Pakistan's military modernization: an overview

By Alex Calvo

Pakistan's three traditional strategic imperatives are uniting a diverse population, confronting India, and keeping Afghanistan divided, to which we can add maritime security. A look at the country's defence policy reveals how they remain the driving force behind Islamabad's efforts at military modernization. At the nuclear level, Pakistan keeps working to achieve a full triad, including sea-based components, while modernizing and expanding tactical weapons. Concerning conventional forces, modernization goes hand in hand with import-substitution, in a bid to expand export markets. Relations with China remain an important pillar of Islamabad's defence industry, which seeks to add more value and export to third countries. While the United States remains an important defence industry partner, Islamabad is increasingly relying on Beijing, as clear from plans to renew her submarine fleet with the acquisition of four boats and the production under licence of a further four. While the Navy is to some extent diversifying away from Karachi, the city remains of the utmost importance to the Pakistani military and the country at large, contributing 25 per cent of GDP, with the proposed China Pakistan Economic Corridor (CPEC) raising even further the country's maritime profile.

Keywords: Pakistan, Military, Armed Forces, South Asia, Nuclear Weapons, Karachi

Pakistan's Prime Minister, Nawaz Sharif, and Army Chief General Raheel Sharif. The military are widely seen as retaining a significant amount of political power despite formally being under civilian command, as clear in areas like foreign policy.¹

Introduction

Pakistani defence policy needs to respond to the country's three traditional strategic imperatives: uniting a diverse population, confronting India, and keeping Afghanistan divided. To these, we must add maritime security. In terms of defence industry, this translates into diversifying suppliers and partners with the goal of maximizing geopolitical leverage, expanding domestic production to contribute to the national economy and the military's patronage and influence, and seeking to turn import substitution and co-production agreements with countries like China into exports to third nations. Nuclear forces remain central to Islamabad's defence planning, making up for conventional inferiority and enabling the use of clandestine, subconventional force. Three key questions are whether Islamabad will develop a full triad, expand her tactical arsenal, and gain a measure of international recognition through agreements with the US and organizations like the Nuclear Suppliers Group (NSG).

A not always hidden tug of war keeps taking place between the country's civilian leadership and the top military brass, in a country whose army has sometimes been described as a 'state within a state'. While third-time Prime Minister Nawaz Sharif enjoys high approval ratings, many people see first-time army chief Raheel Sharif as actually being in control, with some analysts believing that below the surface, the military and the ruling PML(N) are more than happy cooperating while sharing an interest in sometimes seeming to be at loggerheads. In terms of internal security, Nawaz Sharif seems to be paying much more attention to the southwestern province of Balochistan, Pakistan's largest, than his predecessors, in a bid to stabilize the situation in a province labelled by Islamabad-based journalist Wajahat S. Khan as the country's 'geographical Achilles heel'.

U.S. Secretary of State John Kerry in a wreath laying ceremony at Pakistani Army General Headquarters, Rawalpindi, on 13 January 2015, with Chief of Army Staff Raheel Sharif. Islamabad keeps playing a complex balancing act between Washington and Beijing.\(^2\)

Concerning defence industry cooperation with Beijing, the situation in Xinjiang has been casting a shadow over it, following reports of alleged Pakistani involvement. Dr Jonathan Sullivan (Director of Research at the School of Contemporary Chinese Studies, University of Nottingham) says that the 'situation in Xinjiang is increasingly dangerous', with 'the resistance and radicalisation of Uyghurs likely to increase' and 'any suspicion of trans border and transnational links between Uyghur resistance/terrorists' prompting 'difficulties in Sino-Pakistan relations which will have to be carefully managed'. However, Sullivan believes that 'in the broader scheme of things, there are too many strategic benefits for the bilateral relationship to be severely damaged'.\(^3\) Relations with Washington remain of the utmost importance for the US military, not only in terms of military hardware but also concerning a possible nuclear deal and the stalled peace and reconciliation talks.

