

Article

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Emerging Force Balances and Postures in South Asia: Trends and Trajectories

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Abstract: South Asia has been embroiled in an action-reaction arms race dynamic for over half a century, marked by several episodes of crises and conflict between India and Pakistan. Following overt nuclearisation in 1998, both countries have continued to develop their conventional and nuclear forces, while India has pursued space for limited war through progressive doctrinal and capability enhancements. Pakistan has responded proportionately through doctrinal evolution and force modernisation to close perceived gaps in its deterrence posture. However, since the 2020 India-China Ladakh crisis, India's conventional superiority with Pakistan has eroded, prompting greater reliance on its dual-use missile arsenal and latent nuclear potential.

Keywords: conventional forces, nuclear weapons, force postures, military modernisation, South Asia

Zusammenfassung: Seit über einem halben Jahrhundert befindet sich Südasien in einem Rüstungswettlauf, geprägt von mehreren Krisen- und Konfliktereignissen zwischen Indien und Pakistan. Nach der offenen Nuklearisierung im Jahr 1998 haben beide Länder ihre konventionellen und nuklearen Streitkräfte kontinuierlich weiterentwickelt. Indien hat zudem durch eine schrittweise Anpassung seiner Doktrin und die Verbesserung seiner militärischen Fähigkeiten Raum für begrenzte Kriege geschaffen. Pakistan reagierte darauf proportional, indem es seine Doktrin weiterentwickelte und seine Streitkräfte modernisierte, um vermeintliche Lücken in seiner Abschreckungskapazität zu schließen. Seit der Ladakh-Krise mit China im Jahr 2020 ist Indiens konventionelle Überlegenheit gegenüber Pakistan jedoch geschwunden. Seither hat Indiens Abhängigkeit von seinem Arsenal an *Dual-Use*-Raketen und seiner nuklearen Latenz zugenommen.

Schlüsselwörter: konventionelle Streitkräfte, Kernwaffen, Streitkräftedispositive, Streitkräftemodernisierung, Süd-asien

1 Introduction

South Asia is home to a quarter of the world's population and two of the world's nine nuclear-armed states. Since gaining independence in 1947, India and Pakistan have endured a history of conflict and hostility, marked by five wars and five crises. These include the full-scale wars of 1948, 1965, 1971, and the limited wars of 1999 and 2025. Five other crises—in 1986, 1990, 2001–2002, 2008, and 2019—eventually defused without further escalation.¹ Despite enduring resource constraints and possessing a smaller resource and industrial base, Pakistan has largely been able to neutralise India's conventional military superiority and nuclear edge by developing a nuclear deterrent between 1974 and 1998, coupled with maintaining a credible conventional force posture.² This paper seeks to map the direction and scope of conventional military modernisation in India and Pakistan, and how it is driving shifts in their doctrines and force postures. It begins with an assessment of the structural features that define South Asia's strategic landscape and then proceeds with an overview of the emerging force balances and capabilities across the armies, air forces, and navies of India and Pakistan. The second part of the paper surveys the doctrinal evolution and nuclear force balances in the region, followed by a conclusion.

India and Pakistan share a 3.323 km-long border which includes 740 km of the Line of Control (LoC), separating the Pakistani and Indian-controlled segments of disputed Jammu and Kashmir. India also shares a 3.488 km-long border with China, known as the Line of Actual Control (LAC), which is also disputed.³ For over seven decades since independence in 1947, much of India's conventional force

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1 Haegeland/Krepon/Lalwani/Yun 2018.

2 See Cloughley 2016.

3 Singh, S. 2021.

posture was deployed against Pakistan, including all offensive assets and formations, given the history of conflict and rivalry between the two countries.⁴ The Kargil conflict in the summer of 1999 was primarily a localised limited war at the Kargil-Drass sector along the northern section of the LoC. This was followed by the ten-month stand-off of 2001-2002 in the wake of the terrorist attack on India's parliament that saw a prolonged mobilisation and deployment of Indian armed forces for an attack on Pakistan. However, the Indian Army took several months to fully mobilise and deploy along the international border with Pakistan and thereby lost the crucial element of surprise.

