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# Current Affairs (CONSOLIDATION)

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# Polity and Governance

## Highlights

- Kayakalp Awards
- Scandalising the Courts: A Ground for Contempt
- Five Years of Pradhan Mantri Fasal Bima Yojana
- Judicial Review
- Vertical and Horizontal Reservations
- Global Housing Technology Challenge-India
- Impeachment of the President of the USA
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- Draft National Science Technology and Innovation Policy, 2020
- Sagarmala Seaplane Services

## Kayakalp Awards

### Why in News

Recently the Ministry of Health and Family Welfare has conferred **5<sup>th</sup> National Kayakalp awards** to **Public and Private Health Facilities** for high standards of Sanitation and Hygiene.

### Key Points

#### ➤ Background:

- Government of India launched a **National Initiative 'Kayakalp'** on 15<sup>th</sup> May 2015 to ensure **hygiene, sanitation and cleanliness in Public Health Facilities in India**.

#### ➤ About:

- Those District Hospitals, Sub-divisional hospitals, Community Health Centres, Primary Health Centres and Health & Wellness Centres in the public healthcare system who have achieved high levels of cleanliness, hygiene and infection control were **recognised and felicitated with awards**.

#### ➤ Objectives:

- To promote **cleanliness, hygiene and infection control practices in public healthcare facilities,**

through incentivizing and recognizing such public healthcare facilities that show exemplary performance in adhering to standard protocols of cleanliness and infection control

- To inculcate a **culture of ongoing assessment** and peer review of performance related to hygiene, cleanliness, and sanitation.
- To create and share **sustainable practices related to improved cleanliness in public health facilities** linked to positive health outcomes

#### ➤ Other Initiatives under Kayakalp:

##### ○ Mera Aspataal:

- The Mera Aspataal Initiative was launched to **capture patient reaction** to the **services offered in the hospital** and **help improve the services** by taking corrective measures.

##### ○ Swachh SwasthSarvatra (SSS):

- MoHFW had collaborated with **Ministry of Drinking Water and Sanitation** and launched **SSS program**, under which, **one community health centre (CHCs)** situated within **Open Defecation Free block** receives **one-time grant** of Rs. **10.00 lakhs** under the **National Health Mission** for undertaking improvement activities, so that the CHC becomes Kayakalp CHC.

Note:



## Scandalising the Courts: A Ground for Contempt

### Why in News

The Karnataka High Court has issued notice to the Union government on a **PIL petition**, challenging the **constitutional validity of a provision of the Contempt of Courts Act, 1971**, that makes “scandalising or tends to scandalising courts” as a ground for contempt.

- **Public Interest Litigation (PIL)** stands for a legal action taken by a public spirited person in order to protect public interest (any act for the benefit of the public).

### Key Points

- **Grounds for Contempt:**
  - **Contempt** is the **power of the court to protect its own majesty and respect**. The power is **regulated but not restricted in the Contempt of Courts Act, 1971**.
    - The expression ‘contempt of court’ has **not been defined by the Constitution**.
    - However, **Article 129** of the Constitution conferred on the **Supreme Court** the power to punish contempt of itself. **Article 215** conferred a corresponding power on the **High Courts**.
  - The **Contempt of Courts Act, 1971** defines both **civil and criminal contempt**.
    - **Civil contempt [Section 2(b)]** refers to **wilful disobedience to any judgment of the court**.
    - **Criminal contempt** can be invoked if an act:
      - Tends to **scandalise or lower the authority of the court [Section 2 (c)(i)]**; or
      - Tends to **interfere with the due course of any judicial proceeding [Section 2 (c)(ii)]**; or
      - **Obstruct the administration of justice [Section 2 (c)(iii)]**.
    - Section 5 of the Act provides that “**fair criticism**” or “**fair comment**” on the merits of a finally decided case **would not amount to contempt**. But the **determination of what is “fair” is left to the interpretation of judges**.
    - The Act was **amended in 2006** to include the **defence of truth** under Section 13 of the original legislation. Implying that the court must permit justification by truth as a valid defence if it is satisfied that it is in the public interest.

### Arguments of the Petitioners:

- **Section 2(c)(i)** of the Act **violates the right to free speech and expression** guaranteed under **Article 19(1)(a)** and **does not amount to a reasonable restriction under Article 19(2)**.
- Though the petitioners have **not challenged the constitutional validity of Section 2(c) (ii) and Section 2(c)(iii) of the Act**, they have contended that **rules and guidelines must be framed** defining the process that superior courts must employ while taking criminal contempt action, keeping in mind principles of natural justice and fairness.
- In the **contempt jurisdiction**, the petitioners have contended, the **judges may often be seen to be acting in their own cause**, thus **violating the principles of natural justice and adversely affecting the public confidence** they seek to preserve through the proceeding.

### Issues that Get Highlighted:

- **Subjectivity:**
  - The word ‘**scandalising**’ is **subjective** and depends on the perception of the concerned person. As long as the words ‘scandalising the court’ are present (in the statute book), it will be **susceptible to arbitrary exercise of power**.
  - One of the disturbing trends is the **propensity of the court to treat personal attacks on their character as contempt**.
    - It is often forgotten that the law of contempt is **not meant for protecting the judges, but it is for the protection of the institution of the judiciary**.
- **Violation of Freedom of Expression:**
  - A **strong judiciary in a democratic republic** is the bulwark of masses of this country. It **must work towards** fulfilling the goals set out in the constitution - to secure social economic and political justice for the masses and to uphold their fundamental rights.
  - If the **judiciary is not functioning keeping in mind these objectives, an individual should have the freedom to point out the same** and it cannot be said to be criminal contempt. Freedom of expression is a fundamental right.
- **United Kingdom’s Decision to abolish ‘scandalising the judiciary’ as a form of contempt of court:**

Note:

- **India's contempt of court law is derived from British law, but in 2013, the United Kingdom abolished 'scandalising the judiciary' as a form of contempt of court on the grounds that this went against freedom of expression while retaining other forms of contempt like behaviour causing disruption or interference with court proceedings.**
  - **One of the reasons why the UK repealed scandalising judiciary as a ground for contempt is to allow constructive criticism.**
- **Does not recognise one of the basic principles of natural justice, i.e., no man shall be a judge in his own cause.**
- Thus, in contempt proceedings, the court arrogates to itself the powers of a judge, jury and executioner which often leads to perverse outcomes.

### Suggestions

- **Freedom of speech** is the most fundamental of the fundamental rights and the restrictions thereupon have to be minimal. The **law of contempt of court can impose only such restrictions as are needed to sustain the legitimacy of the judicial institutions.** The law need not protect the judges. It has to protect only the judiciary.
- A contempt notice issued without proper scrutiny could cause great hardship to people who are engaged in public life. Freedom must be the rule and the restriction must be an exception.
- In contemporary times, it is more important that **courts are seen to be concerned about accountability**, that allegations are scotched by impartial probes rather than threats of contempt action, and processes are transparent.

## Five Years of Pradhan Mantri Fasal Bima Yojana

### Why In News

Recently, the **flagship crop insurance scheme** of the Government of India - **the Pradhan Mantri Fasal Bima Yojana (PMFBY)** - has completed five years of its launch.

- PMFBY was launched on **13<sup>th</sup> January 2016**.
- The scheme was conceived as a milestone initiative to provide a **comprehensive risk solution** at the **lowest uniform premium** across the country for farmers.

### Key Points

- **Pradhan Mantri Fasal Bima Yojana (PMFBY):**
- It provides a **comprehensive insurance cover** against failure of the crop thus helping in stabilising the income of the farmers.
  - **Scope:** All food & oilseed crops and annual commercial/horticultural crops for which past yield data is available.
  - **Premium:** The prescribed premium is **2%** to be paid by farmers for all Kharif crops and **1.5%** for all rabi crops. In the case of annual commercial and horticultural crops, the premium is **5%**.
    - The premium is calculated on the **Sum Insured (SI)** or the **actuarial rate** which is an estimate of the expected value of the future losses. This estimation is predicted based on historical data and consideration of risk involved.
    - Premium cost over and above the farmer share was **equally subsidized** by States and GoI.
    - However, GoI shared **90% of the premium subsidy for North Eastern States** to promote the uptake in the region.
  - The scheme was **compulsory for loanee farmers** availing Crop Loan / **Kisan Credit Card (KCC)** account for notified crops and voluntary for others.
- **PMFBY 2.0:**
- In order to ensure more efficient and effective implementation of the scheme, the central government **had revamped PMFBY in the 2020 Kharif season.**
  - This overhauled PMFBY is often called **PMFBY 2.0**, it has the following features:
    - **Completely Voluntary:** Enrolment 100% voluntary for all farmers from 2020 Kharif.
    - **Limit to Central Subsidy:** The Cabinet has decided to cap the Centre's premium subsidy under the scheme for premium rates up to 30% for unirrigated areas/crops and 25% for irrigated areas/crops.
    - **More Flexibility to States:** The government has given the flexibility to states/UTs to implement PMFBY and given them the option to select any number of additional risk covers/features.
    - **Investing in ICE Activities:** Insurance companies have to now spend 0.5% of the total premium collected on information, education and communication (IEC) activities.
- **Use of Technology under PMFBY:**

Note:

- **Crop Insurance App:**
  - Provides for easy enrollment of farmers.
  - Facilitate easier reporting of crop loss within 72 hours of occurrence of any event.
- **Latest Technological Tools:** To assess crop losses, **satellite imagery, remote-sensing technology, drones, artificial intelligence** and machine learning are used.
- **PMFBY Portal:** For integration of land records.
- **Performance of the Scheme:**
  - The Scheme covers over **5.5 crore farmer applications on average per year.**
  - **Aadhar seeding** (linking Aadhaar through Internet banking portals) has helped in speedy claim settlement directly into the farmer accounts.
  - One notable example is mid-season adversity claims of nearly Rs. 30 crore in **Rajasthan** during **Rabi 2019-20 Locust attack.**

### Suggestions

- **Rationalising waivers and service delivery:** Loan waiver schemes announced by state governments along with mandatory Aadhaar linkage should be rationalised to enable PMFBY of greater coverage.
- **Enable Timely Compensation:** There has been reports of delayed compensation by some of the states.
- **Bringing Behavioural Change:** Apart from this, a lot more needs to be done in bringing about a behavioural change regarding the cost of insurance being a necessary input and not a money-back investment.
- **Streamlining with Similar Schemes:** PMFBY needs to be streamlined with state crop insurance schemes and schemes like **Restructured Weather Based Crop Insurance Scheme** to include more risk areas not covered under them.
- **Proper Implementation:** Successful implementation of PMFBY is an essential benchmark in agricultural reform in India to make farmers self-sufficient in times of crisis and support the creation of an **Aatmanirbhar** Kisan.

## Judicial Review

### Why in News

Recently, the **Supreme Court (SC)** refused to treat the **Central Vista project** as a unique one requiring greater or heightened **judicial review.**

- The SC said the **government** was “**entitled to commit errors or achieve successes**” in **policy matters** without the court’s interference **as long as it follows constitutional principles.**
- The **Central Vista project** of New Delhi includes **Rashtrapati Bhawan, Parliament House, North and South Block, India Gate, National Archives** among others.
- The Indian Constitution **adopted the Judicial Review on lines of the American Constitution.**

### Key Points

- **Judicial Review:**
  - It is a type of **court proceeding** in which a judge **reviews the lawfulness of a decision or action made by a public body.**
    - In other words, judicial reviews are a **challenge to the way in which a decision has been made**, rather than the rights and wrongs of the conclusion reached.
    - **Concepts of Law:**
      - **Procedure Established by Law:** It means that a law enacted by the legislature or the concerned body is valid only if the correct procedure has been followed to the letter.
      - **Due Process of Law:** It is a doctrine that not only checks if there is a law to deprive the life and personal liberty of a person but also ensures that the law is made fair and just.
        - India follows **Procedure Established by Law.**
    - It is the **power exerted by the courts of a country to examine the actions of the legislatures, executive and administrative arms of government** and to ensure that such actions conform to the provisions of the nation’s Constitution.
    - Judicial review has **two important functions**, like, of **legitimizing government action** and the **protection of constitution against any undue encroachment by the government.**
      - Judicial review is considered a **basic structure of the constitution** (*Indira Gandhi vs Raj Narain Case 1975*).
      - Judicial review is also called the **interpretational and observer roles of the Indian judiciary.**
      - **Suo Moto cases** and the **Public Interest Litigation (PIL)**, with the discontinuation of the principle

Note:

of Locus Standi, have **allowed the judiciary to intervene in many public issues**, even when there is no complaint from the aggrieved party.

#### ➤ **Types of Judicial Review:**

##### ○ **Reviews of Legislative Actions:**

- This review implies the power to ensure that **laws passed by the legislature are in compliance with the provisions of the Constitution.**

##### ○ **Review of Administrative Actions:**

- This is a tool for **enforcing constitutional discipline** over administrative agencies while exercising their powers.

##### ○ **Review of Judicial Decisions:**

- This review is used to correct or make any change in previous decisions by the judiciary itself.

#### ➤ **Importance of Judicial Review:**

- It is essential for maintaining the **supremacy of the Constitution.**
- It is essential for **checking** the possible **misuse of power** by the legislature and executive.
- It **protects the rights** of the people.
- It **maintains** the federal **balance.**
- It is essential for securing the **independence of the judiciary.**
- It **prevents tyranny** of executives.

#### ➤ **Problems with Judicial Review:**

- It **limits the functioning of the government.**
- It **violates the limit of power set to be exercised by the constitution** when it overrides any existing law.
  - In India, a **separation of functions rather than of powers is followed.**
  - The concept of separation of powers is not adhered to strictly. However, a system of **checks and balances** have been put in place in such a manner that the judiciary has the power to strike down any **unconstitutional laws passed by the legislature.**
- The judicial opinions of the judges once taken for any case becomes the standard for ruling other cases.
- Judicial review can harm the public at large as the judgment may be **influenced by personal or selfish motives.**
- Repeated interventions of courts can **diminish the faith of the people in the integrity, quality, and efficiency of the government.**

#### **Constitutional**

##### **Provisions for Judicial Review**

- There is no direct and express provision in the constitution empowering the courts to invalidate laws, but **the constitution has imposed definite limitations upon each of the organs, the transgression of which would make the law void.**
- The **court is entrusted with the task of deciding whether any of the constitutional limitations has been transgressed or not.**
- Some provisions in the constitution supporting the process of judicial review are:
  - **Article 372 (1)** establishes the judicial review of the pre-constitution legislation.
  - **Article 13** declares that any law which contravenes any of the provisions of the part of Fundamental Rights shall be void.
  - **Articles 32 and 226** entrusts the roles of the protector and guarantor of fundamental rights to the Supreme and High Courts.
  - **Article 251 and 254** states that in case of inconsistency between union and state laws, the state law shall be void.
  - **Article 246 (3)** ensures the state legislature's exclusive powers on matters pertaining to the State List.
  - **Article 245** states that the powers of both Parliament and State legislatures are subject to the provisions of the constitution.
  - **Articles 131-136** entrusts the court with the power to adjudicate disputes between individuals, between individuals and the state, between the states and the union; but the court may be required to interpret the provisions of the constitution and the interpretation given by the Supreme Court becomes the law honoured by all courts of the land.
  - **Article 137** gives a special power to the SC to review any judgment pronounced or order made by it. An order passed in a criminal case can be reviewed and set aside only if there are errors apparent on the record.

#### **Suggestions**

- With the power of judicial review, the courts **act as a custodian of the fundamental rights.**

Note:



- With the growing functions of the modern state, **judicial intervention in the process of making administrative decisions and executing them has also increased.**
- When the judiciary surpasses the line of the powers set for it in the name of judicial activism, it could be rightly said that the judiciary then **begins to invalidate the concept of separation of powers set out in the Constitution.**
- **Making laws is the function and duty of the legislature,** to fill the gap of laws and to implement them in a proper manner. So that the only work remaining for the judiciary is interpretations. Only a **fine equilibrium between these government bodies can sustain the constitutional values.**

## Vertical and Horizontal Reservations

### Why in News

Recently, the **Supreme Court (SC)**, in a case, has clarified the **position of law** on the interplay of vertical and horizontal **reservations.**

### Key Points

- **Vertical Reservation:**
  - Reservation for **Scheduled Castes, Scheduled Tribes, and Other Backward Classes** is referred to as vertical reservation.
  - It **applies separately for each of the groups** specified under the law.
  - **Example: Article 16(4)** of the Constitution contemplates vertical reservation.
- **Horizontal Reservation:**
  - It refers to the **equal opportunity provided to other categories of beneficiaries** such as women, veterans, the transgender community, and individuals **with disabilities**, cutting through the vertical categories.
  - **Example: Article 15 (3)** of the Constitution contemplates horizontal reservation.
- **Application of Reservations:**
  - The **horizontal quota is applied separately** to each vertical category, and not across the board.
  - For **example**, if **women have 50% horizontal quota**, then **half of the selected candidates will have to necessarily be women in each vertical**

**quota category** i.e., half of all selected **Scheduled Caste candidates** will have to be women, half of the unreserved or general category will have to be women, and so on.

- **The Case:**
  - **Saurav Yadav versus State of Uttar Pradesh 2020** dealt with issues arising from the way different classes of reservation were to be applied in the selection process to fill posts of constables in the state.
  - The **Uttar Pradesh government's policy was to restrict and contain reserved category candidates to their categories**, even when they had secured higher grades.
- **SC's Ruling:**
  - The court ruled against the Uttar Pradesh government, holding that if a **person belonging to an intersection of vertical-horizontal reserved category had secured scores high enough to qualify without the vertical reservation**, the **person would be counted as qualifying without the vertical reservation, and cannot be excluded from the horizontal quota** in the general category.
  - The court said Uttar Pradesh Government's argument meant that it was ensuring that the general category was 'reserved' for upper castes.
- **Significance:**
  - The ruling will give **clarity on reservation and make it easier for governments to implement and apply reservation.**
  - More **needy scheduled caste, scheduled tribes and other backward class candidates will be benefited** if high scoring candidates are recruited under general category.

### Reservation

- Reservation is a form of **positive discrimination, created to promote equality among marginalised sections**, so as to protect them from social and historical injustice.
- Generally, it means giving **preferential treatment to marginalised sections** of society in employment and access to education.
- It was also originally **developed to correct years of discrimination and to give a boost to disadvantaged groups.**

Note:

- In India, people have been historically discriminated against on the basis of caste.

### Constitutional Provisions

#### Governing Reservation in India

- **Article 15(3)** allows **protective discrimination in favour of women**.
- **Article 15(4) and 16(4)** of the Constitution enabled the State and Central Governments to **reserve seats in government services** for the members of the SC and ST.
- The Constitution was amended by the Constitution **(77<sup>th</sup> Amendment) Act, 1995** and a new clause **(4A)** was inserted in **Article 16 to enable the government to provide reservation in promotion**.
  - Recently, the Supreme Court of India has said that reservation of seats provided to certain communities **is not a fundamental right**.
- **Later, clause (4A) was modified** by the Constitution **(85<sup>th</sup> Amendment) Act, 2001** to provide consequential seniority to SC and ST candidates promoted by giving reservation.
- **Constitutional 81<sup>st</sup> Amendment Act, 2000** inserted Article 16 (4 B) which enables the state to fill the unfilled vacancies of a year which are reserved for SCs/STs in the succeeding year, thereby nullifying the ceiling of fifty percent reservation on total number of vacancies of that year.
- **Article 330 and 332** provides for specific representation through **reservation of seats for SCs and STs in the Parliament and in the State Legislative Assemblies** respectively.
- **Article 243D** provides reservation of seats for SCs and STs in every **Panchayat**.
  - It also **provides for the reservation of not less than one-third of the total number of seats for women** (including the number of seats reserved for women belonging to the SCs and STs).
- **Article 233T** provides reservation of seats for SCs and STs in every **Municipality**.
- **Article 335** of the Constitution says that the claims of SCs and STs shall be taken into consideration constitutively with the maintenance of efficacy of the administration.

## Global Housing Technology Challenge-India

### Why in News

The Prime Minister has laid the foundation of **LightHouse Projects (LHPs)**, as part of the **Global Housing Technology Challenge-India (GHTC-India)** initiative, at **six sites** across six states via videoconference.

- He also announced the winners under **Affordable Sustainable Housing Accelerators - India (ASHA-India)** and gave away annual awards for excellence in implementation of **Pradhan Mantri Awas Yojana - Urban (PMAY-U) Mission**.
- He also released a **certification course on innovative construction technologies** named **NAVARITI** (New, Affordable, Validated, Research Innovation Technologies for Indian Housing).

### Key Points

- **Global Housing Technology Challenge-India:**
  - The **Ministry of Housing and Urban Affairs** has conceptualized a Global Housing Technology Challenge - India (GHTC- India) which **aims to identify and mainstream a basket of innovative technologies** from across the globe **for the housing construction sector** that are sustainable, eco-friendly and disaster-resilient.
  - The Prime Minister declared the **year 2019-20** as **'Construction Technology Year'** while inaugurating **GHTC-India in March 2019**.
  - **3 Components of GHTC-India:**
    - **Grand Expo and Conference:** It is **organized biennially** to provide a platform to all stakeholders associated with housing construction for the exchange of knowledge and business.
    - **Proven Demonstrable Technologies for the Construction of Lighthouse Projects:** These projects **demonstrate the merits of the selected technologies** and serve as live laboratories for research, testing, technology transfer, increasing mass awareness and for mainstreaming them in the country.
      - The **funding** for the LHPs is **as per the guidelines of PMAY-U**.

Note:

- **Potential Future Technologies for Incubation and Acceleration Support:** Potential future technologies from India that are applicable to the housing sector **will be supported and encouraged through the ASHA (Affordable Sustainable Housing Accelerators) India program.**
- **LightHouse Projects at Six Sites:**
  - Six LHPs **consisting of about 1,000 houses each with physical & social infrastructure facilities** are being constructed at six places across the country namely Indore (Madhya Pradesh), Rajkot (Gujarat), Chennai (Tamil Nadu), Ranchi (Jharkhand), Agartala (Tripura) and Lucknow (Uttar Pradesh).
  - These projects will **showcase the use of the six distinct shortlisted innovative technologies** for field level application, learning and replication.
  - LHPs will **demonstrate and deliver ready to live mass housing** at an expedited pace as compared to conventional brick and mortar construction and will be more economical, sustainable, of high quality and durability.
- **Affordable Sustainable Housing Accelerator – India (ASHA India):**
  - The aim of ASHA-India is to **catalyse research and development in the housing construction sector, building materials and related products** by providing a suitable platform to promote and showcase India's vibrant and dynamic community of innovators.
  - It will **support the potential future technologies developed in India** by the way of incubation and acceleration.
    - Incubation and acceleration support is provided to potential future technologies that are **not yet market ready (pre-prototype applicants)** or to the technologies that are **market ready (post prototype applicants)** respectively.

## Impeachment of the President of the USA

### *Why in News*

Donald Trump has become the **first President of the USA** in history **to be impeached twice** by the House of Representatives. He was charged for **inciting an insurrection.**

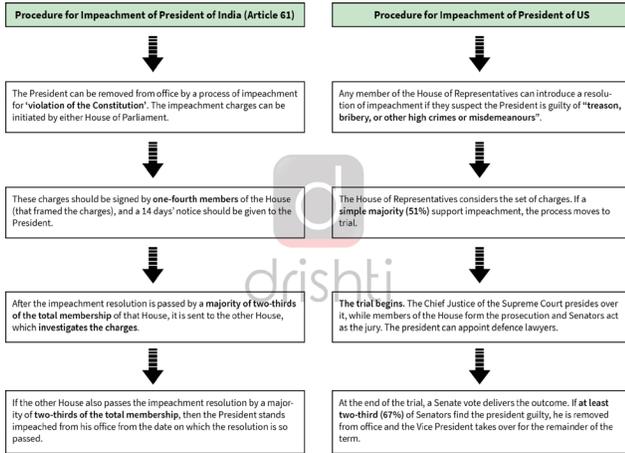
- On 6<sup>th</sup> January, 2021, as the USA Congress assembled to **certify President-elect Joe Biden's victory**, a mob of Donald Trump supporters occupied the USA Capitol in a failed bid to overturn the election results.

### *Key Points*

- **Mechanism of Impeachment of President in USA:**
  - **Two Houses:** The legislature of the United States of America i.e. Congress of the United States consists of two houses:
    - **The Senate**, in which each state, regardless of its size, is represented by two senators.
    - **House of Representatives**, to which members are elected on the basis of population.
  - **Reasons for Impeachment:** The USA Constitution states that the President can be removed for conviction of **treason, bribery, or other high crimes or misdemeanour.**
  - Earlier Impeachments:
    - **Three USA Presidents, Trump** in 2019, **Bill Clinton** in 1998 and **Andrew Johnson** in 1868, previously were impeached by the House but **acquitted by the Senate.**
    - Thus, **no USA President ever has been removed from office through impeachment.**
    - The present impeachment process against President Trump would **certainly not be completed** because until that time he may have left the White House, yet Democrats are determined to Impeach him so that **unpunished abuse of power doesn't set a dangerous precedent** of impunity for future presidents.
- **Mechanism of Impeachment of President in India:**
  - In India, the President can be removed only for **'violation of the Constitution'** and the Constitution **does not define the meaning** of the phrase 'violation of the Constitution'.
  - The **impeachment charges can be initiated by either House of Parliament** - Lok Sabha or Rajya Sabha.

### *Mechanism of Impeachment of President in India and the USA*

Note:



## Moringa Powder

### Why in News

The **Agricultural and Processed Food Products Export Development Authority (APEDA)** has been supporting private entities in creating necessary infrastructure to promote **Moringa products exports** from India.

### Key Points

- Globally, the demand for Moringa products, such as **Moringa Leaf Powder and Moringa Oil, Moringa as a nutritional supplement and in food fortification** has been witnessing healthy growth.
- Its usage has been well received among the global consumers for its nutritional, medicinal, culinary uses.

### Agricultural and Processed Food Products Export Development Authority

- Agricultural and Processed Food Products Export Development Authority (APEDA) was established by the Government of India under the **Agricultural and Processed Food Products Export Development Authority Act, 1985**.
- It functions under the **Ministry of Commerce and Industry**.
- The Authority has its **headquarters in New Delhi**.
- APEDA is mandated with the **responsibility of export promotion and development** of the scheduled products like fruits, vegetables and their products, meat and meat products, etc.
- APEDA has been entrusted with the **responsibility to monitor import of sugar**.

## Moringa

- Botanical name: **Moringa oleifera**
- It is a **fast-growing, drought-resistant tree native to the Indian subcontinent**.
- Common names include moringa, drumstick tree, horseradish tree etc.
- It is widely cultivated for its **young seed pods and leaves**, used as vegetables and for **traditional herbal medicine**. It is also used for **water purification**.
- It has various healthy compounds such as **various vitamins**, important elements such as **Iron, Magnesium** etc. and is extremely low on fats and contains **no cholesterol**.

## Toycathon 2021

### Why in News

Recently, the government has launched a virtual toy hackathon 'Toycathon 2021'.

### Key Points

- **Initiative of:**
  - The Ministry of Education, Ministry of Women and Child Development, Ministry of Textile, Ministry of Commerce and Industries, Ministry of Micro, Small and Medium Enterprises, Ministry of Information and Broadcasting and **All India Council for Technical Education**.
- **Aim:**
  - To **conceptualize innovative toys based on the Indian value system** which will inculcate the **positive behaviour and good value among the children**.
  - To **promote India as a global toy manufacturing hub (Atmanirbhar Abhiyan)**.
- **Features:**
  - **Based on:** Indian culture and ethos, local folklore and heroes, and Indian value systems.
  - **Themes:** Nine themes, including fitness and sport and rediscovering traditional Indian toys.
  - **Participants:** Students, teachers, start-ups and toy experts.
  - **Prize:** Participants can get prizes upto Rs. **50 lakhs**.
- **Significance:**
  - Toys can be an excellent medium to further the spirit of '**Ek Bharat, Shreshtha Bharat**'.

Note:

- “Ek Bharat Shreshtha Bharat” was announced by the Prime Minister in 2015 to **enhance the understanding and bonding between the States**, thereby strengthening the unity and integrity of India.
- It will help in promoting the use of educational toys in line with the **National Education Policy (NEP) 2020**.
- It will create an ecosystem for the **domestic Toy industry and the local manufacturers**, tapping the untapped resources and **utilizing their potential**.
- It will help in **reducing toy imports**.
  - Though the toy market in India is worth USD 1 billion, **80% toys are imported**.

## Prevention of Cruelty to Animals Act, 1960

### Why in News

The **Supreme Court (SC)** has asked the Centre to **either withdraw or amend rules notified in 2017** for confiscating animals of traders and transporters during the pendency of trial in cases under the Prevention of Cruelty to Animals Act, 1960.

### Key Points

- **About the 2017 Rules:**
  - The **Prevention of Cruelty to Animals (Care and Maintenance of Case Property Animals) Rules, 2017** have been framed under the **Prevention of Cruelty to Animals Act, 1960**.
  - The Rules **allow a Magistrate to forfeit the cattle of an owner facing trial under the Act**.
    - The animals are then **sent to infirmaries, animal shelters**, etc.
    - The authorities **can further give such animals for “adoption”**.
- **SC’s Observations:**
  - The Rules are plainly **contrary to Section 29 of Prevention of Cruelty to Animals Act**, under which **only a person convicted of cruelty can lose his animal**.
  - It **asked the government to either change the rule or face a stay** from the court.
- **About the Prevention of Cruelty to Animals Act, 1960:**

- The legislative intent of the Act is to **“prevent the infliction of unnecessary pain or suffering on animals”**.
- The **Animal Welfare Board of India (AWBI)** was established in 1962 under Section 4 of the Act.
- This Act **provides for punishment for causing unnecessary cruelty and suffering to animals**. The Act **defines animals and different forms of animals**.
- Discusses **different forms of cruelty, exceptions, and killing of a suffering animal** in case any cruelty has been committed against it, so as to relieve it from further suffering.
- Provides the **guidelines relating to experimentation on animals** for scientific purposes.
- The Act enshrines the provisions relating to the **exhibition of the performing animals**, and offences committed against the performing animals.
- This Act provides for the **limitation period of 3 months** beyond which no prosecution shall lie for any offences under this Act.

## School Bag Policy 2020

### Why in News

The Directorate of Education has issued a circular asking schools to follow the new **‘School Bag Policy, 2020’** released by the **National Council of Educational Research and Training (NCERT)**.

### Key Points

- **The Circular:**
  - School teachers should inform the students in advance about the books and notebooks to be brought to school on a particular day and frequently check their bags to **ensure that they are not carrying unnecessary material**.
  - It is the duty and the responsibility of the school management to provide **quality potable water in sufficient quantities** to all the students in the school so that they do not need to carry water bottles from their homes.
- **About the School Bag Policy 2020:**
  - It **lays down the guidelines on homework and weight of school bags** for classes I to XII.

Note:

- **School bags should not be more than 10% of the bodyweight of students** across classes I to X and there should be **no bags in pre-primary students**.
- It recommends **no homework up to class II** and a maximum of two hours per week for classes III to V, one hour a day for classes VI to VIII and two hours a day for classes IX and above.
- The Policy will **also require schools to introduce infrastructural changes** as students will not be able to carry many books daily.
  - The schools **need to provide lockers** right from preschool to senior secondary to enable children to leave books in school and carry home only what is required.
- It adds that the **teachers** should take the **responsibility of checking the weight** of school bags of the students **every three months on a day selected for the whole class** and any information about heavy bags should be **communicated to the parents**.
- It adds that files and **thin/light exercise** books should be preferred to **thick/heavy ones**.
- **Problems of heavy school bags:**
  - The heavy school bag has **severe/adverse physical effects on growing children** which can cause damage to their **vertebral column and knees**.
  - A heavy backpack can pull on the neck muscles contributing to headache, shoulder pain, lower back pain and neck and arm pain.
  - The **posture of the body** also gets affected to a great extent which in the long term develops imbalances in the body and **affects the health of the nervous system**.

#### NCERT

- It is an **autonomous organization under the Ministry of Education (MoE)** which is responsible for:
  - Ensuring **qualitative improvement in school education** by undertaking and promoting research in areas related to school education.
  - **Prepare and publish model textbooks**, supplementary material.
  - Develop and **disseminate innovative educational techniques** and practices.
- Act as a **nodal agency** for achieving the goals of **Universalization of Elementary Education**.

## Virtual Agri-Hackathon 2020

### Why in News

Recently, the Union Minister of Agriculture & Farmers' Welfare inaugurated the **Virtual Agri-hackathon 2020** in association with **Indian Agricultural Research Institute (IARI)**, Pusa, New Delhi.

- **IARI** is the country's **premier national Institute for agricultural research, education and extension**.

### Key Points

#### ➤ About Agri-Hackathon 2020:

##### ○ Objective:

- It will **bring together the most important stakeholders** from industry and government alongside India's young **bright minds, creative startups and smart innovators** who will build new, fast and frugal solutions to tackle the challenges of the agriculture sector.

##### ○ The Competition:

- **Requirement:** The hackathon will **accept innovations and ideas on farm mechanization, precision agriculture, supply chain and food technology, waste to wealth, green energy**, etc.
- **Prize:** **Final 24 winners** will get a cash prize of **Rs 1,00,000** along with incubation support, tech & business mentoring and various other benefits.

#### ➤ Significance:

- This event is very **crucial from the standpoint of new technology and value addition in agriculture**.
- It will help achieve **doubling the farmer's income** which in turn will **create many growth opportunities for the entire country**.

## Smart Classes for Rural Schools

### Why in News

Recently, **RailTel** has proposed to the **Ministry of Education** its plan for **equipping rural schools, run by the central government, with the ability to hold 'smart classes'**.

### Key Points

#### ➤ About the Proposal:

Note:



- The proposal is to **power remote government schools with high-speed broadband** and create an **“Internet of Things” environment for learning**.
- The plan is to create **end-to-end e-learning solutions for the schools**, using the **solid Optical Fibre Cable network**, which is the backbone of Indian Railways telecom operations.
  - Behind the plan is the education sector’s thrust on **leveraging the gains of e-learning** as a mode of instruction, at a time when the **pandemic** has forced teachers and students to migrate to virtual platforms and adopt IT-enabled interactive means for teaching.
- The cable network **runs along railway tracks**, and so as far as reach is concerned, there is the **capability to impact rural schools anywhere in India**, including the remotest locations which otherwise may not get reliable Internet.
  - RailTel has **already provided such connectivity to 723 institutions of higher learning under the Centre’s National Knowledge Network programme**, with broadband speed of up to 10 gigabytes per second.
- It would **impact around 3.5 lakh students** who are enrolled in these schools, which are run by the Central government predominantly for meritorious students in rural India.
- **RailTel:**
  - It is a **“Mini Ratna (Category-I)” Central Public Sector Enterprise**.
  - It is an ICT (Information and Communication Technology) provider and one of the largest neutral telecom infrastructure providers in the country owning a Pan-India optic fiber network on exclusive Right of Way (ROW - for laying telecom cables) along Railway track.
    - The OFC network covers all important towns & cities of the country and several rural areas.
  - It has been selected for **implementation of various mission-mode projects** for the Government of India including rolling out the **National Knowledge Network, Bharat Net** and **USOF (Universal Service Obligation Fund) funded optical fiber based connectivity project in North East India**.

## Rastriya Kamdhenu Aayog

### Why in News

Recently, the **Rastriya Kamdhenu Aayog** has announced **‘Kamdhenu Gau-Vigyan Prachar-Prasar Exam’** with an aim to “infuse curiosity” among people about the importance of cows, and to “sensitise and educate” them about the bovine species.

### Key Points

- **Rastriya Kamdhenu Aayog is an agency** under the Department of Animal Husbandry and Dairying (**Ministry of Fisheries, Animal Husbandry & Dairying**) **established for the protection of cows**.
- It has been constituted to **organize animal husbandry on modern and scientific lines** and to take steps for preserving and improving breeds, and prohibiting the slaughter of cows and calves and other milch and draught cattle.
  - There are 50 well-defined breeds of cattle and 17 breeds of buffaloes in the country.
- It is a **high-powered permanent body** to formulate policies and to provide directions for the implementation of schemes related to cattle so as to lay more emphasis on livelihood generation for small & marginal farmers, women and youth entrepreneurs.
- It functions as an integral part of **Rashtriya Gokul Mission**.
  - Rashtriya Gokul Mission was initiated by Government of India in December 2014 with the **aim of development and conservation of indigenous bovine breeds**, genetic upgradation of bovine population and enhancing milk production and productivity of bovines thereby making milk production more remunerative to the farmers.

## Scheme for Industrial Development of Jammu and Kashmir

### Why in News

Recently, the **Cabinet Committee on Economic Affairs** has approved the proposal of **Department for Promotion of Industry and Internal Trade (DPIIT)** for **Central Sector**

Note:

### **Scheme for Industrial Development of Jammu and Kashmir (J&K).**

- **DPIIT** comes under the **Ministry of Commerce and Industry**.

#### **Central Sector Schemes**

- These schemes are **100% funded by the Central government**.
- Implemented by the Central Government machinery.
- Formulated on subjects mainly from the Union List.

#### **Key Points**

- **Aim:**
  - To take industrial development to the block level in **Union Territory (UT)** of J&K, which is the **first time in any Industrial Incentive Scheme of the Government of India** and attempts for a more **sustained and balanced industrial growth** in the entire UT.
- **Beneficiaries:**
  - Scheme is made attractive for **both smaller and larger industrial units**.
- **Expenditure:**
  - The financial outlay is **Rs. 28,400 crore** for the scheme **period 2020-21 to 2036-37** (17 years).
- **Role of J&K in Implementation:**
  - Scheme envisages a greater role of the UT of J&K in **registration and implementation of the scheme** while having proper checks and balances by having an **independent audit agency** before the claims are approved.
- **Incentives Under the Scheme:**
  - **Capital Investment Incentive:**
    - It provides an **incentive at the rate of 30% in Zone-A and 50% in Zone-B on investment** made in plant and machinery (in manufacturing), or construction of building and other durable physical assets (in service sector).
      - **Zone-B** includes far-off areas and will receive higher incentives so as to ensure equal opportunities of growth in far-flung areas and major towns.
      - **Zone-A** includes areas other than Zone-B.
    - A **capital investment** is a sum of money that goes towards furthering the objectives of a

business or towards purchasing long-term assets for the business.

- **Capital Interest subvention:**
  - It provides for **6% capital interest subvention for a maximum of seven years on loans up to Rs. 500 crore** for investment in plant and machinery (in manufacturing), or construction in building and all other durable physical assets (in service sector) for 10 years.
    - **Capitalized interest** is the cost of borrowing to acquire or construct a long-term asset.
- **GST Linked Incentive:**
  - It is based on **Gross Goods and Services Tax (GST)**.
  - This will **incentivise output up to 300% of the eligible value of actual investment** made in the plant and machinery (in manufacturing), or construction in building and all other durable physical assets (in service sector).
- **Working Capital Interest Incentive:**
  - This will provide all existing units **incentive at the annual rate of 5% for maximum 5 years**. Maximum limit of incentive is **Rs. 1 crore**.
    - **Working capital**, also known as **net working capital (NWC)**, is the **difference between a company's current assets**, such as cash, accounts receivable (customers' unpaid bills) and inventories of raw materials and finished goods, **and its current liabilities**, such as accounts payable.
- **Significance:**
  - The scheme will encourage **new investment, substantial expansion and also nurture the existing industries** in the Union Territory.
  - It will also provide **employment to 4.5 lakh people** besides leading to equitable, balanced and sustainable **socio-economic development of the region**.
- **Other Initiatives:**
  - Earlier **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) Social Endeavour for Health and Telemedicine (SEHAT) scheme** was launched to **extend health insurance coverage** to all residents of J&K.
  - The **Union Cabinet has also approved a special package worth Rs. 520 crore** in the Union Territories

Note:

(UTs) of J&K and Ladakh for a period of five years under the **Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM)**.

