

## Prelim Bits 23-04-2024 | UPSC Daily Current Affairs

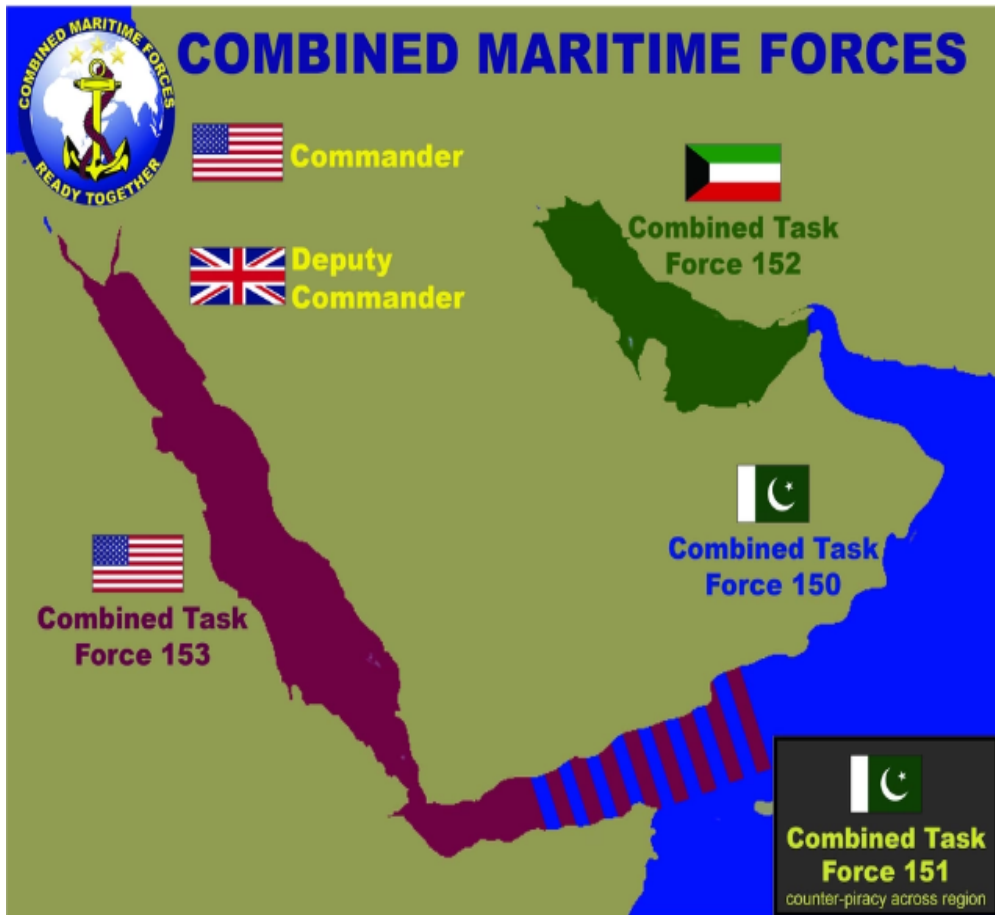
### Combined Maritime Forces (CMF)

Indian Navy's elite MARCOs commandos deployed on INS Talwar, seized the narcotics from a 'dhow' as part of an operation named 'Crimson Barracuda'.

- **CMF** - It is a multinational maritime partnership, which exists to uphold the Rules-Based International Order (RBIO).

Combined Maritime Forces (CMF)	
Established in	2001
Headquarters	Bahrain
Partnership	43 member and partner nations
India	It is member nation

- It is the ***world's largest international naval partnership***.
- **Aim** - To uphold the international rules-based order by promoting *security and stability across* 3.2 million square miles of water encompassing some of the world's most important *shipping lanes*.
- **5 Combined Task Force (CTF)** - They are led by partner nations on a rotating basis.
  - **CTF 150** - Maritime Security Operations outside the Arabian Gulf (Gulf of Oman & Indian Ocean)
  - **CTF 151** - Counter-Piracy
  - **CTF 152** - Maritime Security Operations inside Arabian Gulf
  - **CTF 153** - Red Sea Maritime Security ( Red Sea & Gulf of Aden)
  - **CTF 154** - Maritime Security Training



### **Focussed Operation Crimson Barracuda**

*It was the 1<sup>st</sup> time the Indian Navy conducted a drug interdiction as part of the Combined Maritime Forces (CMF).*

- **Focus** - To counter terrorist and criminal organizations' use of the high seas to conduct smuggling operations in the Western Indian Ocean region.
- **Location** - **Western Arabian Sea**
- **Operation by** - **INS Talwar** which was operating in support of the Canadian-led Combined Task Force (CTF) 150.
- **Operation** - Seized 940 kg of contraband narcotics from dhow
  - It includes **methamphetamines, hash and heroin**

***Dhow** is the generic name of a number of traditional sailing vessels with one or more masts with settee or sometimes lateen sails, used in the Red Sea and Indian Ocean region.*

- **Significance** - This seizure is the 4<sup>th</sup> of this Focused Operation.