\(^2\) Source of the picture: https://www.flickr.com/photos/statephotos/16246573276/in/photolist-qKDQw-7byZno-7bvcLF-7byYZ3-pQd3F9-7cx3we-fkSQ8g-qKnejj-qMzRBE-fm81i6-pQSMXZ-pQE1YQ-qveuBp-qv5Yzs-pQEZQa-7byYW3-7cAVUv-7cAVs3-pQd2HC-qM5KhU-quzTkC-qH8mR-pQnWhB-qMa3R6-8jYK1J-8tYtfq-8jYKny-7ofuXu-7ofvji-7ofbrh-8BEbc8-7jVyhg-8M2CGL-piEKJ5-8ACNtb-9iiEcs-ddXKt5-ddXKDF-ddX4a-ddXHE-ddX3G-deuxS9-7obfZB-8jYQQ-8BHgYf-8BEaXn-8BEb3X-8jYKbf

\(^3\) Personal communication to the author, dated 7 November 2015
in neighbouring Afghanistan.

Despite seeking to boost domestic production and exports, Pakistan has been spending growing sums in importing weapons. In 2014-15 alone arms imports totalled $2.86 billion, a sharp increase from the $2.22 billion spent the previous year. Ammunition imports also went up slightly, from $1.92 to $1.97 million.

**Conventional land forces**

Pakistan’s Army is the senior service, fielding more than 600,000 officers and soldiers, plus 800,000 reserve and paramilitary personnel. With more than 2,500, Main Battle Tanks (MBTs) remain central to Army thinking, but the need for protection against air attack is clearly recognized, being one of the priorities in terms of new equipment. In May 2015 the Army inducted the Chinese-made HQ-7B/FM-90 short range air defence missile system, designed to engage not just planes but also cruise missiles, drones, and air-to-surface guided missiles, operating under adverse electronic counter measure (ECM) environments. This system is a copy of France's Crotale SAM.

Pakistan also produces MANPADS, the most advanced version of the Kahuta Research Laboratories ANZA (Lance) series being the ANZA MK III, an improved variant of the Chinese QW-2, with a range of 6 Km, a dual-band infra-red homing seeker, and a warhead with 1.42 kg of high explosive. Malaysia has purchased the MK I and II versions, and Islamabad is seeking new international customers.

In January 2015 fears of proliferation to terrorist groups prompted the European Aviation Safety Agency (EASA) to warn aircraft to exercise 'extreme caution' when overflying Pakistan, following a request by French regulator DGAC, which has banned aircraft operators from flying below 24,000 ft over the country.

**Navy**

Traditionally the junior service, operating in the Army's shadow and receiving a ten per cent share of the 2015 defence budget of $6.6 billion, Pakistan's Navy personnel numbers more than 22,000 active, plus 5,000 in the reserve. This secondary role stands in contrast with the economy's dependence on the sea, with the port city of Karachi contributing 25 per cent of GDP and the proposed China Pakistan Economic Corridor (CPEC) raising even further the country's maritime profile. Much of the Navy's backbone, including its seven submarines, five French-made 'Khalid' class conventional hunter-killer (SSKs) acquired in the 1990s plus two 'Hashmat' class SSKs from the 1970s, is nearing retirement. The Navy is working to acquire new surface and undersea
combatants, boosting domestic shipbuilding in the process in cooperation with Beijing. Plans include a further four 3000-ton F-22P / 'Zulfiqar' (Sword) class frigates with improved sensors and weapons (including HQ-17 surface-to-air missiles, developed from Russia's Tor I/SA-N-9), as well as six Type-022 Houbei stealth catamaran missile boats. State-owned shipbuilder Karachi Shipyards and Engineering Works (KSEW) is responsible for these programs, and is expanding its facilities in the city with a new foundry, manufacturing areas, and two dry docks of 26,000 and 18,000 dead weight tons, spread over 71 acres. Islamabad had been hoping to procure six Perry-class frigates from the US on easy terms, but congressional hostility has prompted greater reliance on China, a country heavily committed at all levels to Pakistan, being a key to Beijing's strategy of securing access to the Indian Ocean and keeping New Delhi distracted by a regional rival.