- In August 2019, the Central government had suspended all modes of communications in the wake of **revocation of Jammu and Kashmir's special status, granted under Article 370**. Eventually, services were partially restored, with internet speed restricted to 2G.

## Demand For Autonomy in Assam

### *Why in News*

There has been a demand for implementation of **Article 244A for the creation of an autonomous State** within Assam.

### *Key Points*

- **Background:**
  - The appeal to the Centre has been for the creation of an autonomous State for the **Karbi Anglong region**.
    - This has been a demand since 1986.
  - The districts are currently governed by **two autonomous councils Karbi Anglong and North Cachar hills**.
- **Definition of Scheduled and Tribal Areas:**
  - The areas inhabited by the socially and educationally backward '**Aboriginals**' are called Scheduled Areas.
- **Administration of Scheduled and Tribal Areas:**
  - There are **two schedules (5<sup>th</sup> and 6<sup>th</sup>) of the Indian Constitution** which entail the details about the control and management of the Scheduled and Tribal Areas.
  - **Fifth Schedule of the Indian Constitution:**
    - The provisions regarding the administration and control of **Scheduled and Tribal Areas** of any state **except the four states (Assam, Meghalaya, Tripura, Mizoram)** are mentioned under this schedule.
    - At present, 10 states namely **Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana** have Fifth Schedule Areas.

### ○ **Sixth Schedule of the Indian Constitution**

- **This schedule deals with the administration and control of the scheduled and tribal areas of the four states** of Assam, Meghalaya, Tripura, Mizoram.
- **Scheduled and Tribal Areas are dealt with two articles:**
  - **Article 244:**
    - This article deals with the administration of the Scheduled and Tribal Areas.
    - It defines **Scheduled Areas as the areas defined so by the President of India** and are mentioned in the **fifth schedule** of the Constitution.
  - **Article 244A:**
    - Formation of an **autonomous state comprising** certain tribal areas in Assam and creation of local legislature or Council of Ministers or both therefore.

## SC Notice on Plea to Bar Disqualified Legislators

### *Why in News*

The **Supreme Court** has asked the **Centre** and the **Election Commission of India (EC)** to respond to a plea to **debar legislators, disqualified under the Tenth Schedule, from contesting byelections** during the **rest of the tenure of the House**.

### *Key Points*

- **Background:**
  - The plea comes in the backdrop of recent political events in several States such as **Manipur, Madhya Pradesh, Karnataka** in which Members of Legislative Assemblies resign, followed by the collapse of the **incumbent government**. They surface again as **Ministers in the new government** formed by a rival political party.
- **Arguments made by the Petitioner:**
  - The plea said that once a member of the House incurs **disqualification** under the tenth Schedule, **he or she cannot be permitted to contest again during the term** for which he was elected (considering **Article 172** of the Constitution).

Note:

- If a seat **falls vacant due to disqualification** then that particular disqualified member of the House has to incur disability under **Article 191 (1)(e)** of the Constitution and be **debarred from being chosen again during the term for which he/she was elected.**
- **Related Constitutional Provisions:**
  - **Para 2 of the X<sup>th</sup> Schedule:**
    - It says defecting legislators **“disqualified for being a member of the House.”**
  - **Article 172:**
    - It makes a membership of a House coterminous with the term of 5 years of the House.
  - **Article 191(1) (e):**
    - A person shall be disqualified for being a member of the **Legislative Assembly or Legislative Council** of a State if he is so disqualified under the **Tenth Schedule.**
- **Tenth Schedule:**
  - The Tenth Schedule was inserted in the Constitution in 1985 by the **52<sup>nd</sup> Amendment Act.**
  - It lays down the process by which **legislators may be disqualified on grounds of defection** by the **Presiding Officer** of a legislature.
  - The law applies to both **Parliament and state assemblies.**
  - **Disqualification:**
    - If a member of a House belonging to a political party:
      - Voluntarily gives up the membership of his political party, or
      - Votes or abstains from voting in such House **contrary to any direction** issued by his **political party** without obtaining **prior permission** of such party and such act has not been condoned by the party within **15 days.**
    - If an **independent candidate** joins a political party after the election.
    - If a **nominated member** joins a party six months after he becomes a member of the legislature.
  - **Exceptions under the Law:**
    - If a member goes out of his party as a result of a **merger of the party with another party.** A merger takes place when **two-thirds of the members of the party** have agreed to such merger.

- If a member, after being elected as the **presiding officer** of the House, voluntarily gives up the membership of his party or rejoins it after he ceases to hold that office.
- **Decision of the Presiding Officer is Subject to Judicial Review:**
  - In the **Kihoto Hollohan case** (1993), the Supreme Court declared that while deciding a question under the 10<sup>th</sup> Schedule, the presiding officer should **function as a tribunal.**
    - Hence, his/her decision (like that of any other tribunal) was **subject to judicial review on the grounds of mala fides, perversity, etc.**
- **Time limit within which the Presiding Officer decides:**
  - There is **no time limit as per the law** within which the Presiding Officers should decide on a plea for disqualification.
  - The courts also can intervene **only after the officer has made a decision**, and so the only option for the petitioner is to wait until the decision is made.
  - There have been several cases where the Courts have expressed concern about the **unnecessary delay** in deciding such petitions.
    - **The SC in a recent judgement** held that unless there are **“exceptional circumstances”**, disqualification petitions under the Tenth Schedule should be **decided by Speakers within three months.**

## National Youth Day

### *Why in News*

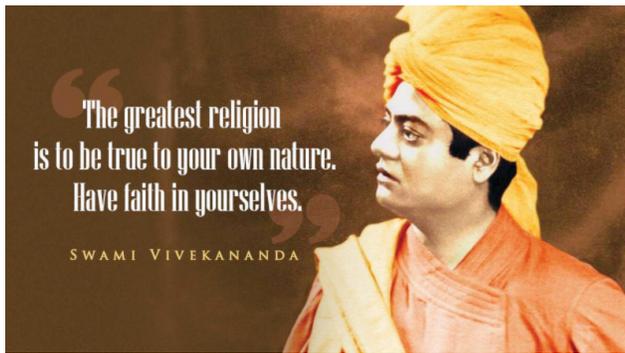
National Youth Day is held every year on 12<sup>th</sup> January to observe the **birth anniversary of Swami Vivekananda.**

### *Key Points*

- The day is also referred to as **Swami Vivekanand Jayanti** and was designated as the **National Youth Day in 1984.**
- **24<sup>th</sup> National Youth Festival:**
  - Celebrated to commemorate the birth anniversary of **Swami Vivekananda**, the **National Youth Festival** is an annual gathering of youth with various activities including competitive ones.

Note:





- Theme of **2021 Festival: 'YUVAAH – Utsah Naye Bharat Ka'**.
- It will be celebrated from **12<sup>th</sup> to 16<sup>th</sup> January**.
- It is organized by the **Ministry of Youth Affairs and Sports, Government of India** in collaboration with **one of the State Governments**.
- As part of the National Youth Festival, the **National Youth Parliament Festival (NYPF)** has also been organized **since 2019**.
- **National Youth Parliament Festival:**
  - **Objective:**
    - To hear the voice of youth in this age bracket of **18-25** who are **allowed to vote but cannot contest in elections**.
    - To encourage the youth to engage with public issues, understand the common man's point of view, form their opinion and express these in an articulate manner.
  - **Organized by:**
    - **National Service Scheme (NSS)** and **Nehru Yuva Kendra Sangathan (NYKS)** under the aegis of **Ministry of Youth Affairs and Sports**.
    - The **first festival** of the NYPF was organised from **12<sup>th</sup> January to 27<sup>th</sup> February, 2019**, with the theme **"Be the Voice of New India and Find solutions and Contribute to Policy"**.
    - This is the **second NYPF festival** started in **December 2020**.

#### Swami Vivekananda (1863-1902)

- He was born as **Narendranath Datta** on **12<sup>th</sup> January, 1863**.
- Introduced the world to the Indian philosophies of **Vedanta and Yoga**.
- He was the chief disciple of the 19<sup>th</sup>-century mystic **Ramakrishna Paramhansa**.

- Laid the greatest emphasis on **education** for the **regeneration of our motherland**. He advocated a **man-making character-building education**.
- Established the **Ramakrishna Mission in 1897**. It is an organization which works in the area of **value-based education, culture, health, women's empowerment, youth and tribal welfare and relief and rehabilitation**.
- He died at **Belur Math in 1902**. Belur Math, located in West Bengal, is the **headquarters of Ramakrishna Math & Ramakrishna Mission**.

## Draft National Science Technology and Innovation Policy, 2020

### Why in News

Recently, the draft of the **5<sup>th</sup> National Science Technology and Innovation Policy (STIP)** has been uploaded by the **Department of Science and Technology (DST)** on its website.

- This Policy will replace the **Science Technology and Innovation Policy of 2013**.

### Key Points

- **Aim:**
  - To bring about **profound changes through short, medium and long-term mission mode projects** by building a nurtured **ecosystem that promotes research and innovation** on the part of both individuals and organizations.
  - To **identify and address strengths and weaknesses of the Indian Science Technology and Innovation (STI) ecosystem** to catalyse socio-economic development of the country and also make the Indian STI ecosystem globally competitive.
- **Important Provisions:**
  - **Related to Equity and Inclusion:**
    - **Gender Equality:**
      - It proposes that at least **30% representation be ensured for women** in all decision-making bodies, as well as **"spousal benefits" be provided to partners of scientists belonging to the Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ+) community**.

Note:

- The **LGBTQ+ community** should be included in all conversations related to **gender equity**, and provisions be made to **safeguard their rights** and promote their representation and retention in the science and technology sector.
- **Child and Elderly Care:**
  - **Child-care benefits are proposed to be made gender-neutral**, and **flexible work timings and adequate parental leave** are to be offered to cater to maternity, childbirth and child care.
  - All publicly-funded research institutions and universities will be asked to provide **day-care centres for children of employees**, and also have a provision for elderly care.
- **For Disabled:**
  - For the **benefit of people with disabilities**, the policy asks all publicly-funded scientific institutions to make “**structural and cultural changes**” to support their inclusion.
- **Other Related Provisions:**
  - For age-related cut-offs in matters relating to selection, promotion, awards or grants, the “**academic age**” and not the biological age would be considered.
  - **Removal of bars on married couples** being employed in the same department or laboratory.
    1. As of now, married couples are not posted in the same department, leading to cases of loss of employment or forced transfers when colleagues decide to get married.
- **Open Science Policy (One Nation, One Subscription):** To make scientific knowledge and data available to all, the government has proposed:
  - To **buy bulk subscriptions of all important scientific journals across the world**, and provide everyone in India free access to them.
  - To set up a **Science, Technology and Innovation Observatory** that will serve as the central repository of all kinds of data generated from scientific research in the country.
- **Research and Education:**
  - It proposes to establish **Education Research Centres (ERCs)** and **Collaborative Research Centres (CRCs)** to provide research inputs to policymakers and bring together stakeholders.
- **Research and Innovation Excellence Frameworks (RIEF)** will be developed to enhance the quality of research along with the promotion of engagements with the relevant stakeholders.
- A dedicated portal to provide access to the outputs of such publicly-funded research will be created through the **Indian Science and Technology Archive of Research (INDSTA)**.
- To set up Infrastructure to **boost local Research and Development capabilities** and **reduce large scale import** in selected sectors of domestic importance such as electronic hardware for home appliances, railways, intelligent transport, clean tech, defence, etc.
- **For Strengthening India’s Strategic Position:**
  - To achieve **technological self-reliance** and **position India among the top three scientific superpowers** in the decade to come.
  - To **double the number of Full-Time Equivalent (FTE) researchers**, **Gross Domestic Expenditure on R&D (GERD)** and private sector contribution to the GERD every 5 years.
  - Establishment of a **Strategic Technology Board** that will **bridge all strategic government departments**, and monitor and recommend technologies to be bought or indigenously made.

## Sagarmala Seaplane Services

### Why in News

The Ministry of Ports, Shipping and Waterways is starting the ambitious Project of Sagarmala Seaplane Services (SSPS) with potential airline operators.

- A seaplane is a fixed-wing aeroplane designed for taking off and landing on water.

### Key Points

- **Mechanism:**
  - The project is being initiated under a Special Purpose Vehicle (SPV) framework through prospective airline operators.
  - SPV is a legal object formed for a specifically-defined singular purpose.
- **Project Implementation:**
  - The project execution and implementation would be through Sagarmala Development Company Ltd

Note:

(SDCL), which is under the administrative control of the Ministry of Ports, Shipping and Waterways.

- Airline operators will be invited to form a SPV with SDCL.
- The routes may be operated under the government's subsidised **ude desh ka aam nagrik (UDAN)** scheme.

➤ **Location:** Several destinations are envisaged for seaplane operations:

➤ **Benefits and Significance:**

- The seaplanes services will be a game-changer providing a supplementary means of faster and comfortable transportation across the nation.
- Apart from providing air connectivity to various remote religious/tourist places, it will boost tourism for domestic and international holiday makers.
- It will save travel time and stimulate localized short distance travelling especially in the hilly regions or across the rivers/lakes etc.
- It will provide infrastructure enhancements at the places of operations.
- It will generate employment opportunities.

➤ **Previous Project:**

- One such Seaplane Service is already in operation between **Kevadia and Sabarmati Riverfront in Ahmedabad** which was inaugurated in October 2020.



#### Sagarmala Programme

- The Sagarmala Programme was approved by the Union Cabinet in 2015 which aims at holistic port infrastructure development along the 7,516-km long coastline through modernisation, mechanisation and computerisation.
- Under this port-led development framework, the government hopes to increase its cargo traffic three-fold.
- It also includes the establishment of rail/road linkages with the port terminals, thus providing last-mile connectivity to ports; development of linkages with new regions, enhanced multi-modal connectivity including rail, inland water, coastal and road services.

Note:

# Economic Scenario

## Highlights

- *Issues in Agriculture in India*
- *Seventh Trade Policy Review of India at the WTO*
- *Extension RoDTEP Scheme*
- *New Industrial Infrastructure Projects*
- *Single Window Clearance for Coal*
- *IFSCA Becomes Associate Member of IOSCO*
- *Digital Payments Index: RBI*
- *Payment Infrastructure Development Fund Scheme*
- *Spectrum Auctions*
- *Indian Digital Tax Discriminatory: USTR*
- *Data on Retail Inflation and Factory Output*
- *India's Potential to Increase Cereals Export*

## Issues in Agriculture in India

### Why in News

The **protest by thousands of farmers** at Delhi's borders have brought to focus a range of **issues in agriculture in India**.

- The protests are against the three farm bills that seek to replace **ordinances issued in June 2020**.

### Key Points

- **Concerns of Protesting Farmers:**
  - These laws signal the beginning of the **end of open-ended procurement of wheat and paddy**.
  - The **success of states( Punjab and Haryana)** in creating the infrastructure for procurement may now **become the reason for withdrawal of support of the Centre**.
  - **Stocking by corporates**, especially those which are in modern retail and e-commerce
- **Land Size:**
  - **Decreasing Area:** Area under agriculture has been shrinking, it reduced from **159.5 million hectares (mn ha) in 2010-11 to 157 mn ha in 2015-16**.
  - **Increase in Land Holdings:** The number of **operational holdings has been rising** (increased from 138.3 million to about 146 million) owing to increasing population.
    - This **leads to falling average landholdings' size** of farmers, which has come down from 1.2 ha to about 1.08 ha.

- **Forced Selling: Smaller landholdings produce smaller pockets of produce**, aggregation of which becomes essential for even a trolley-load to be carried to an **Agricultural Produce Market Committee (APMC)** mandi or a nearby market.
  - Due to small holdings caused by fragmentation, small and marginal farmers are **forced to sell their produce at the farm gate itself**.
  - This is especially so in states that have a weak network of APMC mandis.
- **No Access to Modern Technology:** Bringing new technologies and practices to such a large number of smallholders scattered over a vast countryside and integrating them with the modern input and output markets is a **huge challenge for Indian agriculture**.
- **More Farm Labourers than Farmers:**
  - A **farmer** is usually a **farm owner**, while **employees** of the farm are farm labourers, farmhands, etc.
  - **Employment in Agri-sector:** As per recent estimates from the **Labour Bureau**, **45%** of India's workforce is employed in agriculture. .
  - **Labours in Agri-sector:** According to **Census 2011**, **55%** of the agri-workforce comprises agri-labourers.
  - **No support for Labours:** It is tough to drive or sustain growth in agriculture since farm labourers get no policy support or incentive to invest in farming.
  - **Owners Getting the Benefit:** All benefits like seed kit, fertilisers, pesticides, farm machinery, micro-irrigation, land development assistance etc. are meant only for those who can prove land ownership.
- **Falling Investment in Agriculture:**

Note:



- The **Gross Capital Formation (GCF)** in agriculture as a percentage of the total GCF in the economy has **fallen from 8.5 % in Financial Year 2011-12 to 6.5 % in Financial Year 2018-19**. This is because the share of private investment has shrunk.
- Though public investment has gone up it is not sufficient to check the slide or keep the GCF at FY12 level.
- **Subsidy and Related Issues:**
  - **Flowing to Businesses:** A number of subsidies meant for agriculture also flow to businesses, e.g **grants given to food processing units and cold chain projects**.
  - **Net Loss of Farmers:** As per the **Indian Council for Research on International Economic Relations-Organisation for Economic Co-operation and Development (ICRIER-OECD)** report, despite the plethora of schemes run to support and subsidise Indian farmers, because of **regressive policies on the marketing side** (both domestic and international trade policies) and the **deficit of basic infrastructure for storage, transportation etc.**, **Indian farmers suffered net losses** and thus emerged to be net taxed despite receiving subsidies.
- **Minimum Support Price (MSP) and Related Issues:**
  - **Selective Procurement:** The government **declares MSP for 23 crops**, only wheat and paddy (rice) are procured in large quantities as they are required to meet the requirement of the **Public Distribution System (PDS)**, which is about 65 million tonnes.
  - **Stagnant Rates of MSP:** The government declaration of Minimum support prices do not increase at par with increase in cost of production.
  - **Unequal Access:** The benefits of this scheme do not reach all farmers and for all crops. There are many regions of the country like the north-eastern region where the implementation is too weak.
  - **Non Scientific Practices:** MSP leads to non-scientific agricultural practices whereby the soil, water are stressed to an extent of degrading ground water table and salinisation of soil.

### Suggestions

- If India has to move away from procurement-based support, at present restricted to certain crops only, a **more attractive income support scheme has to be conceived coupled with much higher investment, both public and private**, in agri-infrastructure.

- The **Rashtriya Krishi Vikas Yojana (RKVY)** incentivised the states, which increased their expenditure on agriculture. The **Centre's assistance for such states should be higher**.
- **Focused research on crops grown in low-productivity states can deliver better seeds**, which can withstand the challenge of higher temperature due to climate change.
- Democratic norms and processes like **open public debate, dialogue with stakeholders and detailed Parliamentary scrutiny** to ensure every aspect and implication of a public policy goes through meticulous examination before being adopted and implemented is crucial to fix the issues with agriculture.

## Seventh Trade Policy Review of India at the WTO

### Why in News

Recently, the final session of India's seventh **Trade Policy Review (TPR)** concluded at the **World Trade Organization (WTO)** in Geneva, Switzerland.

- The TPR is an **important mechanism under the WTO's monitoring function** in which member countries' trade and related policies are examined by the WTO with an aim to contribute towards **improved adherence to WTO rules**.
- India's last TPR took place in **2015**.

### Key Points

- **Appreciation for India:**
  - Introduction of **Goods & Services Tax** in 2016.
  - India's efforts in the implementation of **WTO's Trade Facilitation Agreement**.
  - Role played by India in furthering "**Ease of Doing Business**" in the country.
  - India's improved ranking in "**Trading across Borders**" indicator under the **Ease of Doing Business Report**.
    - **Trade Facilitation Agreement (TFA)**, aims to speed up customs procedures and make trade easier, faster, and cheaper.
  - The steps taken by India for **liberalizing its Foreign Direct Investment (FDI) regime** and India's **National Intellectual Property Rights Policy, 2016**.
- **Concerns for India:**

Note:

- India's trade **policy remained largely unchanged** since the previous review.
- India continues to **rely on trade policy instruments** such as the **tariff, export taxes, minimum import prices, import and export restrictions, and licensing**, WTO said.
  - These are **used to manage domestic demand and supply requirements**, protect the economy from wide domestic price fluctuations, and ensure conservation and proper utilization of natural resources.
  - As a result, **frequent changes** are made to tariff rates and other trade policy instruments, which **create uncertainty for traders**.
- **India's Request:**
  - The ongoing pandemic has again brought to the fore, the importance of food and livelihood security and **urged for a permanent solution to Public Stock Holding (PSH) for food security**.

#### Public Stockholding (PSH)

- It is a policy tool used by governments to procure, stockpile and distribute food when needed.
- Currently, public distribution programmes of developing countries are included under **trade-distorting Amber Box** measures **that attract reduction commitments of WTO**.
- India with the group of developing countries is **demanding that the programmes for food security purposes be exempted from subsidy reduction commitments of WTO**.
  - India has repeatedly demanded a permanent solution for public stockholding issues.

#### Trade Policy Review Mechanism

- The **Trade Policy Review Mechanism (TPRM)** was an early result of the **Uruguay Round**.
- It is the **main transparency instrument of the WTO**, affording opportunities for a process of collective evaluation of the trade policies and practices of individual members.
- **Objectives:**
  - Facilitating the smooth functioning of the multilateral trading system by enhancing the transparency of Members' trade policies.
  - To examine the impact of a Member's trade policies and practices on the multilateral trading system.

#### ➤ Mechanism:

- The reviews **take place in the Trade Policy Review Body** which is actually the WTO General Council — comprising the WTO's full membership — operating under special rules and procedures.

#### ➤ Function:

- The trade policy review **allows members to put the overall trade and economic policies of a country under the scanner**.
- The trade policies of developing countries are taken up for review every four years while developed ones face similar scrutiny every two years.
- The mandate of the TPRM was **broadened to cover services trade and intellectual property**.

- **All WTO Members are subject to review** under the TPRM.

## Extension RoDTEP Scheme

### Why in News

Recently, the Government has decided to **extend the benefit** of the Scheme for **Remission of Duties and Taxes on Exported Products (RoDTEP)** to all export goods.

### Key Points

- **Remission of Duties or Taxes on Export Product (RoDTEP):**
  - The scheme was announced in 2020 as a replacement for the **Merchandise Export from India Scheme (MEIS)**, which was not compliant with the rules of the **World Trade Organisation**.
    - Following a complaint by the US, a dispute settlement panel had ruled against India's use of **MEIS** as it had found the duty credit scrips awarded under the scheme to be **inconsistent with WTO norms**.
    - The **RoDTEP** scheme would **refund to exporters the embedded central, state and local duties or taxes** that were so far not being rebated or refunded and were, therefore, placing India's exports at a disadvantage.
  - **Significance:**
    - Indian **exporters** will be able to **meet the international standards** for exports as affordable

Note:

testing and certification will be made available to exporters within the country instead of relying on international organizations.

- Also under it, **tax assessment is set to become fully automatic for exporters**. Businesses will get access to their refunds for GST via an automatic refund-route.
- This would **increase the economy for the country and working capital for the enterprise**.

#### ➤ Extension of Benefits:

- The government has decided to **extend the benefits of the RoDTEP to all export goods starting 1<sup>st</sup> January 2021**.
  - Initially, the scheme was expected to be limited to around three sectors to start with due to limited resources.
- The rates under this scheme, which are expected to be notified soon, will be applicable from 1<sup>st</sup> January 2021 to all eligible exports of goods.
- **Reason for Extension:**
  - It will boost the export sector of the country.
  - So far refunds were not taking place, **adversely impacting exports**.
    - India's exports fell **8.74%** in November, steeper than **5.12%** dip in October.

## New Industrial Infrastructure Projects

### *Why in News*

Recently, the **Cabinet Committee on Economic Affairs (CCEA)** has approved three infrastructure proposals worth **Rs 7,725 crore** for setting up **greenfield industrial cities with connectivity to major transportation corridors**.

- The cabinet also approved a modified scheme for **interest subvention for Ethanol production** expanding the scheme to **include grain based distilleries and not just molasses based ones**.
  - The scheme would **encourage ethanol production** from grains like barley, maize, corn and rice and **boost production and distillation capacity** to 1,000 crore litres and help in meeting the **goal of 20% ethanol blending with petrol by 2030**.

### **Key Points**

- These projects are based on major transportation corridors like **Eastern & Western Dedicated Freight Corridors, Expressways and National Highways, proximity to ports, airports**.
- This will **attract investments into manufacturing and position India as a strong player in the global value chain**.
- These projects will generate **ample employment opportunities through** development of Industrial Corridors.

### **Industrial Corridors**

- **Industrial corridors** offer **effective integration between industry and infrastructure**, leading to overall **economic and social development**.
- **Economic Significance:**
  - **Avenues for Exports:** The Industrial Corridors are likely to lower the cost of logistics thereby increasing the efficiency of industrial production structure. Such an **efficiency lowers the cost of production which makes the Indian made products more competitive in international markets**.
  - **Job Opportunities:** Development of Industrial Corridors would attract investments for the development of Industries which is likely to **create more jobs in the market**.
  - **Logistics:** These corridors would **provide necessary logistics infrastructure needed to reap economies of scale**, thus enabling firms to focus on their areas of core competence.
  - **Investment Opportunities:** Industrial corridor **provides opportunities for private sector investment** in the provision of various infrastructure projects associated with the exploitation of industrial opportunity.
  - **Improved Functioning:** Apart from the **development of infrastructure**, long-term advantages to business and industry along the corridor include benefits arising from smooth access to the industrial production units, **decreased transportation and communications costs, improved delivery time and reduction in inventory cost**.
- **Environmental Significance:**
  - The establishment of Industrial Units in a scattered manner along the industrial corridor across the

Note:

length of the state will **prevent concentration of industries in one particular location which exploited the environment beyond its carrying capacity** and caused environmental degradation.

#### ➤ Socio-Economic Significance:

- The cascading effect of industrial corridors in socio-economic terms are many such as setting up of industrial townships, educational institutions, hospitals. These will further **raise the standards of human development**.
- Moreover, people would find job opportunities close to their homes and would not have to migrate to far-off places (would prevent distress migration).

#### ➤ National Industrial Corridor Development Programme:



- **Aim:** The Government of India is developing various Industrial Corridor Projects as part of the **National Industrial Corridor programme** which is aimed at development of futuristic industrial cities in India which can compete with the best manufacturing and investment destinations in the world.
- **Administration:**
  - **National Industrial Corridor Development and Implementation Trust (NICDIT)** is under the administrative control of **Department for Promotion of Industry and Internal Trade (DPIIT)** for coordinated and unified development of all the industrial corridors which are at various stages of development and implementation.
- It is India's most ambitious infrastructure programme aiming to develop new industrial cities as **"Smart Cities"** and **converging next generation technologies** across infrastructure sectors.
- 11 Industrial Corridors Projects are being taken up for development with 30 Projects to be developed in **04 phases up to 2024-25:**

## Single Window Clearance for Coal

### Why in News

Recently, the Union government has announced a new **online single window clearance portal for the coal sector**.

- The coal sector can be the **biggest contributor** towards the target of **India becoming a USD 5 trillion economy by 2025**.
- Despite having the **world's fourth-largest coal reserves**, India is **importing coal**.
- The next tranche of commercial mining auction would be **launched in January 2021**.

### Key Points

#### ➤ Aim:

- It is aimed at **allowing faster clearances, including environmental and forest clearances, from a single portal** with progress monitoring, instead of having to go to multiple authorities.
  - Presently, about **19 major approvals, or clearances are required before starting the coal mine** in the country.

#### ➤ Significance:

- The portal will allow successful bidders to **operationalise coal mines more quickly**.
- It is in the spirit of **minimum government and maximum governance**.
- It will further **ease of doing business** in the country's coal sector.
- It will help in bringing **huge investment and creating employment**.

#### ➤ Future Plan:

- **PARIVESH Mechanism** for forest and environment related clearances would likely be **merged into this single window clearance mechanism** which is expected to **help with the operationalisation of the coals blocks** that are set to be auctioned in the upcoming auctions.
  - **PARIVESH** is a **web-based application** which has been developed for online submission and monitoring of the proposals submitted by the proponents for **seeking Environment, Forest,**

Note:

**Wildlife and Coastal Regulation Zones (CRZ) Clearances from Central, State and district level authorities.**

➤ **Recent Initiatives in Coal Sector:**

- **As a part of Atmanirbhar Abhiyaan:**
  - **Commercial mining** of coal allowed, with 50 blocks to be offered to the private sector.
  - **Entry norms will be liberalised** as it has done away with the regulation requiring power plants to use “washed” coal.
  - **Coal blocks to be offered to private companies on revenue sharing basis** in place of fixed cost.
  - **Coal gasification/liquefaction** to be incentivised through rebate in revenue share.
  - **Coal bed methane (CBM)** extraction rights to be auctioned from Coal India’s coal mines.
- **UTTAM (Unlocking Transparency by Third Party Assessment of Mined Coal):** In April 2018, the Ministry of Coal launched **UTTAM Application** for coal quality monitoring.
- **Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India (SHAKTI):** Launched in May 2017, for allocation of future coal linkages in a transparent manner for the power sector.

## IFSCA Becomes Associate Member of IOSCO

### Why in News

The **International Financial Services Centres Authority (IFSCA)** has become an associate member of the **International Organization of Securities Commissions (IOSCO)**.

- **Securities and Exchange Board of India (SEBI)** is an ordinary member of IOSCO.

### Key Points

- **International Financial Services Centres Authority (IFSCA):**
  - **About:**
    - It was established in April 2020 under the **International Financial Services Centres Authority Act, 2019**. It is headquartered at **GIFT (Gujarat International Finance Tec-City)**, Gandhinagar in Gujarat.

- It is a **unified authority for the development and regulation of financial products, financial services and financial institutions** in the **International Financial Services Centre (IFSC)** in India.

- An IFSC caters to customers outside the **jurisdiction of the domestic economy**.

- It has been established to **promote ease of doing business** in IFSC and to **provide a world class regulatory environment**.

- **Objective:**

- To **develop a strong global connect and focus on the needs of the Indian economy** as well as to **serve as an international financial platform** for the entire region and the global economy as a whole.

- **International Organization of Securities Commissions (IOSCO):**

- **About:**

- **Founded:** April 1983
- **Headquarters:** Madrid, Spain
  - **IOSCO Asia Pacific Hub** is located in **Kuala Lumpur, Malaysia**.
- It is the **international organization that brings together the world’s securities regulators**, covering more than **95%** of the world’s securities markets, and is the global standard setter for the securities sector.
- It works closely with the **G20 (Group of Twenty)** and the **Financial Stability Board (FSB)** in setting up the standards for strengthening the securities markets.
  - The FSB is an **international body that monitors and makes recommendations about the global financial system**.
- The **IOSCO Objectives and Principles of Securities Regulation** have been **endorsed by FSB** as one of the key standards for sound financial systems.
- IOSCO’s enforcement role extends to matters of interpretation of **International Financial Reporting Standards (IFRS)**, where IOSCO maintains a (confidential) database of enforcement actions taken by member agencies.
  - IFRS is an accounting standard that has been issued by the **International Accounting Standards Board (IASB)** with the objective

Note:



of providing a common accounting language to increase transparency in the presentation of financial information.

○ **Objectives:**

- To **cooperate in developing, implementing and promoting adherence** to internationally recognized and consistent standards of regulation, oversight and enforcement in order to protect investors, maintain fair, efficient and transparent markets, and seek to address systemic risks;
- To **enhance investor protection and promote investor confidence** in the integrity of securities markets, through strengthened information exchange and cooperation in enforcement against misconduct and in supervision of markets and market intermediaries; and
- To **exchange information at both global and regional levels** on their respective experiences in order to assist the development of markets, strengthen market infrastructure and implement appropriate regulation.

➤ **Significance of the Membership:**

- It would provide IFSCA the **platform to exchange information at the global level and regional level on areas of common interests.**
- The IOSCO platform would enable IFSCA to **learn from the experiences and best practices of the regulators of other well established financial centres.**

## Digital Payments Index: RBI

### Why in News

The **Reserve Bank of India (RBI)** has constructed a composite **Digital Payments Index (DPI)** to **capture the extent of digitisation of payments** across the country.

### Key Points

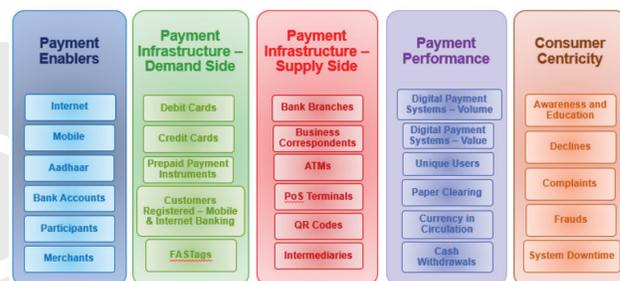
➤ **About the Index:**

- The RBI-DPI comprises **5 broad parameters** that enable **measurement of deepening and penetration of digital payments** in the country **over different time periods.**
- **5 Parameters:**

- **Payment Enablers** (weight 25%),
- **Payment Infrastructure – Demand-side factors** (10%),
- **Payment Infrastructure – Supply-side factors** (15%),
- **Payment Performance** (45%) and
- **Consumer Centricity** (5%).

- It has been **constructed with March 2018 as the base period**, i.e. DPI score for March 2018 is set at 100.
- It will be **published on RBI's website on a semi-annual basis** from March 2021 onwards with a lag of 4 months.

Payments Index – Parameters and Sub-parameters



➤ **Index Value for 2019 and 2020:**

- The DPI for March 2019 and March 2020 worked out to be **153.47 and 207.84 respectively**, indicating appreciable growth.

➤ **Digital Payments Scenario:**

○ **Data Analysis:**

- During the second quarter (Q2) of 2020-21, **Unified Payments Interface (UPI) payments** recorded an **82% jump in volume** and a **99% jump in value**, compared with the same quarter last year, according to the Worldline India Digital Payments report.
- In Q2, **19 banks joined the UPI ecosystem**, bringing the total number of banks providing UPI services to 174 as of September 2020 while the **BHIM App was available for customers of 146 banks.**
- In Q2, there were **over 51.8 lakhs Point of Sale (PoS) terminals** deployed by merchant acquiring banks, which is 13% higher than the same quarter of the previous year.

Note:

- A merchant acquiring bank is a **bank that processes payments on behalf of a merchant.**
- In 2018, the **Bank for International Settlements (BIS)** ranked **India seventh** among the 24 countries where it tracks digital payments.
- **Recent Initiatives:**
  - The **National Payments Corporation of India (NPCI)** has recently given **approval to WhatsApp to go live with UPI** in a graded manner, starting with a maximum registered user base of 2 crores.
  - The NPCI has also **issued a cap of 30% of the total volume of transactions processed in UPI**, which is applicable to all Third-Party App Providers (TPAPs) and is effective from 1<sup>st</sup> January 2021.
  - The RBI has created a **Payments Infrastructure Development Fund (PIDF)** to encourage acquirers to deploy Points of Sale (PoS) infrastructure — both physical and digital modes — in tier-3 to tier-6 centres and north eastern states.

#### RBI's Other Publications

- **Consumer Confidence Survey (CCS - Quarterly)**
- Inflation Expectations Survey of Households (IESH - Quarterly)
- Financial Stability Report (Half-Yearly)
- **Monetary Policy Report (Half-Yearly)**
- Report on Foreign Exchange Reserves (Half-Yearly)

## Payment Infrastructure Development Fund Scheme

### Why in News

Recently, the **Reserve Bank of India (RBI)** has announced the operationalisation of the **Payment Infrastructure Development Fund (PIDF)** scheme.

### Key Points

- **Objective:**
  - Develop **payment acceptance infrastructure in tier-3 to tier-6 cities** (centres), with a special focus on the **north-eastern states of the country.**
- **Time Period:**
  - The fund will be operational for **three years** effective from **1<sup>st</sup> January, 2021** and may be extended for **two more years.**

- **Management:**
  - An **Advisory Council (AC)** under the chairmanship of RBI **deputy governor BP Kanungo** has been constituted for managing the PIDF.
- **Fund Allocated:**
  - The PIDF presently has a corpus of **Rs. 345 crore**, with **Rs. 250 crore** contributed by the RBI and **Rs. 95 crore** by the major **authorised card networks in the country.** The **authorised card networks** shall contribute in all **Rs. 100 crore.**
  - Besides the initial corpus, PIDF shall also receive annual contributions from **card networks and card issuing banks.**
    - For example, Card networks will have to chip in **0.01 paisa per rupee of transaction.**
    - The role of a **card network** is to facilitate transactions between merchants and card issuers. E.g. Mastercard, Visa.
- **Implementation:**
  - The focus shall be to target those merchants who are yet to be **terminalised (merchants who do not have any payment acceptance device).**
    - Merchants engaged in services such as **transport and hospitality, government payments, fuel pumps, public distribution system (PDS) shops, healthcare and kirana shops** may be included, especially in the targeted geographies.
  - The fund will be used to **subsidize banks and non-banks for deploying payment infrastructure**, which will be contingent upon specific targets being achieved.
    - The **Advisory Council will devise a transparent mechanism for allocation of targets** to acquiring banks and non-banks in different segments and locations.
    - The **implementation of targets shall be monitored by the RBI** with assistance from card networks, the Indian Banks' Association (IBA) and the Payments Council of India (PCI).
    - **Acquiring banks (also acquirers or merchant banks)** are financial institutions processing debit and credit card transactions on behalf of a merchant or business.
  - Tentatively, **tier-3 and tier-4 centres** will be allocated **30%** of the acceptance devices, **tier-5 and tier-6 centres** will get **60%** and the **north eastern states will be given 10%.**

Note:

- Multiple payment acceptance devices and infrastructure supporting underlying card payments, such as **physical Point of Sale, mobile Point of Sale, General Packet Radio Service (GPRS) , Public Switched Telephone Network (PSTN) and QR code-based payments** will be funded under the scheme.
- **Breakup of Subsidy:**
  - A subsidy of **30% to 50% of cost of physical PoS** and **50% to 75% subsidy for Digital PoS** shall be offered.
  - The subsidy shall be granted on a **half-yearly basis**, after ensuring that performance parameters are achieved, including conditions for **'active'** status of the acceptance device and **'minimum usage'** criteria, as defined.
- **Fixing Accountability:**
  - Acquirers of the subsidy shall submit **quarterly reports** on the **achievement of targets to the RBI**.
- **Other Related Steps:**
  - The setting of PIDF is in line with the measures proposed by the **vision document on payment and settlement systems in India 2019-2021**.
  - The RBI has constructed a composite **Digital Payments Index (DPI)** to capture the extent of digitisation of payments across the country.

