

Indian Navy's New BrahMos deal

Why in news?

India's decision to acquire 200 BrahMos Extended Range (ER) supersonic cruise missiles for its naval fleet represents a significant development in the country's defense capabilities.

BrahMos Missile

- **BrahMos Aerospace**- It is a joint venture between India and Russia founded in 1998 with the aim to develop, design, manufacture and market world's only supersonic cruise missile system-BrahMos.
- **Ownership**-India holds a 50.5% stake, while Russia holds a 49.5% share in the venture.
- **Origin**- The BrahMos missile itself is derived from the Russia's P-800 Oniks (also known as Yakhont) missile, which was first tested in 1990s.
- **Brahmos missile**- Brahmos is named on the rivers Brahmaputra (India) and Moskva (Russia), it is a two-stage (solid propellant engine in the first stage and liquid ramjet in second) air to surface missile.
- **Indian Navy**- The base version of the missile has been part of the Indian Navy's arsenal since 2005.
- **Indian Army**- Since 2007, the Army has utilized the missile's vertical launch configuration for mobile autonomous launchers.
- **Indian Air Force**- Recently inducted, the Air Force has integrated the BRAHMOS-ER missiles onto its *Su-30MKI fighter aircraft*.
- In 2023 Ministry of Defence had signed a deal with BrahMos Aerospace for procuring long range missiles and maritime mobile coastal batteries for the Indian Navy.
- The **Indian Navy's warships or destroyers** of the
 - Vishakhapatnam class (Vishakhapatnam, Mormugao, Imphal),
 - Kolkata class (Kolkata, Kochi, Chennai),
 - Delhi class (Delhi, Mysore, Mumbai),
 - Rajput class (Ranvir, Ranvijay) and
- **Frigates** of the
 - Shivalik class (Shivalik, Satpura, Sahyadri) and
 - Talwar class (Teg, Tarkash and Trikand) are already equipped with BrahMos missiles.
- **BrahMos Indigenisation plan**- Indian Navy has a 15 year plan in place to boost Indian manufacturing of weapons including the BrahMos missile.
- **Indigenous capacity**- In 1998, the indigenous capacity of the BrahMos project was only 13% which was increased to 75% in 2023.

What is the significance of BrahMos Extended Range Missile?

- **Enhanced naval defence capability**- The BrahMos ER missiles are poised to become the primary surface-to-surface missiles for the Indian Navy, offering enhanced range, capabilities and versatility.
- **Two-stage design**-
 - **First stage**- It features a solid propellant booster which provides initial thrust

during launch.

- **Second Stage-** It employs a liquid-fuel fired ramjet engine which propels the missile beyond supersonic speeds.
- **Speed-** In the last test-firing conducted by the Indian Navy, the BRAHMOS-ER achieved a remarkable speed of 2.8 Mach, which is nearly three times the speed of sound.
- **Fire and forget principle-** The missile operates on this principle, once launched it can autonomously track and hit its target without external intervention.
- **Modernization-** The decision to replace older missiles underscores the India's commitment to modernizing its naval defence arsenal
- **Multi-domain launch capabilities-** The BrahMos ER's ability to be launched from sea, land, or air enhances India's operational flexibility and strategic reach.

Special Features of BRAHMOS cruise missile

- Universal Missile for multiple platforms
- "Fire and Forget" principle of operation
- High supersonic speed all through the flight
- Long flight with varieties of trajectories
- Low radar signature
- Pin point accuracy & high lethal power



Guidance System

Advanced guidance system incorporating high manoeuvres & steep dive capabilities

Propulsion System

Air-breathing ramjet propulsion for fuel-efficiency & supersonic speed

Wings & Fins

For better stability & accurate direction of missile during the flight

Solid State Propellant

Solid-propellant rocket for initial acceleration of the missile

- **Service integration-** Integration with different branches of the military (Navy, Army, and Air Force) further emphasizes its versatility and adaptability to diverse mission requirements.
- **Extended target capabilities-** While the base version of the BrahMos missile had a range of 290 km, the BRAHMOS-ER has been extended to an impressive range of 800-900 km allowing naval vessels to engage targets at a greater distance
- **Accuracy-** The missile's cruising altitude (up to 15km) and low radar signature combined with supersonic speeds, make it a formidable asset that reportedly cannot be intercepted by existing weapon systems.

- **Enhanced precision-** BrahMos missile features an indigenous seeker and booster designed by the Defence Research and Development Organisation (DRDO) which ensures precision and effectiveness in striking distant targets
- **Indigenization-** The project has achieved 75% indigenous capacity, with over 200 Indian industries involved, enhancing self-reliance in defence manufacturing.
- **Compliance with MTCR-** BrahMos ER comply with Missile Technology Control Regime (MTCR) norms demonstrates India's commitment to international agreements.
- **Strategic partnership-** The BrahMos project, a joint venture between India and Russia exemplifies successful international collaboration in defence technology by *strengthening diplomatic ties* between two nations.
- **Successful tests-** The successful tests across various domains (air, sea and land) underscores the missile's reliability and operational readiness.

Quick facts

Missile Technology Control Regime (MTCR)

- **Aim-** To limit the spread of ballistic missiles and other unmanned delivery systems that could be used for chemical, biological, and nuclear attacks.
- **Launch year-** 1987
- **Establishment-** By the G-7 industrialized countries (Canada, France, Germany, Italy, Japan, the UK, and the United States).
- **Member countries-** 35
- **India-** It is a part of the regime since 2016.
- **Restrictions-** The regime urges the member countries to restrict their exports of missiles and related technologies capable of carrying a 500-kilogram payload at least 300 kilometers or delivering any type of weapon of mass destruction.

References

1. [The Hindu- Indian Navy's new BrahMos deal](#)
2. [Indian Express- Cabinet Committee to procure BrahMos for Navy](#)
3. [BrahMos- BrahMos aerospace](#)