

INDIA'S EVOLVING MISSILE DEVELOPMENT STRATEGY IN SOUTH ASIA: MOTIVATIONS AND CHALLENGES*

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Abstract

India's missile development becomes one of the significant delivery systems for increasing Indian deterrent forces. As India's economic imperatives and its strategic partnership with the leading powers grows, its Defence Research and Development Organization tends to embark upon competing strategic force projects that include different variants of missile development programs primarily at three broader competing levels in order to understand the rationale of India's missile development program. They include short, intermediate, and long range of missile variants. While conceptualizing India's competing strategy of its missile development program, the article concludes that India's development of missiles program will have certain implications for Indian deterrent force posture in general and South Asian deterrence stability in particular.

Keywords: India's Missile Development Program; DRDO; India's Missile Variants; Counterforce Targeting; South Asian Deterrence Stability.

Introduction

India attempted to master the technology of missile programme even before the advent of nuclear weapons development in South Asia. Later, India was not only the first to develop and test nuclear weapons, but also acquired missile technology in South Asia. There can be multiple effective delivery systems such as dual aircrafts, bombers, and nuclear submarines that in turn complete India's strategic triad force posture.¹ Each of these particular deterrent force domains

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requires various missile variants. However, arguably, missile technology has become one of the most significant and fastest delivery systems. These are capable of carrying nuclear warheads to the adversary's targets both at the tactical and strategic levels.² It would be an exaggeration to claim that India had developed all of its missile technology indigenously. However, it is imperative to note that India has largely benefited from the Russian, French, Israeli, Canadian, and the United States' technologies in order to produce and establish its deterrent forces, including its missile development programme.³ After two decades of South Asia nuclearization, India continues to successfully maintain strategic partnership with the United States that in turn is benefiting New Delhi to make its nuclear deterrent forces more effective and updated. That being noted, India has been potentially effective by exploiting its rising geopolitical and geo-economic status in Asia-Pacific by forging strategic partnership agreements with a number of developed countries. Therefore, India becomes one of the key states in the US "offshore rebalancing" and/or "pivot to Asia" strategy against the rise of the potential regional power, in this case, China, which could potentially challenge the US predominant role in the Asia-Pacific region.⁴

In this context, it is observed that India would exploit its growing strategic partnership with the US in terms of developing more deterrent forces that in turn could facilitate it in reinforcing its vision to play a major role in the Asia-Pacific region in league with the US and its regional allies. Efforts for non-proliferation and the possibility of establishing arms control regime in the Southern Asian region may not likely to occur soon,⁵ and the US may prioritize its geopolitical interests as a part of its grand strategy rather than encouraging talks to establish a strategic restraint regime in the South Asian region. That being noted, there is a little or no attention being paid by the international community to strengthen and to effectively implement the provisions of non-proliferation regimes, especially by the major powers Party to the Nuclear Non-Proliferation Treaty (NPT). In addition, India's consistent missile expansion program in collaboration with the US and its allies is in full swing. India modernizes its conventional force capability and *prima facie* enhancing civilian nuclear cooperation arrangements with the assistance of the west with ostensible aim to expand its missile development programme. India's Defence Research and Development Organization (DRDO) plays a significant role in making this possible.

This article aims at tracing out India's rationale for acquiring these mega deterrent force projects and the rationale each missile variants has in the broader South Asian nuclear and geopolitics. Also, this article illustrates that India has enhanced almost all ranges of its missile's variants. Therefore, the distinction between the counterforce and counter-value targeting strategy may get blurred in the real dynamics of nuclear warfare. Tellingly, this paper conceptualizes a framework at three broader levels of deterrent force posture.

One, India's short-range missiles are designed for counterforce targeting purposes, but this could cause multiple vulnerabilities to Indian deterrent forces since it has to mobilize closer to the adversaries' border region before they can be used. In doing so, India falls in a classic "use or lose" strategic dilemma.⁶ Either India has to use these deployed short-range missiles before they are pre-empted. Two, India develops intermediate-range missiles that are meant for the counter-value targeting purposes in order to avoid the security dilemma. India now can launch its intermediate-range missile away from the common border regions, which in turn reduces the vulnerabilities to India's deterrent forces. However, Indian security leadership and its DRDO scientists would need to consider the accuracy and speed of these types of missiles to avoid bigger collateral damages particularly if the intermediate-range missile variants are also considered for the counterforce targeting strategy. Three, its longer ranges are enhanced up to the Intercontinental Ballistic Missile (ICBM) level, which are specifically designed to inflict massive destruction and loaded with strategic power projection capability. For example, India becomes one of the nuclear states that have developed ICBM. The US, Russia, the United Kingdom (UK), France, China are the established nuclear weapon states that have already acquired such capability while North Korea the NPT outlier state has recently tested its ICBM. The canisterized long ranges of these types of missiles variants provide India added advantages for covering major parts of China. Also, in some cases, India's longer-range up to the ICBM level could have global reach capability thereby threatening other parts of the world as well. With longer-range ballistic missiles India could further reduce the vulnerabilities to its deterrent forces since these missile deterrent forces can be launched from any parts of India, and even from the deep blue sea - when it comes to India's sea-based deterrent forces. In addition to this, India's longer-range missile variants mean that they can be the prime candidates for Multiple-Independently Re-entry Vehicles (MIRVs) that in turn would further increase India's deterrent force credibility. To this end, the paper first explains India's rationale behind each of Indian deterrent missile variants, as to how these missile projects of all spectrums affect the Indian deterrent force posture in general and

the South Asian strategic stability in particular before it further unpacks the challenges for the Indian missile expansion strategy.

