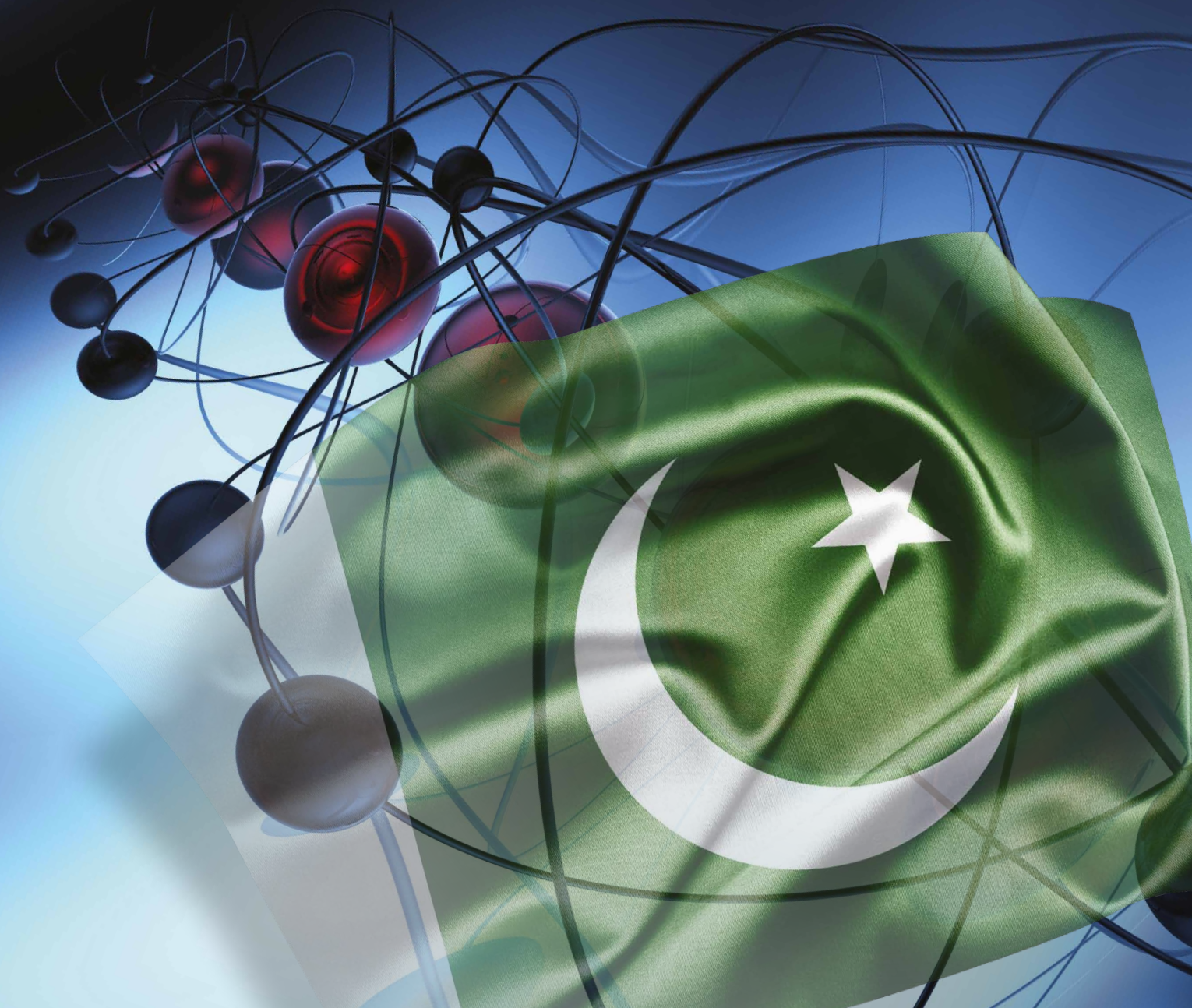


POLICY BRIEF

Pakistan: Whither Minimum Deterrence?



