

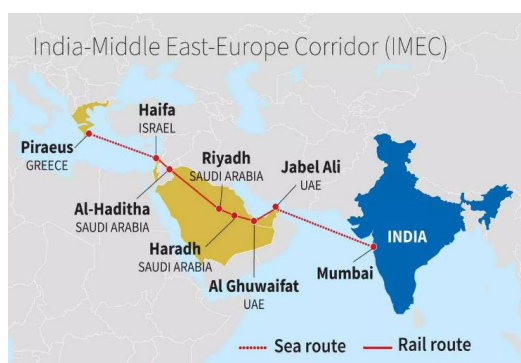
# CSB IAS ACADEMY

## THE ROAD MAP TO MUSSORRIE...

PRELIMS EDGE – 2025 – 13/11/2024

### India-Middle East-Europe Economic Corridor (IMEC)

**Context:** The conflicts in the West Asia is slowing down the progress on IMEC



- IMEC is part of the broader Partnership for Global Infrastructure and Investment (PGII), which focuses on infrastructure development in economically developing regions.
- The MoU for IMEC was formally endorsed on September 10, 2023, during the 2023 G20 New Delhi summit.
- **Signatories to this agreement:** India, United States, United Arab Emirates, Saudi Arabia, France, Germany, Italy, and the European Union.
- **Aim:** To integrate Asia, Europe, and the Middle East, enhancing economic cooperation across these regions.

#### Objectives:

- Improve transportation efficiency, lower costs, and promote economic cohesion among participating nations.
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- Generate employment opportunities and reduce Greenhouse Gas (GHG) emissions.
- Facilitate trade and connectivity, thereby reshaping regional integration among Asia, Europe, and the Middle East

#### IMEC comprises two primary corridors:

- East Corridor: Linking India to the Arabian Gulf.
- Northern Corridor: Connecting the Gulf region to Europe.

#### Key ports integral to the project's success include:

- India: Mundra, Kandla, and Jawaharlal Nehru Port Trust (Mumbai).
- Middle East: Fujairah (UAE), Jebel Ali (Dubai, UAE), Abu Dhabi (UAE), Dammam (Saudi Arabia), and Ras Al Khair (Saudi Arabia).
- Israel: Haifa port.
- Europe: Piraeus (Greece), Messina (Italy), and Marseille (France).

Additionally, it encompasses various infrastructure components such as railway networks, ship-to-rail connections, road transport routes, electricity cables, hydrogen pipelines, and high-speed data cables.

*Source: A mixed report card for the IMEC (The Hindu)*

## Terms in News

### Nirbhay Cruise Missile



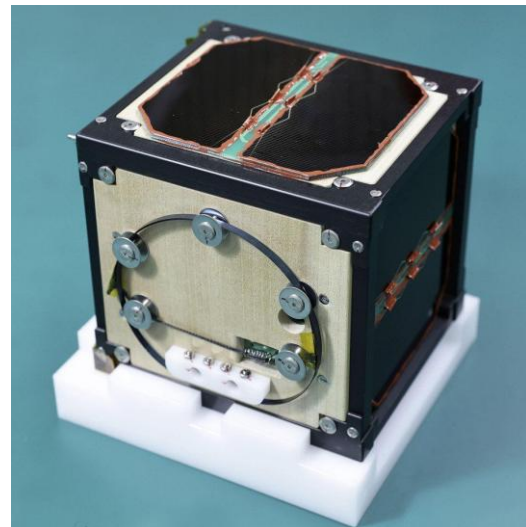
- It is a **long-range sub-sonic cruise missile**.
- It is **India's first indigenously-produced cruise missile**.
- The missile was developed by the Bengaluru-based Aeronautical Development Establishment, a lab under India's Defense Research and Development Organization (**DRDO**).
- It is capable of deep penetration into adversary territory to strike high-value targets with precision.

