NEXT IAS

DAILY CURRENT AFFAIRS (DCA)

Time: 45 Min

Date: 20-02-2024

Table of Content

LA NINA IMPACTED AIR QUALITY IN INDIA

Context

- An unprecedented triple-dip La-Nina event, extended by climate change, has impacted the air quality in India.

Link between pollution and winter months in India

- During October to January, northern Indian cities experience very high concentrations of PM2.5.
- A variety of meteorological factors — **temperature, moisture, heaviness in air, wind speed and direction** — play a role in trapping pollutants in the lower levels of the atmosphere.
- These factors are also responsible for transporting pollutants from other regions, particularly those generated by agriculture waste burning in Punjab and Haryana, to Delhi and adjoining areas.
- On the other hand **Western and Southern parts** of the country have always had relatively lower levels of pollution, because of their proximity to oceans.

Rare 'triple dip' La Niña

- The winter of 2022-23 coincided with the last phase of an unusual triple-dip La Niña event, the first in the 21st century.
- The air quality worsened in peninsular Indian cities in the 2022-23 winter season but improved in the northern part of India.
- This phenomenon, influenced by climate change, **impacted the large-scale wind pattern**, playing a decisive role in preventing stagnation conditions in north Indian cities and thus improving air quality.

El Niño, La Niña & ENSO

El Niño

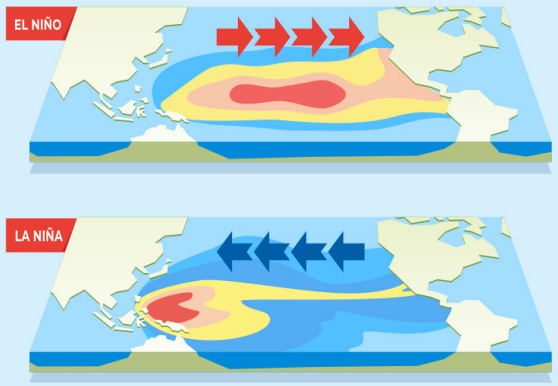
- El Niño is the **warming of seawater** in the central-east Equatorial Pacific that occurs every few years.
- During El Niño, surface temperatures in the **equatorial Pacific rise,** and trade winds — east-west winds that blow near the Equator — weaken.
- El Niño causes dry, **warm winters in the Northern U.S. and Canada** and increases the risk of flooding in the U.S. gulf coast and southeastern U.S. It also brings drought to Indonesia and Australia.
- **In India,** it causes **weak rainfall** and more heat.

La Niña

- La Niña is the opposite of El Niño. La Niña witnesses **cooler than average sea surface temperature (SST)** in the equatorial Pacific region.
- Trade winds are stronger than usual, pushing warmer water towards Asia.
- This leads to **drier conditions in the Southern U.S.,** and heavy rainfall in Canada. It has also been associated with heavy floods in Australia.
- **In India,** La Niña **intensifies rainfall** particularly in its northwest.

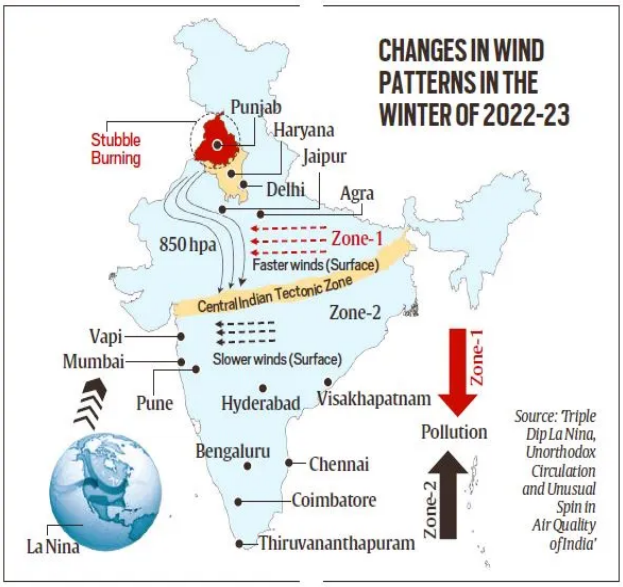
El Niño Southern Oscillation (ENSO)

- The combination of El Niño, La Niña, and the neutral state between the two opposite effects is called ENSO.
- Southern oscillations are large-scale changes in sea level pressure in the tropical Pacific region.