**S. RAJARATNAM SCHOOL
OF INTERNATIONAL STUDIES**

A Graduate School of Nanyang Technological University

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Executive Summary

Following its nuclear tests in May 1998, Islamabad announced that it would pursue a policy of “minimum deterrence” and adopted a quantitative nuclear force building approach. Pakistanis perceived that 60-70 nuclear warheads would be good enough for Pakistan to deter India. In subsequent years, Islamabad however could not sustain its initial declaratory posture and modified its policy in which it emphasised “credibility” over a fixed number of nuclear warheads. This policy modification was significant, because it paved the way for a rapid expansion of the Pakistani nuclear forces. Today, the country is assumed to be the fastest growing nuclear weapons state in the world.

Pakistan now has 90-110 nuclear warheads in its arsenal. It has built a significant stockpile of fissile materials. Pakistan’s missile force is formidable, which includes both ballistic and cruise missiles. Of particular significance is the addition of a 60km range tactical weapon system, which has increased the possibility of nuclear use in an Indo-Pakistani crisis. Islamabad recently has also embarked on building sea-based assets. Pakistan’s nuclear activities highlight a maximalist tendency rather than a minimalist one.

What drives Pakistan’s nuclear force building? First of all, Pakistanis equate nuclear weapons with the survival of the state against the mortal threat posed by India. Second, although Pakistanis following the nuclear tests perceived that a specified number of nuclear weapons would deter the adversary, they subsequently realised that minimum deterrence could not be defined in static terms. Third,

India’s adoption of the “Cold Start” war doctrine made critical impact on Pakistan’s nuclear policy. In response, they built a tactical system - the *Nasr*. Fourth, the Indo-U.S. nuclear cooperation agreement strengthened the Pakistani resolve to increase its fissile material stockpile. Fifth, New Delhi’s intention to build a missile defense shield made Pakistanis very concerned about the credibility of their deterrent; hence they began to rapidly expand the nuclear arsenal.

The rapid expansion of the Pakistani nuclear arsenal will have significant implications on deterrence stability in South Asia. First of all, it will make crisis stability more precarious. Second, it will accelerate the pace of Indo-Pakistani tit-for-tat nuclear arms building. Third, the introduction of tactical nuclear weapons will increase the possibility of nuclear use in a future crisis. Fourth, the nuclearisation of the Pakistan navy will make significant destabilising impact on South Asia’s deterrence.

Given the above context, this paper makes several policy recommendations. First, minimum deterrence works, hence Pakistan should revert back to its declaratory posture of minimum deterrence. Second, Islamabad should make every effort to avoid an arms race with India. Third, Pakistan does not need sea-based assets because other components of its deterrent are good enough to deter India. So, it should not nuclearise its navy. Fourth, Pakistan should actively seek a regional arms control regime. Fifth, Pakistan should be more judicious in its missile development. Sixth, Islamabad should gear up its effort for nuclear confidence building in order to reduce the danger of a nuclear war in South Asia.

Introduction

Following the May 1998 nuclear tests, Pakistan announced that it would pursue a policy of “minimum deterrence.” At the time, the country’s policy elites thought that such a posture would require an arsenal of 70 nuclear warheads.¹ Islamabad, however, could not sustain its initial policy for long and modified it into what it called “credible minimum deterrence.”² Apparently it was a simple modification, but in reality its implications were huge as it prompted an expansion of the Pakistani nuclear arsenal. Consequently, Pakistan steadily increased the number of nuclear warheads and fissile material stockpile. According to the latest report of Stockholm International Peace Research Institute (SIPRI), Pakistan possesses 100-120 nuclear

weapons (SIPRI Year Book, 2013), which is a significant increase from a total of two warheads in 1998 (see Table 1). Indeed, various sources indicate that Pakistan in recent years has emerged as the fastest nuclear arms builder in the world and is set to be the fourth largest nuclear-armed state in the next few years (Sanger and Schmitt, 2011).

Notwithstanding the claim that it is pursuing “minimum deterrence,” Pakistan has moved well beyond minimalism. Indeed, it is pursuing an open-ended nuclear expansion, which will produce destabilising strategic consequences in South Asia and the broader Asian region.

