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# Monthly Current Magazine



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- ✚ Sittanavasal
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**Cabinet has approved the implementation of the Production Linked Incentive Scheme on ‘National programme on High Efficiency Solar PV Modules’.**

### Key Points

- A provision of ₹19, 500 crore has been made for achieving manufacturing capacity of Giga Watt scale under PLI Scheme (Tranche II).
- It aims to create an ecosystem for manufacturing of high efficiency Solar PV Modules and thus reduce import dependence in the area of Renewable Energy.
- About 65,000 MW per year manufacturing capacity of fully and partially integrated, solar PV modules will be installed under the project.

### Background

- Solar capacity addition presently depends largely upon imported solar PV cells and modules as the domestic manufacturing industry has limited operational capacities of solar PV cells and modules.

- **The National Programme on High Efficiency Solar PV Modules will reduce import dependence in a strategic sector like electricity. It will also support the Atmanirbhar Bharat initiative.**

### **National programme on High Efficiency Solar PV**

#### **Modules**

- **An initiative of Ministry of New & Renewable Energy.**
- **Under the scheme, Solar PV manufacturers will be selected through a transparent selection process.**
- **The PLI will be disbursed for five years post commissioning of solar PV manufacturing plants on sales of high efficiency solar PV modules from the domestic market will be incentivised.**

### **Expected Benefits of the scheme**

- **Additional 10,000 MW capacity of integrated solar PV manufacturing plants,**
- **Direct investment of around Rs.17,200 crore in solar PV manufacturing projects**
- **Demand of Rs.17,500 crore over 5 years for 'Balance of Materials',**

- **Direct employment of about 30,000 and Indirect employment of about 1,20,000 persons,**
- **Import substitution of around Rs.17,500 crore every year, and**
- **Impetus to Research & Development to achieve higher efficiency in solar PV modules**

### **Solar PV modules**

- **Solar PV modules are created by joining together solar cells with photovoltaic (PV) cells.**
- **They are produced using semiconductors like crystalline silicon. Solar modules transform solar energy into electric energy.**



**State government of Bihar has recently asked the state education department to set up academies for the promotion of the Surjapuri and Bajjika dialects on the lines of the Hindi and Urdu academies.**

### Key Points

- **Eight academies or functioning organisations — for Hindi, Urdu, Bhojpuri, Maithili, Angika, Magahi, Bangla, and South Indian languages — already exist in Bihar**, and the government's decision on Bajjika and Surjapuri takes note of the **two dialects that had been left out**.
- The education department will also set up an umbrella body to monitor the progress of all languages and dialects spoken in Bihar.

### Surjapuri

- Surjapuri is spoken mainly in Kishanganj and other parts of Seemanchal in northeastern Bihar, including the districts of Katihar, Purnia and Araria.
- The dialect, a mix of Bangla, Urdu, and Hindi, is also spoken in contiguous parts of West Bengal.

- The name Surjapuri comes from Surjapur pargana, which no longer exists.
- But there is a toll plaza called Surjapur between Purnia and Kishanganj.
- Although Surjapuri has nothing specifically to do with religion, the largest share of speakers of the language is made up of Surjapuri Muslims, who live mainly in Kishanganj, the district that has about 70 per cent Muslim population.

### Bajjika dialect-

- It is one of five dialects spoken in Bihar.
- It is a mix of Hindi and Maithili and is spoken mainly in Vaishali, Muzaffarpur, and parts of Sitamarhi, Sheohar, and Samastipur.
- Bajjika is not as well known as other dialects such as Bhojpuri and Maithili.



**The Archaeological Survey of India has undertaken conservation measures and also introduced digital checks to track public access in Sittanavasal.**

### Sittanavasal

- A small village in Pudukottai district of Tamil Nadu was a major centre of Jain influence for 1,000 years just before the Christian era.
- It is known for the Sittanavasal Cave, a 2nd-century Jain cave complex. From the 7th to the 9th century A.D., the village flourished as a Jain centre.
- Sittanavasal is the name used synonymously for the hamlet and the hillock that houses the:
  - ✓ **Arivar Kovil** (temple of Arihants — Jains who conquered their senses)
  - ✓ **Ezhadipattam** (a cavern with 17 polished rock beds), megalithic burial sites and the
  - ✓ **Navachunai** tarn (small mountain lake) with a submerged shrine

### Characteristics

- ✓ This is the **only place in Tamil Nadu where we can see Pandya paintings.**
- ✓ The **artwork on the ceiling of the sanctum and the ardha mandapam of Arivar Kovil is an early example of post-Ajanta cave paintings of the fourth to sixth centuries.**
- ✓ Even though Sittanavasal is a comparatively small archaeological microcosm of Jainism in contrast to those found in Madurai and the Arcot districts, it is **thought to be the best preserved example of a Jain cave temple in Tamil Nadu.**
- ✓ **Of the 20 cave temples in Pudukottai district, 19 belong to Saivite and Vaishnavite streams of Hinduism; Sittanavasal is the only Jain temple with sculptures.**
- ✓ The Sittanavasal Cave are **listed as one of the Adarsh Smarak Monument by Archaeological Survey of India**

### Features of the cave paintings

- ✓ The **ceiling paintings show 'bhavyas'** (exalted souls who work to achieve moksha or spiritual liberation) **enjoying themselves in a pool, full of lotuses;** today much of it is obscured by patchy plastering.
- ✓ **Faint outlines linger of dancing girls on the 'ardha mandapam' pillars.**
- ✓ The **colours are a mixture of plant dyes and mineral elements such as lime, lamp black, and clay pigments such as ochre for yellow and terre verte for the greyish-green tints.**
- ✓ **Paintings have been created by applying colours over a thin wet surface of lime plaster**





**The 18th meeting of the Persistent Organic Pollutants Review Committee of the Stockholm Convention is taking place this week in Rome.**

### Highlights of the meeting

- The **18th meeting of the Persistent Organic Pollutants (POP) Review Committee (POPRC-18)** to the Stockholm Convention has included **five more chemicals** in its agenda.
- The listed chemicals include a **pesticide**, a **flame retardant** and some **plastic stabilising substances**.
- **3 of the listed chemicals- chlorpyrifos, chlorinated paraffin** (beyond prescribed standards) and **long-chain perfluoro carboxylic acids** had already been nominated by the 17th meeting (POPRC-17).
- Other **2 chemicals, dechlorane plus** (a flame retardant) and **UV-328** (a stabiliser used in some personal care products) which were qualified for risk management evaluation at POPRC-17.
- POPRC-18 aims to list each of these chemicals in **Annex A** (elimination), **B** (restriction) and/or **C** (unintended release) of the Stockholm Convention.

### Review

- Experts will determine if these chemicals are POPs which demand global action due to their adverse effects on human health and the environment.
- Their draft risk profiles will be adopted and global action will be warranted if they fall into the hazardous chemicals category.
- These chemicals will then be elevated for the third review stage (Annex-F) or risk management evaluation.
- Socio-economic considerations associated with possible control measures are evaluated at this stage.
- Thereafter, they will be considered for recommendation to the Conference of the Parties to list them under the Stockholm Convention.

### India's resistance

- The UNEP proposal to list chlorpyrifos as POP was resisted by India.
- Still, chlorpyrifos got nominated as Persistent organic pollutants.
- The Pesticides Manufacturers and Formulators Association of India (PMFAI) had obstructed listing chlorpyrifos under the Stockholm Convention.
- India had also opposed the decision to list flame retardant dechlorane plus.

### Chlorpyrifos

- Chlorpyrifos is not a carcinogen and its concentrations are low. Some of the studies in the POPRC proposal were not peer reviewed.

- Chlorpyrifos was registered under the Insecticide Act of 1968 since 1977 and Anupam Verma Committee recommended its review for continued use in 2015.
- China and India are among the largest producers of chlorpyrifos. Nearly 48 per cent of chlorpyrifos or 24,000 tonnes was produced in India.
- Globally, some 50,000 tonnes of chlorpyrifos is being used annually, according to estimates by the China Crop Protection Industry Association.
- Nearly 48 per cent of chlorpyrifos, or 24,000 tonnes, was produced in India.
- Some 11,000 tonnes were used within the country and 12,000 tonnes were exported. Around 1,000 tonnes were kept as stockpiles, estimated PMFAI.
- Chlorpyrifos was approved for agricultural use in 2021, which includes its use as a pesticide against pests affecting Bengal gram, rice and cotton.
- It is one of the ten pesticides banned by Punjab and Haryana governments in August 2022.
- Chlorpyrifos is approved for 18 crops in India, while it was being used for 23 crops
- India's views against the listing of chlorpyrifos may not find much acceptance by the expert committee consisting of 31 experts — from Africa, Asia and the Pacific, Europe, Latin America and the Caribbean.

### Note

- The **Stockholm Convention** has listed **31 chemicals** as of **December 2020**.
- **This list is likely to expand further amid evidence pointing towards the health burden of hazardous chemicals and pesticides.**
- Stockholm Convention is **an international environmental treaty** that **aims to eliminate or restrict the production and use of POPs** or the **substances that persist in the environment and pose risk to our health.**



**The Archaeological Survey of India (ASI) discovered Buddhist caves and stupas at Bandhavgarh Tiger Reserve in Madhya Pradesh.**

- The **26 caves** that were found are associated with the **Mahayana sect of Buddhism**
- Besides the caves, the **team also found the remains of 26 temples, two mathas, two stupas, 46 idols and sculptures, 26 fragments and 19 water bodies**
- It also mentioned a **Buddhist pillar fragment containing a miniature stupa carving, dating to the 2nd-3rd century CE, and**
- **24 Brahmi inscriptions from the 2nd-5th century CE.**

**Discovery**

**Buddhist Caves**

- The **team discovered 26 mostly Buddhist caves dating back to the 2nd and 5th centuries.**
- The **caves and some of their remains had 'Chaitya' (rounded) doors and stone beds typical of Mahayana Buddhism sites.**

- This **discovery brings the total number of caves** found in **Bandhavgarh to 76**, as **50** are already in the records since the last survey.

### Inscriptions in Brahmi text

- The **ASI team found 24 inscriptions in Brahmi text**, all dating back to the **2nd-5th centuries**.
- The **inscriptions mention sites such as Mathura and Kaushambi, and Pavata, Vejabharada and Sapatanaairikaa**.
- The **kings they mention include Bhimsena, Pothasiri and Bhattadeva**.

### Remains of Temples

- The **temples are from more recent times — the Kalachuri period (9th-11th century)**, while the **water bodies range between 2nd-15th centuries CE**.
- **In addition to this, two Saiva mutts have also been documented**.
- The **Kalachuri dynasty, which spread over parts of Gujarat, Maharashtra and Madhya Pradesh, is also associated with the earliest Ellora and Elephanta cave monuments**.

### Sculpture

- The **world's largest Varaha sculpture also dating to the same period, at the Bandhavgarh Tiger Reserve in Madhya Pradesh also found**
- The **Varaha sculpture is among the many monolithic sculptures of the 10 incarnations of Lord Vishnu that were discovered by an ASI at the national park earlier this year**.

- The **exploration took place 84 years after the last such effort in 1938.**

### **Remains of the Gupta Period:**

- **Some remains of the Gupta period, such as door jambs and carvings in caves, have been found.**

### **Also**

- **In the exploration, remarkable archaeological remains came to light, adding a new chapter in the history of Baghelkhand which is said to derive its name from the Vaghela Rajput kings of the 14th century**
- **It covers the northeastern regions of Madhya Pradesh, and a small area of southeastern Uttar Pradesh.**

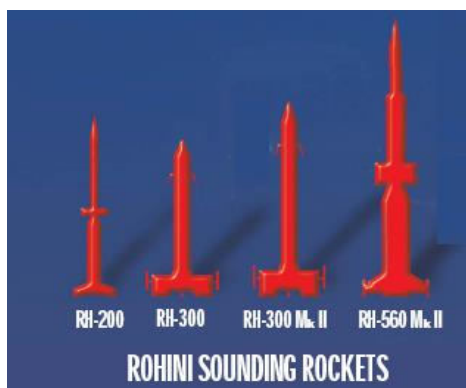
### **Bandhavgarh Tiger Reserve**

- **Bandhavgarh National Park is located in the Umaria district of Madhya Pradesh.**
- **The Park derived its name from the most prominent hill of the area which is said to have been given by Lord Rama to his brother Laxman to keep a watch on Lanka**
- **The fort was built by Gond Dynasty king.**
- **Bandhavgarh was declared a national park in 1968 and became a tiger reserve in 1993**
- **Bandhavgarh Tiger Reserve is of vital importance considering its Flora and Fauna diversity.**

- The **Tiger Reserve** is Known for the healthy population of tigers and **variety of herbivores**.
- This **area is unique from the point of biodiversity**, as it comprises **hills, valley, rivers, marshes and meadows to give rise to diverse vegetation**.
- Apart from tiger, **as many as 34 species of Mammals** have been listed and **nearly 260 species of birds and 70 species of butterfly**

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**The Indian Space Research Organization (ISRO) is planning the 200th successful launch of the Rohini RH-200 sounding rocket in a row.**

### **Key Points**

- **RH-200 of the Rohini sounding rocket family has completed 198 consecutive successful flights.**
- **The 199th launch will happen in October 2022 during the World Space Week (4th-10th October) celebrations.**
- **The 200th will take place either towards the end of October or the beginning of November 2022.**

### **Rohini RH-200**

- **The 3.5-metre-tall RH-200, a trusted member of the Rohini sounding rocket family used by the ISRO for atmospheric studies**
- **RH-200 is a two-stage rocket capable of climbing to a height of 70 km bearing scientific payloads.**
- **The first and second stages of RH-200 are powered by solid motors.**

- The first RH-200 to use a new propellant based on hydroxyl-terminated Polybutadiene (HTPB) was successfully flown from the TERLS in September 2020.
- As compared to PVC based propellants, HTPB based propellant is more energetic, higher mechanical & interface properties and has less defects due to lower processing temperature.
- The '200' in the name denotes the diameter of the rocket in mm.
- The ISRO has launched more than 1,600 RH-200 rockets so far.
- Other operational Rohini variants are **RH-300 Mk-II and RH-560 Mk-III**.

### Sounding rockets

- Sounding rockets are usually one or two-stage solid propellant rockets.
- It is designed to take measurements and perform scientific experiments during its sub-orbital flight.
- They also serve as platforms for testing prototypes of new components or subsystems intended for use in launch vehicles and satellites.
- The rockets are used to launch instruments from 48 to 145 km above the surface of the Earth, the altitude generally between weather balloons and satellites.

### History of sounding rockets in India

- Sounding rockets have an important place in the ISRO story.
- The first sounding rocket to be launched from Thumba was the **American Nike-Apache — on November 21, 1963**.

- After that, **two-stage rockets imported from Russia (M-100) and France (Centaure) were flown.**
- The **ISRO launched its own version — Rohini RH-75 — in 1967.**
- The ISRO has **launched more than 1,600 RH-200 rockets so far.**
- **Currently, the RH200, RH300 MkII and RH560 Mk-III rockets are operational** which were developed during the early phase of our journey in rocketry.

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## **Asian Palm Oil Alliance (APOA) was launched during the Globoil**

### **Summit at Agra**

#### **Asian Palm Oil Alliance (APOA)**

- It was formed from five major palm oil importing countries of Asia -- **India, Pakistan, Sri Lanka, Bangladesh and Nepal**
- The idea is to gain collective bargaining power and make imports sustainable.
- APOA held its first general body meeting on the side-lines of the Globoil Summit.
- The membership of APOA would be further expanded to include companies or industry bodies associated with production or refining of palm oil across the continent.
- The next meeting of APOA is expected to be held in Indonesia early next year.

#### **Working**

- The industry associations of Asian palm oil importing countries, unlike their counterparts in Europe, are not involved in shaping the global discourse on sustainable palm oil in a collective way.

- Through APOA, the countries aim at safeguarding the economic and business interests of the palm oil consuming countries and will work towards increasing the consumption of palm oil in member countries.
- The alliance would work towards ensuring that palm oil is recognised as a high-quality, economical, and healthy vegetable oil and to change the negative image of palm oil.

### Need

- India's annual imports of edible oil is around 13-14 million tonne (MT).
- Around 8 MT of palm oil is imported from Indonesia and Malaysia
- Other oils, such as soya and sunflower, come from Argentina, Brazil, Ukraine and Russia.
- Asia accounts for around 40% of the global palm oil consumption while Europe accounts for 12% of palm oil trade.
- Indonesia and Malaysia are the biggest palm oil exporters in the world.
- *India is the largest importer of palm oil in Asia, accounting for 15% of global imports, followed by China (9%), Pakistan (4%) and Bangladesh (2%).*



District administration of Tirunelveli in Tamil Nadu along with Bengaluru-based non-profit ATREE are using a ‘hyper local’ approach to restore one of south Asia’s oldest rivers, the Thamirabarani.

### The Thamirabarani Project

- It is of **great importance to southern Tamil Nadu environmentally and historically.**
- **But it has suffered, which is why the restoration project has been started.**
- The TamiraSES project aims to restore the **Social Ecological Systems of Tamiraparani river riverscape from head-waters to the estuary to enable conditions for native biodiversity to thrive and maintain and enhance multiple ecosystem services to local stakeholders**
- **Five social ecological observatories will set up as part of first phase of the project.**
- **These will serve as pilots to scale up from the learnings from these sites.**
- **It is a bottom-up rather than a top-down approach**

### The Thamiraparani river

- It is the **only perennial river in Tamil Nadu.**
- It was called the Tamraparni River in the pre-classical period, a name it lent to the island of Sri Lanka.
- The **old Tamil name of the river is Porunai.**
- It **originates in the Pothigai Hills of the Western Ghats in Tirunelveli district.**
- The river **flows through Tirunelveli and then neighbouring Thoothukudi and ends in the Gulf of Mannar at Punakayil.**
- It thus **originates and ends in the same state.** This river **flows towards north direction initially.** However, it **changes to east direction later.**

### History

- Its **many name derivations of Tan Porunai include Tamraparani, Tamirabarni, Tamiravaruni.**
- **Tan Porunai nathi** finds mention by classical Tamil poets in **ancient Sangam Tamil literature Purananuru.**
- Recognised as a **holy river in Sanskrit literature Puranas, Mahabharata and Ramayana,** the river was famed in the Early Pandyan Kingdom for its **pearl and conch fisheries and trade.**
- One **important historical document on the river is the treatise Tamraparni Mahatmyam.**
- It has many ancient temples along its banks. A hamlet known as **Appankoil** is located on the northern side of the river.

- This **has provided evidence that there was a city civilisation** in south India as long back as 3,200 years ago, the **later part of the Indus Valley Civilisation**.

### Importance

- The river **supports wildlife** such as the Nilgiri marten, slender loris, lion-tailed macaque, white spotted bush frog, galaxy frog, Sri Lankan Atlas moth and the great hornbill
- Besides the ecosystem services it provides, the **river also has historical value** for the people of the state.





## India's 1st Avalanche Monitoring Radar installed in North Sikkim

### Avalanche Radar

- The **first of its kind in India**, in north Sikkim was jointly installed by the **Indian Army and the Defence Geoinformatics and Research Establishment (DGRE)**
- The **avalanche radar** was made operational by **Defence Research and Development Organisation's wing DGRE**
- The **radar** was inaugurated by **Tri Shakti Corps commander**.

### Uses

- It is **involved in forecasting and mitigation of avalanche hazards** faced by **Indian Army** in the **Himalayan region**.
- Besides being used for detection of avalanches, this **radar can also be employed to detect landslides**.

### Features

- It has the **capability to detect avalanches within three seconds** of its trigger and will assist in **saving lives of troops** and **reducing damage to property** in **super high altitude areas**.

- It can scan the targeted slope for avalanche release and track its path and its size in case it is triggered.
- It can see through snow, fog as well as in the night, making it an all weather solution and covers an area of two sq/km
- The radar is also linked to an alarm system enabling automatic control and warning measures in case an avalanche is triggered.
- Images and videos of the event are automatically recorded for future analysis

### Working

- The radar uses a series of short micro wave pulses which are scattered at the target and can detect an avalanche in less than three seconds.
- In an area where frequencies of avalanches are high, the radar will go a long way in safeguarding the life of troops deployed in hostile terrain and sub-zero temperatures
- At the same time limiting damage to vehicles and equipment at such snowbound high-altitudes area.



**The Ministry of Culture has organized the celebration of Bathukamma festival being held at Kartavyapath, India Gate, New Delhi.**

### **Key Point**

- The **Union Ministry of Culture** has announced that **this festival would be celebrated at the India Gate for the first time.**
- The **celebrations will be in line with the Telangana/Hyderabad Liberation Day celebrations** that were organized earlier this month, when the **national flag was hoisted in Hyderabad** by Home Minister

### **Bathukamma Festival**

- Bathukamma is a **colourful floral festival of Telangana** and is **celebrated by womenfolk with exotic flowers of the region**
- It is the **second largest festival during Durga Navaratri in Telangana after Dasara or Vijaya Dashami.**
- It is also known as **Mahalaya Amavasya or Pithru Amavasya**, and **ends on Ashwayuja Ashtami**, popularly known as **Durgashtami.**
- Bathukamma **comes during the latter half of monsoon**, before the onset of winter.

- It begins a week before the grand 'Saddula Batukamma' (the grand finale of the Batukamma festival) which falls two days before Dussehra.

### Celebrations

- Boddemma Panduga marks the ending of Varsha ruthu whereas Bathukamma festival indicates the beginning of Sharath ruthu.
- Hence, these both festivals are celebrated as 'Ruthu Lakshmi Samaradhana.
- The women usually go back to their parents' home.
- First day of Bathukamma festival is called as 'Engili Poolu, women make symbolic images of Bodemma (Goddess Gauri) using clay and small Bathukammas.
- Sixth day of Bathukamma festival is 'Arremu and the final day or the main festival of Bathukamma, which is celebrated on Durgashtami, referred as Chaddula Bathukamma or Chattala Bathukamma.
- It involves the preparation of huge Bathukammas on a special plate and womenfolk singing and dancing around it.
- Bathukammas are then taken out in a procession to be immersed a river or any nearby waterbody.
- The men pick the flowers like gunuka (a type of lily) and tangedi (a type of orchid) and make a huge Batukamma/ Batukammalu on brass plate (taambalam).
- The festival celebrates the inherent relationship between earth, water and the human beings.



**The Prime Minister of India has extended his warmest greetings to the Prime Minister of Israel and the Jewish people around the world on the occasion of Rosh Hashanah.**

### **Rosh Hashanah**

- **2022 edition of Rosh Hashanah marks the start of year 5783 in the Hebrew calendar.**
- **It is the Jewish New Year which is observed on the first day of Tishrei, the seventh month of the Hebrew calendar.**
- **The biblical name for this holiday is Yom Teruah, literally "day of shouting or blasting."**
- **It is the first of the Jewish High Holy Days that occur in the late summer/early autumn of the Northern Hemisphere.**
- **It is a two-day observance and celebration that begins on the first day of Tishrei, which is the seventh month of the ecclesiastical year.**
- **This is symbolized by one of Rosh Hashanah's most iconic traditions, tachlich, in which participants symbolically cast off their sins by throwing morsels of bread into a body of running water.**

### Celebrations

- Rosh Hashanah is the **birthday of the universe, the day G-d created Adam and Eve**, and it's celebrated as the head of the **Jewish year**.
- The **central observance of Rosh Hashanah is blowing the shofar** (ram's horn) on **both mornings of the holiday** (except on Shabbat), which is **normally done in synagogue as part of the day's services**.
- Rosh Hashanah **feasts traditionally include round challah bread** (studded with raisins) and **apples dipped in honey**, as well as **other foods that symbolize our wishes for a sweet year**.
- **Other Rosh Hashanah observances include candle lighting in the evenings and desisting from creative work**.
- **Together with Yom Kippur** (which follows 10 days later), it is **part of the Yamim Nora'im** (Days of Awe, or High Holidays)
- While **Rosh Hashanah tends to be a joyful celebration**, Yom Kippur is a more somber holiday often marked by fasting.