PNS Badr, a British-built Type-21 frigate, was decommissioned in 2014. Despite being the junior service and the country facing a difficult fiscal position, Pakistan's Navy has been pushing for ambitious plans in terms of both surface and undersea combatants.4

Karachi is the traditional home of the Pakistani Navy, and remains of the utmost importance, despite diversification into other bases, among them PNS Siddique (in Turbat, in the south-west,

4 Source of the picture: https://www.flickr.com/photos/59239214@N08/13457682614/in/photolist-mvd9bA-5Dcn82-a7hA6H-4euFHF-br5Kkbk-55kmYy-8z1BxL-q1otgji-5DE1QL-dMkzcv-5fbDZe-p4jxuE-7vfEeY-5DcmnT-8QcvJb-8uVb6q-5KFumX-5PdRfC-5Demig-8u2Ct5-pHK48X-q1aF5t-q1ixFw-5VWjrR-8tZJjp-5DgCe9-5P9CxK-q15X4D-amu4an-p4jDm9-6c83QQ-8JZokQ-5DhwmA-pHVjMy-pYa4nu-9sJCMF-8tZHT2-8u3P4G-8tZI7T-pHSctu-pHTz7g-q1osJY-pHViHQ-9sZorY-5DE1P3-5E5fFo-otGPpm-5MLCtR-5P9xJt-5PdNvE
close to the strategic deepwater port of Gwadar and the border with Iran), Pasni, and Jinnah Naval Base (also in the south-west). Asked whether security is considered by the Pakistani Navy as a reason to push for further diversification away from the city, Zoha Waseem (PhD Candidate at King's College London and an expert in Pakistani security and policing) explains that 'the situation in Karachi in terms of the ongoing operation is linked with the need of the Military to keep investing in Karachi. The construction of military bases, infrastructure and training centres and accommodation does not appear to be decreasing. Karachi is an ATM machine, and a prime location for any stakeholder to have its assets here'.

Pakistan rangers conducting a search operation after an incident near Karachi airport on 10 June 2014. The city, a major contributor to Pakistan's economy and main shipbuilding and naval hub, remains a hotspot in terms of terrorism and organized crime.

While new ships are seen as essential also in terms of maritime security and the fight against piracy, it is Pakistani plans to acquire new submarines that have met with the greatest concern in New Delhi. In March 2015 Islamabad announced plans to procure eight new Chinese submarines, and in

---

5 Personal communication to the author, dated 4 November 2015
October 2015 confirmed that four would be purchased from Beijing and four built at KSEW. The package includes a training centre in Karachi and probably access to China's Beidou-II (BDS-2) satellite navigation network. Thanks to similar designs, Beijing, in turn, gets to enjoy the necessary maintenance personnel and facilities enabling her to operate her own submarines much more efficiently in the Indian Ocean, home to vital SLOCs (sea lanes of communication) for China. Ideally the Navy would like a total of 12 new boats. These Chinese-designed submarines will probably be based on the air independent propulsion (AIP) equipped Type 39B Yuan SSK (known as S-20 in its export version). Displacing 2,300 tons, they can fire both cruise missiles and 533 mm torpedoes, and also deploy mines and special forces. Pakistan, already working on a version of the National Defence Complex Babur capable of launch from her old Khalid submarines, sees the S-20 as more than a conventional platform, although preventing an Indian blockade is certainly a major goal in and by itself. A sea-based deterrent would provide Islamabad with a second strike capability, while avoiding perceptions of falling behind from India in the nuclear sphere. The resulting greater survivability is seen by Mansoor Ahmed (Stanton Nuclear Security junior faculty fellow at the Harvard Kennedy School's Belfer Center) as providing greater strategic stability to South Asia, given that India could not be sure of completely destroying Pakistani nuclear forces and thus escape unacceptable damage herself.