Pakistan’s Growing Nuclear Capabilities

Fissile Material and Warheads

Since its nuclear tests in May 1998, Pakistan has expanded and modernised, initially steadily and subsequently rapidly,

its nuclear arsenal. In the initial years following the nuclear tests, the arsenal expanded by adding six nuclear weapons per year, but from 2006 onward Pakistan added ten nuclear weapons on an average each year. Table 1 demonstrates how the arsenal has expanded since 1998.

Table 1: Growth of Pakistan’s Nuclear Arsenal, 1998-2013

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimated no. of nuclear weapons	2	8	14	20	26	32	38	44	50	60	70	80	90	100	110	120

Sources: Adapted from Robert S. Norris and Hans Kristensen, “Global Nuclear Weapons Inventories, 1945-2010,” *Bulletin of the Atomic Scientists*, vol. 88, no. 4 (July-August 2010), pp. 77-83; *SIPRI Year book, 2013: Armament, Disarmament and International Security* (Oxford: Oxford University Press, 2013).

Islamabad initially adopted a ‘quantitative’ force building approach, specifying both short-term (2000-2005) and long-term (2000-2020) numerical force development targets (IISS, 2007: 33). In absence of government source materials, it is difficult to know exactly what quantitative

target Islamabad set for its short-term and long-term warhead development. However, the thinking about the minimum deterrent, as noted above, was that about 70 nuclear weapons should be good enough to deter India and at the beginning of 2006, President Pervez Musharraf

¹ Samar Mubarakmand, the leader of the 1998 nuclear test team, stated in an interview that 60-70 nuclear warheads would be good enough for Pakistan to deter India. See, *Dawn*, 3 June 1998. Brigadier (Retd.) Naeem Ahmad Salik, a former Strategic Plans Division official, has asserted that Pakistan would need 68-70 nuclear warheads for deterrence against India (Salik, 2006: 15).

² As Pakistan’s foreign minister Abdul Sattar argued: “The minimum cannot be quantified in static numbers. The Indian build up will necessitate review and reassessment in order to ensure the survivability and credibility of the deterrent. Pakistan will have to maintain, preserve and upgrade its capability” (Sattar, 2000: 3).

indicated that Pakistan had quantified its arsenal (Chakma, 2009:59). As Table 1 indicates, Pakistan's initial quantitative force building posture was subsequently modified and Pakistan significantly expedited its nuclear force building.

Pakistan has also significantly improved the design and yields of its weapons since 1998. In the 1998 nuclear tests, it used devices produced from Highly Enriched Uranium (HEU); subsequently it acquired the capability to produce plutonium (Pu) weapons. Pakistan can now build weapons produced from HEU or Pu or a combination of both.

There is no public information about the Pakistani fissile material stockpile or its production sites. It is generally assumed that Pakistan has built a reasonably elaborate infrastructure for the production of fissile materials, which includes uranium mining, uranium enrichment facilities, nuclear reactor and nuclear fuel fabrication plants and plutonium reprocessing facilities.

Although there is no authentic government source material, it is estimated that Pakistan could produce about 10-15 warheads equivalent of HEU per year and as of the end of 2012, it had about 3000 kg of HEU (International Panel on Fissile Materials, 2013). Assuming that a warhead needs 20 kg of HEU, Pakistan could produce about 150 weapons with this. If Pakistan maintains the current level of HEU production, by 2020 it will have a stockpile of 4600-5400 kg of HEU, from which it can build 230-270 nuclear warheads.

Similarly, Pakistan's Pu stockpile is unknown. Various estimates project that it can produce 6-12 kg of Pu per year (good for 1-3 warheads depending on weapon design) and as of the end of 2012 Pakistan had about 150 kg of Pu (International Panel on Fissile Materials, 2013). Assuming that 5 kg Pu is required per warhead, Pakistan could build about 30 weapons from its existing Pu stockpile. With the current level of Pu production, by 2020 Pakistan will probably have a stockpile of 198-246 kg of Pu, from which it will be able to produce 40-49 nuclear warheads. By 2020, Pakistan then may have an arsenal of 380-429 nuclear weapons (this includes current stockpile of actual warheads and fissile materials).

Nuclear Delivery Systems

Pakistan has built and is in the process of building a diverse array of delivery systems for its nuclear weapons, comprising land, air and sea-based assets.