The Indian Tourism Statistics 2022 report was released by the Vice President of India

on the occasion of World Tourism Day

### Key Points

- The **COVID-19** pandemic and the resulting restrictions saw foreign tourist arrivals in India dip by 44.5% in 2021.
- While in 2020, 2.74 million foreign tourists visited India, in 2021, the number was 1.52 million.
- While the foreign tourist arrivals recorded negative growth rate in 2021, non-resident Indians and international tourist arrivals witnessed positive growth.
- The arrivals of NRIs increased 52.6 per cent from 2020 to 2021.

### Top 15 countries from which foreign tourists arrived in India

- The total number of foreign visitors to the country during the same period declined by 23.4 per cent on year
- In 2021, the top 15 countries from which foreign tourists arrived in India included the **U.S., the U.K., Bangladesh, Canada, Nepal, Afghanistan, and Australia.**

- These nations accounted for nearly 81% of foreign tourist arrivals in India last year.

### Domestic tourist visits

- India witnessed 677.63 million domestic tourist visits in 2021. This is a 11.05 per cent increase from 2020's figures.
- Taj Mahal, Red Fort and Qutub Minar are the top 3 most visited sites in India in 2021-22.
- Taj Mahal reported a 3.29 million visits or 12.65 per cent of total footfall in 2021-22 from domestic visitors.
- **Group of Monuments at Mamallapuram in Tamil Nadu** was the most visited centrally-protected monument by foreigners in 2021-22.
- The two states with the most domestic tourists visiting are **Tamil Nadu and Uttar Pradesh**, with 140.65 million and 86.12 million, respectively.
- **Maharashtra and Tamil Nadu** have the highest numbers of foreign tourist visits, with 1.26 million and 1.23 million
- In 2021-22, the total number of domestic visitors recorded a 98 per cent year-on-year growth.

### Note

- Foreign exchange earnings from tourism sector in India in 2021 were USD 8.797 billion, which is a 26.4 per cent increase from 2020.
- India's ranking in the global Travel and Tourism Development Index (TTDI) was 54th in 2021





**India and the Netherlands have signed a joint statement to formalize the bilateral Fast-Track Mechanism between the two countries.**

### About Fast-track Mechanism

- It aims to provide a mechanism for the quicker resolution of investment matters involving Dutch companies doing business in India
- It functions in close collaboration between DPIIT, respective ministries and departments, Invest India and the Embassy of The Netherlands
- This will strengthen and assist bilateral efforts to increase mutual investment activities, as well as support and develop business cooperation between companies in both countries.
- Invest India, the national investment promotion and facilitation agency, is the executing body of the bilateral FTM.

### Bilateral relations between India and Netherlands

- Diplomatic relations between India and the Netherlands were formally established in 1947.
- Netherlands is the 4th largest foreign direct investor in India.

- Between **April 2000 and June 2022**, the **cumulative flow of foreign direct investment from the Netherlands to India** reached some **USD 42.3 billion**.
- In **2021–2022**, **bilateral trade** between the **two countries** amounted to **USD 17 billion**.
- **India's exports to the Netherlands** consist mainly of *mineral fuels and mineral-based products, organic chemicals, electrical machinery and equipment, aluminum, iron and steel; and pharmaceutical products.*

Exact IAS



## The Ministry of Petroleum and Natural Gas has launched indigenously-developed AVGAS 100 LL.

### AV GAS 100 LL

- **Indian Oil Corporation (IOC)** has **indigenously-produced AVGAS 100 LL**, a **special aviation fuel** meant for **piston engine aircraft** and **unmanned ariel vehicles** at its **Vadodara Refinery** in Gujarat.
- It has been **tested and certified by the Directorate General of Civil Aviation (DGCA)**, the statutory body of the Government of India to regulate civil aviation in India.
- **Principal grade of Aviation Gasoline**, AVGAS 100 LL is **designed for use in turbo-charged reciprocating piston engines aircrafts**, mainly used by **FTOs and defence forces** for training pilots.
- It is a **higher-octane Aviation fuel** meeting the **product specifications with superior performance quality standards**, as compared to imported grades.

### Significance

- At present **AVGAS 100 LL** is **completely imported product**.

- The **domestic production of AVGAS 100 LL** produced by Indian Oil at its Gujarat Refinery **will make flying training more affordable** in India.
- This **product which fuels the aircraft operated by FTOs and Defense forces** is being imported for decades by India.
- **Indian Oil's R&D, Refineries and Marketing teams** have achieved **this feat of indigenous production** and have **offered price advantage** to the industry.
- It **will help reduce dependence on imports** and **address the associated logistical challenges**.
- **Country** will be able to **save precious foreign exchange** with the **inhouse availability of this product**.
- It **will make huge difference to us in terms of exporting it to areas and countries which need AV Gas 100 LL fuel**

### Note-

- The **aviation gasoline market is predicted to grow** from the present **1.92 billion to 2.71 billion by 2029**.
- **Self-reliance in aviation gasoline will save India around Rs.20,000 to Rs.30,000 per kilo liter**.
- India consumes around **3,000 kilo liter each year**, which are all imported from foreign countries.



## The Universal Service Obligation Fund (USOF) launched the Telecom Technology Development Fund (TTDF) Scheme.

### Key Points

- Universal Service Obligation Fund (USOF) is a **body under the Department of Telecommunications (DoT) to fund rural and remote digital connectivity.**
- It is the **telecom department's Rs 58,000-crore reserve to fund rural and remote digital connectivity.**
- The **Centre in the draft telecom bill, 2022 has said that the USOF, created under the Indian Telegraph Act of 1885, shall be referred to as the “Telecommunication Development Fund”.**

### Telecom Technology Development Fund (TTDF) Scheme

- A **scheme to promote research and development in the field of Telecommunications, Technologies and Solutions in line with Hon’ble Prime Minister’s call of “Jai Anusandhan”.**
- Aims to **fund R&D in rural-specific communication technology applications and form synergies among academia, start-ups,**

research institutes, and the industry to build and develop the telecom ecosystem.

### Features

- Under the scheme, **USOF is also targeting to develop standards to meet countrywide requirements and create the ecosystem for research, design, prototyping, use cases, pilots, and proof of concept testing, among others.**
- The scheme entails grants to Indian entities to encourage and induct indigenous technologies tailor-made to meet domestic needs.
- The Scheme aims to promote technology ownership and indigenous manufacturing, create a culture of technology co-innovation, reduce imports, boost export opportunities and creation of Intellectual Property.

### Universal Service Obligation Fund (USOF)

- The Universal Service Obligation Fund (USOF) was formed by an **Act of Parliament, and was established in April 2002** under the **Indian Telegraph (Amendment) Act 2003.**
- Aims to provide financial support for the provision of telecom services in **commercially unviable rural and remote areas of the country**



### India recently participates at 3rd G20 Sherpa meeting in Indonesia.

#### Key Points

- At the deliberations, India's commitment and active support to Indonesian presidency's efforts to finalise meaningful outcomes for the forthcoming G20 Bali Summit in November 2022 was reaffirmed
- Prime Minister of India's statement *"today's era is not of war [and] diplomacy and dialogue are things that touch the world"* was highlighted
- The need for G20 to "bring enhanced global focus on and strengthen international cooperation and efforts in key priority areas" was emphasized
- These areas include *sustainable growth, accelerated progress on SDGs, addressing climate change including through India's concept of Lifestyle for Environment (LiFE), tech-enabled development, digital public infrastructure, multilateral reforms and women's empowerment.*

#### Note

- The first G20 sherpa meeting under the Indonesian presidency was held in December 2021, and the second in July.

- **India is set to take over the G20 presidency in December and host the next summit in New Delhi in 2023.**

### Sherpa

- **A Sherpa is a personal representative of the leader of a member country at an international Summit meeting such as the G8, G20, the Nuclear Security Summit etc.**
- **The term is derived from the Nepalese Sherpa people, who serve as guides for mountaineers in the Himalayas.**
- **Sherpas are career diplomats or senior government officials appointed by the leaders of their countries.**
- **The Sherpa engages in planning, negotiation and implementation tasks through the Summit.**
- **They coordinate the agenda, seek consensus at the highest political levels, and participate in a series of pre-Summit consultations to help negotiate their leaders' positions.**
- **There is only one Sherpa per Summit for each member country; he/she is assisted by several sous Sherpas.**





## **The Defence Research and Development Organization (DRDO) conducted two successful tests of Very Short Range Air Defence System (VSHORADS) missile in Odisha**

### **VSHORADS**

- It is a **Man Portable Air Defence System (MANPAD)**.
- It is **designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad in collaboration with other DRDO laboratories and Indian Industry Partners.**
- **VSHORADS missile incorporates many novel technologies including miniaturised Reaction Control System (RCS) and integrated avionics, which have been successfully proven during the tests.**
- **The missile, meant for neutralising low altitude aerial threats at short ranges is propelled by a dual thrust solid motor.**
- **The design of the missile including launcher has been highly optimised to ensure easy portability.**

### **Need**

- Very Short Range Air Defence Missiles are **critical for defending major cities and strategically important locations.**
- It is the **last line of defence from low-flying aerial assets like fighter jets, helicopters and drones.**
- The **Indian Army currently has Air Defence Guns L-70 and ZU-23** for this purpose. They are **over 40 years old** and are **completely redundant in face of modern warfare technologies.**
- This **new missile equipped with modern technologies will give further technological boost to the Armed Forces.**

### Reaction Control System

- A Reaction Control System (RCS) is **responsible for attitude control and steering by the use of thrusters.**
- The RCS system is **capable of providing small amounts of thrust in any desired direction or combination of directions.**

### Man-Portable Air Defence System (MANPAD)

- Man-portable air-defense systems (MANPADS) are **portable surface-to-air missile** capable of **attacking low-flying fixed and rotary-wing aircraft.**
- They **help shield troops from aerial attacks** and are most **effective in targeting low-flying aircraft.**
- MANPATs or Man-Portable Anti-Tank Systems **work in a similar manner but are used to destroy or incapacitate military tanks.**
- They **can be fired while being mounted on an individual's shoulder or on a tripod.**

- **Most MANPADS** have **passive** or **'fire and forget'** guidance systems.
- The **missiles are fitted with infrared (IR) seekers** that **target the airborne vehicle** through **heat radiation being emitted by the latter**.
- They were **developed in the 1950s** to **protect troops** from **attacks by jet aircraft**.
- The **United States and the USSR** were the **first to introduce these weapons**.

Exact IAS



## **The UNESCO World Conference on Cultural Policies and Sustainable Development –**

**MONDIACULT 2022 was held at Mexico City**

### **Key Point**

- The **Minister is expected to address the conference on burning issues and concerns of the Cultural sector policies.**
- In the conference, **Culture Ministers of more than 100 countries will participate on this multilateral forum to decide on the global cultural discourse.**

### **MONDIACULT 2022**

- It is a **UNESCO World Conference on Cultural Policies and Sustainable Development.**
- **Convened by UNESCO forty years after the first Mondiacult World Conference on Cultural Policies, held in Mexico City (Mexico) in 1982, and 24 years after the**

### **UNESCO World Conference on Cultural Policies for Development held in Stockholm (Sweden) in 1998**

- This is the **third such conference**.
- The **main goal** of the conference is to **shape a more robust and resilient cultural sector**, fully anchored in the **perspectives of sustainable development** as well as **promotion of solidarity, peace, and security**
- It will be in line with the vision enshrined in the **UN Secretary-General's report 'Our Common Agenda'**, which refers to culture as a **'global public good, the good of us all.'**



**China's Zhurong rover that landed on Mars in 2021 has found evidence of major floods that took place billions of years ago.**

### Findings

- Zhurong Rover studied its landing site – Utopia Planitia – vast plains in Mars's northern hemisphere.
- The radar did not find any evidence of liquid water down to 80 meters but it did detect two horizontal layers with interesting patterns.
- Scientists think these layers may have been created due to flooding.
- For instance, the older, deeper and thicker layer that is between 30 and 80 metres underground was probably formed by rapid flooding three billion years ago.
- The upper layer (between 10 and 30 metres in depth) could have been created by another flood some 1.6 billion years ago when there was lots of glacial activity.
- Radio waves from the radar bounce off underground materials to reveal two crucial pieces of information about them:
  - Grain size and ability to hold an electric charge

- **Hydrated minerals that could have formed** when **groundwater rose through the rock or ice melted**

### **Zhurong Rover**

- Zhurong is **China's first Mars rover mission.**
- It is **part of the Tianwen-1 mission to Mars** conducted by the **China National Space Administration (CNSA)**, exploring the **southern part of Utopia Planitia.**
- The rover is **named after a traditional fire god.** The rover's title also fits with the Chinese name for Mars i.e. "Huo Xing" or fire star.
- Zhurong **carries multispectral cameras and instruments to analyse the composition of the rocks.**
- It **will investigate subsurface characteristics with ground penetrating radar.**
- It is **powered by retractable solar panels** and **fitted with seven primary instruments** — cameras, ground-penetrating radar, a magnetic field detector and a weather station.

### **Note**

- With Zhurong, **China will become the third country after Soviet Union and USA to achieve soft landing on Mars.**
- Also, it will **become the second country put a rover on Mars after the US.**

**BY 2024, POLLUTION CUT BY 30%**

**NATIONAL CLEAN AIR PROGRAMME (NCAP)**

Cities to be covered: 102

**GOAL:** To meet annual average ambient air quality standards

**MID-TERM (5 YEARS) TARGET:** Reducing air pollution by 20-30% by 2024, taking 2017 as base year

**HOW:** Through city-specific air pollution abatement action plan

**BUILD CAPACITY BY SETTING UP:**

- 1 National emission inventory
- 2 Air Information Centre for data analysis
- 3 Source apportionment studies
- 4 Guidelines for indoor air pollution
- 5 Rural monitoring stations

**INTERNATIONAL SUPPORT AGENCIES:** World Bank, German development agency (GIZ), AFD (French funding agency), Swiss Development Corporation, Bloomberg Philanthropies

## New targets under NCAP ( National Clean Air Programme)

### Key Points

- The Centre has set a new target of 40 percent reduction in particulate matter concentration in cities covered under the National Clean Air Programme (NCAP) by 2026
- Updated the earlier goal of 20 to 30 percent reduction by 2024
- The target was updated due to an overall improvement in PM10 levels in 2021.
- 20 cities including Chennai, Madurai and Nashik have met the national standards for annual average PM10 concentration (60 microgram per cubic metre).
- 95 of the 131 non-attainment cities (NACs) covered under the NCAP have witnessed an “overall improvement” in PM10 levels in 2021 as compared to 2017 levels.
- The acceptable annual standard for PM2.5 is 40 micrograms per cubic metre.
- Cities that showed overall improvement in PM 10 concentration since 2017 - Delhi, Noida, Ghaziabad, Mumbai, Kolkata, Chennai, Bengaluru, Chandigarh, Dehradun, Patna, Nagpur,



*Pune, Agra, Allahabad, Bareilly, Firozabad, Moradabad, Kanpur, Varanasi, Jalandhar, Ludhiana, Jaipur, Jodhpur, Jamshedpur, Ranchi, Raipur* among others.

### National Clean Air Programme(NCAP)

- It was launched by the Ministry of Environment, Forests and Climate Change (MoEFCC) in January 2019.
- It is a long-term, time-bound, national-level strategy making determined efforts to deal with the air pollution problem across the country in a comprehensive manner.

### Features

- Identification of 122 non-attainment cities across the country based on the 2014-2018 Air Quality data
- **Non- Attainment Cities** are the cities which do not meet the **National Ambient Air Quality Standards**.
- The city specific action plans have been prepared which, inter-alia, include measures for strengthening the monitoring network, reducing vehicular/industrial emissions, increasing public awareness etc.
- Implementation of the city specific action plans are regularly **monitored by Committees at Central and State level** namely Steering Committee, Monitoring Committee and Implementation Committee.
- **Air quality of cities is monitored by State Pollution Control Boards** which publishes their results from time to time.

- **Some Smart Cities have established Integrated Command and Control Centres (ICCCs) which are also connected to Air Quality Monitors (AQMs) for effective monitoring.**

**Objective of NCAP:**

- **To augment and evolve effective and proficient ambient air quality monitoring networks across the country.**
- **To have efficient data dissemination and public outreach mechanisms for timely measures for prevention and mitigation of air pollution.**
- **To have a feasible management plan for prevention, control and abatement of air pollution**



## Swedish defense major SAAB announced plans to manufacture its Carl-Gustaf M4 weapon system in India.

### Key Points

- The Indian government inked a deal with Swedish defence products company Saab to manufacture Carl-Gustaf M4 assault rifles in India.
- It is announced under the Government of India's 'Make in India' initiative to bolster indigenous defence manufacturing.
- The manufacturing would be done by a new fully SAAB-owned subsidiary, **Saab FFV India Pvt. Ltd.**
- This is the first time, SAAB will be setting up a manufacturing facility for this outside Sweden.
- The technology will be transferred to India.
- The **first product will roll out in 2024.**

### Carl-Gustaf M4

- It is a **man-portable, multi-role weapon system** that allows **dismounted soldiers to effectively deal with multiple challenges** on the **modern battlefield**.
- This weapon system **has been in service with the Indian Army since 1976**.
- Its **earlier M2 and M3 variants have been licence-produced in India**.

### Features

- **Lightweight, robust, reliable, effective and easy to use**
- It can be fitted with a wide range of sights to ensure a maximum effect in any tactical situation and flexibility for the user.
- **Combat proven system**
- Ammunition: **Anti-armour, anti-structure, anti-personnel, support**
- The system is attached with a standard clip-on telescopic sight, with additional options, including open sight, red dot sight and advanced fire control devices available.



**The Uttar Pradesh (UP) cabinet has approved the notification of the state's 4th tiger reserve in the Ranipur Wildlife Sanctuary (RWS) in Chitrakoot district.**

### Key Points

- This will be the 54th Tiger Reserve in India.
- Guru Ghasidas National Park of Chhattisgarh is the 53rd Tiger Reserve in India.
- A Ranipur Tiger Conservation Foundation will also be established for the protection and conservation of tigers in the region.
- It will also be the first in the state's portion of the Bundelkhand region, which it shares with neighbouring Madhya Pradesh.
- The other tiger reserves in Uttar Pradesh includes **Dudhwa, Pilibhit, and Amargarh (buffer of Corbett Tiger Reserve).**

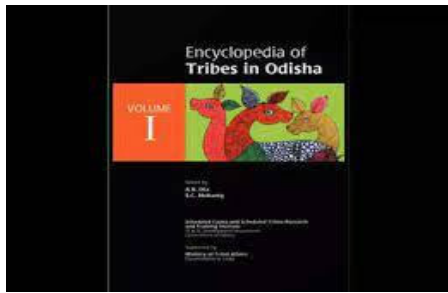
### Ranipur Wildlife Sanctuary (RWS)

- Ranipur Wildlife Sanctuary(RWS) was founded in 1977.
- The sanctuary does not have any tiger of its own, however, pugmarks are frequently seen which belong to the tiger from nearby Panna.
- Ranipur Wildlife Sanctuary is home to dry deciduous forest of **Bamboo, Palash, Khair, Mahua, Dhau, Saal, Tendu**, etc.

- Among animals, **Blackduck, Chinkara, Sambar, Cheetal, Bear, Leopard, Wolf, Wild dog, Blue bull**, etc, can be **found** in the sanctuary.
- According to the **report, “Status of tigers, co-predators & prey in India”** by the National Tiger Conservation Authority (NTCA), **RWS is an important corridor for the movement of tigers.**
- 12 photo-captures of 3 tigers were recorded during a camera trapping in 2018 by NTCA, which confirmed tiger sightings in the sanctuary.

### Note

- **India is home to 52 tiger reserves** covering approximately 75,000 Sq Km area in **18 States with approximately 75% population** of the wild tiger at global level.
- **India achieved the goal of doubling the tiger numbers in 2018 itself, four years in advance from the targeted year 2022.**
- Also, so far **17 tiger reserves in the country have got CA|TS international accreditation** and **two tiger reserves have got international Tx2 Award.**



## Odisha launched Encyclopedia of Tribes in Odisha'

### Key Points

- *Odisha happens to be the only State to publish such an encyclopedia.*
- The **five edited volumes of the Encyclopedia** have research articles on the tribals, including **13 particularly vulnerable groups**.
- These are **published by Scheduled Castes and Scheduled Tribes Research and Training Institute and Odisha State Tribal Museum.**

### Encyclopedia of Tribes in Odisha

- It is an **exhaustive work on the various aspects of life, culture and development of 62 Scheduled Tribes and 13 Particularly Vulnerable Tribal Groups (PVTGs) of Odisha.**
- **Comprising five edited volumes with 3,800 pages**, the encyclopedia has **418 research articles covering all ST communities and PVTGs** which had been published in the 'Adivasi' journal and other publications over the last six decades.
- The **purpose of this book is to preserve the rapidly changing cultural identity of tribal communities** in the state.

- It brings together both published and unpublished data regarding the tribes' ethnography and development over the years, covering their past as well as the present.
- Each of the volumes is a fine repository of ethnographic knowledge as well as excellent exposition of pristine tribal culture with its specificity and variety.
- It will be used as a repository for reference by a wide range of readers.

### Tribes in Odisha

- As per 2011 census, tribals account for 22.85 percent of the State's total population.
- Though their numbers as percentage of the total population is higher in Jharkhand and Chhattisgarh, Odisha has the most diverse tribal communities found in the country.
- The state has 62 tribes.
- The Kondha or Kandha is the largest tribe of the state in terms of population.
- Other tribes of the state are Santhals, Ho People, Saura, and Bonda.





**UNESCO released a list of 50 exclusive and iconic heritage textile crafts of the country**

## Key Point

- The report is titled **Handmade for the 21st Century: Safeguarding Traditional Indian Textile**.
- **Safeguarding Traditional Indian Textiles** lists the histories and legends behind the textiles, describes the complicated and secret processes behind their making, mentions the causes for their dwindling popularity, and provides strategies for their preservation.
- According to UNESCO, one of the major challenges to the safeguarding of Intangible Cultural Heritage in South Asia is the lack of proper inventory and documentation.

## Some of the Important Textiles Crafts Listed

- ✓ *Toda embroidery and Sungudi from Tamil Nadu*
- ✓ *Himroo weaves from Hyderabad*
- ✓ *Bandha tie and dye weaving from Sambalpur in Odisha*
- ✓ *Kunbi weaves from Goa*
- ✓ *Mashru weaves and Patola from Gujarat*
- ✓ *Himroo from Maharashtra*
- ✓ *Garad-Korial from West Bengal*

- ✓ *Ilkal and Lambadi or Banjara embroidery from Karnataka*
- ✓ *Sikalnayakanpet Kalamkari from Tamil Nadu*
- ✓ *Khes from Haryana*
- ✓ *Chamba rumals from Himachal Pradesh*
- ✓ *Thigma or wool tie and dye from Ladakh*
- ✓ *Awadh Jamdani from Varanasi*

### Significance

- ✓ **Textile crafts represent a very significant share of the Indian cultural heritage and have dazzled the world for centuries.**
- ✓ **It is essential that these iconic heritage crafts are taken stock of and promoted as contemporary treasures.**
- ✓ **UNESCO publication also includes recommendations for the protection and revitalization of these textile crafts, that cover both the broad-spectrum of issues extending from policy to grass-root based micro-interventions.**



**The defence minister launched several digital initiatives of the Defence Accounts Department (DAD) during its 275th Annual Day celebrations.**

### **SPARSH Mobile App**

- The app will ensure pensioner access and reach to important functionalities of the SPARSH portal through their mobiles.
- SPARSH portal is for pensioners of the Armed Forces as well as defence civilians as an integrated system for automation of sanctions and disbursement of defence pensions.
- It is an end-to-end solution to all pension-related processes, from claim initiation to disbursement. Pensioners can log on to the portal and get their pension-related issues resolved.

### **Agniveer Pay System**

- It will facilitate efficient pay management for Agniveers, who will soon join the Armed Forces through the Government's transformational Agnipath scheme.
- The fully automated IT system will be a specialised and secure portal to ensure claim processing and payroll management of Agniveers.