Indian Evolving Missiles Expansion: What Rationale Each Missile Variant Makes?

Under the DRDO, India has successfully developed various families of missiles with varying ranges and payload capabilities. India has been trying to make all of its missiles nuclear capable. Also, India is trying to make the most, if not all, of the missiles ready to be deployed under the canisterized mechanism that in turn boosts up the efficiency of most of Indian ballistic missiles. This system enhances the credibility of Indian missile system.

Short-Range Missile Family for Counterforce Targeting

India has successfully developed short-range ballistic missiles for tactical deployment/ employment objectives. These types of missile capability would enhance India's prospects for crafting counterforces targeting posture. They are land and sea based missile variants. Most of these short-range missiles are nuclear capable, that is, to carry the nuclear warheads to the assigned targets. The short-range missiles family includes land based such as surface-to- surface Prithvi-I (SS-150km), and Prithvi-II (SS-250km). While the Prithvi-III (SS-350km) also known as Dhanush that is a sea-based missile. India has been considering replacing Prithvi-I (150km) with the short-range Prahaar (150km) tactical nuclear weapons carrier that India tested in July 2011, though it still keeps many of Prithvi missiles as part of deterrent forces. In addition to the Prithvi missile variants, India's DRDO has developed other short-range missile variants such as Shaurya (750km to 1900km) a canistered surface-to-surface hypersonic nuclear capable missile, Prahaar (150-300km), and BrahMos B-I and BrahMos B-II supersonic cruise missile (290km). The sea-based short-range missile comprises of K-15 Sagarika (750km) that can be fired from submarine. The DRDO has claimed that Shaurya could also be fired from submarine.

Although India has been trying to make all short-range missiles nuclear capable, yet, Prahaar, Nirbhay, and Brahmos short-range missile variants are ideal that could be used for carrying tactical nuclear warheads, if and when DRDO expands to miniaturize its nuclear warheads.⁷ In doing so, this could increase India's confidence in its deterrent forces. It could also enhance India's prospects for counterforce targeting strategy aimed at preparing to wage a limited war against parts of Pakistan, if there is an outbreak of a war between the two rivals.

These short-range nuclear capable missiles could then be used as tactical nuclear weapons that in turn bolster the Indian Cold Start Doctrine (CSD), which Indian civil and military leadership has recently declared that it has been working on its development and possible deployment against Pakistan. This could also increase the challenges and/or the risk of miscalculations and inadvertent nuclear war in South Asia, especially when both sides possess and presumably deploy their short-range nuclear capable missile variants ready for counterforce targeting objectives. However, India appears not only to increase the number of short-range nuclear capable missiles variants, but also to increase their penetrability to the assigned targets, and to ensure their survivability from the adversary's pre-emptive strikes. India, as part of its deterrent force posture, logically should be contemplating as how to address two fundamental dilemmas with regard to these short-range missile variants, however deterring effects they could have. One, India may not want to place these short-range missiles back to central parts of India. This might waste its deterring purpose. Therefore, it might place these missile variants closer to the Pakistani or the Chinese borders in order to make them more effectively employment contingency plan when it comes to deterrence capability of these types of deterrent forces. Second, in bringing these types of missile variants closer to the borders of its adversaries, India at the same time could also increase the vulnerabilities of these deterrent forces. India would be in a tremendous strategic pressure during the serious crisis situation either to use or lose its short-range missiles. The effective counter-measures by its adversary could continue to increase the vulnerabilities of India's short-range nuclear capable missiles meant for counter-force targeting. As part of solution to this rising dilemma for India's counter-force deterrent force posture, New Delhi is systematically and resolutely continuing to expand the family of its missile development program with increased ranges and payload capability. It also takes good care of its intermediate-range missile variants.

