

## EASTERN MARITIME CORRIDOR (EMC)

**Context:** The Red Sea crisis has shifted attention to the Eastern Maritime Corridor (EMC) - the proposed trade route for coking coal, crude oil, LNG, fertilizers and containers.



### About Eastern Maritime Corridor (EMC)

- It is a proposed sea route between the Indian port of **Chennai** and the Russian port of **Vladivostok**.
- The corridor is estimated to bring down transportation time between Indian and Russian ports in the Far East Region by up to **16 days**.
- Once complete, it will take 24 days, down from presently over 40 days, to transport goods from India to Far East Russia.
- The present trade route between Mumbai and St. Petersburg covers a distance of 8,675 nautical miles.
- The EMC will cover a distance of about 5,600 nautical miles, which is

significantly shorter than the current route via the Suez Canal.

- For India, it will provide a shorter and more efficient route to access the markets of the Far East, such as China and Japan.

### About Vladivostok

- It is a major city in Russia, located in the **Far East of the country**.
- It is located on the Golden Horn Bay, north of North Korea, and a short distance from Russia's border with China.
- It is the largest port on Russia's Pacific coast, and home to the Pacific Fleet of the Russian Navy.
- It is the eastern railhead of the legendary Trans-Siberian Railway, which connects the Far East of Russia to the capital Moscow, and further west to the countries of Europe.
- At Vladivostok's massive port, shipping and commercial fishing are the main commercial activities.

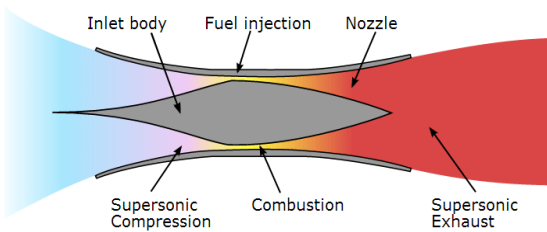
*Source: Chennai-Vladivostok maritime corridor is operational: Sonowal (The Hindu)*

## LONG-RANGE HYPERSONIC MISSILE

**Context:** India successfully tested its first long-range hypersonic missile, marking a significant milestone in defense technology.

### About

- It builds upon the DRDO's Hypersonic Technology Demonstrator Vehicle (HSTDV) programme which successfully tested a Mach 6 scramjet in 2019 & 2020.
- This test showcased the **scramjet engine technology**. In a scramjet engine, air enters at supersonic speeds and exits at hypersonic speeds.
- Developed by: **Defence Research and Development Organisation (DRDO)**



The principle of operation of a scramjet engine

**Features**

- **Range:** It has a range of over 1500 kms
- **Speed:** Mach 6, Six times the speed of sound.
- **Mid-Flight Maneuverability:** Merges the speed of a ballistic missile with the agility like Mid-Flight movements of a cruise missile to bypass defenses.
- **Advanced Tracking:** Utilizes advanced multi-domain monitoring systems for precise targeting.
- **Multi-Payload Capability:** Capable of carrying both conventional and nuclear warheads.

**About Hypersonics**

- Hypersonics are defined as being able to travel at velocities of at least

five times the speed of sound — Mach 5, or more than 6,100 kilometres (3,800 miles) per hour.

- They can also manoeuvre in mid-flight, making them much harder to track and intercept than traditional projectiles.
- By cutting flight times, they also reduce the opportunity to respond.
- Depending on the design, they can be capable of carrying nuclear warheads or conventional only, and have the potential to alter the strategic balance.

Source: DRDO carries out successful flight-trial of India's first long-range hypersonic missile off the Odisha coast (PIB)

**PLACES IN NEWS**



- Azerbaijan is a country in Asia that is bordered by Russia, Georgia, Armenia, and Iran.
- The east of the country is bordered by the **Caspian Sea**.
- Much of the north and west is covered by the **Caucasus Mountains**.
- Capital city: **Baku**.

- Azerbaijan is abundant in oil and natural gas.
- **Yanar Dag**, a famous site in Azerbaijan, has a natural eternal fire fueled by seeping natural gases, burning for over 65 years along the Caspian Sea.
- This unique phenomenon aligns with Azerbaijan's nickname, "**The Land of Fire.**"

### Nagorno-Karabakh Conflict

- Nagorno-Karabakh, known as Artsakh by Armenians, is a landlocked mountainous area in the Caucasus region (the transcontinental region between the Black Sea and the Caspian Sea).
- **It is internationally recognized as part of Azerbaijan but its inhabitants are predominantly ethnic Armenians.**
- They have their own government which has enjoyed close links to Armenia's but has not been officially recognised by Armenia or any other country.
- The conflict dates back to the late 1980s when the region declared its independence from Azerbaijan as the Soviet Union collapsed.

### Dead Sea



- Researchers have discovered meter-high chimneys on the floor of the Dead Sea formed by the spontaneous crystallization of minerals from groundwater with an extremely high salt content flowing up out of the lake floor.
- The Dead Sea, also known as the Salt Sea, is a saline lake in southwestern Asia located between Jordan and Israel.
- Its eastern shore is in **Jordan**, and the western shore is in Israel.
- However, the western shore's southern half belongs to Israel, while the shore's northern half is in the **West Bank**, an area claimed by both **Israel and Palestine.**
- It lies to the east of the Mediterranean Sea and south of the Sea of Galilee.
- It is located at an elevation of 430.5 meters below sea level, making it the **Earth's lowest land-based feature.**
- It covers approximately 605 sq.km. It is 50 kilometres long and 15 kilometres wide at its widest point.
- **Salinity:** The Dead Sea is one of the Earth's saltiest water bodies, almost ten times saltier than ordinary seawaters. It has a salinity of 34.2%.