The lessons of the Kargil conflict and the 2001-2002 crisis were quickly absorbed by the Indian political and military leadership that led to the genesis of the Cold Start Doctrine (CSD) or Pro-Active Military Operations doctrine in 2004.⁵ The CSD shifted the focus from large-scale formations to eight independent battlegroups or independent brigade groups (IBGs) that would be positioned close to Pakistan's border. These groups would be available for rapid mobilisation and a swift but shallow thrust into Pakistani territory, designed for punitive strikes before Pakistan could fully mobilise its forces, and to keep the conflict limited and below Pakistan's perceived nuclear thresholds.⁶

Pakistan responded to India's CSD with the development and testing of the 60-70 km-range nuclear-capable *Hatf-IX (Nasr)* battlefield ballistic missile in April 2011. The introduction of tactical nuclear weapons (TNWs) was projected by Pakistan as a deliberate strategy to lower the nuclear threshold and pursue nuclear warfighting options designed to "pour cold water on Cold Start."⁷ Yet, despite the expansion of Indian and Pakistani nuclear forces after the 1998 tests, both countries have been engaged in one of the world's largest conventional force modernisation programmes.

The 2017 Doklam and the 2020 Ladakh crises with China along the LAC forced a strategic re-think in India's force posture. China also claims India's northeastern territory of Arunachal Pradesh, which it calls South Tibet, and both countries have been rapidly building logistics

and military infrastructure all along the LAC since 2020.⁸ These geo-strategic developments in the India-China dyad exacerbated India's threat perceptions, with China being declared as India's biggest threat instead of Pakistan.⁹ Over the past fifteen years, India was also designated as a "net security provider" and the most important strategic partner of the United States for the latter's Indo-Pacific Strategy to contain China. India's impressive Gross Domestic Product (GDP) growth rate also raised the U.S. expectations of India acting as the most capable candidate to contain China's rise and influence in the Indo-Pacific and in South Asia.¹⁰ These geo-strategic alignments helped promote India's self-image as an emerging great power that is increasingly becoming risk-averse, thereby prompting Pakistan to enhance its overall deterrence posture for preserving a semblance of strategic stability in South Asia.

2 Evolving Conventional Force Balances

It is widely believed that India has long enjoyed a clear superiority over Pakistan in conventional military strength and capabilities for much of their volatile history since 1947.¹¹ This is a function of a larger structural imbalance, with India having a five times bigger population (1.4 billion and 250 million) and a ten times bigger GDP (USD3.9 trillion and USD411 billion).¹² This asymmetry is also reflected in the defence budgets of the two countries, as India's annual spending for 2025-2026 of USD81 billion is ten times greater than Pakistan's USD9 billion.¹³ The last two decades wit-

4 Ajai Shukla: China, not Pakistan, is now India's Enemy No. 1, *Rediff*, 15.01.2021, <https://www.rediff.com/news/special/china-not-pakistan-is-now-indias-enemy-no-1/20210115.htm>.

5 Ladwig 2007/2008.

6 Franz-Stefan Gady: Is the Indian Military Capable of Executing the Cold Start Doctrine?, *The Diplomat*, 29.01.2019, <https://thediplomat.com/2019/01/is-the-indian-military-capable-of-executing-the-cold-start-doctrine/>.

7 Baqir Sajjad Syed: Nasr pours cold water on India's cold start doctrine. *Bajwa*, *Dawn*, 06.07.2017, <https://www.dawn.com/news/1343581>.

8 Rajat Pandit: China still boosting infrastructure, defence positions along LAC, *The Times of India*, 29.01.2025, <https://timesofindia.indiatimes.com/india/china-still-boosting-infrastructure-defence-positions-along-lac/articleshow/117656092.cms>.

9 Ajai Shukla: China, not Pakistan, is now India's Enemy No. 1, *Rediff*, 15.01.2021.

10 Rahul Mishra: India as a Net Security Provider in the Indo-Pacific. Ambitious but Attainable, *The Diplomat*, 30.04.2024, <https://thediplomat.com/2024/04/india-as-a-net-security-provider-in-the-indo-pacific-ambitious-but-attainable>.

11 Tellis 2022.

12 Mubarak Zeb Khan: Pakistan set to miss growth projection for FY25, *Dawn*, 21.05.2025, <https://www.dawn.com/news/1912301>; Sarwant Singh: India's Economic Juggernaut on Way to Becoming The 3rd Largest Economy, *Forbes*, 14.07.2025, <https://www.forbes.com/sites/sarwantsingh/2025/07/14/indias-economic-juggernaut-on-way-to-becoming-the-3rd-largest-economy>.