The Intermediate-Range Missile Family: Posturing for Counter-Value Targeting

India's DRDO has long been working on intermediate-range missile family that could enhance its deterrent force posture against the counter-value targeting. India continues to increase its ranges and expands the number of these types of missiles that in turn enhances its posture for counter-value targeting so that if the adversary ever holds Indian major cities at risk of a pre-emptive strike, India can also do the same to retain quantum deterrence balance. Apparently, this brings the Mutual Assured Destruction (MAD) to South Asia. DRDO makes sure

that this type of missile variant can be used for both strategic and tactical purposes. The intermediate-range ballistic missiles are both land and sea-based variants. Amongst the land-based missile variants are: Agni series that comprises Agni-II (2000-3000km), Agni-III (3500-5000km), and Agni-IV (3000-4000km). In addition, India continues to develop the ranges of these types of missile variants. Therefore, it prepares to develop Agni-V (5200+km) and Agni-VI with more than 8000km ranges. However, this may be considered as ICBM thereby making India the sixth nuclear state to have developed the ICBM as a credible deterrent force carrying warheads to the longer distant targets. These long-ranges ballistic missiles become one of the prime candidates for MIRVing - carrying multiple warheads earmarked for multiple targets. This is discussed in the succeeding paragraphs.

Amongst the sea based missile variants, India has already developed the short-range K-15 SLBM (750km). However, many analysts may consider that the short-range of SLBMs may not serve Indian deterrent force posture on the following grounds: first, India may not be able to effectively utilize its deterrent - sea based forces from longer distances. It would need to get closer to the adversary's seashore so as to hit the assigned targets. Second, in doing so, it makes Indian deterrent forces vulnerable to pre-emption. Therefore, in order to address this dilemma, India plans to increase the ranges of its SLBMs for three plausible reasons. One, it would like to prevent the pre-emption against its sea based deterrent forces primarily caused by the vulnerability due to the short-range of these types of missiles. Two, the increased ranges could enable India to strike from the deep sea. Three, with long-range, India could multiply its SLBMs for hitting multiple targets from the sea. That being noted, India tested intermediate-range K-4 SLBM (3500km) in 2014. This reflects a significant increase in its sea based deterrent force ranges as India intends to develop K-5 SLBM with increased range. In the near future, India could further develop long-range of various K-variants SLBMs since it develops more nuclear-powered submarines when it comes to its growing strategic partnership with the major powers particularly with the predominant sea power of US. While exploiting this strategic partnership with the US, India could acquire cutting edge technology from the US to build more nuclear submarines and aircraft carriers that in turn, what many in the US currently perceive, could best serve the US offshore balancing strategy.⁸ Whether or not India would follow each dictum the US present to India will yet to be seen, but here it is imperative to note that India has recently shown its reluctance when it declined the US request for placing its boots on ground in Afghanistan.⁹

Having developed its intermediate-range of Agni and K-variants ballistic missiles, India tends to strengthen its counter-value targeting option specifically against most parts of Pakistan. However, with increased ranges India could also cover most parts of China from land and sea. India's development of intermediate and long-range of ballistic missiles enhances the credibility of its deterrent force posture targeting both the Pakistani and Chinese cities. The increased ranges of Agni and K-series of ballistic missiles prepare India for counter-value targeting for a couple of plausible reasons. First, India may intend to take some of its adversary's cities hostage for bargaining purposes in order to prevent and/or deter, say, Pakistan and China to hit the Indian cities. This can be city-busting versus city-busting strategy that is, if you hit my city, I can hit yours in return. Second, India may intend to MIRV some of its intermediate-range missiles since India have already taken initiatives for MIRVing deterrent force projects. Third, India could also plan to hit most of its adversary's military and nuclear installations with its intermediate-range missiles both from land and sea. However, even if India intends to hit army brigade or any other military force installations as part of its counter-force targeting and posturing strategy; therefore, then India would still be capable to hit cities killing millions of non-combatants when and if the military war escalates to a nuclear level between India and China and/or Pakistan and India. Therefore, the distinction between the counterforce and counter-value targeting could get blurred since most of the military, nuclear installations, and major cities of both nuclear states are generally located closer to the border areas. Nevertheless, the limitation of India's intermediate range of missiles is that India may not be able to hit all parts of its strategic rival China, though these types of missiles could cover most parts of its traditional adversary Pakistan. India's extended ranges of ballistic missiles to the ICBM level in reality have become China-specific since these missiles are capable of going far beyond the peripheral limits of Pakistani territories.

The Long-Range Missile Family: Posturing for Power Projection and Mass Destruction

Amid a consistent arms race and India's expansion of missile programme under the DRDO, India continues to successfully test fire the longer-range of ballistic missiles of Agni variants, that is, Agni V (5000+km) and the longer range three-stage ballistic missile. Although India has already tested Agni V ballistic missile in 2012 and 2013, India still continues to test fire the Agni V in 2016 and 2018 with the same payload. However, the difference between them is that 2012 and 2013 Agni V tests were in "open configuration" while the 2016 and 2018 were

fired from “a hermetically sealed canister mounted on a Tatra launcher truck.”¹⁰ This reflects India’s strides for more technical excellence and maturity in the field of its missile expansion program. According to some reports, India has made key improvements in the Agni-V system with ability to be canister launched. The canister launched system suggested that Agni V missiles could be mated with their warheads. This would give India capability to shift from its “recessed deterrence posture” to a “ready deterrent posture.” In fact, recessed deterrence posture is a posture in which missiles are not mated with their warheads. While in ready deterrent posture the warheads are mated with the delivery systems.