### **References**

1. [ETV Bharat| Operation Crimson Barracuda](#)
2. [CMF| Combined Maritime Forces](#)

## BrahMos missile

Recently, Indian BrahMos missiles delivered to the Philippines as per contract with the Philippines signed in 2022 for supply of Shore Based Anti-Ship Missile System.

- **Origin** - BrahMos missile was derived from the Russia's P-800 Oniks (Yakhont) missile, whose name 'Brahmos' is after the rivers Brahmaputra (India) and Moskva (Russia).
- **BrahMos Aerospace** - A joint venture between India (50.5% share) and Russia (49.5% share), founded in **1998**.
- **Aim** - To develop, design, manufacture and market world's only supersonic cruise missile system-BrahMos.
- **Features** - It is a 2-stage **air to surface cruise missile**
  - **1<sup>st</sup> stage** - Solid propellant engine, brings the missile to supersonic speed and then gets separated.
  - **2<sup>nd</sup> stage** - Liquid ramjet, takes the missile closer to 3 times the speed of sound in cruise phase.
- It has a very low radar signature, with varied trajectories.
- The 'fire and forget' type missile can achieve a cruising altitude of 15 km and a terminal altitude as low as 10 m to hit the target.
- It has 3 times the speed, 2.5 times flight range and higher range compared to subsonic cruise missiles.

Different version of BrahMos Missile	
<b>Land version</b>	<ul style="list-style-type: none"><li>• 4 to 6 mobile autonomous launchers, each with 3 missiles, can be fired almost simultaneously.</li><li>• Upgraded version can cruise at 2.8 Mach, can hit targets at a range up to 400 km with precision.</li></ul>
<b>Ship version</b>	<ul style="list-style-type: none"><li>• Inducted into India's warships from 2005.</li><li>• Hit sea-based targets beyond the radar horizon.</li><li>• Launched as a single unit or in a salvo of up to 8 missiles, separated by 2.5-second intervals.</li><li>• Successful in sea-to-sea and sea-to-land modes.</li></ul>
<b>Air version</b>	<ul style="list-style-type: none"><li>• Successfully flight-tested for the 1<sup>st</sup> time from a Sukhoi-30MKI.</li><li>• 1,500km range, without mid-air refuelling.</li></ul>
<b>Submarine version</b>	<ul style="list-style-type: none"><li>• Launched from ~50m below the water surface.</li><li>• The canister-stored missile is launched vertically from the pressure hull of the submarine.</li><li>• Successfully tested 1<sup>st</sup> in 2013 from a submerged platform off the coast of Visakhapatnam.</li></ul>

Cruise missiles are also called as '**standoff range weapons**', can be fired from a range far enough to allow the attacker to evade defensive counter-fire.

	<b>Cruise missiles</b>	<b>Ballistic missiles</b>
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<b>Operation</b>	Powered throughout flight, <i>manoeuvrable</i>	Powered only in the first phase of flight, <i>not manoeuvrable</i>
<b>Range</b>	Typically 1,000 km, can be as much as 4000 km	From <1,000 km to >10,000 km, missiles are classified according to range
<b>Trajectory</b>	<i>Low altitude</i> , level trajectory — hard to detect	<i>High</i> altitude, <i>parabolic</i> trajectory — hard to detect
<b>Precision</b>	High, up to a few metres — fit for <i>small, moving targets</i>	Low precision, roughly a few 100 m — fit for <i>larger, stationary targets</i>
<b>Speed</b>	Subsonic (<Mach 1) to hypersonic (>Mach 5) — <i>slower than ballistic</i> missiles, possible to intercept	Can hit targets at >25,000 km/h or >Mach 20 — very fast, extremely hard to intercept even with state of art technology

## References

1. [The Indian Express| BrahMos exported to Philippines](#)
2. [The Indian Express| Difference between Cruise and Ballistic missile](#)