- **Wind direction**
  - A change in the normal wind direction led to the anomaly of winter 2022.
  - During this time, **wind usually blows in the northwesterly direction,** from Punjab towards Delhi and further into the Gangetic plains.
  - In the winter of 2022, however, the wind circulation was in the north-south direction.
  - The pollutants being carried from Punjab and Haryana bypassed Delhi and surrounding areas and flew over Rajasthan and Gujarat to southern regions.
  - In the case of Mumbai, usually wind currents alternate between blowing from the land to the sea every few days. When blowing from the land towards the sea, the winds carry pollutants out of the city.
  - In 2022, however, instead of changing direction every four to five days, the winds

persisted in one direction for more than a week or 10 days, leading to greater accumulation of pollutants in Mumbai.



Source: IE

REPORT ON LOCAL FINTECH PLAYERS

Context

- Recently, the **Parliamentary Standing Committee on Communications and Information Technology** raised concerns about the **dominance of fintech apps owned by foreign entities** in the Indian ecosystem and recommended that **local players be promoted.**

About Fintech Players

- It is supported by an enabling policy and digital infrastructure framework, making India one of the largest digital markets in the world.
- **Market Overview:** The Indian fintech market was valued at approximately INR 2.30 trillion in 2020 and is expected to reach **INR 8.35 trillion by 2026**, expanding at a **Compound Annual Growth Rate (CAGR)** of ~24.56% during the 2021 – 2026 period.
  - As of 2020, India had over 676 million smartphone users, over 1.2 billion telecom subscribers (wireless + wireline), and 825 million internet subscribers.

How are Indian Fintechs different from International Players?

- **High Adoption Rate: India's fintech sector** has seen a significant surge in recent years, with the country boasting the highest fintech adoption rate globally at 87%, **compared to the global average of 64%.**
- **Market Size and Growth:** The Indian fintech industry's market size was $50 billion in 2021 and is estimated to reach approximately $150 billion by 2025.
  - This rapid growth rate is much higher compared to many other countries.
- **Diverse Fintech Ecosystem:** India's fintech startups have been at the forefront of digital innovation, particularly in the areas of payments, lending, and wealth management.
  - This diversity in the fintech ecosystem is a distinguishing feature of the Indian market.
- **Global Real-Time Transactions:** India accounted for 46% of all real-time transactions worldwide in 2022, indicating the country's significant role in the global fintech landscape.
- **Untapped Market:** Despite the growth, India still remains an untapped market due to lower penetration of financial services.
  - According to a report, 14.6% of the Indian population remains unbanked compared with that of 6% in the US.

Key Players in India

- India hosts the **third-largest ecosystem for startups globally** (*after the United States and the United Kingdom*), with 59,593 startups recognized by DPIIT across 57 unique industries, of which 1,860 startups belong to the fintech sector.
  - India has over 17 fintech companies, which have gained 'Unicorn Status' with a valuation of over USD 1 billion, as of early 2022.
- Prominent fintech players in India include **PhonePe, Google Pay, and NPCI's BHIM UPI.**
  - **PhonePe** commands the leading market share in volume terms, followed by Google Pay, at 46.91% and 36.39% respectively.
  - On the other hand, **NPCI's BHIM UPI's** market share (in terms of volume) stood at a mere 0.22%.

Roles played by Fintech Players

- **Digital Payments:** Fintech companies have revolutionised the payments landscape in India.
  - They have facilitated the shift from cash to digital transactions, contributing to the growth of a cashless economy.
- **Digital Lending:** Fintech players have transformed the lending landscape by providing quick, hassle-free loans to individuals and businesses.
  - They use technology to assess creditworthiness, thereby enabling loans to sections of the population that were previously underserved by traditional banks.