The strike aircraft F-16A/B and Mirage V, with ranges of 1600 and 2100 km respectively, can deliver nuclear weapons. Given the geographical proximity, these aircraft can target a large number of major Indian cities, industrial zones and military bases.

Pakistan has built a formidable missile force, which is composed of short, medium and longer range road-mobile, surface-to-surface ballistic missiles and two types of cruise missile systems. Pakistani ballistic missiles are of both solid and liquid propellant and can carry conventional as well as nuclear weapons. To be precise, Pakistan's ballistic missiles capabilities include the solid-fuelled *Hatf* battlefield missile series, the liquid-fuelled *Ghauri* intermediate-range ballistic missiles, and the solid-propellant *Shaheen* series. Besides ballistic missiles, Pakistan has developed two types of cruise missile systems - the *Babur* and the *Raad*. Additionally, Pakistan possesses several dozens of M-11 missiles, which Beijing supplied to it in the early 1990s. A list of Pakistani missiles is provided in Table 2.

Table 2: Pakistan's Missile Capabilities

Ballistic Missiles		
Delivery System	Range (km)	Year of Deployment
Abdali (Hatf-2)	180	2012
Ghaznavi (Hatf-3)	400	2004
Shaheen-1 (Hatf-4)	450	2003
Ghauri (Hatf-5)	1,200	2003
Shaheen-2 (Hatf-6)	2,000	2011
Nasr (Hatf-9)	60	(2014)

Cruise Missiles		
Delivery System	Range (km)	Year of Deployment
Babur (Hatf-7)	600	2011
Ra'ad (Hatf-8)	350	(2013)

Sources: Hans Kristensen and Robert S. Norris, Pakistan Nuclear Forces 2011, *Bulletin of the Atomic Scientists*, Vol. 67, No. 4, pp. 91-99.

A key feature of Pakistan's missile development is that several systems were developed in response to strategic developments in the region. The latest addition in the Pakistani missile inventory is the Nasr, a battlefield weapon, which Pakistan first tested in 2011. Islamabad has indicated that the system was built to counter India's 'Cold Start' war doctrine.

Pakistan has embarked on building sea-based assets and announced the establishment of a Naval Strategic Force Command in 2012 (ISPR, 2012). This implies that Pakistan has developed a submarine-launched variant of the *Babur/Hatf-VII (Vengeance VII)* cruise missile. When the missile was first tested in 2005, Pakistan indicated that the system was designed to deploy in submarines. There are, however, questions as to how far the Pakistan Navy is equipped to operate a sea-based delivery capability owing to a shortage of submarines. Currently it has only two 1970s-era Agosta-70s and three 1990s-era Agosta 90B submarines. To achieve a sea-based second-strike capability, Pakistan will require a significant expansion of its submarine fleet, which will impose an enormous burden on the struggling Pakistan economy (Ansari, 2012).

The above discussion highlights that Pakistan has significantly increased its nuclear capabilities since it conducted nuclear tests in 1998. Initially, the expansion of the arsenal progressed at a modest pace, but in recent years the pace of expansion has greatly accelerated. This rapid expansion is incompatible with its declared policy of minimum deterrence. What explains this expansion?

Motivations and Driving Factors of Nuclear Force Expansion

Several factors have driven Pakistan's nuclear force expansion since 1998. The key factor, however, is the perception that nuclear weapons are the ultimate guarantor of Pakistan's survival against the 'mortal threat' posed by India (Chakma 2009). Islamabad closely observes New Delhi's every strategic move and readjusts its policies accordingly in order to maintain the effectiveness and credibility of its nuclear deterrent.

Following its nuclear tests, Islamabad's immediate concern was to build a diverse, effective deterrent force. Its first-generation warheads were uranium-based and it felt the need to build plutonium nuclear weapons and diversify the warhead stockpile. Plutonium weapons are lighter and more suitable for a variety of missile systems. While developing the Pu option, Pakistan did continue to produce and modernise HEU weapons as well.

