A Comparative Study of Missile Capabilities of India, Pakistan and China

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In the 21st century, India is poised to become the net security provider in the South Asian region and inadvertently, a counter-force to the behemoth, China. However, India's regional power status is contingent on an intimidating China, an unstable Pakistan and a growing strategic nexus between the two countries. The West is concerned about the competitive nuclear and conventional arsenal build-up between Pakistan and India, whereas China is reportedly facilitating in Pakistan's endeavours by providing technology and financial assistance.

Pakistan's nuclear capability development programmes with Chinese assistance are a cause of grave concern. The missile tests of the surface-to-surface ballistic missile Hatf-9 (Nasr) conducted by Pakistan in April 2011 attracted the attention of the world over the supposed nuclear race between the two bordering nation states. The Inter-Services Public Relations (ISPR) press release revealed, "The Nasr missile, with a range of 60 km, carries nuclear warheads of appropriate yield with high accuracy and shoot and scoot attributes".[1] It is believed that Pakistan has ramped up its nuclear arsenal to offset India's conventional military superiority as well as in response to India's "Cold Start" doctrine. The Hatf -2 (Abdali) and Hatf-4 (Shaheen) are Surface-to-Surface Missiles (SSMs) and the Hatf-8 (Ra'ad) is in service with the Pakistan Air Force. There is evidence to suggest increasing Pakistani collaboration with China and North Korea on missile development, although the extent of foreign support

is ambiguous. One of the missiles of Pakistan closely resembles the Chinese M-11 and M-18 and the Ghauri missile is said to be based on the North Korean Nodong-1 and Taepodong-1 liquid propulsion systems. However, Pakistan's indigenous Research and Development (R&D), design and manufacturing capabilities are questionable as there is limited industrial capacity, scarcity of major raw materials like steel, limited technological expertise and wherewithal, and inexperienced defence industry in the state. In addition, there is a need for heavy investments for military modernisation and a well structured military build-up programme. Ironically, despite the challenges, Pakistan has one of the top ten ballistic missile manufacturing capabilities in the world.[2]

The Chinese missile system consists of a broad range of sophisticated ballistic, cruise, air-to-air and surface-to-air missiles. The Asian giant has also been a continuous provider of technology and missile components to countries like Pakistan, North Korea and Iran. China developed the "M" class of short-range ballistic missiles for export in the 1980s as a source of hard currency to continue funding defence research and development during the early stages of the country's economic reform. China is known to have exported the Dong Feng-11 (DF-11) to Pakistan, which served as the basis for the Shaheen-1 and Shaheen-2 missiles. The DF-15 and the newer DF-16 are thought to be the only non-nuclear missiles in use by the People's Liberation Army (PLA) Second Artillery Corps. The tactical use of the DF-15 is similar to the use of Iraqi 'Scuds' in the Gulf War. This involves using the missiles to strike at military targets or to bombard civilian areas outside the range of traditional ordnance. The DF-16 missile would likely replace the D-15 (CSS-6/M9), and possibly the DF-11 (CSS-7/11). China's ballistic missile arsenal has undergone several upgrades with new missiles possessing better range and payload capabilities. Furthermore, China continues to develop technologies for ballistic missile defence counter-measures including "maneuvering re-entry vehicles (MaRV), multiple independently targeted re-entry vehicles (MIRV), decoys, chaff, jamming, thermal shielding, and ASAT weapons."[3]

China continues to invest in its cruise missile programmes and is currently developing and testing several different models of advanced Land-Attack Cruise Missiles (LACMs) that are capable of standoff, precision strikes.[4] China's first LACM was the ground-launched Hongniao-1 (HN-1), which has a range of 600 km and can carry a 300 to 400 kg conventional warhead or a 90 kilo tonne (kT) nuclear warhead. The HN-1 is believed to use inertial guidance with terrain comparison or Global Positioning System (GPS) updates. The primary goal of the HN series development programme was to create a nuclear-capable cruise

missile able to achieve 3,000 km in range. The HN-1 is similar in shape and size to the Russian AS-15A "Kent" (Kh-55) and SS-N-21 "Sampson" (3M10), and to the US RGM-109 "Tomahawk" cruise missiles. The HN-1 has a minimum range of around 50 km. The maximum range of the ground-launched version, designated the HN-1A, is 600 km, while the maximum range of the air-launched version, designated the HN-1B, is 650 km. First made public in 2005, the Kong Di-63 (KD-63) is most likely the first indigenous, long range, air-launched, land attack cruise missile deployed by the Chinese People's Liberation Army Air Force (PLAAF). There are reportedly two variants including the KD-63A, which possess a new conformal antenna that may point to a better guidance package. There are also reports of the KD-63XL which may be an extended range variant.