- **Wealth Management:** Fintech companies have democratised access to investment products, allowing individuals to invest in mutual funds, stocks, and other financial instruments with ease.
- **Insurance (InsurTech):** Fintech players in the insurance sector leverage technology to simplify the process of buying insurance, making it more accessible and affordable.
- **Regulatory Compliance (RegTech):** Some fintech companies specialise in helping other businesses comply with regulatory requirements efficiently and cost-effectively.
- **Financial Inclusion:** Fintech companies play a significant role in promoting financial inclusion in India.
  - Government initiatives like the **Pradhan Mantri Jan Dhan Yojana (PMJDY)** have been leveraged by fintech startups to build technology products that cater to a large consumer base in India.
- **Customer Engagement:** Fintech players have a **'natural advantage'** when it comes to understanding the customer, various ecosystem participants, the digital public infrastructure, and broader market infrastructure.
- **Collaboration with Government:** Fintech players are encouraged to have more engagement with the government and its agencies to enhance trust.

Challenges and Concerns

- **Cybersecurity and Data Privacy:** With the increasing digitization of financial services, cybersecurity threats and data privacy concerns have become more prominent.
- **Financial Inclusion:** Despite significant strides, a large portion of India's population remains unbanked or underbanked.
  - Fintech companies face the challenge of extending their services to these sections of the population.
- **Trust Issues:** Some consumers still distrust online modes of payment, preferring cash transactions.
  - This can be a barrier to the adoption of fintech solutions.
- **Competition:** The Indian fintech market is highly competitive, with numerous players vying for a share of the market.
  - This can make it difficult for new entrants to establish themselves.
- **Technological Challenges:** Rapid technological advancements mean that fintech companies must continually innovate and update their offerings to stay relevant.
- **Non-Performing Assets (NPAs):** High NPAs and slow deleveraging and repair of corporate balance sheets are testing the resilience of the banking system and holding back growth.
- **Regulatory Challenges:** For instance, Paytm, once hailed as India's fintech champion, faced regulatory challenges that highlighted the precarious balance between ambition and compliance in the country's financial landscape.

Future Prospects of Fintech in India

- The fintech sector in India has huge potential, with segments like **WealthTech and InsurTech**, which did not see much traction in the past decade, now coming into their own.
- The digital lending marketplace has grown exponentially in India from a modest USD 9 billion evaluation in 2012 to a whopping USD 110 billion in 2019.
  - It is further projected to attain a market evaluation of a colossal USD 350 billion by 2023.

Conclusion

- India's fintech sector is a rapidly growing market with significant potential, driven by technological advancements, supportive government policies, and increasing digital literacy among the population.
- The rise of local fintech players is a testament to the sector's potential and the opportunities it presents for the future.

Source: TH

CAUVERY PACT: A CONTROVERSIAL JOURNEY

Context:

- The long-pending dispute between Tamil Nadu and Karnataka over the sharing of Cauvery waters was seen in the news.

Cauvery River

- **Origin:** The river originates at **Talakaveri** in the Brahmagiri range of hills in the **Western Ghats**, located in the Kodagu district of **Karnataka**. It flows eastward and **empties into the Bay of Bengal.**

  - It rises at an elevation of 1,341 metres.

- **Basin**: The Cauvery basin extends over the states of **Tamil Nadu, Karnataka, Kerala, and the Union Territory of Puducherry**, covering an area of 81,155 square kilometres.
  - This represents nearly 2.7% of the total geographical area of India.
  - It is a vital lifeline for the regions it flows through, supporting **agriculture, industry, and domestic needs**.
- **Tributaries**: The river has several tributaries, including the ***Harangi, Hemavati, Lakshmanathirtha, Kabini, Shimsha, Arkavathi, and Suvarnavathy.***

The dispute:

