Strategic Implications of India's Ballistic Missile Defense

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As India becomes a more influential player in international politics, its policy perspectives on important global security issues also become consequential. It is important to note that India is also undertaking some pertinent changes in how it achieves its own security, which have called for new approaches. Increasingly, Indian policy is driven by a pragmatic and national security perspective than idealism, which was the case until recently. One of the areas that has seen a big shift in policy is in the realm of missile defense. India traditionally remained vehemently opposed to missile defense programmes such as the U.S. "Star Wars" program, opposed militarisation of space and the American and Soviet anti-satellite (ASAT) missile tests. However, the growing missile threats in the Indian neighbourhood has emerged as an imperative for India to reconsider its earlier stated positions and approach. The proliferation of short- and medium-range ballistic missiles from China to Pakistan in the early 1990s became a compelling factor for India to consider developing limited missile defense cover as a defensive option. From the mid-1990s, India has been making efforts at developing an indigenous missile defense system, which is a dramatic shift in its policy towards missile defenses.

This paper outlines in brief the evolution and status of policies as it relates to India's missile defenses and then examines the status of the programme. The paper concludes with what this policy shift might mean for India as well as the broader Asian security dynamics.

India's Policy Approach and Rationale

India's policy approach towards ballistic missile defenses has been undergoing some important shifts in recent years. While India has never spelt out a policy per se, statements in the United Nations and other multilateral bodies as well as in the Indian Parliament over the years provide a sense of India's policy perspective.[1] The change in Indian policy was first apparent in India's official reaction to US President George W Bush's National Missile Defense (NMD) speech in May 2001 and later as India expressed interest in developing its own ballistic missile defense system.[2] But domestic political opposition pushed India to go back yet again to the old comfortable stand opposing the militarization of outer space.[3]

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[1] For a detailed examination of India's opposition to the US and Soviet competition in space including the ASAT tests, see Ashley J Tellis, "The Evolution of U.S.-Indian Ties: Missile Defense in an Emerging Strategic Relationship," *International Security*, Vol. 30, No. 4 (Spring, 2006), pp. 113-151.

[2] Ashley J Tellis, "The Evolution of U.S.-Indian Ties: Missile Defense in an Emerging Strategic Relationship," *International Security*, Vol. 30, No. 4 (Spring, 2006), p. 115.

[3] Rajeswari Pillai Rajagopalan, "India's Changing Policy on Space Militarization: The Impact of China's ASAT Test," *India Review*, Vol. 10 , Issue 4, 2011, pp. 354-378.

Nevertheless, there was a big difference – the shrill criticism was replaced by a more nuanced and somewhat ambiguous response to the new developments.[4] There were clear pragmatic reasons for India to adopt this nuanced posturing. The first was the changing regional security scenario and the utility of missile defense to tackle the growing missile threats from China and Pakistan. Second, it was felt that the US' new approach envisaged moving the major nuclear powers away from their traditional focus on nuclear deterrence, which India was opposed to. The third was that India anticipated that the US was moving away from the old established nuclear order (to which India was not part of) to establish a new order and that India could join the new framework in the emerging global nuclear order. A fourth reason was India's own desire to forge closer ties with the US, a policy articulation that was becoming important in the early 2000s. Nevertheless, there were fluctuations in India's policy – the change was not definite if one were to chronicle the statements by Indian political and military leadership during this time. However, the new trends began to acquire certain traction following the Chinese ASAT test in January 2007.[5]

Logic for Missile Defence Shield

As stated earlier, New Delhi began to seriously consider missile defense options in the mid-1990s.[6] Though China had long-range missiles that could strike India for a couple of decades, they were not deemed to pose as important a threat for India to pursue missile defense options. Pakistan figures as a somewhat more unpredictable adversary than China in general and therefore India has had to respond with far more swiftness to threats from Pakistan than China. India's BMD programme is a reflection of this line of thinking. Though India is concerned about China's space capabilities too, this is primarily in the area of ASAT weapons.

The changing global context with a big focus on missile defense, especially on the US side, was also a factor in the Indian policy debates. Also, possibilities of collaboration in high-end technologies with the US was another factor, especially in the context of the India-friendly policies of the Bush administration.