## Spectrum Auctions

### *Why in News*

Bidding for the **sixth round of spectrum auction** for radio waves worth **Rs. 3.92 lakh crore** will start from 1<sup>st</sup> March 2020.

- The long-awaited spectrum auction is **being held after a gap of four years** and over two years after the **Telecom Regulatory Authority of India (TRAI)** calculated and recommended base/reserve price for the radio waves.

### *Key Points*

- **About the Spectrum Auctions:**
  - Devices such as **cellphones and wireline telephones** require signals to connect from one end to another. These signals are carried on airwaves (medium of radio waves), which must be sent at **designated frequencies** to avoid any kind of **interference**.

- Interference may prevent reception altogether, may cause only a temporary **loss of a signal**, or may affect the **quality of the sound or picture produced** by one's equipment.
- The **Union government** owns all the publicly available assets within the geographical boundaries of the country, which also include **airwaves**.
  - With the **expansion in the number of cellphone, wireline telephone and internet users**, the need to provide more space for the signals arises from time to time.
- To sell these assets to companies willing to set up the required infrastructure to transport these waves from one end to another, the **central government through the Department of Telecom (Ministry of Communications)** auctions these airwaves from **time to time**.
  - **These airwaves are called spectrum**, which is **subdivided into bands** which have varying **frequencies**.
  - All these airwaves are **sold for a certain period of time**, after which their **validity lapses**, which is generally **set at 20 years**.
- **About the Latest Auction:**
  - The last spectrum auctions **were held in 2016**. The need for a new spectrum auction has arisen because the validity of the airwaves bought by companies is set to expire in 2021.
  - In December 2020, the Union Cabinet cleared the sale of **2251.25 MHz of spectrum** (for 4G) across seven frequency bands at a reserve price of **Rs. 3.92 lakh crore**.
    - This is likely to provide a **boost to government revenue collections** at a time when its inflows from other sources such as direct taxes, indirect taxes such as **goods and services tax**, have **fallen sharply** on account of restrictions to prevent the spread of **Covid-19**.
  - However, the government has **skipped the sale of the much-coveted 5G airwaves** in this round, auctions for which could though be announced soon.
    - Airwaves in the 3500 MHz band are considered ideal for the first wave of the 5G.
  - Depending on the demand from various companies, the price of the airwaves may go higher, but **cannot go below the reserve price**.

Note:



- A reserve price is a minimum price that a seller would be **willing to accept from a buyer**. If the reserve price is not met, the seller is **not required to sell the item, even to the highest bidder**.
- The reserve price is recommended by **Telecom Regulatory Authority of India**.
- The successful bidders will have to pay **3% of Adjusted Gross Revenue (AGR) as spectrum usage charges**.
  - AGR is **divided into spectrum usage charges and licensing fees** that are fixed between 3-5% and 8% respectively.
  - It is the usage and licensing fee that telecom operators are charged by the Department of Telecommunications (DoT).
- **Potential Buyers:**
  - Apart from existing telecom players, **new companies, including foreign companies**, are eligible to bid for the airwaves.
    - Foreign companies, however, will have to **either set up a branch in India and register as an Indian company, or tie up with an Indian company** to be able to retain the airwaves after winning them.

## Indian Digital Tax Discriminatory: USTR

### Why in News

Recently, the Office of the **United States Trade Representative (USTR)** has said that the **Digital services taxes** adopted by **India, Italy and Turkey discriminate against US companies** and are **inconsistent with international tax principles**.

### Key Points

- **The Office of the United States Trade Representative (USTR):**
  - It is responsible for **developing and coordinating US international trade**.
  - **Section 301 (US Trade Act)** gives the USTR broad authority to **investigate and respond to a foreign country's action which may be unfair or discriminatory** as well as negatively affect US commerce.
- Adopted through the **1974 Trade act**, the Section allows the US President to **impose tariffs or other curbs on foreign nations**.
- However, the law **mandates consultations with trading partners**.
- **Digital Services Taxes (DSTs):**
  - These are the adopted taxes on **revenues that certain companies generate from providing certain digital services**. E.g. digital multinationals like Google, Amazon and Apple etc.
  - The **Organisation for Economic Cooperation and Development (OECD)** is currently **hosting negotiations with over 130 countries that aim to adapt the international tax system**. One goal is to address the tax challenges of the digitalization of the economy.
    - Some experts argue that a **tax policy designed to target a single sector** or activity is likely to be **unfair** and have complex consequences.
    - Further, the **digital economy cannot be easily separated** out from the rest of the **global economy**.
- **India's Tax on Digital Companies:**
  - The government **had moved an amendment in the Finance Bill 2020-21** imposing a **2% digital service tax (DST)** on trade and services by **non-resident e-commerce operators with a turnover of over Rs. 2 crore**.
    - This effectively **expanded the scope of equalisation levy** that, till last year, only applied to digital advertising services.
    - Earlier, the **equalisation levy (at 6%) was introduced in 2016** and imposed on the revenues generated on business-to-business digital advertisements and allied services of the resident service provider.
  - The new levy **came into effect from 1<sup>st</sup> April 2020**. E-commerce operators are **obligated to pay the tax at the end of each quarter**.
- **USTR's Investigation Report:**
  - The **DST in India is discriminatory** because it exempts Indian companies and targets non-Indian firms.
    - This hits US firms which **dominate the technology industry**.
    - 119 companies that it identified as likely liable under the digital services tax, 86, or 72%, were American.

Note:



- USTR estimates that the aggregate tax bill for US companies could exceed **USD 30 million per year**.
- The USTR has determined that **India's DST** is unreasonable or discriminatory and burdens or restricts US commerce and thus is **actionable** under **Section 301 (US Trade Act)**.

#### ➤ **India's Stand:**

- India has described the **equalization levy as a fair, reasonable and non-discriminatory tax** aimed at all offshore digital economy firms accessing the local market and has **denied it targets US companies**.
  - It seeks to **ensure a level-playing field** with respect to e-commerce activities undertaken by entities resident in India as well as those not residents in India or without permanent establishment in India.
- The government of **India will examine the determination/decision notified by the US** in this regard, and would **take appropriate action keeping in view the overall interest of the nation**.
- There was no retroactive element or extra-territorial application involved in the levy which applied only on the revenue generated from India.
  - It is a recognition of the principle that in a digital world, **a seller can engage in business transactions without any physical presence, and governments have a legitimate right to tax such transactions**.

#### ➤ **Concerns:**

- In the backdrop of an improper functioning of the **World Trade Organization (WTO)**, the move could signal the **start of more unilateral action by the US especially on the digital services front**.
- In India's case, the probe could **potentially affect the outcome of a bilateral trade deal** that India has been looking to forge with the US.

### **Key Points**

#### ➤ **Retail Inflation:**

- Measured by the **Consumer Price Index (CPI)**, **eased to 4.59%** in the month of December 2020.
- The retail inflation for the **month of Nov.** was 6.93%.
- The December CPI data has come within the **Reserve Bank of India's (RBI)** upper margin of 6%.
  - The government has **mandated the central bank** to keep retail inflation within the **range of 4% with a margin of 2% on either side as per its inflation targeting**.
  - CPI inflation has been above RBI's upper bound inflation target of 4 +/-2% for more than 11 months.
- RBI primarily factors in retail inflation while making its **bi-monthly monetary policy**.
  - In its **bi-monthly monetary policy** meeting in **December 2020**, the Indian central bank had kept its key interest rates unchanged (repo and reverse repo rates) and decided to maintain an **'accommodative stance'** as long as necessary at least through the current financial year.

#### ○ **Causes of decline:**

- **Decline in food prices:** Inflation in the food basket eased to 3.41% in the month of December, down from 9.50% in November.

#### ➤ **Factory Output:**

- India's factory output, which is measured in terms of **Index of Industrial Production (IIP)**, witnessed a contraction of **-1.9%** during the **month of Nov 2020**.
- The industrial growth so far in the fiscal year 2020-21 (April-November) has contracted **-15.5%**, compared to a **0.3%** rise in the corresponding period in 2019.

#### ○ **Causes of Contraction:**

- **Mining and Manufacturing sectors.**
  - The **mining sector** saw a decline of -7.3% in November, while the **manufacturing sector** witnessed a fall of -1.7%.
  - However, the **electricity sector grew 3.5%**.
  - In **November 2019**, the **manufacturing sector** had witnessed a **growth of 3.0%**. During the same period, the **mining sector had risen 1.9%**, while the **electricity sector had witnessed a fall of -5.0%**.

<b>DIFFERENT STROKES</b>	
<b>USTR probe:</b>	<b>Indian official:</b>
India's digital services tax (DST) from Apr 2020 is <b>'discriminatory'</b> , as it targets only non-residents	US probe ignores the <b>2016 levy on domestic firms</b> ; levy's scope was only widened last year to level playing field
DST taxes firms' revenue rather than income, so it's inconsistent with <b>global tax principles</b>	Several global tax measures, including those on royalty and technical fees, are not levied on income
Firms should not be subject to a country's <b>corporate tax absent a territorial connection</b> to it	Almost all US states have laws on <b>remote sellers/market-place facilitators</b> , which tax even non-US resident entities

Note:

### Consumer Price Index

- It measures **price changes from the perspective of a retail buyer**. It is released by the **National Statistical Office (NSO)**.
- The CPI calculates the difference in the price of commodities and services such as food, medical care, education, electronics etc, which Indian consumers buy for use.
- The CPI has **several sub-groups** including food and beverages, fuel and light, housing and clothing, bedding and footwear.
- At present, India has **five consumer price indexes (CPIs)**, **three** of which are **working-class specific**. These are:
  - CPI for Industrial Workers (IW).
  - CPI for Agricultural Labourer (AL).
  - CPI for Rural Labourer (RL).
  - These three indexes are compiled by the **Labour Bureau** in the **Ministry of Labour and Employment**.
  - **CPIs AL and RL are used to fix minimum wages of agricultural labourers and rural unskilled employees.**
  - The **CPI-IW** is mainly used for **determining dearness allowance (DA)** paid to central/state government employees and workers in the industrial sectors besides measuring inflation in retail prices, fixation and revision of minimum wages in scheduled employments.
    - The Base Year for CPI-IW has **recently been changed to 2016** from **previous 2001**.
  - The Labour Bureau is also expected to bring out the new series of the CPI- AL/RL, which currently has the base year of **1986-87** by August 2021.
- The other two are **CPI-Urban and CPI Rural**. These two indexes are compiled by the **National Statistical Office (NSO) in the Ministry of Statistics and Programme Implementation**.
  - The combined rise in retail prices is captured by CPI Combined.

### Index of Industrial Production

- The Index of Industrial Production (IIP) is an index that **shows the growth rates in different industry groups** of the economy in a **fixed period of time**.

- It is compiled and published monthly by the **National Statistical Office (NSO)**, Ministry of Statistics and Programme Implementation.
- IIP is a composite indicator that measures the **growth rate of industry groups** classified under:
  - **Broad Sectors:**
    - Mining, Manufacturing, and Electricity.
  - **Use-based sectors:**
    - Basic Goods, Capital Goods, and Intermediate Goods.
- The **eight core sector industries** represent about **40%** of the **weight of items that are included in the IIP**.
  - The eight core industries in decreasing order of their weightage: Refinery Products (28.04 %)> Electricity (19.85 %)> Steel (17.92 %)> Coal (10.33 %)> Crude Oil (8.98 %)> Natural Gas (6.88 %)> Cement (5.37 %)> Fertilizers (2.63 %).
- **Base Year** for IIP calculation is **2011-2012**.

## India's Potential to Increase Cereals Export

### Why in News

The **US Department of Agriculture (USDA)** has noted in its latest **Grain: World Markets and Trade report** that **exports of wheat and rice from India are likely to increase**.

### Key Points

- **Findings:**
  - **Increase in Wheat Exports:** The USDA has recently **upped its forecast of Indian wheat exports for 2020-21** (July-June) to **1.8 million tonnes (mt)**, as against its earlier estimate of **1 mt**.
  - **Increase in Rice Exports:** USDA has also estimated India's rice exports to have hit a record **14.4 mt** in 2020, up from the **preceding two years**.
- **Causes for Increase in Wheat Exports:**
  - **Chinese Stockpiling:** The key driver of global price turnaround seems to be China. The reasons for its building strategic stockpiles of everything aren't as fully clear as their effect on international prices.
  - **Rising Global Prices:** For example, the **Russian government** is levying an export tax on wheat in response to high domestic prices. **Bangladesh**, a

Note:

potential importer of wheat from Russia is beginning to **shift its purchases towards India**.

- **Ultra-low interest rate** money increasingly being invested into **agri-commodity markets**.
  - In the wake of Covid-19 pandemic, various countries such as the USA, India, Russia are reducing their interest rates.
  - **For example:** Bank of England current bank rate: 0.1%
    - Reserve Bank of India (RBI) current repurchase rate: 4%
- **Causes for Rise in Rice Exports:**
  - **Impact of drought:**
    - The country's closest competitors **Thailand and Vietnam** have been facing drought leading to **decline** in rice productivity.
    - Increase in **demand in Bangladesh**
- **Potential Challenges to Rise in Export:**
  - Indian wheat is still not competitive at the government's **minimum support price (MSP)** of **Rs. 19,750 per tonne**. Further additional cost of **cleaning, bagging, loading and transport to port** would be in addition making export uncompetitive.
  - **Solution:** Procurement of wheat below MSP from Uttar Pradesh, Bihar, Gujarat and Maharashtra, where not much government procurement happens.
- **Significance:**
  - Estimates for increase in these exports will be

beneficial as India's **own domestic production of rice and wheat** has touched an all-time-high of 118.43 mt and 107.59 mt, respectively, in 2019-20.

- Government agencies also procured **an all time high in 2019-20** thus burdening **government exchequer**.

#### Cereals Exports of India

- India is one of the **largest producers** as well as **exporter of cereal products in the world**.
- The important cereals are - **wheat, paddy, sorghum, millet (Bajra), barley and maize**.
- Previously in 2008, India had imposed a **ban on export of rice and wheat etc.** to meet **domestic needs**.
  - Owing to **huge demand in the global market and country's surplus production**, India allowed limited amounts of export of the commodity.
- Rice (including Basmati and Non Basmati) occupy the **major share in India's total cereals export with 95.7%** in 2019-20. Whereas, other cereals including wheat represent only **4.3% share in total cereals exported from India during the year 2019-20**.
- **Major Export Destinations (2019-20) of Wheat :** Nepal, Bangladesh , UAE, Somalia.
- **Major Export Destinations (2019-20) of Non Basmati rice:** Nepal, Benin, UAE, Somalia.
- **Major Export Destinations (2019-20) of Basmati Rice:** Iran, Saudi Arab, Iraq, UAE.



Note:

# International Relations

## Highlights

- *India at UNSC: Previous Contribution & Current Challenges*
- *India as Counterbalance to China: USA*
- *USA Redesignates Cuba as State Sponsor of Terrorism*
- *Solidarity and Stability Deal: Gulf Countries*
- *Iran Steps Up Uranium Enrichment*
- *Conflict Over Nile*
- *Helping Hand to Sri Lanka*
- *India-Mongolia Relations*
- *Japan Provides Loan to India*
- *China's Rising Influence in South Asia*
- *Henley Passport Index 2021*
- *India's NSA Visit to Afghanistan*
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## India at UNSC: Previous Contribution & Current Challenges

### Why in News

India, for the **eighth time**, has entered the **United Nations Security Council (UNSC)** as a **non-permanent member** recently. It will stay on the council for two years i.e **2021-22**.

### Key Points

- **Contributions of India at UNSC:** India has served **seven times** in the **UN Security Council**.
  - **1950-51:** India, as President of UNSC, presided over the **adoption of resolutions** calling for cessation of hostilities during the **Korean War** and for **assistance to the Republic of Korea**.
  - **1967-68:** India **co-sponsored Resolution 238** extending the mandate of the **UN mission in Cyprus**.
  - **1972-73:** India pushed strongly for **admission of Bangladesh into the UN**.
  - **1977-78:** India was a **strong voice for Africa in the UNSC** and **spoke against apartheid** and for **Namibia's independence** in 1978.
  - **1984-85:** India was a **leading voice in UNSC for resolution of conflicts in the Middle East, especially Palestine and Lebanon**.
  - **1991-92:** Participated in the **first ever summit-level meeting** of the UNSC and **spoke on its role in maintenance of peace and security**.

- **2011-2012:** India was a **strong voice for developing world**, peacekeeping, counter-terrorism and Africa. First statement on Syria was during India's Presidency at the UNSC.

- During the 2011-12 term, India chaired the **UNSC 1373 Committee concerning Counter-Terrorism**, the **1566 Working Group concerning threat to international peace and security by terrorist acts**, and **Security Council 751/1907 Committee concerning Somalia and Eritrea**.

- Earlier in 1996, India took the initiative to pilot a draft **Comprehensive Convention on International Terrorism (CCIT)** with the objective of providing a comprehensive legal framework to combat terrorism.

- India worked closely with its partners in the UNSC to ensure the listing of **Pakistan-based terrorist Masood Azhar under the UNSC's 1267 Sanctions Committee** (May 2019) concerning al-Qaeda and ISIS and associated individuals and entities, which was pending since 2009.

### ➤ Challenges at UNSC:

#### ○ China Challenge:

- India is entering the UNSC at a time when Beijing is asserting itself at the global stage much more vigorously than ever. It heads at least six UN organisations and has challenged the global rules.
- China's aggressive behaviour in the **Indo-Pacific** as well as the **India-China border** has been visible in all of 2020.

Note:



drishti

- China has tried to raise the **issue of Kashmir** at the UNSC.
- **Post Covid World Order:**
  - As the global economy is in shambles with various countries facing **recession and health emergencies**. To handle all these situations need **careful strategy** to move the world out of this burdening challenge.
- **Balancing USA and Russia and Unstable West Asia:**
  - With the situation deteriorating between **USA and Russia** and increasing tensions between **USA and Iran**, it will be tough situation to handle for India. India needs to uphold rule based world order with due respect to human rights ensuring the national interest.

### United Nation Security Council

- The United Nations Charter established **six main organs of the United Nations**, including the United Nations Security Council (UNSC). Article 23 of the UN Charter concerns the composition of the UNSC.
- The UNSC has been given primary responsibility for maintaining **international peace and security to the Security Council**, which may meet whenever peace is threatened.
- While other organs of the United Nations make recommendations to member states, only the Security Council **has the power to make decisions that member states are then obligated to implement under the Charter**.
- **Permanent and Non-Permanent Members:** The UNSC is composed of **15 members, 5 permanent and 10 non-permanent**.
  - **Five permanent members:** China, France, the Russian Federation, the United Kingdom, and the United States.
  - **Ten non-permanent members: Elected for two-year terms by the General Assembly.**
    - Each year, the General Assembly elects **five non-permanent members** (out of ten in total) for a **two-year term**. The ten non-permanent seats are distributed on a **regional basis**:
      - Five for African and Asian countries.
      - One for Eastern European countries.
      - Two for Latin American and Caribbean countries.

- Two for Western European and other countries.

- India has been advocating a permanent seat in UNSC.
- India has the following objective criteria, such as **population, territorial size, Gross Domestic Product, economic potential, civilisational legacy, cultural diversity, political system and past and ongoing contributions to UN activities** especially to **UN peacekeeping operations**.

## India as Counterbalance to China: USA

### Why in News

Recently, the **Trump administration declassified a document** which asserted that a **strong India**, in cooperation with like-minded countries, would **act as a counterbalance to China** in the **strategic Indo-Pacific region**.

- The document on the **USA strategic framework for the Indo-Pacific** from 2018 outlines objectives, challenges and strategies with regard to China, North Korea, India and other countries in the Indo-Pacific region.

### Key Points

- **Challenges for USA:**
  - Maintaining **USA's strategic primacy in the Indo-pacific** and **stopping China** from establishing illiberal spheres of influence.
  - Ensuring that **North Korea does not threaten the USA**.
  - **Advancing the USA economic leadership globally** while pushing fair and reciprocal trade.
- **Aspects Related to India:**
  - India is a **preferred partner on security issues** and to cooperate to preserve maritime security and **counter Chinese influence** in South Asia and Southeast Asia. To achieve this, **USA aims to:**
    - **Support India's aspiration to be a leading global power**, highlighting its compatibility with the USA, Japanese and Australian vision of the Indo-Pacific.
    - Work with India **"toward domestic economic reform"**.

Note:



- **Enhance defence cooperation** and interoperability.
  - **Provide greater leadership roles for India** in the **East Asia Summit** and **ASEAN Defence Ministers' Meeting Plus**.
  - **Support India's Act East policy**.
- **India vis-a-vis China:**
- **Help India addressing disputes with China:** USA aims to support India via military, diplomatic and intelligence channels to **help address continental challenges** such as the **border dispute with China** and resolution of disputes over rivers, including the **Brahmaputra** and other rivers facing diversion by China.
  - **Supporting India's reservations against Belt Road Initiative:** USA seeks the transparent infrastructure-debt practices in the countries facing debt due to Chinese financing under **Belt Road Initiative**.
  - **Working with India and Japan:** To help finance projects that enhance regional connectivity between India and countries of the region.
- **India-USA Relations:**
- **Shared democratic values** and increasing convergence of interests on bilateral, regional and global issues.
  - **Broad-based and multi-sectoral relationship** covering trade and investment, defence and security, education, science and technology and **cyber security** etc.
  - **People to people connection:** Vibrant people-to-people interaction and support across the political spectrum in both countries nurture bilateral relationships between the two countries.
  - USA has signed **defence agreements** with India to provide **military information and mutual logistics support**. These are:
    - The General Security of Military Information Agreement (GSOMIA).
    - The Logistics Exchange Memorandum of Agreement (LEMOA).
    - The Communication Compatibility and Security Agreement (COMCASA).
    - The Basic Exchange and Cooperation Agreement (BECA): It was the result of the **Indo-United States (US) 2+2 talks**.
- **Recent USA-China Rivalries:**

- **Competition for dominating world finances:** To counter the USA-dominated International Monetary Fund, World Bank and World Trade Organization, China has come out with alternative financial institutions like **Asia Infrastructure Investment Bank**, and **New Development Bank**.
- **Contending influence over international groupings:** In order to contain rising China's assertiveness, the USA under its 'pivot to Asia policy' has launched a **Quad initiative**, **Indo pacific narrative**. Most recently, the USA proposed to expand G7 to G-11 without including China in it.
- **New Cold War:** USA-China confrontation is on multiple fronts including ideological and cultural hegemonic rivalry, trade wars which has often been called the **New Cold War**.

### Suggestions

- **Maintain interest oriented balancing:** India should realise its rising global power and rather than getting enmeshed in USA-China rivalry, **it should prioritize its own interests and growth by maintaining peaceful mutual relationships**.
- **Promote Multilateralism:** India can promote new multilateralism under the aegis of **Vasudhaiva Kutumbakam**- which relies on restructuring both the economic order and societal behaviour for equitable sustainable development.

## USA Redesignates Cuba as State Sponsor of Terrorism

### Why in News

Recently, the USA State Department has designated Cuba as a **State Sponsor of Terrorism** for repeatedly providing **support for acts of international terrorism** in granting safe harbour to terrorists.

### Key Points

- **Provisions for sanctions on countries:**
  - The State Department of the USA can place **four categories** to enlist any country as sanctioned:
    - Restrictions on foreign assistance by the USA.
    - A ban on defence exports and sales.
    - Certain controls over exports of dual use items.

Note:



- Sanctions can also be placed on countries and persons that engage in certain trade with designated countries.
- Four countries remain on the list: **Syria, Iran, North Korea and Cuba.**
  - Cuba was delisted in 2015 and has been blacklisted again.
- **Cuba Designated as a State Sponsor of Terrorism:** The USA government had been accusing the Castro regime for:
  - Illegitimate interference in internal politics Venezuela.
  - Oppressing the people of Cuba.
  - Supporting international terrorism.
  - Subversion of the USA justice.
- **USA-Cuba Relationship:**
  - The United States and Cuba have had a strained relationship for more than sixty years, rooted in Fidel Castro's overthrow of a USA-backed government in 1959.
  - Presidents Barack Obama and Raul Castro took several steps to normalize bilateral relations, including restoring diplomatic ties and expanding travel and trade.
  - The Trump administration has reversed aspects of the past agreements by reimposing restrictions on tourism and other commerce.
  - **Havana Syndrome:**
    - In late 2016, USA diplomats and other employees

stationed in Havana (capital of Cuba) reported feeling ill after hearing strange sounds and experiencing odd physical sensations.

- The symptoms included nausea, severe headaches, fatigue, dizziness, sleep problems, and hearing loss, which have since come to be known as the **Havana Syndrome**. The USA had accused Cuba of carrying out "attacks", but Cuba denied any knowledge of the illnesses.

➤ **Historical Reasons for Strained Relationship:**

- **Cuban Revolution:** The tumultuous USA-Cuba relationship has its roots in the Cold War. In 1959, Fidel Castro and a group of revolutionaries seized power in Havana (city capital of Cuba). They overthrew the USA-backed government of Fulgencio Batista.
- **Cuban Missile Crisis:**
  - The United States **severed diplomatic ties with Cuba** and began pursuing covert operations to overthrow the Fidel Castro regime in 1961.
  - The missile crisis arose after **Cuba allowed the Soviet Union to secretly install nuclear missiles** on the island following an attempt by the USA agencies to topple Cuban Government, known as the **Bay of Pigs invasion**.
    - In the end, Soviet Union head Khrushchev agreed to withdraw the missiles in exchange for a pledge from Kennedy (USA) not to invade Cuba and to remove the USA nuclear missiles from Turkey.
- **Trade with Soviet Union:** After the Cuban Revolution, the United States recognized Fidel Castro's government but began imposing economic penalties as the new regime increased its trade with the Soviet Union, nationalized American-owned properties, and hiked taxes on the USA imports.
- **Embargo by Kennedy Government (1962):** After slashing Cuban sugar imports, the USA instituted a ban on nearly all its exports to Cuba, which President John F. Kennedy expanded into a full economic embargo that included stringent travel restrictions.
- **India's Stand:**
  - **Supports Lifting Economic Blockade of Cuba:** Recently when the **USA opposed Cuba's membership in UNHRC** in 2019, India joined the majority of countries from all continents that raised their voices in the UN General Assembly to demand an

Note:

end to the unjust and long economic blockade of the United States against Cuba.

- **Criticised the USA Embargo:** In the UN General Assembly, India stressed that the continued existence of this siege by the USA against Cuba contravenes world opinion, undermines multilateralism and the credibility of the United Nations.

➤ **UN General Assembly's Stand:**

- Since 1992, the **UN General Assembly** has approved every year a resolution acknowledging the necessity of ending the economic, commercial and financial blockade imposed by the United States of America against Cuba.

## Solidarity and Stability Deal: Gulf Countries

### Why in News

Recently, Gulf states signed a 'solidarity and stability' deal at the 41<sup>st</sup> **Gulf Cooperation Council (GCC)** summit held in Al Ula, Saudi Arabia.



### Key Points

- **Background:**
  - **Sanctions on Qatar:**
    - In June 2017, Saudi Arabia and its allies, the United Arab Emirates (UAE), Bahrain and Egypt severed ties with Qatar and imposed a naval, air and land blockade on the country.
  - **Reasons:**

- Qatar was **charged to be too close to Iran** and backed radical Islamist groups.
- The country was **alleged to support and fund terror** through its support of Iran and **Muslim Brotherhood** (a Sunni Islamist political group outlawed by both Saudi Arabia and the UAE).

➤ **Solidarity and Stability Deal:**

- Members of the **GCC** signed a deal in **AlUla, Saudi Arabia** to remove all the sanctions over Qatar and **re-open their land, sea and air borders to Qatar.**
  - Bahrain, Kuwait, Oman, **Qatar**, Saudi Arabia and UAE are the members of **GCC.**
- **Reason:**
  - To unite efforts to promote the Gulf region and to confront challenges that surround them, especially the threats posed by the **Iranian regime's nuclear and ballistic missile programme** and its plans for sabotage and destruction.

### Gulf Cooperation Council

- GCC is a **political, economic, social, and regional organisation** which was **established by an agreement concluded in 1981** among Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE in view of their special relations, geographic proximity, similar political systems based on Islamic beliefs, joint destiny and common objectives.
- The structure of the GCC consists of the **Supreme Council (the highest authority), the Ministerial Council and the Secretariat General.** The Secretariat is located in Riyadh, Saudi Arabia.

### India's Relation with Gulf Region

- **India and GCC:**
  - The economic and political relationship of India with the GCC has improved in recent years.
  - The friendly relation has been reflected in the **bilateral trade** of around USD 121 billion and **remittances** of USD 49 billion from a workforce of over nine million.
  - GCC suppliers account for around **34% of India's crude imports.**
- **India and Iran:**
  - India has always **shared a friendly relationship with Iran.** But the India-Iran relation faces one of the most complex phases at all times due to the USA's pressure which has politico-economic impacts.

Note:

- In May 2018, the USA abandoned the nuclear deal (**Joint Comprehensive Plan of Action**) and **reinstated economic sanctions against Iran**.
- **India and Qatar:**
  - Recently, **India's External Affairs Minister met the top leaders of Qatar** and discussed strengthening the economic and security cooperation between the two countries.
  - India shares a **friendly relation with Qatar** and even at the time of sanctions on Qatar, India maintained a cordial relation with the oil rich nation.
- **India's Overall Role in the Region:**
  - India has **avoided involvement in local or regional disputes** in the region, since Indian interests do not entail power projection but necessitate **peace and regional stability**.
  - The Gulf is among India's **top trading partners**. The **deepening energy interdependence** is marked by growing volumes of energy imports into India. There is also the prospect of substantive investments from the Gulf into the **Indian hydrocarbon sector**.
  - The number of Indian **migrant workers in the region** stands at more than **7 million**.
  - The expansion of the political engagement has been matched by the **growing security cooperation, especially on counter-terrorism**.
  - India and its Gulf partners are also **taking tentative steps towards defence cooperation**.
    - For example participation of Saudi Arabia, Oman, Kuwait, and others in **India's mega multilateral Milan Exercise**.

## Iran Steps Up Uranium Enrichment

### **Why in News**

Recently, Iran has **resumed enriching uranium up to 20%** in violation of the **2015 nuclear deal** and also seized a **South Korean-flagged tanker** near the **crucial Strait of Hormuz**.

- Meanwhile, the **USA** has decided to keep **nuclear powered aircraft carrier Nimitz** in the Gulf region in the wake of threats from Iran.

### **Key Points**

- **Uranium Enrichment:**
  - **Natural uranium** consists of two different isotopes - nearly **99% U-238** and **only around 0.7% of U-235**.
    - **U-235 is a fissile material** that can sustain a chain reaction in a nuclear reactor.
  - **Enrichment process increases the proportion of U-235** through the **process of isotope separation** (U-238 is separated from U-235).
  - For **nuclear weapons**, enrichment is required upto **90% or more** which is known as **Highly Enriched Uranium/weapons-grade uranium**.
  - For **nuclear reactors**, enrichment is required upto **3-4%** which is known as **Low Enriched Uranium/reactor-grade uranium**.
- **2015 Nuclear Deal:**
  - In **2015**, Iran with the **P5+1 group of world powers - the USA, UK, France, China, Russia, and Germany** agreed on a long-term deal on its nuclear programme.
    - The deal was named as **Joint Comprehensive Plan of Action (JCPOA)** and in common parlance as **Iran Nuclear Deal**.
    - Under the deal, **Iran agreed to curb its nuclear activity in return for the lifting of sanctions and access to global trade**.
    - The agreement **allowed Iran to accumulate small amounts of uranium for research** but it **banned the enrichment of uranium**, which is used to make reactor fuel and nuclear weapons.
    - Iran was also **required to redesign a heavy-water reactor** being built, whose spent fuel would contain plutonium suitable for a bomb and to allow international inspections.
  - In **May 2018**, the **USA abandoned the deal** criticising it as flawed and reinstated and tightened its sanctions.
  - Since sanctions were tightened, **Iran has been steadily breaking some of its commitments** to pressure the remaining signatories to find a way to provide sanctions relief.
- **Issues Involved:**
  - The dual incidents come amid heightened **tensions between Iran and the USA**.
  - Enrichment could shorten Iran's time it would take to develop a **nuclear bomb**.
  - **Israel criticised Iran's** enrichment decision.

Note:



- Iran's decision to begin enriching to 20% purity a decade ago nearly **triggered an Israeli strike targeting its nuclear facilities**, tensions that only abated with the **2015 nuclear deal**.
- A resumption of 20% enrichment (at **fordow facility**) could see that **brinkmanship** return as that level of purity is **only a technical step away from weapons grade levels of 90%**.
  - **Brinkmanship** is the art or practice of pursuing a dangerous policy to the limits of safety before stopping, especially in politics.
- Previously the **International Atomic Energy Agency (IAEA)** expressed serious concerns over Iran's blocking of **inspections of two suspect locations of Uranium enrichment for more than four months**.

- **Two-thirds of the oil and half the Liquefied Natural Gas (LNG) Indian imports** come through the strait between Iran and Oman.
- As much as **18 million barrels of oil pass through the Strait of Hormuz every day**, accounting for one-third of the global oil trade.
- A **third of the world's LNG trade** also passes through the strait.
- **Issues in the Strait:**
  - The strait of Hormuz plays a vital geopolitical role to the point where the **US Fifth Fleet guards this strait**.
  - During the recent years, Iran has threatened the safe passage of oil tankers in this strait.

### Strait of Hormuz



- **Geographic Location:**
  - It is the waterway **separating Iran and Oman**, linking the Persian Gulf to the Gulf of Oman and the Arabian Sea.
  - On the north coast lies Iran, and on the south are the UAE and Musandam, an enclave of Oman.
  - The Strait is **21 miles wide** at its narrowest point, but the **shipping lane is just two miles wide** in either direction.
- **Importance:**
  - The Strait of Hormuz is **one of the world's most strategically important choke points**.

## Conflict Over Nile

### Why in News

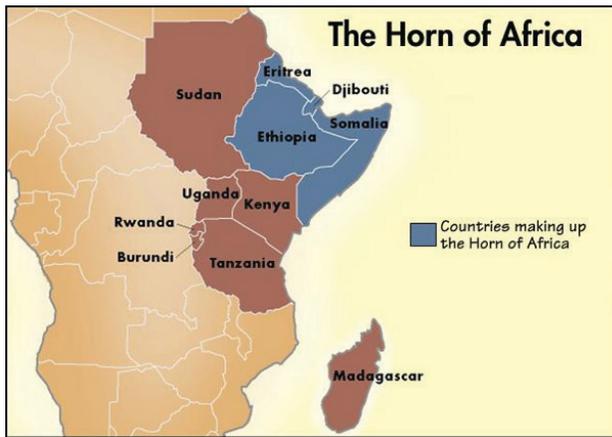
Ethiopia, Sudan and Egypt have recently agreed to resume negotiations to resolve their **decade-long complex dispute** over the **Grand Renaissance Dam** hydropower project in the **Horn of Africa**.

- Horn of Africa is the **easternmost extension of African land** and includes the region that is home to the countries of **Djibouti, Eritrea, Ethiopia, and Somalia**, whose cultures have been linked throughout their long history.
- The Grand Renaissance Dam is being constructed by **Ethiopia on the river Nile**.

### Key Points

- **Conflict:**
  - **The Nile, Africa's longest river**, has been at the center of a decade-long complex dispute involving several countries that are dependent on the river's waters.
  - **Grand Renaissance Dam:**
    - This 145-meter-tall (475-foot-tall) hydropower project, started by **Ethiopia** is the cause of conflict.
    - Given the **dam's location on the Blue Nile tributary**, it would **allow Ethiopia to gain control** of the flow of the river's waters.
      - Blue Nile is a tributary of the Nile river and it carries about two-thirds of the river's water volume and most of the silt.

Note:



- At the forefront of this **dispute are Ethiopia, Egypt and Sudan.**
- **Dam's Importance for Ethiopia:**
  - Ethiopia believes this dam will generate approximately **6,000 megawatts** of electricity which will **support its industrial growth.**
  - It can also **export surplus electricity** to neighbouring regions to generate revenue.
    - Neighbouring countries like **Kenya, Sudan, Eritrea and South Sudan** also suffer from **electricity shortages** and they can also **benefit from the hydropower project** if Ethiopia decides to sell electricity to them.
- **Egypt's Concern:**
  - Egypt lies **downstream** and is concerned that Ethiopia's control over the water could result in **lower water levels within its own borders.**
  - Egypt depends on the Nile for approximately 97% of its drinking water and irrigation supplies.
  - The dam would jeopardise **food and water security** and **livelihoods** of ordinary Egyptian citizens.
- **Sudan's Stand:**
  - Sudan too is concerned that if Ethiopia were to gain control over the river, it would affect the **water levels Sudan receives.**
  - Sudan is likely to **benefit from the power generated** by the dam.
  - The **regulated flow of the river will save Sudan** from serious flooding in August and September. Thus it has proposed joint management of the dam.
- **Current Situation:**

- The latest round of talks between **Ethiopia, Sudan and Egypt** occurred with **South Africa** observing the proceedings in its role as the current head of the **African Union's** rotating council, in addition to other international observers.
- Despite previous talks, the point of contention hasn't changed.

### Nile River

- The River Nile is in Africa. It originates in **Burundi, south of the equator**, and flows northward through northeastern Africa, eventually flowing through Egypt and finally draining into the **Mediterranean Sea.**
- **Source:**
  - The source of the Nile is sometimes considered to be **Lake Victoria**, but the lake itself has feeder rivers of considerable size like the **Kagera River.**
- The Nile River is considered as one of the **longest rivers** in the world.
- The Nile has a length of about **6,695 kilometers** (4,160 miles).
- The Nile basin is huge and includes parts of **Tanzania, Burundi, Rwanda, Congo (Kinshasa), Kenya.**
- **The Nile River** forms an **arcuate delta** as it empties into the Mediterranean Sea. Deltas with **triangular or fan-shape** are called **arcuate (arc-like) deltas.**
- The Nile is formed by three principal streams: **the Blue Nile, the Atbara, and the White Nile.**



## Helping Hand to Sri Lanka

### Why in News

An India-funded **free ambulance service** is playing a vital role in Sri Lanka's **Covid-19** response.

### Key Points

- **Background:**
  - India provided a **grant of 7.56 million USD** for the

Note:

**Suwa Seriya** [vehicle or journey for good health] **service** which was launched in 2016, on a pilot basis. Later, this was extended throughout the country with additional grants from India.



- India also helped with **Capacity Building**:
  - Training and refresher programmes for **Sri Lankan emergency medical technicians** which further **generated employment** for the local population.
- It is India's **second largest grant project to Sri Lanka** after the **housing project** of more than **60,000 houses**, with a nearly 400 million USD grant.