Islamabad's modification of its nuclear posture and the resultant build-up were also driven by a changed perception about nuclear deterrence. Although Pakistani policy elites initially thought that minimum deterrence based on a fixed number of nuclear warheads would be good enough to deter India, their thinking soon shifted to the belief that 'minimum' could not be defined in *fixed, static* and *quantitative* terms. Instead, it needed to be defined in a dynamic context in order to maintain the effectiveness and credibility of the deterrent. As Pakistan's three leading policymaker-turned-strategic analysts argued:

Minimum deterrence has been and should continue to be the guiding principle of Pakistan's nuclear pursuit. Of course *the minimum cannot be defined in static numbers*. In the absence of an agreement on mutual restraints the size of Pakistan's arsenal and its deployment pattern have to be adjusted to ward off dangers of pre-emption and interception. Only then can deterrence remain efficacious (Shahi, Khan and Sattar, 1999).

Several strategic developments following the nuclear tests also influenced the Pakistani thinking about strategic deterrence and force building. For example, the key conclusion Pakistanis drew from the 1999 Kargil war was that 'limited war' would remain a possibility in the Indo-Pakistani context. The 2001-2002 military standoff between the forces of India and Pakistan demonstrated that Pakistan might have to confront an Indian strategy of coercion in the future. Such a possibility was nearly realised in the wake of the 2008 Mumbai terrorism crisis. Although

all these incidents were triggered directly or indirectly by Pakistan's policy of using non-state militant groups as 'strategic tools'; Pakistani decision-makers concluded that they must remain steadfastly prepared to counter Indian threats to their security and survival, which essentially meant a greater reliance on nuclear weapons in their strategic policy.

Against the backdrop of these strategic developments, New Delhi developed a war doctrine called 'Cold Start.' Islamabad's response to this doctrine was the building of a tactical nuclear weapon - the *Nasr*. As noted earlier, the key motivation for building this capability was to undermine India's newly developed limited war doctrine and maintain the credibility of the country's nuclear deterrent (Khan, 2012).

Additionally, several other developments also prompted Pakistan to expand the nuclear arsenal. Islamabad is extremely resentful of the USA's signing of a civilian nuclear cooperation agreement with India in 2008. The chief implication of this agreement from Pakistan's vantage point was that it would allow India to build more nuclear weapons by freeing up indigenous fuel for use in its nuclear weapons programme because it could obtain fuel for civilian nuclear reactors from the United States and other countries. This would put Pakistan in a strategically disadvantageous position relative to India. More crucially, the agreement signalled a shifting pattern of U.S. alignment in South Asia. Islamabad responded to this development by strengthening its nuclear capabilities.

The possibility of the conclusion of a Fissile Material Control Treaty (FMCT) has also significantly influenced Pakistan's nuclear expansion. For several years the USA and other Western powers have been pressing to initiate negotiations for an FMCT. Pakistani policy elites fear that once this document is signed, Pakistan would be at a disadvantage because its fissile material stockpile would be smaller than India's. Hence, Islamabad has vetoed the initiation of negotiations for an FMCT. The chief motivation for this is to buy time and build a formidable stockpile of fissile material before an FMCT is concluded.

New Delhi has shown considerable interest in missile defence and is probably obtaining assistance from the USA and Israel to build such a system. If India is eventually able to build a robust missile shield, it will, in Islamabad's view, significantly erode the efficacy of Pakistan's nuclear weapons. Accordingly, Pakistan has begun to build more bombs. The Pakistani calculation is that by building more warheads and a diverse array of delivery capabilities, Islamabad could neutralise the effectiveness of an Indian missile defence shield.

The Pakistani leadership also remains concerned about the intention of the USA towards the Pakistani deterrent. They fear that the U.S. in collusion with India (and possibly Israel), may 'take out' the Pakistani deterrent in a surprise attack (Nelson, 2012a). Hence they feel the need to expand their arsenal to make such an attempt futile.

Implications

Minimum deterrence conceivably provides the best hope for strategic stability in South Asia and the broader Asian region. Pakistan's nuclear force development exhibits a maximalist tendency; hence it is bound to have an impact on Asia's strategic landscape and even beyond.