A third and more important factor is the bureaucratic politics around Indian BMD programme. The Defence Research and Development Organisation (DRDO), which leads the BMD programme, has substantial bureaucratic interest in the programme, to the extent that they have opposed import of BMD systems. The DRDO has also made a case for greater funding on account of the missile defense development program. Given the DRDO's poor track record, there is skepticism of the agency's claims of what it has achieved and what can be done.

Four, some also argue that India's move to develop missile defense systems is possibly a reflection of "India's incapacity to deter Pakistan's use of terrorist proxies."[7] The argument

[4] Rajesh Rajagopalan, "Missile Defences in South Asia: Much Ado about Nothing," *South Asian Survey*, 11: 2, 2004, pp. 205-217.

[5] Rajeswari Pillai Rajagopalan, "India's Changing Policy on Space Militarization: The Impact of China's ASAT Test," *India Review*, Vol. 10 , Issue 4, 2011, pp. 354-378.

[6] There are others who have argued that India's decision to pursue missile defence was more of a political imperative than military. See Rajesh Rajagopalan, "India: Largest Democracy and Smallest Debate?," *Contemporary Security Policy*, Vol. 26, No. 3 (December 2005), p. 606.

[7] Sumit Ganguly, "India's Pursuit of Ballistic Missile Defense," *The Non-proliferation Review*, Volume 21, 2014 - Issue 3-4, 2015, pp. 373-382.

has been that should Pakistan "resort to using nuclear weapons, India, with a deployed BMD capacity, can mount a possible response", and that "an effective Indian BMD could partially, if not fully, thwart the incoming attack" with "a much more vigorous nuclear response" to follow.[8]

Lastly, changes in the broader strategic environment around India pushed India to see the utility of missile defenses and in January 2003, the Indian government took a "decision to integrate missile defense into India's nuclear posture."[9]

Technology Development

India's missile defense programme began in the mid-1990s. In 1996, the Ministry of Defence asked the then Scientific Adviser to the Defence Minister, Dr. APJ Abdul Kalam if India could develop a missile defense shield by way of protecting itself from incoming missiles from Pakistan.[10] Dr. Kalam who had by then moved from India's civil space program to the Integrated Guided Missile Development Programme began scouting for systems and components necessary to develop the missile defence shield domestically. India needed a 300 km range radar in order to pick up enemy missile launch from long distances – India only had a 60 km range radar titled, Rajendra which could not be used for a missile defense system. India initially reached out to Russia and later to Israel for the radar since Israel had the Arrow-1 system with Green Pine radar. Given the Israeli collaboration with the US in the Arrow system, Israel could not sell the radar to India. Nevertheless, Israel decided to collaborate with India and offered to develop a Long Range Tracking Radar (LRTR) – the target acquisition and fire control radar. Similarly, India reached out to France in developing the domestically manufactured guidance radar for tracking missiles.[11] The DRDO laboratory, The Electronics and Radar Development Establishment partnered with the French company, Thales.[12] Thereafter, India went on to develop the interceptor missiles, mission control centre and launch control centre.

The first test of India's indigenous BMD was the test of the PAD (Prithvi Air Defence) missile in November 2006 and that of the AAD (Advanced Air Defence) missile in December 2007. With these, India joined an exclusive club of nations – the US, Russia and Israel – that have

[8] Sumit Ganguly, "India's Pursuit of Ballistic Missile Defense," *The Non-proliferation Review*, Volume 21, 2014 - Issue 3-4, 2015, pp. 373-382.

[9] Ashley J Tellis, "The Evolution of U.S.-Indian Ties: Missile Defense in an Emerging Strategic Relationship," *International Security*, Vol. 30, No. 4 (Spring, 2006), p. 144.