13 Pakistan ramps up defence spending by 20 percent after India conflict, *Al Jazeera*, 10.06.2025, <https://www.aljazeera.com/news/2025/6/10/pakistan-ramps-up-defence-spending-by-20-percent-after-india-conflict>.



The Indian Army's annual TOPCHI artillery exercise, 17 January 2022

nessed India's unprecedented economic growth, which allowed it to steadily increase its defence budget and become the world's second-largest arms importer between 2020 and 2024, accounting for 8.3 % of global arms imports.¹⁴ India is expected to increase its current defence spending from 1.9 % to 2.5-3.0 % of GDP, with an annual capital expenditure of USD25-30 billion over the next decade on indigenisation and modernisation.¹⁵ India is also likely to continue to leverage unhindered access to the Russian, U.S., French, Israeli, and South Korean arms markets, coupled with exponentially expanding its domestic defence-industrial base. Pakistan is likely to continue with its own conventional and strategic force modernisation, primarily through arms acquisitions and defence industrial collaboration with China and Turkey, with the Saudi-Pakistan Strategic Mutual Defence Agreement, signed on 17 September 2025, expected to assist in overcoming financial constraints.¹⁶

While the conventional force imbalance has been an enduring feature of South Asia's balance of military power, it has reduced in the past fifteen years, partly due to India's

growing deployments along the LAC with China, and due to Pakistan's efforts to modernise its armed forces.¹⁷ India has the world's fourth-largest military force with 1.4 million active military personnel. The Indian Army is divided into six operational commands: Northern, Southern, Western, South-West, Central, and Eastern. Across these commands, the Indian Army fields fourteen Corps including ten defensive "holding Corps" and four offensive "strike Corps". This force comprises sixteen infantry, twelve mountain, three armoured, three artillery, and five mechanised RAPIDs (Reorganised Army Plains Infantry Divisions). These formations are supplemented with seven independent infantry, two independent mountain, eight independent armoured, two independent mechanised, and two independent artillery brigades. Between them, the Indian Army, comprising 1.2 million personnel, is equipped with 3,750 tanks; 3,095 towed, 100 self-propelled and 156 rocket artillery pieces; and 3,100 armoured fighting vehicles.¹⁸

There are 660,000 personnel serving in Pakistan's armed forces. The Pakistan Army comprises 550,000 troops organised in seven holding and two strike Corps. It is structured into three independent commands—Northern Command, with X Corps (Rawalpindi) and XI Corps (Peshawar); Central Command, with I Corps (Mangla), XXX Corps (Gujranwala), IV Corps (Lahore) and XXXI Corps (Bahawalpur); and Southern Command, having V Corps (Karachi) and XII Corps (Quetta). Of these nine Corps, two strike Corps and five holding Corps are positioned close to India's border and the

¹⁴ Cherry Gupta: Top 10 largest arms importing countries (2020–2024). India's position revealed, *The Indian Express*, 24.06.2025, <https://indianexpress.com/article/trending/top-10-listing/top-10-largest-arms-importing-countries-2020-2024-indias-position-revealed-9880245/>.

¹⁵ Parikshit Luthra: Indigenization remains core of India's defence strategy says Defence Secretary Rajesh Singh, *CNBC TV18*, 22.09.2025, <https://www.cnbctv18.com/business/india-defence-capex-indigenisation-roadmap-defence-secretary-rajesh-singh-19683857.htm>.

¹⁶ Maha El-Dahan and Saeed Shah: Saudi Arabia, nuclear-armed Pakistan sign mutual defence pact, *Reuters*, 18.09.2025, <https://www.reuters.com/world/asia-pacific/saudi-arabia-nuclear-armed-pakistan-sign-mutual-defence-pact-2025-09-17/>.

¹⁷ Tarapore 2020.

¹⁸ See International Institute for Strategic Studies 2025, 85–90.