## Defence Travel System

- The system provides an end-to-end solution, from booking of rail and air tickets to claim submission on its portal for Defence Services and Civilians in a cashless and paperless environment.
- It will provide the facility of booking air tickets for foreign travel to defence services replacing Air Exchange Warrants.
- It will fill the time gap between GSL receipt and ticket booking and eliminate the last hassle for travelling officers.

## DARPAN

- The Defence Accounts Receipts and Payment System is a unified solution for third-party bill payment and accounting.
- Its real-time processing will provide comprehensive insights into various accounting and financial performances.

## Defence Pay Civilian System

- The System envisages the disbursement of pay of all defence civilians through a single, centralised and fully automated system.
- Both Units and PCDA/CDA offices have been given access to the system and units will be able to check the payment status on the portal itself.

## Defence Accounts HR Management System

- The platform has various self-service modules like e-service book, leave management, payroll generation etc. which will be accessible to the employees through a mobile app.

## PAO-Bharti

- Through the initiative, the **Armed Forces personnel will be able to get real-time data related to pay & allowances and claims.**
- **In addition, the personnel will be able to register their complaints by phone and get replies within 48 hours.**

## Other Points

- The **Raksha Mantri shed light on the important role the department can play in realising the vision of 'Aatmanirbharta' in Defence.**
- **"68 per cent of capital procurement budget has been earmarked for the domestic industry during Financial Year 2022-23, which underlines the Government's commitment towards achieving self-reliance in defence manufacturing**
- The **Raksha Mantri also praised the vital role played by the DAD in managing the financial resources of the Services by following the principles of financial prudence**
- He **termed financial advice; accounting, billing and payments and internal audit as the three major roles of the DAD in Ministry of Defence, which contribute significantly in Nation Building.**
- He **suggested the department to explore opportunities for setting up a faceless mechanism on financial advice and billing & payments, taking advantage of the latest technological advancements.**



**The first indigenously made light combat helicopter (LCH) will be inducted in the Indian Air Force (IAF) at Jodhpur Base.**

### Key Points

- According to the IAF, the **induction marks India becoming the seventh country to make attack helicopters.**

### Background

- For a long time after Independence, indigenous technology for the **development of the attack helicopter was not given enough attention.**
- As a result, the IAF had to depend on foreign-origin attack helicopters...not just for our own operations but also for UN peacekeeping missions in other countries
- The need for indigenous attack helicopters was felt “even more **intensely**” during the 1999 Kargil War.
- India has been operating sub 3 ton category French-origin legacy helicopters, Chetak and Cheetah, made in India by the HAL.
- These single engine machines were, primarily, utility helicopters.
- Indian forces also operate the Lancer, an armed version of Cheetah.

- In addition, the **Indian Air Force** currently operates the **Russian origin Mi-17** and its **variants Mi-17 IV and Mi-17 V5**, with maximum **take off weight of 13 tonnes**, which are to be phased out starting 2028.
- But the **requirement was for a more agile, multi-role dedicated attack helicopter**.
- After the **initial deliberations**, the government sanctioned the **LCH project in October 2006**, and HAL was tasked to develop it.
- LCH's **glorious flight is not just powered by rotors, engines and blades but also by the dedication, courage and patriotism of the scientists, engineers and others who worked on it**

### About LCH

- The LCH is **the only attack helicopter in the world that can fly and take off at an altitude of 5,000 metres with considerable weapons and fuel load, meeting the specific requirement of armed forces**
- It is a **5.5-tonne class dedicated combat helicopter designed and developed by Hindustan Aeronautics Ltd (HAL)**.
- The LCH has similarities with the **Advanced Light Helicopter Dhruv, designed and developed by HAL**
- It is **powered by two French-origin Shakti engines manufactured by the HAL**.

### Features

- Has been **primarily designed for deployment in high-altitude regions**



- It has a narrow fuselage and tandem- one behind the other configuration for pilot and co-pilot.
- The co-pilot is also the Weapon Systems Operator (WSO).
- It has a maximum speed of 268 kilometres per hour, range of 550 kilometres.
- The LCH is armed with air-to-air missiles, 20 mm turret guns, rocket systems and other weapons.
- It uses radar-absorbing material to lower radar signature and has a significantly crash-proof structure and landing gear.
- A pressurised cabin offers protection from nuclear, biological and chemical (NBC) contingencies.
- The LCH has stealth features, armoured-protection systems, night attack capability and crash-worthy landing gear for better survivability.

### Uses

- It's capable of performing a range of roles including **combat search and rescue (CSAR), destruction of enemy air defence (DEAD) and counter-insurgency (CI) operations.**
- The LCH can also be deployed in high-altitude bunker-busting operations, counter-insurgency operations both in jungles and populated areas, and for supporting ground forces.
- The multi-role platform is capable of firing a range of missiles and other weapons.
- The LCH can also be used against slow-moving aircraft and remotely piloted aircraft (RPAs) of adversaries.





## The Ministry of Education, Department of Higher Education, launched YUVA 2.0 - Prime Minister's Scheme for Mentoring Young Authors.

### Key Point

- In view of the significant impact of the first edition of YUVA with large scale participation from young and budding authors in 22 different Indian languages and English, **YUVA 2.0 is now being launched.**

### About YUVA-2.0 (Young, Upcoming and Versatile Authors)

- It is an **Author Mentorship programme to train young and budding authors** (below 30 years of age) in order to promote reading, writing and book culture in the country, and project India and Indian writings globally.
- YUVA 2.0 is a part of **India@75 Project (Azadi Ka Amrit Mahotsav)** to bring to the fore the perspectives of the young generation of writers
- **THEME : 'Democracy (institutions, events, people, constitutional values – past, present, future)' in an innovative and creative manner.**

- The launch of YUVA 2.0 is in tune with the Prime Minister's vision to encourage the youth to understand and appreciate India's democracy.

## Background

- **NEP 2020 has emphasized on the empowerment of the young minds and creating a learning ecosystem that can make the young readers/learners ready for leadership roles in the future world.**
- **India tops the chart in youth population being 66% of the total, waiting to be tapped for capacity building and thereby nation building.**
- **With the purpose of mentoring a new generation of young creative writers, there is an imminent requirement to take initiatives at highest level**
- **In this context, YUVA 2.0 will go a long way in laying the foundation of the future leaders of the creative world.**

## Features

- **The National Book Trust, India, under the Ministry of Education is the Implementing Agency.**
- **The books prepared under this scheme will be published by National Book Trust, India.**
- **The books will also be translated into other Indian languages ensuring the exchange of culture and literature, thereby promoting 'Ek Bharat Shrestha Bharat'.**
- **Under the scheme, the selected writers will receive an Rs. 50,000 scholarship each month for six months.**

- 10% royalty to be paid by NBT on publication and sale of the books.

### Significance

- The scheme will help to develop a stream of writers who can write on various facets of Democracy in India encompassing the past, present and future
- It will help to develop a stream of writers who can write on a spectrum of subjects to promote the Indian heritage, culture, and knowledge system.
- It will also provide a window to the aspiring youth to articulate themselves and present a comprehensive outlook of Indian Democratic values at domestic as well as international platforms.



In all the buzz around the Tamil film **Ponniyin Selvan: 1** or **PS1**, a fictional period drama, a point of focus has been the **Chola dynasty** that the film is based on.

### Ponniyan Selvan

- In **Tamil Nadu**, which was the **centre of the kingdom**, the **Cholas** have **been part of the popular imagination** for a long time.
- **Ponniyan Selvan means the son of Ponni (the Cauvery River).**
- The **novel was penned by author and freedom fighter Kalki Krishnamurthy**, and **serialized from 1950-54 on a weekly basis in Tamil magazine 'Kalki'**.
- It was **later published in form of a book in 1955.**
- It **tells the story of the early days of Rajaraja I, born Arunmozhi Varman and considered the greatest of all Chola rulers.**
- While the **novel is work of fiction**, it **draws heavily on the events and involves characters from the Chola dynasty.**

### Cholas

- The **Chola kingdom stretched across present-day Tamil Nadu, Kerala, and parts of Andhra Pradesh and Karnataka.**

- The **dynasty was founded by the king Vijaylaya**, described as a “**feudatory**” of the Pallavas by historian **Satish Chandra** in the book ‘The History of Medieval Era’.

*During the period of the Cholas’ rise and fall (around 9th to 12th century AD), other powerful dynasties of the region would also come and go such as*

- *The Rashtrakutas of the Deccan who defeated the Cholas*
- *The Chalukyas of the Andhra Pradesh region whom the Cholas frequently battled.*

### Wars

- The **Chola King Rajadhiraja came to power in 1044**, he was able to “**subdue**” Pandyan and Kerala kings, and presumably to **celebrate these victories performed the Ashvamedha sacrifice**.
- Despite being a **relatively minor player in the region among giants**, Vijaylaya **laid the foundation for a dynasty that would rule a major part of southern India**.

### Defense

- One of the **biggest achievements of the Chola dynasty was its naval power**.
- **Naval power allowed them to go as far as Malaysia and the Sumatra islands of Indonesia in their conquests**.
- It is **assumed that the domination was such that the Bay of Bengal was converted into a “Chola lake” for some time**.

### Economy

- While the **extent of this domination is disputed**, the **Cholas** had **strong ties with merchant groups** and **this allowed them to undertake impressive naval expeditions**.
- In **general, even merchant guilds, which had close ties to the court, had to hire their own guards** because **roads could be dangerous**.

### Art

- The **practice of building grand temples, common to the dynasties of the region around this time, was ramped up in an unprecedented way**.
- **Several artworks and sculptures were commissioned by Chola kings and queens, including the famous bronze Nataraja idols**.
- Earlier, the **Rashtrakutas had built the Kailasanatha temple in Maharashtra's Aurangabad** — the largest monolith structure (carved from a single rock) of its time.

### Women under the Cholas

- The **role of women in the royal family is being brought to focus given their impact on public life**.
- But that **is not to suggest that ordinary women wielded equal power as men**.
- The *royal women's proximity to male power was valued, rather than women in general*.

### Chola Architecture

- The temple of Thanjavur called the Rajarajeswara or **Brihadeshwara temple** was completed around 1009 by Rajaraja Chola and is the **largest and tallest of all Indian temples**.
- This **Chola temple's pyramidal multi-storeyed vimana** rises a **massive, 70-metre structure topped by a monolithic shikhara** which is an **octagonal dome-shaped stupika**.
- There are **two large gopuras (gateway towers) with an elaborate sculptural programme** which was conceived along with the temple.
- The **walls surrounding the sanctum are decorated with murals and sculptures depicting mythological narratives**.

### Local annexations

- The **Chola rulers sacked and plundered Chalukyan cities** including **Kalyani and massacred the people**, including Brahmins and children.
- They **destroyed Anuradhapura, the ancient capital of the rulers of Sri Lanka**.



## **Climate change may aid spread of Lassa fever from west to east Africa by 2070: Report**

### **Findings**

- **Climate change will aid the spread of Lassa fever (a zoonotic disease) endemic to parts of west Africa, to the central and eastern parts of the continent in the next 50 years.**
- **There would be a 600% jump in the number of people exposed to the virus that causes Lassa fever.**
- **The number of people at risk of exposure would rise to 453 million by 2050 and 700 million by 2070, up from about 92 million in 2022.**
- **Temperature, rainfall and the presence of pastureland areas are key factors that contributed to the transmission of the Lassa virus.**
- **If the virus is successfully introduced and propagated in a new ecologically suitable area, its growth would be limited over the first decades.**

### **Lassa Fever**

- **The Lassa virus is named after a town in Nigeria where the first cases were discovered in 1969.**



- Lassa fever is a **viral haemorrhagic disease** caused by the **Lassa virus**, a member of the **Arenaviridae** family.
- The **fever is spread by rats** and is **primarily found in countries in West Africa including Sierra Leone, Liberia, Guinea, and Nigeria where it is endemic.**
- The **fatality rate for hospitalised patients is generally high** and can reach **80 per cent** at times.

### Transmission

- **Humans usually become infected through direct contact or exposure to the excreta of infected Natal multimammate rat (Mastomys natalensis) rats.**
- **It can also be spread, though rarely, if a person comes in contact with a sick person's infected bodily fluids or through mucous membranes such as the eyes, nose or the mouth.**

### Symptoms

- **Mild symptoms include slight fever, fatigue, weakness and headache.**
- **Serious symptoms include bleeding, difficulty breathing, vomiting, facial swelling, pain in the chest, back, and abdomen and shock.**
- **Death can occur from two weeks of the onset of symptoms, usually as a result of multi-organ failure.**

### Vaccines and Treatment

- There is currently **no vaccine approved to prevent the disease.**

## ***Prelims 2023***

- The **antiviral drug ribavirin** seems to be an effective treatment for **Lassa fever** if given early on in the course of clinical illness.
- The **best way to avoid getting infected** is to **avoid contact with rats**.
- **Other procedures** used are **supportive care including hydration, oxygenation, and treatment of specific complications** arising due to the disease.
- **Preventive vaccines** are currently under research and development.

Exact IAS



### The Indian Army is inducting the M777 Ultra Light Howitzer on the northern borders

#### Key Points

- In the next five years, the Army's Regiment of Artillery will see major force accretion with the induction of several guns, including indigenous ones.
- It includes the Dhanush, Sharang, M777 Ultra Light Howitzer (ULH), additional K9-Vajra howitzers and the Advanced Towed Artillery Gun System (ATAGS).

#### M777 Ultra Light Howitzer

- The M777s are a key component of the army's field artillery rationalisation plan (FARP), cleared in 1999.
- The Ultra Lightweight Howitzer has a battle-proven rapid reaction that delivers firepower under sustained combat conditions.
- To meet operational contingency, a Light Artillery Regiment was converted to a medium regiment with the induction of M777 ULH in early 2021.

#### Features

- The ultralight gun **consists of artillery technology** which involves **technical insertions, long-range precision guided munition** developments and **flexible mobility options**.
- The **155-mm, 39-calibre towed artillery gun weighs just four tonnes** which **makes it light enough to be airlifted** underslung from **Chinook helicopters** operated by IAF.

### Significance

- The gun is **highly transportable for rapid deployment** to meet any **operational contingency**
- The Ultra Lightweight Howitzer gun **provides a rapid reaction** that delivers firepower under sustained combat conditions.
- Further, it is a **highly transportable gun system** which enables rapid deployment as it can be airlifted by the CH-47F(I) Chinook heavy-lift helicopters.

### Production

- **BAE Systems has collaborated with Mahindra** as its business partner for an **in-country Assembly, Integration & Test (AIT) facility for the M777 Ultra Lightweight Howitzer**.
- The **facility will be a fundamental part of the M777 production line** and **enable the Indian Army to access maintenance, spares and support for the M777 locally**.



कौशल भारत - कुशल भारत  
**BHARAT SKILLS**  
Directorate General of Training (DGT)

**The Directorate General of Training (DGT) in the Ministry of Skill Development and Entrepreneurship (MSDE)**

**launched Bharatskills Forum**

### Key Point

- A new feature called the **Bharatskills Forum** has been added to the **Bharatskills learning platform** developed by DGT

### Bharat Skills

- In **Oct 2019** DGT launched an online learning platform called the **Bharatskills** (<https://bharatskills.gov.in>).
- It is a **Central Digital Repository** for the trainees and trainers of the ITI ecosystem, providing easy access to updated curriculum, e-books, Question Banks, mock/practice papers, learning videos for courses under the **Craftsmen Training Scheme (CTS)**, **Craft Instructor Training Scheme (CITS)** and the **Apprenticeship Training Scheme (ATS)**.

- This platform also **presents unique access to a centralized, scalable, and thriving support ecosystem** through its **industrial partners for the students and teachers** who can **now learn the new age (Industrial Revolution 4.0) skills** to **meet the demands of the industry.**

### **Bharat Skills Forum**

- It **will allow sharing of books, notes, videos, a question bank, etc., and other relevant skill-related content** to **interested learners.**
- This facility **shall act as a digital warehouse for the skilling community** as it **will allow access to handwritten trainers' or trainees' notes, PDFs, scanned copies, or recorded videos in any preferred language.**

**herSTART**

**The President of India launched 'herSTART' – a start-up platform of Gujarat University.**

**'herStart**

- It is an **initiative of the Gujarat University Startup and Entrepreneurship Council (GUSEC).**
- It **seeks to boost innovation and start-up efforts of women entrepreneurs** and also **help them connect with various government and private enterprises.**
- The platform **will include a digital platform to provide resources and training modules free of cost to aspiring women entrepreneurs, a digital community for them, and a digital publication to spread their success stories.**
- The Platform **encompasses the herSTART Incubator, a dedicated full-fledged startup incubator for women entrepreneurs and innovators, and the herSTART Accelerator, a round-the-year accelerator programme for high-impact women-led startups.**
- herSTART is **supported by UNICEF, the government of Gujarat, and the government of India.**



# Recently, 22 Standing Committees were reorganised.

### Committees of Parliament

- A **Parliamentary Committee** is a panel of MPs that is **appointed or elected by the House or nominated by the Speaker**, and which works under the direction of the Speaker.
- It **presents its report to the House or to the Speaker**.
- Parliamentary Committees have **their origins in the British Parliament**.

### Authority

- They **draw their authority from Article 105 and Article 118**.
- **Article 105** deals with the **privileges of MPs**.
- **Article 118** gives **Parliament authority to make rules to regulate its procedure and conduct of business**.

### Various Committees of Parliament

- **Financial Committees**
- **Departmentally Related Standing Committees**
- **Ad hoc Committee**
- **Other Parliamentary Standing Committees**



## Financial Committees

- The Financial Committees include the **Estimates Committee, Public Accounts Committee, and the Committee on Public Undertakings.**
- These committees were **constituted in 1950.**
- **A Minister is not eligible for election or nomination** to Financial Committees, and **certain Departmentally Related Committees.**

## Departmentally Related Standing Committees

- **Seventeen Departmentally Related Standing Committees** came into being in **1993** to examine budgetary proposals and crucial government policies.
- The aim was to increase Parliamentary scrutiny, and to give members more time and a wider role in examining important legislation.
- The number of Committees was subsequently increased to **24.**
- Each of these Committees has **31 members — 21 from Lok Sabha and 10 from Rajya Sabha.**
- **Lok Sabha Panels** includes *Agriculture; Coal; Defence; External Affairs; Finance; Communications & Information Technology; Labour; Petroleum & Natural Gas; and Railways.*
- The **Rajya Sabha panels** include *Commerce; Education; Health & Family Welfare; Home Affairs; and Environment.*

## Ad hoc committee

- Ad hoc Committees are **appointed for a specific purpose.**

- They **cease to exist** after they have completed the task assigned to them, and have **submitted a report to the House**.
- The **principal Ad hoc Committees** are the **Select and Joint Committees on Bills**.
- **Committees** like the *Railway Convention Committee, Committee on Food Management and Security in Parliament House Complex*, etc. also come under the category of Ad hoc Committees.

### Joint Parliamentary Committee (JPC)

- Parliament can also constitute a **Joint Parliamentary Committee (JPC)** with a **special purpose, with members from both Houses**, for **detailed scrutiny of a subject or Bill**.
- **Either of the two Houses can set up a Select Committee with members from that House**.
- **JPCs and Select Committees** are usually **chaired by ruling party MPs** and are **disbanded after they have submitted their report**.
- There are **other Standing Committees** for each House, such as the **Business Advisory Committee and the Privileges Committee**.

### Constitution of the Committees

- The **Presiding Officer of each House** nominates members to these panels.
- **By convention, the main Opposition party gets the post of PAC chairman**; it is currently with the Congress.
- **Chairmanship of some key committees** has been **allocated to opposition parties in the past**. However, this **pattern has changed in the latest rejig**.

## Meeting

- The **chairperson presides over the meetings** and can **decide who should be summoned before the panel.**
- The **chairperson plays a clear role in preparing the agenda** and the **annual report** and can **take decisions in the interest of the efficient management of the Committee.**
- An **invitation to appear before a Parliamentary Committee is equivalent to a summons from a court:** If one cannot come, he or she has to give reasons, which the panel may or may not accept.
- However, the **chairman should have the support of the majority of the members to summon a witness.**
- **MPs typically have a one-year tenure on Parliamentary Committees.**

## Recommendations of the Committees

- Reports of Departmentally Related Standing Committees are **recommendatory in nature.** They are **not binding on the government,** but **they do carry significant weight.**
- The suggestions by the Select Committees and JPCs — which have a majority of MPs and heads from the ruling party — are accepted more frequently.
- These **panels also examine policy issues in their respective Ministries** and **make suggestions to the government.** The **government has to report back on** whether these recommendations have been accepted.

Based on this, the **Committees table Action Taken Reports,** detailing the **status of the government's action on each recommendation.**



# India lags in biomass co-firing targets

## Key Points

- As per recent reports, India has missed the target of co firing of coal based thermal power plants with biomass.
- The Power Ministry in October 2021 had decreed that all thermal power plants ensure 5% biomass mixing compliance by October 2022.
- In 2020-21, only eight power plants had co-fired biomass pellets, and this number had risen to 39 in October 2022.

## Biomass Co-firing

- Biomass co-firing is the **practice of substituting a part of the fuel with biomass at coal thermal plants.**
- **Biomass pellets have the same calorific value as coal and mixing them with coal saves consumption as well as reportedly cuts emissions.**
- **Coal and biomass are combusted together in boilers that have been designed to burn coal.**

- Co-firing is an **option to convert biomass to electricity**, in an **efficient and clean way**, and to **reduce GHG** (Greenhouse Gases) emissions of the power plant.
- Biomass co-firing is a **globally accepted cost-effective method** for **decarbonising a coal fleet**.

### Significance

- Biomass co-firing is an **effective way to curb emissions** from **open burning of crop residue**, it also **decarbonises the process of electricity generation using coal**.
- **Substituting 5-7 % of coal with biomass in coal-based power plants can save 38 million tonnes of carbon dioxide emissions**.
- It can **help cut emissions from combustion of fossil fuels**, address **India's burgeoning problem of farm stubble burning** to some extent, **reduce waste burden while also creating jobs in rural areas**.
- **India has large biomass availability** as well as **rapid growth in coal-fired capacity**.

### Challenges:

- The **existing infrastructure is not robust enough to substitute 5-7% of coal with biomass in coal-based power plants**, which indeed can save **38 million Tonnes of carbon dioxide emissions**.
- Around **95,000-96,000 tonnes of biomass pellets are required per day for co-firing**, but **India's pellet manufacturing capacity is 7,000 tonnes per day at present despite a surplus 228 million tonnes of agricultural residue available in the country**.

- It is **challenging to store biomass pellets for long durations** at the **plant sites since they absorb moisture from air quickly**, rendering them **useless for co-firing**.
- Only **pellets with up to 14% of moisture can be used for combustion along with coal**.

Exact IAS



**‘Vyommitra’, is undergoing pre-flight ground tests at the ISRO Inertial Systems Unit (IISU).**

### Vyomitra

- Vyommitra is a **combination of two Sanskrit words Vyoma (Space) and Mitra (Friend).**
- Vyommitra, a **spacefaring human robot developed by the Indian Space Research Organisation.**
- Vyommitra is a **half-humanoid who can mimic human actions**
- **IISU (ISRO Inertial Systems Unit) was responsible for the design, development, and integration of the robot.**
- The **Vikram Sarabhai Space Centre (VSSC) at Thumba here developed its fingers.**
- It has **been designed to resemble a human with facial expressions and speech and sight capabilities.**
- It is an **AI-enabled robot (Artificial Intelligence).**
- It **can withstand vibrations and shock during the flight.**

### Half humanoid

- "It's called a **half humanoid because it doesn't have legs. It can only bend sideways and forward.**

- It will carry out certain experiments and will always remain in touch with the Isro command centre

### Gaganyaan human space-flight mission- Functions

- Vyommitra will fly aboard the first unmanned test flight ahead of the manned Gaganyaan flight expected in 2024.
- Vyommitra will help in simulating human functions in space and will also interact with the environment control life support system.
- Vyommitra has been designed to speak in Hindi and English, can act as a companion to the astronauts, converse with them, and also respond to their queries.
- Attaining launch and orbital postures, responding to the environment, generating warnings, replacing carbon dioxide canisters, and operating switches, monitoring of the crew module, receiving voice commands, and responding via speech (bilingual) are among the functions listed.
- It will have a human-like face, with lips synchronized for movement to mimic speech
- Once it is fully developed, Vyommitra will be able to use the equipment on board the spacecraft's crew module, like safety mechanisms and switches, as well as receive and act on commands sent from ground stations.