- The Cauvery water dispute primarily involves the Indian states of **Tamil Nadu and Karnataka**, with **Kerala and Puducherry also laying claims**.
- The dispute dates back to the 19th century and has its roots in **two agreements signed in 1892 and 1924** between the Madras Presidency and the princely State of Mysore.
  - **In 1892:** The dispute started **between the Madras Presidency and the Princely state of Mysore**. Madras disagrees with the Mysore administration's proposal to build irrigation systems, arguing that it would impede water flow into Tamil Nadu.
  - **In 1924:** The dispute came close to being resolved when Mysore and Madras reached an agreement under which Mysore was allowed to build a dam at Kannambadi village. It is to be **valid for 50 years** and reviewed thereafter. Based on this agreement, **Karnataka builds the Krishnaraja Sagar dam**.
- After 50 years, **the 1924 agreement was lapsed in 1974**, and allowed Tamil Nadu to expand its agricultural area and limited Karnataka's ability to develop farming activities along the Cauvery basin.
  - It **led to a dispute** when Karnataka began building reservoirs to make up for lost ground.

Key Problems

- Primarily, the dispute pertains to the allocation of water resources during periods of water scarcity, the distribution of water during regular years, and the establishment of reservoirs and dams along the river's course.
- Both states are vying for a greater portion of the river's water to cater to the needs of their expanding populations and agricultural activities.

Observation Supreme Court of India

About CWDT:

- The Union Government constituted it in 1990 to adjudicate the water dispute.
  - It passed an interim order in 1991 directing Karnataka to release 205 TMC of water to Tamil Nadu.
  - The order was upheld by the Supreme Court, which struck down an ordinance by Karnataka aimed at nullifying the interim awards.
- The CWDT gave its **final award in 2007**, holding the **1892 and 1924 agreements as valid**.
  - It allocated 419 TMC to Tamil Nadu, 270 TMC to Karnataka, 30 TMC to Kerala, and 7 TMC to Puducherry, with the remaining 14 TMC reserved for environmental protection.

- The Supreme Court, in 2018, declared the Cauvery River **a national resource** and **upheld the water-sharing arrangements** determined by the **Cauvery Water Disputes Tribunal (CWDT)**.
  - Additionally, the Central Government was directed to formalise the Cauvery Management Scheme.

Constitutional Provisions

- **Article 246** of the Constitution grants the Centre and States certain powers over water resources.
- **Article 262** of the Constitution deals with the adjudication of water disputes. The provisions in this regard are:
  - ***Article 262 (1)*** Parliament may, by law, provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.
  - ***Article 262 (2)*** Notwithstanding anything in this Constitution, Parliament may, by law, provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (1).

Statutory Provisions

- **The Inter-State River Water Disputes (ISRWD) Act, 1956**, provides the legal framework for the resolution of these disputes.
  - It empowers the Union Government to intervene in disputes surrounding inter-state rivers when negotiations between states fail.
  - A Water Disputes Tribunal is then constituted for the adjudication of the water dispute.

- **The Inter-State River Water Disputes (Amendment) Bill, 2019:** It was introduced to streamline the adjudication of inter-state river water disputes.
  - It proposes the establishment of a single, standalone tribunal with a permanent office space and infrastructure.
  - It aims **to replace the existing nine tribunals**, including those for the ***Cauvery, Mahadayi, Ravi, Beas, Vansadhara, and Krishna rivers.***
  - It proposes the establishment of a **Dispute Resolution Committee (DRC)** to amicably resolve inter-state water disputes within a maximum period of one year and six months.
  - Any dispute that cannot be settled by negotiations shall be referred to the Tribunal for adjudication.

The Way Forward

- It is a complex issue that requires a balanced approach, taking into account the needs and rights of all stakeholders, by proactive measures and initiatives to resolve these disputes.
- The resolution of inter-state water disputes is crucial for the sustainable management of water resources in India.

Source: TH

SATYENDRA NATH BOSE'S CONTRIBUTION TO PHYSICS

Context

- The year 2024 marks **100 years of Bose's discovery** of the **correct set of equations to use to work out the behaviour of collections of photons** (particles of light).