## Declaration of Rights for Cetaceans

*Pacific Island leaders signed a treaty, He Whakaputanga Moana, to recognise Cetaceans as legal persons.*

- **Cetacean** - The name is from the Latin "cetus", which means **large sea creature**.
- It refers to *the over 80 species of marine mammals* that include all whales, dolphins, and porpoises.
- **Declaration of Rights for Cetaceans** - It was signed to foster moral and legal change in protection of Cetaceans.
- **Signed in** - 2010
- **Rights** - Whales and dolphins should not be held in captivity.
- Every individual cetacean has a right to life, right to freedom of movement and residence within their natural environment.
- No cetacean is the property of any State, corporation, human group or individual.
- Right to the protection of their natural environment.
- Right not to be the subject to the disruption of their cultures.
- Rights shall be protected under international and domestic law.
- **Partnership** - Open to individuals as well as nations.

*In 2013, India declared dolphins as non-human persons to prevent their import and use for commercial entertainment in water parks, dolphinariums or aquariums*

- **Challenges** - There have been attempts at establishing animal rights like the universal declaration of animal rights at UNESCO in 1978, but still no international set

standard of animal rights.

## He Whakaputanga Moana

*A declaration to grant cetaceans the legal personhood status.*

- **Signing authority** - New Zealand, Tonga, Tahiti & Cook Islands.
- **Basis** - Customary law, or tikanga Māori, rather than Crown law.
- **Objectives** - To protect the rights of whales (tohorā) to migrate freely and to use knowledge of Māori alongside science for better protections.
- To set up a dedicated fund for whale conservation.
- **Significance** - The animals are protected not only for their high cognition but also for their importance to ecosystems.

### Environmental Personhood status

- **New Zealand (Aotearoa)** - **River** (Te Awa Tupua Whanganui River), **land** (Te Urewera) and a **mountain** (Taranaki maunga).
- **India** - Several India state high courts have given legal person status to glaciers, rivers (**Ganga & Yamuna**), lake (**Sukhna Lake**), animals, and Mother Earth.
- While these are binding at the state level, there's no countrywide legal personhood law for animals, plants, water bodies, or nature.

### References

1. [The Print| Personhood Status to Environment](#)
2. [Cetacean Rights| Declaration of Rights of Cetaceans](#)
3. [The Hindu| He Whakaputanga Moana](#)

## Euvichol-S

*World Health Organisation (WHO) prequalifies new oral vaccine Euvichol-S for cholera.*

- It is an ***inactivated oral vaccine***, simplified formulation of the oral cholera vaccine (OCV) Euvichol-Plus.
- It is the ***3<sup>rd</sup> product*** of the same family of vaccines ***for cholera*** in current WHO prequalification list after Euvichol and Euvichol-Plus.
- **Manufactured by** - South Korea-based EuBiologics Co., Ltd.

*EuBiologics is the largest supplier of oral cholera vaccine in the world, representing more than 80% market share and able to produce up to 50 million doses after expansion is completed in 2023.*

- **Significance** - It has a ***similar efficacy*** to existing vaccines but a simplified formulation, allowing ***opportunities to rapidly increase production capacity***.

### Prequalification List of Medical Products by WHO

- **List** - It contains *finished pharmaceutical products* used to treat diseases, and for reproductive health, that have been assessed by WHO and found to be acceptable, in principle, for procurement by UN agencies.
- **Coverage** - IVDs, medicines, vaccines and immunization devices and vector control practices.

## Cholera

- It is an ***acute diarrhoeal disease***.
- **Caused by** - The ***bacterium Vibrio cholerae***.
- **Transmission** - By the *ingestion of food or water* contaminated with the bacterium.
- **Spread** - Currently, *23 countries are reporting cholera* outbreaks.
- **Infection** - It can *kill within hours* if left untreated.
- It is estimated that each year there are 1.3 to 4.0 million cases of cholera and 21,000 to 143,000 deaths worldwide due to cholera.
- **Symptoms** - Most people exposed *don't become ill and don't know they've been infected*.
- According to WHO, the bacteria are present in the faeces of infected people for 1-10 days after infection and they can still infect others through contaminated water.
- Symptoms include *diarrhoea, nausea & vomiting and dehydration*.
- **Prevention** - Wash your hands with soap and water frequently
  - Drink only safe water
  - Eat food that's completely cooked and hot
  - Stick to fruits and vegetables that you can peel yourself