LoC while the two holding Corps deployed on the Afghan border can be redeployed to the international border with India during a crisis.¹⁹ Thus, the total strength of the Pakistan Army available for operations for a conflict with India includes nineteen infantry divisions, one mountain division, two armoured and three mechanised divisions, and three artillery divisions. These are supplemented with five independent infantry brigades, seven independent armoured brigades, one independent mechanised brigade, and fourteen independent artillery brigades that are distributed across seven holding Corps. Pakistan Army fields 2,674 tanks; 1,701 towed, 552 self-propelled and 112 rocket artillery pieces; and 3,200 armoured fighting vehicles.²⁰

Traditionally, Indian Army's Northern, Western, South-Western, and Southern Commands with ten Corps-level formations have been available for operations against Pakistan. This force included the XIV, XV and XVI Holding Corps of the Northern Command; the II Strike Corps and IX and XI Holding Corps of the Western Command; I Strike Corps and X Corps of the South-Western Command; and XXI Strike Corps and XII Holding Corps of the Southern Command, with only four other holding Corps deployed along the disputed LAC with China. These Corps and formations comprised the bulk of the Indian Army that was deployed for operations against Pakistan before the 2020 India-China Ladakh crisis.²¹ As one Indian security expert notes: "Of 14 army Corps, just four-and-a-half faced China, while more than twice that number was ranged against Pakistan."²² Therefore, pre-2020 only twelve Indian Army divisions "faced China, while 25 divisions were deployed on the India-Pakistan border and one division was a reserve under [Indian Army Headquarters]."²³

In the wake of the 2020 Galwan Valley stand-off in Ladakh with the Chinese People's Liberation Army (PLA), the Indian Army Headquarters moved to restructure its force posture to meet the growing Chinese threat, resulting in the repositioning and redeployment of some of the Indian Army Corps from the Pakistan front to the LAC after December 2021. Under the new re-alignment of forces post 2021, only two Indian Strike Corps—the II Corps (Ambala) of the Western Command and the XXI Corps (Bhopal of Southern Command)—are believed to have been deployed against Pakistan. The I Corps (Mathura) was converted to a mountain Strike Corps under

Northern Command facing China along the LAC in Ladakh, and a new XVII Mountain Strike Corps (Arunachal Pradesh) was raised for deployment on the LAC under the Eastern Command. This rebalancing, relocation, and re-orbiting of forces was driven by the need to meet India's two-front war challenge, according to the former Indian Chief of Army Staff, M. M. Naravane: "[The] two strike corps [are now] facing China as opposed to the previous 17 mountain strike corps that were only partially raised. [...] [T]he central sector [...] has been reinforced by another division (14 RAPID Division). This division, meant for operations against Pakistan, is being converted into a mountain division to address any Chinese aggression in the middle sector."²⁴ Although the Corps in the Indian Army's Northern Command can be redeployed against Pakistan, a new equation in the balance of ground forces can be projected between the two countries. Thus, if the Indian Army deploys twenty-nine divisions against Pakistan, it is likely to be matched with twenty-three divisions across the two Strike and five Holding Corps of the Pakistan Army that are already deployed for operations along the international border and the LoC. These seven Corps of the Pakistan Army immediately available for defensive and offensive operations include two armoured divisions, three mechanised divisions, three artillery divisions, fourteen infantry divisions, one mountain division, in addition to independent armoured, artillery, mechanised, and infantry brigades. If the two infantry divisions and one independent armoured brigade of the XI Corps (Peshawar) and two infantry divisions of the XII Corps (Quetta) are also moved to the international border during a crisis, it can enable the Pakistan Army to deploy its full strength of twenty-seven full strength divisions and other independent brigade-sized formations to meet India's threat. On the other hand, assuming the Indian Army is able to reposition all its dual-task formations deployed in the Northern Command for Pakistan and China, and all the available Corps and formations from the Western and South-Western Commands already deployed for Pakistan, and the Corps of the Southern Command, it will then be able to deploy a twenty-nine division force with other independent brigade-sized formations for operations against Pakistan. Such a combined Indian Army posture would likely include four mountain divisions, fourteen infantry divisions, three armoured divisions, three artillery divisions, five RAPID divisions, and four division-equivalent independent brigades (eight armoured, two mechanised, four infantry and one artillery) along with supporting engineering and air-defence elements.²⁵ If a 3:1

¹⁹ Nawaz 2020, 309.

²⁰ Pakistan Army Order of Battle, see The International Institute for Strategic Studies 2024, 301–304.