Satyendra Nath Bose

- **Satyendra Nath Bose (1894-1974)** was one of India's most eminent scientists.
- He was a renowned Indian physicist whose fundamental contribution to **quantum mechanics**, known as **Bose-Einstein statistics**, revolutionized our understanding of the **subatomic world.**

Breakthrough Contribution

- Inspired by Albert Einstein's work on light quanta, Bose sent Einstein a paper titled **"Planck's Law and the Hypothesis of Light Quanta."**
  - This paper, based on novel statistical principles, aimed to explain the **distribution of radiation energy.**
    - Planck's law, named after Max Planck, describes the pattern that **physics worked differently in the microscopic** and **all hot objects** — from a bowl of hot soup to the Sun — **emit radiation in a range of frequencies.**
- **Bose-Einstein statistics**: Recognizing the paper's groundbreaking potential, **Einstein translated it into German and published it** in a leading scientific journal.

Legacy

- Together with **Meghanand Saha** he published the **first English translation of Einstein's papers on general relativity.**
- **Bose-Einstein condensates:** Laid the foundation for Bose-Einstein condensates (BECs), a crucial concept in physics with diverse applications.
- **Applications of BECs:** Range from understanding superconductivity and superfluidity to developing ultra-precise atomic clocks and exploring quantum computing possibilities.
- **Quantum theory:** Bose's work not only contributed significantly to quantum theory but also paved the way for further advancements in various scientific fields.
- **Higgs boson:** Though not formally acknowledged, his contribution to the discovery of the Higgs boson, later awarded the Nobel Prize, highlights the significance of his pioneering work.
- **Awards:** His dedication to research and scientific integrity earned him numerous accolades, including the **Padma Vibhushan and the Fellowship of the Royal Society.**

Beyond Physics

- Bose's intellectual pursuits extended beyond physics. He actively **participated in promoting Bengali literature and scientific education** in India.
- He **translated scientific papers into Bengali** and contributed to the development of science textbooks in his **native language.**

Source: TH

NEWS IN SHORT

SECTION 41A OF THE CRPC

Context:

- Recently, the Bombay High Court termed the Section 41A of the Criminal Procedure Code (CrPC) as **'Abuse of Power'.**

About the *Section 41A* of the CrPC, 1973:

- It is a significant provision that **regulates the process of arrest in India**.
  - It was introduced to avoid routine arrests.
- It provides for the requirement of **a notice to be sent by the investigating agencies before making an arrest** in certain conditions prescribed by the Code.
- It empowers a police officer conducting a probe to issue notices to people connected to the case, directing them to appear before him.
  - If the person concerned complies with the notice, they shall not be arrested unless there are specific reasons, which have to be recorded in writing by the police officer.

The Guidelines on Arrests:

- The Supreme Court of India has laid down guidelines on arrests and bail orders to ensure strict compliance with the provisions of **Section 41 and 41A of the CrPC.**
  - **Section 41 of CrPC** provides the circumstances in which an arrest can be made by the police without a warrant.
- These guidelines are intended to ensure that the rights and liberties of individuals are protected during the arrest process.

Source: IE

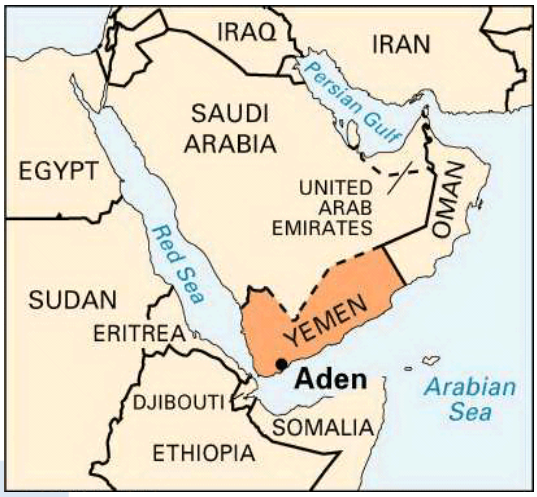
RED SEA MISSION OF EU

Context:

- Recently, the European Union (EU) has launched a naval mission to protect Red Sea shipping from Yemen's Houthi rebels.