#### Features:

- The Nirbhay measures 6.0 m in length, 0.5 m in body diameter, and weighs 1,500-1,600 kg at launch.
- It can strike land targets at a distance of up to 1,000 kilometers.
- It uses a **solid propellant booster motor** that is jettisoned shortly after launch, switching over to a turbojet engine.
- It is capable of loitering and cruising at Mach 0.7 (sub-sonic) at altitudes as low as 100 meters.
- It can be armed with a 200-300 kilogram warhead. It can carry both conventional and nuclear warheads.
- It can be launched from multiple platforms.

- It is guided by INS/GPS with an active-radar terminal seeker.

### LignoSat



- Recently, **LignoSat is the world's first wood-panelled satellite launched into space**.
- This satellite marks a unique step toward renewable materials in space exploration.
- It has been developed by Kyoto University and Sumitomo Forestry. It will orbit the Earth for six months, beginning one month after arrival at the ISS.
- **Design & Structure:** The satellite is a small, cube-shaped device, measuring just 10 centimeters on each side and weighing 900 grams.
- It features panels made from magnolia wood, crafted using traditional Japanese woodworking techniques without screws or glue.
- **Objectives:** LignoSat will monitor wood's endurance in space, where temperatures range from -100 to 100 degrees Celsius every 45 minutes. Researchers are examining wood's resistance to space radiation and its

potential to shield delicate semiconductors.

- **Goal:** The goal is to explore sustainable building options, potentially for future habitats on the moon and Mars.
- It is also with the goal of testing timber as a sustainable alternative to metals in spacecraft.
- **Broader Implications and Goals**
  - Reducing Metal Use in Space: Aluminium and other metals commonly used in satellites contribute to pollution upon re-entry. Wood, as a renewable material, could mitigate these environmental impacts.
  - Future Possibilities: Kyoto University researchers aim to establish timber-based technologies to construct habitats and plant trees on the moon or Mars in the next 50 years.

#### Advantages of Wooden Satellites

- **Lower Environmental Impact:** As a renewable material, wood could offer a greener solution for satellite design, reducing the space debris pollution problem.
- **Potential Applications:** LignoSat's success could encourage further exploration into wood and other sustainable materials for satellites, particularly as the number of active satellites continues to grow.

#### Antariksha Abhyas – 2024



- The Defence Space Agency of India, under the Headquarters Integrated Defence Staff has launched “Antariksha Abhyas – 2024.”
- It is **India's first space-focused military exercise**.
- It is dedicated to assessing and addressing the growing threats to space-based assets and services.
- This three-day event, conducted in New Delhi from November 11 to November 13, 2024.
- **Aim:** The exercise aims to strengthen India's defense capabilities in space and secure national strategic objectives.
- **Purpose:** It will help the defense forces understand the dependency on space-based services and assets in military operations.
- **Focus:** Identifying potential vulnerabilities in space assets, especially in situations where space-based services may be denied or disrupted
- **Collaborating Organizations:** The Indian Space Research Organisation (ISRO) and the Defence Research & Development Organisation (DRDO) will play key roles in contributing their expertise and resources.

#### Key Outcomes Expected:

- Enhance coordination among defense, intelligence, and space research entities.
- Improve operational preparedness against potential threats to India's space assets.
- Lay the groundwork for future innovation in space defense technologies and strategic resilience in space operations.