According to Debalina Ghoshal, “Agni-V would surely prove its mettle as a weapon system that enhances India’s nuclear deterrence but could also become a diplomatic weapon that could ensure India’s ability for coercive diplomacy vis-à-vis China.”¹¹ Innovative technology bolstered with its increasingly robust organization DRDO would matter much for India to not only to make most of its missiles, both land and sea versions invulnerable, but at the same time be able to effectively penetrate the adversary’s territory with high degree accuracy to hit the assigned targets. This is discussed later. First, it is imperative to remind that although India could hit with its previous Agni ballistic missile variants most of China’s major cities, including Beijing and Shanghai from its north-eastern parts of India, but in essence, the Agni V becomes more significant for India as it is capable of hitting all Chinese major cities from its central and Southern parts.¹² This can be a significant breakthrough for India when it comes to India’s deterrent force development capability particularly against even the five established nuclear weapon states (US, Russia, China, France, and the UK) and the NPT outlier, North Korea, who has recently tested its version of ICBM capable of targeting the US mainland.¹³ However, all of these nuclear states have already developed the longer ranges of ICBMs.

The question arises as to why India needs to develop longer-range ICBM ballistic missiles when its intermediate-range missiles could quite effectively cover most parts of its adversaries for deterrence purposes. There can be a few key plausible explanations. One, as India’s Draft Nuclear Doctrine (DND) of 1999 still remains an open draft open for further modifications; therefore, India would enjoy a flexibility to shift away from what it had earlier conceptualized. For example, the shift from DND to 2003 amended DND is quite obvious when India declares to retaliate massively when and if its forces are targeted by chemical and biological weapons anywhere in the world. This doctrinal change imperatively raises more

questions than it may answer. It becomes unclear and ambitious, however. India could bring more changes in its DND as it remains open for continuous reconfiguration. In doing so, the modified DND will continuously provide a significant amount of flexibility for Indian deterrent force development that could include nuclear powered submarines and long-range ballistic missiles that later on can be MIRVed. Therefore, the gradual modifications within India's DND would continue to enable India to expand its missiles development program, including that of the long-range of Agni variants.

Two, the long-range ballistic missiles (ICBMs) demonstrate India's breakthrough in technological innovation where technology would matter much for India to enhance the credibility of its deterrent forces. India realizes its limitations against its adversary China as a rising regional economic, military, and technological power. To outpace China, India gears up for conventional and nuclear forces modernization programs to counter-balance the rising military, geopolitical/diplomatic, and the relative clout of China, not only in the regional context, but also at the global level. However, it could take many years before India could match Chinese economic, technological, industrial, military, and geostrategic capability. For example, one of the former Pakistani ambassadors to the US has recently remarked that India would require fifty years to match Chinese influence in region.¹⁴ Nevertheless, the consistent India-US strategic partnership can make a huge difference where India could find ample opportunities to master the latest technological innovations for its deterrent forces that could at least confront, if not outpace, China effectively.

Three, although both China and India have rising trade volume as compared to what China-Pakistan economically invest even under the China-Pakistan Economic Corridor (CPEC) project as envisaged under China's Belt and Road Initiative (BRI), the strategic rivalry between China and India still remains consistent. In fact, the Chinese security leadership has recently shown strategic concerns over the Doklam issue and the India's missile expansion that are capable of targeting major parts of China.¹⁵ Therefore, India would require long-range missiles to target major parts of China from its centre where the Indian deterrent forces would become less prone to Chinese pre-emption.

Four, in addition to these constraints, long-range of missile technology could make India aspire for more power projection capability to maximize its security and military capabilities against the rise of China in the entire Southern

Asian region. India's missile expansion to ICBM level and modernization of its deterrent forces gradually take India away from minimum deterrence what the Indian security leadership had earlier conceptualized. In doing so, this reflects India's strides for power projection vis-à-vis its adversaries that could go beyond the imperatives of minimum deterrence that India had earlier outlined in its DNDs.

In sum, although India's short-range ballistic missiles are supposed to be for counterforce targeting options, its intermediate and long-range ballistic missile variants are ostensibly designed for counter-value targeting as well. That being noted, India could use its short-range ballistic missiles for tactical purposes against Pakistan. Its intermediate-range ballistic missiles could be used against targeting both China and Pakistan. While India's larger-range (ICBM) ballistic missiles go beyond Pakistan and become China-specific that in turn would cover major parts of China for counter-value targeting purposes. On a broader spectrum, India's consistent expansion of ballistic missile variants provides India a mix of counterforce and counter-value targeting capabilities and options. However, the distinction between these two nuclear targeting dynamics could get blurred when it comes to a real war situation.