## Recent development

- The IISU has successfully integrated it with a computer “brain”, which enables it to “read” control panels aboard the unmanned test flights and communicate with the ISRO ground stations.
- It has a certain level of intelligence.
- It is intended to operate and read the display panels and communicate back to ground station using its own voice.



**The 200th anniversary of the Basilica of Our Lady of Graces, one of India's minor basilicas, was celebrated in the first week of October.**

### Begum Samru(1750's – 1836

- **Joanna Nobilis Sombre** (c. 1753– 27 January 1836) is also popularly known as Begum Samru.
- She was a **Muslim who converted to Catholicism, a nautch-girl (dancing girl) who became a warrior and an aristocrat**
- Was described by her contemporaries as dressing more like a man than a woman, **sporting a dark turban and ever-puffing away at a hookah**
- She is also regarded as the **only Catholic ruler in India.**
- She ruled the principality of Sardhana in 18th- and 19th-century India.

### Early Years

- She started her career as a **nautch (dancing) girl in 18th century India, and eventually became the ruler of Sardhana, a small principality near Meerut.**

- While she had first supported the waning Mughal empire, from the 1790's the **Begum began to provide service to the rising Marathas, before joining the British to ensure that she could maintain her landholding rights if they emerged victorious.**
- She **spent her early years as a nautch** (dancing girl) in a tawaif's (courtesan) kotha (household) in Delhi.
- It **was here she met Walter Reinhardt, an Austrian mercenary of uncertain origins** and even more uncertain allegiances, who after reaching India in 1750 had served the British, French and Jats, i.e any force willing to employ him.
- While **some accounts suggest he was called Le Sombre** due to his serious nature, other sources claim he **took on the name Sommers or Summers, which was Indianised into Samru.**
- In **1767, the teenage-Farzana became the much older Reinhardt's close companion, and remained so until his death, assuming the role of his wife and became known as Begum Samru.**

### Rise to power

- After **first fighting in armies against the Mughals, Reinhardt switched sides and began to serve them, for which the emperor Shah Alam II bestowed upon him the jagir (land tenureship) of Sardhana, in present day Meerut district.**
- **Begum Samru accompanied Reinhardt on his military campaigns** and began to play an essential role in managing Sardhana and its land revenue dealings.
- Begum **had lived among Reinhardt's military force** and formed **strong relations with his officers.**

- Thus, after his death in 1778, they looked to her as his successor, rather than Reinhardt's son from a woman
- In the late 18th century, Delhi faced increasing threats from the rising Marathas, Jats, Sikhs and Rohilas, and the now waning Mughal Empire relied on the support of the Begum who provided her armies for protection.
- For her service, she was bestowed the title Zeb-un-nissa by emperor Shah Alam and honoured with a khilat (ceremonial robe).
- The title and award brought her into the emperor's inner circle of trusted nobility and she was given a land grant near Delhi.

### **The Basilica of Our Lady of Graces(church)-**

- While she had constructed a mansion in Chandini Chowk and another in her independent territory, Begum Samru, referred to by some as India's only Catholic Queen, is best known for building a Catholic church in Sardhana known today as the Basilica of Our Lady of Graces.
- It is one of the 23 minor basilicas of India, and the only one in the north, after the church was bestowed the status by Pope John XXIII in 1961.
- The architect was an Italian engineer Antonio Reghellini from the city of Vicenza, and the Begum is said to have incurred a cost of Rs 4 lakh.
- Completed in 1822, it is commonly believed that the church was built as a replica of St Peter's Basilica in Rome

- However **some Historians claim that it was likely based on 'Akbar's Church' in Agra**, which had been built as a tribute to the Jesuit missionaries in the emperor's court in 1599.
- The **structure consists of a blend of architectural styles, of Indian and Islamic features** added to a **European cross-plan church**.
- The **church's domes lie next to large steeples reminiscent of Islamic minarets**, while the **central altar contains pietra dura or parchinkari designs that are found in the Taj Mahal and Red For.**
- The **church helped Begum Samru establish relations with Europeans**, beyond the networks she had established with the British in India later in her life.



**An analytical study of medicinal fungi using MeFSAT carried out by researchers from Chennai shows that some chemicals they secrete may find use as novel drugs.**

### Key Points

- Chennai-based researchers analysed the structure of **1,830 secondary metabolites of medicinal fungi.**
- **Secondary metabolites are chemical compounds that fungi produce when they are stressed.**
- They enhance the fungus' ability to survive.

### MeFSAT

- MeFSAT (**Medicinal Fungi Secondary Metabolites and Therapeutics**) is a database that compiles information on **184 medicinal fungi, including mushrooms.**
- It is a **manually curated database that compiles information on secondary metabolites and reported therapeutic uses of medicinal fungi** from published research articles and specialized books on the subject.

### Medicinal fungi

- Medicinal fungi are **fungi that contain metabolites** or can be **induced to produce metabolites through biotechnology** to **develop prescription drugs**.
- Medicinal fungi **belongs to two taxonomic divisions** namely, **basidiomycota and ascomycota**.

### **Examples**

- **Mushrooms** belong to the **basidiomycota division**.
- An **example is Agaricus bisporus**, the **button mushroom**, which **can be consumed**.
- Fungi belonging to the **ascomycota division** are **generally not mushrooms**.
- Among these are **Isaria cicadae** and **Shiraia bambusicola** which are **used in traditional Chinese medicine**.

### **Benefits**

- Several **secondary metabolites** are also known to be **beneficial for humans in terms of both therapy and health**.
- **Cordycepin**, a secondary metabolite **produced by Cordyceps species of fungus**, is known to have **anti-tumor properties**.



**The government recently asked Chief Justice of India (CJI) to name his successor.**

### **Key Points**

- According to the **Memorandum of Procedure (MoP)**, the CJI names the senior-most judge as his or her successor.
- The **MoP** is a document which guides the appointment and transfer of Supreme Court and high court judges.

### **Appointment of Chief Justice of India**

- The **Chief Justice of India** and the **Judges of the Supreme Court (SC)** are appointed by the **President** under **clause (2) of Article 124** of the Constitution.
- The **Chief Justice of India** is traditionally appointed by the **outgoing Chief Justice of India** on the day of his (or her) retirement.
- By convention, the **outgoing Chief Justice of India** selects the **most senior then-sitting Supreme Court judge**.
- The **Union Law Minister** forwards the recommendation to the **Prime Minister** who, in turn, advises the **President**.

### **History**



- From **1950 to 1973**, the practice has been to appoint the senior most judge of the SC as the CJI.
- This **established convention was violated in 1973** when **A N Ray** was appointed as the Chief Justice of India by superseding three senior judges.
- Again in **1977**, **M U Beg** was appointed as the chief justice of India by superseding the then senior-most judge.
- This **discretion of the government was curtailed by the SC** in the **Second Judges Case (1993)**, in which the **SC ruled** that the senior most judge should alone be appointed to the office of the CJI.

### Procedure

- The **Constitution of India does not have any provision for criteria and procedure for appointing the CJI.**
- The **procedure to appoint is laid out in the Memorandum of Procedure (MoP)** between the government and the judiciary
- It is **initiated by the Law Minister seeking the recommendation of the outgoing CJI at the 'appropriate time'**, which is near to the date of retirement of the incumbent CJI.
- The **CJI sends his recommendation to the Law Ministry**; and in the **case of any qualms, the CJI can consult the collegium** regarding the fitness of an SC judge to be elevated to the post.
- After **receiving recommendation from the CJI, the law minister forwards it to the Prime Minister who then advises the President on the same.**
- The **President administers the oath of office to the new CJI.**

### Collegium System

- Under the Collegium System, **appointments/elevation of judges/lawyers to the Supreme Court and transfers of judges of High Courts and Apex Court are decided by a panel of the Chief Justice of India and the four senior-most judges of the Supreme Court.**
- The word **‘Collegium’** is nowhere mentioned in the **Indian Constitution**, it has come into force as per Judicial Pronouncement.

## **Evolution**

### **First Judges Case (1981)**

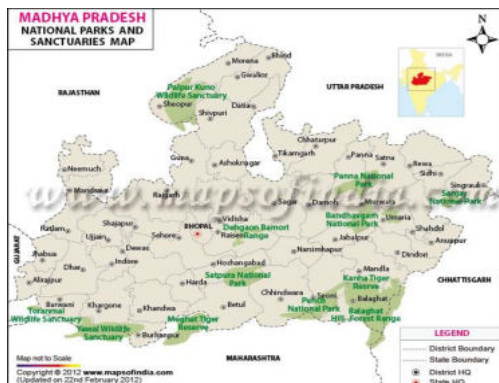
- It ruled that the **“consultation”** with the CJI in the matter of **appointments must be full and effective.**
- However, it **rejected the idea that the CJI’s opinion**, albeit carrying great weight, should have primacy.

### **Second Judges Case (1993)**

- It introduced the **Collegium system**, holding that **“consultation”** really meant **“concurrence”**.
- It added that it was not the **CJI’s individual opinion**, but an **institutional opinion formed in consultation** with the two senior-most judges in the Supreme Court.

### **Third Judges Case (1998)**

- This opinion laid down that the **recommendation should be made by the CJI and his four seniormost colleagues, instead of two.**
- Even if two judges gave an adverse opinion, the CJI should not send the recommendation to the government.



## The National Green Tribunal (NGT) has called for halting mining in the ecologically sensitive zone (ESZ) of Madhav National Park

### Key Points

- **Annexure II of the ESZ notification** contains a list of villages falling within ESZ and Majhera is one of those villages.
- Majhera village was called the village of widows owing to the high death rate of male members on account of silicosis and tuberculosis caused by stone mining in the area.
- The village was home to 25 families of Sahariya tribe — a category of a particularly vulnerable tribal group — residing within a kilometre range of the mining area. The tribe was prone to adverse effects of mining.
- Mining had previously taken place at the sites and there was overburden in the area
- In mining, overburden is the material that lies above an area that lends itself to economical exploitation.
- Pits were created due to mining activity and rainwater had accumulated in the same.

### Madhav National Park

- Situated near Shivpuri town in Madhya Pradesh and is a part of the upper Vindhyan hills.
- The Park was the hunting ground of Mughal emperors and Maharaja of Gwalior.
- It got the status of a National Park in 1958.

### Features

- It has a diverse ecosystem consisting of lakes, dry deciduous & dry thorn forests.
- The forest is home to tigers, leopards, Nilgai, and Chinkara (*Gazella bennettii*) and Chousingha (*Tetracerus quadricornis*) and Deers (Chital, Sambar and Barking Deer) among others.

### Tiger corridor

- The Park falls within one of the 32 major Tiger Corridors of the country, which are operationalised through the Tiger Conservation Plan.
- A part of the Ranthambhore-Kuno-Madhav (Madhya Pradesh and Rajasthan) Tiger Corridor of Central India & Eastern Ghats landscape.

### Other National Parks of Madhya Pradesh

- *Bandhavgarh National Park & Tiger Reserve*
- *Kanha National Park & Tiger Reserve*
- *Satpura National Park & Tiger Reserve*
- *Sanjay National Park & Tiger Reserve*
- *Van Vihar National Park*

- ***Ghughua National Park***
- ***Panna National Park & Tiger Reserve***
- ***Pench National Park & Tiger Reserve***

Exact IAS



**The Ministry of Finance released the 7th monthly installment of Post Devolution Revenue Deficit (PDRD) Grant of Rs.7,183.42 crore to 14 States.**

### **Key Point**

The grant has been released as per the recommendations of the Fifteenth Finance Commission.

### **Post Devolution Revenue Deficit Grant**

- The Centre provides the Post Devolution Revenue Deficit Grant to the States under Article 275 of the Constitution.
- The grants are released as per the recommendations of the successive Finance Commissions in monthly instalments to meet the gap in revenue accounts of the States post-devolution.
- The purpose of the grant is to correct inter – state disparities and promote welfare of the state.

### **Eligibility**

- The eligibility of States to receive this grant and the quantum of grant for the period from 2020-21 to 2025-26 was decided by the Fifteenth Finance Commission based on the gap between

assessment of revenue and expenditure of the State after taking into account the assessed devolution during this period.

### Grant for the period from 2020-21 to 2025-26

- The Fifteenth Finance Commission has recommended a total Post Devolution Revenue Deficit Grant of Rs. 86,201 crore to 14 States for the financial year 2022-23.
- The States recommended for Post-Devolution Revenue Deficit Grant by the Fifteenth Finance Commission in 2022-2023 are: *Andhra Pradesh, Assam, Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand and West Bengal.*
- The recommended grant is released by the Ministry of Expenditure to the recommended states in 12 equal monthly installments.

### Article 275 of the Constitution

- Provides for the payment of such sums as Parliament may by law provide as grants-in aid to such States as Parliament may determine to be in need of assistance
- Paid out of the Consolidated Fund of India in each year, and different sums may be fixed for different States.



## The Ministerial dialogue of US-India Strategic Clean Energy Partnership (USISCEP) was held recently.

### Highlights

- The **two Ministers reviewed progress** across the **entire spectrum of the energy sector partnership**
- **Welcomed the increased clean energy collaboration** between stakeholders of both countries which is **facilitating expanded clean energy investment**, including in emerging technologies
- The Ministers **stressed that climate and clean energy collaboration should promote energy access, affordability, energy justice, while supporting sustainable economic growth and just energy transitions.**
- The Ministers also **recognized that ambitious national climate and clean energy goals require concerted action and implementation at all levels of government to ensure their viability and sustainability.**
- **Capacity building and exchanging best practices including with all stakeholders were also highlighted as critical components to achieving the countries' climate and clean energy ambitions.**

### Enhanced bilateral efforts



- **Strengthening the power grid to ensure reliable, affordable, and resilient clean energy supply including through smart grids and energy storage;**
- **Assessing grid-integrated buildings, electric vehicles, and other distributed energy resources to support load management;**
- **Advancing renewable energy development and deployment, including to support India's goal of achieving approximately 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030;**
- **Advancing energy efficiency and conservation in appliances, buildings and the industrial sector**

### **US-India Strategic Clean Energy Partnership (USISCEP)**

- **The revamped USISCEP was launched in accordance with the U.S -India Climate and Clean Energy Agenda 2030 Partnership announced by Prime Minister of India and President Joe Biden.**
- **The partnership continues to advance energy security and innovation and deploying technical solutions through five pillars.**

***1. Responsible Oil and Gas Pillar***

***2. Power and Energy Efficiency Pillar***

***3. Renewable Energy Pillar***

***4. Sustainable Growth Pillar***

***5. Emerging Fuels and technologies***



The Reserve Bank of India (RBI) indicated that it will soon commence limited pilot launches of the much-awaited e-rupee, or central bank digital currency (CBDC), for specific use cases.

## Key Points

- CBDC is aimed to complement, rather than replace, current forms of money and is envisaged to provide an additional payment avenue to users, not to replace the existing payment systems.
- RBI believes that the digital rupee system will "*bolster India's digital economy, enhance financial inclusion, and make the monetary and payment systems more efficient.*"

## Digital Rupee

- The Central Bank Digital Currency (CBDC) can be defined as the legal tender issued by the Reserve Bank of India, according to the concept note.
- Touted as Digital Rupee or e-Rupee, RBI's CBDC is the same as a sovereign currency and is exchangeable one-to-one at par with the fiat currency.
- A CBDC would differ from existing digital money available to the public because a CBDC would be a liability of the Reserve Bank, and not of a commercial bank."

## Types

### General purpose or retail (CBDC-R) and wholesale (CBDC-W).

#### Retail CBDC

- Retail CBDC can be used by all including the private sector, non-financial consumers, and businesses. Wholesale CBDC is designed for restricted access to select financial institutions.
- Retail CBDC can provide access to safe money for payment and settlement as it is a direct liability of the central bank.

#### Wholesale CBDC

- While retail CBDC is an **electronic version of cash primarily meant for retail transactions**, the wholesale CBDC is **designed for the settlement of interbank transfers and related wholesale transactions**.
- Has the potential to transform settlement systems for financial transactions and make them more efficient and secure.

## Features

- a **sovereign currency issued by central banks in alignment with their monetary policy**.
- **freely convertible against commercial bank money and cash**.
- must be **accepted as a medium of payment, legal tender, and a safe store of value by all citizens, enterprises, and government agencies**.
- appears as a **liability on the central bank's balance sheet**.



**National Security Guard (NSG) recently hosted the multinational Joint Anti-Terror Exercise (JATE), “Manesar Anti-Terror 2022”.**

### JATE Manesar Anti-terror 2022

- JATE is an **annual counter-terrorist exercise** held within the **framework of the SCO RATS**.
- The **National Security Guard (NSG)** is **hosting the multinational JATE “Manesar Anti-Terror 2022”**, under the **framework of the SCO Regional Anti-Terrorist Structure (RATS)**.

### Purpose

- The exercise is **aimed at exchanging expertise, best practices and building synergy between the Counterterrorism Forces of the SCO RATS member countries**.
- This is to **enhance capabilities for conducting anti-terrorist operations and countering other security threats collectively**.

### Stages

- The present one is **stage 2 of the exercise**.
- **Stage 1** of the Exercise was conducted in **July-August** by the **National Counterterrorist Forces of SCO Member Countries** in their respective territories.

### Regional Anti-Terrorist Structure (RATS)

- Regional Anti-Terrorist Structure (RATS) **one of the permanent organ** of the **Shanghai Cooperation Organisation** and has its **headquarters in Tashkent, Uzbekistan.**
- The **objective** of SCO RATS is to **facilitate cooperation and coordination against Terrorism, Extremism and Separatism.**
- **India assumed the chairmanship of the Council of SCO RATS in Oct 2021.**

### Shanghai Cooperation Organisation (SCO)

- It is a **permanent intergovernmental international organisation of Eurasian Nations with a secretariat in Beijing.**
- It is primarily **centred on security-related concerns of Central Asian members** with main threats being terrorism, separatism and extremism.
- It was **established in June 2001 as a successor of Shanghai Five mechanism** which was established in 1996

### Members

- The SCO, in which **China plays an influential role**, is also comprised of **Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Uzbekistan, India and Pakistan.**
- **India and Pakistan were admitted into the bloc in 2017.**
- **Iran, Afghanistan, Belarus and Mongolia** enjoy **observer status** of SCO.
- **Turkey, Azerbaijan, Armenia, Cambodia, Sri Lanka and Nepal** are dialogue partners of SCO.



**India has received the fourth set of Swiss bank account details of its nationals and organisations as part of an annual information exchange.**

### **Automatic Exchange of Information (AEOI) Regime**

- It is **systematic and periodic transmission of “bulk” taxpayer information** by the source country to the residence country
- It is **possible under most of the Double Taxation Avoidance Agreements (DTAAs) and Multilateral Convention on Mutual Administrative Assistance in Tax Matters (MAC).**
- It **aims to reduce global tax evasion.**
- The **information which is exchanged automatically is normally collected in the source country on a routine basis.**
- It **can be used to transmit other types of useful information such as changes of residence, the purchase or disposition of immovable property**

- The **tax authority of a taxpayer's country of residence** can **check its tax records** to **verify that taxpayers** have **accurately reported their foreign source income**.

### **Guidelines for exchange**

- Are **set by the OECD** (Organisation for Economic Co-operation and Development), the Paris-based international body.
- The **data is kept in the custody of and for action** by the **Central Board of Direct Taxes (CBDT)**.
- Under the OECD's guidelines, **details of the quantum of funds or the names of account holders** cannot be **publicised**.



A “committee of experts on sustainable finance” was constituted by International Financial Services Centres Authority (IFSCA) at the GIFT City.

### Key Points

- **C K Mishra committee**, under the International Financial Services Centres Authority (IFSCA), has **submitted a report on sustainable finance**.
- The **committee members comprised of leaders and experts** from the **entire sustainable finance ecosystem including national and international institutions**
- Aim is to **grow the sustainable financing ecosystem** through **Gujarat International Finance Tec-City** - India’s offshore financial services center, GIFT-IFSC.

### Main Focus of the committee

- To **align the IFSC regulations with the international best practices**
- To **explore the ways in which capital flows through IFSC**
- To **enhance and support development of innovative financial products** in the **area of green and sustainable finance**

### Recommendations of the Committee



- **Developing a voluntary carbon market, framework for transition bonds, enabling de-risking mechanisms, promoting regulatory sandbox for green fintech and facilitating the creation of a global climate alliance among others**
- **Setting up of a dedicated MSME (Micro, Small and Medium Enterprises) platform for sustainable lending**
- **Facilitating the use of innovative instruments such as catastrophe bonds, municipal bonds, green securitisation, blended finance among others.**
- **Enabling aggregation facilities, impact funds, green equity etc. in IFSC**
- **It recommends IFSCA to play a vital role in capacity building which lays the foundation for greening the financial system.**

### IFSCA

- **IFSCA was established in April 2020 under the International Financial Services Centres Authority Act, 2019.** It is headquartered at GIFT City, Gandhinagar.
- **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.**
- **At present, GIFT IFSC is the only international financial services centre in India.**
- **Prior to the establishment of IFSCA, the domestic financial regulators, namely, RBI, Sebi, PFRDA and IRDAI regulated the business in IFSC.**

- The **main objective** of IFSCA is 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**.

### Members

- The International Financial Services Centres Authority consists of **nine members, appointed by the central government**.
- They include the **chairperson of the authority, a member each from the RBI, SEBI, the IRDAI, and the PFRDA, and two members from the Ministry of Finance**.
- In **addition, two other members are appointed** on the **recommendation of a Selection Committee**.
- **All members of the IFSCA have a term of three years, subject to reappointment**.