- It is the **fourth saltiest body of water** in the world, ranking behind Antarctica's Don Juan Pond and Lake Vanda, and Djibouti's Lake Assal.
- The Dead Sea has one main inlet (the **Jordan River**) but does not have an outlet and so loses its water mainly through evaporation.
- The high saline level and the harsh climate make the lake **devoid of life, except for algae and other microorganisms**.
- It has a density of 1.240 kg/L, which makes swimming in its waters similar to floating.

## TERMS IN NEWS

### High-Performance Buildings

- In response to the pressures of climate mitigation as well as adaptation, High-Performance Buildings (HPBs) are emerging as essential solutions in the construction sector.
- The term "high-performance building" means a building that integrates and optimizes all major high-performance building attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity.
- The term was first used in the Whole Building Design Guide (WBDG) to outline the concept of a highly-efficient and sustainable type of building.
- HPBs are designed to address both urban and climate challenges by reducing greenhouse gas emissions, minimizing energy and water consumption, and cutting operational costs.

- They integrate climate-adaptive designs that enhance occupant well-being, making them attractive to businesses and residents.

## SCHEMES IN NEWS

### PAIR Initiative

- The Centre recently launched an initiative called Partnerships for Accelerated Innovation and Research (PAIR).
- It is an initiative of the **Anusandhan National Research Foundation (ANRF)**, set up under the ANRF Act 2023, to promote a research culture across the country.
- **Nodal Ministry/Department:** Department of Science and Technology (DST)
- **Objective:** To boost research in universities with potential but limited research experience. It is done by pairing them with top-tier institutions for mentorship and offering significant funding.
- **Criteria** : Hub institution– In the first phase, the Hub institutions will include the top 25 NIRF-ranked institutions and Institutions of National Importance ranked 26-50 in NIRF.
- Spoke institutions: It will consist of Central and State Public Universities, along with selected NITs and IIITs.
- **Funding**
  - Maximum funding for each network is ₹100 crore.
  - The budget is split between hub and spoke institutions in a 30:70 ratio.
  - If a private institution is the hub, it must allocate 25% of its

budget to the spoke institutions.

## SPECIES IN NEWS

### King Cobra



- In ground-breaking research, well-known wildlife biologist from Agumbe has proved that king cobra (Ophiophagus hannah) the longest venomous snake in the world, has four different species.
  - It is the **world's largest venomous snake**.
  - The main feature that distinguishes the king cobra from other cobras is the possession of 11 large scales on the crown of its head.
  - It preys almost exclusively on other snakes, prowling in forests, fields, and villages in the daytime as well as at night.
  - It was in 1836 that a broad spectrum of king cobra species was named as Ophiophagus Hannah by Danish naturalist, Theodore Edward Cantor.
  - The amount of venom that they can deliver in a single bite is enough to kill 10 people or even an elephant.
  - The neurotoxin venom of king cobra affects the respiratory centres, causing respiratory arrest and cardiac failure.
- The study identified four species of king cobra:
    - **Ophiophagus Kaalinga:** Found in the Western Ghats of southwestern India, this species has fewer than 40 bands on its body.
    - **Ophiophagus Hannah:** Inhabiting northern and eastern India, the Andaman Islands, eastern Pakistan, Indo-Burma, Indo-China, and Thailand, this species displays 50 to 70 bands.
    - **Ophiophagus Bungarus:** Found in the Malay Peninsula, Greater Sunda Islands, and parts of southern Philippines, it features more than 70 bands.
    - **Ophiophagus Salvatana:** Native to Luzon in the northern Philippines, this species lacks bands altogether.
  - **Conservation status**
    - IUCN: Vulnerable
    - CITES: Appendix II
  - **Threats:** Their survival is threatened by habitat destruction and exploitation for their skin, food, medicine, and the pet trade

## PRACTICE QUESTIONS

**Q1: The Red Sea crisis has shifted India's attention to the Eastern Maritime Corridor (EMC). The proposed trade route for coking coal, crude oil, LNG, fertilizers and containers is linked between which of the following cities?**

- A. Kolkata and Yokohama
- B. Vishakhapatnam and Osaka
- C. Chennai and Vladivostok

D. Trivandrum and Amur

**Q2: Consider the following statements regarding Hypersonic Missiles**

1. They are able to travel at velocities of at least five times the speed of sound — Mach 5.
2. They can also maneuver in mid-flight, making them much harder to track and intercept than traditional projectiles.
3. India recently successfully tested its first long-range hypersonic missile

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

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

**Q3 : Which of the following countries do not share borders with Azerbaijan**

- A. Russia
- B. Armenia
- C. Iran
- D. Iraq

**Q4 : Consider the following statements regarding King Cobra**

1. It is the world's largest venomous snake
2. There are more than ten subspecies of King Cobras in the world
3. They are considered as critically endangered in the IUCN Red List.

**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 : Located in the south western Asia, It is also known as the Salt Sea. It is one of the Earth's saltiest water bodies, almost ten times saltier than ordinary seawaters. It is located at an elevation of 430.5 meters below sea level, making it the Earth's lowest land-based feature.**

Identify the location based on the description given above

- A. Red Sea
- B. Dead Sea
- C. Caspian Sea
- D. Black Sea

**Answers**

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