²¹ Ajai Shukla: China, not Pakistan, is now India's Enemy No. 1, *Rediff*, 15.01.2021. Naravane 2023, 42–45.

²² Ajai Shukla: China, not Pakistan, is now India's Enemy No. 1, *Rediff*, 15.01.2021.

²³ *Ibid*.

²⁴ Naravane 2023, 44.

²⁵ These assessments are derived from the 2024-2025 orders of battle of the Indian and Pakistani armies available in published sources such as the IISS Military Balance.

ratio is generally accepted to execute a successful offensive campaign in the plains and desert areas along the international border with Pakistan and a 6:1 ratio for offensive operations across the mountainous LoC, India will require an estimated forty-three army divisions for a credible defensive posture facing Pakistan and China. However, India would require a minimum force of fifty-four army divisions for the execution of simultaneous military operations against Pakistan and China. The execution of a successful military campaign for capturing, holding, or regaining lost territory against both Pakistan and China would require a force of seventy-two army divisions.²⁶

Both the Indian and the Pakistan Army are pursuing their land force modernisation initiatives and programmes for several years. The Indian Army, for example, still fields the Russian-origin T-90 and T-72 main battle tanks (MBTs) with only a few hundred of the locally produced *Arjun* tanks in operation. India's armoured fighting vehicle fleet also comprises the Soviet-era BMP-1 and BMP-2 models. Although the Indian Army possesses a larger towed artillery inventory, the Pakistan Army has a 6:1 superiority in self-propelled howitzers.²⁷ To bridge the gap in self-propelled artillery, the Indian Army has inducted one hundred K-9 155 mm howitzers with another batch of one hundred K-9 systems on order from South Korea in addition to 307 domestically produced Advanced Towed Artillery Gun Systems (ATAGS). India has recently inducted 145 of the M-777 Ultra-Lightweight Howitzers (ULH) supplied by the United States. The Indian Army has also ordered another five hundred T-90S tanks and has a long-standing requirement for inducting 4,000 towed, mounted, and self-propelled guns and howitzers.²⁸ India also has plans to acquire 1,800 next-generation MBTs and four hundred light tanks over the next fifteen years that will replace the T-72s and will be equipped for net-centric warfare. These will be supplemented with 50,000 tank-mounted anti-tank guided missiles, 600,000 advanced-range artillery rounds, seventy medium- and high-altitude unmanned aerial vehicles (UAVs), among several other pieces of high-technology equipment.²⁹ India has been investing in building a mul-

ti-layered and integrated air-defence network comprising short- to long-range surface-to-air missiles (SAMs), most notably the domestically produced *Akash/Akash-NG* and the Quick Reaction Surface-to-Air Missile (QRSAM) system; the Israeli *Barak-8* and *Spyder*; the Russian S-400; and several other air-defence systems.³⁰

The Pakistan Army is focusing on modernising its armoured forces with the induction of over six hundred VT-4 tanks from China which is being produced under licence in Pakistan as the *Al-Haider* MBT. The Pakistan Armoured Corps comprises T-59IIAP, *Al-Zarrar* (modernised T-59) T-69, T-85IIAP, T-80UD, *Al-Khalid* and *Al-Khalid-1* (MBT 2000), and VT-4 MBTs. It is locally producing *Al-Khalid*, *Al-Khalid-1* and VT-4 tanks and is modernising the older T-59 and T-85 tanks.³¹ The Pakistan Army is also inducting three hundred 155 mm SH-15 howitzers, with transfer of technology, to supplement its inventory of 438 of the 155 mm M-109 and sixty of the 203 mm self-propelled howitzers.³²



MBT *Al-Khalid* at the International Defence Exhibition and Seminar (IDEAS), November 2012

²⁶ Singh, A. 2021; Singh, S. 2021.

²⁷ See the IISS Military Balances from 2023 to 2025.

²⁸ Amit Chaturvedi: Indian Army deploys K9-Vajra howitzer regiment along LAC, *The Hindustan Times*, 02.10.2021, <https://www.hindustantimes.com/india-news/indian-army-deploys-k9-vajra-howitzer-regiment-along-lac-know-all-about-the-gun-101633166922888.html>; Rajat Pandit: CCS approves mega deals for big indigenous artillery guns, *The Times of India*, 20.03.2025, <https://timesofindia.indiatimes.com/india/ccs-clears-mega-deal-for-big-indigenous-artillery-guns/articleshow/119234281.cms>.