### Sustainable Finance

- Sustainable Finance is a **business or investment decisions that take into consideration not only financial returns but also environmental, social and governance (ESG) factors**.
- It refers to **any form of financial service integrating environmental, social and governance(ESG) criteria into the business or investment decisions for the lasting benefit of both clients and society at large**.
- **Global Sustainable investment has reached \$35.3 trillion in five markets – US, Canada, Japan, Australia and Europe – reporting a 15% increase**



**The Food and Agriculture Organization has recently released a report titled “Mainstreaming Biodiversity in Forestry Report.”**

**Key Points**

- **FAO’s forestry statutory body, Committee on Forestry (COFO), had asked FAO to review biodiversity mainstreaming in forestry in its 25th session in 2020.**
- **COFO has also asked the FAO to share good practices on solutions that balance conservation and sustainable use of forest biodiversity.**

**About the report**

- **The report was released at the 8th World Forest Week on the sidelines of the 26th session of COFO taking place in Rome, Italy**
- **It was produced through a partnership between FAO and the non-profit Center for International Forestry Research (CIFOR), the lead centre of the CGIAR Research Program on Forests, Trees and Agroforestry.**
- **CGIAR is a global partnership that unites international organisations engaged in research about food security.**

**Mainstreaming Biodiversity**

- Mainstreaming Biodiversity is the **process of embedding biodiversity considerations into policies, strategies, and practices of key public and private actors to promote the conservation and sustainable use of natural resources.**

### Significant role of forests

- Forests that are **managed primarily for economic benefits** are critical for biodiversity conservation
- The role of forests in **maintaining biodiversity** is explicitly **recognised by the United Nations Strategic Plan for Forests 2017–2030.**
- In 2019, FAO adopted the Strategy on Mainstreaming Biodiversity across Agricultural Sectors.
- Forests **cover 31% of the world's land surface, store an estimated 296 gigatonnes of carbon** and are **home to most of the world's terrestrial biodiversity.**
- The **world's forests provide habitats for about 80 per cent of amphibian species, 75 per cent of bird species and 68 per cent of mammal species.**
- In addition, about **60 per cent of all vascular plants occur in tropical forests.**
- But **forests and their biodiversity continue to be lost at an alarming rate.**
- Much **progress has been made towards mainstreaming biodiversity in production forest management.**
- On the other hand, **biodiversity continues to decline globally.**

### Threats to biodiversity mainstreaming

- **Deforestation**- Deforestation continues at an alarming rate of 10 million ha per year (mainly for agricultural expansion) especially in lower income tropical countries.
- **Weak governance and law enforcement** are the biggest stumbling blocks behind biodiversity conservation in protected areas
- **Lack of Participation**: Lack of Indigenous People and local community participation.
- **Low profile of conservation outside protected areas**: The management of biodiversity outside protected areas is essential if one hope to stem the loss of biodiversity.
- **Illegal Forest Activities**: Illegal timber harvesting is estimated to account for 15–30% of global timber production.
- **Other threats** include **over-harvesting of timber, invasive species, climate change, desertification and forest fires.**

### Recommendations of the Report

- **Recognizing the forest tenure of Indigenous Peoples and local communities, with emphasis on enhancing the equitable sharing of benefits**
- **Preventing the conversion of natural forests into monospecific forest plantations**
- **Ensuring the sustainable management of harvested species to control overharvesting of plants and wildlife**
- **Adopting a multisectoral perspective by mainstreaming biodiversity across other land use sectors**

- Providing economic incentives, like **compensation for reduced production to promote biodiversity benefits** and **investing in knowledge and capacity development**.
- Facilitating market-based instruments like **engaging in public-private partnerships** to leverage corporate social responsibility commitments.
- Leveraging global momentum on restoration to enhance biodiversity conservation

Exact IAS



**Ministry of Environment, Forest and Climate Change has constituted a Task Force for monitoring Cheetah**

**introduction in Kuno National Park, Madhya Pradesh and other suitable designated areas**

### **About Cheetah Task Force**

- The **National Tiger Conservation Authority (NTCA) would facilitate the working of Cheetah Task Force** and render all necessary help.
- The **nine member task force** will include Principal Secretaries, Forests and Tourism of Madhya Pradesh, and the Inspector General of NTCA
- The Task Force **will be in-force for a period of two years.**
- It **may appoint a subcommittee to regularly visit the Cheetah introduction area** as and when decided by them.

### **Formation**

- Formation of the task force **came days after Prime Minister** in his **monthly radio broadcast Mann Ki Baat**, said that **a task force will be formed and it will decide when the people can see the cheetahs at Kuno Park.**

- Owing to **habitat loss and over-hunting**, cheetahs got completely **wiped out from India by 1952** and it **came back to India after 70 years** after the species was declared extinct in the country.

### **The Cheetah Task Force has been constituted to**

- constituted to **review, progress and monitor the health status of Cheetah,**
- **upkeep** of the **quarantine and soft release enclosure,**
- **protection status** of the **entire area and adherence to the defined protocols.**
- will also **monitor hunting skills and adaptation of Cheetahs** to the **habitat of Kuno National Park**
- will also **suggest development of tourism infrastructure** in the fringe areas of Kuno National Park and other Protected Areas
- will also **give suggestions on the regulation of eco-tourism endeavors.**
- will **regularly interact with cheetah mitras and local communities** to **assess their awareness and involvement in the protection of cheetahs** in particular and area in general.

### **Cheetah restoration**

- Cheetah restoration is **part of a prototype or model for restoration of original cheetah habitats** and their **biodiversity.**
- This **will help to stem the degradation and rapid loss of biodiversity.**
- Bringing back a top predator restores historic evolutionary balance resulting in cascading effects on various levels of the ecosystem





## **Chandrayaan-2 Gauges Sodium Content on Moon's Surface**

### **Key Point**

- **Chandrayaan-2**, which has been hovering around the Moon since **2019**, has mapped an abundance of sodium on the moon for the first time
- This is the **first effort to provide a global-scale measurement of sodium on the lunar surface using X-ray fluorescent spectra.**

### **Findings**

- The X-ray spectrometer '**CLASS**' on the Chandrayaan-2 orbiter mapped an **abundance of sodium on the moon for the first time.**
- **Chandrayaan-2 Large Area Soft X-ray Spectrometer or CLASS** built at the UR Rao Satellite Centre of Isro, **provides clean signatures of the sodium line** thanks to its high sensitivity and performance
- A recent study found that a part of the signal could be arising from a **thin veneer of sodium atoms weakly bound to the lunar grains.**
- The **sodium atoms can be nudged out of the surface by solar wind or ultraviolet radiation more easily if they were part of the lunar minerals.**

- Also found a diurnal variation of the surface sodium that would explain the continuous supply of atoms to the exosphere, sustaining it.
- Besides, Sodium was found in the wispy atmosphere of the moon, a region so thin that the atoms there rarely meet.

### Significance

- The new findings from Chandrayaan-2, provide an avenue to study surface-exosphere interaction on the moon, which would aid development of similar models for mercury and other airless bodies in our solar system and beyond
- The amount of volatiles on the moon today can be used to test formation scenarios of the Earth-Moon system.
- Sodium can be used as a tracer of the volatile history of the moon

### X-ray fluorescence

- X-ray fluorescence is commonly used to study the composition of materials in a non-destructive manner.
- When the sun gives out solar flares, a large amount of X-ray radiation falls on the moon, triggering X-ray fluorescence.
- The CLASS measures the energy of the X-ray photons coming from the moon and counts the total number.
- The energy of the photons indicates the atom (for instance, sodium atoms emit X-ray photons of 1.04 keV) and the intensity is a measure of how many atoms are present.
- When compared to Earth, the moon is significantly depleted of volatile elements such as sodium.



**Centre has approved the creation of a new branch, called the Weapon Systems (WS) branch**

### Weapon System Branch

- This is the **first time since Independence** that a **new operational branch** is being created.
- **Aimed** at the **unification of all weapon system operators** in **specialist ground-based systems** and **airborne platforms** under a **single stream**.
- The branch **will contribute immensely** by **enhancing the war fighting capability** of the **Indian Air Force**
- The IAF **also unveiled a new digital camouflage uniform** for its rank and file.

### Significance

- It would entail **unification of all weapon system operators** under **one entity** dedicated to the **operational employment of all ground-based and specialist airborne weapon systems**.

- This will essentially be for manning of four specialised streams of
  - *Surface-to-Surface missiles*
  - *Surface-to-Air Missiles*
  - *Remotely Piloted Aircraft*
  - *Weapon system operators in twin and multi crew aircraft*
- Creation of this branch **would result in savings of over ₹3,400 crore** due to **reduced expenditure on flying training.**



## World Migratory Bird Day 2022 was recently celebrated on 8 October.

### Theme

- World Migratory Bird Day 2022 campaign will focus on the theme of **“Light Pollution”**.
- WMBD 2022 is addressing the growing issue of light pollution on these birds and actions on a global scale to help migrate these birds safely.

### Artificial lights are the cause of significant threats to migratory birds such as:

- *Distortion while flying at night*
- *Collisions with buildings*
- *Disruptions - in their ability to migrate long distances* and in their internal clock

### World Migratory Bird Day

- The bi-annual global campaign is commemorated to raise awareness about migratory birds, the need for their conservation, and the importance of the preservation of their habitat.

- It is **celebrated on the second Saturday in May** and then in **October**.

### History

- World Migratory Bird Day **was initiated in 2006 by the Secretariat of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) in collaboration with the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (CMS)**.
- However, **this was not the first time the idea was proposed to designate a day for migratory birds**.
- In **1993, the US Fish and Wildlife Service, the Smithsonian Migratory Bird Center and the Cornell Laboratory of Ornithology initiated celebrations of the 'International Migratory Bird Day' (IMBD)**.
- This **stirred bird festivals** and related education programmes across the US
- A **decade later in 2005, the AEWA Secretariat commenced the Migratory Waterbird Days (MWD)**.
- It was **being held in parts of Asia, Africa, and Europe**.
- With its **success in African-Eurasian region, it was decided to commemorate a day that celebrates all migrating birds around the globe**.

### Significance

- Day helps **bring awareness for the conservation of migratory birds** and their habitats.

- This day also **aims to bring attention to the threats** faced by migratory birds around the world.

### **Convention on Migratory Species (CMS)**

- An **international agreement that aims to conserve migratory species** signed under the auspices of the United Nations Environment Program (UNEP)
- It was **signed in 1979 in Germany** and is known as the **Bonn Convention**.
- It is the **only global convention and environmental treaty specialising in the conservation of migratory species**, their habitats and migration route.

### **Classification of species**

- **Appendix I**- migratory species threatened with extinction
- **Appendix II**- migratory species that need or would significantly benefit from international co-operation

### **Note-**

- **India is a signatory to the CMS.**
- India has also **launched the National Action Plan** for the conservation of migratory species under the **Central Asian Flyway**.



**Union Minister for Environment, Forest and Climate Change attended the inaugural session of Sustainable Mountain Development Summit-XI, (SMDS-XI) held at Leh, Ladakh**

### **Sustainable Mountain Development Summit- XI**

- The **theme** for SMDS-XI is '**Harnessing tourism for sustainable mountain development**'.
- The **main focus** of the summit is to **reduce the negative impacts of tourism** while **harnessing its positive contributions to building climate and socio-ecological resilience and sustainability.**

### **Sustainable Mountain Development Summit (SMDS)**

- It is a **flagship annual event of Integrated Mountain Initiative.**
- It **comprises 10 mountain states, two union territories and four hill districts.**
- In addition to the central event, **two integral components** of the SMDS include the **Mountain Legislators' Meet (MLM)** and the **Indian Himalayan Youth Summit.**

### **R&D for sustainable development**

- During the event, **G.B. Pant National Institute of Himalayan Environment (GBPNIHE)** and its **one Regional Centre at Leh,** was inaugurated.



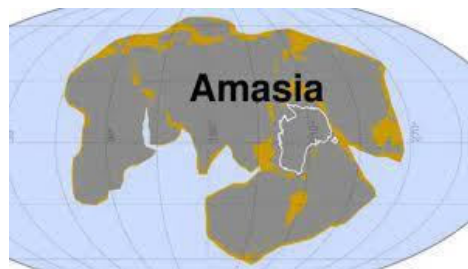
- The Institute **mandates on research and development activities for sustainability of the Himalayan environment.**

### **Ease of Living**

- During **COP-26 at Glasgow, Prime Minister highlighted that world should go towards Mission Lifestyle for Environment (LiFE).**
- The **Government of India is promoting mindful use of resources rather than mindless use of the same**

### **Other important points**

- **Focus was also given on capacity building of youth, literacy for employment, preservation of local culture, environment protection and developing scientific integrity among youth.**
- The **Government has schemes like Skill India and various portals like National Career Service Portal, e-Shram Portal, Udyami and ASEEM portals etc., which are promoting financial literacy and integrated capacity building even for remote areas of the country.**



## New Supercontinent 'Amasia' Will Develop When Pacific Ocean Disappears

### Key Findings of the new research

- As per scientists, the Arctic Ocean and Caribbean Sea will disappear within the coming 200 to 300 million years, as *Asia merges with the Americas to form 'Amasia,' a new supercontinent.*
- Pacific Ocean is shrinking by nearly an inch every year and will result in disappearing of the Arctic Ocean and Caribbean Sea.

### Researchers on supercontinent

- Over the past two billion years, Earth's continents have collided together to form a supercontinent every 600 million years, known as the **supercontinent cycle**.
- This *means that the current continents are due to come together again in a couple of hundred of million years' time.*
- According to the researchers, **introversion and extroversion** are two distinct mechanisms that are hypothesised to have created Earth's supercontinents.
- "**Introversion**" means the closure of interior oceans and "**extroversion**" defines the closure of exterior oceans.

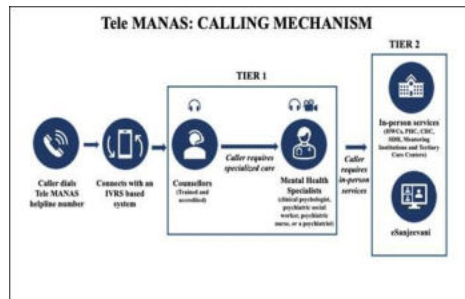
- Expert says, "The **former involves the closure of the internal oceans formed during the breakup of the previous supercontinent, the latter involves the closure of the previous external superocean.**"

### **New subcontinent**

- The **formation of the new supercontinent depends upon the shrinking of the Pacific Ocean**
- Expert says that **Australia will play an important role** in this event, as it **will first collide with Asia and then will connect America and Asia once the Pacific ocean disappears.**
- The new supercontinent is **expected to form on the top of the Earth and will downturn towards the south of the equator.**
- It is believed that this **geographical development will let Antarctica remain isolated at the bottom of the world.**
- The study found that **Eurasia and the Americas are gradually moving toward the Pacific Ocean, but Australia is already floating towards Asia at a rate of about 7 centimetres per year.**

### **Changes**

- Our **earth will likely seem considerably different** from how it does now as a consequence of the creation of the new supercontinent
- The **formation of the new supercontinent will bring drastic changes to the topographical boundaries.**
- The **sea level is expected to be lower.**
- The **vast interior of the supercontinent will be very arid with high daily temperature ranges.**



## Tele-MANAS: India's 24×7 mental health service launched

### Key Points

- On **World Mental Health Day** (10 October), the **government rolled out** Tele Mental Health Assistance and Networking Across States (**Tele-MANAS**).
- The **objective** is to establish a **digital mental health network** that will **provide a support system** against the mental challenges intensified by the pandemic.
- The initiative was **first announced** by the **Central Government** during the **2022-23 Budget**, while acknowledging that the **COVID-19 pandemic** has **exacerbated** the mental health crisis in India.

### About Tele-MANAS App

- Launched by **Karnataka governor** at **National Institute of Mental Health and Neurosciences (NIMHANS)** in Bengaluru
- Tele-MANAS aims to provide **free tele-mental health services** all over the country **round the clock**, particularly catering to **people in remote or under-served areas**.

### Working



## Prelims 2023

- **Initially**, the service **will be launched in 20 states and union territories**. It will later be expanded to include other parts of the country as well.
- This **mental health service can be accessed by calling the helpline number 14416 and 1-800-91-4416**.
- The **callers will first reach the interactive voice response (IVRS) and then the call will be transferred to a trained counsellor in their areas**.
- If **required, callers will be connected to mental health specialists like psychiatric social workers, psychiatric nurse, psychiatrist and clinical psychologists**.
- In **case the caller requires an in-person service, he/she will be referred to a health and wellness centre or primary healthcare or tertiary healthcare**.

### Managed by

- The **nodal centre for its implementation is National Institute of Mental Health and Neuroscience (NIMHANS)**.
- **Technical support** for this initiative will be provided **by IIT Bombay**.
- It will **also involve five regional coordination centres and 23 mentoring institutes** like PGIMER, AIIMS and Delhi-based Institute of Human Behaviour and Allied Sciences.

### Services provided by Tele-MANAS App

The services are categorized into two tiers:

1. The **first tier** includes **trained counsellors and mental health specialists.**
2. The **second tier** is **one on one services**, where specialists at **District Mental Health Programme (DMHP)/Medical College** can access physical consultation and e-Sanjeevani for audio-visual consultation.

### States/UTs launching Tele Mental Health Programme

- *Andhra Pradesh*
- *Assam*
- *Andaman and Nicobar Islands*
- *Chhattisgarh*
- *Dadra Nagar Haveli and daman and Diu*
- *Gujarat*
- *Himachal Pradesh*
- *Jammu and Kashmir*
- *Karnataka, Kerala*
- *Ladakh*
- *Maharashtra*
- *Madhya Pradesh*
- *Odisha*
- *Punjab*
- *Rajasthan*
- *Tamil Nadu*
- *Telangana*
- *Uttar Pradesh*
- *West Bengal*



## Revised Beti Bachao Beti Padhao Scheme

### Key Points

The **Central Government**, expanding the mandate of its flagship **scheme** - 'Beti Bachao Beti Padhao' (BBBP Scheme) announced the inclusion of skilling of girls in non-traditional livelihood (NTL) options.

### New Changes in the Scheme

- Will now also **focus on increasing the enrolment of girls in secondary education, particularly in STEM** (Science, Technology, Engineering, Mathematics) subjects.
- **Skilling of girls and women every year** (mainly in non-traditional livelihoods)
- **Raising awareness about safe menstrual hygiene**
- Promulgating **elimination of child marriages**
- The **MW&CD** also emphasised the **convergence between various departments for providing quality education** (including vocational) to empower girls.

### Beti Bachao Beti Padhao (BBBP)

- A **flagship scheme of the Government of India**, launched by the Prime Minister in **2015** to **arrest the declining Child Sex Ratio** and **related issues of empowerment of Women** over a **lifecycle continuum**
- Was initiated as a tri-ministerial effort of **Ministries of Women and Child Development, Health & Family Welfare and Human Resource Development**
- From **2021-22**, the **Ministry of Skill Development and Entrepreneurship** and **Ministry of Minority Affairs** have also been added as partners.

### Objectives

- To **prevent gender biased sex selective elimination**
- To **ensure survival and protection of the girl child**
- To **ensure education and participation of the girl child**
- To **increase girl's participation in the fields of sports**

### Need

- The scheme was **launched after the national census results for 2011 revealed detraction in key gender metrics – Child Sex Ratio (CSR) and Sex Ratio at Birth (SRB)**.
- Dip in these ratios is a significant indicator of gender discrimination and women disempowerment
- **Research concluded** that the **strong socio-cultural and religious preference for boys** was the **root cause of the problem** and this **provided impetus for launch of the BBBP initiative**.

### Target group



- **Primary** : Young and newly married couples and expecting parents, Adolescents (girls and boys) and youth, Households and communities
- **Secondary** : Schools and AWCs, Medical doctors/ practitioners, private hospitals, nursing homes, diagnostic centres etc. Officials, PRIs/ULBs, frontline workers, Women Collectives and SHGs, civil society organizations, media, industry, religious leaders

### Components

- It aims at ensuring girls are born, nurtured and educated without discrimination to become empowered citizens of this country.
- The Campaign interlinks National, State and District level interventions with community-level action in 100 districts, bringing together different stakeholders for accelerated impact.

### Implementation

- Budgetary control and administration of the scheme- The **Ministry of Women and Child Development**
- To review implementation of Beti Bachao Beti Padhao at regular intervals with the State Governments/UT administration- A **national committee headed by the Secretary of MW&CD, formed under the larger Mission Shakti**

### Note

- It is implemented by states with 100% central assistance.
- Under, BBBP scheme there is no provision of direct benefit transfer.



## **India's first Slender Loris Sanctuary to be established in Tamil Nadu**

### **Key Points**

- The Tamil Nadu government has notified the first Indian sanctuary for the endangered Slender Loris in Karur and Dindigul districts
- A total of 11,806 hectares in the forest areas of the Karur and Dindigul districts will be merged to form the **Kadavur Slender Loris Sanctuary, the first of its kind in India**
- The Kadavur slender loris sanctuary is to cover Veda sandur, Dindigul East and Natham taluks in Dindigul district and Kadavur taluk in Karur district.
- The government notified 'Kadavur slender loris sanctuary' under **Section 26 (A)(1)(b) of Wildlife (Protection) Act, 1972.**

### **Slender Loris (Loris tardigradus)**

- Slender Loris is a **small, nocturnal primate**, commonly found in the **tropical scrub and deciduous forests of Southern India and Sri Lanka.**
- It is also found in the adjoining forest areas on the eastern, southern and western slopes of the Kadavur hills.

- It **sleeps by day** in the foliage or in a hole or crevice. It comes out **at dusk** in search of prey.
- They are one of the **least studied of all primates in India**.
- They act as **biological predators of pests** that harm agricultural crops and help farmers.
- It has a **wide range of ecological roles** and importance in the terrestrial ecosystem.

### Types

There are **two species of Slender Loris**, the **only members of the genus 'Loris'**:

- 1. Red Slender Loris (*Loris tardigradus*)**
- 2. Grey Slender Loris (*Loris lydekkerianus*)**

### Features

- They **prefer to inhabit thick, thorny bushes and bamboo clumps**.
- Their **physical characteristics** include **thin long arms, and small, vestigial tail**.
- Their **most prominent feature** is the **pair of two large, closely set, brown eyes**.
- Their **diet** includes **insects, leaves, flowers, slugs** and sometimes **eggs of birds**.

### Threats

- However, these wild primates **face the threat of poaching**, and **destruction of habitat**

- Since there is **great demand** for keeping these animals as pets, they are **illegally smuggled**.
- **Habitat loss, electrocution of live wires, and road accidents** are other threats that have caused its populations to dwindle.

### Conservation

- The slender loris has **been listed as 'Endangered'** by the **International Union for the Conservation of Nature**.
- It has been **brought under Schedule I of the Wild Life (Protection) Act, 1972** in order to provide the highest level of legal protection.

### Note-

Earlier, the Tamil Nadu government had notified

- ✓ *India's first Dugong Conservation Reserve in Palk Bay*
- ✓ *Kazhuveli bird sanctuary in Villupuram*
- ✓ *Nanjarayan Tank birds sanctuary in Tiruppur*
- ✓ *State's fifth elephant reserve at Agasthyamalai in Tirunelveli.*



**Activists have called Coca-Cola's sponsorship of the world's biggest climate summit a 'greenwashing exercise'.**

### **What is Greenwashing?**

- Greenwashing is the **process of conveying a false impression or providing misleading information** about how a company's products are more environmentally sound.
- Greenwashing is **considered an unsubstantiated claim to deceive consumers into believing** that a company's products are environmentally friendly.
- May occur when a company attempts to emphasize sustainable aspects of a product to **overshadow the company's involvement in environmentally-damaging practices**
- Some of the **world's biggest carbon emitters**, such as conventional energy companies, have attempted to rebrand themselves as champions of the environment.
- **Products are greenwashed through a process of renaming, rebranding, or repackaging them.**
- **Greenwashed products might convey the idea that they're more natural, wholesome, or free of chemicals than competing brands.**



## China launches Kuafu-1 satellite to unravel secrets of the Sun

### Key Points

- The **Advanced Space-based Solar Observatory (ASO-S)** was launched onboard a Long March-2D rocket.
- It has launched the satellite after successfully integrating its under-construction Space Station and approving the next phase of its lunar missions.

### Kuafu-1

- Kuafu-1 is named after a giant in Chinese mythology who chased the sun
- The ASO-S is China's first full-scale satellite dedicated to researching the Sun.
- It is the world's first solar telescope capable of simultaneously monitoring both solar flares and coronal mass ejections.
- It has been placed in an orbit about 720 km above the planet, higher than the orbit of the International Space Station.
- The satellite is made to be in service for four years and the mission will beam back about 500 gigabytes of data daily.

### Note-

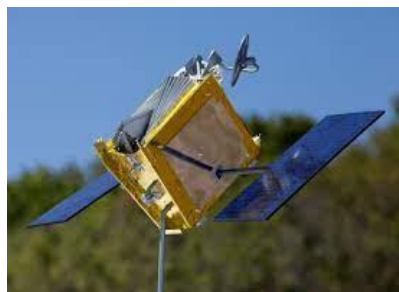
- Kuafu is the **fourth big mission exploring the Sun** after **Nasa Parker Solar Probe**, which has been getting closer to the Sun alongside **European Space Agency's Solar Orbiter** and **China's own Xihe probe**, which was launched in **2021**.
- **India is also planning to launch a mission dedicated to the Sun**, the **Aditya L-1 mission** will launch next year.

### **Objectives**

- The spacecraft **will study the causality between the solar magnetic field** and **two major eruptive phenomena**: solar flares and coronal mass ejections.
- **Astronomers have long been trying to better understand** these phenomena, which **affect space weather** and their understanding is **critical to saving assets in space** like the **International Space Station** and **astronauts**.
- The **scientific objective** for the mission has been described as **1M2B**, where **M** refers to the **solar magnetic field** and **two Bs** are for **two violent bursts**, the solar flares and coronal mass ejections (CMEs).