About the Red Sea Mission:

- It comes in response to a series of attacks on commercial vessels, disrupting maritime traffic, hampering trade, and driving up prices.
- It is named as **Aspides (Greek for 'shield')** aims to safeguard the vital shipping lane of the Red Sea.
- It aims to provide maritime situational awareness, accompany vessels, and protect them against possible multi-domain attacks at sea.
- Unlike the U.S. and British forces, which have conducted retaliatory strikes on the Houthis, the EU mission will not partake in any military strikes and will only operate at sea.



Red Sea:

- It is a seawater inlet of the Indian Ocean, lying **between Africa and Asia**.
- Its connection to the ocean is in the south, through the **Bab-el-Mandeb strait and the Gulf of Aden.**
- To its north lie the **Sinai Peninsula**, the **Gulf of Aqaba, and the Gulf of Suez** (leading to the Suez Canal).
- The sea separates the coasts of **Egypt, Sudan, and Eritrea** to the west from those of **Saudi Arabia and Yemen** to the east.
- It is home to a kaleidoscopic ecosystem teeming with life.
  - It could become the **world's 'last coral refuge'** as global heating eradicates reefs elsewhere.

Importance:

- About 80% of the outbound shipments to Europe take place through the Red Sea region.
- It is vital for 30% of global container traffic and 12% of global trade.
- The disruption has led to an increase in freight costs, insurance premiums, and longer transit times, potentially making imported goods significantly more expensive.
  - It could significantly impact **India's exports to Europe.**

Source: TH

RHODAMINE-B

Context

- The Tamil Nadu government banned the sale and production of cotton candy in the state due to the presence of Rhodamine-B in it.

What is Rhodamine-B ?

- Rhodamine-B or RhB is a chemical commonly used for dyeing in the textile, paper, leather, and paints industry as a coloring agent that helps in attaining the red and pink spectrum.
- In powdered form the chemical is green in color and upon being added to water, it turns pink.
- It is widely used as a food additive in the manufacturing, packaging, import, and sale of various food items.

Why is it harmful?

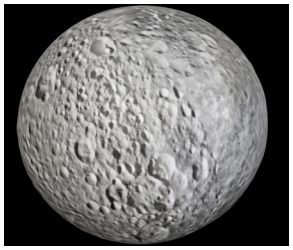
- According to studies, even if consumed in small quantities, the chemical is highly toxic and carcinogenic.
- If consumed regularly, Rhodamine-B can cause severe **damage to the cerebellum tissue** in the brain and to the brainstem that connect the brain to the spinal cord.
- This damage can lead to **functional abnormalities** and can **hinder human motor functioning.**
- As per the **Food Safety Standards Act, 2006,** preparation, packaging, importing, selling and serving food items with Rhodamine-B in wedding ceremonies and other public events is a punishable offense.

Source: IT

SATURN'S MOON MIMAS

In News

- Astronomers believe Mimas may have a liquid ocean around 20-30 km under its heavily cratered ice shell.



About Mimas

- Mimas was discovered in 1789 by **English astronomer William Herschel**.
- It is less than 123 miles (198 kilometers) in mean radius.
- The crater-covered **Mimas is the smallest and innermost of Saturn's major moons.**
- Its low density suggests that it consists almost **entirely of water ice,** which is the only substance ever detected on Mimas.
- It takes only 22 hours and 36 minutes to complete an orbit.
- Its most distinguishing feature is a giant impact crater – named **Herschel**
- Mimas appears to be frozen solid is puzzling because **Mimas is closer to Saturn.**

Source:TH

GOVT RAISES AUTHORISED CAPITAL OF FCI

Context

- The government has **increased the authorised capital** of state-run **Food Corporation of India (FCI)** from 10,000 crore to 21,000 crore **to enhance the operational capabilities** and fulfill its mandate effectively.

Significance

- As FCI resorts to **cash credit, short-term loan,** etc, to match the gap in the fund requirement, the increase in the authorised capital **will reduce the interest burden, decrease the economic cost** and ultimately **affect the government subsidy positively**.
- With this infusion of capital, the FCI should also embark upon **modernizing its storage facilities, improving transportation networks, and adopting advanced technologies.**
- These measures are essential not only for **reducing post-harvest losses but also for ensuring efficient distribution** of food grains to consumers.

