



## India Beyond Earth

This editorial is based on [“Time for a joint space exercise”](#) which was published in The Hindu on 08/09/2022. It talks about the militarisation and weaponization of Outer Space and related challenges.

**For Prelims:** Space warfare, ASTERX, Tiangong Space Station, Space Force, IndSpaceX, Mission Shakti, Defence Space Research Agency (DSRA), Outer Space Treaty, SpaceX's Crew Dragon Capsule, Mangalyaan, Polar Satellite Launch Vehicle (PSLV), Project NETRA, Global Positioning System

**For Mains:** Militarisation of Outer Space, India's Stand on Militarisation of Space, Challenges Threatening Outer Space, Global Governance of Global Common

The recent years have seen not only **scientific and astronomical success** in investigating outer space, but also a remarkable growth in its utilisation of space for a wide range of civilian and military purposes.

**There is a growing synergistic approach between space and the military.** The projection of the military now is not restricted to land and sea. Countries like the **United States, China and Russia** are consistently **trying to dominate the outer space by weaponising and militarising the outer space** to establish their supremacy over the other.

The [Outer Space Treaty](#) prohibits countries from placing into orbit around the Earth **“any objects carrying nuclear weapons or any other kinds of weapons of mass destruction”**.

**Unchecked and unregulated weaponization and militarisation** of space in future can pose serious **threat not only to international peace** but also to the critical **civilian space-based infrastructure services** such as [communication](#), [navigation](#), [broadcasting](#), and [remote sensing](#).

### What is Understood by Militarisation of Outer Space?

#### ▪ About:

- The militarisation of space involves the **placement and development of weaponry and military technology** in outer space, in order to develop [space warfare capabilities](#).
- **Space warfare** is combat that takes place in outer space, i.e. outside the atmosphere. It includes:
  - **Ground-to-space warfare:** Attacking satellites from the Earth
  - **Space-to-space warfare:** [Satellites](#) attacking satellites.
  - However, It does **not technically include space-to-ground warfare**, where orbital objects attack ground.

#### ▪ Global Scenario of Space Militarisation:

- **France:** Conducted its first space military exercise, **ASTERX** in 2021.
- **China:** While building its [Tiangong Space Station in low Earth orbit](#), China is also looking

forward to establish its **permanent presence on the Moon** by 2024 in **Cis-Lunar space** (region beyond [geosynchronous orbit](#)).

- **United States:** US has created a new department of the US military named [Space Force](#) to strengthen its war-fighting capabilities.

## What is the Outer Space Treaty 1967?

- The Outer Space Treaty, formally the **Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space**, including the Moon and Other Celestial Bodies is a treaty that lays the foundation of **international space law**.
  - **India** is a party to the **Outer Space Treaty**.
- The treaty **prohibits countries from placing [nuclear weapons](#)** or any other weapons of mass destruction **into orbit around the Earth**.
  - Furthermore, it also **restricts the use of such weapons on celestial bodies**, such as the **moon**, or in outer space, all parties to the treaty agree to use them exclusively for peaceful purposes.

## What is India's Stand on Militarisation of Space?

- **Changing Polarity in Current Scenarios:** In India, historically, space has remained the sole jurisdiction of its civilian space agency, the [Indian Space Research Organisation \(ISRO\)](#). India has always maintained a **pacifist** approach towards **space security, opposing the weaponization and militarisation of space**.
  - For the last decade, India's **approach to outer space has been shifting** and is now increasingly driven by national security concerns. Rather than opting for a morally-driven policy, **India is focusing on peaceful uses of outer space**.
    - Though India **has still not abandoned its policy of non-weaponization**, it has felt that its inaction and ignoring of contemporary developments in outer space could leave it vulnerable to a range of **threats to its [space assets](#)**.
- **Recent Developments: In 2019**, India conducted its first ever simulated space warfare exercise ([IndSpaceX](#)) with an eye on Chinese threats and successfully **tested an anti-satellite weapon ([Mission Shakti](#))** in the same year.
  - Also, the launch of the tri-service Defence Space Agency (DSA) has permanently taken the military away from the shadows of civil space.
    - India has also set up the [Defence Space Research Agency \(DSRA\)](#) to help develop **space-based weapons for the DSA**. Space is as much recognised as a military domain as **land, water, air and cyber**.
  - In **2020**, the Government of India approved the creation of [IN-SPACE](#)- an independent nodal agency under the **Department of Space** to encourage **private participation** in the space domain.