This could become one of the potent challenges to India's evolving missile deterrent force posture and to its evolving missile development program. Given the conceptualization of India's motivation behind its missile expansion efforts, India may not only strategize to expand its security dynamics by maximizing its security against both Pakistan and China as part of its broader strategic calculus, but also that India may want to expand its ballistic missile development program to the ICBM level for power projection purposes since India apparently aspires to rise as a regional power. These missile variants of different sophisticated ranges as a broader part of India's deterrent force posture would make India more assertive that in turn pose challenges to its deterrent force posture in general and strategic stability of Southern Asian region in particular.

Challenges of India's Missile Force Expansion for Southern Asian Region

As India expands its missile deterrent forces for a mixed of counter-force and counter-value targeting objectives vis-à-vis China and Pakistan, it is imperative to analyse how India's growing missile force expansion may impact India's broader nuclear policy of minimum deterrence that India earlier

conceptualized in its previous 1999 and 2003 nuclear policy drafts, how India's expansion of its missile forces could expand the security dilemma in the Southern Asian region, and how this could increase the arms race and increase the risk of accidental war, say, between India and Pakistan and/or between China and India since China remains concerned about India's bigger missile force development. Such rudimentary essentials are further conceptualized and unpacked in the subsequent paragraphs.

Future of India's Minimum Deterrence: Does Minimum Remain Minimum for India?

Although India has already declared in its 1999 and 2003 policy drafts that it follows minimum deterrence as a broader part of its nuclear policy that frames up the Indian deterrent force framework, which it continues to officially maintain the similar stance, but it is still unclear as to what the minimum deterrence is, what force structure India would develop vis-à-vis its adversaries China and Pakistan, whether or not India's defined minimum deterrence would remain a minimum against both these strategic rivals, and how many more deterrent forces India may require to suffice its perceived minimum deterrent forces. Therefore, it may require more conceptualization when it comes to the essentials of minimum deterrence that commonly illustrate that small number, but credible and survival deterrent forces are sufficient when it comes to minimum deterrence. The conceptual essentials of minimum deterrence could reject the bigger number of nuclear forces bolstered with the sophisticated delivery systems that both the former Soviet Union (Russia) and the US followed during the Cold War.¹⁶ Apparently, the nuclear rivals, the US and the Soviet Union, rejected to follow the proposed minimum deterrence strategy during the Cold War.¹⁷ Minimum deterrence, though desirable, did not suit the US and the Soviet Union because of number of factors such as the bigger geographical distances, the vastness of their territories, the overwhelming strategic responsibility pledge given to their allies and closer partners across Europe and Asia, and the then prevailing bi-polar system where both the US and the Soviet Union were the major powers in the system to prevail since bigger number of deterrent forces would define their status as the only major powers in the Cold War bi-polar system. Does India need to follow these principles that the then Soviet Union and the US had practiced particularly during the peak of the Cold War?

Despite its innocuousness, minimum deterrence for India remains complex mainly when it modernizes its conventional and nuclear deterrent forces.

The gradual shift in India's DNDs, reappraisal of its deterrent force posture, and the strides for bigger number of deterrent forces, including that of sophisticated delivery systems demonstrate the challenges to the minimum deterrence India follows in general and the conceptualization of minimum deterrence in South Asia in particular. Conceptually, while closely defining the essentials of minimum deterrence, perceived here apparently takes India away from the minimum deterrence that it had earlier conceptualized, though the Indian civilian leadership has not yet declared this growing and apparent shift. As India recapitulates its nuclear policy, minimum deterrence may not remain minimum for India in years to come particularly in the context of South Asia. It could rephrase this prevailing concept in South Asia as it tends to expand its clear forces especially its contemporary missiles expansion program. The larger number of deterrent forces, including that of India's growing expansion of missile deterrent forces may not remain consistent with India's nuclear policy of minimum deterrence. India falls in dilemma to contextualize the minimum deterrence for both China and Pakistan in the evolving Southern Asian nuclear politics. That is, what is minimum for China, could this be minimum for Pakistan as well? To cover all major parts of China, India would need more nuclear warheads supported by sophisticated delivery systems with enhanced ranges. All that being noted, minimum does not appear to be the minimum in the Southern Asian region particularly against Pakistan.

Missile Technology: How Advances in Technology Impact the Evolving Indian Deterrent Force Posture?

In addition to the challenges posed to the concept of minimum deterrence in the South Asian region as how India expands its missile deterrent forces, it is imperative to conceptualize that advances in technology enables India to employ its missile development program that would impact its emerging deterrent force posture as part of its nuclear draft doctrine. For example, India claimed in its DND that it could acquire nuclear powered submarine. Today, India is preparing its deterrent force muscles by acquiring both advanced conventional and nuclear forces through its strategic partnership agreements with number of major powers. The employment of innovative technology for India's conventional and nuclear forces modernization objectives could have a couple of key implications for its missile development program in general, and its deterrent force posture in particular.

One, the induction of new technologies would further boost up India's missile development program. This can significantly help India increase the number of its missile variants. India could enable most of its nuclear capable missiles that in turn would ensure the penetrability, survivability, ranges, accuracy, mobility, and speed of these types of missile variants.

