Mission Shakti - Anti-Satellite Missile Test - II

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What is the issue?

- India recently carried out a successful anti-satellite missile test (ASAT), Mission Shakti.
- Here is a look at how the technology took shape in India and the gaps in international agreements in this regard.

Why did India embark on ASAT?

- Pakistan's missile capability was notably growing in the 1990s.
- It acquired the M-9 and the M-11 missiles from China and the No-dong from North Korea.
- India thus embarked on its Ballistic Missile Defence (BMD) programme in 1999.
- An ASAT capability is normally a part of a Ballistic Missile Defence (BMD) programme.
- While a BMD targets an incoming ballistic missile, an ASAT interceptor targets a hostile satellite.

What was the BMD programme?

- The Indian Defence Research and Development Organisation (DRDO) developed a two-tier Ballistic Missile Defence (BMD) system.
- It is intended to destroy an incoming missile, at a higher altitude, in the exo-atmosphere.
- If this miscarries, an endo-atmospheric interception will take place, thus providing a multi-layered shield against ballistic missile attacks.
- It can intercept incoming missiles at exo-atmospheric altitudes of 150km and endo-atmospheric altitudes of 80km.
- The BMD system consists of a Prithvi Air Defence (PAD) missile and an Advanced Air Defence (AAD) Missile for high and low altitude interception respectively.

How did ASAT evolve?

- A modified Prithvi was planned to be developed as the intercept missile.
- Work on a long-range tracking radar (Swordfish) was also taken up to track incoming ballistic missiles to enable target acquisition.
- Testing began nearly 15 years ago followed by the integration of the various systems.
- These include the active RF seekers, fibreoptic gyros and directional warheads.
- In 2011, an incoming Prithvi missile was destroyed by the interceptor missile over the Bay of Bengal at an altitude of around 16 km.
- Another half a dozen tests have been carried out since 2011.
- These gradually expanded the parameters of the system to enable taking on targets at higher altitudes.

How effective are the international regulations?

- The salience of space in defence is evident from the fact that all 3 countries - U.S., Russia and China - have set up 'Space Commands'.
- This has given rise to demands to prevent the militarisation of space so that it is preserved "as the common heritage of mankind".
- The 1967 Outer Space Treaty followed by the 1979 Moon Treaty laid the foundations of the legal regime for space, mandating -

i. refraining from appropriating territory
ii. non-placement of any weapons of mass destruction in space
iii. prohibition of military activities on the moon and other celestial bodies

- However, these treaties were negotiated when the technology was still in a nascent stage.
- Satellite registration was introduced in the 1970s, though compliance to above agreements has been inconsistent.

How are countries operating in this regard?

- Space as a medium is increasingly used for military applications.
- The U.S. has been adamantly opposed to negotiating any legally binding instrument to prevent 'militarisation of space'.
- In 2008, Russia and China had proposed a draft.
- This was to start negotiations on the Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects.
- But it was rejected by the West.
- The European Union was mindful of U.S. allergy to any negotiations on this issue.
- It thus began to develop an international code of conduct based on

transparency and confidence-building measures.

- The UN General Assembly has called for a declaration of political commitment by all countries that they shall not be the first to place weapons in space.
- This initiative too has not taken off as norm building cannot take place in a political vacuum.
- At present, the U.S. has the dominant presence in space, which reflects its technological lead and dependence on space-based assets.
- It therefore perceives any negotiations as a constraint on its technological lead.

What lies ahead?

- While countries have developed and tested ASATs, they are not known to have stockpiled ASAT weapons.
- Effective use of an ASAT also requires space situational awareness capability, which works best if it is a cooperative effort.
- India’s successful ASAT test is therefore a technology marker.
- Further development of interceptor technology and long-range tracking radars is necessary for a robust BMD.
- The DRDO also needs to move on to newer technologies to enhance its ASAT capability in the coming years.

Source: The Hindu

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