### India Sri Lanka Relations

- **Geopolitical Significance of Sri Lanka:**
  - Sri Lanka's location in the **Indian Ocean region** has been of strategic geopolitical relevance to several major powers.
    - China's **string of pearl's strategy** is aimed at encircling India to establish dominance in the Indian Ocean.
      - China is building state of the art gigantic modern ports all along the Indian Ocean and to the south of it, in Gwadar (Pakistan), Chittagong (Bangladesh), Kyauk Phru (Myanmar) and **Hambantota (Sri Lanka)**. Thus Sri Lanka is vital for China's **String of Pearls strategy**.
    - Sri Lanka has a list of **highly strategic ports** located among **busiest sea lanes of communication**.
- **Political Relations:**
  - **The Reserve Bank of India (RBI)** has signed an agreement for extending a **USD 400 million currency swap** facility to Sri Lanka to boost the

foreign reserves and ensure financial stability of the country, which is badly hit by Covid-19 pandemic.

- Political relations between India and Sri Lanka have been marked by **high-level exchanges of visits at regular intervals**.
- Sri Lanka is a member of regional groupings like **BIMSTEC** (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) and **SAARC** in which India plays a leading role.
- India and Sri Lanka conduct **joint Military (Mitra Shakti) and Naval (SLINEX)** exercises.
- **Commercial Relations:**
  - Sri Lanka is one of India's **largest trading partners among the SAARC countries**. India in turn is Sri Lanka's **largest trade partner globally**.
  - India's exports to Sri Lanka amounted to 5.3 billion USD in 2015-17 whereas its imports from the country were at 743 million USD.
  - Trade between the two countries grew particularly rapidly after the **India-Sri Lanka Free Trade Agreement** which came into force in March 2000.
- **Cultural and Educational Relations:**
  - The Indian Cultural Centre in Colombo actively promotes awareness of Indian culture by offering classes in **Indian music, dance, Hindi and Yoga**. Every year, cultural troupes from both countries exchange visits.
  - The **India-Sri Lanka Foundation**, set up in December 1998 as an **intergovernmental initiative**, also aims towards enhancement of scientific, technical, educational and cultural cooperation through civil society exchanges and enhancing contact between the younger generations of the two countries.
  - The People of Indian Origin (PIOs) comprise **Sindhis, Borahs, Gujaratis, Memons, Parsis, Malayalis and Telugu** speaking persons who have settled down in Sri Lanka (most of them after partition) and are engaged in various business ventures.
  - In April 2019, India and Sri Lanka also concluded agreement on **countering Drug and Human trafficking**.
- **Issues and Conflicts**
  - **China Factor:**
    - Sri Lanka also handed over the **strategic port of Hambantota**, which is expected to play a key role in **China's Belt and Road Initiative**, to **China on a 99-year lease**.

Note:

- China has also supplied arms as well as provided huge loans to Sri Lanka for its development.
- The two countries have signed a civil nuclear cooperation agreement which is Sri Lanka's first nuclear partnership with any country.

#### ➤ Fishermen issue:

- Given the proximity of the territorial waters of both countries, especially in the **Palk Straits** and the **Gulf of Mannar**, incidents of straying of fishermen are common.
- Fishermen often **risk their lives** and cross in to Srilankan rather than return empty-handed, but the Sri Lankan Navy is on alert, and have either arrested or destroyed fishing nets and vessels of those who have crossed the line.
- The 4<sup>th</sup> meeting under **Joint Working Group (JWG)** on fisheries was held recently between the Ministry of Agriculture and Farmers Welfare of India and Ministry of Fisheries and Aquatic Resources Development of Sri Lanka as the mechanism to help find a permanent solution to the fishermen issue.

## India-Mongolia Relations

### Why in News

Recently, India and Mongolia have **reviewed bilateral cooperation in hydrocarbons and steel sectors.**

### Key Points

- India reiterated its commitment to timely completion of the **Mongol Refinery Project**, the country's 1<sup>st</sup> oil refinery.
- The greenfield Mongol Refinery Project is **being built under a Line of Credit from the Government of India.**



- It is **expected to cut some of Mongolia's fuel import dependence.**
- The Project came in the backdrop of **Mongolia**, which has **large uranium deposits** signing an **agreement for civil nuclear cooperation with India in 2009** and **China** unfolding its **Belt and Road Initiative (BRI).**

- **India is opposed to the BRI**, which seeks to invest about USD 8 trillion in infrastructure projects across Asia, Europe and Africa, as it says the initiative lures countries into debt traps and does not respect sovereignty or address environmental concerns.

- India **welcomed the keenness of Mongolian companies in supplying coking coal to Indian steel industry.** According to a recent report, India will overtake China as the **largest importer of coking coal by 2025.**
  - Further, India looks forward to substantial partnerships with Mongolian companies in the areas of minerals, coal and steel.
- India expressed its willingness to further **share its expertise in the oil and gas sector** including capacity building in accordance with the developmental priorities of Mongolia.

### India-Mongolia

#### ➤ Historical Relations:

- India and Mongolia have interacted **through Buddhism** throughout history.

#### ➤ Diplomatic Relations:

- India, the first country outside the former Soviet bloc of nations to open diplomatic relations with Mongolia in 1955, has upgraded ties with Mongolia to a **strategic partnership.**
- In **2015**, Mongolia witnessed the **first ever visit by the Prime Minister of India** (a part of **India's Act East policy**).

#### ➤ International Cooperation:

- Mongolia has publicly reiterated its **support for India's membership to the permanent seat** of the expanded **United Nations Security Council (UNSC).**
- **India** has played an **important role** in getting **Mongolia membership** to key international forums, including the **United Nations (UN)**, despite strong opposition from China and Taiwan. India also championed the **inclusion of Mongolia in the Non-Aligned Movement.**

Note:

- In a reciprocal gesture, **Mongolia co-sponsored a 1972 UN resolution** with India and Bhutan for the **recognition of the newly liberated Bangladesh**.
  - **Other Forums of which both the countries are members: Asia-Europe Meeting (ASEM), World Trade Organisation (WTO).**
  - **India is a member** whereas **Mongolia is an observer state** at the **Shanghai Cooperation Organisation (SCO)**.
- **Economic Cooperation:**
- India - Mongolia **bilateral trade was USD 38.3 million in 2019**, down from USD 52.6 million in 2018.
- **Defence Cooperation:**
- Joint defence exercises code-named **Nomadic Elephant**.
  - India is also an active participant in an annual week-long joint training exercise called the **Khaan Quest**, hosted by Mongolia.
- **Cooperation over Environmental Issues:**
- Part of the **Bishkek Declaration (snow leopard)**.
- **Cultural Relations:**
- The **Ministry of Culture (India)** has taken up the project of **reprinting 108 volumes of Mongolian Kanjur** under the **National Mission for Manuscripts (NMM)**.
- **Other Possible Areas of Cooperation:**
- **Solar energy** is abundant and cooperation is solicited especially as India has emerged as the leader by way of **International Solar Alliance** and its very own ambitious alternate and renewable energy projects.
  - **Mongolia's mining sector including copper and Uranium** hold exceptional cooperation possibilities.
  - In the area of **cooperatives**, India has the capacity to share its expertise for the vastly dispersed farmers and milkmen in Mongolia.

## Japan Provides Loan to India

### Why in News

**India and Japan** signed an agreement for a **loan of up to 50 billion yen** (about Rs. 3,550 crore) to **back India's economic support programmes** for the poor and vulnerable affected by the **Covid-19** crisis.



### Key Points

- **About the Loan:**
- It is a part of Japan's **Official Development Assistance (ODA)** loan.
    - ODA is defined as **government aid designed to promote the economic development and welfare of developing countries**.
    - Loans and credits for military purposes are excluded.
  - The loan has an **interest rate of 0.65% per annum** and a **repayment period of 15 years**, including a five-year grace period.
  - The financial support **aims to support the Indian government's programmes such as Pradhan Mantri Garib Kalyan Yojana (PMGKY)**, which aims to mitigate socio-economic impacts and strengthen socio-economic institutions.
    - This includes **schemes for distributing food grains** to the poor and vulnerable, provision of assistance and **support to construction workers**, and provision of **special insurance for health workers fighting Covid-19**.
  - It is for the **implementation of health and medical policy** by the Government of India, and is expected to lead to the **development of hospitals equipped with ICUs (Intensive Care Units)** and infection prevention and management facilities.
    - It is also expected to lead to the **enhancement of telemedicine** using digital technology in numerous villages across India.
- **Previous Support:**
- Japan had earlier provided **budget support of 50 billion yen** and **grant assistance worth one billion**

Note:



yen to support the Indian government's efforts to counter the Covid-19 crisis.

- Japanese assistance to India now **totals** approximately **Rs. 5,800 crores**.

➤ **India-Japan Economic Relations:**

- India and Japan have had a long and fruitful history of **bilateral development cooperation since 1958**.
- In the last few years, the economic cooperation between India and Japan has strengthened and grown into **strategic partnership**.
  - Japan was the **4<sup>th</sup> largest investor for India in FY2019**.
  - India has been the **largest recipient of Japanese ODA Loan** for the past decades. **Delhi Metro** is one of the most successful examples of Japanese cooperation through the utilization of ODA.
- Further, Japan continues to cooperate in supporting **strategic connectivity linking South Asia to Southeast Asia** through the synergy between "Act East" policy and "Partnership for Quality Infrastructure."

## China's Rising Influence in South Asia

### Why in News

China has held its **third multilateral dialogue** virtually with countries from **South Asia** to take forward **closer cooperation on fighting Covid-19** and coordinating their **economic agendas**, reflecting a **new approach in Beijing's outreach to the region**.



### Key Points

- **Participating countries:**

- It brought together every country in the region **barring India, Bhutan and the Maldives**, and was aimed at **"anti-epidemic cooperation and poverty reduction cooperation"**.

- The recent meeting was attended by **all five countries** that have taken part in these dialogues: **Pakistan, Nepal, Afghanistan, Sri Lanka and Bangladesh**.

- All three dialogues have been attended by **Pakistan and Nepal**.

➤ **Engagements through other Platforms:**

- Previously at the July **quadrilateral dialogue** with Afghanistan, Nepal and Pakistan, China's proposed extending the **China-Pakistan Economic Corridor (CPEC)** to Afghanistan, as well as taking forward an **economic corridor plan** with Nepal, called the **Trans-Himalayan Multi-dimensional Connectivity Network**.

➤ **Other Initiatives by China to Enhance Engagement in South Asia:**

- According to the **American Enterprise Institute's China Global Investment Tracker**, China has committed around **100 billion USD** in the economies of Afghanistan, Bangladesh, the Maldives, Pakistan, Nepal and Sri Lanka.

- China is now the **largest overseas investor** in the Maldives, Pakistan, and Sri Lanka.

- **Afghanistan:**

- Beijing was a part of the **trilateral China-Pakistan-Afghanistan foreign ministers dialogue** which focuses on facilitating Afghan domestic political reconciliation, enhancing regional connectivity, and improving regional common development.
- The trilateral discussions also agreed to push **"forward under the Belt and Road Initiative (BRI)"** and **"to enhance connectivity by extending the CPEC to Afghanistan"**.

- **Bangladesh:**

- China and Bangladesh pledged to deepen defense cooperation, especially in the areas of **"defense industry and trade, training, equipment and technology"**.
- China is also the **largest arms supplier of the Bangladeshi military**, providing **71.8%** of weapons from 2008 to 2018.

- **Bhutan:**

- It **does not have diplomatic relations** with China.

Note:



- **Maldives:**
  - China's relationship with the Maldives is near-exclusively focused on leveraging BRI to develop Maldives as well as to raise Chinese influence there to counter India.
- **Nepal:**
  - Chinese President went to Nepal in 2019.
    - This was the **first visit by a Chinese head of state in 23 years.**
  - The countries have signed agreements to **accelerate Infrastructure building in Nepal and improve connectivity between them.**
  - Both the countries have also announced the launch of a **feasibility study of the China-Nepal cross-border railway.**
- **Sri Lanka:**
  - Sri Lanka handed over **Hambantota port** on a 99-year lease to China to repay its loan back to china. **Hambantota is geostrategically located on the Indian Ocean**, potentially bolstering **Beijing's String of Pearls.**
- **Concerns for India:**
  - **Security Concerns:**
    - Growing cooperation between Pakistan and China.
    - Increasing nexus between Nepal and China.
    - Acceptance to China-Pakistan Economic Corridor by south asian countries.
  - **Leadership Roles in South Asia:**
    - It shows increasing chinese presence in south asia and its acceptance by the countries as a torch bearer for the region which India wants for itself.
  - **Economic Concerns:**
    - Over the past decade, China has replaced India as the **major trading partner of several South Asian countries.** For instance, the share of India's trade with Maldives was **3.4 times that of China's in 2008.** But by 2018, **China's total trade with Maldives slightly exceeded that of India.**
    - China's trade with **Bangladesh is now about twice that of India.** China's trade with Nepal and Sri Lanka **still lags India's trade with those countries but the gap has shrunk.**

## Henley Passport Index 2021

### Why in News

India has been ranked **85<sup>th</sup>** in the most powerful passport report 'Henley Passport Index 2021'.

### Key Points

#### ➤ About the Index:

- The **Henley Passport Index** is the **original ranking of all the world's passports according to the number of destinations** their holders can access **without a prior visa.**
- Originally **created by Dr. Christian H. Kaelin** (chairman of Henley & Partners), the ranking is based on exclusive data from the **International Air Transport Association (IATA)**, which maintains the world's largest and most accurate database of travel information.
- It was **launched in 2006** and includes **199 different passports.**

#### ➤ Latest Rankings:

##### ○ Top Rank Holders:

- **Japan continues to hold the number one position** on the index, with passport holders able to access 191 destinations around the world visa-free.
- **Singapore is in second place** (with a score of 190) and **South Korea ties with Germany in third place** (with a score of 189).
- The top spots were traditionally held by EU countries, the UK, or the US. This year, it is the Asia-Pacific (APAC) passports which are the most powerful in the world as it includes some of the first countries to begin the process of recovering from the Covid-19 pandemic.

##### ○ Bottom Rank Holders:

- **Syria, Iraq and Afghanistan** continue to be the countries with the worst passport to hold with a passport score of 29, 28 and 26 respectively.

##### ○ India's Performance:

- India **ranks 85<sup>th</sup>**, with a **visa-free score of 58.**
- The Indian passport **ranked higher in both 2020 (84<sup>th</sup>) and 2019 (82<sup>nd</sup>).**

##### ○ Comparison with Neighbouring Countries:

- **Pakistan** was ranked **107<sup>th</sup>** and **Nepal** was ranked **104<sup>th</sup>.**

Note:



### ➤ Related Government Initiatives:

- The **government has been making efforts to increase the number of countries that provide visa free travel, visa-on-arrival and e-visa facilities** so as to further ease international travel for Indians.
  - While **issuance of visa and visa related process is the sovereign and unilateral decision** of the respective country, the matter regarding easier and liberalised visa policy for Indian nationals is taken up regularly in bilateral meetings and forums with foreign countries.

## India's NSA Visit to Afghanistan

### Why in News

Recently, the **National Security Advisor (NSA)** of India visited Afghanistan for talks on strategic issues with the leadership in Kabul.

### Key Points

- **First official visit since initiation of Intra-afghan talks:**
  - This visit is significant because it was the first visit by any senior Indian official amidst the **Intra-Afghan Talks**.
  - **Intra-Afghan talks** refer to the **negotiation meetings between the Taliban and the Afghan High Council for National Reconciliation** (representative of Afghan Government) opened in Doha in 2020.
  - These talks are **facilitated and supervised by the United States**, representatives of the Ghani government and the Taliban aimed at ending the decades-old war and forging a political settlement.
- **Issues discussed:**
  - **Exchanged views** on the **Peace Process**, the beginning of **2<sup>nd</sup> round of (Intra-Afghan) talks**, and the **role of India in establishing peace** in Afghanistan.
  - Emphasis to **synchronise efforts to combat terrorism** and maintain peace in Afghanistan which shall become more challenging after the USA troops withdraw after **Doha Peace Pact (2020)**.
    - **Doha Peace Pact:** In February 2020, the USA and the Taliban signed an agreement in Doha, (Qatar's capital) which included:
      - USA to withdraw all of its troops from Afghanistan in 14 months and would also

release Taliban prisoners, held captive by the Afghan government.

- Assurance by Taliban that they would not allow transnational jihadist organisations such as al-Qaeda and the Islamic State to use Afghanistan as their base and also committed to start direct talks with the Afghan government, which began in September 2020.

### ➤ India's Role in establishing Peace in Afghanistan:

- By **participating in the intra-Afghan inaugural dialogue** in Doha, India has shown its willingness to engage with all Afghan parties including the Taliban for peace in Kabul.
- India conveyed that the peace process must:
  - Be Afghan-led, Afghan-owned and Afghan-controlled;
  - Respect national sovereignty and territorial integrity of Afghanistan; and
  - Promote human rights and democracy.
- India has a major stake in the stability of Afghanistan since it has **invested considerable resources in Afghanistan's development**.

### ➤ Significance of Stable Afghanistan for India:

- A stable Afghanistan government in power is a **strategic asset vis-à-vis Pakistan**.
  - **An increased political and military role for the Taliban** and the expansion of its territorial control should be of great concern to India since the Taliban is widely believed to be a protégé of Islamabad.
- The country has the **Central Asian Republics** to the North, Pakistan to its East, and through Iran and Pakistan the Indian Ocean deeper south.



Note:

- Withdrawal of the USA troops could result in the **breeding of the fertile ground for various anti-India terrorist** outfits like **Lashkar-e-Taiba** or Jaish-e-Mohammed.

## India in GAVI Board

### Why in News

Recently, the Union Minister of Health and Family Welfare has been nominated by the **Global Alliance for Vaccines and Immunisation (GAVI)** as a member on GAVI board.

- Earlier in May 2020, Union Minister of Health and Family Welfare was also elected as the Chair of the World Health Organization's Executive Board.

### Key Points

- The minister will be representing the South East Area Regional Office (SEARO)/Western Pacific Regional Office (WPRO) constituency on the GAVI Board.
- The seat is currently held by Myanmar and India will be holding it from 1st January 2021 to 31<sup>st</sup> December 2023.
- **Global Alliance for Vaccines and Immunisation:**
  - Created in 2000, Gavi is an international organisation, a global vaccine alliance.

- It brings together public and private sectors with the shared goal of creating equal access to new and underused **vaccines** for children living in the world's poorest countries.
- Its core partners include the **World Health Organisation (WHO)**, **United Nations Children's Fund (UNICEF)**, the **World Bank** and the Bill and Melinda Gates Foundation.
- As part of its mission to save lives, reduce **poverty** and protect the world against the threat of **epidemics**, GAVI has helped vaccinate more than 822 million children in the world's poorest countries, preventing more than 14 million future deaths.

### ➤ GAVI Board:

- It is responsible for strategic direction and policy-making, oversees the operations of the Vaccine Alliance and monitors programme implementation.
- With membership drawn from a range of partner organisations, as well as experts from the private sector, the Board provides a forum for balanced strategic decision making, innovation and partner collaboration.
- It normally meets twice a year in June and November/December and holds an annual retreat, normally in March or April.

Note:

# Science and Technology

## Highlights

- *Nanobodies*
- *Lumpy Skin Disease*
- *Bird Flu Threat*
- *COVISHIELD and COVAXIN Approved for Restricted Use*
- *National Metrology Conclave 2021*
- *Boost to Defence Exports*
- *Covid Deaths: Developed Versus Developing Countries*
- *Trans Fatty Acids*
- *Lithium-ion Technology*
- *South African Variant of Coronavirus*
- *Immunity Against Covid-19*
- *MukundPura Meteorite*
- *Quantum Technology*
- *Two Dimensional Electron Gas*
- *ASMI: The Machine Pistol*

## Nanobodies

### Why in News

An international research team led by the University of Bonn (Germany) has identified and further **developed novel antibody fragments (nanobodies) against SARS-CoV-2**, the virus that causes **Covid-19**.

### Key Points

#### ➤ Nanobodies Against SARS-CoV-2:

- **Produced along with Antibodies:** On injection of surface protein of the coronavirus into an alpaca and a llama, their immune system not only produced antibodies directed against the virus but also a simpler antibody variant that can serve as the basis of nanobodies.
- **More Effective:**
  - They had also **combined the nanobodies into potentially particularly effective molecules**, which **attack different parts of the virus simultaneously**. This new approach **could prevent the pathogen from evading the effect of antibodies through mutations**.
  - Nanobodies **appear to trigger a structural change** before the virus encounters its target cell - an unexpected and novel mode of action. The change is likely to be irreversible; the virus is therefore no longer able to bind to host cells and infect them.

#### ➤ Antibodies:

- Antibodies are an important weapon in the **immune system's defense against infections**.
- They **bind to the surface structures of bacteria or viruses and prevent their replication**.
- One strategy in the fight against disease is therefore to produce effective antibodies in large quantities and inject them into patients. However, **producing antibodies is difficult and time-consuming**; they are, therefore, **probably not suitable for widespread use**.

#### ➤ Nanobodies:

- Nanobodies are **antibody fragments** that are so simple that they **can be produced by bacteria or yeast**, which is **less expensive**.
- These are **antibodies with a single variable domain located on a heavy chain**, also known as **VHH antibodies**.
- These are **often seen as an alternative to conventional antibodies**, and have **significant differences** in both **production** and **use** that influence their suitability.

#### ➤ Difference between Nanobodies and Conventional Antibodies:

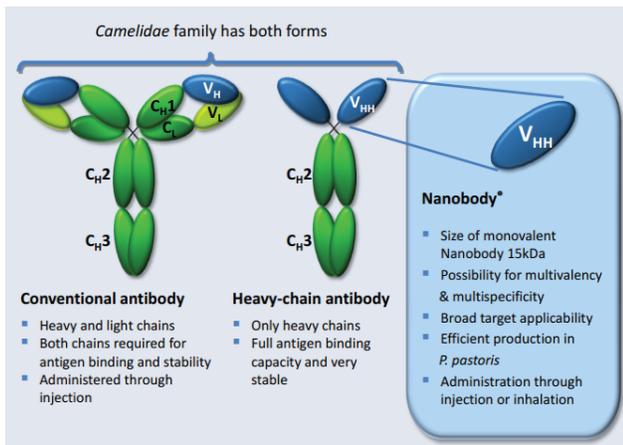
- **Difference in Structure and Domains:**
  - **Conventional antibodies** have **two variable domains, called VH and VL**, which offer each other stability and binding specificity.
  - **Nanobodies have VHH domains and lack VL domains**, but are still highly stable. Lacking

Note:



the VL domain also means nanobodies have a **hydrophilic** (having a tendency to dissolve in a water) side.

- Hydrophilic side means they **do not have issues with solubility and aggregation** otherwise associated with conventional antibodies.
- Nanobody production follows many of the same protocols as used in traditional antibody production. However, it also has distinct advantages not available with traditional antibodies, such as **improved screening, improved isolation techniques, and no animal sacrifice.**



#### ➤ Use:

- **Nanobodies** are much smaller than classic antibodies and they, therefore, **penetrate the tissue better** and can be produced more easily in **larger quantities.**
- **Nanobodies** are **stable in a wide range of temperatures**, remaining functional at temperatures as high as 80°C. As an added bonus, **unfolding of the nanobody due to high temperatures** has been shown to be **fully reversible, unlike conventional antibody fragments.**
  - Nanobodies are **also stable at extreme pH levels**, able to survive exposure to gastric fluid.
- **Nanobodies** are also **compatible with genetic engineering methods**, which allow alteration of amino acids to improve binding.

#### ➤ Limitations of Nanobodies:

- **Monoclonal and polyclonal antibodies** are slightly **safer to produce than nanobodies**, as there are biohazards involved in nanobody production not present for conventional antibody production.

- The biohazards result mainly from **use of hazardous bacteriophages** (any of a group of viruses that infect bacteria) for selection of nanobodies. Other sources include plasmids, antibiotics, and recombinant DNA. These materials require safe disposal.

- **Polyclonal antibodies** are made using several different immune cells.

- **Monoclonal antibodies** are made using identical immune cells that are all clones of a specific parent cell.

## Lumpy Skin Disease

### Why in News

Recently, a **Lumpy Skin Disease (LSD)** has been infecting India's bovines.

- The disease is being reported for the **first time in India.**

### Key Points

#### ➤ Cause:

- The LSD is caused by infection of cattle or water buffalo with the **poxvirus Lumpy skin disease virus (LSDV).**
- The virus is one of three closely related species within the genus **capripoxvirus**, the other two species being **Sheeppox virus** and **Goatpox virus.**

#### ➤ Symptoms:

- It appears as **nodules of two to five centimetre diameter** all over the body, particularly around the **head, neck, limbs, udder (mammary gland of female cattle) and genitals.**
  - The lumps gradually open up like large and deep wounds.
- Other clinical signs include **general malaise, ocular and nasal discharge, fever, and sudden decrease in milk production.**

#### ➤ Effect:

- According to the **Food and Agriculture Organization (FAO)** the mortality rate is less than 10%.

#### ➤ Vectors:

- It spreads through **mosquitoes, flies and ticks** and also through **saliva and contaminated water and food.**

#### ➤ Prevention:

Note:

- Control and prevention of lumpy skin disease relies on four tactics - **movement control (quarantine), vaccination, slaughter campaigns and management strategies.**
- **Treatment:**
  - There is **no treatment for the virus**, so **prevention by vaccination** is the most effective means of control.
    - **Secondary infections** in the skin may be **treated with Non-Steroidal Anti-Inflammatories (NSAIDs)** and also **antibiotics** when appropriate.
- **Global Spread:**
  - LSD is endemic to **Africa and parts of West Asia**, where it was first **discovered in 1929.**
  - In Southeast Asia the first case of LSD was reported in **Bangladesh in July 2019.**
  - In India, which has the **world's highest 303 million heads of cattle**, the disease has spread to **15 states within just 16 months.**
    - In India it was first reported from **Mayurbhanj, Odisha in August 2019.**
- **Implication:**
  - This will have a **devastating impact on the country**, where most dairy farmers are either landless or marginal landholders and **milk is among the cheapest protein sources.**

## Bird Flu Threat

### **Why in News**

Hundreds of crows have died in Rajasthan prompting authorities to sound a bird flu alert in the state.

### **Key Points**

- **About:**
  - Bird flu, also known as **Avian influenza (AI)**, is a **highly contagious viral disease** affecting several **species of food-producing birds** (chickens, turkeys, quails, guinea fowl, etc.) as well as pet birds and wild birds.
  - Occasionally mammals, including **humans**, may **contract avian influenza.**
- **Types:**
  - Influenza viruses are grouped into **three types; A, B, and C.** Only **type A** is known to infect animals

**and is zoonotic**, meaning it can infect animals and **also humans.** Type B and C **mostly infect humans** and typically cause mild disease.

- Avian influenza virus subtypes include **A(H5N1), A(H7N9), and A(H9N2).**
- **Classification:**
  - Influenza viruses are classified into subtypes based on two surface proteins, **Hemagglutinin (HA)** and **Neuraminidase (NA).** For example, a virus that has an HA 7 protein and NA 9 protein is designated as subtype H7N9.
  - Highly Pathogenic Avian Influenza (HPAI) A(H5N1) virus occurs mainly in birds and is highly contagious among them.
  - HPAI Asian **H5N1** is especially **deadly for poultry.**
- **Impact:**
  - Avian Influenza outbreaks can lead to **devastating consequences for the country, particularly the poultry industry.**
  - Farmers might experience a **high level of mortality in their flocks**, with rates often around **50%.**
- **Prevention:**
  - Strict **biosecurity measures** and **good hygiene** are essential in protecting against disease outbreaks.
- **Eradication:**
  - If the infection is detected in animals, a policy of **culling infected** and **contact animals** is normally used in an effort to rapidly contain, control and eradicate the disease.
- **India's Status:**
  - Previously in 2019, India was **declared free from Avian Influenza (H5N1)**, which had also been notified to the **World Organization for Animal Health (OIE).**
  - The status will last only till another outbreak is reported.

### **World Organization for Animal Health**

- The OIE is an **intergovernmental organisation** responsible for improving animal health worldwide.
- It is recognised as a **reference organisation by the World Trade Organization (WTO).**
- In 2018, it had a total of 182 Member Countries. India is a member country.
- It is headquartered in **Paris, France.**

Note:



## COVISHIELD and COVAXIN Approved for Restricted Use

### Why in News

Recently, the **Drugs Controller General of India's (DCGI)** approved **COVISHIELD** and **COVAXIN** vaccines for **restricted use** against **Covid-19** in the country.

- **COVISHIELD, COVAXIN** and **BNT162b2** applied to the **Central Drug Standard Control Organisation (CDSCO)**, seeking **emergency use approval**.

### Key Points

#### ➤ Type of Approval:

- Both vaccines have received a **restricted use approval** in an **emergency situation**.
- This means the **vaccines have been approved** for use **despite the companies not having completed clinical trials**.
- This approval is, however, subject to regular submission of **safety, efficacy and immunogenicity data** from their ongoing trials.
  - The **immunogenicity** of a vaccine is its ability to prompt an immune response.
  - The efficacy, in this case, is a measure of its ability to bring down the number of symptomatic Covid-19 cases.

#### ➤ Reason for the Emergency Approval:

- Given the pandemic, the government wanted a **vaccine ready to use at the earliest**.
- Another growing concern is the **mutation of the SARS-CoV-2 virus** in **countries like the UK** which are now starting to spread to other parts of the world, including India.

#### ➤ **COVISHIELD**: It is the name given to an **Oxford-AstraZeneca** Covid-19 vaccine candidate which is technically referred to as **AZD1222 or ChAdOx 1 nCoV19**.

##### ○ Produced By:

- It is a version of the vaccine **developed by the University of Oxford** in collaboration with **Swedish-British drugmaker AstraZeneca**.
- **Serum Institute of India (SII)** is the manufacturing partner in India.

##### ○ Constituents and Action:

- It is based on a **weakened version of a common cold virus** or the adenovirus that is found in chimpanzees.
- This viral vector **contains the genetic material of the SARS-CoV-2 spike protein** (protrusions) present on the outer surface of the virus that help it bind with the human cell.
- The **body's immune system** is supposed to **recognise this protein** as a threat, and work on **building antibodies against it**.

##### ○ Significance:

- It had triggered an immune response in humans against the **novel coronavirus** in early trials and is considered to be one of the global frontrunners for the Covid-19 vaccine.

#### ➤ **COVAXIN**: It is India's only indigenous **Covid-19** vaccine.

##### ○ Produced By:

- Developed by **Bharat Biotech**, Hyderabad in collaboration with the **Indian Council of Medical Research's National Institute of Virology**, Pune

##### ○ Constituents and Action:

- It is an **inactivated vaccine** which is **developed by inactivating (killing) the live microorganisms** that cause the disease.
- This **destroys the ability of the pathogen to replicate**, but keeps it intact so that the immune system can still recognise it and produce an immune response.
- It is expected to **target more than just the spike protein**.
- It also **aims to develop an immune response to the nucleocapsid protein** (the shell of the virus that encloses its genetic material).

##### ○ Significance:

- **COVAXIN** is more likely to work against newer variants of the virus, **including the UK variant**, as it contains **immunogens (epitopes)** from other genes in addition to those from Spike protein.
  - **Immunogen** is a stimulus that produces a humoral or cell-mediated immune response, whereas antigens are any substance that binds specifically to an antibody.
  - All immunogens are antigens, but all antigens may not be immunogens.
- Approval of **COVAXIN** ensures India has an additional vaccine shield especially against

Note:



potential mutant strains in a dynamic pandemic situation.

## Vaccines out, but data missing

The efficacy data of the Phase-3 trials conducted in India for the two vaccines approved for restricted public use on Sunday have not been made public yet

### COVISHIELD

- A vaccine developed by the Serum Institute-Pune based on the AstraZeneca-Oxford vaccine has been given 'conditional approval'

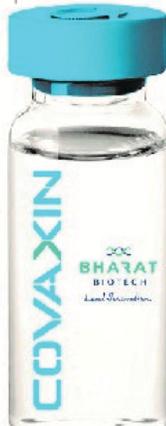
- The vaccine's efficacy is reported to be 70.4% based on the Phase-3 trials conducted in the U.K. and Brazil

- The efficacy data of the Phase-3 trials conducted on 1,600 volunteers in 17 Indian cities have not been made public yet

### COVAXIN

- A vaccine developed by Bharat Biotech and the Indian Council of Medical Research has been approved for restricted emergency use in clinical trial mode

- During the first two months after the roll-out, the firm has to inform drug regulators every fortnight about the adverse effects of the vaccine



- Phase-1 and 2 trials were conducted on 800 volunteers to determine the safety and immunogenicity of the jab

- The efficacy data of the ongoing Phase-3 trials with 22,500 volunteers have not been made public yet

## National Metrology Conclave 2021

### Why in News

Recently, the Prime Minister has inaugurated the **National Metrology Conclave 2021** and also laid the foundation stone of **National Environmental Standards Laboratory** through a video conference.

- The Conclave was organised by **Council of Scientific and Industrial Research-National Physical Laboratory** (CSIR-NPL), New Delhi, on its **75<sup>th</sup> year of inception**.
- **National Atomic Time Scale** and **Bhartiya Nirdeshak Dravya Pranali** were dedicated to the nation on the occasion.
- Metrology is defined by the International Bureau of Weights and Measures (BIPM) as **"the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology"**.

### Key Points

#### ➤ National Atomic Time Scale:

- The National Atomic Time Scale generates **Indian Standard Time** with an accuracy of **2.8 nanoseconds**.
  - The **longitude of 82°30' E** has been selected as the 'standard meridian' of India against which the Indian Standard Time is set.
- Now **Indian Standard Time** is matching the **International Standard Time** with the accuracy range of less than **3 nanoseconds**.
- **CSIR-NPL** is the **National Measurement Institute of India** and authorized (by an act of Parliament) to realize and **maintain the Indian Standard Time (IST)**.
- IST is realized at CSIR-NPL through the **National Primary Time Scale** consisting of a bank of **ultra-stable atomic clocks**.
- CSIR-NPL is on a **mission to synchronize all the clocks in the nation to IST for securing digital infrastructure and reducing cyber crime**.
- CSIR-NPL is strengthening the **national timing infrastructure of India**, where a very rough estimate shows an economic impact of more than **10% of GDP**.
- **Benefits:**
  - This will be a big help for organizations like **Indian Space Research Organisation** who are working with cutting edge technology. **Banking, railways, defense, health, telecom, weather forecast, disaster management, Industry4.0** and many similar sectors will be benefited greatly from this achievement.

#### ➤ Bhartiya Nirdeshak Dravya Pranali (BND):

- These are Indian reference materials developed by CSIR-NPL. It is committed to ensure the **quality of products in every manufacturing and consumer sector** by providing **SI traceable measurements** and enhancing quality life of citizens through metrology.
  - SI system is used to describe units of measurement in the International System (from French 'Système International').
- Reference materials (RM) play a pivotal role in maintaining the **quality infrastructure** of any economy through **testing and calibration** with precise measurements traceable to SI units. NPLI

Note:



has recently released two very important certified RMs as Bharatiya Nirdeshak Dravyas (BNDs) for **purity of gold and for Bituminous coal**.

- Recently, the Govt of India (GoI) has supported NPLI to strengthen its BND program by developing BNDs in the area of **AYUSH, Materials, Nanotechnology, Medicine, Food & Agriculture and Biologics**.
- The availability of SI traceable BNDs are poised to **boost the “Make in India” program** and harmonize the **quality infrastructure of the country**.

## Boost to Defence Exports

### Why in News

The Union Cabinet has recently approved export of the **Akash surface-to-air missile to “friendly countries”** and constituted a **committee, headed by the Defence Minister**, for faster approval of export of defence platforms.

- This committee would **authorise subsequent export of major indigenous platforms** to various countries.

### Key Points

- The export version of Akash, will be **different from the system currently deployed with the Indian armed forces**.
- The Cabinet approval will facilitate Indian manufactures to participate in **RFI/RFP issued by various countries**.
  - A **request for information (RFI)** is used when the owner wants several contractors to provide potential solutions, while a **request for proposal (RFP)** is used in a **bidding process to solicit offers for a project**.
- So far, Indian defence exports included parts/ components etc. The export of big platforms was minimal.
  - This initiative of the Cabinet would help the country **improve its defence products and make them globally competitive**.
  - It would be a significant step under **Atma Nirbhar Bharat**,
- Besides Akash, there is interest in other major platforms like the **coastal surveillance system, radars and air platforms**.

### Akash Missile

- Akash is India’s **first indigenously produced medium range Surface to Air missile** that can engage multiple targets from multiple directions.
  - The all-weather missile can engage targets at a speed **2.5 times more than the speed of sound** and can detect and destroy targets flying at **low, medium and high altitudes**.
- The Akash missile system has been designed and developed as part of India’s 30-year-old **integrated guided-missile development programme (IGMDP)** which also includes other missiles like **Nag, Agni, Trishul and Prithvi**.
- **Range and Capability:**
  - The **nuclear-capable missile** can fly at a speed of up to **Mach 2.5** (nearly 860 meter per second) at a maximum height of **18 km**.
  - It can strike enemy aerial targets like fighter jets, drones, cruise missiles, air-to-surface missiles as well as ballistic missiles from a distance of **30 km**.
- **Unique features of Akash:**
  - The missile is unique in the way that it can be launched from **mobile platforms like battle tanks or wheeled trucks**. It has nearly 90% kill probability.
  - The missile is supported by the **indigenously developed radar** called ‘**Rajendra**’ that can handle **highly-maneuvring multiple targets from multiple directions in group or autonomous mode**.
  - The missile is reportedly cheaper and more accurate than US’ Patriot missiles due to its solid-fuel technology and high-tech radars.
- **Manufactured by:**
  - The missile system is designed and developed by **Defence Research and Development Organisation (DRDO)**

### India's Defence Exports:

- As per the data published by the **Stockholm International Peace Research Institute**, or SIPRI, in March 2020, India is **ranked 23<sup>rd</sup> in the list of major arms exporters** for 2015-2019 and 19<sup>th</sup> for 2019.
  - The **Ministry of Defence’s annual report 2018-19** records that the defence exports were worth Rs **10,745 crore**, a growth of more than 100% from 2017-18 (Rs 4,682 crore) and over 700% since 2016-17 (Rs 1,521 crore).
  - It’s share of global arms exports is only **0.17%**.

Note:

- The current government has been laying emphasis on defence manufacturing in India to build up the country's manufacturing base, ensure jobs for its youth and to bring down India's arms import bill.
  - India's target was to export **5 billion USD** worth of military hardware by 2025

## Covid Deaths: Developed Versus Developing Countries

### Why in News

As per a new study, **better hygiene and sanitation** in the rich and developed countries could, paradoxically, be **one of the reasons for the high rates of coronavirus-related deaths** lending credence to what is known as the 'hygiene hypothesis'

### Key Points

- **The Study:**
  - The study is based on analysis of data until 29<sup>th</sup> June 2020, by which time more than 5 lakh deaths had been reported with 70% of it in **high-income countries**.
  - It correlated coronavirus deaths in several countries with indicators such as **Gross Domestic Product, population density, human development index rating, demography, sanitation and hygiene, and prevalence of autoimmune diseases**.
- **Findings:**
  - **Case of Developed Countries:**
    - Among countries with the **highest rates of death per million of population** are **Belgium, Italy and Spain**, where more than **1,200 have died per million**. The US and the UK have more than 1,000 deaths per million of population.
  - **India Specific Findings:**
    - In contrast, India has seen just about **110 deaths per million**, less than half the world average of about 233. Most other South Asian countries, as also in rest of Asia and Africa, have **much lower death rates**.
  - **The Paradox:**
    - The lower-income countries, with **higher population densities and much lower sanitation standards**, seem to have recorded much fewer

coronavirus-related deaths compared to richer and more developed countries.