Work on a sea-based deterrent may also be closely linked to the Navy's status within the military. According to Scott Cheney Peters (US Navy reserve officer and founder of CIMSEC, Center for International Maritime Security), 'Unless Pakistan's Navy can develop an at-sea strategic nuclear deterrent it is likely to remain the "junior service". This means it has a strong institutional incentive to pursue an SLBM second-strike capability. But just as this incentive may not be enough to bring the capability to fruition any time soon, so the second-capability may not be enough to remove the perception of the Navy as a junior partner in the nation's armed forces'.

**Nuclear Forces**

This leads to Pakistan's heavy reliance on nuclear weapons for national defence, with an arsenal estimated at between 100 and 120 warheads, significant Chinese assistance, strong popular support, and a refusal to declare a no first strike policy. Islamabad is moving beyond strategic deterrence, working on a wide range of tactical nuclear weapons. The move is observed with concern by the US, which according to analysts like Ankit Panda (New York chapter president for the Center for International Maritime Security) may offer Islamabad a deal normalizing the country's nuclear

---

7 Personal communication to the author, dated 9 November 2015
program in exchange for capping nuclear forces and more specifically, stopping development of tactical weapons.

IAEA Director General Yukiya Amano meeting a Pakistani Delegation, including Mr Mohammad Anwar Habib (Chairman, Pakistan Nuclear Regulatory Authority) on 27 February 2014. Islamabad seeks a measure of recognition as a nuclear power, in line with India's successful moves.\(^8\)

Short-range systems in development include the National Development Complex Hatf-9 (Nasr), with an estimated range of 60 kilometres (32 nm). Fired from a multi tube launcher, it sports a solid fuel engine and in-flight manoeuvre capability. The Nasr is a derivative of China's Weishi-2 (WS-2) short-range ballistic missile, specifically developed with the export market in mind. Tests have usually involved four-missile salvoes from a so called 'state-of-the-art multi-tube launcher' also derived from a Chinese system. Designed to check advancing Indian armoured forces, detractors fear it could lead to escalation, whereas proponents see limited escalation from conventional to tactical nuclear weapons as a path to de-escalation, in a similar vein to Moscow's thinking. Nasr is

---

\(^8\) Source of the picture: https://www.flickr.com/photos/iaea_imagebank/12814142763/in/photolist-kwkQcV-khyiQH-9yKfgf-9yKgoD-9yNgSS-9yNgCF-m178YZ-9yNhjj-fFuaS4-cCJeDd-cCJgqs-mfoTDh-gVFH8R-m18AFU-dattGS-mfmUuR-55N6RG-qlNbfT-e3ghoR-quCCrc-quSGvr-zKME6-7LmEAX-9t1YhT-5yAQGL-9u7TUZ-9uZyYC-zKME1-8PQEuh-q1Ap6U-quCEeR-qur9JH-qLHP3a-qJLuc5-qLTcT-mfnLce-af2Mx-64q3uB-5ZJdsF-pQ74U2-qLZ5wh-quivTGG-quivXXW-qLTdyz-pQhaxX-quiv7P0-quivCAaa-qLZ3ss-qLTbtT-quivBni
viewed by the Pakistani military as an antidote to India's 'Cold Start' doctrine, based on the employment of independent battle groups in short, sharp blitzkriegs, with little time necessary to mobilize. They expect the spread of tactical nuclear weapons to not only make it more difficult for Indian armoured spearheads to penetrate, but for New Delhi's political leadership to authorize conventional action in the first place. On the other hand, critics believe that if Pakistan and India move away from a counter-value strategy (targeting cities) to a counter-force approach (aiming at each other's military forces), stability will suffer, and war will become more likely. They point at India's nuclear doctrine, which rules out a first strike but calls for massive retaliation in response to any nuclear attack. In 2013 Shyam Saran, the head of the National Security Advisory Board, said that 'The label on a nuclear weapon used for attacking India, strategic or tactical, is irrelevant from the Indian perspective', however not everybody sees this approach as realistic. In line with such doubts, the deployment of the Nasr led Pakistan's foreign secretary, Aizaz Chaudhury, to announce in October 2015 a move from 'minimum credible deterrence' to 'full spectrum deterrence', meaning that Islamabad is no longer formally committed to using nuclear weapons only to respond in kind or when facing an existential threat. Chaudhury said 'Pakistan has built an infrastructure near border areas to launch a quickest response to Indian aggression… Usage of such low-yield nuclear weapons would make it difficult for India to launch a war against Pakistan'. While the Nasr's doctrinal aspects are clear, and the system seems to have been deployed in late 2014, it has not been confirmed whether Pakistan is already capable of building small enough nuclear warheads.