India's nuclear doctrine envisages building and maintaining a credible minimum deterrent posture with a second strike capability.

India's nuclear doctrine envisages building and maintaining a credible minimum deterrent posture with a second strike capability. The country plans to build a credible nuclear triad under the Strategic Forces Command (SFC) and a robust Ballistic Missile Defence (BMD) system. The Dhanush has been developed as a naval variant of the Prithvi ballistic missile system. The Air Force version of the Prithvi has a range of 250km and it is mainly used to destroy the enemy's Air Force assets like air bases. The Sagarika and Shaurya are Submarine Launched Ballistic Missiles (SLBMs) offering India second strike capability and significantly adding to the country's strategic deterrence. BrahMos Aerospace is a joint venture between India and Russia which has successfully developed the BrahMos supersonic cruise missile system. The missiles have been operationalised in the Indian Army and Navy and are being developed for the Air Force. India's Nirbhay cruise missile system is said to be capable of being launched from the air, sea and land. It is designed to carry nuclear payloads and is compared to the US Tomahawk missile. India has a largely indigenous ballistic missile programme including development and production infrastructures for both solid and liquid propellant missiles. By striving to achieve independence from foreign suppliers, India is hoping to alleviate problems caused by the Missile Technology Control Regime (MTCR). Both India and Pakistan also have fighter aircraft, artillery and rockets available as potential means of delivery for Nuclear, Biological, Chemical (NBC) weapons. India's nuclear doctrine clearly states a no first use policy; however, there have been recent debates to revise its nuclear stance. Pakistan, on the other hand, has consciously kept an unclear nuclear doctrine and policy towards India. In terms of capability to carry nuclear warheads, India possesses multiple missiles of a wide

range. The Prithvi-3 can carry 10-20 kT of nuclear warheads while the Agni-1 can also carry 20-45 kT. The Dhanush, Prahaar, Sagarika and Shaurya are also known to have nuclear warhead capabilities. The Pakistani ballistic missile arsenal boasts of the Hatf-3 (Ghaznavi) and the Hatf-4 (Shaheen-1) which possess nuclear warhead capability with the possible payload at 12-20 kT and 35 kT respectively. Pakistan's cruise missiles, the Hatf-7 and Hatf-8, are also nuclear capable. The Chinese ballistic missiles DF-11/-11A and DF-15 have been built to carry nuclear payloads, so has the HN-1 subsonic cruise missile which can be launched from the ground, a ship or a submarine and from the air.

The tables below depict the missile (ballistic and cruise) capabilities of Pakistan, China and India up to 1,000 km.

Table 1: Pakistan's Short Range Ballistic Missiles (SRBMs)

S. No.	Name	Range (km)	Payload (kg)	Status
1	Hatf-1	70	500	Operational
2	Hatf-1A	100	500	Operational
3	Hatf-1B	100	500	Operational
4	Hatf-2 (Abdali)	180-200	250-450	Operational
5	Hatf-2A (Abdali)	800	280-350	Operational
6	Hatf-3 (Ghaznavi)	290-320	700	Operational
7	Hatf-4 (Shaheen-1)	750	700	Operational
8	Hatf-9 (NASR)	60	Unknown	Development

Table 2: Pakistan's Short Range Cruise Missiles (SRCMs)

S. No.	Name	Range	Payload	Status
1	Hatf-7 (Babur)	750	450-500	Development
2	Hatf-8 (Ra'ad)	350	1,000	Development

Table 3: China's SRBMs

S. No.	Name	Range (km)	Payload (kg)	Status
1.	B611/-611M Zhenmu	260 [improved version]	480	Operational
2.	DF-11/-11A	280-350	500-800	Operational
3.	DF-15/-15A/-15B	600	500-750	Operational
4.	DF-16	800-1000	Unknown	Development
5.	Guided Wei-Shi-2/-3	200	200	Operational
6.	Guided WM-80	280	150	Unknown
7.	P-12 (BP-12/-12A)	150	450	Operational
8.	SY-400	150-200	150-200	Development