### **Work**

- It has been **launched with three major instruments**, which include **the Lyman-alpha Solar Telescope (LST)**, **the Hard X-ray Imager (HXI)**, and **the Full-disk Vector MagnetoGraph (FMG)**
- The spacecraft **will work for 96 per cent of the year**, and since it is **placed outside the planet**, it will **not be affected by Earth's atmosphere**.



**The Indian Space Research Organisation's (ISRO) heaviest rocket Launch Vehicle Mark 3 (LVM3 or GSLV Mark 3) has successfully orbited 36 satellites of U.K.-based OneWeb.**

### Key Points

- It was **launched from Satish Dhawan Space Centre (SDSC- SHAR) in Sriharikota, India.**
- This **launch by ISRO and NSIL** is one of the **biggest commercial orders by India's premier space organization**, and the **first using the LVM3 rocket.**
- This launch **brings the total of OneWeb's constellation to 462 satellites, representing more than 70% of its planned 648 Low Earth Orbit (LEO) satellite fleet** that will deliver high-speed, low-latency connectivity worldwide.

### LMV 3

- It is a **dedicated commercial mission** for a **foreign customer OneWeb**, through **NewSpace India Limited (NSIL)**, a Central Public Sector Enterprise (CPSE).
- It is the **first multi-satellite mission with 36 OneWeb Satellites** to the LEO as the heaviest Payload mass of 5,796 kg. of LVM3 till date.



- This newest rocket is **capable of launching 4,000-kilogram class of satellites into GTO** (Geosynchronous Transfer Orbit) and **8,000 kgs of payloads into LEO**.
- It is a **three-stage launch vehicle** consisting of **two-solid propellant S200 strap-ons** on its sides and **core stage** comprising **L110 liquid stage and C25 cryogenic stage**.

### OneWeb

- OneWeb (legally Network Access Associates Ltd) is a **communications company that aims to build broadband satellite Internet services**.
- It is a **global communications network**, powered from space, **enabling connectivity for governments, businesses, and communities**.
- OneWeb has **teamed up with NewSpace India Limited (NSIL)**, the commercial arm of national space agency Indian Space Research Organisation (ISRO) to facilitate the launch.
- The company is headquartered in London, with offices in California, Florida, Virginia, Dubai and Singapore.

### OneWeb Constellation

- OneWeb Constellation **operates in a LEO Polar Orbit Satellites** are **arranged in 12 rings** (Orbital planes) with **49 satellites in each plane**.
- It **will provide high data throughput, low latency and global internet coverage**

- Each **satellite completes a full trip around the earth every 109 minutes.**
- **The earth is rotating underneath satellites, so they will always be flying over new locations on the ground.**

### NewSpace India Limited (NSIL)

- NewSpace India Limited (NSIL) is a **Public Sector Undertaking (PSU) of Government of India and commercial arm of Indian Space Research Organisation (ISRO)**
- It was **established on 6 March 2019** under the administrative control of **Department of Space (DoS)** and the **Company Act 2013.**
- Its **purpose is to realize business demands in the space sector.**
- These include **building indigenous launch vehicles** through **collaborations with Indian firms, transferring technology, providing launch services, satellite building** and other ground services as well as satellite-based services



## The 7th edition of India-Brazil-South Africa Maritime (IBSAMAR) was held

### Key Points

- It was held at Port Gqeberha (also known as Port Elizabeth) in South Africa.
- INS Tarkash reached Port Gqeberha (also known as Port Elizabeth), South Africa to participate in the exercise

### BSAMAR VII

- It is a joint Multinational Maritime Exercise between the Indian, Brazilian and South African Navies currently being held in South Africa
- The first trilateral naval drill of IBSA was initiated in 2006.
- The Sixth edition of IBSAMAR was conducted off Simons Town, South Africa in 2018.

### Features

- IBSAMAR is an important part of IBSA trilateral defence cooperation.
- The harbour phase of IBSAMAR VII includes *professional exchanges such as damage control and fire-fighting drills, Visit,*

***Board, Search, and Seizure (VBSS)/cross boarding lectures and interaction among special forces.***

- The Joint Maritime Exercise will **strengthen maritime security, joint operational training, sharing of best practices and building interoperability** to address common maritime threats.

### Indian representation

- The **Indian Navy** was represented in it by the **guided missile frigate, INS Tarkash, a Chetak helicopter and MARCOS Special Forces.**

### India's Other Maritime Exercises

- ✓ ***Qatar: Zair-Al-Bahr***
- ✓ ***Indonesia: Samudra Shakti***
- ✓ ***Singapore: Singapore-India Maritime Bilateral Exercise (SIMBEX)***
- ✓ ***Japan: Maritime Partnership Exercise (MPX)***
- ✓ ***Thailand: India-Thailand Coordinated Patrol (Indo-Thai CORPAT)***
- ✓ ***United Kingdom: Konkan - Shakti***



**Wildlife officials in Arunachal Pradesh await results of a survey to ascertain the presence of the elusive snow leopard in the Namdapha National Park and Tiger Reserve.**

### **Key Points**

- The **snow leopard has never been spotted nor recorded** in the **Namdapha National Park and Tiger Reserve in Changlang district of Arunachal Pradesh.**
- The belief that the national park is also the habitat of the snow leopard is based on the claim of a hunter from the Lisu ethnic community that he possessed the skin of the snow leopard.

### **Snow Leopard (Panthera uncia)**

- Snow leopard, **also called ounce**, large long-haired **Asian cat**, classified as either *Panthera uncia* or *Uncia uncia* in the family Felidae.
- They are **solitary creatures**, and **skillful predators**, **able to kill prey up to three times their own weight** in challenging terrain
- The snow leopard has a **beautiful, spotted coat**, **thick enough to insulate them from the cold.**
- It **hunts at night and preys** on various animals, such as **marmots, wild sheep, ibex (Capra), and domestic livestock**

## **Habitat and Distribution**

- It **inhabits the mountains of central Asia** and the Indian subcontinent, **ranging from an elevation of about 1,800 metres** (about 6,000 feet) in the **winter to about 5,500 metres** (18,000 feet) in the summer.
- They are **sparsely distributed across 12 countries in central Asia**, from **southern Russia down to the Tibetan plateau**, including **Mongolia, China, Afghanistan, Pakistan, India and Nepal**.
- In **India**, snow leopards **inhabit the higher Himalayan and trans-Himalayan region** at an altitude between 3,000-5,400 metres.
- Snow leopard states are **Jammu and Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh**.

## **Threats**

- **Herding and ranching activities** have expanded throughout their geographic range.
- Their **bones and hides are sought after by hunters and poachers** for the **illegal animal trade**.
- Often **killed by herders and ranchers whose livestock they have taken**

## **Conservation**

- It is listed as '**Vulnerable**' on the **IUCN red list of threatened species**.
- It is protected under **Schedule I** of **Wildlife Protection Act, 1972**
- Also, it is listed on **Appendix I** of the **Convention on International Trade of Endangered Species (CITES)**.

## Namdapha National Park

- Namdapha National Park is a **1,985 km<sup>2</sup> (766 sq mi)** large protected area in Arunachal Pradesh of Northeast India.
- Its name was a combination of two Singpho words, namely **"nam" which means water, and "dapha" which means origin** – the river originates from the Dapha Bum glaciers.
- Namdapha was originally declared a Wildlife Sanctuary in **1972**, then a National Park in **1983** and became a Tiger Reserve under the Project Tiger scheme in the same year.
- It is the **fourth largest national park in India**.
- The first three are Hemis National Park in Ladakh, Desert National Park in Rajasthan, and Gangotri National Park in Uttarakhand.

## Location

- It is located in the State of Arunachal Pradesh and it covers 1,985 sq km.
- It lies in close proximity to Indo-Myanmar-China trijunction.
- The park is located between the Dapha bum range of the Mishmi Hills and the Patkai range.
- It is crossed from east to west by the Noa Dihing River that originates at the Chaukan Pass, located on the Indo-Myanmar border.

## Flora and Fauna

- It is only park in the World to have the four Feline species of big cat namely the **Tiger (Panthera Tigris), Leopard (Panthera**

**Pardus), Snow Leopard (Panthera Uncia) and Clouded Leopard (Neofelis Nebulosa)** and numbers of lesser cats.

- It is also a **part of biodiversity hotspot**.
- A **number of primate species** are seen in the park, such as **Assamese macaque, pig-tailed macaque, stump-tailed macaque** and number of the **distinctive Hoolock Gibbons** (Hylobates Hoolock), **highly endangered and only ape' species found in India** dwells in this impenetrable virgin forest.
- Of the many other important animals are the **elephants, black bear, Indian Bison**, several species of **deers, reptiles** and a variety of arboreal animals.
- It is also **famous for Critically Endangered species** like the **Namdapha flying squirrel**, species that was last spotted in 1981.

### Other Protected Areas in Arunachal Pradesh

- **Pakke Wildlife Sanctuary**
- **Mouling National Park**
- **Kamlang Wildlife Sanctuary**
- **Itanagar Wildlife Sanctuary**
- **Eagle Nest Wildlife Sanctuary**





## The World Wide Fund for Nature (WWF) released Living Planet Report 2022.

### Key highlights of the report

- There has been a **69% decline in the wildlife populations of mammals, birds, amphibians, reptiles and fish**, across the globe in the **last 50 years**
- The **freshwater populations have declined the most**, with an **average 83% decline between 1970 and 2018**.
- The IUCN Red List shows cycads, an ancient group of seed plants, are the most threatened species, while corals are declining the fastest, followed by amphibians.

### Region-wise Decline in Wildlife Populations

- The **highest decline in the wildlife populations (94%)** was in the **Latin America and the Caribbean region**.
- **Africa recorded a 66% fall in its wildlife populations** from 1970-2018
- The **Asia-Pacific recorded a decline of 55%**.
- **Southeast Asia** is the region where **species are most likely to face threats at a significant level**.

- The **Polar Regions and the east coast of Australia and South Africa showed the highest impact probabilities for climate change**, driven in particular by impact on birds.

### Mangroove

- **Continue to be lost to aquaculture, agriculture and coastal development at a rate of 0.13% per year.**
- **Around 137 square kilometres of the Sundarbans mangrove forest in India and Bangladesh has been eroded since 1985, reducing land and ecosystem services for many of the 10 million people who live there.**

### Corals

- **About 50% of warm water corals have already been lost and a warming of 1.5 degrees Celsius will lead to a loss of 70-90% of warm water corals.**

### Sharks

- **The global abundance of 18 of 31 oceanic sharks has declined by 71% over the last 50 years** and the report said that by 2020 three-quarters of sharks and rays were threatened with extinction.

### Other highlights:

- **Only 37% of rivers that are over 1,000 km long remain free-flowing in their natural state.**
- **Report says action is needed to reverse biodiversity loss by 2030 and keep global warming to 1.5°C.**

- By moving to sustainable, healthy, and culturally appropriate diets we can reduce agricultural land use by 41% and wildlife loss by up to 46%.

### India-specific highlights

- The **Himalayan region and the Western Ghats** are the **most vulnerable regions in the country in terms of biodiversity loss.**
- The country has seen a decline in the population of the likes of **honeybees and 17 species of freshwater turtles** in this period.

### Six Key threats to Biodiversity loss

WWF identified six key threats to biodiversity to highlight 'threat hotspots' for terrestrial vertebrates:

- **Agriculture**
- **Hunting**
- **Logging**
- **Pollution**
- **Invasive Species**
- **Climate Change**

### Living Planet Report (LPR)

- A **biennial report published by the World-Wide Fund for Nature (WWF).**
- **Prepared in collaboration between WWF International and the Zoological Society of London**
- It is a **comprehensive study of trends in global biodiversity and health of the planet.** It tracks changes in the relative abundance of wild species populations across the globe.



## The PM addressed the second United Nations World Geospatial Information Congress in Hyderabad.

### 2nd United Nations World Geospatial Information Congress, 2022

- Hosted by the Department of Science and Technology (DST) and convened by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM).
- Organized by the United Nations Department of Economic and Social Affairs
- Theme- **“Geo-Enabling the Global Village: No one should be left behind”**.

### Highlights of the conference

- Will promote dialogues on the global geospatial information management that would help governments, non-governmental organizations (NGOs), private entities and academia
- Will focus on achieving an inclusive and equitable global society by creating a community for the collection of human data
- Seek to highlight the significance of the integrated geospatial information infrastructure and knowledge services to support

the **implementation and monitoring** of the **sustainable development goals (SDGs)**.

- Discussions held on boosting the well-being of society, addressing environmental and climate related challenges and supporting the digital transformation and technological development.

### United Nations World Geospatial Information Congress (UNWGIC)

- The **first United Nations World Geospatial Information Congress** was held in **Deqing, Zhejiang Province, China in 2018**.
- The **United Nation Committee of Experts on Global Geospatial Information Management (UN-GGIM)** organizes the United Nations World Geospatial Information Congress (UNWGIC) every **four years**.
- The **objectives** are **enhancing international collaboration** among the **Member States and relevant stakeholders** in **Geospatial information management and capacities**.
- Its **goal** was to **strengthen the geospatial information management, innovation and related technologies** to help in the **achievement of the Sustainable Development Goals**.

### Geospatial Technology

- The **systems broadly include mapping and surveying techniques** like **global positioning system, geographic information system, remote sensing, etc.**
- Geospatial technology **enables us to acquire data** that is **referenced to the earth** and **use the data for analysis, modeling, simulations and visualization**.

- Promotes societal development and well-being, addresses environmental and climate challenges, and embraces digital transformation and technological advancement.

### Benefits of Geospatial Technology

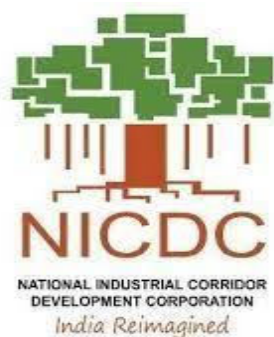
- **Simplification of complex data to improve decision-making**
- It helps in **maintaining transparency in data for citizen access.**
- It helps in **managing natural resources.**
- It helps the **government in making better decisions.**
- It **helps in discovering precautions before planning development changes** in a community.

### Types

- *Remote Sensing*
- *Electromagnetic impulses*
- *Filmed or digital aerial imagery*
- *Radars and lidars*
- *Global Positioning Systems (GPS)*
- *Geographic Information Systems (GIS)*

### Note

- **India's geospatial economy is expected to cross Rs. 63,100 crores by 2025 at a growth rate of 12.8%.**
- Geospatial technology has become one of the key enablers in socio-economic development by enhancing productivity, ensuring sustainable infrastructure planning, effective administration, and aiding the farm sector.



**The 4th NICDC Investors' Roundtable Conference organized by Maharashtra Industrial Township Limited (MITL), recently held**

**About the conference**

- The **4th** edition of the conference will showcase the **development of upcoming greenfield industrial cities** across India, which have been **planned by National Industrial Corridor Development Corporation Limited**.
- **Currently, four such greenfield** smart industrial cities are being **developed in Maharashtra** in the districts of Aurangabad, Raigad, Satara and Nagpur.
- The **conference is intended to facilitate a meaningful discussion** among stakeholders and thus **help in identifying various collaboration opportunities for investors**.

**National Industrial Corridor Development Corporation (NICDC)**

- National Industrial Corridor Development Corporation (NICDC) is a **Special Purpose Vehicle** that **envisages to establish, promote and facilitate development of the National Industrial Corridor Development Programme**

**Current equity shareholders in NICDC-**

- **Government of India (49%),**
- **Japan Bank for International Cooperation (JBIC) (26%)**
- **Financial institutions such as Housing and Urban Development Corporation (HUDCO) (19.9%),**
- **India Infrastructure Finance Company Limited (IIFCL) (4.1%)**
- **Life Insurance Corporation (LIC) (1.0%).**

### National Industrial Corridor Development Programme

- National Industrial Corridor Development Programme is **India's most ambitious infrastructure programme** aiming to **develop new industrial cities as "Smart Cities"** and **converging next generation technologies across infrastructure sectors.**
- The programme is **aimed at providing impetus to planned urbanization in India** with **manufacturing as the key driver.**
- Aimed at **development of futuristic industrial cities** in India which can compete with the best manufacturing and investment destinations in the world **creating employment opportunities and economic growth leading to overall socio-economic development**

### Note

- **Maharashtra**, the economic powerhouse of India, has been an **ideal investment destination for investors around the world.**
- The state has **managed to retain the position as India's top Foreign Direct Investment (FDI) destination.**
- In the last decade, Maharashtra has been a recipient of almost **28%** of the cumulative FDI flowing into the country



Exact IAS



**The World Bank extended an unconditional loan of \$250 million for the SALT project in Andhra Pradesh.**

### **SALT Project**

- Supporting Andhra's Learning Transformation (SALT) is a **project undertaken by the Government of Andhra Pradesh with support from the World Bank.**
- The SALT is the **first project in the school education sector to be funded by the World Bank without any precondition.**
- The project **will introduce a one-year preschool-level course in 3,500 schools in the tribal blocks.**

### **Aim**

- To **strengthening foundation schools and providing training and skill development to teachers**
- To **transform the state's school education system by strengthening the quality of foundational learning through various pathways including improving teacher professional development, classroom-based assessments and early childhood education.**
- Establishing and **strengthening foundation schools is in tune with the National Education Policy, 2020.**



**The Supreme Court recently delivered a split verdict in the Karnataka hijab ban case.**

### What is split verdict?

- A split verdict is **passed when the Bench cannot decide one way or the other in a case**, either **by a unanimous decision** or by a **majority verdict**.
- Split verdicts **can only happen when the Bench has an even number of judges**.
- This is why **judges usually sit in Benches of odd numbers** (three, five, seven, etc.) **for important cases**, even though **two-judge Benches, known as Division Benches, are not uncommon**.
- In case of a split verdict, the case is heard by a larger Bench.
- The larger Bench to which a split verdict goes can be a **three-judge Bench of the High Court**, or an **appeal can be preferred before the Supreme Court**.



The Prime Minister of India has paid tributes to Loknayak Jayaprakash Narayan and Nanaji

Deshmukh on their birth anniversary.

### Loknayak Jayaprakash Narayan

- Born in 1902 in Bihar's Sitab Diara, JP, as Narayan was fondly referred, was a leading freedom fighter and a radical socialist.
- He was marxist in his youth and founder general secretary of the Congress Socialist Party and the Socialist Party.

### Contribution to Freedom Struggle

- In 1929, he joined the Indian National Congress.
- The 'Loknayak' was one of the prominent faces of the Quit India Movement
- He became a Gandhian and was involved in the Bhoodan movement.
- He formed the Congress Socialist Party. It was a left-wing offshoot of the Congress party.
- He is remembered for leading the mid-1970s opposition against Prime Minister Indira Gandhi, for whose overthrow he had called for a "total revolution".

- The **Janata Party** was voted into power and became the first non-Congress party to form a government at the Centre under his guidance
- He argued for a “reconstruction of Indian polity” by means of a four-tier hierarchy of village, district, state, and union councils (**Chaukhamba Raj**).

### Awards

- In **1999**, he was **posthumously awarded** India's highest civilian award, the **Bharat Ratna**.
- He was given **Magsaysay award for Public Service** in **1965**.
- The **Patna airport, Lok Nayak Jayaprakash Airport**, is also named after him.

### Nanaji Deshmukh

- Born on **October 11, 1916**, was **social reformer and politician** from India
- He was a **founder member of the Janata Party** and one of the **senior most members of the Bharatiya Janata Party**.
- He was **influenced by Lokamanya Tilak** and his nationalist ideology.
- He was a **leader of Bharatiya Jana Sangh and Rashtriya Swayamsevak Sangh**.
- He **actively participated in Acharya Vinoba Bhave's Bhoodan**.
- He also **extended his support to Jayaprakash Narayan's call for 'Total Revolution'**.

### Social Activity

- He was a **social reformer with focus on health, education and rural self-reliance.**
- His **stellar contribution towards rural development** showed the way for a new paradigm of empowering those living in our villages.
- He did **social work in Gonda (UP), Balrampur and Beed (Maharashtra).**
- The **motto of his project was Har hath ko denge kaam, har khet ko denge paanee.**
- He did **great work towards the anti-poverty and minimum needs programme.**
- He **established Chitarkoot Gramoday Vishwavidyalaya in Chitrakoot, India's first rural University**

### **Award**

- He was **conferred India's highest civilian honour the Bharat Ratna posthumously** on January 25, 2019 for his services to the nation.



**Madhya Pradesh Wildlife Board recently approved the establishment of a new tiger reserve called Durgavati Tiger Reserve.**

### **Background**

- As part of a wildlife management plan for Panna in wake of the Ken-Betwa river linking project, the NTCA had asked Uttar Pradesh and MP governments to notify new tiger reserves.
- The two state governments, with the Centre, are implementing a ₹44,605 crore river-linking project to end the water crisis in Bundelkhand region.
- The Uttar Pradesh cabinet approved the notification of the state's fourth tiger reserve in the Ranipur Wildlife Sanctuary (RWS) in the Chitrakoot district. RWS has no tigers of its own.
- But pugmarks of the animals are frequently seen there as tigers from nearby PTR frequent it

### **Note-**

- Panna Tiger Reserve (PTR), where the history of successful reintroduction of tigers was created after it lost all the tigers in 2009, is home to 54 big cats.
- Panna is home to the largest number of vultures in Central India and loss of habitat will badly impact them.

- In **2020**, UNESCO included PTR in a global network of biospheres because of its **unique landscape and management**.

### The new tiger reserve

- It will host tigers of Panna Tiger Reserve (PTR), quarter of which is set to be **submerged** because of the linking of Ken-Betwa rivers.
- The **2,339 square kilometres new tiger reserve**, to be called **Durgavati Tiger Reserve(DTR)**, will spread across Narisinghpur, Damoh and Sagar districts.
- A **green corridor linking PTR with Durgavati** will be developed for the **natural movement of the tiger to the new reserve**.
- The new tiger reserve(DTR) is **being developed so that big cats from Panna Tiger Reserve (PTR) can shift there naturally**.
- **Nauradehi wildlife sanctuary**, which has **five tigers**, is a **corridor between Satpura and PTR**, while **Durgavati Wildlife Sanctuary** is a **green corridor for Bandhavgarh Tiger Reserve**.
- The new reserve will also **accommodate excess tigers from Bandhavgarh**.

### Ken-Betwa link project

- The Ken-Betwa link project is set to **become one of the first river interlinking projects implemented in India**.
- It is **expected to provide for the irrigation needs to around 9 lakh hectares of farmland and drinking water for over 62 lakh people**.
- It will also **generate 103 Mega Watt of hydropower and 27 Mega Watt of solar power**.
- The project will be **especially beneficial for the drought prone Bundelkhand region**.





**An Ethiopian government team and Tigray forces are going to have peace talks in South Africa.**

### Key Points

- This is the **first formal Peace talks between the two led by the African Union** and is **happening at a time when Ethiopian forces and allies have made some gains in Ethiopia's northern Tigray region.**
- For the rest of the world, the development spells some hope of reconciliation between the federal government and Tigray which was a prominent force in the country's ruling coalition until Ethiopia's current leader and Nobel Peace laureate (2019) Abiy Ahmed became the Prime Minister in 2018.