A further regional complication from the Nasr's deployment is the possibility that the spread of tactical nuclear weapons may prompt Iran, which sees itself as surrounded by nuclear weapons states and is acutely aware of close Saudi-Pakistani defence links, to push even harder to develop her own weapons, whatever agreements with other countries may say. Furthermore, just like Pakistan's bomb is seen as a source of pride by the country's population, Iranians similarly view nuclear weapons as a matter of prestige and equality, a posture shared even by the anti-regime emigrés and their descendants.

While the nuclear-capable F-16 A/B remains an important pillar of Pakistan's deterrent, Islamabad is not only working on short-range ballistic missiles but also on their strategic and cruise counterparts. The National Defence Complex has developed the mobile ground-launched cruise missile Babur, or Hatf-7, with a range of 750 km (466 miles) and a circular error probable (CEP) of 20-50 meters. Already operational, it can carry a nuclear or conventional payload of between 450 and 500 kilograms, hugging the terrain at subsonic speeds.
On the other hand, the Air Weapons Complex is working on the air-launched Ra'ad (thunder) or Hatf-8 cruise missile (range 350 km, 189 nm), with stealth capabilities making it easier to penetrate air defence systems. Designed to attacked fixed facilities, the Ra'ad is powered by a turbofan engine and can carry both conventional (450 kilograms of high explosive) and nuclear (10 to 35 kilotons) warheads at subsonic speeds. It was successfully test-fired, for a fifth time, in February 2015. Pakistan claims this missile has been developed domestically, but it resembles some South African projects such as MUPSOW and Torgos, and the two countries have cooperated in weapons development in the past. First tested in 2007, it has been launched from a Dassault Mirage III, and it is unclear whether the F-16 can also deliver it. Pakistan may choose to bypass it and work instead on the JF-17 as a future launching platform. The Ra'ad is supposed to be already operational, but this is unclear.

Pakistani engineers deployed as UNAMID blue helmets in West Darfur in 2009. Pakistan is a major contributor to UN operations, with both military and police personnel, and has gained extensive peace keeping experience.9

---

9 Source of the picture: https://www.flickr.com/photos/sudanenvoy/4147734383/in/photolist-ikxBqm-aBKtjP-g5cfSU-eYLnEg-eww6ht-ewze4s-5aoRJ1-7jwdVM/
**Air force**