Table 4: China's SRCMs

S. No.	Name	Range (km)	Payload (kg)	Status
1.	KD-63	200	513	Operational
2.	HN-1	600	Single warhead	Operational

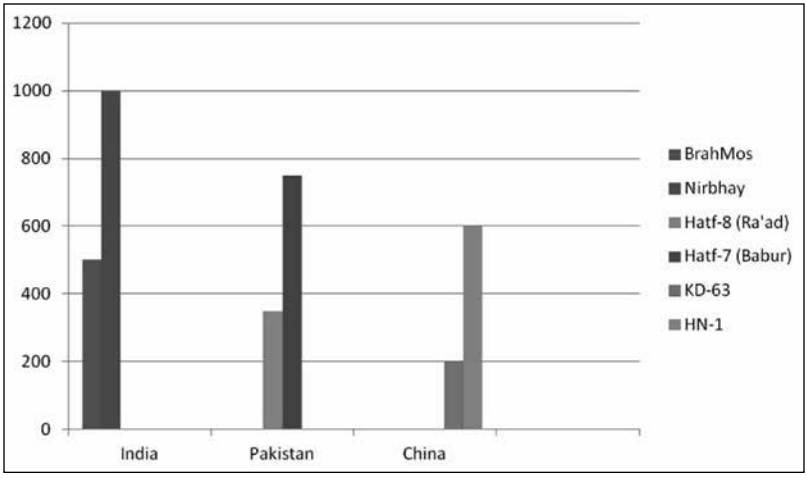
Table 5: India's SRBMs

S. No.	Name	Range (km)	Payload (kg)	Status
1	Prithvi 1	150	1,000	Operational
2	Prithvi 2	350	350-750	Operational
3	Prithvi 3	300-350	500-1,000	Development
4	Dhanush	250-350	500-1,000	Operational
5	Prahaar	150	200	Development
6	Sagarika (K-15)	700	500-800	Development
7	Agni-1	700-1,200	2,000	Operational
8	Shaurya	700	800	Development

Table 6: India's SRCMs

S. No.	Name	Range (km)	Payload (kg)	Status
1	BrahMos	300-500	300	Operational
2	Nirbhay	800-1,000	450	Development

Fig 1: SRCMs Possessed by India, Pakistan and China



X-axis: Range in km

Y-axis: Cruise Missiles (<1,000 km)