Two, India may not lag behind in the technological arms race when innovative technologies in conventional and nuclear domains would matter the most for states so as to quickly achieve their military and political goals without necessarily causing much collateral damage. Modern technologies in India's missiles expansion program would enable it to craft more effective counter-value and counter-force targeting strategies to accurately hit the targets, though collateral damage can still be associated with the counter-force targeting especially when the targets are closer to the population centres. However, innovative technologies in the missile field could minimize casualty of the non-combatants.

Three, reinforcing the second plausible implication with regard to advances in India's missile development program, this could eventually facilitate India in maturing its counterforce targeting strategy. The technological advances could provide India a confidence to strike the assigned targets with precision without even risking the major escalation. This in turn could put India into a more advantageous position when it would desire to have a controlled escalation stage-by-stage in order to gain maximum political and military goals.

Four, advancement in technologies relating to Indian missile development program could enhance India's aspirations to craft strategy to operationalizing pre-emptive strike operations in South Asia. India's BMD system, canisterization of most of its missiles, particularly the ICBM, MIRVs, and increasing the deterring values such as speed, sound, accuracy, lethality, and penetrability into adversary's territory would provide India incentive to strike first without realizing the unintended consequences of arms race or retaliation. This reflects that revolutionary progress in technologies alone may not prevent India's vulnerabilities particularly to its cities through the counter-value targeting and to the military installations at the counterforce targeting level. Despite the technological advancements in the Indian missile development program aside, it may not be convincing to argue that India could successfully protect the whole of India against rivals strikes and, therefore, or would be able to prevent

vulnerabilities to its major cities or to its deterrent forces.¹⁸ Like the US and the Soviet Union that remained mutually vulnerable to each other's mutual counter-attacks during the Cold War despite advance in technology,¹⁹ India remains vulnerable to different types of counter-attacks if it strikes first. Mutual vulnerabilities during the Cold War between the two superpowers and the same between the nuclear adversaries in the broader Southern Asian region remain daunting challenge to deterrence that eventually could deter all sides from attacking first.

However, in fact, as India strides for advancement in technology when it comes to its missile's development program, this will have implications on its deterrent force posture. Therefore, India is expected to bring more modifications to its DND that eventually could provide India flexible option to deal with the outstanding issues of South Asia at a full-spectrum deterrence level (i.e., conventional, tactical and strategic deterrent force levels).²⁰ Based on its advances in technologies, Indian conventional force modernization would assist New Delhi to achieve its military goals at the conventional level without using its nuclear forces. But, India could use both tactical and strategic forces under its ostensible nuclear strategy of massive retaliation, though this could not be so convincing to its adversaries in the Southern Asian region in general and international community in particular.²¹ The strategy of massive retaliation would urge India to get more warheads and delivery systems at all level. This in turn makes India assertive to its deterrent force development program, its deterrent force posture will appear to be aggressive to its potential adversaries, and this maximization in Indian deterrent force structure would entail unintended consequences – vicious cycle of arms race and security dilemma.

Expansion of Security Dilemma: How India's Expansion of Missile Development could further Expand South Asian Security Dilemma?

Can Indian security leadership craft a security policy and deterrent force posture that could protect Indian security without intimidating and/or creating security dilemma vis-à-vis its Southern Asian adversaries? Perhaps, not even if India may continue to sustain a policy of minimum deterrence as this remains quite idealistic when it comes to a real dynamic of international nuclear politics where each nuclear weapon state not only retains, but also persistently modernizes its deterrent forces. The prospects of nuclear disarmament pledged by the nuclear weapon states under the international non-proliferation regimes remain dim. That being noted, as India's expansion of its deterrent forces creates

and/or expands security dilemma, and it may also fall in the similar dilemma when it perceives China's deterrent forces modernization program and its gradual assertiveness in the Indian Ocean region as a source of security threat.

Nevertheless, the better conceptualization of security dilemma may rest in the dispassionate and objective analysis of deterrence forces development between the competing states as to what security policy each state develops and how this creates a security dilemma at what considering level against the other competing state.²² Although the conceptualization of security dilemma has a renewed appreciation during the nuclear age, the idea of security dilemma is two and a half millennia old that can be traced back to the classical work of Thucydides - *The Peloponnesian War* that illustrates that security dilemma became one of the fundamental root causes of conflict between the Athens and Sparta.²³ The security dilemma tends to convey that "under many circumstances an increase in one state's security will automatically and inadvertently decrease that of others."²⁴ But, when there appears to be a consistent expansion of deterrent forces bolstered by sophisticated delivery system by one state, this expands the security dilemma consequently as the other state confronts unintended consequences and increases its perceived security threat.²⁵ Security dilemma exists and continues to expand in the South Asian region between China and India and between Pakistan and India when it comes to their conventional and nuclear forces modernization programs posing perceived threat to each other's security. Particularly, this persists when it becomes hard to identify between the defensive and offensive deterrent forces.²⁶

Arms Race in South Asian Region: Does China remain Concerned?