[10] Ajai Shukla, "The Untold Story of India's Missile Defence," Rediff, January 30, 2008, available at http://www.rediff.com/news/2008/jan/30missile.htm

[11] Ajai Shukla, "Anti-Ballistic Missile Defence: Star Wars over India," *Business Standard*, December 1, 2012, http://ajaishukla.blogspot.in/2012/12/anti-ballistic-missile-defence-star.html

[12] Electronics & Radar Development Establishment (LRDE), a subsidiary of the DRDO and a major player in the Rs. 2,000-crore programme, has developed two types of radars — the long-range tracking radar and the multi-function fire control radar with two different tie-ups, one with Israel and the other with Thales. Thereafter, the LRDE has indigenized the programme to such an extent that India is in a position to manufacture and meet its needs of radars internally. See Ajai Shukla, "The Untold Story of India's Missile Defence," Rediff, January 30, 2008, available at http://www.rediff.com/news/2008/jan/30missile.htm; and Ashok Sharma, "India's Missile Defence Programme: Threat Perceptions and Technological Evolution," *Manekshaw Paper No. 15*, 2009, http://www.claws.in/images/publication_pdf/1262760881MP_15___111209.pdf

tested anti-ballistic missile capabilities.[13] In March 2009, India conducted a test using ship-launched Dhanush missile (naval version of the Prithvi missile) as the target with a missile range of 1,500 km. Swordfish (the LRTR) radar was used for tracking and destroyed using a PAD missile at an altitude of 75 km.[14] Following the successful interception, Dr. VK Saraswat, then DRDO Chief said, "This system will be our mainstay until we enter Phase 2." India has done multiple tests since then and the DRDO Chief Controller Dr. Selvamurthy in 2015 claimed that the next step is to "move towards multiple target interception,"[15] but the success rate cannot be verified independently. In April 2014, India tested a Prithvi Defence Vehicle (PDV), which is meant to replace the PAD. The PDVs are meant to engage targets in the exo-atmosphere at an altitude above 50 km (31 miles) above earth's atmosphere. The PDV was tested most recently in February 2017 and was a success but the 2014 test, engaging the target at a 120 km altitude had a "near miss" despite the DRDO claiming it as a success.[16] The February 2017 test engaged a target missile fired from an Indian warship in the Bay of Bengal at over 2,000 km from the interceptor launch site located in Abdul Kalam Island in eastern India. There are differing reports on the altitude at which the incoming missile was engaged.[17] India conducted another successful endo-atmospheric test on March 1, 2017 engaging an incoming missile at 15-25 km altitude.

The DRDO has claimed that India has completed phase 1 of the project capable of engaging targets at 2,000 km range and that it is in the process of developing missiles to tackle targets at 5,000 km range.[18] The DRDO also has made some bold claims that the phase 2 of the missile defense system will be comparable to the US Terminal High Altitude Area Defence (THAAD) system, though independent analysts have expressed skepticism over these claims. For instance, it has been reported that PAD missiles have had problems engaging incoming missiles above 80 km altitude, despite DRDO's claims to the contrary.[19] Nevertheless, Dr. Saraswat, former head of DRDO, acknowledged problems in meeting the threat from longer-range missiles.[20] These requirements are critical because the second stage of the missile defence shield is almost entirely catering to the threat of long-range missiles from China.[21]

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[13] "40 Cos Involved in Making of Missile Killers," The Hindu Business Line, January 27, 2008, available at http://www.thehindubusinessline.com/todays-paper/tp-economy/article1614356.ece?ref=archive

[14] "India Tests 'Swordfish' Radar with Successful Missile Defence Test," *domain-b.com*, March 06, 2009, available at http://www.domain-b.com/aero/mil_avi/miss_muni/20090306_successful_missile.html

[15] Vishal Thapar, "India Successfully Tests Missile Defence System," CNN-IBN, March 07, 2009, available at http://ibnlive.in.com/news/india-successfully-tests-missile-defence-system/87057-3.html

[16] Franz-Stefan Gady, "India Successfully Tests Prithvi Defense Vehicle, A New Missile Killer System," *The Diplomat*, February 15, 2017, http://thediplomat.com/2017/02/india-successfully-tests-prithvi-defense-vehicle-a-new-missile-killer-system/

[17] Smriti Jain, "India's impregnable ballistic missile defence interceptor shield is a strong message to Pakistan," *Financial Express*, March 2, 2017, http://www.financialexpress.com/india-news/indias-impregnable-ballistic-missile-defence-interceptor-shield-is-a-strong-message-to-pakistan/572233/; and Franz-Stefan Gady, "India Successfully Tests Prithvi Defense Vehicle, A New Missile Killer System," *The Diplomat*, February 15, 2017, http://thediplomat.com/2017/02/india-successfully-tests-prithvi-defense-vehicle-a-new-missile-killer-system/