65,000-strong, including some 3,000 pilots, Pakistan’s air force operates seven bases and around 800 aircraft. Its traditional workhorse has been the 76 General Dynamics/Lockheed Martin F-16 A/B Block-15 (and other versions such as the F-16C and F-16C/D Block 52) multi-role combat aircraft. These aircraft continue to be modernized, the latest contract being with Lockheed Martin to upgrade 22 existing Sniper Advanced Targeting Pods (ATP) and produce a further 15. ATPs provide pilots with high-resolution imagery for precision targeting, surveillance, and reconnaissance, also automatically tracking and laser designating small tactical targets at long ranges. Furthermore, in October 2015 Washington announced the sale of a further eight F-16. Following the delivery in May 2015 of over 14 combat aircraft, 59 military trainer jets, and 374 armoured personnel carriers, previously used by US forces in Afghanistan and Iraq, the latest F-16 package confirms Pakistan's worth in Washington's eyes. However, it is not clear whether Congress will approve the F-16 sale, American lawmakers being reluctant to approve a transfer not seen as having a direct bearing on the fight against terrorist groups. Other weapons packages are also awaiting approval, in March 2015 Congress having rejected $150 million in military aid and frozen the delivery of second-hand U.S. Navy cutters.

It is thus no wonder to see Pakistan's Air Force, in line with the rest of the military, increasingly reliant on Beijing. On the co-produced Chenghu/Pakistan Aeronautical Complex (PAC) JF-17 Thunder MRCA, to be precise, with 60 in service and plans to purchase up to 250. This is not just a bilateral affair though, given the PAC's confirmation in November 2015 that Russia's RD-93 would remain the JF-17's engine, in a deal which may see Pakistani engine specialists train in Russia, and which has been accompanied by plans for cooperation in other spheres from energy to agriculture. In June 2015 Russia lifted her arms embargo, and in August 2015 Moscow and Islamabad signed a landmark defence deal comprising the sale of Mi-35 Hind E attack helicopters. They are also discussing the possible sale of Sukhoi Su-35 fighter jets. Another third party angle to the JF-17 is the search for further buyers, with a statement in November 2015 by Aviation Industries Corporation of China (AVIC) Executive Vice President Liu Yu that an unnamed air force had signed a purchase contract for an undisclosed number of planes.
Pakistan is one of many countries operating the versatile, robust C-130B Hercules, often involved in humanitarian operations. Able to operate from rough, short strips, the Hercules is well adapted to Pakistan's varied geography.\footnote{Source of the picture: https://www.flickr.com/photos/pallo/208447735/in/photolist-jqmft-e3ji8-6Cmd8i-jqmev-59566T-599gco-oYaVov-qSYUns-e3ghzX-8y5P5u-e3ghLM-tbSfHS-uReUu-8q5tg4-5Dcmjjg-5DgCc9-m19J8V-AggBZV-Arg9mZ-zteNZJ-ePpbJ5-5Wvmu-5WviE-9DMYyh-9DtexB-Ap5ieo-ztePzS-AggFuk-Ap5bZj-AggCLE-AggGcc-9pyVKt-8zZMGc-8R8bq9-9pySMX-5DhwmA-qbHTJv-a7kvN-niWk6t-rCfCAA-uWYQfT-a8X5Np-5WtMo-9DtexAt-9Dtexr-8tZ77T-c5opeY-9sZorY-5Wuw8-5WtQ4}

**Conclusions**

Pakistan's difficult fiscal position has not put a dent on her appetite for military modernization, although major question marks remain, not least of which whether the Navy will finally secure its long-demanded submarines. Islamabad sees cooperation with Beijing as the key to increased indigenization and exports to third country, a goal that will be closer if the deal with an unnamed customer for the JF-17 MRCA is confirmed. Concerning the nuclear sphere, Islamabad is working on tactical nuclear weapons and a sea-based deterrent, and it is unclear whether an offer from Washington for limited recognition would be attractive enough to convince Pakistan to revert to a minimum deterrence posture.
Alex Calvo is a guest professor at Nagoya University (Japan) focusing on security and defence policy, international law, and military history in the Indian-Pacific Ocean Region. A member of the Center for International Maritime Security (CIMSEC) and Taiwan's South China Sea Think-Tank, he is currently writing a book about Asia’s role and contribution to the Allied victory in the Great War. He tweets @Alex__Calvo and his work can be found at https://nagoya-u.academia.edu/AlexCalvo