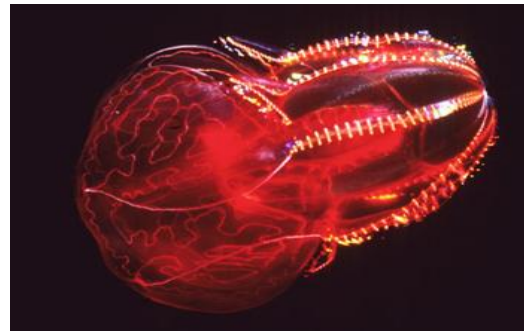
## Species in news

### Dicliptera polymorpha



- Recently, a new plant species *Dicliptera polymorpha* was discovered in the grasslands of Talegaon-Dabhade in the Northern Western Ghats, India.
- *Dicliptera polymorpha* is **highly fire-resilient**, showing a unique pyrophytic habit.
- Unlike other species, it blooms twice a year. The first bloom follows the monsoon, while the second bloom is triggered by grassland fires in summer.
- The species features a spicate (spike-like) inflorescence, unique among Indian *Dicliptera* species, with similar structures observed only in African relatives.
- It thrives in open grasslands prone to extreme weather, including summer droughts and human-induced fires.
- It develops dwarf flowering shoots from woody rootstocks during fire-triggered blooming, an adaptation to its challenging habitat.
- *Dicliptera polymorpha*'s limited habitat and fire-dependent lifecycle call for balanced fire management practices.

### Comb Jellies



- They are **transparent, gelatinous invertebrates that drift through the waters of our global ocean.**
- They are one of the oldest multicellular phyla in the animal kingdom, probably existing already more than 500 million years.
- There are between 100 and 150 known species of comb jellies, the best known of which are found close to shore.

#### Description:

- They are colorful, simple invertebrates that are part of the family Ctenophora.
- Each species varies in length, but the average size of a comb jelly is about four inches long.
- Comb jellies get their name from their eight rows of plates made of fused cilia (little hairs) that they use to move through the water, which look like combs.
- They are the largest animals known to use cilia for locomotion.
- They have two large, trailing tentacles that branch out to create the appearance of a net-like structure of many tentacles.
- These organs serve as sticky fishing lines, which they use to trap and move prey to their bodies.
- These animals have two major cell layers, the external epidermis and

internal gastrodermis; in between these cell layers is the mesoderm that is what gives the animals their gelatinous appearance.

- Many species are **bioluminescent**, meaning they can use proteins in their bodies to create an ethereal blue or green glow in response to stimuli like touch.
- Comb jellies are **carnivorous** and opportunistic, feeding on whatever passes them by.
- Unlike their close relative, the jellyfish, comb jellies do not have stinging tentacles and are harmless to humans.

- B. Wooden Panelled Satellite
- C. Carbon Fiber based Satellite
- D. Heat Resistant Satellite

**Q3 : Dicliptera polymorpha is a new plant species that was discovered from the Western Ghats. It has a unique feature that amused the botanists and scientists alike. Select the correct option regarding Dicliptera polymorpha that puts it on the headlines.**

- A. Fire Resilience
- B. Flood Resilience
- C. Frost Resilience
- D. Cyclone Resilience

## Practice Questions

**Q1 : Consider the following statements regarding Nirbhay Missiles**

1. It is a long-range sub-sonic ballistic missile
2. It is India's first indigenously-produced ballistic missile
3. The missile was developed by the Bengaluru-based Aeronautical Development Establishment, a lab under India's Defence Research and Development Organization (DRDO).

**How many of the above statements are correct?**

- A. Only One
- B. Only Two
- C. All of the Above
- D. None of the Above

**Q2: Select the correct option that describes the term Lignosat that has been in the news recently.**

- A. Bio Degradable Satellite

**Q4 : Consider the following statements regarding the India Middle East Europe Economic Corridor (IMEC)**

1. IMEC is the grand vision of faster economic connectivity between Europe and Asia through Middle East.
2. IMEC is part of the broader Partnership for Global Infrastructure and Investment (PGII), which focuses on infrastructure development in economically developing regions.
3. The MoU for IMEC was formally endorsed during the 2023 G20 New Delhi summit.

**How many of the above statements are correct?**

- A. Only One
- B. Only Two
- C. All of the Above
- D. None of the Above

**Q5 : Consider the following statements regarding Comb Jellies**

1. They are transparent, gelatinous invertebrates that drift through the waters of our global ocean.
2. Comb jellies are carnivorous and opportunistic, feeding on whatever passes them by.

**How many of the above statements are correct?**

- A. Only Statement 1
- B. Only Statement 2
- C. Both the Statements
- D. None of the above

**Answers**

1. A
2. B
3. A
4. C
5. C