Fig 2: Total Nuclear Warheads Possessed by India, Pakistan and China

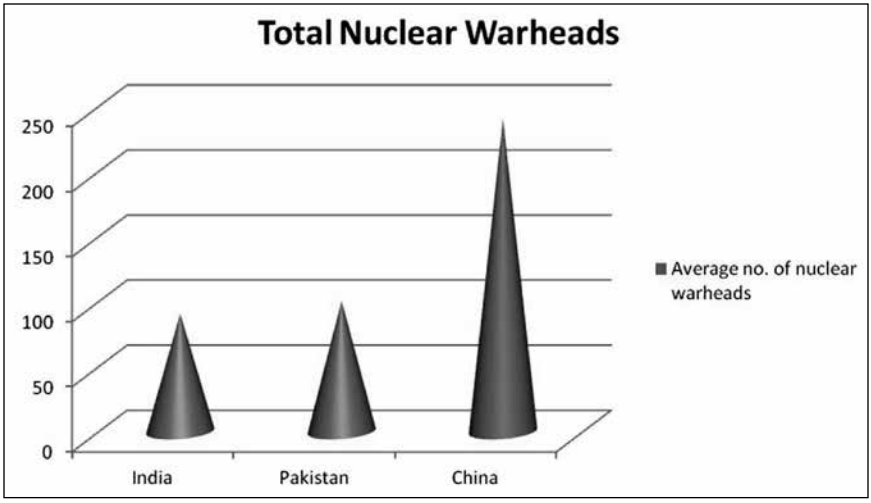


Fig 3: SRBMs Possessed by Pakistan

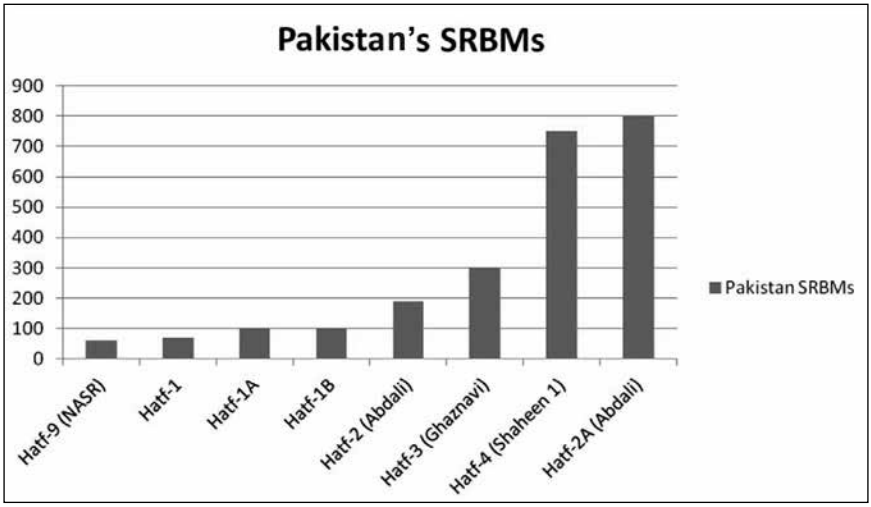


Fig 4: SRBMs Possessed by China

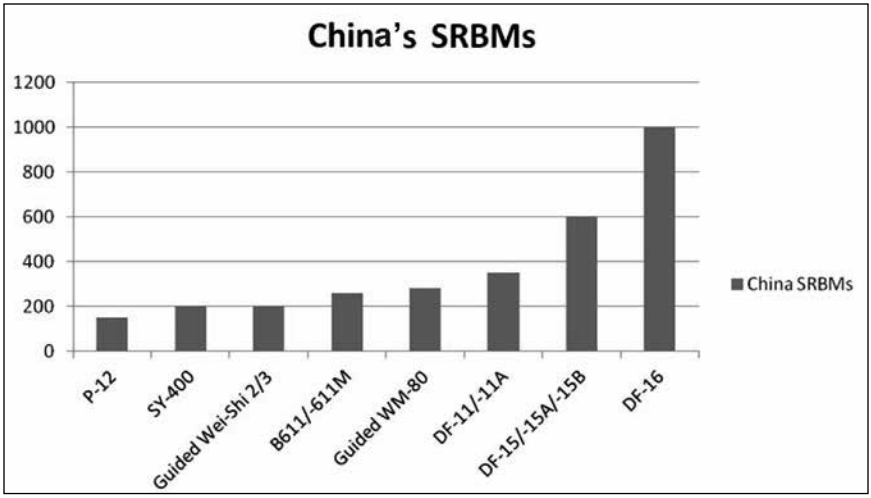
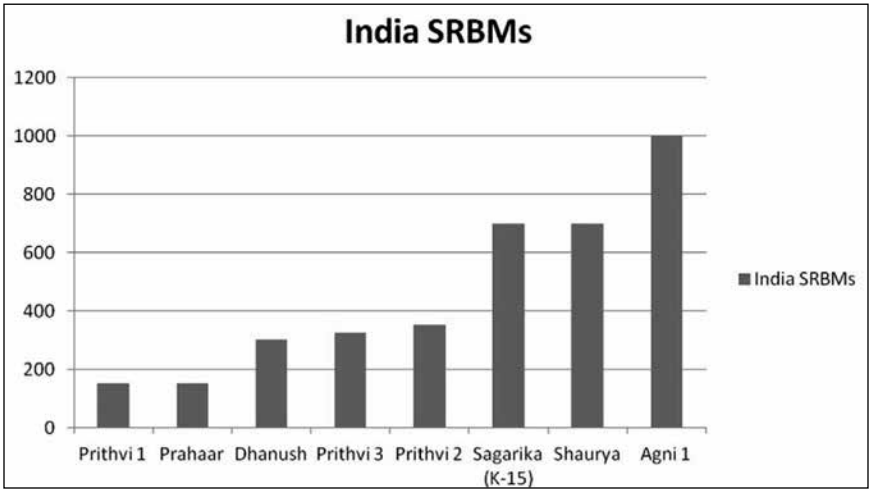


Fig 5: SRBMs Possessed by India



Sources: www.nti.org; www.missilethreat.com

Decades after the US and Russia agreed to halt the proliferation of strategic missile technology, China, Pakistan and India are leading the modernisation of conventional and nuclear-capable ballistic missile and cruise missile forces in Asia. Analysts argue on the several issues that impinge on the security of the South Asia region, including crisis escalation of the potential arms race and the efficiency of the command and control systems of the three countries. However,

a significant cause for concern is the safety and security of the nuclear weapons and arms stockpile in Pakistan. The risks of such weapons being used are huge, including miscalculation, human and system error and cyber and other sabotage. The strategic ramifications of such proliferation are drawing the attention of the international strategic community towards Asia. The extent of the missile build-up and its implications, the effect of the missile control regime and the role played by the West in the Asian continent will decide the nature and course of the 'arms race'.

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Notes

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