²⁹ Manu Pabby: Defence Min unveils 15-year roadmap: Nuclear-powered warships, hypersonic missiles, more on the horizon, *The Eco-*

nomic Times, 05.09.2025, <https://economictimes.indiatimes.com/news/defence/>.

³⁰ See International Institute for Strategic Studies 2025, 89.

³¹ Usman Ansari: Pakistan resumes armor modernization as terror threat recedes, *Defense News*, 20.11.2021, <https://www.defensenews.com/land/2021/11/19/pakistan-resumes-armor-modernization-as-terror-threat-recedes>; Gabriel Dominguez/Samuel Cranny-Evans: Pakistan Army holds induction ceremony for VT4 MBT, *Janes*, 13.10.2021, <https://www.janes.com/osint-insights/defence-news/land/pakistan-army-holds-induction-ceremony-for-vt4-mbt>.

³² Kapil Kajal: China's Norinco delivers SH-15 howitzers to Pakistan, *Janes*, 25.04.2023, <https://www.janes.com/osint-insights/defence-news/defence/chinas-norinco-delivers-sh-15-howitzers-to-pakistan>; Bilal Khan: The Pakistan Army is Evolving Its Strike Capabilities, *Quwa*, 06.02.2022, <https://quwa.org/quwa-premium-excerpt/the-pakistan-army-is-evolving-its-strike-capabilities-2>.

Pakistan has also made important inductions over the past decade including the *Spada* 2000, HQ-16 and HQ-9 variants for the army and Pakistan Air Force (PAF).³³ China has also reportedly offered Pakistan the acquisition of the HQ-19, which is the Chinese equivalent of the U.S. Terminal High Altitude Area Defence (THAAD) air-defence and anti-missile system.³⁴ Both the Indian and the Pakistan Army are raising rocket forces for conventional counterforce and precision strikes at stand-off ranges. The Indian Army is developing an Integrated Rocket Force (IRF) for deployment against China and Pakistan while Pakistan announced the creation of the Army Rocket Force Command (ARFC) on 14 August 2025, Independence Day. This will comprise the *Fatah*-series multiple-launch rocket systems (MLRSs) including the *Fatah*-1 (140 km), the *Fatah*-2 (290–400 km), the *Fatah*-3 (450 km), and the *Fatah*-4 (750 km), along with the *Taimoor* (290 km; air-launched cruise missile – ALCM), among other missile systems.³⁵ Pakistan inducted the first batch of Chinese Z-10ME attack helicopters in August 2025 to replace its ageing fleet of U.S.-origin *Cobra* attack helicopters, following India's induction of the AH-64 *Apache* attack helicopters.³⁶

The Indian Army is more than twice the size of the Pakistan Army. Although the Indian Army's five RAPID and three armoured divisions are larger in terms of armour and armoured fighting vehicles, the Pakistan Army is a more compact force with a higher concentration of armour and mechanisation, with three mechanised and two armoured divisions, for its size, comparable to the Indian Army (550,000 vs. 1.3 million troops). Both armies have independent armoured, mechanised, and artillery brigades attached to their holding Corps to support offensive and defensive operations. The Pakistan Army has the advantage of using U.S.-origin and the latest Chinese weapon systems, of which several are now being produced in Pakistan under licence—such as the VT-4 tank and SH-15 howitzer—with the Z-10ME also planned for large-scale domestic production, while the bulk of the Indian Army's equipment continues to be of Russian origin. Although India is among the world's top importers of military hardware, it is pursuing

an ambitious goal of comprehensive self-reliance for its armed forces, and is investing heavily in domestic research and development (R&D) for import substitution.³⁷ The Pakistan Army has the added advantage of shorter lines of communication with most of its offensive and defensive Corps and formations deployed close to the Indian border. But the country also suffers from a relative lack of strategic depth, given its north-south geography while India being a much bigger landmass with its army Corps spread over the north, west and east of the country. However, after the re-orbiting and re-deployment of two of the four Indian strike Corps and other formations to the LAC with China, the Indian Army's long-held numerical edge over the Pakistan Army has eroded, although the dual-task formations can be redeployed against Pakistan during a crisis. As one South Asia expert wrote in 2020: "India probably cannot achieve its desired battlefield effects against Pakistan or China [...]. Despite a growing imbalance in aggregate national power, Pakistan retains near parity in local conventional military balances in Kashmir and Punjab."³⁸