Since security dilemma prevails in the Southern Asian region with profound security and policy implications, which tends to increase the arms race between the strategic rivals. India's expansion in missile development program includes both counter-value and counter-force targeting assets that have recently created cause of strategic concern for China as well.²⁷ China in the past apparently had no major strategic worries when it came to its deterrence policy against India because most of the Chinese forces were geared-up for the US-specific employment objectives or as a part of its strategy for effective counter-measures, and more broadly for minimum deterrence purposes.²⁸ But the recent Indian deterrent forces ambitious development program particularly its ballistic missiles has become a source of security concern for China that obviously creates strategic

worries for the Chinese leadership. Lately, India's enhanced ranges of its ICBM missiles have become more China-specific that would effectively cover major parts of China both for counter-value and counter-force targeting purposes.²⁹

As part of Indian growing counter-force strategy for a punitive action, it would make both Pakistan and China vulnerable to its ballistic missiles program reinforced with its BMD system including the recent inclusion of S-400 sophisticated air defence system from Russia. India's strides for turning most of its intermediate and long-range of missile variants into MIRVs, its increased ranges of SLBMs, and ambitious aircraft carriers' development project would enable India to successfully confront China with its deterrent forces and to effectively challenge the Chinese security and to constrain latter's influence in the IOR. These competing strategies are emitting an acute security dilemma in the Southern Asian region that would produce multiple security implications for the other regional states, specifically Pakistan that has consistently endeavoured to safeguard its security and the territorial integrity from the perceived Indian offensive military and political policy.

One, India's deterrent forces expansion makes its nuclear force posture more China-specific because it considers the potential rise of China in the Southern Asian region as a threat to the Indian security. Although Chinese advancement of deterrent forces may not necessarily bring India into Chinese strategic calculus, the gradual rise of India both in terms of its economic potential and deterrent forces development especially in the field of missiles expansion could make India more assertive towards China.³⁰ Indian strategic forces' posture vis-à-vis China converges with the current US offshore balancing strategy against China in the broader geopolitics of the Asia-Pacific region where the US contends to retain its position as a predominant player.³¹ Therefore, US considers India as one of the potential strategic partners in the South Asian region that could keep an eye on the perceived Chinese expansion and assertive policy towards the region. As a consequent, the Chinese security leadership may consider the Indian strategic move at behest of the US re-balancing strategy as a security concern for the entire Southern Asian region; but it will be interesting to observe whether or not India would really take an expensive geopolitical ride with the US in order to challenge the rise of China. Can India really afford to do it, and will this remain consistent with India's ostensible policy of minimum nuclear deterrence?

Two, given India's missile forces expansion both against China and Pakistan, it would contribute to its power projection capabilities. India's blooming strategic partnership with the US, France, Israel, Japan and many other regional players in parallel with its "Act East"³² policy reflects that India is doing much to raise its power projection stature as a broader part of its geo-economic and geo-political imperatives. The Indian leadership would like to have India's greater role in the Indian Ocean region to meet its geopolitical and geo-economic goals. For example, on the strategic significance of Indian Ocean, Indian Prime Minister Narendra Modi stated in his speech in Mauritius that "India is becoming more integrated globally. We will be more dependent than before on the ocean and the surrounding regions...so the Indian Ocean region is at the top of our policy priorities."³³ In doing so, India would not only further cement its relations with the regional countries, but would also improve its deterrent forces, including its increased ranges of SLBMs for more nuclear powered submarines to reduce Chinese economic and geopolitical influence in the Indian Ocean region. Very recently, Larry Pressler, who represented South Dakota in the US Senate from 1979 to 1996, recommended building the Indian nuclear submarine fleet against the rising China. In his book, he stated unambiguously and ambitiously that "we can send China a devastating message by strengthening the Indian Navy. An Indian Navy that has the capability of delivering nuclear weapons would cause China great concern. In fact, if we actually outfitted the Indian Navy with nuclear weapons, China might back down from its antagonistic stance in the region."³⁴ Apparently, India places itself in a position where it can create opportunities by enhancing its strategic and economic ties with the major powers to build its deterrent forces both for power projection purposes and to reduce Chinese influence in the IOR.³⁵

Three, in addition to China-specificity and power projection capabilities concerning Indian expansion of missiles program, Pakistan also has landed into a vicious cycle of arms race with India as well. Presumably, the more India expands its missile development program at the multiple deterrent force levels, the more it will tend to increase Pakistan's insecurity, and the more it will create security dilemma for the entire South Asian region. As the Chinese remains concerned of the recent expansion of Indian missiles development program, simultaneously Pakistan also feels threatened and considers this as one of the major factors that undermines the strategic stability of South Asia in particular. Some of the recent Pakistani land and sea based ballistic and cruise missiles tests demonstrates the threats Pakistan perceives from India's highly offensive and destabilizing CSD, along with latter's induction of nuclear powered submarines, S-400 and BMD

deterrent forces capabilities. In an era of mutual assured destruction that in turn causes mutual vulnerabilities in South Asian region, particularly when India is ostensibly following a strategy to aggressively confront both China and Pakistan. This policy in Pakistan-India equation would be perceived in Islamabad as tantamount to undermining of its security and the territorial integrity in comparison to India-China security metric. This could create more problems both at the strategic and tactical levels. The flawed strategies in the era of nuclear revolution could cause more strategic worries that could also include increasing the risk of miscalculations, even outbreak of accidental war, in South Asia.