The change from 'minimum deterrence' to 'credible nuclear deterrence' paved the way for a more competitive arms build-up in South Asia and beyond. As a Pakistani analyst has asserted, 'the requirement of credibility can raise level of minimality. . . . It is just that need that a nuclear race is made of' (Siddiqui 1999). The accelerated pace of the competitive nuclear arms build-up may even turn into an open arms race between India and Pakistan with an extra-regional linkage (i.e. China). Indeed, this trend is gradually becoming visible. For example, India in the past two years has accelerated the pace of warhead building to keep pace with Pakistan and China (Nelson, 2012b), while previously it rather took a relaxed approach in the development of its arsenal. SIPRI's 2013 data reveal that New Delhi has also begun to add 10 warheads annually to keep pace with Pakistan, whereas in previous years it added fewer warheads than its sub-continental rival

(SIPRI, 2013 & various years; Rajghatta, 2013). Similarly the announcement of the establishment of a Naval Strategic Forces Command by Pakistan in 2012 indicates an added dimension to the competitive arms building in South Asia. Many analysts are of the view that Pakistan's planned build-up for submarine-based nuclear delivery capability makes little sense for strategic and economic reasons (Ansari, 2012). Islamabad still chose to tread that path to enhance its 'strategic depth' and acquire a 'second-strike capability.' Pakistan pursues a first-use nuclear doctrine; hence the nuclearisation of the Pakistan Navy will have a destabilising impact (Rahman, 2013). A first-use policy is inherently risky and destabilising and the nuclearisation of the Pakistan Navy will expand this risk in the maritime environment. The possibility of miscalculation and accident is higher at sea, where red lines are unclear; hence the nuclearisation of the Pakistan navy will add new dangers to the Indo-Pakistani nuclear relationship.

If New Delhi decides to keep pace with the expansion of the Pakistani arsenal, it will inevitably draw attention from China, thus transforming the Indo-Pakistani nuclear dyad into a triangular nuclear insecurity spiral. It will generate further strategic uncertainty among the Asian nuclear powers, thus putting pressure on Asia's strategic stability.

Islamabad claims that the arms build-up is to restore strategic balance between India and Pakistan, which will help maintain strategic stability in South Asia. There are, however, doubts about the Pakistani claim. The introduction of the *Nasr* is a case in point, since it will affect crisis stability (Basrur, 2011) and enhance the possibility of nuclear use in a crisis-prone South Asia region. Pakistanis claim that the *Nasr* was developed in response to India's adoption of a 'limited war' doctrine. Islamabad has indicated that Pakistan would use nuclear weapons first on a limited scale against an advancing Indian army. As if to put an official stamp on it, Islamabad at a National Command Authority meeting adopted the idea of 'full spectrum deterrence,' implying that Pakistan is building nuclear weapons to use in various strategic

scenarios (Almeida, 2013). New Delhi has responded to the Pakistani move by noting that it would employ massive force in response to any Pakistani nuclear use (Global Security Newswire, 2013a). This action-reaction spiral of strategic moves and counter-moves between India and Pakistan highlights not only an accelerated pace of competitive arms build-up, but also an increase of strategic risks associated with this process.

Flowing from the above point, it could also be asserted that the expansion of the Asian nuclear arsenals may increase the risk of nuclear inadvertence, particularly in South Asia. The possibility of nuclear use is higher in South Asia due to the likelihood of escalation of a conventional war between India and Pakistan to the nuclear level (Rajagopalan, 2007). The Pakistani nuclear build-up will heighten the risk of inadvertent nuclear use in the region.

Pakistan's rapid nuclear expansion also raises concern about the likelihood of those weapons falling into the hands of terrorist groups. Despite Islamabad's claim that its arsenal is secure (Global Security Newswire, 2013b), many remain worried by the weakening of the Pakistani state's capacity to control various terrorist groups operating on its soil.