### Ethiopia

- Ethiopia is **Africa's oldest independent country** and its **second largest in terms of population**
- **Officially the Federal Democratic Republic of Ethiopia**, is a **landlocked country** in the Horn of Africa.
- The **national capital and largest city, Addis Ababa**, lies several kilometres **west of the East African Rift** that **splits the country into the African and Somali tectonic plates**

## Geography

- The **major portion** of Ethiopia lies in the **Horn of Africa**, which is the **easternmost part of the African landmass**.
  - It shares **borders** with **Eritrea to the north, Djibouti to the northeast, Somalia to the east and northeast, Kenya to the south, South Sudan to the west, and Sudan to the northwest**.
- It is an **ecologically diverse country**, ranging from the **deserts** along the eastern border to the **tropical forests** in the south to **extensive Afromontane** in the northern and southwestern parts.
- **Lake Tana in the north is the source of the Blue Nile.**

## Other facts

- It has a **unique cultural heritage**, being the **home of the Ethiopian Orthodox Church** - one of the **oldest Christian denominations** - and a **monarchy that ended only in the coup of 1974**.
- It served as a **symbol of African independence** throughout the **continent's colonial period**, and was a **founder member** of the **United Nations** and the **African base** for many **international organisations**.
- The **Oromo- the largest ethnic group in the country**, and **Amhara- the second largest group**, make up **more than 60 per cent** of **Ethiopia's 115 million people**.
- The **Tigrayans**, meanwhile, constitute around **6-7 per cent** and are an **ethnic minority**.



The Prime Minister of India has dedicated 75 Digital Banking Units (DBU) across 75 districts to the nation.

### Key Points

- As part of the Union budget speech for 2022-23, the Finance Minister announced setting up the 75 DBUs in 75 districts to commemorate our country's 75 years of independence.

### Digital Banking Units(DBU)

- It is a joint initiative of the Government, the RBI, the Indian Banks Association and the participating banks.
- A Digital Banking Unit is a specialised fixed point business unit or hub, set up by scheduled commercial banks, housing certain minimum digital infrastructure for delivering digital banking products and services as well as servicing existing financial products and services digitally in self-service mode at any time.

### Features

- They will provide banking services including cash deposit & withdrawal 24 x 7.
- Services shall be provided digitally.

- Will help in providing digital financial literacy and create awareness for adopting digital banking.
- People not having connectivity or computing devices can do banking transactions from DBU in a paperless mode.

### Services provided

- It includes banking facilities like
  - *opening of savings account,*
  - *balance-check,*
  - *print passbook,*
  - *transfer of funds,*
  - *investment in fixed deposits,*
  - *loan applications,*
  - *stop-payment instructions for cheques issued,*
  - *application for credit / debit cards,*
  - *view statement of account, pay taxes, pay bills, make nominations, etc.*
- The DBUs will also facilitate on boarding to Government credit link schemes through the Jan Samarth portal and end-to-end digital processing of small ticket MSME/retail loans.

### Set up

- **Commercial banks** (other than regional rural banks, payment banks and local area banks) with **past digital banking experience** are **permitted to open DBUs in tier 1 to tier 6 centres**, unless

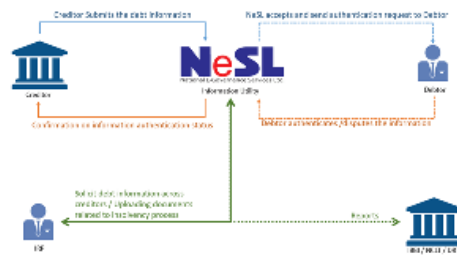
**otherwise specifically restricted**, without having the need to take permission from the RBI in each case.

### **Significance of the move**

- It will **help to improve the financial literacy** and awareness among the masses.
- It will **boost the financial inclusion**.
- It will increase **the speed of payments and transactions**.
- DBUs will **enable customers to have cost-effective, convenient access and enhanced digital experience of banking products and services throughout the year**.
- The **resolution of NPA-related issues is expedited with the help of IBC while promoting the use of technology and analytics for loans, for the creation of a transparent and scientific system**.

### **Other Initiatives for Financial Inclusion**

- **Jan Dhan Bank accounts**
- **UPI**
- **DBT**
- **Fintech**
- **GEM**



## American Express to resume sharing card holders' financial information with NeSL

### Key Points

- **American Express issued a notice to its card holders, that it will report financial information related to their cards to National E-Governance Services Ltd (NeSL).**
- **This is the second time this year that the company has informed card holders that their data will be shared with NeSL.**
- **In April 2022, American Express had issued a similar communication, but the drive was put on the back burner after many card holders voiced concerns on data privacy.**

### Reason for move

- **The move is in accordance with a 2017 RBI circular that required financial creditors to submit financial information to an information utility under Section 215 of Insolvency and Bankruptcy Code (IBC).**
- **According to Section 215 of IBC, a financial creditor shall submit financial information and information relating to assets in relation to which any security interest has been created, to an information utility (IU) in such form and manner as may be specified by regulations.**

- **Cardholders will receive an email notification from NeSL on a monthly basis to review and verify the information that American Express will submit on an ongoing basis and they will have to register at NeSL's portal to authenticate or dispute the information within a stipulated timeline.**

### What is NeSL?

- **National E-Governance Services Limited ("NeSL") is an Information Utility ("IU") appointed by the Insolvency and Bankruptcy Board of India ("IBBI").**
- **It is a Union government company and is governed by the provisions of Insolvency and Bankruptcy Code, 2016 ("IBC") and Insolvency and Bankruptcy Board of India (Information Utilities) Regulations, 2017**

### Purpose

- **The primary role of NeSL is to serve as a repository of legal evidence holding the information pertaining to any debt/claim, as submitted by the financial or operational creditor and verified and authenticated by the parties to the debt.**
- **It was set up as an Information Utility to provide level playing field in financial contracts by**
  - **storing facts of borrowing,**
  - **default and security interest** with safeguards like **authenticating the terms of contract,**

- **digital storage of details** in a central server with information security policies wrapped around,
- providing **effective retrieval facilities** for insolvency professionals,
- DRT and NCLT to proceed with their roles in time bound manner

### NeSL works towards

- **Time-bound resolution by providing verified information to creditors and to Adjudicating Authorities that do not require further authentication.**
- **Default intimation to Creditors linked to a debtor** when any creditor files a default against a debtor
- **Mitigation of information asymmetry between parties to a debt**
- **Superior credit monitoring by creditors**
- **An agreed statement of outstanding balance between parties to a debt**
- **Facilitate all stakeholders of the IBC ecosystem by leveraging Information Technology to achieve objective of code.**

### Concerns

- Legal experts believe that sharing personal financial information related to card holders spending with any entity, including a government-registered one, is a breach of their privacy.





## What is 'meat' from plants, and is 'just like' meat vegetarian?

### Key Point

- Recently, cricketer M S Dhoni picked up an undisclosed equity stake in plant-based meat startup Shaka Harry.
- A couple also founded plant-based Imagine Meats in September 2021.

### Plant based meat

- “Plant-based” refers to **products that bio-mimic or replicate meat, seafood, eggs, and milk derived from animals** — by looking, smelling, and tasting like them.

### Examples

- The variety includes **mutton samosas, chicken nuggets, momos, fries, etc.**
- **Beyond Meat’s patties**, apart from **using coconut oil to copy the melty beef fat of a real hamburger**, apparently **even bleed** as they cook — the “**blood**” coming from a **beetroot juice-based liquid**.
- **Plant-based dairy products** include **ice-cream** that isn’t simply **frozen dessert** that replaces milk fat with vegetable oil.

- Even the **proteins and other solids-not-fat ingredients** are sourced from plants.

### How are Plant-based meat and dairy made?

- **Animal meat** contains **protein, fat, vitamins, minerals, and water**, just like plants.
- This **biochemical similarity** allows for finding analogues in the **plant kingdom** or making them through **mechanical, chemical, or biological treatment** of such ingredients.
- The **challenge** lies in replicating **muscle tissue** that **plants don't have**.
- The **unique spatial arrangement** of proteins in these tissues is **what creates the distinct texture** of animal meat.
- That's why **plant-based mutton samosas, kebabs or keema**, having a **simpler texture**, are easier to make than larger whole cuts of animal meat such as **chicken breasts and pork chops**.

### For Plant-based dairy

- As for **plant-based dairy**, the main products are **milk from oats, almond, soyabean, coconut, and rice**.
- Among these, **oat milk** is considered the closest to regular milk in **taste and texture**.
- It is also **thicker and creamier**, as **oats absorb more water** than **nuts or rice during soaking**, and **more of the grain gets strained** for incorporation into the final product.

### Advantages

- Eating a plant-based diet **improves the health** of your **gut**, so you are **better able to absorb the nutrients from the food** that support your immune system and **reduce inflammation**.
- Plant-based meats are **low in fats**, provide almost the **same amount of protein** as real meat products.

### **How big are the plant-based meat and milk industry?**

- According to the **Good Foods Institute in Washington DC**, retail sales of **plant-based animal product alternatives in the US** stood at **\$7.4 billion in 2021**.
- Plant-based meat is **becoming an integral part of a vegan diet**, wherein the **individuals adopt a vegetarian lifestyle** that is **devoid of animal-based foods**.

### **Scope in India**

- Due to **India's significant vegetarian population**, plant-based meat does **not see much potential in India**.
- Plant-based meat **can have only a niche market relevant for the top 1%.**
- **Most Indians take naturally to milk**, which is a classic **"superior food"**.
- **Both milk** (which includes ghee, curd, butter, ice-cream and other dairy products) and, to a **lesser extent, meat** (which includes fish and prawn) are **superior foods** — **unlike cereals and sugar**, whose **share in the value of consumption reduces with increasing incomes**, making them **"inferior foods"**.



## Ukraine's capital region was struck by kamikaze drones.

### Kamikaze Drones

- These are **small unmanned aircraft** that are **packed with explosives** that can be flown directly at a tank or a group of troops that are destroyed when it hits the target and explodes.
- They are called **Switchblade** because their **bladelike wings spring out on launch**.
- The name comes from the **World War 2 era's feared Japanese kamikaze pilots**, who conducted suicide attacks by intentionally crashing their explosive-filled aircraft into enemy targets.
- The **modern drone versions have the capability of surpassing traditional defences to strike their targets** and are also **cheaper** than their larger counterparts.
- They are **precise, small in size, able to effectively penetrate air defenses when fired in groups**.

### Note-

- These are **made in Iran**, where they are known as **Shahed-136**, which could be translated as **"witness of faith"** but also as **"martyr"**.

- Unlike drones that return to base once missiles are launched, **“kamikaze” or “suicide” drones are destroyed in an attack.**
- There are **drones that fire missiles** and then there are ones which are **missiles themselves.**

## **Features of the Kamikaze Drones**

### **Light Weight**

- Weighing just **five-and-a-half pounds**, including its **small warhead**, the **Switchblade** can be taken into battle in a **backpack** and fly up to **7 miles** to hit a target.

### **Can Adjust Blast Radius**

- The drone has a **feature that allows the operator to adjust the blast radius.** So, it **can kill the driver of a vehicle but not a passenger**, for example.
- The weapon can be **“waived off”** up to two seconds before impact.

### **Cameras for Centralised View of Area of Operation:**

- The Switchblade also has **cameras that show a target seconds before impact.**
- The **drone cruises at 63 miles per hour** and provides **“operators with real-time video downlinks for a centralised view of the area of operation”.**

### **Difficult to detect**

- These small lethal drones are **difficult to detect on radar.**

- They can even be **programmed to hit targets without human intervention, based on facial recognition.**

### **Countries possessing such drones**

- Although the Kamikaze **might be the most advanced form** of this **genre of drones**, **Russia, China, Israel, Iran and Turkey** all have some version of it.

Exact IAS



**The state cabinet of Uttarakhand has cleared a proposal to replace the “Revenue Police” system with the regular police.**

**Uttarakhand is the only state which still has the colonial-era system under which revenue officials carry out initial investigation into crimes in certain areas.**

### **The Revenue Police System in Uttarakhand**

- **The system of revenue police was brought by the British over a century ago when crime in the hilly areas was low.**
- **The motive was to save money and resources by not deploying regular police.**
- **Under the unique revenue police system, civil officials of the revenue department have the powers and functions of the regular police.**
- **Whenever a crime takes place, the revenue police of the area files an FIR, investigates the case, arrests the accused and also files a chargesheet in the local court.**
- **In case of heinous crimes like murder, rape, or crimes against Scheduled Castes (SC) and Scheduled Tribes (ST), the case is transferred to the regular police.**

### **Scenario in Other states**

- In **other states**, the **core function** of revenue officials is to **maintain land, cultivation and revenue records of villages**, and **collect revenues on behalf of the government**.
- The **revenue officials like patwari and kanungo compile data on crop production, perform election-related duties, and collect census and literacy data**.
- They are **also given the duty of implementing government schemes and preparing birth, death, and caste certificates**.

### Criticism

- The **main criticism** of the system is that the **revenue officials** are given the **additional task of policing without any adequate training**.
- The **prevention of crime, either by collecting intelligence or creating a fear of law and order, cannot be done** by the **revenue officials**, as they are **not trained to do these added responsibilities**.
- The **revenue police officers do not fall under the Police-Forces (Restriction of Rights) Act**, which **restricts certain rights conferred by the Constitution to the members of the forces charged with the maintenance of public order**.

### Judicial intervention

- The **Uttarakhand High Court, in a landmark judgment in 2018, ordered the state government to abolish the “century-old practice” of the revenue police system**.
- However, the state **challenged the matter in a higher court**.





**Recently, the European Central Bank (ECB) called an emergency meeting for a doom loop. Many economists have warned that**

**Europe may be headed for a doom loop**

### What is Doom Loop?

- A doom loop is the **circle of vulnerability** where a **country's banking system** can be **severely hurt by volatility in the economy**.
- A **country is at risk of a doom loop** when a **shock to one part of its economic system is amplified by its effect on another**.
- Is **describes as a scenario** in which **one negative factor creates another negative factor, which in turn worsens the first, similar to a "vicious cycle."**

### Impact on economy

- **Country's banking system** can be **severely hurt by volatility** in the **price of the sovereign bonds they hold for reserves**.
- Thus **resulting in a contraction in lending provided by the banks**
- This **contraction in credit, in turn, slows the domestic economy, resulting in a further deterioration in the price of the sovereign's bond issues**.

- A government under financial stress may have to cut spending or raise taxes when the economy is weak.
- That in turn can aggravate fiscal problems.
- The circle can also be activated by external forces such as a slowdown in global economic activity due to natural recession or trade friction.

### Euro Zone is more vulnerable to a doom loop

- In rich countries, central banks have the power to halt such a vicious cycle by standing behind government debt, stabilising financial markets or cutting interest rates to support the economy.
- But in the eurozone, the ECB can only do this to a degree for individual countries.
- After the financial crisis in 2008, banks in highly indebted eurozone countries started to buy large amounts of government debt.
- Between 2009 and 2015 in Spain, for example, banks increased their holdings of Spanish government bonds from around 2% of total assets to over 9%.



## Detection of Barium in the Exoplanet Atmospheres

### Key Points

- In a **new study**, scientists have detected **barium** in the **upper atmosphere** of **two giant exoplanets** for the **first time**.
- Ultra-hot Jupiters are a class of hot gaseous planets that matches the size of Jupiter, but they have short orbital periods, unlike Jupiter.

### Findings of the Study

- The exoplanets are **two ultra-hot Jupiters** — **WASP-76b** and **WASP-121b** — which **orbit their host stars WASP 76** and **WASP 121**.
- The **former is about 640 light-years away from the Earth** and the **latter around 900 light-years away**.
- Both **WASP-76b** and **WASP-121b** **complete one orbit in two days**.
- **Surface temperatures** in these bodies **reach as high as 1,000 degrees Celsius**.
- These **bodies have unique features** owing to their **high temperatures**. For instance, **WASP-76b** experiences **iron rain**.
- The **presence of hydrogen, lithium, sodium, magnesium, calcium, vanadium, chromium, manganese and iron** in the atmosphere of the **WASP-76 b** has also been confirmed in addition to **barium**.

- In **WASP 121b**, they confirmed the presence of **lithium, sodium, magnesium, calcium, vanadium, chromium, manganese, iron and nickel**.
- Additionally, the **team found elements such as cobalt and strontium**. They also found indications of **titanium** in the **exoplanet**.

### Why these metals are unique to be found in the Atmosphere?

- This **discovery** of barium is **surprising** because **heavy elements like barium are expected to quickly fall** (as these exoplanets have high gravity) **into the lower layers of the atmosphere**.
- It **revealed some new dynamics inside the atmospheres** or gives us insights into the **composition of these distant planets**.

### Barium

- Barium is a **silvery-white metal** that can be found in the **environment, where it exists naturally**.
- It **occurs combined with other chemicals**, such as **sulfur, carbon or oxygen**.
- It is **very light** and its density is half that of iron.
- Barium **oxidizes in air, reacts vigorously with water** to form the **hydroxide, liberating hydrogen**.
- Barium **reacts with almost all the non-metals**, forming often **poisoning compounds**.
- Barium, **two and half times heavier than iron**, is the **heaviest-ever detected element**

## Applications

- Barium is often used in **barium-nickel alloys** for **spark-plug electrodes** and in **vacuum tubes** as **drying and oxygen-removing agent**.
- It is also **used in fluorescent lamps**: impure barium sulfide phosphoresces after exposure to the light.
- Barium **compounds are used by the oil and gas industries to make drilling mud**.
- Drilling mud simplifies drilling through rocks by lubricating the drill.
- Barium compounds are also used to make **paint, bricks, tiles, glass, and rubber**.
- Barium nitrate and chlorate give fireworks a green colour.

## Health effects of barium

- People with the greatest risk to barium exposure with additional health effects are those that work in the barium industry.
- Most of the health risks that they can undergo are caused by **breathing in air that contains barium sulphate or barium carbonate**.
- Barium compounds that **dissolve in water can be harmful to human health**.
- The **uptake of very large amounts of barium** that are **water-soluble** may cause **paralyses** and in some cases even **death**.
- **Small amounts of water-soluble barium** may cause a person to experience **breathing difficulties, increased blood pressures, heart rhythm changes, stomach irritation, muscle weakness,**

**changes in nerve reflexes, swelling of brains and liver, kidney and heart damage.**

- Barium has **not shown to cause cancer with humans.**

### **Environmental effects of barium**

- Because of **their water-solubility these barium compounds can spread over great distances.**
- When **fish and other aquatic organisms absorb the barium compounds, barium will accumulate in their bodies.**
- Barium compounds that are **persistent usually remain in soil surfaces, or in the sediment of water soils.**
- Barium is **found in most land soils at low levels.** These levels may be higher at hazardous waste sites.



## **The Second India-Africa Defence Dialogue (IADD) was held on the sidelines of DefExpo 2022 in Gandhinagar, Gujarat.**

### **Theme**

- *Adopting Strategy for Synergizing and Strengthening Defence and Security Cooperation*

### **Outcome document of IADD 2022**

- The **Gandhinagar Declaration** was adopted as an outcome document of IADD 2022.

### **It proposes to enhance cooperation in the field of training in all areas of mutual interest by:**

- **increasing training slots and deputation of training teams,**
  - **empowerment and capability building of the defence forces of Africa,**
  - **participation in exercises, and**
  - **providing humanitarian assistance during natural disasters.**
- 
- **A volume on India–Africa Defence cooperation was also released.**

## Expansion of UNSC

- During the dialogue, India's Defence Minister said that **India does not believe in the hierarchical world order** and sought the **expansion of the United Nations Security Council (UNSC)**.
- India **called for democratisation of the world order** during the dialogue along with the other African Nations.

## India–Africa Security Fellowship Programme

- IADD also encouraged further research of security issues through offer of fellowships to experts from African countries.
- This will be **done under the India–Africa Security Fellowship Programme**.

## Significance of the dialogue

- The IADD, as a **part of DefExpo 2022**, showcased to the African nations the **growing prowess of the domestic defence industry**, which is **one of the major drivers of the nation's resolve to achieve 'Make in India, Make for the World'** as envisioned by the Prime Minister.
- This **interaction is expected to help fulfilling the Defence requirements of our African partners** as also **achieving the objective of catering to our domestic requirements**.

## India-Africa Defence Dialogue(IADD)

- **India and Africa share close and historical ties.**
- **India's approach towards Africa is guided by the Kampala Principles enunciated by the Prime Minister of India in 2018.**



- The **first-ever India-Africa Defence Dialogue(IADD)** was held in **Lucknow, Uttar Pradesh in conjunction with DefExpo in 2020.**
- In **continuance of the ‘Lucknow Declaration’** and in consultation with stakeholders, **IAAD has been institutionalised** to be held **once every two years on the sidelines of DefExpo.**
- The **IADD will explore new areas of convergence** for mutual engagement, including in **areas like capacity building, training, cyber security, maritime security and counter terrorism.**

### India Africa Relations- Key Points

- **Partnership with Africa is centered on the ten guiding principles** articulated by Prime Minister during his address to Parliament of Uganda in 2018.
- **India and Africa share a robust partnership**, which is **based on the cooperative framework of ‘SAGAR’** (Security and Growth for All in the Region), drawn upon the **ancient ethos of ‘Vasudhaiva Kutumbakam’ (The World is One Family).**
- **India is Africa’s fourth-largest national trading partner**, according to Exim Bank and the African Export-Import Bank (Afriexim Bank).
- **India-Africa cooperation has also focused on techno-economic capacity building, skill development** and capacity building featured prominently in all the **India-Africa Forum Summits.**
- **India is among the top 5 investors in Africa**- 38 African nations have benefited from India’s Duty-Free Tariff Preference (DFTP) scheme which provides duty-free access to 98.2 percent of India’s total tariff lines.

- **India is investing in capacity building** providing more than \$1 billion in **technical assistance and training to personnel** under the **Indian Technical and Economic Cooperation (ITEC) program.**
- The **Indian government organised e-ITEC** training courses for healthcare professionals **on COVID-19 prevention and management protocols.**
- **India has unveiled the Vision Document of the Asian Africa Growth Corridor** which is **jointly prepared by Indian and Japanese think tanks.**
- Over 3 million strong Indian diaspora in Africa also proves to a crucial strategic asset for India to further its relations with African countries.



**Union Minister for Finance & Corporate Affairs Smt. Nirmala Sitharaman attended the Plenary Meeting of the International Monetary and Financial Committee**

**Key Points of the meeting**

- Discussions at the meeting were based on IMF Managing Director's Global Policy Agenda (GPA) titled, **"Bolstering the Recovery, Countering Divergence"**.
- The members updated the committee on the actions and measures taken by member countries to combat COVID-19 pandemic and facilitate economic recovery.
- The Finance Minister endorsed the view of the IMF that the key priority remains to end the pandemic and the universal availability of vaccines and medical solutions need to be ensured
- Emphasized that the GPA's suggestion to hasten the transition to a low-carbon economy for promoting growth that benefits all needs to be viewed in the context of its implications for the Emerging Market and Developing Economies and low-income economies.
- The burden of economic transformation to a low carbon economy would disproportionately be higher for these countries, and positive benefits may not accrue in the short run.

- The **focus** needs to remain on the agreed principles of equity and differentiated responsibility of climate action.

### International Monetary and Financial Committee (IMFC)

- It is the **Ministerial-level committee** of the International Monetary Fund (IMF).
- The IMFC meets **twice a year**, once during the **Fund-Bank Spring Meetings in April**, and again during the **Annual Meetings in October**.
- The Committee **discusses matters of common concern** affecting the **global economy** and **advises the IMF** on the **direction** of its work.

### Composition

- IMFC has **24 members** who are **central bank governors, ministers, or others of comparable rank** and who are **usually drawn from the governors of the Fund's now 190 member countries**.
- **Each member country and each group of member countries** that elects an **Executive Director** appoints a **member of the IMFC**.
- Its **structure mirrors that of the Executive Board** and its **24 constituencies**.
- As such, the IMFC **represents all the member countries of the Fund**.
- It **operates on consensus**, including on the selection of its chairman.
- There are **no formal rules on term limits**, since **2007** IMFC chairs have been appointed for a **term of three years**. (Conventionally).

**Functions**

- It **discusses the management of the international monetary and financial system.**
- **Advises and reports to the IMF Board of Governors on the supervision and management of the international monetary and financial system, including on responses to unfolding events that may disrupt the system.**
- It also **considers proposals by the Executive Board to amend the Articles of Agreement and advises on any other matters that may be referred to it by the Board of Governors.**
- Although the **IMFC has no formal decision-making powers, in practice, it has become a key instrument for providing strategic direction to the work and policies of the Fund.**



**Sri Lanka recently asks India to translocate 6 Indian bisons or gaurs to reintroduce them in the island after three centuries**

### Key Points

- Close on the heels of the project that translocated cheetahs from Namibia, the Indian government is considering a proposal from **Colombo to export a number of gaurs, or Indian bisons, to Sri Lanka** to revive the population of gavaras that have been extinct in the island since the end of the 17th century.
- If the Indian Government agrees to this proposal, this **will be the first of its kind agreement between India and Sri Lanka.**
- It is in line with the global trend of wildlife or zoological diplomacy.