The Indian Air Force (IAF) has traditionally enjoyed numerical superiority over the PAF, the latter deploying Western-origin platforms—including the F-16 and *Mirage*-III and *Mirage*-V—to offset the IAF's Soviet/Russian-origin inventory of SU-30MKI, MiG-21, MiG-29, and the French *Mirage* 2000 and British *Jaguar* fighter bombers. However, as of September 2025, the IAF will be able to deploy twenty-nine fighter squadrons compared with the forty-two that are the sanctioned strength of the IAF. The backbone of the IAF as of August 2025 comprised a fleet of 270 SU-30MKI with another twelve on order, forty-six *Mirage* 2000, fifty-nine MiG-29, eighty-six *Jaguar* and thirty-six *Rafale* (of which the IAF has reportedly lost four in four-day May 2025 war with Pakistan). The IAF has retired all its MiG-21 squadrons in September 2025 and has inducted the thirty-seven *Tejas* MK-1 fighters with another eighty three *Tejas* MK-1A on order including a follow-on order of ninety-seven *Tejas* MK-1A for over USD7.4 billion.³⁹ The MiG-29 and *Jaguar* are also due for retirement beginning in 2027 and the IAF is likely to order additional batches of the *Rafale* to meet the requirement of 114 medium multi-role combat aircraft

33 See the IISS Military Balances from 2023 to 2025.

34 Akhil Kadidal: Pakistan announces Chinese J-35 aircraft offer, *Janes*, 09.06.2025, <https://www.janes.com/osint-insights/defence-news/air/pakistan-announces-chinese-j-35-aircraft-offer>; Pakistan says China has offered to sell new military equipment, including J-35 fighter jets, *Arab News*, 10.06.2025, <https://arab.news/6j4gt>.

35 Ransing 2025. On 28 October 2025, Pakistan also conducted an unconfirmed hypersonic missile test. See Imran Gabol: 'Don't ask everything'. Khwaja Asif sidesteps question on alleged missile test in Balochistan, *Dawn*, 02.11.2025, <https://www.dawn.com/news/1952578>.

36 Pakistan Army inducts Z-10ME helicopters to 'reinforce battlefield response', *Dawn*, 02.08.2025, <https://www.dawn.com/news/1928244>.

37 See for example: India's Integrated Air Defence Weapon System clears maiden flight test, *The Economic Times*, 24.08.2025, <https://economictimes.indiatimes.com/news/defence>.

38 Tarapore 2020, 17.

39 Bhaswar Kumar: Final nod for ₹62,000 crore deal to procure 97 more Tejas Mk1A jets, *The Business Standard*, 20.08.2025, https://www.business-standard.com/external-affairs-defence-security/news/final-nod-for-62-000-crore-deal-to-procure-97-more-tejas-mk1a-jets-125082000014_1.html.



Pakistani *Fatah-1* MLRS (left) and *Fatah-2* MLRS (right), 9 April 2024

(MRCA) coupled with over three hundred locally produced *Tejas* MK-1/MK-1A fighters.⁴⁰ India's Chief of the Air Staff, Air Chief Marshal A. P. Singh asserts that the IAF will have to induct two squadrons' worth of aircraft or thirty-five to forty fighter aircraft each year for the next decade to achieve the sanctioned strength of forty-two fighter squadrons. This is only possible if India increases the domestic production rate of *Tejas* MK-1A from eighteen to thirty aircraft per year by 2030.⁴¹ The IAF is the weakest among India's three armed forces in 2025. Its rapidly depleting squadron strength is barely sufficient to maintain a slight edge over PAF and will take at least a decade before it is able to retire the legacy platforms from service and induct 4.5- and fifth-generation fighters in the required numbers to achieve the sanctioned strength of forty-two fighter squadrons. India is therefore actively pursuing plans to develop the stealth Advanced Medium Combat Aircraft (AMCA) to match PAF's acquisition of advanced Chinese fighter aircraft such as the J-10C and J-35AE and is also considering to acquire at least two squad-