- **Exceptions:**
  - Countries such as **Japan, Finland, Norway, Monaco or Australia** have also recorded very low death rates.
- **Other factors Involved:**
  - Stage of the epidemic,
  - **Lower reporting/testing** in less developed countries that could also affect the mortality numbers.
  - It found that '**hygiene hypothesis**' could be one of the reasons for the same.

### Hygiene Hypothesis

- According to the Hygiene hypothesis', people in countries with **low sanitation standards** get exposed to **communicable diseases** at an early age and **develop stronger immunity**, helping them to ward off diseases later in life, a phenomenon called '**immune training**'.
- Conversely, people in richer countries have **better access to healthcare and vaccines**, and things like clean drinking water, due to which they remain safer from such infectious diseases. Paradoxically, this also means that **their immune system remains unexposed to such dangers**.
- This hypothesis is also sometimes used to explain the prevalence of **auto-immune diseases**, in which the immune system sometimes '**overreacts**' and **starts attacking the body's own cells**, leading to disorders like **type-1 diabetes mellitus** or **multiple sclerosis**.
- However, few suggest that it would be better if the hypothesis were renamed, e.g. as the 'microbial exposure' hypothesis, or 'microbial deprivation' hypothesis. Avoiding the term 'hygiene' would help **focus attention on determining the true impact of microbes**, while **minimizing risks of discouraging good hygiene practice**.

## Trans Fatty Acids

### Why in News

The **Food Safety and Standards Authority of India** (FSSAI) has capped the amount of **trans fatty acids** (TFA) in oils and fats to **3% for 2021** and **2% by 2022** from the current permissible limit of **5%** through an **amendment**

Note:

### to the Food Safety and Standards (Prohibition and Restriction on Sales) Regulations 2011.

- The Regulations deal with the prohibitions and restriction on sales of various food products, ingredients and their admixtures.

#### Key Points

- The revised regulation applies to edible refined oils, vanaspati (partially hydrogenated oils), margarine, bakery shortenings, and other mediums of cooking such as vegetable fat spreads and mixed fat spreads.
- As per the World Health Organisation (WHO), approximately 5.4 lakh deaths take place each year globally because of intake of industrially produced trans fatty acids.
- The FSSAI rule comes at the time of a pandemic where the burden of non-communicable diseases (NCD) has risen.
  - Trans-fat consumption is a significant risk factor for cardiovascular diseases.
  - Cardiovascular diseases account for most NCD deaths.
- Previously it was in 2011 that India first passed a regulation that set a TFA limit of 10% in oils and fats, which was further reduced to 5% in 2015.

#### Trans Fat

- Trans fatty acids (TFAs) or Trans fats are the most harmful type of fats which can have much more adverse effects on a human body than any other dietary constituent.
- These fats are largely produced artificially but a small amount also occurs naturally. Thus in our diet, these may be present as Artificial TFAs and/ or Natural TFAs.
  - Artificial TFAs are formed when hydrogen is made to react with the oil to produce fats resembling pure ghee/butter.
- In our diet the major sources of artificial TFAs are the partially hydrogenated vegetable oils (PHVO)/ vanaspati/ margarine while the natural TFAs are present in meats and dairy products, though in small amounts.
- Usage:
  - TFA containing oils can be preserved longer, they give the food the desired shape and texture and can easily substitute 'Pure ghee'. These are

comparatively far lower in cost and thus add to profit/saving.

#### ➤ Harmful effects:

- TFAs pose a higher risk of heart disease than saturated fats. While saturated fats raise total cholesterol levels, TFAs not only raise total cholesterol levels but also reduce the good cholesterol (HDL), which helps to protect us against heart disease.
- It is also associated with a higher risk of developing obesity, type 2 diabetes, metabolic syndrome, insulin resistance, infertility, certain types of cancers and can also lead to compromised fetal development causing harm to the yet to be born baby.
  - Metabolic syndrome includes high blood pressure, high blood sugar, excess body fat around the waist and abnormal cholesterol levels. The syndrome increases a person's risk of heart attack and stroke.

#### ➤ Efforts to reduce their intake:

##### ○ National:

- FSSAI launched a "Trans Fat Free" logo for voluntary labelling to promote TFA-free products. The label can be used by bakeries, local food outlets and shops for preparations containing TFA not exceeding 0.2 per 100 g/ml.
- FSSAI launched a new mass media campaign "Heart Attack Rewind" to eliminate industrially produced trans fat in the food supply by the year 2022.
  - "Heart Attack Rewind" is a follow-up to an earlier campaign called "Eat Right", which was launched in July, 2018.
    1. Edible oil industries took a pledge to reduce the levels of salt, sugar, saturated fat and trans fat content by 2% by 2022.
    2. Swasth Bharat Yatra, an initiative started under the "Eat Right" campaign is a Pan-India cyclothon to engage citizens on issues of food safety, combating food adulteration and healthy diets.
- Global:
  - WHO launched a REPLACE campaign in 2018 for global-level elimination of trans-fats in industrially produced edible oils by 2023.

Note:

## Lithium-ion Technology

### Why in News

India, through a newly-floated state-owned company **Khanij Bidesh India Ltd**, has inked a pact with an **Argentine firm** to jointly **prospect lithium in Argentina**, a country that has the **one of the largest reserves** of Lithium in the world.

### Key Points

- **Khanij Bidesh India Ltd** was incorporated in August 2019 by three state-owned companies, **NALCO, Hindustan Copper and Mineral Exploration Ltd**, with a specific mandate to **acquire strategic mineral assets such as lithium and cobalt abroad**.
  - It is also learnt to be exploring options in **Chile and Bolivia**, two other top lithium-producing countries.
- Lithium is a crucial building block of the **lithium-ion rechargeable batteries** that power **electric vehicles (EVs), laptops and mobile phones**.
- Currently, India is **heavily dependent on import of these cells** and the move to ink sourcing pacts for lithium is also seen as a move to **reduce its dependency on China** which is a **key source of both the raw material and cells**.
- India is seen as a late mover as it attempts to enter the lithium value chain, coming at a time when **Electric Vehicles** are predicted to be a **sector ripe for disruption**.
  - 2021 is likely to be a **turning point for battery technology**, with several potential improvements to the **Li-ion technology**, and alternatives to this tried-and-tested formulation, under **advanced stages of commercialisation**.
- **About Li-ion Batteries:**
  - A lithium-ion battery or Li-ion battery is a type of **rechargeable battery**.
  - Li-ion batteries use an **intercalated** (Intercalation is the reversible inclusion or insertion of a molecule into materials with layered structures) lithium compound as one electrode material, compared to the metallic lithium used in a non-rechargeable lithium battery.
  - The battery consists of electrolyte, which allows for **ionic movement**, and the two electrodes are the constituent components of a lithium-ion battery cell.
- Lithium ions move from the **negative electrode** to the **positive electrode during discharge and back when charging**.
- **Lithium-ion Battery Applications:**
  - Electronic gadgets, Tele-communication, Aerospace, Industrial applications.
  - Lithium-ion battery technology has made it the favourite power source for electric and hybrid electric vehicles.
- **Disadvantages of Li-ion Batteries:**
  - Long charging times.
  - Weak energy density.
  - Safety issues as instances of batteries catching fires have been there.
  - Expensive to manufacture.
  - While the Li-ion batteries are seen as sufficiently efficient for applications such as phones and laptops, in case of EVs, these cells still lack the range that would make them a viable alternative to internal combustion engines.
- **Potential Alternatives to Li-ion technology:**
  - **Graphene Batteries:**
    - Graphene batteries may be an important alternative to lithium-ion batteries, with the latter having limitations due to the frequency with which lithium requires charging. Graphene is a newly stabilized and isolated material.
  - **Fluoride Batteries:**
    - Fluoride Batteries have the potential to last eight times longer than lithium batteries.
  - **Sand Battery:**
    - This alternative type of lithium-ion battery **uses silicon to achieve three times better performance** than current graphite Li-ion batteries. The battery is still lithium-ion like the one found in a smartphone, but it uses silicon instead of graphite in the anodes.
  - **Ammonia-powered Batteries:**
    - Ammonia-powered batteries may not be coming any time soon, but the chemical commonly known as a household cleaner is still an alternative to lithium in the way it can power fuel cells in vehicles and other equipment.
    - If scientists can figure out a way to produce ammonia without creating the greenhouse gas emissions that result right now, they can ship

Note:



it anywhere in the world to be converted into hydrogen to power those fuel cells.

- **Lithium-Sulfur Batteries:**
  - Researchers in Australia say they have developed the world's most powerful rechargeable battery using lithium-sulfur, said to perform four times better than the strongest batteries currently available.
- **Vertically Aligned Carbon Nanotube Electrode:**
  - These are good candidates for lithium-ion battery electrodes which require high rate capability and capacity.
- **Solid-state Batteries:**
  - It uses alternatives to **aqueous electrolyte solutions**, an innovation that could lower the risk of fires, sharply increase energy density and potentially take only 10 minutes to charge an EV, cutting the recharging time by two-thirds.
  - These cells can extend the driving distance of a compact electric vehicle while maintaining legroom - a quantum leap in battery tech.

## South African Variant of Coronavirus

### Why in News

Recently, the **World Health Organisation (WHO)** has raised a concern over the **South African variant of Coronavirus**.

### Key Points

- **About:**
  - South Africa named the variant **501Y.V2** because of the **N501Y mutation** they **found in the spike protein** that the virus uses to gain entry into cells within the body.
    - Changes in spike protein could possibly **affect how the virus behaves in terms of its ability to infect, or cause severe disease, or escape the immune response** made by vaccines.
  - This mutation was also found in the **new strain that the UK** notified WHO..
    - While the mutant virus from the UK **also has the N501Y mutation, phylogenetic analysis has shown that 501Y.V2 from South Africa are different virus variants.**

- **Phylogenetic analysis** is the study of evolutionary development of a species or a group of organisms or a particular characteristic of an organism.

### ➤ Concerns:

- Preliminary experiments have shown that **monoclonal antibodies** that were effective against SARS-CoV2 are **less effective against the South Africa variant**.
- **Effect of Vaccination:**
  - The serum of persons who have been administered the Covid vaccine is now being tested in labs in the UK and South Africa **to check whether it can neutralise the South African strain**.
- **Tracking Mutation in Virus:**
  - Global scientific collaboration and public genomic sequence databases like **Global Initiative on Sharing All Influenza Data (GISAID)** enables WHO and partners to track the virus from the beginning.
    - **GISAID** is a **public platform** started by the WHO in 2008 for countries **to share genome sequences**.
    - The GISAID Initiative **promotes the international sharing of all influenza virus sequences, related clinical and epidemiological data associated with human viruses**, and geographical as well as species-specific data associated with avian and other animal viruses.
- **Mutant Variant in India:**
  - India reported a total of **82 persons with new UK mutant strain** and presently there are **no reports on the South African mutant**.
- **Earlier Mutation:**
  - **D614G Mutation:**
    - This particular mutation aided the virus in attaching more efficiently with the ACE2 receptor in the human host, thereby making it more successful in entering a human body than its predecessors.
    - D614G showed **increased infectivity but it also displayed greater ability at attaching itself to the cell walls** inside an individual's nose and throat, increasing the viral load.
  - **N501Y mutant:**
    - In this case there has been a **single nucleotide change in one portion of the spike protein**, so there would be no bearing on the disease biology or even diagnostics.

Note:

- There is **no evidence that this strain is more transmissible or more severe/resistant** to treatment or vaccination.

### Mutation

- A mutation means a change in the genetic sequence of the virus.
- In the case of **SARS-CoV-2**, which is an **Ribonucleic acid (RNA)** virus, a mutation means a **change in the sequence in which its molecules are arranged**.
  - **SARS-CoV-2** is the virus that causes **Covid-19**.
  - **RNA** is an **important biological macromolecule** that is **present in all biological cells**.
    - Principally **involved in the synthesis of proteins, carrying the messenger instructions from Deoxyribonucleic Acid (DNA)**, which itself contains the genetic instructions required for the development and maintenance of life.
  - **DNA** is an **organic chemical that contains genetic information and instructions for protein synthesis**. It is found in most cells of every organism.
- A mutation in an RNA virus often happens when the virus makes a **mistake while it is making copies of itself**.
  - Only if the mutation results in a **significant change in the protein structure can the course of a disease be altered**.

## Immunity Against Covid-19

### Why in News

As per a recent study, published in the **journal Science**, based on analyses of **blood samples** from 188 patients, **Covid-19** survivors have **protective immunity** from the coronavirus for months, perhaps years, **after infection**.

### Key Points

- **Background:**
  - The duration of immunity to Covid-19 has been a **subject of research** throughout the **pandemic**, and studies so far have provided various results.
  - Previously in July 2020, a study suggested that **immunity might be lost in months** making it susceptible to **re-infections**.

### Findings of the New Study:

- It suggests that the **body's immune response** to the novel coronavirus **can last for at least eight months** after the onset of symptoms from the initial infection.
- It suggests that **nearly all Covid-19 survivors** have the immune cells necessary to fight re-infection.
  - It measured **antibodies, memory B cells, helper T cells and killer T cells** all at the same time.
- It addresses concerns arising out of Covid-19 data from **other labs**, which showed a **dramatic drop-off of Covid-specific antibodies over time**.

### Immunity

#### ➤ Meaning:

- Immunity is the **ability of the body to defend itself against disease-causing organisms**.
- Immunity is of **two types**: Innate immunity and Acquired immunity.

#### ➤ Innate Immunity:

- It is a **non-specific type of defense** that is **present at the time of birth**.

#### ➤ Acquired Immunity:

- It is **pathogen specific**. It is **characterized by memory**. This means that the body when it encounters a pathogen for the first time produces a response called primary response which is of low intensity.
- Subsequent encounters with the same pathogen elicits a **highly intensified secondary or anamnestic response**. This is ascribed to the fact that the body appears to have memory of the first encounter.

#### ➤ Antibody:

- An antibody, also known as an immunoglobulin, is a large, **Y-shaped protein** used by the immune system to identify and **neutralize foreign objects** such as pathogenic bacteria and viruses.

- **T cells** (thymus cells) and **B cells** (bone marrow- or bursa-derived cells) are the major **cellular components of the adaptive immune response**. T cells are involved in **cell-mediated immunity**, whereas B cells are primarily responsible for **humoral immunity** (relating to antibodies).

#### ➤ Memory B Cells (MBCs):

- These are a B cell **subtype formed within germinal centers** following **primary infection**. MBCs can survive for decades and repeatedly generate an

Note:

accelerated and robust antibody-mediated immune response in the case of re-infection (also known as a secondary immune response).

#### ➤ Helper T Cells:

- These are arguably the most **important cells in adaptive immunity**, as they are required for almost all adaptive immune responses. They not only help **activate B cells** to secrete **antibodies and macrophages** to destroy ingested microbes, but they also help activate **killer T cells** to kill infected target cells.

#### ➤ Killer T cells:

- It is a T lymphocyte (a type of white blood cell) that kills **cancer cells**, cells that are infected (particularly with viruses), or cells that are damaged in other ways.

## MukundPura Meteorite

### Why in News

A recent study has shed light on the mineralogy of the meteorite named Mukundpura CM2 which fell in Mukundpura village near Jaipur in **2017**.

- A meteorite is a **solid piece of debris** from an object, such as a **comet, asteroid, or meteoroid**, that **originates in outer space** and survives its passage through the atmosphere to reach the **surface of a planet or moon**.

### Key Points

#### ➤ About:

- The meteorite named **Mukundpura CM2** was classified to be a **carbonaceous chondrite**. The composition of carbonaceous chondrites are also similar to the Sun.
- Chondrites are silicate droplet bearing meteorites, and this Mukundpura chondrite is the **5<sup>th</sup> carbonaceous meteorite known to fall in India**.

#### ➤ Classification Of Meteorite:

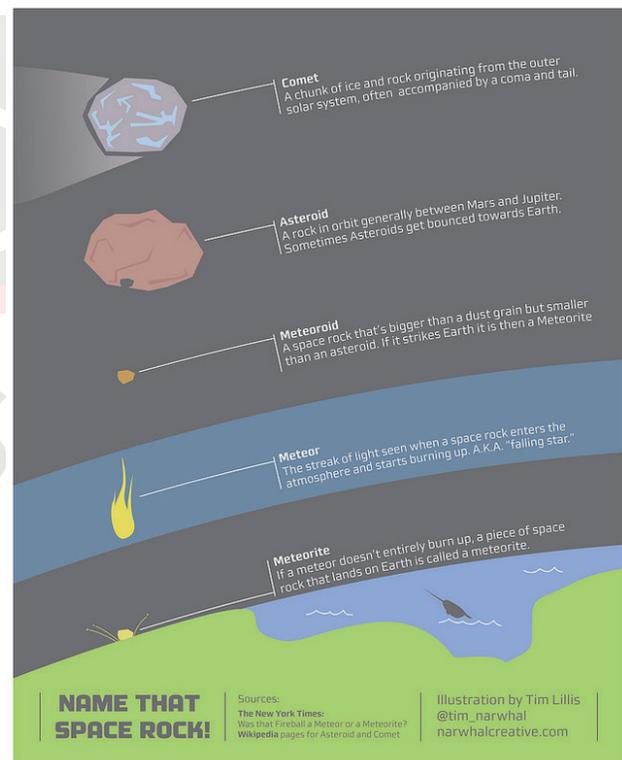
- Meteorites are classified into **three groups: Stony** (silicate-rich), **Iron** (Fe–Ni alloy), and **Stony Iron** (mixed silicate iron alloy).
- **Mukundpura CM2** is a type of **stony meteorite**, considered the **most primitive meteorite** and a remnant of the first solid bodies to accrete in the solar system.

#### ➤ Components of Meteorite:

- Detailed spectroscopic studies revealed that the **meteorite had very high (about 90%) phyllosilicate minerals** comprising both **magnesium and iron**.
- **Forsterite and FeO olivine, calcium aluminium rich inclusion (CAI) minerals**.
- Few **magnetites, sulphides, aluminium complexes and calcites** were also found.

#### ➤ Importance of studying Asteroid:

- **Understanding of Solar system's history**.
- How the solar system evolved into the Sun and planets of today.
- The effects of impact of meteorites.
- They are often rich in volatiles and other minerals and can be **exploited for future planetary exploration**.



#### Difference between Meteor, Meteorite and Meteoroid

- When **meteoroids** enter Earth's atmosphere (or that of another planet, like Mars) at **high speed and burn up**, the fireballs or "**shooting stars**" are called **meteors**.
- When a meteoroid **survives a trip through the atmosphere and hits the ground**, it's called a **meteorite**.

Note:

# Quantum Technology

## Why in News

The detailed project report for a **National Mission on Quantum Technology and Applications (NMQTA)** has been drawn out and finalised.

- **Union Budget 2020-21 proposed to spend Rs 8,000 crore** on the newly launched NMQTA.
- In 2018, the **Department of Science & Technology** unveiled a programme called **Quantum-Enabled Science & Technology (QuEST)** and committed to investing Rs. 80 crore over the next three years to accelerate research.
  - The mission seeks to develop quantum computing linked technologies amidst the second quantum revolution and make India the world's third-biggest nation in the sector after the US and China.

**केन्द्रीय बजट**  
UNION BUDGET 2020

**Budget 2020 announced Rs 8,000 crore over the next 5-yrs in the National Mission on Quantum technology and its applications**

- The areas of focus for the NM-QTA Mission will be in fundamental science, translation, technology development and towards addressing issues concerning national priorities
- The mission can help prepare next generation skilled manpower, boost translational research and also encourage entrepreneurship and start-up ecosystem development.
- Quantum principles will be used for engineering solutions to extremely complex problems in computing, communications, sensing, chemistry, cryptography, imaging and mechanics



- Their applications which will be boosted include those in aero-space engineering, numerical weather predictions, simulations, securing the communications & financial transactions, cyber security, advanced manufacturing, health, agriculture, education
- It can bring India in the list of few countries with an edge in this emerging field will have a greater advantage in garnering multifold economic growth and dominant leadership role

## Key Points

- **About Quantum Technology/Computing:**
  - Quantum Technology is based on the principles of Quantum mechanics that was developed in the early 20<sup>th</sup> century to describe nature at the scale of atoms and elementary particles.
  - The first phase of this revolutionary technology has provided the foundations of our understanding of the physical world, including the interaction of light and matter, and led to ubiquitous inventions such as lasers and semiconductor transistors.
  - A second revolution is currently underway with the goal of putting properties of quantum mechanics in the realms of computing.

## ➤ Difference Between Conventional and Quantum Computing:

- **Conventional computers** process information in 'bits' or 1s and 0s, following classical physics under which our computers can process a '1' or a '0' at a time.
- **Quantum computers** compute in 'qubits' (or quantum bits). They exploit the properties of quantum mechanics, the science that governs how matter behaves on the atomic scale.
 

Bit

0

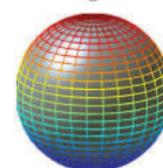


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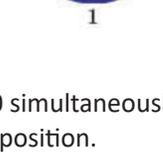


Qubit

0



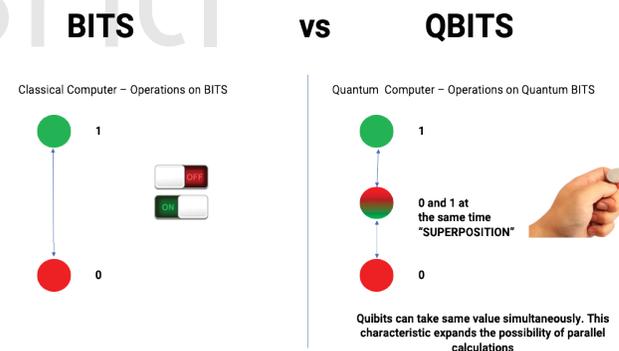
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  - In this scheme of things, processors can be a 1 and a 0 simultaneously, a state called quantum superposition.
  - Because of quantum superposition, a quantum computer — if it works to plan — can mimic several classical computers working in parallel.

## ➤ Properties of Quantum Computing:

- The basic properties of quantum computing are **superposition, entanglement, and interference.**
  - **Superposition:**
    - It is the ability of a quantum system to be in multiple states simultaneously.

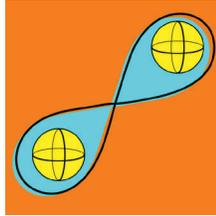


- The example of superposition is the flip of a coin, which consistently lands as heads or tails—a very binary concept. However, when that coin is in mid-air, it is both heads and tails and until it lands, heads and tails simultaneously. Before measurement, the electron exists in quantum superposition.

Note:

- **Entanglement:**

- It means the two members of a pair (Qubits) exist in a single quantum state. Changing the state of one of the qubits will instantaneously change the state of the other one in a predictable way. This happens even if they are separated by very long distances.
- Einstein called spooky 'action at a distance'.



- **Interference:**

- Quantum interference states that elementary particles (Qubits) can not only be in more than one place at any given time (through superposition), but that an individual particle, such as a photon (light particles) can cross its own trajectory and interfere with the direction of its path.

- **Applications of Quantum Technology:**

- **Secure Communication:**

- **China recently demonstrated** secure quantum communication links between terrestrial stations and satellites.
- This area is **significant to satellites, military and cyber security** among others as it promises unimaginably fast computing and safe, unhackable satellite communication to its users.

- **Research:**

- It can **help in solving some of the fundamental questions in physics related to gravity, black hole etc.**
- Similarly, the quantum initiative could give a big boost to the **Genome India project**, a collaborative effort of 20 institutions to enable new efficiencies in life sciences, agriculture and medicine.

- **Disaster Management:**

- **Tsunamis, drought, earthquakes and floods** may become more predictable with quantum applications.
- The collection of data regarding **climate change** can be streamlined in a better way through quantum technology.

- **Pharmaceutical:**

- Quantum computing **could reduce the time frame of the discovery of new molecules and**

**related processes** to a few days from the present 10-year slog that scientists put in.

- **Augmenting Industrial revolution 4.0:**

- Quantum computing is an integral part of **Industrial revolution 4.0**.
- Success in it will help in **Strategic initiatives aimed at leveraging other Industrial revolution 4.0 technologies** like the **Internet-of-Things**, machine learning, **robotics**, and **artificial intelligence** across sectors will further help in laying the foundation of the Knowledge economy.

- **Challenges Associated with Quantum Computing:**

- The dark side of quantum computing is the **disruptive effect that it can have on cryptographic encryption, which secures communications and computers.**
- It might pose a challenge for the government also because if this technology goes into wrong hands, all the **government's official and confidential data will be at a risk of being hacked and misused.**

### Suggestions

- Long after the birth of social media and artificial intelligence, there are now demands to regulate them. **It would be prudent to develop a regulatory framework for quantum computing before it becomes widely available.**
- It will be better to **regulate it or define the limits of its legitimate use, nationally and internationally** before the problem gets out of hand like nuclear technology.

## Two Dimensional Electron Gas

### Why in News

Scientists at **Institute of Nano Science and Technology (INST)**, Mohali, Punjab have produced an **ultra-high mobility Two dimensional (2D)-electron gas (2DEG)**.

### Key Points

- **Two Dimensional Electron Gas (2DEG):**

- It is an electron gas that is free to move in **two dimensions**, but tightly **confined in the third**. This tight confinement leads to **quantized energy levels for motion in the third direction**. Thus the electrons appear to be a **2D sheet embedded in a 3D world**.

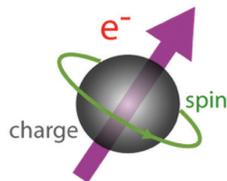
Note:

- One of the most important recent developments in **semiconductors**, has been the achievement of structures in which the electronic behavior is essentially **two-dimensional (2D)**.
- Most 2DEGs are found in **transistor-like structures** made from **semiconductors**.
- 2DEG is a valuable system for exploring the physics of **superconductivity magnetism and their coexistence**.
  - Superconductivity is a phenomenon whereby a **charge moves through a material without resistance**. In theory this **allows electrical energy to be transferred between two points** with perfect efficiency, losing **nothing to heat**.

#### ➤ Cause for Development of 2DEG:

- The need for attaining new functionalities in modern electronic devices has led to the **manipulation of property of an electron** called **spin degree of freedom along with its charge**. This has given rise to an altogether new field of spin-electronics or 'spintronics'.
- The manipulation of **electron spin** offers **new dimensions for basic and applied research**, and the potential for **new capabilities for electronics technology**. This motivates studies of spin polarized electrons in a **high mobility two dimensional electron gas (2DEG)**.

#### Spintronics



- Spintronics is the study of the **intrinsic spin of the electron** and its associated **magnetic moment**, in addition to its fundamental electric charge, in solid-state devices.

- It has been realized that a phenomenon called the '**Rashba effect**', which consists of splitting of spin-bands in an electronic system, might play a key role in spintronic devices.
  - **Rashba Effect:** Also called **Bychkov–Rashba effect**, it is a **momentum-dependent splitting of spin bands** in bulk crystals and low-dimensional condensed matter systems.

#### ➤ Mechanism and Importance:

- Due to the **high mobility of the electron gas**, electrons **do not collide** inside the medium for a **long distance** and hence **do not lose the memory and information**.

- Hence, it can speed up transfer of quantum information and signal from one part of a device to another and increase data storage and memory.
- Since they collide **less during their flow, their resistance is very low, and hence they don't dissipate energy as heat**.
  - So, such devices **do not heat up easily** and need **less input energy** to operate.

## ASMI: The Machine Pistol

### Why in News

India's **first indigenous 9mm Machine Pistol** has been jointly developed by **Infantry School, Mhow** and **DRDO's Armament Research & Development Establishment (ARDE), Pune**.



- Machine pistols are primarily self-loading versions of pistols which are either fully automatic or can also fire bursts of bullets.

### Key Points

- The Pistol is named "**Asmi**" meaning "**Pride**", "**Self-Respect**" & "**Hard Work**".
- **Features of Asmi:**
  - The Machine Pistol fires the in-service **9mm ammunition**.
  - With an overall **empty weight of less than 2 Kg**, it features an **8-inch barrel** and **33 rounds high capacity magazine**.
  - It has an upper receiver made from Aircraft **grade Aluminium** and lower receiver from **Carbon Fibre**.
  - **3D Printing process** has been used in designing and prototyping of various parts including trigger components made by metal 3D printing.
- **Significance:**
  - The weapon has huge potential in Armed forces as **personal weapon for heavy weapon detachments, commanders, tank, aircraft crews, counter insurgency and counter terrorism** operations etc.
- **Cost Effective:**
  - The Machine Pistol is likely to have production cost under Rs. **50000** each and has **potential for exports**.



Note:



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# Environment and Ecology

## Highlights

- Dzukou Valley
- Management Effectiveness Evaluation of Protected Areas
- CAFE-2 Regulations and BS-VI Stage II Norms
- Advisory for Management of Human-Wildlife Conflict
- State of the Climate Report 2020: IMD
- Umed Paoni Karhandla Wildlife Sanctuary
- Arctic: Concerns & Opportunities
- Indian Pangolin
- Asian Waterbird Census
- Sulfur Dioxide Emission Norms Delayed
- Natural Capital Accounting and Valuation of the Ecosystem Services Project
- Sultanpur National Park
- National Energy Conservation Awards
- Supreme Court's View on Pollution in Yamuna

## Dzukou Valley

### Why in News

The two-week long forest fire in Dzukou valley on Nagaland-Manipur border has been doused.

- The 90-sq km green valley has been prone to forest fires for decades - in 2015, 2012, 2010 and 2006.

### Key Points

- **Location:** The Dzukou Valley, popularly known as the 'valley of flower', is located at the border of Nagaland and Manipur.
- **Features:**
  - Situated at an altitude of 2,438 metres behind the Japfu mountain range, it is one of the most popular trekking spots in the North East.



- Dzukou valley and Japfu peak are located adjacent to the Pulie Badze Wildlife Sanctuary (Nagaland).

- There are no human habitations within the forests, but they are home to rare and 'vulnerable' (as per the IUCN Red List) birds - Blyth's Tragopan (Nagaland's state bird), the Rufous-necked Hornbill and the Dark-rumped Swift, among many others. Also found in the forests are endangered Western Hoolock Gibbons.
- It is covered with bamboo and other grass species. The valley harbours many species of flowering plants including the endemic Dzukou Lily Lilium chitrangada.
- The valley is a source of conflict for ownership between local tribes and the state governments of Manipur/Nagaland.
- It is home to the Angami people.

### Forest Fires

#### ➤ Description:

- Wildfire, also called forest, bush or vegetation fire, can be described as any uncontrolled and non-prescribed combustion or burning of plants in a natural setting such as a forest, grassland, brush land or tundra, which consumes the natural fuels and spreads based on environmental conditions (e.g., wind, topography).

#### ➤ Causes:

- Wildfire can be incited by human actions, such

Note:



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as land clearing, extreme drought or in rare cases by **lightning**.

- **One of the major reasons for forest fires in the north-east is slash-and-burn cultivation**, commonly called **jhoom or jhum cultivation**.
  - The fires happen between the months of January and March. The north-east has tropical evergreen forests and, unlike the dry deciduous forests of central India, these are not likely to catch fire easily.

#### ➤ **Impact:**

- Globally, forest fires **release billions of tons of CO<sub>2</sub> into the atmosphere**, while hundreds of thousands of **people are believed to die due to illnesses caused by exposure to smoke** from forest fires and other landscape fires.

#### ➤ **Some Findings from the 2019 Report by the Forest Survey of India (FSI):**

- About **21.40% of forest cover in India is prone to fires**, with forests in the **north-eastern region and central India being the most vulnerable**.
- While the **overall green cover has increased** in the country, the **forest cover in the north-east** — particularly in Mizoram, Arunachal Pradesh and Nagaland — has **decreased**. **Forest Fires** could be **one of the causes**.

#### ➤ **Measures Taken:**

- National Action Plan on Forest Fires (NAPFF) 2018
- Forest Fire Prevention and Management Scheme.

## Management Effectiveness Evaluation of Protected Areas

### **Why in News**

Recently, the **Ministry for Environment, Forest and Climate Change (MoEF&CC)** has released **Management Effectiveness Evaluation (MEE) of 146 national parks and wildlife sanctuaries (NP&WLS)** in the country.

- It was also announced that from the year 2021 onwards, **10 best national parks, five coastal and marine parks and top five zoos** in the country will be **ranked and awarded every year**.

### **Key Points**

- **Management Effectiveness Evaluation (MEE) of**

### **Protected Area:**

- MEE of Protected Areas has **emerged as a key tool** that is increasingly being used by governments and international bodies **to understand strengths and weaknesses of the protected area management systems**.

- The assessment process of India's National Park and Wildlife Sanctuaries **adopted from IUCN WCPA (World Commission on Protected Areas) framework of MEE**.

- MEE is **defined as** the assessment of how well NP&WLS are being managed—primarily, whether they are protecting their values and achieving the goals and objectives agreed upon.

- The **ratings** are assigned in **four categories**, as Poor – upto 40%; Fair - 41 to 59%; Good - 60 to 74%; Very Good – 75% and above.

- A new framework for **MEE of Marine Protected Areas** has also been jointly prepared by the **Wildlife Institute of India (WII)** and MoEF&CC.

- The MoEF&CC has also launched the **Management Effectiveness Evaluation of Indian Zoos (MEE-ZOO) framework** which proposes guidelines, criteria and indicators for evaluation of **zoos of the country** in a manner which is discrete, holistic and independent.

#### ➤ **Protected Areas:**

- India has a **network of 903 Protected Areas** covering about **5% of its total geographic area**.

- India has systematically **designated its Protected Areas in four legal categories** — **National Parks, Wildlife Sanctuaries, Conservation Reserves and Community Reserves** under the **Wildlife (Protection) Act, 1972**.

#### ➤ **Findings:**

- **Overall Performance:** The results of the present assessment are encouraging with an **overall mean MEE score of 62.01%** which is **higher than the global mean of 56%**.

- **Regional Performance:** The **eastern region** of India presents the **highest overall mean MEE Score** of 66.12% and the **Northern region** represents the **lowest mean MEE Score** of 56%.

- **Best NP&WLS:** **Tirthan Wildlife Sanctuary** and **Great Himalayan National Park (GNHP)** in Himachal Pradesh have performed the best among the surveyed protected areas (Total - 146).

Note:

- **GHNP** was awarded **UNESCO World Heritage Site** status in 2014, in recognition of its outstanding significance for biodiversity conservation.
- **Tirthan Wildlife Sanctuary** (declared in 1976) is located at a height of 5000 feet and overlooking River Tirthan. It is a **part of Seraj Forest Division**. This sanctuary is **connected to the Great Himalayan National Park**.
- **Worst NP&WLS:** The **Turtle Wildlife Sanctuary in Uttar Pradesh** was the worst performer in the survey.
  - A 7 km stretch of Ganga River between Rajghat (Malviya Bridge) to Ramnagar Fort, for the conservation, propagation and development of wildlife and their environment was declared as the Kachhua Vanyajiv Abhyaranya (Turtle Wildlife Sanctuary) via notification in 1989.

### Categories of Protected Areas

- **Sanctuary:** It is an area which is of adequate ecological, faunal, floral, geomorphological, natural or zoological significance. The Sanctuary is declared for the purpose of protecting, propagating or developing wildlife or its environment. **Certain rights of people living inside the Sanctuary could be permitted.**
- **National Park:** It is declared for the purpose of protecting, propagating or developing wildlife or its environment, **like that of a Sanctuary**. The **difference** between a Sanctuary and a National Park mainly **lies in the vesting of rights of people living inside**.
  - Unlike a Sanctuary, where certain rights can be allowed, **in a National Park, no rights are allowed.**
  - **No grazing of any livestock** shall also be permitted **inside a National Park** while in a Sanctuary, the Chief Wildlife Warden may regulate, control or prohibit it.
- **Conservation Reserves:** These **can be declared by the State Governments** in any area owned by the Government, **particularly the areas adjacent to National Parks and Sanctuaries** and those areas which link one Protected Area with another. Such declarations **should be made after having consultations with the local communities**.
  - These are **declared for the purpose** of protecting landscapes, seascapes, flora and fauna and their habitat. The **rights of people** living inside a Conservation Reserve are **not affected**.

- **Community Reserves:** These **can be declared by the State Government in any private or community land**, not comprised within a National Park, Sanctuary or a Conservation Reserve, where an individual or a community has volunteered to conserve wildlife and its habitat. As in the case of a Conservation Reserve, the **rights of people living inside a Community Reserve are not affected**.

## CAFE-2 Regulations and BS-VI Stage II Norms

### Why in News

The **auto industry** has **requested the government to defer the implementation of Corporate Average Fuel Efficiency (CAFE-2) regulations and BS-VI stage II norms to April 2024**, given the impact of the **lockdown** measures.

- **As of now**, the **CAFE-2 norms and BS-VI stage II norms** are set to come into effect in **2022 and April 2023** respectively.

### Key Points

- **Corporate Average Fuel Efficiency (CAFE-2) Regulations:**
  - **About:**
    - **CAFE or Corporate Average Fuel Efficiency/Economy** regulations are in force in many advanced as well as developing nations, including India.
    - They **aim at lowering fuel consumption** (or improving fuel efficiency) of vehicles by **lowering Carbon dioxide (CO<sub>2</sub>) emissions**, thus serving the **twin purposes of reducing dependence on oil for fuel and controlling pollution**.
    - **Corporate Average** refers to **sales-volume weighted average** for every auto manufacturer. The idea of CAFÉ is to push manufacturers to achieve fuel efficiency targets by **producing and selling more fuel-efficient models, including electric vehicles**
  - **Launch in India:**
    - The CAFÉ standards **were first notified in 2017** by the Union **Ministry of Power (MoP)** under **Energy Conservation Act, 2001**.
      - The regulation is **in accordance with the fuel consumption standards of 2015** that aim to **increase fuel efficiency of vehicles road by 35% by 2030**.

