

INDIA'S PURSUIT OF MISSILE SHIELD: CHALLENGES AND IMPLICATIONS FOR PAKISTAN

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(Views expressed in the brief are those of the author, and do not represent those of ISSI)



India has been going through a spate of ballistic missile defence (BMD) tests recently indicating that it is in the advanced stages of developing and deploying BMD. On 24 June 2024, India tested the second phase of its BMD system, with a reported range of 5,000 km. India also tested its S-400 system acquired from Russia on July 27, 2024. India has been developing a two-phased BMD system for years. It is imperative to assess the state of development of India's BMD system and its strategic implications for Pakistan.

India's Ballistic Missile Defence Systems

India has a two-tiered BMD system comprised of the Prithvi Air Defence (PAD) and Advanced Air Defence (AAD). The former is meant for high altitude or exo-atmospheric interception and the latter for endo-atmospheric interception. The PAD is for mid-course interception while AAD is meant to intercept missiles at the terminal stage. This is phase I of Indian BMD development aimed at intercepting missiles with up to 2000 km range. In 2012, the Chief of the Indian Defence Research and Development Organisation (DRDO), V.K. Saraswat, said that phase I was complete: "The ballistic missile defence shield is now mature... We are ready to put phase-I in place...."¹ Saraswat claimed at the time that the system was ready to protect two cities.

¹ "Missile Defence Shield Ready: DRDO Chief," *Times of India*, May 6, 2012, <https://timesofindia.indiatimes.com/india/missile-defence-shield-ready-drdo-chief/articleshow/13019050.cms>.

India is developing the AD-1 and AD-2 interceptors as part of phase II of its BMD plans. These are aimed at protecting against intermediate-range ballistic missiles (IRBMs) and intercontinental ballistic missiles (ICBMs).

AD-1

The AD-1 missile tested on June 24, 2024 is a component of Indian BMD's Phase II. The test involved a "hostile" ballistic missile which was detected and intercepted. The AD-1 can intercept missiles with a 5000 km range. Indian Defence Minister Rajnath Singh congratulated the DRDO for the successful test and said "it has again demonstrated India's ballistic missiles defence capability."² The press release accompanying the test claimed that it "fully met all the trial objectives validating complete network centric warfare weapon system consisting of Long Range Sensors, low latency communication system and MCC (Missile Control Centre) and Advance Interceptor missiles."³ This was the second test of the AD-1. The first test was conducted in November 2022. The test allows India to gather data points to improve the AD-1 interceptor's capabilities as well as test its efficacy. Both phase I and II of Indian BMD use Swordfish Radar for target tracking which is a derivative of Israel's Green Pine radar. The latest detection range for the Swordfish is 1500 km.⁴

S-400

Recently, the Indian Air Force (IAF) conducted a military exercise to test the Russian S-400 surface-to-air defence system, which reportedly "shot down 80 percent of the 'enemy' fighter aircraft package while forcing others to retreat."⁵ The Russian-made S-400 is an advanced BMD system with a 400 km range and the ability to engage and intercept 80 targets simultaneously.⁶

India negotiated a deal with \$5.5 billion to acquire 5 battalions of Russian S-400 anti-ballistic missile system in 2018. Russia has already delivered three of the five battalions to India with the remaining 2 systems scheduled to be delivered by the end of 2026. According to media reports "current deployments indicate that we [India] have nearly 1.5 squadrons each stationed on the fronts with

² "India Successfully Tests Phase-II Ballistic Missile Defence System," *Business Standard*, July 25, 2024, https://www.business-standard.com/external-affairs-defence-security/news/india-successfully-tests-phase-ii-ballistic-missile-defence-system-124072401336_1.html.

³ Ibid.

⁴ Vijaiinder K Thakur, "THAAD's Analog, S-400's Partner, DRDO's AD-1 Missile Interceptor Puts India in the Elite League," *Eurasia Times*, July 26, 2024, <https://www.eurasiantimes.com/thaads-analog-s-400s-partner-drdo/>

⁵ "S-400 air defence system 'shot down' 80% of entire 'enemy' package in exercise," *India Today*, July 27, 2024, <https://www.indiatoday.in/india/story/indian-air-force-iaf-s-400-air-defence-system-military-exercise-russia-2572492-2024-07-27>.

⁶ Vikas Pandey, "S-400: India Missile Defence Purchase in US-Russia Crosshairs," *BBC News*, October 5, 2018.

China and Pakistan.”⁷ Thus, the 3 S-400 systems have already been deployed in the Northern and Eastern sectors and have conducted several aerial exercises as well. The deployment of S-400 system provides a boost to India’s missile defence capability.