Policy Recommendations

Pakistan's rapid nuclear expansion is likely to exacerbate strategic tension in South Asia, which will also produce a negative impact on the stability of the broader Asian region. Two aspects of Pakistani nuclear activities, namely the nuclearisation of its Navy and the introduction of tactical weapons, will have a particularly destabilising impact on the regional strategic landscape. Nevertheless, for the reasons given above, Pakistan is likely to continue with the expansion of its nuclear forces and its fissile material stockpile. Pakistan needs to restrain its nuclear build-up given the volatility of Indo-Pakistani strategic relationship and the destabilising impact of its nuclear expansion on South Asia and Asia in general. For the maintenance of strategic stability the following policy adjustments are recommended:

1. Pakistan can and should revert to its initial posture of minimum deterrence. Minimum deterrence works despite the 'unequal' distribution of capabilities (Basrur 2008; Basrur forthcoming), so reverting to its initial policy will not compromise its fundamental strategic objective of deterring India.
2. A key objective of Pakistan's nuclear policy should be an all-out effort to avoid an active arms race with India. A vigorous India-Pakistan arms race will harm Pakistan more than its adversary because India's ability to absorb the costs of an arms race is much higher than Pakistan's due to its superior economic, technological and political capabilities. In short, Pakistan's rapid nuclear expansion is a self-defeating strategy.
3. Pakistan does not need to build sea-based capabilities, because its air and land assets are good enough to ensure deterrence. Such a posture will reduce the economic burden as well as help avoid a nuclear arms race with India.
4. Adding to its inventory of missiles is unnecessary for the same reasons.
5. It is in Islamabad's interest to actively seek an arms control regime, which will benefit it in numerous ways. Of course, Islamabad has proposed a number of proposals in the past, but it needs to be pragmatic in its proposal for such a regime.
6. By building tactical nuclear weapons, Pakistan has narrowed the threshold for nuclear use. It has created a grey area in strategic deterrence between the sub-continental rivals and increased the likelihood of nuclear use in a future Indo-Pakistani crisis. Again, this is a self-defeating strategy. But now that tactical weapons have been built, Islamabad can use them as a tool for negotiating arms control.
7. India, as the other party to the nuclear dyad, should correspondingly pursue policies in a manner that does not appear offensive to Islamabad. For example, New Delhi's apparent intention to build a missile defence shield is alarming to the Pakistanis. Similarly, Islamabad is deeply concerned about India's adoption of the 'Cold Start' war doctrine. Indian policy changes on these issues will have a moderating impact on Islamabad's nuclear policy.'
8. Both India and Pakistan should adopt robust confidence-building measures in order to stabilise their mutual deterrence. For example, the two countries can begin negotiations for a treaty banning tactical nuclear weapons, which will build confidence and significantly reduce the danger of a nuclear war in South Asia. In this context, the INF treaty of 1987 between the United States and the Soviet Union can serve as a model. Similarly, more interaction between the two militaries will significantly reduce their mistrust. A good starting point for this perhaps will be the conduct of a joint exercise for disaster management (including nuclear disaster).

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About the Project on Strategic Stability in the 21st Century Asia

Since June 2012, this project by the Institute of Defence and Strategic Studies (IDSS is a constituent unit of RSIS) has been engaged in identifying and analysing the key sources of strategic stability and instability in contemporary Asia. We sought to augment the prevailing understanding of how forces that stabilise Asia can be strengthened, and how forces that destabilise Asia (or have the potential for doing so) can be managed, and their adverse effects mitigated or contained.

The project addresses three key research concerns: First, examine major power relations in Asia. Second, analyse interstate dynamics within the maritime domain. And finally evaluate the impact of new and emerging military technologies in Asia. To that end, we organised three workshops during January-February 2013. We also commissioned a number of policy briefs, research papers, monographs, and edited volumes on critical security issues that have the potential to affect the security order in Asia over this decade.

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The S. Rajaratnam School of International Studies (RSIS) is a professional graduate school of international affairs at the Nanyang Technological University, Singapore. RSIS' mission is to develop a community of scholars and policy analysts at the forefront of security studies and international affairs. Its core functions are research, graduate education and networking. It produces cutting-edge research on Asia Pacific Security, Multilateralism and Regionalism, Conflict Studies, Non-Traditional Security, International Political Economy, and Country and Region Studies. RSIS' activities are aimed at assisting policymakers to develop comprehensive approaches to strategic thinking on issues related to security and stability in the Asia Pacific.

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