[18] "India Starts Work on Phase-II of Missile Defence System," *domain-b.com*, May 18, 2011, http://www.domain-b.com/aero/mil_avi/miss_muni/20110518_defence_system_oneView.html

[19] Rakesh Krishnan Simha, "India Is Building A Missile Defence System - With Russian Missiles!," *Swarajya*, November 8, 2015, https://swarajyamag.com/books/missile-defence-erecting-an-iron-dome-over-india

[20] Sandeep Unnithan, "DRDO Readies Shield against Chinese ICBMs," *India Today*, March 09, 2009, http://indiatoday.intoday.in/site/story/DRDO+readies+shield+against+Chinese+ICBMs/1/31874.html

[21] Sandeep Unnithan, "DRDO Readies Shield against Chinese ICBMs," *India Today*, March 09, 2009, http://indiatoday.intoday.in/site/story/DRDO+readies+shield+against+Chinese+ICBMs/1/31874.html

Moreover, India is yet to conduct tests in an "integrated mode, with both exo and endo interceptor missiles together."[22]

Strategic Implications of India's Missile Defense Programme

India has yet to deploy its BMD system, but it has already had some impact on Pakistan and the strategic balance between the two countries. But the same cannot be said for China. India's missile defense system is unlikely to have significant impact on China.

Pakistan is clearly worried about the possibility that India may build or buy an effective BMD shield, which could lead to the deterioration of its nuclear deterrent. Pakistan has taken a couple of different steps to deal with this problem. One, it is dramatically increasing the size of its nuclear arsenal.[23] Pakistan currently has one of the fastest growing nuclear arsenals in the world, and a part of the reason could be Islamabad's fear of India deploying a BMD. Expanding its arsenal is one way of negating the effectiveness of Indian BMD by simply throwing more missiles at it in the hope that some will penetrate. Second, Pakistan is also developing an entire array of missiles of different ranges to make India's missile defense shield ineffective. Pakistan is developing everything from short-range ballistic missiles to intermediate range ones. Though there are other factors also impinging on these decisions (for example, Pakistan appears to be developing TNWs mainly to deter an Indian conventional invasion), one reason could be that Pakistan hopes that these missiles of different ranges might increase its nuclear deterrence capability in the light of India's BMD. Third, Pakistan is also developing nuclear-capable cruise missiles, which cannot be defeated by Indian BMD systems. In brief, India's BMD system may partly be responsible for the acceleration of Pakistan's nuclear arsenal.

The Indian BMD system may also have a positive impact on strategic stability in the region. One of the purposes of developing the BMD system is to ensure the survival of India's Nuclear Command Authority (NCA), its national leadership. India's No First Use (NFU) nuclear doctrine is based on the assumption that its leadership will survive a potential nuclear first strike by Pakistan so that it can order a retaliatory strike. The NFU policy cannot work in the absence of this confidence. An Indian BMD system, even a limited one that simply protects the NCA in the Indian capital, thus will ensure that India sticks to the NFU policy. Nuclear stability in the region is already under threat because of Pakistan's refusal to accept an NFU policy. If India decides to give up NFU – as many critics in India want – and move towards a first-use doctrine such as the one Pakistan has, the region will be faced with two nuclear powers who both have their fingers on the nuclear trigger, leading to a highly unstable nuclear balance. An Indian BMD can thus have a positive effect by allowing India to maintain its NFU policy.

In the case of Sino-Indian equations, the general consensus is that India's missile defense is not likely to have much impact. Chinese missiles targeting India are primarily of intermediate- or intercontinental-range, which Indian BMD systems do not have the capacity to intercept.

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[22] "India's Ballistic Missile Defence system: All you need to know," *Times of India*, February 12, 2017, http://timesofindia.indiatimes.com/india/indias-ballistic-missile-defence-system-all-you-need-to-know/articleshow/57105516.cms

[23] Sumit Ganguly, "India's Pursuit of Ballistic Missile Defense," *The Non-proliferation Review*, Volume 21, 2014 - Issue 3-4, 2015, pp. 373-382.