Food Corporation of India (FCI)

- **Origin**: Setup under the **Food Corporations Act 1964**.
- **Parent body:** Ministry of Consumer Affairs, Food and Public Distribution.
- **Primary Objective:** To ensure food security for the nation by effectively managing the procurement, storage, and distribution of essential commodities, thereby providing a reliable and sufficient food supply to meet the needs of the population.
- **Mandate**:To fulfill following objectives of the **Food Policy**:
  - Effective price support operations for safeguarding the interests of the farmers,
  - Distribution of foodgrains throughout the country for public distribution system and
  - Maintaining satisfactory level of operational and buffer stocks of foodgrains to ensure national food security.

- **Role:** Since its inception, FCI has played a significant role in India's success in transforming the **crisis management-oriented food security into a stable security system.**

Source: TH

NEW CORPS FOR OPERATIONS ALONG LAC

In News

- The Army is converting its **Headquarters Uttar Bharat (HQ UB)** area into a full-fledged operational corps.

About Headquarters Uttar Bharat (HQ UB) area

- It is based in Bareilly and is currently a static formation looking after **peacetime locations** and **training** establishments of **Uttarakhand** and western **Uttar Pradesh,** in addition to the **LAC running along Himachal Pradesh** and **Uttarakhand**
- t is also referred to as the central theatre.

Do you know ?

- A corps **comprises** elements of all arms and services with adequate reserves to carry out operations in its area of responsibility.
- It is structured to hold **three divisions**, but can hold more or less as per existing operational requirements.
  - Each division comprises 15,000 to 18,000 troops.

Latest Developments

- Earlier, th**e UB area had only one brigad**e and a few scouts battalions under it to patrol key border areas.
- Considering **frequent face-offs with Chinese troops** at certain disputed points along the LAC and an enhanced focus on dominating the border, the **formation was gradually upgraded** and its combat capability increased by putting three independent brigades and an infantry division based in Uttarakhand under it.
- The formation is currently referred to as Combatised UB Area.
  - A Combatised area HQ has fighting elements, a traditional corps has additional artillery brigades, engineering brigades and other logistics components.
- The newly **reconstituted** corps will have all the **troops and equipmen**t from other arms and services such as artillery, engineers and aviation, among others, under its direct command to successfully conduct operations in the central theatre.

Objectives and Need

- The **increased troop density** in the area and additional emerging operational requirements have necessitated a change of focus towards operational tasks.
- **Changing the static formation to an operational corps** would change the focus of the organisation, which will now be on carrying out various operational tasks even as sub areas and training establishments continue to focus on their traditional peacetime roles.
  - So far, these units did not come under UB Area in its role as a peacetime formation.
- This move will shift its focus towards operations along the **LAC** from its current responsibility of peacetime duties,
- Raising this corps will help **bolster development of border infrastructure** and combat logistics facilities and the corps HQ will be the centralised response agency for all security threats in the region.

Source:IE

'ODYSSEUS' MOON LANDER

Context

- A **SpaceX Falcon 9 rocket** recently lifted off from the **Kennedy Space Center in Florida, USA,** carrying the **private "Odysseus" moon lander**.

About

- If Odysseus completes its journey and soft lands on the Moon, **it will make it the first privately-led mission to do so.**
- **Israel's Beresheet** attempted in 2019, **Japan's Hakuto** in 2023 and the **American Peregrine** in 2024.
  - **All of them failed to land on the Moon,** with Astrobiotic's Peregrine suffered a propellant leak hours after launch and eventually burned up in Earth's atmosphere.
- **Developed by:** Intuitive Machines, a private entity.

Significance & Potential Impact

- If successful, this mission would mark a **significant milestone in lunar exploration, opening doors for further private ventures** and diversifying space partnerships.
- Data collected would be **valuable for NASA's Artemis program,** aiming to land astronauts on the Moon by 2025.
- **Will show technological advancements** in robotic exploration and landing systems and **explore resources and potential future Moon bases.**

Source: IE