Note:



- The **Ministry of Road Transport and Highways (MoRTH)** is the **nodal agency** responsible for monitoring and reporting a summary of annual fuel consumption by automobile manufacturers at the end of each fiscal year.
- The regulation was **introduced in two target phases: Carbon dioxide emission target of 130 gram/kilometre by 2022-23 and 113 g/km 2022-23 onwards.**
- **Applicability:**
  - The norms are applicable for **petrol, diesel, Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG) passenger vehicles.**
- **BS-VI Stage II Norms:**
  - Bharat Stage (BS) emission standards are laid down by the government to **regulate the output of air pollutants from internal combustion engine and spark-ignition engine equipment**, including motor vehicles.
  - These standards are targeted at making **improvements in three areas** - emission control, fuel efficiency and engine design.
  - The central government has **mandated** that vehicle makers must manufacture, sell and register **only BS-VI (BS6) vehicles from 1<sup>st</sup> April, 2020.**
    - BS-VI is **equivalent to Euro-VI norms** currently in place across countries in Europe.
  - As per BS-VI emission norms, **petrol vehicles** will have to effect a **25% reduction in their NOx**, or nitrogen oxide emissions. **Diesel engines** will have to **reduce their HC+NOx** (hydro carbon + nitrogen oxides) **by 43%**, their **NOx levels by 68%** and **particulate matter levels by 82%.**
  - **Sulphur content** in fuel is a **major cause for concern.** BS-VI fuel's sulphur content is much lower than BS-IV fuel. It is reduced to 10 mg/kg max in BS-VI from 50 mg/kg under BS-IV.
  - Some of the **measures to be introduced from 2023 onwards** include deciding the **confirmatory factor for in-service compliance, market surveillance and independent verification testing** of in-use vehicles by regulatory authorities, adoption of **more stringent driving cycle for emissions testing, public disclosure of emissions data** by the manufacturers on publicly accessible websites, and **on-board fuel consumption meters** among others.

## Advisory for Management of Human-Wildlife Conflict

### Why in News

Recently, the **Standing Committee of National Board of Wildlife (SC-NBWL)** in its 60<sup>th</sup> meeting has approved the advisory for management of **Human-Wildlife Conflict (HWC)** in the country.

- In the meeting approval was given for including **Caracal, a medium sized wildcat** into the list of critically endangered species for taking up conservation efforts with financial support under **centrally sponsored scheme Integrated Development of Wildlife Habitat.**

### Key Points

- **The Advisory:**
  - **Empower Gram Panchayats:** The advisory envisages **empowering gram panchayats in dealing with the problematic wild animals** as per the **WildLife (Protection) Act, 1972.**
  - **Provide Insurance: Utilising add-on coverage** under the **Pradhan Mantri Fasal Bima Yojna for crop compensation** against crop damage due to HWC.
  - **Augmenting Fodder:** It also envisages **augmenting fodder and water sources** within the forest areas.
  - **Take Proactive Measures:** The advisory **prescribes inter-departmental committees** at local/state level, **adoption of early warning systems, creation of barriers, dedicated circle wise Control Rooms with toll free hotline numbers** which could be operated on **24X7 basis, Identification of hotspots** and formulation and implementation of special plans for improved stall-fed farm animal etc.
  - **Provide Instant Relief:** Payment of a portion of ex-gratia as interim relief within 24 hours of the incident to the victim/family.

### Human-Wildlife/Animal Conflict

- **About:**
  - It refers to the **interaction between wild animals and humans** which results in a **negative impact on people, animals, resources, and habitats.**
- **Causes:**
  - **Urbanization:** In modern times **rapid urbanization and industrialisation** have led to the diversion of

Note:



forest land to non-forest purposes, as a result, the wildlife habitat is shrinking.

### Caracal Cat

#### ➤ About:

- The **caracal wild cat (*Caracal caracal*)** is a rare species in India. They are slender, medium-sized cats with long powerful legs and tufted ears.



- The black tufted ears of this cat are one of its most distinguishing features.
- It is shy, nocturnal, elusive and difficult to spot in the wild.
- **Habitat:** In India, presence of these Cats has been reported from only three states which are Madhya Pradesh, Gujarat and Rajasthan.
  - In **Madhya Pradesh** it is locally called as **Sheagosh or siyah-gush**.
  - In **Gujarat**, Caracals are locally referred to as **Hornotro** which means killer of a Blackbuck.
  - In **Rajasthan** it is known as **Junglee Bilao or Wildcat**.
- **Threats:** Caracals are mostly killed for **livestock predation** however in some areas of the world it is hunted for its **meat and flesh**.
- **Conservation Status:**
  - **IUCN Red List:** Least Concern
  - **Wildlife Protection Act, 1972:** Schedule I
  - **CITES:** Appendix I

- **Transport Network:** The **expansion of road and rail network** through forest ranges has resulted in animals getting killed or injured in accidents on roads or railway tracks.
- **Population:** The **increasing population** has also led to many human settlements coming up near the peripheries of protected areas and encroachment in the forest lands by local people for cultivation and collection of food and fodder etc. therefore increasing pressure on limited natural resources in the forests.

#### ➤ Recent Initiatives/Developments:

- Recently, the Supreme Court (SC) affirmed the **right of passage of the Elephants** and the closure

of resorts in the Nilgiris elephant corridor. It held that it was the **State's duty to protect a "keystone species"** like elephants.

- The Odisha Government has started casting **seed balls (or bombs) inside different reserve forest areas** to enrich food stock for wild elephants.
- The Uttarakhand government carried out **bio-fencing by growing various species of plants in the areas** in order to reduce the man-animal conflict, prevent wild animals from entering residential areas, and protect agricultural crops and livestock in areas adjoining the forests.
- In 2018, the Uttar Pradesh government has given its in-principle approval to bring **man-animal conflict under listed disasters** in the State Disaster Response Fund to ensure better coordination and relief during such incidents.
- In the **Western Ghats of India**, a new conservation initiative has utilized texting as an **early warning system** to prevent human-elephant encounters. **Elephant tracking collars embedded with SMS chips** automatically text nearby residents, warning them of recent elephant movements.

## State of the Climate Report 2020: IMD

### Why in News

According to the **India Meteorological Department (IMD)'s State of the Climate Report**, the **year 2020 was the eighth warmest since India started keeping records in 1901**.

- The State of the Climate Report **looks at temperature and rainfall trends annually**.

### Key Points

#### ➤ Eighth Warmest Year 2020:

- **Average Temperature:**
  - During the year, the annual average temperature in the country was **0.29 degree Celsius (°C) above normal** ( 29-year average from 1981-2010).
  - However, it was **much lower than 2016** (+0.71 degrees Celsius), which **remains the warmest ever year** the country has recorded since 1901.
  - Such temperature trends were reported **despite the cooling effect of La Nina**, a global weather

Note:

pattern that prevailed in 2020 and is linked to substantially below normal temperatures in winter.

- La Nina typically has a cooling effect on global temperatures, but this is now **offset by global warming due to greenhouse gas emissions**.
- As a result, **La Nina years now are warmer than years with El Niño events of the past**.
- El Nino and La Nina are the **extreme phases of the El Niño and the Southern Oscillation (ENSO) cycle**.
- **ENSO** is a periodic fluctuation in sea surface temperature and the air pressure of the overlying atmosphere across the equatorial Pacific Ocean. It has a major influence on weather and climate patterns such as heavy rains, floods and drought.
- **El Niño has a warming influence** on global temperatures, whilst **La Nina has the opposite effect**.

- **Comparison to Global Average Temperature:**
  - India's nearly 0.3 degree rise was **less than the average global temperature rise of 1.2 degree** (January to October, as per the **World Meteorological Organisation's State of the Global Climate**).

#### ➤ **Warmest Years over India:**

- The **eight warmest years** on record in order were: **2016** (+ 0.71 degree C) > **2009** (+0.55 degree C) > **2017** (+0.541 degree C) > **2010** (+0.539 degrees C) > **2015** (+0.42 degree C) > **2018** (+0.41 degree C) > **2019** (+0.36 degree C) > **2020** (+0.29 degree C).
- The **past decade (2011-2020) was the warmest on record**.

#### ➤ **Extreme Weather Events:**

- Extremely heavy rain, floods, **cold waves** and thunderstorms led to significant loss of lives and properties.
  - According to the report "**Preparing India for Extreme Climate Events**" released by the **Council on Energy, Environment and Water (CEEW)**, over 75% of districts in India are hotspots of extreme climate events.
- **Uttar Pradesh and Bihar reported the highest casualties** due to cold waves, **lightning** and thunder last year.

#### ➤ **Data on Tropical Storms:**

- Globally, the **Atlantic Ocean experienced one of the most active years**, with over 30 tropical storms originating here.
- The **Indian Ocean region - the Arabian Sea and the Bay of Bengal, together reported five cyclones - Amphan, Nisarga, Gati, Nivar and Burevi**.
  - Of these, **Nisarga & Gati formed over Arabian Sea**, while the remaining 3 cyclones formed over the Bay of Bengal.

#### ➤ **Data on Rainfall:**

- The annual rainfall over the country in 2020 was **109% of the Long Period Average (LPA)** calculated for the period of 1961-2010.

#### **India Meteorological Department**

- IMD was **established in 1875**.
- It is an agency of the **Ministry of Earth Sciences** of the Government of India.
- It is the principal agency **responsible for** meteorological observations, weather forecasting and seismology.

## **Umed Paoni Karhandla Wildlife Sanctuary**

### **Why in News**

A **tigress** and her two cubs were found dead in the **Umed Paoni Karhandla Wildlife Sanctuary, Nagpur, Maharashtra**.

### **Key Points**

#### ➤ **About the Sanctuary:**

- **Umed Paoni Karhandla Wildlife Sanctuary** has a connection with **Tadoba Andhari Tiger Reserve** through forest along **Wainganga river (a tributary of Godavari)**.
- The sanctuary is home to resident breeding **tigers**, herds of **Gaur**, wild **dogs** and also **rare animals like flying squirrels, pangolins** and **honey badgers**.

#### ➤ **Other Protected Sites of Maharashtra:**

- Tadoba National Park
- Gugamal National Park
- Pench National Park
- Navegaon National Park

Note:



- Sanjay Gandhi National Park
- Melghat Tiger Reserve
- Sahyadri Tiger Reserve
- Bor Tiger Reserve

## Arctic: Concerns & Opportunities

### Why in News

As per the **WWF-Arctic Programme**, the Arctic region is **warming up twice as fast as the global average**. The ice cap has been shrinking fast since 1980 and the **volume of Arctic sea ice has declined by as much as 75%**.

- Since 1992, WWF's (**World Wide Fund for Nature**) **Arctic Programme** has been working with its partners **across the Arctic** to combat threats to the Arctic and to preserve its **rich biodiversity in a sustainable way**.

### Key Points

- **About Arctic:**
  - The Arctic is a **polar region** located at the northernmost part of Earth.
  - The Arctic consists of the **Arctic Ocean, adjacent seas, and parts of Alaska** (United States), **Canada, Finland, Greenland** (Denmark), **Iceland, Norway, Russia, and Sweden**.
  - Land within the Arctic region has seasonally **varying snow and ice cover**.
- **Ecological Impact of Warming on Arctic:**
  - The loss of ice and the warming waters will affect **sea levels, salinity levels, and current and precipitation patterns**.
  - The **Tundra** is returning to **swamp**, the **permafrost is thawing, sudden storms are ravaging coastlines and wildfires** are devastating interior Canada and Russia.
    - **Tundra:** Found in regions **north of the Arctic Circle and south of the Antarctic Circle**. These are **treeless regions**.
  - The phenomenally **rich biodiversity of the Arctic region is under serious threat**.
    - The absence of year-long ice and higher temperatures are making the survival of Arctic marine life, plants and birds difficult while encouraging species from lower latitudes to move north.



- The Arctic is also home to about **40 different indigenous groups, whose culture, economy and way of life is in danger** of being swept away.
  - Increasing human encroachment with its attendant stresses will only aggravate this impact and upset a fragile balance.
- **Commercial Importance of Arctic:**
  - The opening of the Arctic presents huge commercial and economic opportunities, particularly in **shipping, energy, fisheries and mineral resources**.
  - **Commercial navigation:**
    - The **Northern Sea Route (NSR)** which would connect the North Atlantic to the North Pacific through a short polar arc is the most tempting.
  - **Oil and natural gas deposits:**
    - Estimated to be 22% of the world's unexplored resources, mostly in the Arctic ocean, will be open to access along with mineral deposits including 25% of the global reserves of rare earths, buried in Greenland.
  - **Issues Involved:**
    - Navigation conditions are dangerous and restricted to the summer.
    - Lack of deep-water ports, a need for ice-breakers, shortage of workers trained for polar conditions, and high insurance costs add to the difficulties.
    - Mining and deep-sea drilling carry **massive costs and environmental risks**.

Note:

- Unlike **Antarctica**, the Arctic is **not a global common** and there is no overarching treaty that governs it.

#### ➤ Conflict over Arctic:

- Russia, Canada, Norway and Denmark have put in **overlapping claims for extended continental shelves**, and the **right to sea-bed resources**.
  - Russia is the dominant power, with the **longest Arctic coastline**, half the Arctic population, and a full-fledged strategic policy.
    - Claiming that the NSR falls within its territorial waters, Russia anticipates **huge dividends from commercial traffic including through the use of its ports, pilots and ice-breakers**.
    - Russia has also activated its northern military bases, refurbished its **nuclear armed submarine fleet and demonstrated its capabilities**, including through **an exercise with China** in the eastern Arctic.
  - **China**, playing for economic advantage, has moved in fast, projecting the **Polar Silk Road as an extension of the Belt and Road Initiatives**, and has invested heavily in ports, energy, undersea infrastructure and mining projects.
- #### ➤ India's interests in Arctic:
- **Environmental Interest:**
    - India's extensive coastline makes it vulnerable to the impact of Arctic warming on **ocean currents, weather patterns, fisheries and most importantly, the monsoon**.
  - **Scientific Interest:**
    - Scientific research in Arctic developments, in which India has a good record, will contribute to its **understanding of climatic changes in the Third Pole, the Himalayas**.
  - **Strategic Interest:**
    - The strategic implications of an **active China in the Arctic** and its growing economic and strategic relationship with Russia are self-evident and **need close monitoring**.
  - Since 2013, India has had **observer status** in the **Arctic Council**, which is the predominant inter-governmental forum for cooperation on the environmental and development aspects of the Arctic.
  - It is high time that its presence on the Arctic

Council was underpinned by a strategic policy that encompassed **economic, environmental, scientific and political aspects**.

## Indian Pangolin

### Why in News

Recently, the Odisha Forest department has stressed the need for **stricter monitoring of social media platforms to check pangolin poaching and trading**.

### Key Points

#### ➤ About:

- Pangolins are **scaly anteater mammals** and they have **large, protective keratin scales covering their skin**. They are the only known mammals with this feature.



#### ➤ Diet:

- Insectivore- Pangolins are **nocturnal, and their diet consists of mainly ants and termites**, which they capture using their long tongues.

#### ➤ Types:

- Out of the eight species of pangolin, the **Indian Pangolin (*Manis crassicaudata*)** and the **Chinese Pangolin (*Manis pentadactyla*)** are found in India.

#### ○ Difference:

- Indian Pangolin is a large anteater covered by 11-13 rows of scales on the back.
- A terminal scale is also present on the lower side of the tail of the Indian Pangolin, which is absent in the Chinese Pangolin.

#### ➤ Habitat:

##### ○ Indian Pangolin:

- It is widely distributed in India, except the arid region, high Himalayas and the North-East.
- The species is also found in Bangladesh, Pakistan, Nepal and Sri Lanka.

##### ○ Chinese Pangolin:

- It is found in the Himalayan foothills in Eastern Nepal, Bhutan, Northern India, North-East Bangladesh and through Southern China.

#### ➤ Threats to Pangolins in India:

Note:



- **Hunting and poaching** for local consumptive use (e.g. as a protein source and traditional medicine) and international trade for its meat and scales in East and South East Asian countries, particularly China and Vietnam.
- They are believed to be the world's most trafficked mammal.

➤ **Conservation Status:**

- **Wildlife Protection Act, 1972:** Schedule I
- **IUCN Red List:** Endangered
- **CITES:** Appendix I

## Asian Waterbird Census

### Why in News

The two-day **Asian Waterbird Census-2020** has commenced in **Andhra Pradesh** under the aegis of experts from the **Bombay Natural History Society (BNHS)**.

### Key Points

➤ **About:**

- **Every January**, thousands of volunteers across Asia and Australasia visit **wetlands** in their country and count waterbirds. This **citizen science programme** is the **Asian Waterbird Census (AWC)**.
- The AWC is an integral **part of the global waterbird monitoring programme, the International Waterbird Census (IWC)**, coordinated by **Wetlands International**.
  - The **IWC is a monitoring programme operating in 143 countries** to collect information on the numbers of waterbirds at wetland sites.
  - **Wetlands International is a global not-for-profit organisation** dedicated to the conservation and restoration of wetlands.
- It **runs in parallel with other regional programmes** of the International Waterbird Census in Africa, Europe, West Asia, the Neotropics and the Caribbean.

➤ **Scope:**

- It was **initiated in 1987 in the Indian subcontinent** and has grown rapidly to **cover major regions of Asia**, from Afghanistan eastwards to Japan, Southeast Asia and Australasia.
- The census **covers the entire East Asian -**

**Australasian Flyway** and a large part of the **Central Asian Flyway**.

- The **East Asia - Australasia Flyway** extends from Arctic Russia and North America to the southern limits of Australia and New Zealand. It encompasses large parts of East Asia, all of Southeast Asia and **includes eastern India and the Andaman and Nicobar Islands**.
- The Central Asian Flyway (CAF) **covers a large continental area of Eurasia** between the Arctic and Indian Oceans and the associated island chains.

➤ **Benefits:**

- The count not only gives an **idea of the birds at the wetland** but also the **health of the wetland** - a good number of waterbirds indicates that it has adequate feeding, resting, roosting and foraging spots.
- The information collected helps to promote the designation and management of internationally important sites such as nationally protected areas, **Ramsar Sites**, East Asian - Australasian Flyway Network Sites, **Important Bird and Biodiversity Areas (IBAs)**.
- It also helps in implementation of the **Convention on Migratory Species (CMS)** and the **Convention on Biological Diversity's (CBD)**.

➤ **AWC in India:**

- The AWC is **jointly coordinated by the Bombay Natural History Society (BNHS) and Wetlands International**.
  - BNHS is a **pan-India wildlife research organization**, which has been promoting the cause of nature conservation since 1883.
- A reference list of internationally important AWC sites and wetland IBAs in India has been prepared.
  - India has **42 Ramsar sites**, the latest one included is **Tso Kar Wetland Complex of Ladakh**.
  - **BirdLife's Important Bird and Biodiversity Area (IBA) Programme** identifies, monitors and protects a global network of priority sites for the conservation of birds and other wildlife. India has **more than 450 sites**.
  - The 13<sup>th</sup> Meeting of the **Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS COP13)** concluded in Gandhinagar, Gujarat in February 2020.

Note:

- Ten new species were added to CMS Appendices at COP13. Seven species were added to Appendix I (provides the strictest protection) including the **Asian Elephant, Jaguar, Great Indian Bustard, Bengal Florican**, etc.
- India **submitted its Sixth National Report (NR6) to the Convention on Biological Diversity (CBD)** in December 2018.

## Sulfur Dioxide Emission Norms Delayed

### Why in News

The Ministry of Power has proposed pushing back the deadlines for adoption of **new emission norms by coal-fired power plants**, saying “**an unworkable time schedule**” would burden utilities and lead to an increase in power tariffs.

### Key Points

- **Background:**
  - India initially had set a **2017** deadline for **thermal power plants** to comply with emissions standards for installing **Flue Gas Desulphurization (FGD)** units that cut emissions of **toxic sulphur dioxide**.
    - This was later changed to varying deadlines for **different regions**, ending in **2022**.
- **Flue Gas Desulphurisation (FGD):**
  - **Removal of Sulfur Dioxide** is called as Flue-gas Desulphurization (FGD).
  - It seeks to remove gaseous pollutants viz.  $SO_2$  from exhaust flue gases generated in furnaces, boilers, and other industrial processes due to thermal processing, treatment, and combustion.
- **Proposal of the Ministry of Power:**
  - It has proposed a “**graded action plan**,” whereby areas where plants are located would be graded according to the severity of pollution, with **Region 1 referring to critically polluted areas**, and **Region 5 being the least polluted**.
    - **Strict control of emissions** shall be required in such key areas for thermal power stations categorised under **Region 1**.
    - Plants in **Region 2** could begin to **take action one year after those in Region 1**.

- Presently **no action is required** for power plants that are situated under **Region 3, 4 & 5**.
- According to the Ministry, the target should be to maintain **uniform ambient air quality** across the country and **not uniform emission norms for thermal power plants**.
- This could avoid immediate increase in power price in various relatively clean areas of the country (and) avoid unnecessary burden on power utilities/consumers.

### Sulfur Dioxide Pollution

- **Source:**
  - The largest source of  $SO_2$  in the atmosphere is the **burning of fossil fuels by power plants** and other industrial facilities.
  - Smaller sources of  $SO_2$  emissions include: industrial processes such as extracting metal from ore; **natural sources such as volcanoes**; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content.
- **Impact:**  $SO_2$  can affect both health and the environment.
  - **Short-term exposures to  $SO_2$  can harm the human respiratory system** and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of  $SO_2$ .
  - $SO_2$  emissions that lead to high concentrations of  $SO_2$  in the air generally also **lead to the formation of other sulfur oxides ( $SO_x$ )**.  $SO_x$  can react with other compounds in the atmosphere to form small particles. These particles **contribute to particulate matter (PM) pollution**.
    - Small particles may penetrate deeply into the lungs and in sufficient quantities can contribute to health problems.
- **India's Case:**
  - India's sulphur dioxide ( $SO_2$ ) emissions **recorded a significant decline of approximately 6% in 2019 compared to 2018**, the steepest drop in four years, according to a report from Greenpeace India and the Centre for Research on Energy and Clean Air (CREA).
  - However, India **remained the largest emitter of  $SO_2$** .

Note:



- In 2015, the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** introduced **Sulfur Dioxide (SO<sub>2</sub>)** emission limits for coal power stations.
- **Air Quality sub-index** has been evolved for **eight pollutants** (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, NH<sub>3</sub>, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.

## Natural Capital Accounting and Valuation of the Ecosystem Services Project

### Why in News

Natural Capital Accounting and Valuation of the Ecosystem Services (NCAVES) India Forum-2021 is being organised by the **Ministry of Statistics and Programme Implementation** (MoSPI) in virtual format.

- The MoSPI has taken up several initiatives under the project **“Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES)”** which aims to **advance the theory and practice of ecosystem accounting in India.**

### Key Points

- **About the Project:**
  - The NCAVES Project, funded by the European Union, has been jointly implemented by the **United Nations Statistics Division (UNSD)**, the **United Nations Environment Programme (UNEP)** and the **Secretariat of the Convention of Biological Diversity (CBD)**.
  - **India** is one of the **five countries taking part in this project** - the other countries being **Brazil, China, South Africa and Mexico.**
  - In India, the NCAVES project is **being implemented by the MoSPI** in close collaboration with the **Ministry of Environment, Forest and Climate Change (MoEF&CC)** and the **National Remote Sensing Centre (NRSC)** under the **Department of Space.**
- **Natural Capital Accounting (NCA):**
  - It is an umbrella term covering efforts to make use of an **accounting framework** to provide a

systematic way to **measure and report on stocks and flows of natural capital.**

- Natural capital is another term for the **stock of renewable and non-renewable resources** that combine to yield a flow of benefits to people.
- NCA covers accounting for **individual environmental assets or resources, both biotic and abiotic** (such as water, minerals, energy, timber, fish), as well as accounting for **ecosystem assets** (e.g. forests; wetlands), biodiversity and **ecosystem services, in both physical and monetary terms.**
- Just like the compilation of national accounts of a country is guided by the **System of National Accounts (SNA)**, for natural capital accounting, the **System of Environmental-Economic Accounting (SEEA)** is taken.
  - The System of Environmental-Economic Accounting (SEEA) provides a **framework for measuring the link between the environment and the economy.**
  - SEEA-Central Framework **was adopted in February 2012** as an international statistical standard by the **UN Statistical Commission.**
  - The SEEA accounts bring into direct focus the relationship between the environment and economy **not revealed through traditional measures of economic activity, such as Gross Domestic Product (GDP).**

### ➤ Ecosystem Services:

- As a part of an ecosystem, humans derive lots of benefits from the biotic and abiotic components. These benefits are collectively termed as **ecosystem services.**
- Ecosystem services are classified into **four types:**
  - **Provisioning Services:** This includes the products/raw materials or energy outputs like **food, water, medicines and other resources from ecosystems.**
  - **Regulating Services:** This includes the services which regulate the **ecological balance.** For example, forests purify and regulate air quality, prevent soil erosion, and control greenhouse gases etc.
  - **Supporting Services:** These form the basis for other services. They provide **habitat for different life forms, retain biodiversity, nutrient cycling, and other services for supporting life on the earth.**

Note:



- **Cultural Services:** It includes **recreational, aesthetic, cultural and spiritual services**, etc. Most natural elements such as landscapes, mountains, caves, are used as a place for cultural and artistic purposes.
- **Benefits:**
  - The participation in the project has helped MoSPI commence the compilation of the **Environment Accounts as per the UN-SEEA framework and release environmental accounts in its publication "EnviStats India"** on an annual basis **from 2018**.
  - Several of these accounts are closely related to the social and economic attributes, making them a **useful tool for the Policy**.
  - Another tool under the NCAVES project is the development of the **India-EVL Tool** which is essentially a look-up tool giving the **values of various ecosystem services** in the different States of the country.
  - **Ecosystem accounting** can produce information on the extent of ecosystems, their condition based on selected indicators, and the flow of ecosystem services.

## Sultanpur National Park

### *Why in News*

After confirmed cases of **bird flu** reported from Delhi, the forest department has also stepped up vigilance at **Sultanpur National Park** in **Gurgaon district of Haryana**.

### *Key Points*

- **About:**
  - **Sultanpur National Park** is a bird paradise for bird watchers. It is famous for its **migratory as well as resident birds**.
    - Migratory birds start arriving in the park in September. Birds use the park as a resting place till the following March-April.
    - During summer and monsoon months, the park is inhabited by many local bird species.
  - In April 1971, the **Sultanpur Jheel** inside the park (an area of 1.21 sq. km.) was accorded **Sanctuary status** under section 8 of the **Punjab Wildlife Preservation Act of 1959**.

- The status of the park was upgraded to **National Park** under the **Wildlife (Protection) Act, 1972** in July 1991.
- **Important Fauna at the Park:**
  - **Mammals:** **Blackbuck, Nilgai**, Hog deer, Sambar, **Leopard** etc.
  - **Birds:** **Siberian Cranes, Greater Flamingo**, Demoiselle Crane, etc.
  - **Other National Park in Haryana:** Kalesar National Park, District Yamunanagar.

## National Energy Conservation Awards

### *Why in News*

Recently, the **Ministry of Power**, in association with the **Bureau of Energy Efficiency (BEE)**, organised the **30<sup>th</sup> National Energy Conservation Awards (NECA)** function.

- During the event, the **Standards and Labelling Programme for Air Compressors and Ultra High Definition (UHD) TV** on voluntary basis was initiated and **SATHEE Portal** was also launched.

### *Key Points*

- **National Energy Conservation Awards Programme:**
  - The **Ministry of Power** had launched a scheme in 1991, to give **national recognition** through awards to industries and establishments that have taken **special efforts to reduce energy consumption** while maintaining their production.
    - The awards were given away for the **first time on 14<sup>th</sup> December, 1991**, which was declared as the **'The National Energy Conservation Day'**.
  - It recognizes the energy efficiency achievements in **56 sub-sectors across industry, establishments and institutions**.
  - During the award ceremony, it was specifically mentioned that the impact of **PAT Cycle II** achieved **emission reduction of 61 million ton of CO<sub>2</sub>**.
- **Standards and Labelling Programme for Air Compressors and Ultra High Definition (UHD) TV:**
  - It is to be carried out on a **voluntary basis**.
  - They are aimed to **further enhance the level of energy conservation**. This conserved energy can then be used for a different purpose in the home or workplace.

Note:



### The Perform, Achieve and Trade (PAT) Scheme

- It is a **market-based mechanism** to further accelerate as well as incentivize energy efficiency in the large energy-intensive industries.
  - It **provides the option to trade any additional certified energy savings** with other designated consumers to comply with the Specific Energy Consumption reduction targets.
  - It is **being implemented by BEE**, as a “flag bearer” which has not only demonstrated its promise in the country but also has found interest among many other countries.
- Besides saving energy, this programme could also **facilitate reducing energy bills**.
- **SATHEE Portal:**
    - The Bureau of Energy Efficiency (BEE) has developed a **Management Information System (MIS) portal** namely **State-wise Actions on Annual Targets and Headways on Energy Efficiency (SAATHEE)**.
      - **For SDAs:** It is a portal for the **State Designated Agency (SDA)** for state level activities.
      - **Captures Status of Energy Efficiency:** It will be useful in capturing the physical and financial status/ progress of Energy Efficiency activities being implemented by States/ UTs across the country. Thus, it will **facilitate Real Time Monitoring**.
      - **Streamlines Decision Making and Compliance:** It will also help in decision making, coordination, control, analysis, and implementation and enforcement of the compliance process for various energy consumers at the pan India level.
  - **Targets in Energy Efficiency:**
    - India has **one of the lowest per capita emissions and per capita energy consumption**. Despite this the country has made ambitious commitments to meet the global challenge posed by climate change.
      - India **has a target to reduce the emission intensity to 33-35% by 2030** compared to 2005 level, as part of commitments made during **COP 21**.
    - The Prime Minister’s vision aims at a climate mitigation goal, with a **target for renewable energy capacity to be increased to 450 GW by 2030**.
  - **Initiatives Aimed at Energy Conservation:**

- The **Perform, Achieve and Trade (PAT) Scheme, Standard and Labelling and Demand Side Management, Energy Conservation Building Code**, etc.

### Note:

- **SATHI (Sophisticated Analytical & Technical Help Institutes):**
  - It is an initiative of the **Department of Science & Technology (Ministry of Science and Technology)**.
  - **Objective:** To provide a shared, professionally managed services and strong Science and Technology infrastructure / facilities, to service the demands of faculty, researchers, etc., to enable them to carry out R&D activities on a round the clock basis with minimum downtime.
- **SAATHI (Sustainable and Accelerated Adoption of efficient Textile technologies to Help Small Industries) Initiative:**
  - It is an **initiative of the Ministry of Textiles**.
  - **Objective:** To sustain and accelerate the adoption of **energy efficient textile technologies** in the powerloom sector and cost savings due to use of such technology.
- **SATH (Sustainable Action for Transforming Human capital) Program:**
  - It is a **program of NITI Aayog**.
  - **Objective:** To initiate transformation in the education and health sectors and build 3 future ‘role model’ states.

## Supreme Court’s View on Pollution in Yamuna

### Why in News

Recently, the **Supreme Court (SC)** has taken suo motu cognizance of pollution of water bodies by untreated sewage.

- The SC was hearing an urgent petition filed by the **Delhi Jal Board (DJB)**, to immediately stop Haryana from discharging **pollutants into the Yamuna river**.

### Key Points

- **Background:**

Note:

- In the 2017 *Paryavaran Suraksha Samiti v. Union of India case*, the SC directed that **norms for generating funds, for setting up and/or operating the Common Effluent Treatment Plant and Sewage Treatment Plants**, shall be finalised by the State Pollution Control Board's on or before 31<sup>st</sup> march 2017.
- It was **directed that for the purpose of setting up these plants, the state government will prioritise such cities, towns and villages**, which discharge industrial pollutants and sewer directly in rivers and water bodies.
- **SC's Ruling:**
  - **Constitutional Provisions Highlighted:**
    - **Article 243W** of the Constitution **vests municipalities and local authorities with the performance of functions and implementation of schemes as may be entrusted to them**, including those in relation to the matters listed in **item 6 of the 12<sup>th</sup> schedule**.
      - Item 6 of the Schedule includes **"public health, sanitation conservancy and solid waste management"**.
    - **Article 21:** The right to clean the environment, and further, pollution-free water, has been protected under the broad rubric of the **right to life**.
  - **Directions to Central Pollution Control Board (CPCB):**
    - The court directed the **CPCB to submit a report identifying municipalities along the river Yamuna, which have not installed total treatment plants for sewage** as per the requirement or have gaps in ensuring that the sewage is not discharged untreated into the river.
    - It asked CPCB to **highlight any other source of prominent contamination within the limits of Municipalities** and to **submit priority-wise list of Municipalities**, river stretches adjacent to which have been found to be most polluted.

## Pollution in Yamuna

- **Causes of Pollution in Yamuna:**
  - **Industrial Pollution:**
    - The Yamuna flows into Delhi from Haryana and the state has industrial units in Sonipat (on the banks of Yamuna). **Ammonia is used as an industrial chemical** in the production of fertilisers, plastics and dyes.
  - **Mixing of Drains:**
    - Mixing of **two drains carrying drinking water and sewage or industrial waste, or both**, in Sonipat. The two drains often mix due to overflow or damage to the wall that separates them.
- **Effects of Rising Ammonia:**
  - Ammonia reduces the amount of oxygen in water as it is transformed to oxidised forms of nitrogen. Hence, it also **increases Biochemical Oxygen Demand (BOD)**.
    - Water pollution by organic wastes is measured in terms of BOD.
  - If the **concentration** of ammonia in water is **above 1 ppm**, it is **toxic to fishes**.
  - In humans, **long term ingestion** of water having ammonia levels of 1 ppm or above may cause **damage to internal organs**.

### Yamuna

- **Source:** The river Yamuna, a **major tributary of river Ganges**, originates from the Yamunotri glacier near Bandarpooch peaks in the Mussoorie range of the lower Himalayas in Uttarkashi district of Uttarakhand.
- **Basin:** It **meets the Ganges at the Sangam in Prayagraj**, Uttar Pradesh after flowing through Uttarakhand, Himachal Pradesh, Haryana and Delhi.
- **Length:** 1376 km.
- **Important Dam:** Lakhwar-Vyasi Dam (Uttarakhand), Tajewala Barrage Dam (Haryana) etc.
- **Important Tributaries:** Chambal, Sindh, Betwa, Ken, Tons, Hindon.



Note:



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# History

## Highlights

- 203<sup>rd</sup> Anniversary of the Bhima-Koregaon Battle

## 203<sup>rd</sup> Anniversary of the Bhima-Koregaon Battle

### Why in News

The **Victory Pillar (also known as Ranstambh or Jaystambh)** in Bhima-Koregaon village (Pune district of Maharashtra) celebrated the **203<sup>rd</sup> anniversary of the Bhima-Koregaon battle of 1818 on 1<sup>st</sup> January, 2021.**

- In 2018, **incidents of violent clashes between Dalit and Maratha groups** were registered during the celebration of the **200<sup>th</sup> anniversary** of the Bhima-Koregaon battle.

### Key Points

#### ➤ Historical Background:

- A **battle** was fought in Bhima Koregaon between the **Peshwa forces and the British on 1<sup>st</sup> Jan, 1818.**
- The **British army, which comprised mainly of Dalit soldiers,** fought the **upper caste-dominated Peshwa army.**
  - The **British troops defeated the Peshwa army.**
- **Peshwa Bajirao II** had **insulted the Mahar community** and terminated them from the service of his army.

- This caused them to side with the English against the Peshwa's numerically superior army.

- **Mahar,** caste-cluster, or group of many endogamous castes, living chiefly in Maharashtra state and in adjoining states.

- They mostly speak Marathi, the official language of Maharashtra.

- They are officially **designated Scheduled Castes.**

- The defeat of Peshwa army was considered to be a **victory against caste-based discrimination and oppression.**

- It was one of the last battles of the **Third Anglo-Maratha War (1817-18), which ended the Peshwa domination.**

- **Babasaheb Ambedkar's visit to the site on 1<sup>st</sup> January, 1927,** revitalised the memory of the battle for the Dalit community, making it a rallying point and an assertion of pride.

#### ➤ The Victory Pillar Memorial:

- It was **erected by the British in Perne village** in the district **for the soldiers killed in the Koregaon Bhima battle.** It has attained **legendary stature in Dalit history.**



Note:



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# Art & Culture

## Highlights

- Anubhava Mantapa in Basavakalyan: Karnataka
- Maghi Mela
- Yakshagana
- Jagannath Temple
- Harvest Festivals in India
- Revival of Monpa Handmade Paper

## Anubhava Mantapa in Basavakalyan: Karnataka

### Why in News

Recently, the Chief Minister of Karnataka has laid the foundation stone for the 'New Anubhava Mantapa' in Basavakalyan, the place where 12<sup>th</sup> century poet-philosopher Basaveshwara lived for most of his life.

### Key Points

#### ➤ About the New Anubhava Mantapa:

- It will be a six-floor structure in the midst of the 7.5-acre plot and represent various principles of Basaveshwara's philosophy.
- It will showcase the 12<sup>th</sup> Century Anubhava Mantapa (often referred to as the "first Parliament of the world") established by Basaveshwara in Basavakalyan where philosophers and social reformers held debates.
- The building will adopt the Kalyani Chalukya style of architecture.
  - Later Chalukyas, popularly known as the Chalukyas of Kalyan or Kalyani Chalukyas form an integral part of ancient Karnataka history of early medieval period. Kalyan Chalukya rulers patronised temple construction, dance and music, as their predecessors did.
- The grand structure supported by 770 pillars will have an auditorium with a seating capacity of 770 people.
  - It is believed that 770 Sharanas (followers of Basaveshwara) led the Vachana reformist movement in the 12<sup>th</sup> Century.

- On its top, the structure would have a Shiva Linga placed on a large pedestal.
- The project also envisages state-of-the-art robotic system, open-air theatre, modern water conservation system, terrace garden, library, research centre, prayer hall, yoga centre and so on.

#### ➤ Basaveshwara:

##### ○ Brief Profile:

- Basaveshwara (1134-1168) was an Indian philosopher, social reformer and statesman who attempted to create a casteless society and fought against caste and religious discrimination.
  - Basava Jayanthi is an annual event celebrated in the honour of the birth of Vishwaguru Basaveshwara.
  - He was born in Bagevadi (of undivided Bijapur district in Karnataka).
- The tradition of Lingayatism is known to have been founded by him.
- Philosophy:
  - His spiritual discipline was based on the principles of Arivu (true knowledge), Achara (right conduct), and Anubhava (divine experience) and it brought social, religious and economical revolution in the 12<sup>th</sup> century.
  - This path advocates a holistic approach of Lingangayoga (union with the divine). This comprehensive discipline encompasses bhakti (devotion), jnana (knowledge), and kriya (action) in a well balanced manner.
  - He went to Kalyana (now called Basavakalyan) probably in the year A.D. 1154. His achievements



Note:



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in the short span of twelve or thirteen years of his stay at Kalyana are striking.

- The **Gates of Dharma were thrown open to all** without any barriers of caste, creed or sex (**Kalyana Rajya** - Welfare State).
- He **established the Anubhava Mantapa**, which was a common forum for all to discuss the prevailing problems of socio, economic and political strata including religious and spiritual principles along with personal problems.
  1. Thus, it was the **first and foremost Parliament of India**, where Sharanas sat together and discussed the socialistic principles of a Democratic set up.
- He gave **two more very important socio-economic principles**. They are:
  - **Kayaka (Divine work)**: According to this, every individual of the society should take up the job of his choice and perform it with all sincerity.
  - **Dasoha (Equal distribution)**:
    1. There must be an equal income for equal work.
    2. The worker (Kayakajeevi) may lead his day-to-day life by his hard earned income. But he should not preserve the money or property for tomorrow. He must utilise the
    3. surplus money for the society and poor.
- **Vachana Reformist Movement**:
  - The main aim of the **Vachana (poetry)** movement, led by Basaveshwara in 12<sup>th</sup> century, was welfare of all.
  - It **attempted to address class, caste and to some extent gender issues** in a given societal milieu.