Moreover, there is generally strategic stability assumed in the case of India-China dynamics. On the other hand, this may be changing because some reports suggest that China has begun to factor in as a significant issue in India's missile defense calculations. In 2014, India and Israel decided to partner in developing and deploying an anti-missile system against China's conventional and nuclear missiles.[24] India's changing concern about China may have a counterpart in Chinese thinking also. China appears to be developing some concerns about India's growing missile inventory, especially the long-range ones such as Agni 4, Agni 5 and Agni 6. The vociferous reactions in the Chinese state-run media, *Global Times*, illustrate the increasing wariness to India's intercontinental ballistic missiles (ICBMs).[25] Even so, China does not consider India any major threat or competition given "capability gap" that persists between India and China.[26]

In terms of its direct impact, it does not appear to be undermining China's deterrent posture or broadly its strategic dynamics in the near term but it is difficult to predict with any certainty how India's missile defense system might impact in the long term. This is so because strategic weapons are not necessarily seen as significantly relevant in the India-China strategic competition although this is beginning to change on the Indian side. China does not perceive India's missile defence as a major factor because for Beijing, it is the US and not India that has remained critical in its strategic decision-making. But even in the case of China, a successful, limited Indian BMD system will give India greater confidence that its leadership can ride out an initial nuclear attack by China, thus obviating the need to change India's NFU.

Conclusion

India aims to put in place a multi-layered BMD system. But there has been no clarity on what the focus of India's missile defence shield should, or even its architecture.[27] Whatever the focus may be, the delay in the operationalization of India's missile defense shield reveals that India is still a long way from deploying even a limited missile defence shield. DRDO had set a 2014 deadline for operationalizing the two-tiered defence shield. The recent decision by the Indian government to procure 12 batteries of S-400 air defence systems is possibly a reflection of the seriousness of missile threats in India's neighbourhood but more importantly, it shows that the missile defense shield that has been in the making for more than two decades may not be effective. It is also reported that the S-400s might be armed with 40N6 surface-to-air missile, which would make it superior to India's PDV for intercepting ballistic missiles in the exo-atmosphere.[28] Therefore, while India is making some progress, it

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[24] Vivek Raghuvanshi, "India, Israel to Build Anti-Missile System," Defense News, February 6, 2014, http://www.defensenews.com/article/20140206/DEFREG03/302060025/India-Israel=-Build-Anti-Missile-System

[25] "India needs to cool its missile fever," *Global Times*, January 4, 2017, http://www.globaltimes.cn/content/1027113.shtml

[26] Xiaoping Yang, "China's Perceptions of India as A Nuclear Weapon Power," *Regional Insight*, Carnegie Endowment for International Peace, June 30, 2016, http://carnegieendowment.org/2016/06/30/china-s-perceptions-of-india-as-nuclear-weapons-power-pub-63970

[27] Rajesh Rajagopalan, "India: Largest Democracy and Smallest Debate?," *Contemporary Security Policy*, Vol. 26, No. 3 (December 2005), p. 609.

[28] It is not clear whether 40N6 has become operational even in Russia in addition to the emerging complexities in India-Russia relations. For details, see Franz-Stefan Gady, "India Successfully Tests Prithvi Defense Vehicle, A

will be a while before it will have a deployable system. Less than ten successful tests cannot guarantee a workable system for India. If one were to compare, the US has conducted around 40 missile defense tests, since 2001. Whatever the ultimate architecture of the Indian system be, the overall impact of any Indian deployment of BMD will be mixed, with some potentially dangerous consequence in increasing Pakistan's insecurity and thus leading to a larger Pakistani nuclear force, but also allowing India to maintain its NFU posture, thus aiding strategic stability. On the larger global scene, more wide spread resort to ballistic missile defenses or even attempts to develop such capabilities can lead to a technological arms race as various powers try to ensure that they are not left behind in a critical area of national security technology. This fear that one side might develop a strategic technological advantage was one reason for the Cold War US-Soviet ABM Treaty. It might be time to revisit the possibility of developing a wider ABM treaty-like instrument in order to avoid a larger technology arms race.

New Missile Killer System," *The Diplomat*, February 15, 2017, http://thediplomat.com/2017/02/india-successfully-tests-prithvi-defense-vehicle-a-new-missile-killer-system/