### Indian Bisons (Bos Gaurus)

- The Indian bison are also known as Gaur, is the tallest species of wild cattle found in India and largest extant bovine.
- The gaur is the **State Animal of Goa and Bihar.**
- It is a **grazing animal** and generally feeds in the early morning and in the late evenings.

### Population

- There are about **13,000 to 30,000** gaurs in the world with **approximately 85%** of the population present in India.
- The **first-ever population estimation exercise** of the Indian gaur carried out in the **Nilgiris Forest Division in 2020** estimated around **2,000** Indian gaurs to be inhabiting the division.

### **Habitat and Distribution**

- They are found on the forested hills and grassy areas of south to south east Asia.
- They are not found in the Himalayas with an altitude greater than **6,000 ft.**
- The **Western Ghats and their outflanking hills** in southern India constitute one of the **most extensive extant strongholds** of gaur, in particular in the **Wayanad – Nagarhole – Mudumalai – Bandipur complex.**
- It is also found in **Burma and Thailand.**

### **Conservation Status**

- **Vulnerable** in IUCN Red List
- Included in the **Schedule I** of the Wild Life Protection Act, 1972
- It is listed in CITES **Appendix I.**

### **Zoological Diplomacy**

- It means the **translocation and reintroduction of a species**, particularly **between neighbouring countries** with **similar eco-systems.**
- It is considered as a **potent tool in engaging different nations.**

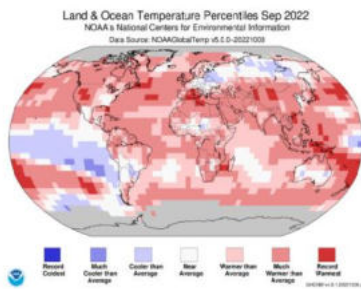
- It is **different from loaning or gifting the animals.**

### **Examples**

- Recently **India translocated cheetahs from Namibia.**
- **American bison herds were supplemented with animals from Canada after the U.S. herds were almost all wiped out.**
- **South Africa has been exporting cheetahs to other African countries as a diplomatic tool after the end of Apartheid era.**
- The **U.K. has recently introduced the European bison (Wisent) after an estimated 10,000 years in June 2022.**
- **Israel has for decades pursued reintroductions, including of Persian fallow deer.**
- **Arabian oryx and other species have been released into the Negev desert.**



## Monthly Global Temperature



The US-based National Oceanic and Atmospheric Administration (NOAA) confirmed that 2022 could feature among the 10 warmest years ever recorded on Earth.

### Key highlights from the NOAA report

- According to NOAA latest report, **this year's September** was the **fifth warmest in 143 years**, with the **recorded global average temperature rising by 0.88 degree Celsius** over the **20th century average**.
- **September 2022** marked the **46th-consecutive September** and the **453rd-consecutive month** with temperatures above the **20th-century average**.
- **Higher than normal temperatures** were recorded over **Africa, north America, southern Asia, Atlantic, and northern South America** regions.
- **Near normal or cooler temperatures** were recorded over **Europe, northern Asia, most parts of India, and south-eastern Pacific Ocean**.
- This was **mainly due to above-average rainfall** over **northern and southern Asia, Australia, Central Europe, Caribbean islands** and the **Southeastern US**.

## Sea Ice extent

- The sea-ice extent **coverage dropped to the eighth lowest ever.**
- The **Arctic sea ice** now covers **5.95 lakh square miles below the 1981-2010 average**, whereas the **Antarctica sea ice** is **1.90 lakh square miles below average.**
- Sea level rise, **ice mass loss in Greenland, Antarctica, and the Arctic and mountain glaciers worldwide** have the **potential to disrupt and reshape lives.**
- It **can reverse development progress** and compromise the well-being of current and future generations.
- **Human activity, burning of fossil fuels and deforestation, led to Greenhouse gas emissions that are causing global warming.**
- The **cryosphere (frozen water part of the Earth) Continued to shrink**, with Arctic and Antarctica sea ice well below average.

## National Oceanic and Atmospheric Administration (NOAA)

- The National Oceanic and Atmospheric Administration (NOAA) is a **U.S. government agency that was formed in 1970 as a combination of several different organizations.**
- The **purpose of NOAA is to study and report on the ocean, atmosphere, and coastal regions of Earth.**
- It **forecasts weather, monitors oceanic and atmospheric conditions, conducts deep sea exploration, and manages fishing and protection of marine mammals and endangered species in the exclusive economic zone of the USA**



**Prime Minister unveils indigenous trainer aircraft HTT-40, designed & developed by HAL, during DefExpo 2022.**

### **HTT-40 Indigenous Trainer Aircraft**

- **HTT-40 is a basic training aircraft developed by Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF).**
- **The aircraft has state-of-the-art contemporary systems and has been designed with pilot-friendly features.**
- **With over 60 per cent in-house parts and collaboration of private industry, it is a shining example of the vision of 'Aatmanirbhar Bharat'.**

### **Features**

- **It is a testament to the cutting-edge technology designed to meet primary training requirements of the Indian defence services.**
- **Built around a meticulously-tested turbo-prop engine, the aircraft is equipped with the latest avionics, an air-conditioned cabin and ejection seats.**

- It will replace the ageing fleet of HAL HPT-32 Deepak trainers that are in service with the IAF.
- It boasts of **unique features** like running change-over of pilots, hot-refuelling and short-turnaround time.
- All the tests required for certification were completed in record six years from the first flight.
- The **HTT-40 has completed all systems tests**, all PSQR performances, hot weather, sea level and cross wind trials and user assisted technical trials.
- It **demonstrated rain water resistance**.
- It **takes-off from a short distance and has a high climb rate**.

### **Mission DefSpace**

- It is an **ambitious effort to develop innovative solutions** for the **three Services** (Indian airforce, Navy and Army) in the **space domain**
- The space programme **aims to develop innovative solutions for the Defence Forces** through industry & startups.
- **Will prepare India for future possibilities in space domain** and will also increase the country's preparation further.

### **Features**

- **75 challenges are being opened to get innovative solutions, based on the defence requirements in the space domain.**
- **Startups, innovators and the private sector will be invited to find solutions for the problems that will include both offensive and defensive capabilities.**

### **Development**

- There are **more than 60 developing countries with whom India is sharing its space science. “**
- The **South Asia satellite is an effective example** of this.
- **By next year, 10 Association of SouthEast Asian Nations (ASEAN) countries will also get real-time access to India’s satellite data.**
- Even developed countries like Europe and America are using our satellite data,



**The Embassy of Japan, New Delhi, has filed an application seeking Geographical Indication (GI) tag for nihonshu/Japanese sake.**

### Key Point

- This is the **first time** a product from Japan has filed for a tag at the **Geographical Indication Registry in Chennai**

### Nihonshu

- In Japan, Nihonshu is regarded as a **special and valuable beverage** made from fermenting rice.
- People **traditionally drink nihonshu on special occasions**, such as **festivals, weddings or funerals**, but it is also consumed on a **daily basis**.
- Thus, it is an **integral part of the lifestyle and culture in Japan**.
- The **sake market** (almost all are nihonshu) is the **second largest brewed liquor** (such as beer) **market in Japan**.

### Making

- For making nihonshu **three main raw materials** – **rice, koji-kin (a type of fungal spore) and water** – are required.
- The **production of nihonshu** follows an **alcoholic fermentation** method called **parallel multiple fermentation** and involves the

raw material treatment, koji making, starter culture-making, mash making, pressing, heat sterilization and bottling.

### Geographical Indication (GI) Tag

- It is a **sign used on products** that have a **specific geographical origin** and **possess qualities or a reputation** that are **due to that origin**.
- It is **primarily an agricultural, natural or a manufactured product** (handicrafts and industrial goods).
- This tag is **valid for a period of 10 years** following which it can be **renewed**.
- It is **governed and directed by the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)**.
- GI registration of a product **provides it legal protection** and **prevention against unauthorised use by others**.
- GI tag helps in promoting the exports of the product.

### India and GI

- The **Geographical Indications of Goods (Registration and Protection) Act, 1999 (GI Act)** is a **sui generis Act** for the **protection of GI in India**.
- The **first product to get a GI tag in India** was the **Darjeeling tea in 2004**.
- **India, as a member of the WTO, enacted the Act to comply with the Agreement on Trade-Related Aspects of Intellectual Property Rights**.

ONE HEALTH QUADRIpartite  
JOINT PLAN OF ACTION  
(2022-2026)

WORKING TOGETHER FOR  
THE HEALTH OF HUMANS, ANIMALS,  
PLANTS AND THE ENVIRONMENT

## One Health Joint Plan of Action(OHJPA) recently launched

### Key Points

- The OHJPA was **jointly launched** by the the **Food and Agriculture Organization (FAO)**, the **United Nations Environment Programme (UNEP)**, the **World Health Organization (WHO)**, and the **World Organisation for Animal Health (WOAH)**.
- In April 2022 a pilot project in the state of Uttarakhand was launched to implement the One Health Framework by One Health Support Unit.

### What is One Health Joint Plan of Action?

- The One Health Joint Plan of Action, **developed through a participatory process**, provided a **set of activities** that aim to **strengthen collaboration, communication, capacity building and coordination**.
- This is the **first-of-its-kind plan** that **seeks to implement One Health Approach at all levels**.
- These will be **equally applicable on across all sectors responsible for addressing health concerns**.



- The action plan **will be implemented from 2022 to 2026** to address health challenges at the international, regional, and national levels.

### Significance

- It will **enhance the health of humans, animals, plants, and the environment and promote sustainable development.**
- **Action Track 5** deals with **curbing the silent pandemic of AMR**, which is a **major global threat affecting the human, animal, plant, food, and environmental sectors.**
- The plan has **outlined joint action to preserve antimicrobial efficacy.**
- It also **focused on ensuring sustainable and equitable access to antimicrobials for responsible and prudent use in human, animal and plant health has been outlined for it.**
- It aims to **integrate systems and boost capacity** to collectively **prevent, predict, detect** and **respond to the global health crisis.**

### Six key areas were focused on in the plan are:

- ✓ *One Health capacity for health systems*
- ✓ *Emerging and re-emerging zoonotic epidemics*
- ✓ *Endemic zoonotic*
- ✓ *Neglected tropical and vector-borne diseases*
- ✓ *Antimicrobial resistance and the environment*
- ✓ *Food safety risks*

### One Health Concept

- ✓ One Health is an **integrated, unifying approach** that aims to **sustainably balance and optimise the health of humans, animals, plants and ecosystems.**
- ✓ Derives its blueprint from the **agreement between the tripartite-plus alliance** comprising the **Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE)**
- ✓ The concept of One Health **recognises the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and interdependent.**

### Features

- ✓ It is the **primary approach for addressing the complex health challenges facing our society**, such as **ecosystem degradation, food system failures, infectious diseases and antimicrobial resistance (AMR).**
- ✓ It will **increase the ability of the global community** to prevent, predict, detect and respond to health crises such as the COVID-19 pandemic.
- ✓ The approach **involves the mobilization of multiple sectors, disciplines, and communities at various levels** of society to **recognize the root causes of complex issues and create long-term and sustainable solutions.**
- ✓ It **integrates the capabilities of public healthcare system, veterinary health, and environmental sectors** at all levels.
- ✓ One Health is one of the **guiding principles of the new international agreement for pandemic prevention, preparedness and response**



The Union Minister of Petroleum and Natural Gas has recently inaugurated Asia's largest Compressed BioGas (CBG) plant in Lehragaga, in Punjab's Sangrur.

### Key Points of the Plant

- The plant in Sangrur is just the **beginning of India's master plan** for a **CBG-based rural economy**, the need of the hour, and Government is taking all steps to promote the ecosystem around it.
- The Plant has been **commissioned with an FDI investment** of Rs. 220 crores (approx.) by **Verbio AG**, one of Germany's leading Bio-energy companies.

### Capacity Enhancement

- Spread across an area of **20 acres** (approx.), Sangrur plant's present production is about **6 TPD CBG** with the **ability to process 300 Tons Per Day of paddy straw** at max. capacity to produce **33 TPD of CBG** using **8 digesters of 10,000 cubic meters**.

### Benefits of the Sangrur CBG plant

- A **significant step toward achieving a win-win outcome** for farmers and the environment

- The CBG plant **will consume 100,000 tonnes of paddy straw**, which will be **procured from 6 to 8 satellite locations** within a **10 km radius of the plant**.
- It **will produce 600-650 Tons of FOM** (fermented organic manure) each day. The **manure will be used for organic farming**.
- The plant **will provide direct employment to 390 people** and **indirect employment to 585 people**.
- This project **will increase the income of farmers** in the Sangrur district.
- It will **contribute in achievement of India's COP26 Climate Change targets of total projected carbon emissions by one billion tonnes from now to 2030 achieving the target of net zero emissions by 2070**.
- The plant will **also reduce stubble burning** of 40,000 – 45,000 acres of fields, translating into an annual reduction of 150,000 tons of CO2 emissions and **clean air with reduced air pollution**.
- It will **fulfill the objectives of the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme 2018** to establish an ecosystem for production of CBG from various waste/ biomass sources in India.
- It will **boost the efforts being made to encourage the indigenous manufacturing of CBG Plant equipment** such as **Cascades, Compressors & Dispensers**, and **ramp up 'Make in India' opportunities** across India's manufacturing sector.

**Sustainable Alternative Towards Affordable Transportation (SATAT) scheme**

- The initiative was launched in October 2018 by the Ministry of Petroleum & Natural Gas in association with Public Sector Undertaking (PSU) Oil Marketing Companies (OMC) viz. Indian Oil Corporation Ltd., Bharat Petroleum Corporation Ltd. and Hindustan Petroleum Corporation Ltd.
- The scheme envisages to target production of 15 MMT (million tons) of CBG by 2023, from 5000 Plants.
- The scheme intends to empower and liberate the rural economy by assisting farmers, boosting domestic energy production and self-sufficiency in India, reducing air pollution, and assisting India in taking the lead globally in the transition to clean energy.

### Biogas plant

- An artificial system to turn waste into sustainable energy and fertilizers, with positive effects on the environment.
- The plant consists of three major components, a reception area, a digester, and a gas holder.

### Compressed Bio-Gas (CBG)

- Compressed Bio-Gas (CBG) is produced naturally through the process of anaerobic decomposition of biomass sources like crop residue, cattle dung, sugarcane press mud, sewage treatment plant waste, etc.
- CBG has calorific value and other properties similar to CNG and hence can be utilized as green renewable automotive fuel.
- It has the potential to replace Compressed Natural Gas in automotive, industrial, and commercial uses in the future.



**The Genetic Engineering Appraisal Committee has approved seed production prior to commercial release of genetically modified (GM) mustard**

### Key Points

- Earlier, India approved the commercial cultivation of only one GM crop, Bt cotton, but GEAC has recommended GM Mustard for commercial use.
- The approval makes *GM mustard only the second approved transgenic crop in India after Bt cotton* and *country's first indigenously developed GM food crop that can be commercially cultivated by farmers.*

### What is GM or Hybrid Mustard?

- **Mustard** is one of **India's most significant winter crops** cultivated between mid-October and late November.
- It is a **self-pollinating crop** which is **especially difficult to hybridise naturally** as it **cross-pollinates itself**.
- **Dhara Mustard Hybrid- 11**( DMH- 11), was **developed by Deepak Pental of Delhi University, through transgenic technology, in 2002.**

## **Production**

- A hybrid crop is **produced by the cross-breeding of two genetically different varieties** that can be **even from the same species**.
- The **first-generation (F1) offspring produced with this technique usually have higher yields than existing varieties**.
- This **hybridisation is difficult in mustard as its flowers have both female (pistil) and male (stamen) reproductive organs**, which makes the plant self-pollinating. Thus **developing hybrids for mustard has its limits**.
- **DMH – 11 was created through transgenic technology, primarily involving the Bar, Barnase and Barstar gene systems.**

## **Benefits**

- The **decision of GEAC recognises the potential of biotechnology to address the issue of India's growing edible oil imports**
- DMH-11 is claimed to **have shown an average 28% yield increase over Varuna in contained field trials** carried out by the Indian Council of Agricultural Research (ICAR).
- DMH-11 seeds **could yield about 30% more than a traditional reference mustard variety**.
- **Other than import limits, the development of indigenous GM Mustard seeds signifies government-led scientific research in Agriculture.**

## **Genetic Engineering Appraisal Committee (GEAC)**

- **India's apex biotechnology regulatory body** responsible for the **appraisal of activities involving large-scale use of hazardous microorganisms and recombinants in research and industrial production from the environmental angle**
- A **statutory committee** functions **under** the Ministry of Environment, Forest and Climate Change (**MoEF&CC**).
- Responsible for the **appraisal of proposals** relating to the **release of genetically engineered (GE) organisms and products** into the **environment** including **experimental field trials**.
- GEAC is **chaired by the Special Secretary/Additional Secretary of MoEF&CC** and **co-chaired by a representative** from the **Department of Biotechnology (DBT)**.





A floating trash barrier (FTB), developed by AlphaMERS Ltd.'s and deployed in eight cities across India to trap trash in water bodies, has won the Cleaning and Restoring India's Water Bodies Challenge.

### Floating trash barrier

- Developed by a Bengaluru firm, is designed to trap trash in waterbodies
- The FTB uses the natural flow of water to bring the trash to the riverbank where it is deployed and from there the trash is manually or mechanically removed.
- The FTB is deployed in eight cities — Bengaluru, Chennai, Puducherry, Hyderabad, Mysuru, Thanjavur, Tuticorin and Coimbatore.
- The FTB is said to be successful in cleaning up the Cooum in Chennai and the Musi in Hyderabad.
- In Bengaluru, it has been deployed in some storm-water drains, and Nagawara and Dasarahalli lakes.

### Cleaning and Restoring India's Water Bodies Challenge

- The challenge was conducted by the Waste to Wealth Mission — Swachh Bharat Unnat Bharat Mission under the Office of the PSA (Office of the Principal Scientific Advisor)



**Arachnologists from the Centre for Animal Taxonomy and Ecology(CATE) have discovered six new species of spiders from across the country.**

### **Key Point**

Found from the **Garo hills in Meghalaya, the Thar desert of Rajasthan, Wayanad Wildlife Sanctuary, Kottappara hills near Kothamangalam, Thumboormuzhi butterfly garden near Athirappilly, and the University of Calicut campus.**

### **The new spider species discovered**

#### **Siamspinops garoensis**

- It was **discovered in the Garo hills in Meghalaya.**
- This **belongs to the family of flat spiders, Selenopidae.** This spider **lives in the crevices of rocks on hills.**
- The **yellowish brown spider measures about 10 mm in length.**
- There is a **black circle around its eyes and black patches on the abdomen.**

#### **Jumping spider**

- **Two new species of spiders coming under the family of jumping spiders (Salticidae) were discovered from the Thar desert of**

**Rajasthan and the Kurichiyad forest ranges of the Wayanad Wildlife Sanctuary.**

**Afraflacilla miajlarensis,**

- the **Thar species**, is characterised by **white fine hairs** on a black head and **black horizontal lines on the abdomen**.
- This **spider stays among dry leaf blades**.

**Afraflacilla kurichiadensis,**

- the Wayanad species, is characterised by **red patches around the eyes and white hairs on the abdomen**.
- The **bulged first pair of legs** are also a special feature of this species. This **spider lives in the moist deciduous forest of Kurichiyad**.

**Feather- legged spiders**

- The next spider **species lacks a venom gland and belongs to the family of feather- legged spiders (Uloboridae)**.
- This new species has been named as **Philoponella rostralis**, due to the **presence of a beak like structure on the male reproductive organ**.

**Spiny-legged spiders**

- **Two new species of spiders belonging to the family of spiny-legged spiders (Oxyopidae) have been discovered from the Thumboormuzhi butterfly garden, near the Athirappilly waterfalls, and on the Calicut University campus**



**India has successfully test-fired indigenously-developed new generation medium-range ballistic missile Agni Prime from the Odisha coast.**

This is the second test of the missile. The first test took place in June last.

### Agni Prime

- Agni-P is a **new generation advanced variant of Agni class of missiles.**
- It is the **sixth missile in the Agni series of ballistic missile.**
- It is a **two-staged canisterised missile** with a range capability between 1,000 and 2,000 km.
- Canisterisation lessens the time required for launch & improves storage and mobility.

### Features

- **Surface-to-surface ballistic missile**
- Weighs **50 per cent less than Agni 3** and **can be launched from rail and road** and **stored for a longer period** and **transported all across the country** as per operational requirements
- Will be **lighter and much sleeker than its predecessor 'Agni-1'**
- A **new generation advanced variant of the Agni class of missiles** with **improved parameters, including manoeuvring and accuracy.**

- With **multiple independently targetable re-entry vehicles**, the missile is **capable of delivering a number of warheads** at separate locations at a distance of 1,000 - 2,000 km.
- The **missile strengthens India's credible deterrence capabilities**.

### Agni Missile Series

- Agni missiles are **long range, nuclear weapons capable, surface to surface ballistic missiles**.
- The **first missile of the series, Agni-I** was **developed under the Integrated Guided Missile Development Program (IGMDP)** and **tested in 1989**.
- After its success, Agni missile program was separated from the IGMDP upon realizing its strategic importance.

### Variants of Agni missiles

- **Agni I**: Medium Range Ballistic Missile with a Range of 700-800 km.
- **Agni II**: Medium Range Ballistic Missile with a Range more than 2000 km.
- **Agni III**: Inter-Medium Range Ballistic Missile with Range of more than 2,500 Km
- **Agni IV**: Inter-Medium Range Ballistic Missile with Range is more than 3,500 km and can fire from a road mobile launcher.
- **Agni-V**: Currently the longest of Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km.
- **Agni- VI**: The longest of the Agni series, an Inter-Continental Ballistic Missile (ICBM) with a range of ICBM 11,000–12,000 km.



**The NGT has directed the state government of Odisha to revive Sukapaika River within 6 months.**

### **Sukapaika River**

- Sukapaika is **one of the several distributaries** of the **mighty Mahanadi river in Odisha**.
- It **branches away from the Mahanadi at Ayatpur village in Cuttack district** and **flows for about 40 kilometres (km) before rejoining its parent river at Tarapur in the same district**.
- In the process, it drains a large landmass comprising over 425 villages.
- It **covers three blocks** such as **Cuttack Sadar, Raghunathpur and Nichintakoili of Cuttack**.
- Sukapaika river is an **important system of the Mahanadi to control floodwater and maintain the flow in the river as well as the Bay of Bengal**.

### **Why is the river diminishing?**

- The **problem has its roots in 1952**, when the **state government blocked the starting point of the Sukapaika with an embankment to save the villages around it from floods**.

- Subsequently, in **1957**, two major projects — **Hirakud Dam** in **Sambalpur district** and **Naraj barrage at Cuttack** — were built **upstream on the Mahanadi**, ostensibly to **control floods** in it.
- However, the **embankment on the Sukapiaka was not removed**.
- This **left the distributary totally dependent on rainwater**
- This **led to the river dying a painful death** and the process was aggravated by agricultural encroachments that had sprung up on the riverbanks.

### Mahanadi River

- **Third largest of peninsular India** after Godavari and Krishna, and the **largest river of Odisha state**
- It rises from a place near **Sihawa**, in the **Dhamtari district of Chhattisgarh**.
- Drains states of **Chhattisgarh, Madhya Pradesh, Odisha, Jharkhand and Maharashtra**
- **Tributaries** are the **Seonath, the Hasdeo, the Mand and the Ib** joins Mahanadi from **left** whereas the **Ong, the Tel and the Jonk** joins it from **right**.