## Maghi Mela

### **Why in News**

For the first time in over several decades there will be no political conferences at the historic **Maghi Mela**.

- **Maghi Mela** is held in **Muktsar, Punjab** every year in January or in the month of Magh according to the **Nanakshahi calendar**.
  - **Nanakshahi calendar** was **designed by Sikh scholar Pal Singh Purewal** to replace the Bikrami

calendar, **to work out the dates of gurgurab and other festivals**.

### **Key Points**

- **About Maghi**:
  - Maghi is the **occasion when Sikhs commemorate the sacrifice of forty Sikhs**, who fought for **Guru Gobind Singh Ji**.
  - The **eve of Maghi** is the **common Indian festival of Lohri** when bonfires are lit in Hindu homes to greet the birth of sons in the families and alms are distributed.
- **Significance**:
  - The day of Maghi is observed to **honour the heroic fight of the Chali Mukte, or the Forty Liberated Ones**, who **sacrificed their own lives** defending an attack by the Mughal imperial army marching in pursuit of **Guru Gobind Singh**.
- **Historical Background**:
  - The battle took place near a pool of water, Khidrane di Dhab, on **29<sup>th</sup> December 1705**.
  - The **bodies were cremated the following day**, the first of Magh (hence the name of the festival), which now falls usually on the 13<sup>th</sup> of January.
  - Following the custom of the Sikhs to observe their anniversaries of happy and tragic events alike, **Maghi is celebrated with end-to-end recitals of the Guru Granth Sahib and religious divans** in almost all gurdwaras.

## Yakshagana

### **Why in News**

Recently, a Yakshagana artiste died while performing on stage.

### **Key Points**

- Yakshagana is a traditional theatre form of **Karnataka**.
- It is a **temple art** form that depicts mythological stories and Puranas.
- It is performed with massive headgears, elaborate facial make-up and vibrant costumes and ornaments.



Note:

Theatre Forms	State	Theme
Nautanki	Uttar Pradesh	Often draws on <b>romantic Persian literature</b> for its themes.
Tamasha	Maharashtra	Evolved from the folk forms such as gondhal, jagran and kirtan.
Bhavai	Gujarat	<b>Subtle social criticism</b> laced with humour.
Jatra	West Bengal/Orissa and eastern Bihar	Originated in Bengal as a result of the <b>Bhakti movement</b> . Initially known as Krishna jatra due to Chaitanya's (spiritual founder of Gaudiya Vaishnavism) influence.
Koodiyattam	Kerala	<b>Oldest traditional theatre forms</b> of India, it follows the performative principles of the ancient tradition of Sanskrit theatre. In 2001, Koodiyattam was officially recognized by <b>UNESCO as a Masterpiece of the Oral and Intangible Heritage</b> of Humanity.
Mudiyettu	Kerala	Traditional ritual theatre and folk dance drama from Kerala that enacts the mythological tale of a <b>battle between the goddess Kali and the demon Darika</b> . The ritual is a part of the bhagavathi or bhadrakali cult.
Bhaona	Assam	A creation of Srimanta Sankardeva (an Assamese saint-scholar), these plays were written in <b>Brajavali, a unique Assamese-Maithili mixed language</b> , and are primarily centered on <b>Hindu deity, Krishna</b> .
Maach	Madhya Pradesh	It is a sung folk theatre that has a semi sacred character, blending religious and secular themes.
Bhand Pather	Kashmir	<b>Satire, wit and parody</b> are commonly used in this folk drama that incorporates local mythological legends and contemporary social commentary.

- Usually recited in Kannada, it is also performed in **Malayalam** as well as **Tulu (the dialect of south Karnataka)**.

#### Note:

- Tulu is a **Dravidian language** whose speakers are concentrated in the region of Tulu Nadu, which comprises the districts of Dakshina Kannada and Udupi in Karnataka and the northern part of Kasaragod district of Kerala.
- The oldest available inscriptions in Tulu are from the period between 14<sup>th</sup> to 15<sup>th</sup> century AD.
- It is performed with percussion instruments like chenda, maddalam, jagatta or chengila (cymbals) and chakratala or elathalam (small cymbals).
- The most popular **episodes are from the Mahabharata** i.e. Draupadi swayamvar, Subhadra vivah, etc. and **from Ramayana** i.e. Rajyabhishek, Lav-Kush yuddh, etc.

## Jagannath Temple

### Why in News

Recently, the **Shree Jagannath Temple Administration (SJTA)** announced that devotees don't need to produce their **Covid-19 negative report** for getting entry into the shrine in Puri from 21<sup>st</sup> January 2021.

### Key Points

- The temple is believed to be constructed in the **12<sup>th</sup> century by King Anatavarman Chodaganga Deva of the Eastern Ganga Dynasty**.
- Jagannath Puri temple is called '**Yamanika Tirtha**' where, according to the Hindu beliefs, the power of 'Yama', the god of death has been nullified in Puri due to the presence of Lord Jagannath.



Note:



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- This temple was called the “**White Pagoda**” and is a **part of Char Dham pilgrimages (Badrinath, Dwaraka, Puri, Rameswaram)**.
- There are **four gates** to the temple- **Eastern ‘Singhdwara’** which is the main gate with two crouching lions, **Southern ‘Ashwadwara’**, **Western ‘Vyaghra Dwara** and **Northern ‘Hastidwara’**. There is a carving of each form at each gate.
- In front of the entrance stands the Aruna stambha or sun pillar, which was originally at the **Sun Temple in Konark**.

## Harvest Festivals in India

### Why in News

The harvest festivals like **Lohri, Makar Sankranti and Pongal** have recently been **celebrated all across the country**.

### Key Points

- **Makar Sankranti:**
  - Makar Sankranti denotes the entry of the sun into the zodiac sign of Makara (Capricorn) as it travels on its celestial path.
  - The day marks the onset of summer and the **six months auspicious period for Hindus known as Uttarayan**, the northward movement of the sun.
  - As a part of the official celebration of ‘**Uttarayan**’, the Gujarat government has been hosting the **International Kite Festival since 1989**.
  - The festivities associated with the day are known by different names in different parts of the country - **Lohri by north Indian Hindus and Sikhs, Sukarat in central India, Bhogali Bihu by Assamese Hindus, and Pongal by Tamil and other South Indian Hindus**.
- **Lohri:**
  - Lohri is primarily celebrated by **Sikhs and Hindus**.
  - It marks the end of the winter season and is traditionally believed to welcome the sun to the northern hemisphere.
  - It is observed a **night before Makar Sankranti**, this occasion involves a **Puja Parikrama (revolve)** around the bonfire with prasad.
  - It is essentially termed as the festival of the farmers and harvest, whereby, the farmers thank the Supreme Being.

- **Pongal:**
  - The word Pongal means ‘**overflow**’ or ‘**boiling over**’.
  - Also known as Thai Pongal, the four-day occasion is **observed in the month of Thai**, when crops such as rice are harvested and people show their gratitude to the almighty and the generosity of the land.
  - Tamilians celebrate the occasion by making **traditional designs known as kolams** in their homes with rice powder.
- **Bihu:**
  - It is celebrated when the **annual harvest takes place in Assam**. People celebrate **Rongali/Magh Bihu** to mark the **beginning of the Assamese new year**.
  - It is believed that the festival started from the time when people of the valley **started tilling the land**. Bihu is believed to be as old as **river Brahmaputra**.
- **Makaravilakku festival in Sabarimala:**
  - It is celebrated at the sacred grove of Lord Ayyappa at Sabarimala.
  - It is an **annual seven-day festival**, beginning on the day of Makar Sankranti when the sun is in the summer solstice.
  - The highlight of the festival is the appearance of Makarajyothi- a celestial star which appears on the day of Makar Sankranti on top of **Kantamala Hills**.



Note:

- Makara Vilakku ends with the ritual called 'Guruthi', an offering made to appease the god and goddesses of the wilderness.

## Revival of Monpa Handmade Paper

### Why in News

Recently, the Monpa Handmade Paper (1000-year old heritage art) of Arunachal Pradesh has been revived by **Khadi and Village Industries Commission (KVIC)**.

### Key Points

#### ➤ About Monpa Handmade Paper:

- The fine-textured handmade paper, which is called Mon Shugu in the local dialect, is integral to the vibrant culture of the local tribes in Tawang.
- The paper has great historic and religious significance as it is the paper used for writing Buddhist scriptures and hymns in monasteries.
- The Monpa handmade paper is made from the bark of a local tree called Shugu Sheng, which has medicinal values too.

#### ➤ Monpa Handmade Paper Industry:

- The art of making Monpa handmade paper originated over 1000 years ago. Gradually the art became an integral part of local custom and culture in Tawang in Arunachal Pradesh.
- Once produced in every household in Tawang, this handmade paper was a major source of livelihood for the locals.



- The handmade paper industry almost disappeared in the last 100 years.
- **Revival Program:**
  - An attempt for the revival of this handmade paper industry was made in 1994 but failed.
  - KVIC commissioned a Monpa handmade paper making unit in Tawang which not only aimed at reviving the art but also engaging the local youths with this art professionally and earn.
  - The revival is aligned with the Prime Ministers Mantra of **Vocal for Local**.
- **Future Programs:**
  - Tawang is also known for two other local crafts:
    - Handmade pottery
    - Handmade furniture
  - KVIC announced that within six months plans will be rolled out for revival of these two local arts.
    - Revival of handmade pottery will be taken up on priority under **Kumhar Sashaktikaran Yojana** very soon.
      - Kumhar Sashaktikaran Yojana (KSY): It was launched in 2018 to strengthen and improve the living of potters in the country by making them self reliant.

### Khadi and Village Industries Commission (KVIC)

- KVIC is a statutory body established under the Khadi and Village Industries Commission Act, 1956.
- The KVIC is charged with the planning, promotion, organisation and implementation of programmes for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary.
- It functions under the Ministry of Micro, Small and Medium Enterprises.



Note:

# Geography

## Highlights

- Report on Lightning Strikes
- Domestic Vanadium Deposits
- Report on Lightning Strikes
- Domestic Exploration of Lithium

## Report on Lightning Strikes

### Why in News

According to a report published by the **Climate Resilient Observing Systems Promotion Council (CROPC)**, the number of **deaths due to lightning strikes reduced by nearly 37%** in 2019-20.

- CROPC is a **non-profit organisation** that works with the **India Meteorological Department (IMD)**.

### Key Points

- **Data Analysis:**
  - Lightning-linked fatalities formed **33% of total deaths in natural disasters** in 2019-20.
- **Factors Responsible:**
  - The rapid **degradation of environment** like **global warming, deforestation, depletion of water bodies, concretisations, rising pollution and aerosol levels** have cumulatively pushed the environment to extremes. And lightning is direct promulgation of these climatic extremities.
- **Suggestions:**
  - States should participate in **Lightning Resilient India Campaign** and undertake lightning risk management more comprehensively.
    - IMD has launched a joint campaign named Lightning Resilient India Campaign along with CROPC and duly supported by Indian Meteorological Society (IMS), NGOs, IIT Delhi and other concerned institutions.
  - **Early lightning warning** to farmers, cattle grazers, children and people in open areas.
    - Lightning strikes around a fixed period and almost similar geographical locations in similar patterns.

- **Kalbaishakhi - Norwesters**, which are violent thunderstorms with lightning - claims life in **eastern India** and **pre-monsoon lightning deaths** occur mostly in **Bihar, Jharkhand, Chhattisgarh and UP**.

- **Implement a local lightning safety action plan** like installing Lightning Protection Devices.
- **Lightning fatalities** should be notified as a **disaster to prevent losses**.
  - It needs to be noted that the **Centre has not notified lightning as a disaster**.
- Although the **National Disaster Management Authority (NDMA)** has issued comprehensive guidelines for action plans to states, a large number of losses show that the implementation needs a more "**scientific and focused community-centric approach**", besides convergence of various departments.
- **Mapping of lightning** is a major breakthrough in identifying the precise risk in terms of lightning frequency, current intensity, energy content, high temperature and other adverse impacts.
  - With continuous mapping for at least three years, a **climatology can be established**. This would yield a **Lightning Risk Atlas map** for India which will form the basis for a lightning risk management programme.

### Lightning

- **Meaning:**
  - It is a very **rapid and massive discharge of electricity in the atmosphere**. It is the **process** of occurrence of a **natural 'electrical discharge of very short duration and high voltage between a cloud and the ground or within a cloud'**, accompanied by a bright flash and sound, and sometimes thunderstorms.

Note:



- **Inter cloud or intra cloud (IC) lightning** are visible and **harmless**.
- It is **cloud to ground (CG) lightning**, which is **harmful** as the 'high electric voltage and electric current' leads to **electrocution**.
- **Process:**
  - It is a **result of the difference in electrical charge between the top and bottom of a cloud**.
    - The lightning-generating clouds are typically about 10-12 km in height, with their base about 1-2 km from the Earth's surface. The temperatures at the top range from -35°C to -45°C.
  - As **water vapour moves upwards** in the cloud, it **condenses into water** due to decreasing temperatures. A huge amount of heat is generated in the process, pushing the water molecules further up.
  - As they **move to temperatures below zero**, droplets **change into small ice crystals**. As they continue upwards, they gather mass, until they become so heavy that they start descending.
  - It **leads to a system** where smaller ice crystals move upwards while larger ones come down. The **resulting collisions trigger release of electrons**, in a process very similar to the generation of electric sparks. The moving free electrons cause more collisions and more electrons leading to a chain reaction.
  - The process **results in a situation in which the top layer of the cloud gets positively charged while the middle layer is negatively charged**.
  - In little time, a **huge current**, of the order of lakhs to millions of amperes, starts to **flow between the layers**.
    - It produces heat, leading to the heating of the air column between the two layers of cloud.
    - It is because of this heat that the **air column looks red during lightning**. The heated air column expands and produces shock waves that result in **thunder sounds**.
- **Strikes Earth's Surface:**
  - The **Earth is a good conductor of electricity**. While electrically neutral, it is **relatively positively charged compared to the middle layer of the cloud**. As a result, an estimated **20-25% of the current flow is directed towards the Earth**.

- It is this current flow that results in **damage to life and property**.
- Lightning **has a greater probability of striking raised objects** on the ground, such as trees or buildings.
  - **Lightning Conductor** is a device used to protect buildings from the effect of lightning. A metallic rod, taller than the building, is installed in the walls of the building during its construction.
- The **most lightning activity** on Earth is seen on the shore of **Lake Maracaibo in Venezuela**.
  - At the place where the Catatumbo river falls into Lake Maracaibo, an average 260 storm days occur every year, and October sees 28 lightning flashes every minute - a phenomenon referred to as the **Beacon of Maracaibo or the Everlasting Storm**.

### Concretisation

- Concretisation or the **increase in paved surfaces** has a **suffocating impact on trees** and turns a city into an **urban heat island** with **extremely low ground water** and **threats of floods** looming large in monsoons due to surface run-off.
  - The concrete surface, be it buildings or roads or footpaths **radiate heat waves in the evening**, making nights as hot as days and decreasing the difference between the maximum and the minimum temperatures, resulting in urban heat island effect.
- During concretisation, the **carbon stored in the soil escapes into the atmosphere**, which then gets oxidised to form **carbon dioxide**, a major **greenhouse gas** leading to temperature escalation.

## Domestic Vanadium Deposits

### Why in News

- A recent exploration by **Geological Survey of India (GSI)** has found reserves of **Vanadium in Arunachal Pradesh**.
- GSI is an **attached office to the Ministry of Mines**.

### Key Points

- **About Vanadium:**
  - Vanadium is a **chemical element** with the **symbol V**.
  - It is a scarce element, hard, silvery grey, ductile and malleable **transition metal** with **good structural strength**.

Note:

- Transition metals are all the elements in groups 3–12 of the periodic table. These are superior conductors of heat as well as electricity.
- **Ores:**
  - Patronite, vanadinite, roscoelite and carnotite.
- **Uses:**
  - Vanadium is used primarily as an alloying element in the **Iron & Steel Industry** and to some extent as a **stabiliser in titanium and aluminium alloys used in the aerospace Industry**.
  - Modern applications of vanadium include its use as **vanadium secondary batteries for power plants** and **rechargeable Vanadium Redox Battery (VRB) for commercial applications**.
  - Vanadium alloys are used in **nuclear reactors** because of **vanadium's low neutron-absorbing properties**.
- **Reserves of Vanadium in Arunachal Pradesh:**
  - Concentrations of vanadium have been found in the **palaeo-proterozoic** (era) **carbonaceous phyllite rocks** in the **Depo and Tamang** areas of Papum Pare district in Arunachal Pradesh.
    - **Phyllite** is a fine-grained **metamorphic rock** formed by the recrystallization of fine-grained, parent sedimentary rocks, such as mudstones or shales.
    - Sedimentary rocks containing significant enrichment in organic matter over average sediments are called **carbonaceous sedimentary rocks**.
  - There are **other potential sites in various districts** in Arunachal Pradesh.
  - This is the **first report of a primary deposit of vanadium in India**.
- **Current Scenario:**
  - India is a **significant consumer of vanadium**, but is not a primary producer of the strategic metal.
    - According to data provided by the GSI, India consumed **4% of total global production of Vanadium in 2017**.
  - It is recovered as a **by-product from the slag** of processed vanadiferous magnetite (iron) ores.
    - Slag is the **glass-like by-product left over after** a desired metal has been separated (i.e., smelted) from its **raw ore**.

#### ➤ **Global Reserves:**

- The largest deposits of Vanadium are in **China**, followed by **Russia and South Africa** respectively.

## Report on Lightning Strikes

### *Why in News*

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### *Key Points*

#### ➤ **Data Analysis:**

- Lightning-linked fatalities formed **33% of total deaths in natural disasters** in 2019-20.

#### ➤ **Factors Responsible:**

- The rapid **degradation of environment** like **global warming**, **deforestation**, **depletion of water bodies**, **concretisations**, **rising pollution** and **aerosol levels** have cumulatively pushed the environment to extremes. And lightning is direct promulgation of these climatic extremities.

#### ➤ **Suggestions:**

- States should participate in **Lightning Resilient India Campaign** and undertake lightning risk management more comprehensively.
  - IMD has launched a joint campaign named **Lightning Resilient India Campaign** along with CROPC and duly supported by Indian Meteorological Society (IMS), NGOs, IIT Delhi and other concerned institutions.
- **Early lightning warning** to farmers, cattle grazers, children and people in open areas.
  - Lightning strikes around a fixed period and almost similar geographical locations in similar patterns.
  - **Kalbaishakhi - Norwesters**, which are violent thunderstorms with lightning - claims life in **eastern India** and **pre-monsoon lightning deaths** occur mostly in **Bihar, Jharkhand, Chhattisgarh and UP**.
- **Implement a local lightning safety action plan** like installing Lightning Protection Devices.

Note:



- **Lightning fatalities** should be notified as a **disaster to prevent losses**.
  - It needs to be noted that the **Centre has not notified lightning as a disaster**.
- Although the **National Disaster Management Authority (NDMA)** has issued comprehensive guidelines for action plans to states, a large number of losses show that the implementation needs a more “**scientific and focused community-centric approach**”, besides convergence of various departments.
- **Mapping of lightning** is a major breakthrough in identifying the precise risk in terms of lightning frequency, current intensity, energy content, high temperature and other adverse impacts.
  - With continuous mapping for at least three years, a **climatology can be established**. This would yield a **Lightning Risk Atlas map** for India which will form the basis for a lightning risk management programme.

### Lightning

#### ➤ Meaning:

- It is a very **rapid and massive discharge of electricity in the atmosphere**. It is the **process** of occurrence of a **natural ‘electrical discharge of very short duration and high voltage between a cloud and the ground or within a cloud’**, accompanied by a bright flash and sound, and sometimes thunderstorms.
- **Inter cloud or intra cloud (IC) lightning** are visible and **harmless**.
- It is **cloud to ground (CG) lightning**, which is **harmful** as the ‘high electric voltage and electric current’ leads to **electrocution**.

#### ➤ Process:

- It is a **result of the difference in electrical charge between the top and bottom of a cloud**.
  - The lightning-generating clouds are typically about 10-12 km in height, with their base about 1-2 km from the Earth’s surface. The temperatures at the top range from -35°C to -45°C.
- As **water vapour moves upwards** in the cloud, it **condenses into water** due to decreasing temperatures. A huge amount of heat is generated in the process, pushing the water molecules further up.

- As they **move to temperatures below zero**, droplets **change into small ice crystals**. As they continue upwards, they gather mass, until they become so heavy that they start descending.
- It **leads to a system** where smaller ice crystals move upwards while larger ones come down. The **resulting collisions trigger release of electrons**, in a process very similar to the generation of electric sparks. The moving free electrons cause more collisions and more electrons leading to a chain reaction.
- The process **results in a situation in which the top layer of the cloud gets positively charged while the middle layer is negatively charged**.
- In little time, a **huge current**, of the order of lakhs to millions of amperes, starts to **flow between the layers**.
  - It produces heat, leading to the heating of the air column between the two layers of cloud.
  - It is because of this heat that the **air column looks red during lightning**. The heated air column expands and produces shock waves that result in **thunder sounds**.

#### ➤ Strikes Earth’s Surface:

- The **Earth is a good conductor of electricity**. While electrically neutral, it is **relatively positively charged compared to the middle layer of the cloud**. As a result, an estimated **20-25% of the current flow is directed towards the Earth**.
  - It is this current flow that results in **damage to life and property**.
- Lightning **has a greater probability of striking raised objects** on the ground, such as trees or buildings.
  - **Lightning Conductor** is a device used to protect buildings from the effect of lightning. A metallic rod, taller than the building, is installed in the walls of the building during its construction.
- The **most lightning activity** on Earth is seen on the shore of **Lake Maracaibo in Venezuela**.
  - At the place where the Catatumbo river falls into Lake Maracaibo, an average 260 storm days occur every year, and October sees 28 lightning flashes every minute - a phenomenon referred to as the **Beacon of Maracaibo or the Everlasting Storm**.

Note:



### Concretisation

- Concretisation or the **increase in paved surfaces** has a **suffocating impact on trees** and turns a city into an **urban heat island** with **extremely low ground water** and **threats of floods** looming large in monsoons due to surface run-off.
  - The concrete surface, be it buildings or roads or footpaths **radiate heat waves in the evening**, making nights as hot as days and decreasing the difference between the maximum and the minimum temperatures, resulting in urban heat island effect.
- During concretisation, the **carbon stored in the soil escapes into the atmosphere**, which then gets oxidised to form **carbon dioxide**, a major **greenhouse gas** leading to temperature escalation.

## Domestic Exploration of Lithium

### Why in News

Recent surveys by the **Atomic Minerals Directorate for Exploration and Research (AMD)** have shown the presence of **lithium resources in Mandya district**, Karnataka.

- AMD is the oldest unit of the **Department of Atomic Energy**.

### Key Points

- **About Lithium:**
  - **Properties:**
    - It is a chemical element with the symbol **Li**.
    - It is a soft, silvery-white metal.
    - Under standard conditions, it is the **lightest metal** and the **lightest solid element**.
    - It is highly **reactive and flammable**, and must be stored in mineral oil.
    - It is an **alkali metal** and a **rare metal**.
      - The **alkali metals** consist of the chemical elements **lithium, sodium, potassium, rubidium, caesium, and francium**. Together with hydrogen they constitute **group 1**, which lies in the **s-block** of the periodic table.
      - **Rare Metals (RM)** include Niobium (Nb), Tantalum (Ta), Lithium (Li), Beryllium (Be), Cesium (Cs) etc. and **Rare Earths (RE)** include Lanthanum (La) to Lutetium (Lu) besides Scandium (Sc) and Yttrium (Y).

1. These **metals are strategic in nature** with wide application in the nuclear and other high tech industries such as electronics, telecommunication, information technology, space, defense etc.

- **Uses:**

- Lithium metal is used to make **useful alloys**.
  - For example, with lead to make **'white metal'** bearings for motor engines, with **aluminium to make aircraft parts**, and with **magnesium to make armour plates**.
- In Thermonuclear reactions.
- To make **electrochemical cells**. Lithium is an important component in **Electric Vehicles**, Laptops etc.

- **Lithium Resources in Karnataka:**

- The survey shows presence of **1,600 tonnes of lithium resources** in the **igneous rocks** of the **Marlagalla-Allapatna** region of **Karnataka's Mandya district**.

- **Benefits of Domestic Exploration:**

- **Reducing Import Bill:**

- **India currently imports all its lithium needs**. Over 165 crore lithium batteries are estimated to have been imported into India between 2016-17 and 2019-20, at an estimated import bill of upwards of **USD 3.3 billion**.

- **Reducing Overdependence on China:**

- China is a major source of **lithium-ion energy storage products** being imported into the country.

- **Issues Associated with Domestic Exploration:**

- The new find is categorised as **"inferred"**.
  - The **'inferred'** mineral resource is the part of a resource for which **quantity, grade and mineral content** are estimated only with a **low level of confidence** based on information gathered from locations such as **outcrops, trenches, pits, workings, and drill holes** that may be of limited or uncertain quality, and also of lower reliability.
- The lithium find is **comparatively small**, considering the size of the proven reserves in **Bolivia, Argentina, Australia, and China respectively**.
- India is seen as a **late mover in attempts to enter the lithium value chain**, coming at a time when **Electric Vehicles** are predicted to be a **sector ripe for disruption**.

Note:

- 2021 is likely to be a turning point for battery technology with several **potential improvements to the li-ion technology**, and alternatives to this tried-and-tested formulation in **advanced stages of commercialisation**.
- **Extraction Method:**
  - Lithium can be extracted in different ways, depending on the type of the deposit.
    - **Solar evaporation of large brine pools.**
      - A **brine pool** is a volume of brine collected in a seafloor depression.
      - For example: Brines of **Sambhar and Pachpadra** in Rajasthan.
    - **Hard-rock extraction of the ore** (a metal-bearing mineral).
      - For example: **rock mining at Mandya**.
- **Other Potential Sites:**
  - The major **mica belts** in **Rajasthan, Bihar, and Andhra Pradesh**.
  - **Pegmatite** (igneous rocks) belts in **Odisha and Chhattisgarh**.
  - Brines of **Sambhar and Pachpadra** in Rajasthan, and **Rann of Kachchh** in Gujarat.
- **Other Government Initiative:**
  - India, through a newly state-owned company **Khanij Bidesh India Ltd**, had **signed an agreement with an Argentinian firm** to jointly prospect lithium in Argentina that has the **third largest reserves of the metal in the world**.
    - The company has a specific mandate **to acquire strategic mineral assets such as lithium and cobalt abroad**.



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Note:



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# Social Issues

## Highlights

- *Special Marriage Act, 1954*
- *Wages for Housework*
- *Air Pollution and Pregnancy Losses: Lancet Report*
- *Protecting the Sentinelese*
- *Severe Stress Among Army Personnel*
- *Satyameva Jayate: Digital Media Literacy*
- *Longitudinal Ageing Study of India*
- *Fighting Drug Addiction*

## Special Marriage Act, 1954

### Why in News

Recently, the **Allahabad High Court** has struck down the provisions under **Section 5 of the Special Marriage Act** that required parties to give a 30-day mandatory public notice of their intention to marry.

### Key Points

- **Special Marriage Act (SMA), 1954:**
  - The Special Marriage Act is a **central legislation** made to **validate and register interreligious and inter-caste marriages in India**.
  - It allows two individuals to solemnise their marriage through a **civil contract**.
  - **No religious formalities** are needed to be carried out under the Act.
- **Provisions of the Special Marriage Act:**
  - **Section 4:** There are **certain conditions** laid down in Section 4 of the Act:
    - It says that neither of the parties should have a spouse living.
    - Both the parties should be **capable of giving consent**; should be sane at the time of marriage.
    - The parties shall **not be within the prohibited degree of relations** as prescribed under their law.
    - While **considering the age**, the **male must be at least 21 and the female be 18 at least**.
  - **Section 5 and 6:**
    - Under these sections, the parties wishing to marry are **supposed to give a notice for their marriage** to the Marriage Officer in an area where one of the spouses has been **living for**

**the last 30 days**. Then, the marriage officer publishes the notice of marriage in his office.

- **Anyone having any objection to the marriage** can file against it within a period of 30 days. If any such objection against the marriage is sustained by the marriage officer, the marriage can be rejected.

### ➤ Details of the verdict

#### ○ Observations:

- The **provision for mandatory publication of notice**, derived through “simplistic reading” of the particular law, “would **invade the fundamental rights of liberty and privacy**, including within its sphere freedom to choose for marriage without interference from state and non-state actors, of the persons concerned”.
- The court also noted that despite the secular law for marriage, a majority of marriages in the country happen as per religious customs. It said that **when marriages under personal law do not require a notice or invitation for objections, such a requirement is obsolete in secular law** and cannot be forced on a couple.
- **Publishing marriage details made optional:** The court made it optional for the parties to the intended marriage to make a request in writing to the Marriage Officer to publish or not to publish a notice under Section 5 and 6 of the Act of 1954.
- **Directives for Marriage officer:** In case the parties do not make such a request for publication of notice in writing, the Marriage Officer shall not publish any such notice or entertain objections to the intended marriage and proceed with the solemnization of the marriage. However, in case the officer has any doubt, he could ask for appropriate details/proof as per the facts of the case.

Note:



- **Basis of Judgement is progressive rulings by the Supreme Court:**
  - **Aadhaar case (2017)** which made the **right to privacy** a fundamental right under **Article 21** of the Constitution of India.
  - **Hadiya Marriage Case (2018)** which held that the **right to choose a partner is a fundamental right**.
  - **Navtej Singh Johar vs. Union of India case (2018)** in which the court decriminalised homosexuality striking down the **Section 377 of IPC**.
- **Benefits of the verdict:**
  - It would **decrease the cases of conversion for marriage**, as the delay under the special marriage Act 1954 was forcing many couples to marry by converting.
  - It shall **remove hindrances to inter-faith and inter-caste marriages**, and thus could promote ideals of **secularism and egalitarianism**.
  - It shall provide **relief to interfaith couples from being targeted by vigilante groups**.
- **Issue related to the verdict:**
  - Doing away with the public notification of the marriage **could increase the cases of cheating**, for example cases of duping by a married spouse.
  - It can facilitate anti social activities such as forceful conversion.

## Wages for Housework

### Why in News

Recently, a political party of Tamil Nadu has promised salaries to housewives as a part of its electoral campaign.

- A report by the **International Labour Organization (ILO)** in 2018 shows that, globally, women perform 76.2% of total hours of unpaid care work, more than three times as much as men. In Asia and the Pacific, this figure rises to 80%.

### Key Points

- **Background:**
  - **Wages for Housework Movement:**
    - The **International Wages for Housework Campaign** started in **Italy in 1972** as a feminist movement that **highlighted the role of gendered labour in the home and its connection to the production of surplus value under**

**capitalism**. The movement further spread to Britain and America.

- Alongside other demands for **social and political equality**, women's rights campaigners made visible and also politicised **women's everyday experience of housework and child care** in the 'private' realm of the household.
- **Scenario in India:**
  - **In 2010**, an application by the **National Housewives Association**, seeking recognition as a trade union was rejected by the deputy registrar of trade unions on the ground that housework is not a trade or an industry.
  - **In 2012**, the then minister for Women and Child development announced that the **government was considering mandating a salary for housework to wives, from husbands**. The purpose was to **empower women financially and help them live with dignity**.
    - The proposal never materialised and with the change in the government in 2014, **the idea was put to rest**.

### ➤ Issue:

- Housework demands effort and sacrifice, **365 days a year, 24/7**. Despite this, a huge proportion of **Indian women are not treated equal to men**.
- A large number of women live with **domestic violence and cruelty because they are economically dependent on others**, mainly their husbands.
- Time-use data from 2019 gathered by the **National Sample Survey Organisation** revealed that only about a quarter of men and boys above six years engaged in unpaid household chores, compared to over four-fifths of women.
  - Every day, an average **Indian male spends 1.5 hours per day** in unpaid domestic work, compared to about **five hours by a female**.

### ➤ Arguments in Favour of Household Wage:

- **More Accurate National Income Accounting:** Domestic labour of women is not accounted for in either the **Gross Domestic Product (GDP)** or the employment metrics. Neglecting to include it would thus mean underestimating GDP of the economy.
- **Makes Woman Autonomous and Controls Domestic Violence:** The wage that the state ought to pay women would make them autonomous of the men on whom they were dependent.

Note:



- Most women continue in an abusive relationship because they don't have a way out, as they are financially dependent on their partner.
- **Redefines the Role of Women:** More fundamentally, the very demand for a wage was a repudiation of housework as an expression of women's nature. It was a revolt against the assigned social role of women.
- **Welfare of a large Segment of Population:** According to the **Census in 2011**, people engaged in household duties have been treated as non-workers, even when **159.9 million women stated that "household work" was their main occupation.**
- **Recognition as the first step to Equality:** Recognition of household work is one of the most central processes in empowerment. It gives them a claim to equality within the patriarchal Indian household that only recognises the work done by men.
  - Once recognised as work, this arena of unpaid domestic labour that is dominated almost entirely by women can become one where **women can demand some degree of parity in terms of the time and energy expended on it.**
- **Time Poverty:** Combining paid work commitments with a mountain of menial, domestic labour at home means **poor women are more likely to suffer from 'time poverty'.**
  - Time poverty fundamentally **undermines women's human rights** since it undermines women's agency and ability to make choices. The immense burden of work therefore **prevents women from pursuing further education, employment opportunities, raising their skill-level and tending to their own well-being.**
- **Against Household Wage:**
  - **Increased Responsibility:** Asking men to pay for wives' domestic work could further enhance their sense of entitlement. It may also put the additional onus on women to perform.
  - **Strengthen the Position of Men:** Buying domestic labour from wife poses a serious risk of formalising the patriarchal Indian family where the position of men stems from their being "providers" in the relationship.
  - **Acceptance and application:** Despite a legal provision, equal inheritance rights continue to be elusive for a majority of women.

- **Burden on Government:** There are still debates on who would pay for the housework done by women, if it is to be done by the State then this will put additional fiscal burden on government finances.

### Suggestions

- We need to **strengthen awareness, implementation and utilisation of other existing provisions.** Starting from the right to reside in the **marital home, to streedhan and haq meher, to coparcenary and inheritance rights as daughters and to basic services, free legal aid and maintenance** in instances of violence and divorce.
- Women should be **encouraged and helped to reach their full potential** through **quality education, access and opportunities of work**, gender-sensitive and harassment-free workplaces and attitudinal and behaviour change within families to make household chores more participative.

## Air Pollution and Pregnancy Losses: Lancet Report

### Why in News

According to recent study **poor air quality is associated** with a considerable proportion of **pregnancy loss in India, Pakistan, and Bangladesh.**

- It is the **first study to estimate the effect of air pollution on pregnancy loss** across the region.

### Key Points

- **The Study:**
  - They created a model to examine how **exposure to PM 2.5 increased women's risk of pregnancy loss**, calculating risk for each  $10 \mu\text{g}/\text{m}^3$  increased in PM 2.5 after **adjusting for maternal age, temperature and humidity, seasonal variation, and long-term trends** in pregnancy loss.
  - Each **increase in  $10 \mu\text{g}/\text{m}^3$**  was estimated to **increase a mother's risk of pregnancy loss by 3%.**
    - The increase in **risk was greater for mothers from rural areas or those who became pregnant at an older age**, compared to younger mothers from urban areas.
- **Area Specific Report:**

Note:

- Of the pregnancy loss cases, **77% were from India**, 12% from Pakistan, and 11% from Bangladesh.

➤ **Limitations:**

- The study was **unable to distinguish between natural pregnancy loss and abortions**, which may have led to an underestimation of the effect of air pollution on natural pregnancy loss.
- There was **under-reporting** of pregnancy losses because of **stigma** or **ignoring very early pregnancy losses**.

### **Air Pollution**

- Air pollution refers to any **physical, chemical, or biological change in the air**. It is the contamination of air by harmful gases, dust, and smoke which **affects plants, animals, and humans drastically**.

- **Air Pollutants:** Pollutants are the substances which cause pollution. **Types:**

- **Primary:** The pollutants that directly cause air pollution or the pollutants that are formed and **emitted directly from particular sources**. Examples are **particulate matter, carbon monoxide, nitrogen oxide, and sulfur oxide**.
- **Secondary:** The pollutants formed by the intermingling and reaction of primary pollutants are known as secondary pollutants. Examples are **ozone and secondary organic aerosol (haze)**.

- **Causes of Air Pollution:** Major sources of air pollution are:

- Indoor **burning of fossil fuels, woods and other biomass** to cook, heat and light homes.
- **Industry**, including power generation such as coal-fired plants and diesel generators.
- **Transport**, especially **vehicles** with diesel engines.
- **Agriculture**, including livestock, which produces methane and ammonia, rice paddies, which produce methane, and the burning of agricultural waste.
- Open **waste burning** and organic waste in landfills.

- **Impact of Air Pollution on Human Health:**

- As per the **State of Global Air 2020 (SoGA 2020)** released by the **Health Effects Institute (HEI)**:
  - High PM contributed to the deaths of more than 1,16,000 Indian infants who did not survive their first month.
  - More than half of these deaths were associated with outdoor PM2.5 and others were linked to

the use of solid fuels such as charcoal, wood, and animal dung for cooking.

- According to the **2017 Global Burden of Disease report** published by the **Lancet Planetary Health journal**:

- India, which accounts for 18% of the global population, recorded 26% of the global premature deaths and disease burden due to air pollution.
- **One in every eight deaths in India (2017)** could be attributed to air pollution, which now contributes to more disease burden than smoking.

- Household air pollution causes about **3.8 million premature deaths** each year.

- Air quality has become a **serious health issue** because the pollutants enter deep inside the lungs and the lungs capacity to purify blood gets reduced which affects the person's growth, mental ability and the working capacity especially for **children, pregnant women and elderly people**.

- In children, it is associated with **low birth weight, asthma, childhood cancers, obesity, poor lung development and autism**, among others.

➤ **Indian Initiatives to Control Air Pollution:**

- **The Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas:**

It coordinates efforts of state governments to curb air pollution, and will lay down the parameters of air quality for the region.

- **Bharat Stage (BS) VI norms:** These are emission control standards put in place by the government to keep a check on air pollution.

- **Dashboard for Monitoring Air Quality:** It is a **National Air Quality Monitoring Programme (NAMP)** based dashboard, built on data from the **Central Pollution Control Board's National Ambient Air Quality Monitoring (NAAQM) Network** which was started in 1984-85 and covers 344 cities/towns in 29 states and 6 UTs.

- **National Clean Air Programme:** launched in 2019 it is a comprehensive pan-India air pollution abatement scheme for 102 cities.

- **National Air Quality Index (AQI):** It focuses on health effects one might experience within a few hours or days after breathing polluted air.

- **National Ambient Air Quality Standards:** They are the standards for ambient air quality with reference to various identified pollutants notified

Note:



by the **Central Pollution Control Board** under the **Air (Prevention and Control of Pollution) Act, 1981**.