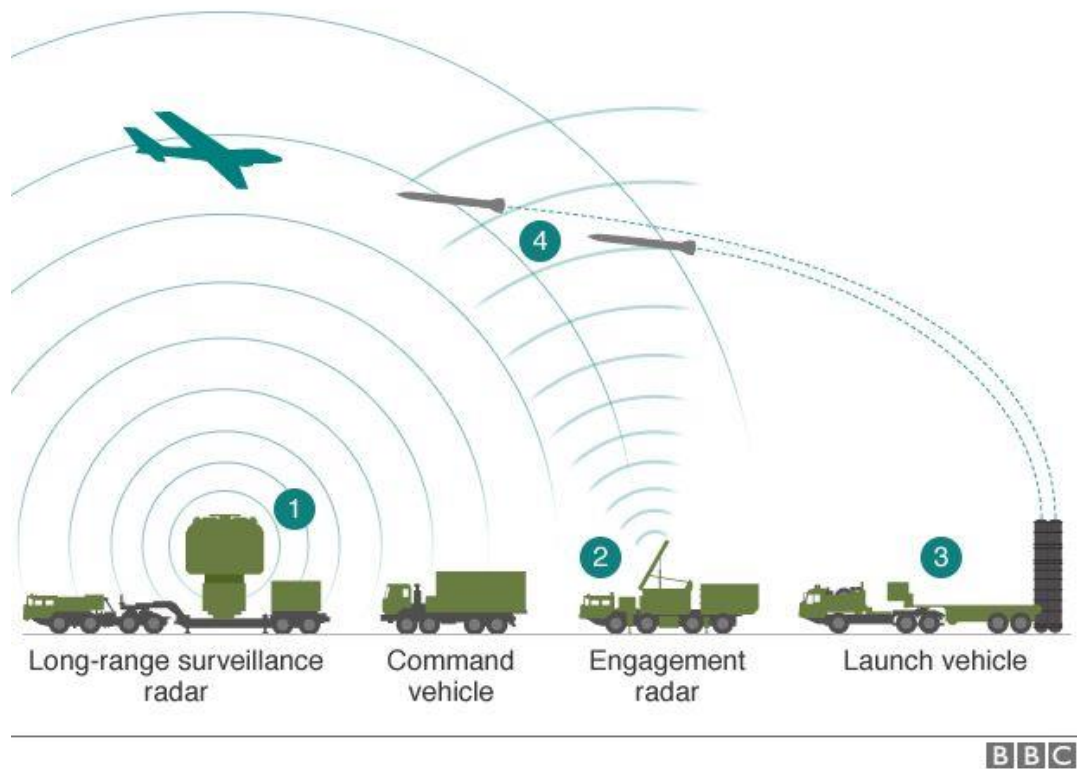
There are reports that India is also working on its own S-400 class air defence system. In October 2023, the Chief of IAF, Air Chief Marshal VR Chaudhari, said that “India would be developing its own long-range air defence system under Project Kusha.”⁸ DRDO has already initiated a program to develop a long-range surface-to-air missile (LRSAM) for the IAF. Reportedly “it is envisaged to detect and neutralize aerial threats such as stealth fighters, aircraft, ballistic and cruise missiles, precision-guided munitions, and unmanned aerial vehicles (UAVs) to ranges of nearly 350 km.”⁹ The Ministry of Defence (MoD) has cleared five units of the LRSAM systems, reportedly worth US\$2.5 billion, for air defence capable of intercepting missiles from 150 to 350 km¹⁰ with plans to deploy the system by 2028–29. DRDO has already developed and inducted the medium-range surface-to-air missile (MRSAM), which is a derivative of the Israeli Barak-8 with the capability to intercept multiple targets at a 70 km range.

⁷ “S-400 Air Defence System 'Shot Down' 80% of Entire 'Enemy' Package in Exercise,” *India Today*, July 27, 2024, <https://www.indiatoday.in/india/story/indian-air-force-iaf-s-400-air-defence-system-military-exercise-russia-2572492-2024-07-27>.

⁸ Ibid.

⁹ “India Initiates Long-range Surface-to-air Missile Programme,” *Janes*, November 6, 2023, <https://www.janes.com/osint-insights/defence-news/defence/india-initiates-long-range-surface-to-air-missile-programme#:~:text=The%20LRSAM%20system%20will%20be,350%20km%2C%20the%20official%20added>.

¹⁰ Ibid.



Source: Vikas Pandey, "S-400: India Missile Defence Purchase in US-Russia Crosshairs," BBC News, October 5, 2018.