## Reference

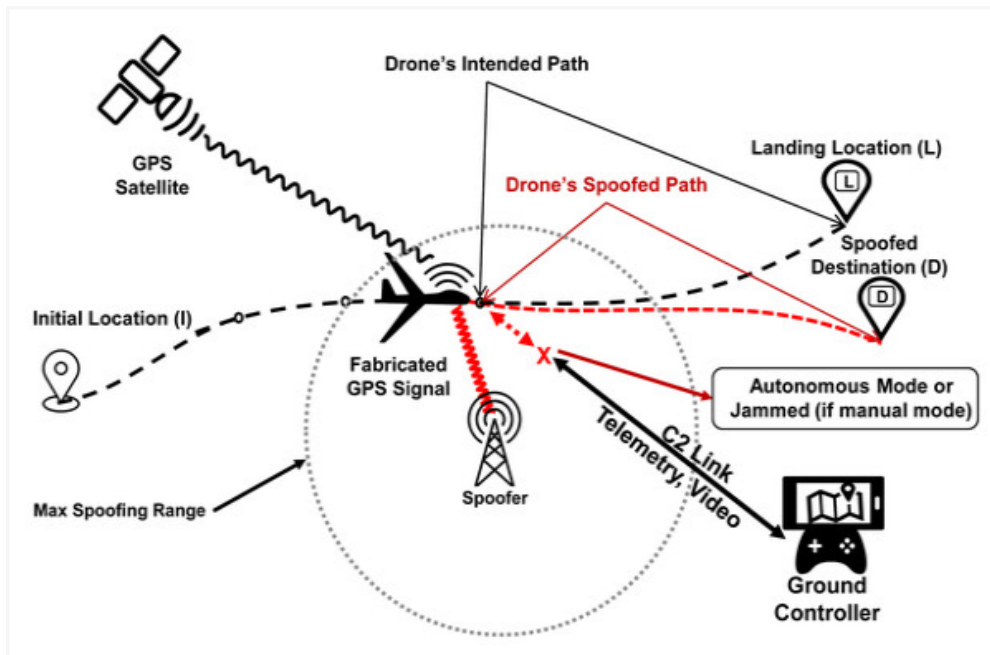
1. [Financial Express| New Oral Vaccine for Cholera](#)

## GPS spoofing

*Ahead of Iran's first-ever direct attack on Israel, Israeli intelligence reportedly jammed the country's GPS navigation system signals to confuse Tehran's missile targeting teams.*

- **GPS Spoofing** - It involves the *manipulation of GPS signals* to *deceive receivers*, offering false information about a user's location, time, or velocity.
- Thus it is also called as ***GPS simulation***.
- Unlike GPS jamming, which disrupts signals, GPS spoofing actively transmits counterfeit signals to mislead GPS receivers.
- **Working** - It involves *acquiring information of the victim's GPS setup*, including the types of signals it uses and how they are processed.
- Then the attacker *sends counterfeit GPS signals that mimic the real ones* and these fake signals are stronger, causing the receiver to recognize them as authentic signals.
- As a result, the victim's GPS receiver ends up processing these counterfeit signals, leading to erroneous location information.





- **Impact** - It can *hinder the adversary's military operations* and the accuracy of its missiles and drones, which often use a combination of GPS, inertial guidance and terrain contour matching to accurately navigate to their programmed target.

A 2021 United States Naval Institute article explained that US used GPS Spoofing technology to "degrade" GPS accuracy for the Indian military during the Kargil war, which "hindered Indian operations".

## Global Positioning System (GPS)

- A *satellite-based radio navigation system* to calculate and pinpoint the precise location of a specified point on a global scale.
- **Owned by** - USA
- **Space Segment** - 27 satellites that orbit the Earth (24 are operational, and 3 are backup satellites) every 12 hours.
- **User Segment** - It has GPS receivers to receive the signals sent by GPS satellites and use them to determine the user's position in space and time.
- **Control segment** - Different tracking stations are located around the globe which pick up microwave carrier signals transmitted by the satellites.
- **Working principle** - The tracker uses a process called *trilateration* which uses the *position of 3 or more satellites* from GPS satellites and its distance from them to determine latitude, longitude, elevation, and time.
- **Challenges** - Due to the *weak signal strength* of the GPS satellites, these signals can be easily *overwhelmed by fake signals*, resulting in inaccurate location data on the receiving device.

## References

[Business Standard| Israel uses GPS Spoofing to evade Iran's attack](#)



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