- **Breathe:** It is a 15 point action plan to fight air pollution by **NITI Aayog**.
- **Pradhan Mantri Ujjwala Yojana (PMUY):** It aims at providing clean-cooking fuel to the poor households and bringing in qualitative changes in the living standards.

#### ➤ International Initiatives:

- **Climate and Clean Air Coalition:**
  - Launched in **2019**
  - It is a **voluntary partnership** of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations **committed to protecting the climate and improving air quality through actions to reduce short-lived climate pollutants**.
  - **India is a member** of the coalition.
- **United Nations Clean Air Initiative:** It calls on national and subnational governments to commit to achieving air quality that is safe for citizens, and to align climate change and air pollution policies by 2030.
- **World Health Organization (WHO)'s 4 Pillar Strategy:** WHO adopted a resolution (2015) to address the adverse health effects of air pollution.

#### PM (Particulate Matter) 2.5

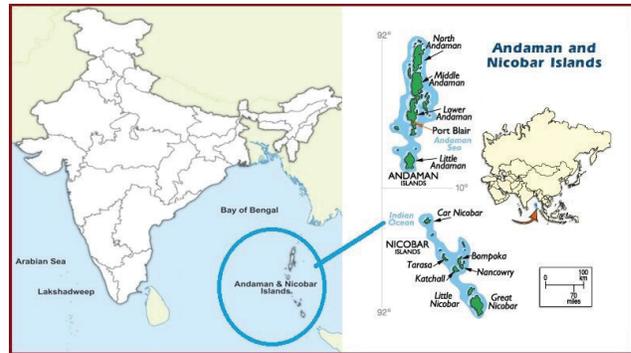
- PM 2.5 is an atmospheric particulate matter of diameter of fewer than 2.5 micrometres, which is around 3% the diameter of a human hair.
- It causes respiratory problems and also reduces visibility. It is an endocrine disruptor that can affect insulin secretion and insulin sensitivity, thus contributing to diabetes.
- It can only be detected with the help of an electron microscope because of them being very small.
- Sources of fine particles include all types of **combustion activities** (motor vehicles, power plants, wood burning, etc.) and certain **industrial processes**.

## Protecting the Sentinelese

### Why in News

Recently, the **Anthropological Survey of India (ANSI)** policy document warned of threat to the Sentinelese from commercial activity.

- The policy document comes almost two years after American national John Allen Chau was allegedly **killed by the Sentinelese on the North Sentinel Island**.



### Key Points

- **ANSI Guidelines:**
  - Any **exploitation** of the **North Sentinel Island** of the **Andamans** for commercial and strategic gain would be **dangerous for its occupants, the Sentinelese**.
  - The **Right of the people** to the island is **non-negotiable, unassailable and unfringeable**. The prime duty of the state is to protect these rights as eternal and sacrosanct.
  - Their **island should not be eyed** for any commercial or strategic gain.
  - The document also calls for **building a knowledge bank on the Sentinelese**.
  - Since 'on-the-spot study' is not possible for the tribal community, anthropologists suggest the '**study of a culture from distance**'.
- **About the Sentinelese:**
  - The Sentinelese are a **pre-neolithic, negrito tribe** who live in North Sentinel Island of the Andamans.
  - They are **completely isolated with no contact to the outside world**. The first time they were contacted by a team of Indian anthropologists in 1991.
    - Due to no contact, the census of Sentinelese is taken through photographing the island individuals from distance.
    - It has a population of about **50 to 100** on the **North Sentinel Island**.
  - Surveys of North Sentinel Island have **not found any evidence of agriculture**. Instead, the community seems to be **hunter-gatherers, getting food through fishing, hunting, and collecting wild plants living on the island**.

Note:

- Sentinelese are also listed under **Particularly Vulnerable Tribal Groups (PVTGs)** by the government of India. The **other four PVTGs** of the islands are **Great Andamanese, Onge, Jarawa, and Shompens**.
- They are protected under the **Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956**.
  - It declares traditional areas occupied by the tribes as reserves, and prohibits entry of all except those with authorization.
  - Photographing or filming tribe members is also an offense.

#### Anthropological Survey of India

- It is a **premier research institute for anthropological research in bio-cultural studies**.
- It was established in **1945**. It is one of the many organizations under **the Ministry of Culture**. It has **headquarters at Kolkata** and **branches in Port Blair, Shillong, DehraDun, Udaipur, Nagpur, and Mysore** in addition to two **field stations at Jagdalpur and Ranchi**.
- The Survey through its anthropological research **contributes in respect of the biological, social and cultural heritage of the country**.
- It is also recognised as one of the most advanced centres **for research and training in anthropology and allied disciplines**.
- **Objectives:**
  - To **study the tribes and other communities** that form the population of India both from the biological and cultural point of view
  - To **study and preserve the human skeletal remains**, both from modern and Archaeological.
  - To **collect samples of arts and crafts** of the tribes of India.
  - To function as a **training center for advanced students in anthropology** and for administration.
  - To **publish** the results of the research.

#### Suggestions

- The academics have suggested that the **best path forward is a policy of “controlled contact”** with these communities instead of a policy of no contact.
- Carefully managed contact to avoid the spread of disease, but **also enable the building of trust and providing aid and medical help if needed is the best way**.

- Establishing contact with the outside world can also **help governments to document their way of life, preserve their culture and their holistic development**.

## Severe Stress Among Army Personnel

### Why in News

According to the findings of a study by **United Service Institution of India (USI)**, a Service think tank, **more than half of Indian Army personnel seem to be under severe stress**.

### Key Points

- **Stressed Army Personnel:**
  - The Army has been **losing more personnel every year** due to suicides, fratricides and untoward incidents **than in response to any enemy or terrorist activities**.
    - **Prolonged exposure** of Indian Army personnel to **Counter Insurgency and Counter Terrorism (CI/CT) environment** has been one of the contributory factors for **increased stress levels**.
    - This loss is **substantially greater than the operational casualties suffered by the Armed forces**. In addition, a number of soldiers and leaders have been affected by hypertension, heart diseases, psychosis, neurosis and other related ailments.
  - Officers experience comparatively **much higher cumulative stress levels**, compared to the **Junior Commissioned Officers (JCO) and Other Ranks (OR)** and the stress causative factors are also different.
- **Causes of Stress:**
  - **Among Army Officers:** Inadequacies in the **quality of leadership, overburdened commitments, inadequate resources, frequent dislocations, lack of fairness and transparency** in postings and promotions, insufficient accommodation, **indifferent attitude of civilian officials**, etc.
  - **Among Lower Rank Officials:** Excessive engagements, domestic problems, lack of dignity, lack of recreational facilities and conflict with seniors as well as subordinates, etc.
- **Impact of Stress on Work:**

Note:



- Units and subunits under stress are likely to witness an **increased number of incidents of indiscipline**, unsatisfactory state of training, inadequate maintenance of equipment and **low morale** that adversely affects their combat preparedness and operational performance.

➤ **Suggestion:**

- **Stress prevention and management** should be treated “as a leadership role at Unit and Formation level”.

➤ **Army’s Stand:**

- The Army has **rejected the study**, stressing that the **sample size** for the survey was **too “miniscule”** to arrive at such **“far reaching”** conclusions.
  - The study has been **done by one individual**, with a sample size of **around 400 soldiers**.

➤ **Related Steps Taken:**

- Provision of **better quality of facilities** such as clothing, food, married accommodation, travel facilities, schooling, recreation etc. and periodic welfare meeting.
- Conduct of **yoga and meditation** as a tool for stress management.
- Training and deployment of **psychological counsellors**.
- Institutionalization of projects ‘**MILAP**’ and ‘**SAHYOG**’ by the Army in **Northern & Eastern Command** to reduce stress among troops.
- A ‘**MansikSahayata Helpline**’ has been established by the Army & Air Force to take professional counselling.
- **Mental Health Awareness** is provided during pre-induction training.
- Formation of **Military Psychiatry Treatment Centre at INHS Asvini** and establishment of **Mental Health Centres** in Mumbai, Visakhapatnam, Kochi, Port Blair, Goa and Karwar.
- Previously, **Defence Institute of Psychological Research (DIPR) had completed research projects** that focused on identifying factors causing suicides among troops deployed in Field and Peace areas. It had found in its studies that **not getting timely leave** was one of the stress factors triggering suicidal behaviour.
  - **Recommendation** included: rationalizing grant of Leave, counselling at the time of leave, decrease

workload, reduction in tenure of deployment, increase in pay and allowances, improvement in living conditions, building better interpersonal relations between the officers and men, training programmes in stress management and psychological counselling, enhancing basic and recreation activities and redress of grievances.

## Satyameva Jayate: Digital Media Literacy

### Why in News

The Kerala Government has recently announced a digital media literacy programme called ‘**Satyameva Jayate (Truth alone triumphs) to counter the menace of Fake News**’.

### Key Points

- The programme would be taught at **schools and colleges**, which would be encouraged to **develop curriculum on digital media literacy**.
- **The programme would cover five points :**
  - What is wrong information.
  - Why they are spreading fast.
  - What precautions have to be adopted while using the content of social media.
  - How those who spread fake news make profit.
  - What steps can be initiated by citizens.

### Satyameva Jayate

- Satyameva Jayate (Truth alone triumphs”) is a part of a mantra from the Hindu scripture **Mundaka Upanishad**.
- Following the independence of India, it was adopted as the national motto of India on **26<sup>th</sup> January 1950**.
- It is inscribed in the **Devanagari script** at the base of the **Lion Capital of Ashoka** and forms an **integral part of the Indian national emblem**.
- The emblem and the words “Satyameva Jayate” are inscribed on one side of all Indian currency and national documents.

### ➤ Menace of Fake News:

- Fake news is untrue information presented as news. It often has the aim of **damaging the reputation** of a person or entity, or making money through advertising revenue.

Note:

- Once common in the print and digital media, the **prevalence of fake news has increased with the rise of social media and messengers.**
- **Political polarization, post-truth politics, confirmation bias, and social media** have been implicated in the spread of fake news.
- **Threats Posed:**
  - Fake news can reduce the impact of real news by **competing with it.**
  - In India, the spread of fake news has occurred mostly with relation to **political and religious matters.**
    - However, misinformation related to Covid-19 pandemic was also widely circulated.
  - Fake news spread through social media in the country has become a serious problem, with the potential of it resulting in **mob violence.**
- **Countermeasures:**
  - **Internet shutdowns** are often used by the government as a way to control social media rumours from spreading.
  - Ideas such as **linking Aadhaar to social media accounts** have been suggested to the Supreme Court of India by the Attorney General.
  - In some parts of India like Kannur in Kerala, the government conducted **fake news classes in government schools.**
  - The government is planning to conduct more public-education initiatives to make the population more aware of fake news.
  - Fact-checking has sparked the creation of **fact-checking websites** in India to counter fake news. For example **Alt News.**
  - Recently, the Supreme Court has asked the Centre to provide information on the **existing legal mechanisms to deal** with complaints about the content on television channels. Further it has asked the Centre to create an authority to check fake news and bigotry on air.

## Longitudinal Ageing Study of India

### **Why in News**

Recently, the **Ministry of Health & Family Welfare** has released the **Longitudinal Ageing Study of India (LASI) Wave-1 Report** on the virtual platform.

### **Key Points**

- **About LASI:**
  - **About:**
    - It is a full scale **national survey of scientific investigation of the health, economic, and social determinants and consequences of population ageing** in India. It was **commissioned in 2016.**
    - It is India's **first and the world's largest ever survey that provides a longitudinal database** for designing policies and programmes for the **older population** in the broad domains of social, health, and economic well-being.
  - **Agencies Involved:**
    - The **National Programme for Health Care of Elderly**, Ministry of Health & Family Welfare has undertaken the Longitudinal Ageing Study of India, through **International Institute for Population Sciences, (IIPS), Mumbai** in collaboration with **Harvard School of Public Health, University of Southern California, USA, United Nations Population Fund (UNFPA)** and **National Institute on Ageing.**
  - **Coverage:**
    - The **first national wave of the LASI (Wave 1)** covered a **baseline sample of 72,250 individuals aged 45 and above and their spouses**, including elderly persons aged **60** and above and oldest-old persons aged **75** and above from all States and Union Territories (UTs) of India (excluding Sikkim).
  - **Methodology:**
    - It collects detailed data on health and biomarkers together with information on family and social network, income, assets, and consumption.
      - In medicine, a biomarker is a **measurable indicator of the severity or presence of some disease state.** More generally a biomarker is anything that can be used **as an indicator of a particular disease state** or some other physiological state of an organism.
- **Findings:**
  - In the 2011 census, the **60+ population accounted for 8.6% of India's population**, accounting for **103 million elderly people.**
  - Growing at around **3% annually**, the number of elderly people will rise to **319 million in 2050.**

Note:

- 75% of the elderly people suffer from one or the other **chronic disease**. 40% of the elderly people have **one or the other disability** and 20% have issues related to **mental health**.
- The self-reported prevalence of diagnosed **cardiovascular diseases (CVDs)** is **28%** among older adults aged **45 and above**.
- The prevalence of **multi-morbidity conditions** among the elderly age **60 and above** is **much higher in the states/UTs** of Kerala (52%), Chandigarh (41%), Lakshadweep (40%), Goa (39%) and Andaman & Nicobar Islands (38%). The prevalence of **single morbidity and multi-morbidity** conditions increases with age.
- **Significance:**
  - The evidence from LASI will be used to further strengthen and broaden the **scope of the National Programme for Health Care of the Elderly** and also help in establishing a range of preventive and health care programmes for the older population and most vulnerable among them.
  - The study holds significance in light of the ongoing **Covid-19** pandemic with the elderly and persons with **comorbidities** being at the highest risk of contracting the disease.
    - **Comorbidity** simply means **more than one illness or disease occurring in one person at the same time** and **multimorbidity** means **more than two illnesses** or diseases occurring in the same person at the same time.

#### National Programme for Health Care of Elderly

- About:
  - The programme is being implemented under the **Non-Communicable Disease (NCD)** flexible pool within the overarching umbrella of the **National Health Mission** for Districts and below in the States.
- Vision:
  - To provide **accessible, affordable, and high-quality long-term, comprehensive and dedicated care services** to an Ageing population.
  - Creating a new **“architecture”** for Ageing.
  - To build a framework to create an enabling environment for **“a Society for all Ages”**.
  - To promote the concept of **Active and Healthy Ageing**.

#### ➤ Funding Pattern:

- The Centre bears **75%** of the total budget and the State Government contributes **25%** of the budget, for activities up to district level.

#### ➤ Eligible Beneficiary:

- All elderly People (above 60 Years) in the country.

#### ➤ Types of Benefits:

- Free, Specialized health care facilities exclusively for the elderly people through the State health delivery system.

## Fighting Drug Addiction

### Why in News

Recently, people in a few villages of **Jodhpur district’s Bilara block, Rajasthan** have come together to tackle **Drug Addiction** among the youth.

### Key Points

#### ➤ Steps Taken By the Villagers:

- **Boycott** of persons consuming **liquor, tobacco and narcotics**.
- **Imposition of a penalty** on the **sellers and buyers** of these **substances**.

#### ➤ Drug Addiction:

- It refers to the **condition of being addicted to a drug**, particularly narcotic drugs.
- These are **generally illegal drugs** that **affect the mood and behaviour of a person**.
- **Drug abuse** refers to the **use of certain chemicals for the purpose of creating pleasurable effects on the brain**.
- There are over **190 million drug users around the world** and the problem has been increasing at alarming rates, especially among young adults under the age of 30.

#### ➤ Drug Menace In India:

- The menace of drug addiction has **spread fast among the youth of India**.
- India is sandwiched between two **largest Opium producing regions** of the world that is **the Golden triangle on one side and the Golden crescent on other**.

Note:





- The **golden triangle** area comprises **Thailand, Myanmar, Vietnam and Laos**.
- The **golden crescent** area includes **Pakistan, Afghanistan and Iran**.
- As per the report **Magnitude of Substance Use in India** released by **All India Institute Of Medical Science (AIIMS)** in 2019:
  - **Alcohol** is the most abused substance in India.
  - Around **5 crore** Indians reported to have **used cannabis and opioids** at the time of the survey (conducted in the year 2018).
  - It has been estimated that there are about **8.5 lakh people who inject drugs**.
  - Of the total cases estimated by the report, **more than half** of them are contributed by states like **Punjab, Assam, Delhi, Haryana, Manipur, Mizoram, Sikkim and Uttar Pradesh**.
  - About 60 lakh people are estimated to need help for their opioid use problems.
- More and more children are taking to alcohol consumption and the **highest percentage of children who are addicted to alcohol are in Punjab followed by West Bengal and Uttar Pradesh**.
- **Major Reasons for Drug Abuse:**
  - To be accepted by the peers.
  - Increasing economic stress.
  - Changing cultural values.
  - Experimentation.
  - Neurotic pleasure.
  - Ineffective Policing.
- **Impacts of Drug Abuse:**
  - Higher risk of unintentional **injuries, accidents, domestic violence incidents, medical problems, and death**.
- **Economic potential** gets wasted.
- **Affects relationships** with family, friends creating emotional and social problems
- Increases **financial burden**.
- Drug abuse seriously **affects our health, security, peace and development**.
  - Increase in **diseases like Hepatitis B and C, Tuberculosis**
- Drug dependence, low self esteem, hopelessness can **lead to criminal action and even suicidal tendencies**.
- **Challenges to Curb the Drug Menace:**
  - **Legally Available Drugs:**
    - Such as **tobacco** is a huge problem which is usually seen as a **gateway drug** which children take just to experiment with.
  - **Lack of Availability of Rehabilitation Centres:**
    - There is a lack of rehabilitation centres. Also, NGOs operating de-addiction centres in the country, have failed to provide the required kind of treatment and therapy.
  - **Smuggling of Drugs:**
    - Smuggling of drugs through the states like Punjab, Assam and Uttar Pradesh which share the border with neighbouring countries.
- **Government Initiatives to Tackle Drug Addiction:**
  - It constituted the **Narco-Coordination Centre (NCORD)** in November, 2016 and revived the scheme of **“Financial Assistance to States for Narcotics Control”**.
  - Narcotics Control Bureau has been provided funds for developing a new software i.e. **Seizure Information Management System (SIMS)** which will create a complete **online database of drug offences and offenders**.
  - The government has constituted a fund called **“National Fund for Control of Drug Abuse”** to meet the expenditure incurred in connection with combating illicit traffic in Narcotic Drugs; rehabilitating addicts, and educating the public against drug abuse, etc.
  - The government is also conducting a **National Drug Abuse Survey** to measure trends of drug abuse in India through the Ministry of Social Justice & Empowerment with the help of **National Drug Dependence Treatment Centre of AIIMS**.

Note:

- 'Project Sunrise' was launched by the **Ministry of Health and Family Welfare in 2016**, to tackle the **rising HIV prevalence** in north-eastern states in India, especially among people injecting drugs.
- **The Narcotic Drugs and Psychotropic Substances Act, (NDPS) 1985**: It prohibits a person from producing, possessing, selling, purchasing, transporting, storing, and/or consuming any narcotic drug or psychotropic substance.
  - The **NDPS Act** has since been **amended thrice** – in **1988, 2001** and **2014**.
  - The Act extends to the whole of India and it applies also to all Indian citizens outside India and to all persons on ships and aircraft registered in India.
- Government has also announced the launch of the

**'Nasha Mukht Bharat', or Drug-Free India Campaign** which focuses on community outreach programs.

➤ **International Treaties and Conventions to Combat Drug Menace:**

- India is signatory of the following International treaties and conventions to combat the menace of Drug Abuse:
  - **United Nations (UN) Convention on Narcotic Drugs (1961)**
  - **UN Convention on Psychotropic Substances (1971).**
  - **UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988)**
  - **UN Convention against Transnational Organized Crime (UNTOC) 2000**



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Note:



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# Security

## Highlights

- LCA Tejas
- Coastal Defence Exercise Sea Vigil 21

## LCA Tejas

### Why in News

The **Cabinet Committee on Security (CCS)** has recently cleared a deal worth Rs. 48,000 crore for the acquisition of **83 Tejas Light Combat Aircraft** for the Indian Air Force.

- 83 Tejas includes **73 LCA Tejas Mk-1A fighter aircraft** and **10 LCA Tejas Mk-1 trainer aircraft**. **Mk-1A variant** is a improved version of Mk-1 with an **electronic warfare system, advanced electronically scanned array (AESA) radar, beyond visual range (BVR) missiles** and a network warfare system comprising **software defined radio (SDR)**.

### Cabinet Committee on Security

- CCS is chaired by the **Prime Minister** of India.
- Major decisions with respect to the **significant appointments, issues of national security, defence expenditure of India** are taken by the **Cabinet Committee on Security (CCS)**.

### Key Points

- **About:**
  - The **Light Combat Aircraft (LCA)** programme was started by the **Government of India in 1984** when they established the **Aeronautical Development Agency (ADA)** to manage the **LCA programme**.
  - It replaced the ageing **Mig 21 fighter planes**.
  - **Designed by:**
    - **Aeronautical Development Agency** under the **Department of Defence Research and Development**.
  - **Manufactured by:**
    - State-owned **Hindustan Aeronautics Limited (HAL)**.
  - **Features:**

- The **lightest, smallest and tailless multi-role supersonic fighter** aircraft in its class.
- Designed to **carry a range of air-to-air, air-to-surface, precision-guided, weapons**.
- **Air to air refuelling capability**.
- Maximum **payload capacity of 4000 kg**.
- It can attend the maximum speed of **Mach 1.8**.
- The range of the aircraft is **3,000km**
- **Variants of Tejas:**
  - **Tejas Trainer:** 2-seater operational conversion trainer for training air force pilots.
  - **LCA Navy:** Twin- and single-seat carrier-capable for the Indian Navy.
  - **LCA Tejas Navy MK2:** This is phase 2 of the LCA Navy variant.
  - **LCA Tejas Mk-1A:** This is an improvement over the LCA Tejas Mk1 with a higher thrust engine.

## Coastal Defence Exercise Sea Vigil 21

### Why in News

Recently, the **second edition** of the **biennial pan-India coastal defence exercise 'Sea Vigil-21'** has started.

### Key Points

- **Launch:**
  - The **inaugural edition** of the exercise was conducted in **January 2019**.
  - It is billed as **India's largest coastal defence drill**.
- **Area of Operation:**
  - The 2021 exercise is **being undertaken along the entire 7516 km coastline and Exclusive Economic Zone of India**.
  - The **United Nations Convention on the Law**

Note:

of the Sea (UNCLOS) defines an **Exclusive Economic Zone (EEZ)** as generally **extending 200 nautical miles from shore**, within which **the coastal state has the right to explore and exploit**, and the responsibility to conserve and manage, both living and non-living resources.

- It **involves all the 13 coastal States and Union Territories** along with other maritime stakeholders, including the **fishing and coastal communities**.
  - **13 Coastal States and UTs:** Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal, Daman & Diu, Puducherry, Andaman & Nicobar Islands (Bay of Bengal) and Lakshadweep Islands (Arabian Sea).
- Assets of the Indian Navy, **Coast Guard**, Customs and other maritime agencies are participating in the Exercise.
- The **Indian Air Force, National Security Guard**, the **Border Security Force**, oil handling agencies and airports also participate in the exercise.
- **Coordinating Force:**
  - **Indian Navy**
- **Aim:**
  - To check the **efficacy of the measures** initiated to plug gaps in coastal security following the Mumbai terror attack in 2008.

- Multiple initiatives were set forth, including the **National Committee for Coastal and Maritime Security (NCSMCS)**, creation of **Joint Operations Centres (JOC)** at Mumbai, Cochin, Visakhapatnam and Port Blair, raising of **Sagar Prahari Bal (SPB)**, installation of the Harbour Defence Surveillance System, setting-up of **National Command Control Communication and Intelligence (NC3I) Network**.
- **Significance:**
  - The exercise is a **build up towards the major Theatre level exercise TROPEX (Theatre-level Readiness Operational Exercise)** which **Indian Navy conducts every two years**.
    - Sea Vigil and TROPEX together will cover the entire spectrum of maritime security challenges, including transition from peace to conflict.
  - While **smaller scale exercises are conducted in coastal states regularly**, including combined exercises amongst adjoining states, the conduct of a security exercise at national-level is aimed to serve a larger purpose.
    - It provides opportunity, at the **apex level**, to **assess the country's preparedness in the domain of maritime security** and coastal defence.

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# Miscellaneous

## Highlights

- World's Oldest Cave Art
- Indian Army Day
- Asian Houbara Bustard
- Pravasi Bharatiya Divas
- World Food Price Index: FAO
- Freight Business Development Portal: Railways
- Mera Gaon, Mera Gaurav Programme: ICAR
- Banana Grit

## World's Oldest Cave Art

### Why in News

Recently, archaeologists have discovered the **world's oldest known cave art** which is a life-sized picture of a **wild pig** that was painted at least **45,500 years ago** in **Indonesia**.



### Key Points

- **Location:**
  - The picture was found in the **Leang Tedongnge cave** in a remote valley on the island of **Sulawesi, Indonesia**.
- **Sulawesi Warty Pig Painting:**
  - It dates to at least **45,500 years ago**.
  - It shows a pig with a short crest of upright hairs and a pair of horn-like facial warts in front of the eyes, a characteristic feature of adult male Sulawesi warty pigs.
    - **Sulawesi warty pigs** were the most commonly portrayed animal in the ice age rock art of the island, suggesting they have long been valued both as food and a focus of creative thinking and artistic expression.
  - Painted using **red ochre pigment**, the pig appears to be observing a **fight or social interaction between two other warty pigs**.
- **Previous Oldest Painting :**
  - The previously oldest dated rock art 'scene' at least 43,900 years old, was a depiction of **hybrid**

**human-animal beings hunting Sulawesi warty pigs and dwarf bovids.**

- It was discovered by the same research team at a nearby limestone cave site.
- **Some of the Caves with Paintings in India:**
  - **Ajanta:**
    - This cave is located in **Aurangabad district of Maharashtra**.
    - Famous fresco paintings of Ajanta are dying princesses, flying apsara and preaching Buddha.
  - **Ellora:**
    - It is located in the **Aurangabad district of Maharashtra**.
    - It is famous for the **largest monolithic excavation** in the world- the great Kailasa.
  - **Elephanta:**
    - It is located on **Elephanta Islands in Mumbai**.
    - There are seven cave excavations in the Elephanta group.
  - **Bhimbetka:**
    - It is located between Hoshangabad and Bhopal, in the foothills of the Vindhya Mountains.
    - It has one of the **oldest paintings in India and the world**.

## Indian Army day

### Why in News

- Army Day is **celebrated every year on 15<sup>th</sup> January** in India to commemorate the jawans and the Indian Army.
- This year India is celebrating its **73<sup>rd</sup> Army Day**.

Note:



**Key Points**➤ **Historical Background:**

- On 15<sup>th</sup> January 1949, Field Marshal Kodandera M. Cariappa, who was then a Lieutenant General, took over as the first Indian Commander-in-Chief of the Indian Army from General Sir Francis Butcher, the last British person to hold that post.
- **K. M. Cariappa** adopted the slogan 'Jail Hindi' which means 'Victory of India'. He is also one of only two Indian Army officers to hold the Five-star rank of Field Marshal, the other being Field Marshal Sam Manekshaw.

➤ **Army Day:**

- Army Day is celebrated every year to honor the soldiers of the country, who have set the greatest example of selfless service and brotherhood and more than anything the love for the country.
- In the celebration of Army Day, the parade is organised every year at the Cariappa Parade Ground of Delhi Cantonment.

➤ **Indian Army:**

- The Indian army originated from the forces of the East India Company, which later became the 'British Indian Army', and eventually, after Independence, the Indian Army.
- The Indian Army was founded almost 126 years ago by the British on 1<sup>st</sup> April, 1895.
- According to the Global Fire Power Index 2021, India's army is considered the world's fourth strongest army.
  - **Global Fire Power Index:** The rankings for the index are reached after judging the countries on 50 parameters, including military resources, natural resources, industry and geographical features and available manpower.

## Asian Houbara Bustard

**Why in News**

Recently, the Pakistan government has issued special permits to Dubai royal family members, allowing them to hunt the internationally protected bird houbara bustard during the 2020-21 hunting season.

**Key Points**

- Bustards are large, terrestrial birds that belong to several species, including some of the largest flying birds.
- **Two Distinct Species of Houbara Bustard:** The International Union for Conservation of Nature (IUCN) recognises two distinct species found in:
  - North Africa (*Chlamydotis undulata*) and
  - Asia (*Chlamydotis macqueenii*).
- **Habitat of Asian Houbara:**
  - The population of the Asian houbara bustards extends from northeast Asia, across central Asia, the Middle East, and the Arabian Peninsula to reach the Sinai desert (Egypt).
  - After breeding in the spring, the Asian bustards migrate south to spend the winter in Pakistan, the Arabian Peninsula and nearby Southwest Asia.
- **Reasons for Decline:** Poaching, unregulated hunting, along with degradation of its natural habitat.
- **Conservation Status:**
  - IUCN Status- Vulnerable
  - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)- Appendix I
  - Convention on the Conservation of Migratory Species of Wild Animals (CMS)- Appendix II



## Pravasi Bharatiya Divas

**Why in News**

- Pravasi Bharatiya Divas (PBD) is celebrated on 9<sup>th</sup> January every year to mark the contribution of Overseas Indian community in the development of India.
- On the occasion, several events such as PBD Convention, Pravasi Bharatiya Samman Award and Bharat ko Janiye Quiz are organised.

**Key Points**➤ **Background:**

- 9<sup>th</sup> January was chosen as the day to celebrate PBD since it was on this day in 1915 that Mahatma Gandhi, the greatest Pravasi, returned to India

Note:

from South Africa, led India's freedom struggle and changed the lives of Indians forever.

- **PBD Conventions:** These are held once every two years.
  - **PBD 2021:** The 16<sup>th</sup> PBD Convention was held virtually in New Delhi. The theme was "Contributing to Aatmanirbhar Bharat".
  - **Chief Guest:** President of Suriname Chandrikapersad Santokhi.
  - **Highlights:**
    - **Response to the Pandemic:**
      - Despite dependence on critical things like PPE kits, masks, ventilators or testing kits, India developed its capabilities not only to become self-reliant but started exporting many things.
      - India's drugs regulator has approved the Oxford Covid-19 vaccine **Covishield**, manufactured by the Serum Institute, and **indigenously developed Covaxin** of Bharat Biotech for restricted emergency use in the country.
    - **Use of Technology:**
      - India is using technology to **end corruption (Direct Benefit Transfer)**.
      - Further, **India's space programme** and **tech start-up ecosystem** is a leader in the global sphere.
    - **Recent Initiatives:**
      - Including **New Education Policy 2020** and **Production Linked Subsidies Scheme**.
    - **Initiatives for Indian Diaspora:**
      - **Vande Bharat Mission**, in which more than 45 lakh Indians were rescued during Corona times.
      - **Skilled Workers Arrival Database for Employment Support (SWADES)**, an initiative for returning immigrants from the Gulf and other areas.
      - **Global Pravasi Rishta Portal** for better connectivity and communication with the Pravasi Bharatiyas.
    - **75<sup>th</sup> Anniversary of India's Freedom (2021):**
      - The Prime Minister asked the members of the diaspora and people in Indian Missions world over to prepare a portal, a digital platform where contribution of the Pravasi

Bharatiyas in the freedom struggle of India can be documented.

- **Pravasi Bharatiya Samman Award:**
  - It is the **highest honour conferred on a Non-Resident Indian, Person of Indian Origin;** or an organisation or **institution established and run by Non-Resident Indians** or Persons of Indian Origin, who have made significant contribution in better understanding of India abroad, support India's causes and concerns in a tangible way, community work abroad, welfare of local Indian community, philanthropic and charitable work, etc.
  - During the PBD convention, select eminent Indian diaspora members are awarded the Pravasi Bharatiya Samman Awards in the presence of the President of India.
  - **30 Winners of the 2021 Award:** Including **Suriname President Chandrikapersad Santokhi, Curacao Prime Minister Eugene Rhuggenaath and New Zealand minister Priyanca Radhakrishnan.**
- **Third Edition Bharat ko Janiye Quiz (2021):**
  - It was **launched in 2015-16** in order to **strengthen the engagement with young overseas Indians (18-35)** and encourage them to know more about their country of origin.
  - The first edition was held in 2015-16 and the second one in 2018-19.
  - **Fifteen winners** of the Quiz were announced during the PBD convention and **will be invited for an India Tour** (Bharat ko Janiye Darshan) after Covid.

## World Food Price Index: FAO

### Why in News

The Food and Agriculture Organization's (FAO) food price index averaged **107.5 points in December 2020, up 2.3 points** from November 2020.

- This marks the **seventh month of consecutive increase.**

### Key Points

- **About the Index:**
  - It was **introduced in 1996** as a public good to

Note:



help in monitoring developments in the **global agricultural commodity markets**.

- The **FAO Food Price Index (FFPI)** is a **measure of the monthly change in international prices of a basket of food commodities**.
- It measures changes for a **basket of cereals, oilseeds, dairy products, meat and sugar**.
- **Base Period: 2014-16**.
- **About the Food and Agriculture Organization:**
  - **FAO** is a **specialized agency of the United Nations** that leads international efforts to defeat hunger.
  - **World Food Day** is celebrated every year around the world on **16<sup>th</sup> October**. The day is celebrated to mark the **anniversary of the founding of the FAO in 1945**.
    - **India** released a **commemorative coin of Rs. 75 denomination** to mark the **75<sup>th</sup> Anniversary of the FAO** (16<sup>th</sup> October 2020).
  - It is **one of the UN food aid organisations based in Rome (Italy)**. Its sister bodies are the **World Food Programme** and the **International Fund for Agricultural Development (IFAD)**.
  - Initiatives Taken:
    - **Globally Important Agricultural Heritage Systems (GIAHS)**.
    - Monitors the **Desert Locust situation** throughout the world.
    - The **Codex Alimentarius Commission or CAC** is the body responsible for all matters regarding the implementation of the **Joint FAO/WHO Food Standards Programme**.
    - The **International Treaty on Plant Genetic Resources for Food and Agriculture** was adopted by the **Thirty-First Session of the Conference of the Food and Agriculture Organization** in 2001.
  - **Flagship Publications:**
    - The **State of World Fisheries and Aquaculture (SOFIA)**.
    - The **State of the World's Forests (SOFO)**.
    - **The State of Food Security and Nutrition in the World (SOFI)**.
    - The **State of Food and Agriculture (SOFA)**.
    - The **State of Agricultural Commodity Markets (SOCO)**.

## Freight Business Development Portal: Railways

### Why in News

The **Ministry of Railways** has launched an **exclusive portal to promote and develop the railways' freight business** - Freight Business Development Portal.

### Key Points

- **Background:**
  - With **passenger train services suspended due to the coronavirus** crisis, the **railways is banking heavily on freight revenues** for its earnings.
  - The **Dedicated Freight Corridor Corporation of India Limited (DFCCIL)**, a government enterprise under the administrative control of the Ministry of Railways, is carrying out the construction of **3,342-km eastern and western freight corridors** for exclusive movement of goods trains.
- **About the Portal:**
  - This **first of its kind dedicated Freight portal** will ensure that all operations stay **customer centric**, **reduce the costs for logistics providers**, provide **online tracking facility for suppliers** and also simplify the process of goods transportation.
  - The aim is to **replace physical processes with online ones** to minimize the need of human to human interaction.
  - The portal has a focus on **ease of doing business** and to bring more transparency and to provide professional support.
  - The Railways **has also invited aggregators, truckers, warehouse owners and labour providers** to offer their services to its more than 9,000 freight customers at over 4,000 freight terminals.

## Mera Gaon, Mera Gaurav Programme: ICAR

### Why in News

Recently, under the **Indian Council of Agricultural Research (ICAR)**'s initiative '**Mera Gaon Mera Gaurav**', cleanliness drive was carried out in few villages of Goa along with guidance to village panchayats on waste disposal.

Note:

- **ICAR** is an autonomous organisation under the **Department of Agricultural Research and Education (DARE)**, Ministry of Agriculture and Farmers Welfare, Government of India.

### Key Points

- **Mera Gaon Mera Gaurav:**
  - The scheme was **launched in 2015**.
  - The scheme envisages **scientists to select villages as per their convenience and remain in touch with the selected villages and provide information to the farmers on technical and other related aspects of agriculture** in a time frame **through personal visits or on telephone**.
  - They may function with the help of **Krishi Vigyan Kendras (KVKs)** and **Agriculture Technology Management Agency (ATMA)**.
- **Objective:**
  - To promote the **direct interface of scientists** with the farmers to hasten the **“lab to land”** process.

### Agriculture Technology Management Agency

- It is a **registered society responsible for technology dissemination at the district level**. It is a focal point for integrating research extension and marketing.
- **Launch:** It was **launched during 2005-06**.
- **Funding:** The funding pattern is **90% by the central Government** and **10% by the state government**.
- **Objectives:**
  - To strengthen **research – extension – farmer linkages**.
  - To provide an **effective mechanism for coordination and management of activities of different agencies** involved in technology adoption / validation and dissemination at the district level and below.
  - To **increase the quality and type of technologies** being disseminated.
  - To move towards **shared ownership of the agricultural technology** system by key shareholders.
  - To **develop new partnerships** with private institutions including NGOs.
- **Beneficiaries:** Individual, Community, Women, Farmers/ Farm Women groups.

## Banana Grit

### Why in News

Recently, scientists at the **Council of Scientific & Industrial Research (CSIR)-National Institute for Interdisciplinary Science and Technology (NIIST)** at Pappanamcode in Kerala have come up with a new product, **Banana Grit or Granules**, developed from raw **Nendran bananas**.

- **CSIR** is the **largest research and development (R&D) organisation in India**.

### Key Points

- **About Banana Grit:**
  - Banana Grit and its byproduct can improve **gut health** and is an **ideal ingredient** in a healthy diet. The concept was introduced to **utilise** the presence of **resistant starch in bananas**.
    - Starch is a **white, granular, organic chemical** that is produced by all **green plants**. It is a **soft, white, tasteless powder** that is insoluble in cold water, alcohol, or other solvents.
    - In humans and other animals, **starch from plants is broken down into its constituent sugar molecules**, which then **supply energy to the tissues**.
- **Significance:**
  - By **diversifying the products sourced from Banana**, farmers can **fetch better prices for their harvest**.
  - It will help in **maintaining health and well-being**.
- **Nendran bananas:**
  - Chengazhikodan Nendran Banana, also known as Chengazhikode Banana, is among the most popular traditional fruits cultivated in **Thrissur district, Kerala**.
  - This variety of Nendran Banana is famed for its characteristic **taste, bunch shape and fruit colour**.
  - The crop is mainly **cultivated in organic mode** and the crop duration is **13-14 months**.
  - The Chengaliodan Nendran banana grown in Kerala got **Geographical Indication (GI) Tag** in 2014.
    - **GI** refers to any indication that identifies the **goods as originating from a particular place, where a given quality, reputation or other characteristic of the goods is essentially attributable to its geographical origin**.



Note:



drishti



**Key Points**

**Details**

Blank area for Key Points.

Lined area for Details.

**Summary**

Blank area for Summary.