Implications for Pakistan

India's development and deployment of its missile defence systems are destabilizing for South Asia and potentially affect Pakistan's nuclear deterrent. Deployed along the border with Pakistan and China the phase I systems and the S-400 would be able to detect objects 600 km inside Pakistani territory. India is developing ever more sophisticated radars with longer ranges. It will also be able to, in theory, counter Pakistan's Hatf, Ghauri, and Shaheen missiles. Phase I is complete and already deployed around Delhi, while phase II is under development. The S-400 is already deployed along Pakistan and China borders. India can, thus, deploy its mixture of indigenous and acquired systems to undermine the effectiveness of Pakistan's nuclear forces. As the scope and sophistication of Indian BMD increases it is likely to have a greater impact on Pakistan's nuclear deterrence.

In the past DRDO has claimed that it has a "kill probability of 99.8" with its mix of two-tiered exo and endo-interceptor missiles.¹¹ However, even the most sophisticated missile defence systems cannot claim such a high level of interception. No BMD system is hundred percent effective and there are a number of counter-measures that can be taken to defeat them. While India's BMD may offer limited

¹¹ "India Tests Ballistic Missile Defence System to Intercept 5,000-km Class Enemy Missiles," *Times of India*, July 24, 2024, <https://timesofindia.indiatimes.com/india/india-tests-ballistic-missile-defence-system-to-intercept-5000-km-class-enemy-missiles/articleshow/111996217.cms>.

protection, with only part of its territory protected, its development can induce a false sense of security. It can be argued that "Possession of BMD increases the effective resolve of India. In any crisis between India and Pakistan, India would be willing to take greater risks of being attacked to prevail knowing that if events lead to a nuclear exchange, it would be protected by BMD."¹² This could potentially embolden India to adopt a more aggressive posture, increasing the risk of nuclear conflict. BMD systems would also increase Indian comfort zone and in the future, it is likely to increase misadventures such as the Balakot strikes of February 2019. It also emboldens India to keep the limited war option open. It may also encourage preemption by India. Indian decision-makers could opt for a preemptive strike against Pakistan's strategic assets in the hope of wiping out a majority of its assets, and absorbing and intercepting any remaining missiles through its BMD system. Such a scenario exacerbates Pakistan's security dilemma, forcing it to re-evaluate its strategic options in response to India's evolving capabilities.

India's aggressive pursuit of BMD becomes more problematic when combined with hypersonic missile developments, its conventional and nuclear arms buildup, its military space program, and aggressive doctrines. All these capabilities fit right into India's 'counterforce temptation'¹³ or the counterforce preemptive strategy against Pakistan.¹⁴ They strengthen India's precision strike capabilities.

To counter Indian BMD, Pakistan could make modifications to its nuclear and missile forces. Pakistan can simply diversify delivery systems. Pakistan can opt for qualitative technologies to penetrate Indian BMD systems, as well as to fog their interception system. It is already diversifying its missile systems. It is pursuing cruise missiles like Babar and Multiple Independently Targetable Reentry Vehicle (MIRV) like Ababeel that can penetrate BMD systems due to maneuverability and sheer numbers. "Pakistan can also go for strategies like mobility, dispersion, and camouflage to increase the survivability of its nuclear force in case of a preemptive strike."¹⁵

¹² Ghazala Y. Jalil, "Indian Missile Defence Development: Implications for Deterrence Stability in South Asia," *Strategic Studies* 35, no 2 (Summer 2015): 36.

¹³ Christopher Clary and Vipin Narang, "India's Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities," *International Security*, Vol. 43, No. 3 (Winter 2018/19), pp. 7–52

¹⁴ For details see Ghazala Yasmin Jalil "Shifting Indian Nuclear Doctrine: Implications for Pakistan's Nuclear Deterrence", in Ed Malik Qasim Mustafa, *Emerging Technologies and Shifting Doctrines: Challenges to Strategic Stability* (Institute of Strategic Studies Islamabad, 2023) p. 16-38

¹⁵ *Ibid*, 40.

Conclusion

While Indian BMD phase I is advancing, its full deployment is likely to be 10 years away.¹⁶ Once it is operational Indian BMD with over 5,000 km range would be a threat to China, regional countries, and beyond. India's aggressive pursuit of the BMD system poses a growing threat to the delicate balance of nuclear deterrence in the region. The cornerstone of deterrence is the mutual vulnerability to retaliation, a principle undermined by BMD systems. It undermines Pakistan's nuclear deterrence. Despite their limitations, missile defence systems can create a false sense of security for Indian leadership, bringing instability, and encouraging pre-emption and adventurism. It would encourage an arms race and make South Asia more volatile.

¹⁶ Vijaiender K Thakur, "THAAD's Analog, S-400's Partner, DRDO's AD-1 Missile Interceptor Puts India in the Elite League