## What are the Challenges Threatening Outer Space?

- **Growing China's Influence:** The **Chinese space industry is evolving rapidly compared to others**. It has established a strong presence in the space domain by successfully launching its own **navigation system, [BeiDou](#)**.
  - It is very likely that [China's Belt Road Initiative \(BRI\)](#) members will contribute to or join the Chinese space sector, solidifying China's global position.
- **Rising Space Debris:** Increasing outer space expeditions is increasing space debris. It can **impact the ongoing and future space missions** because of the high speeds at which objects orbit Earth, **a collision with even a small piece of space debris can damage a spacecraft**.
  - [Space Debris](#) can also lead to [ozone depletion](#).
- **Growing Spy-Based Satellites:** Space is becoming a **battleground for dominance** among major powers. About a fifth of all satellites in space belong to the military and are used for spying, which is posing a **serious risk to global peace and security**.

- **Arm Race Widening Global Trust Deficit:** The ensuing arms race for **weaponization of outer space** can create an environment of **uncertainty, suspicion, competition and aggressiveness** across the globe which may lead to war.
  - It would also put at risk the entire range of satellites as well as those involved in scientific explorations and communication services.
- **Possibility of Monopolising Orbital Slots:** Any **country that deploys a military satellite is reluctant to disclose its [orbital slot](#) and radio frequency**, fearing that such information could be used by an adversary to track the satellite, with the possibility of **shooting it down or jamming its signal**, thus there is a significant possibility that orbital slots will become monopolised in the future.
- **Rising Commercialisation of Outer Space:** The commercialisation of outer space is increasing through **private satellite expeditions** for transmitting [Internet services](#) and [space tourism](#) (Jeff Bezos).
  - **Axiom Space** launched its first **fully private commercial mission to space** in **2022** onboard [SpaceX's Crew Dragon Capsule](#).

## What Should be the Way Forward?

- **Capacity Building for Space Warfare:** With space becoming a fourth battlefield, India needs to **enhance its space capabilities** through adequate research and development.
  - **KALI (Kilo Ampere Linear Injector)** is being designed as a **potential response to any incoming missiles** whose objective would be to disrupt the country's peace.
  - Also, the time is ripe for **India-US Joint Space Military Exercise** that will push India's defence partnership into a new orbit.
    - India and U.S. are going to conduct the **18<sup>th</sup> edition of [Yudh Abhyas](#) in Auli, Uttarakhand** in October 2022.
- **Attracting Global Market for Space Exploration:** India can take advantage of the local market conditions (**talent pool, low labour costs, engineering services**) to replicate the **cost-competitive world-class products and services for the space market**.
  - Successes such as the **most cost-effective and the only first-time success mission to Mars** ([Mangalyaan](#)) can act as a **brand-building exercise** integrating India into the **global supply chain**.
- **Developing Space Asset Security Infrastructure:** India needs **reliable and accurate tracking capabilities** in order to effectively defend its space assets, including debris and spacecraft.
  - It is therefore imperative that this crucial capability be developed indigenously, since accurate tracking is a vital part of almost **every conceivable space action**.
  - **Project NETRA**, an **early warning system in space to detect debris** and other hazards to Indian satellites is a good step in this direction.
- **Global Governance of Global Common: Outer space is a common heritage and asset owned equally by every human being.** Modern global economies rely heavily on **space assets**.
  - **Global Positioning System, Telecom Networks, and Early Warning Systems and [weather forecasts](#)** are important tools for governance across the globe.
  - An unregulated militarisation will deteriorate these facilities, so it is **important to scrutinise this issue at global multilateral forums** and **develop legally binding instruments to prevent an arms race** and fill any legal gaps in the existing system.

### *Drishti Mains Question*

Taking into account the militarization of outer space, critically analyse the growing synergy between space and the military.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q.1 In the context of space technology, what is "Bhuvan", recently in the news? (2010)**

- (a) A mini satellite launched by ISRO for promoting the distance education in India
- (b) The name given to the next Moon Impact Probe, for Chandrayaan-II
- (c) A geoportal of ISRO with 3D imaging capabilities of India
- (d) A space telescope developed by India

**Ans: (c)**

**Q.2 WiMAX is related to which one of the following? (2009)**

- (a) Biotechnology
- (b) Space technology
- (c) Missile technology
- (d) Communication technology

**Ans: (d)**

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### **Mains**

**Q.1** What is India's plan to have its own space station and how will it benefit our space programme? **(2019)**

**Q.2** Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio-economic development? **(2016)**