Risk of Accidental War: How India's Missile Expansion Capability increases the Risk of War in South Asian Region?

It may be convincing to consider that the prospects of major wars between the nuclear states have greatly reduced, but the risk of accidental war still exists due to increasing fog of miscalculations that could be quite easily triggered by information age's complex technologies, unnecessary escalation of crises. This in turn could be quite difficult to control in a heightened state of crisis or due to offensive and counter-offensive strategies of South Asian nuclear rivals, more particularly crafting of more flawed war-fighting strategies like CSD.³⁶ Therefore, despite expansion in deterrent forces, nuclear states may not be able to craft an idealist strategy to fight a war and/or a limited war in the era of nuclear revolution that eventually makes nuclear states mutually much more vulnerable. Also, it may neither be possible for the nuclear weapon states to design security strategy that would not be able to prevent the security dilemma rather it could increase the chances of mutual vulnerabilities both at the strategic and tactical levels. Nevertheless, India's expansion of missiles development program could create certain security and strategic implications that Indian security establishment cannot possibly afford to overlook.

First, as India gradually expands its deterrent forces, including its ballistic missile variants, it increases India's security and adds to its power projection posture capability in the region. The deterrent forces expansion provides India more confidence at all spectrum of its deterrent force posture. Therefore, it provides India an opportunity to craft a strategy based on flexible response principles, which in turn would enable India to fight at the conventional, tactical, and strategic levels that could also include the use of nuclear weapons – that is: 1) at the conventional domain as India continues to develop the CSD capability for waging a limited war; 2) India has already developed *Prahaar* tactical nuclear

weapons that could be deployed at the tactical level; and 3) at the strategic level, India has already developed various long-range missile variants. Also, its short and long-range SLBMs could too be used for both counter-force and counter-value targeting purposes. Therefore, each of Indian deterrent forces are designed for particular assigned targets both against China and Pakistan thereby increasing the chances of miscalculations and risking of an accidental war in the South Asia.

Second, the expansion patterns of India's deterrent forces push it to craft war-fighting strategies based on punitive actions. India's declared CSD is albeit highly flawed, but it still remains a potent strategy for fighting a limited war against Pakistan without intimidating Pakistan to use its nuclear weapons. However, this war-fighting strategy remained flawed for a variety of factors: 1) India has not yet fully matured its deterrent forces, including that of its land forces capability to undertake a conventional blitzkrieg for punitive actions against parts of Pakistan. However, India also has serious limitations in the conventional domain; 2) there exists a number of disagreements between the key sections of Indian armed forces that whether or not CSD could successfully be materialized and bring political and military successes as it is designed for such objectives.³⁷ For example, apparently the Indian CSD plan remains a brainchild of the top Indian military hierarchy. The civilian government in India that may not be interested in waging and initiating a limited war and may not approve of this risky adventure that in turn could compromise/risk the civilian leaderships' central authority concerning the strategic issues or options; 3) geographical restrictions such as difficult geographical terrain like mountains, canals, trees/forests, and even desserts are some of the biggest obstructing factors that could frustrate and hamper the successful deployment of Indian CSD;³⁸ and 4) one of the major hurdles and/or challenges for the Indian CSD is Pakistan's development of short range *Nasr* that Pakistani security leadership consider has plugged the deterrence gap and poured "cold water" over India's Cold Start Doctrine.³⁹ *Nasr* is considered to be under a tight centralized command and control mechanism in order to prevent issues such as the pre-delegation and use and lose security dilemmas related to battlefield nuclear weapons employment strategy.⁴⁰

Conclusion

As India's economic imperatives and its geostrategic partnership with the leading major powers more specifically with the US grows, its DRDO tends to embark upon mega strategic force development projects that include various

variants of missile development programs. The missiles development has become one of the most significant delivery systems for increasing Indian deterrent forces. They include short, intermediate, and long-range of missile variants. In a heightened state of mistrust and offensive military strategies of two makes distinction between the counter-force and counter-value targeting potentially quite blurred. This article concludes that India's short-range missiles are particularly designed for counter-force targeting, its intermediate-range missiles are for counter-value targeting option, though these ranges could also be considered for counter-force targeting purposes as well, however, its long-range missiles up to the ICBMs level demonstrate its power projection potentials, including the strategy for a large-scale mass-destruction strategy that India could use as a bargaining chip against its adversaries. In doing so, India's ongoing missile forces development endeavours could have serious security implications for its deterrent force posture in general and strategic stability of the broader South Asia region in particular.

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