rons of the Russian SU-57 fifth-generation fighter aircraft.⁴² The IAF deploys three A-50 and three Embraer R99 airborne warning and control aircraft (AWACS) with another two on order. India has ordered six *Netra* MK2 AWACS for USD1.2 billion in July 2025.⁴³ The IAF is also seeking 150 stealth unmanned combat air vehicles (UCAVs) for precision strikes, three hundred medium and high-altitude long-endurance drones for surveillance and reconnaissance, large numbers of tactical high-energy laser systems, twenty directed high-energy weapon systems, and a large quantity of high-power electromagnetic weapon systems.⁴⁴ India has built and deployed a mature and advanced space programme with a constellation of communication, navigation, remote sensing and military satellites—also known as Navigation with Indian Constellation (NavIC).⁴⁵

In 2025, the PAF operates an estimated twenty-one fighter squadrons, with a sanctioned strength of twenty to twenty-five squadrons, comprising more than 390 fighter aircraft.

⁴⁰ See the IISS Military Balances from 2023 to 2025; Rajat Pandit: After Operation Sindoor, IAF seeks more Rafales to stem depleting of fighter squadrons, *The Times of India*, 11.08.2025, <https://economictimes.indiatimes.com/news/defence/indias-integrated-air-defence-weapon-system-clears-maiden-flight-test/articleshow/123480402.cms>; Snehes Alex Philip: India looks to ink deal for 114 Rafale as early as next year, some to come in fly-away condition, *The Print*, 17.09.2025, <https://theprint.in/defence/india-looks-to-ink-deal-for-114-rafale-as-early-as-next-year-some-to-come-in-fly-away-condition/2744469/>.

⁴¹ Rahul Singh: Induction of 35-40 fighters per year need of the hour. IAF chief, *The Hindustan Times*, 01.03.2025, <https://www.hindustantimes.com/india-news/induction-of-35-40-fighters-per-year-need-of-the-hour-iaf-chief-101740767803203.html>.

⁴² Junaid Kathju: Meet India's answer to Pakistan's Chinese jets: the AMCA fifth-generation stealth fighter, *South China Morning Post*, 01.06.2025, <https://www.scmp.com/week-asia/politics/article/3312516/meet-indias-answer-pakistans-chinese-jets-amca-fifth-generation-stealth-fighter>.

⁴³ Manu Pubby: ₹20,000 crore project. Indigenous Awacs gets go-ahead, to be developed by DRDO, *The Economic Times*, 17.07.2025, <https://economictimes.indiatimes.com/news/defence/indigenous-awacs-gets-go-ahead-to-be-developed-by-drdo/articleshow/122590361.cms?from=mdr>.

⁴⁴ India's Integrated Air Defence Weapon System clears maiden flight test, *The Economic Times*, 24.08.2025; Also see International Institute for Strategic Studies 2025, 89.

⁴⁵ Verma 2024.

These include seventy-five F-16, twenty J-10CE, 156 JF-17, forty-nine *Mirage*-III, thirty-seven *Mirage*-V, and fifty-three F-7PG fighter aircraft (although the *Mirage* and F-7PG squadrons are believed to be operating below the sanctioned strength of eighteen aircraft per squadron). By 2010, PAF began inducting the JF-17 fighter aircraft which was co-designed and jointly produced with the assistance of China. The JF-17 now forms the backbone of the PAF, with over 156 JF-17 Block-1 and Block-2 (JF-17A/B) and twenty-three Block-3 (JF-17C) versions in service, with another twenty-seven JF-17C on order, the latter armed with long-range PL-15 BVR (beyond visual range) missiles and equipped active electronically scanned array (AESA) radars.⁴⁶ The PAF has also acquired the first batch of twenty J-10CE multi-role fighter aircraft from China in 2021 with another sixteen J-10CE on order and additional batches expected to follow with an estimated total of eighty to ninety aircraft likely to be acquired soon.⁴⁷ The PAF operates seventy-five F-16s, including eighteen F-16C/D (Block-52) and the remaining F-16A/B models that went through mid-life upgrades in the 2000s. Pakistan is also acquiring forty J-35AE fifth-generation fighters from China, for which the pilot training has been ongoing for several months. These are likely to join the PAF fleet within the next few years.⁴⁸ Pakistan is also collaborating in the joint development of the Turkish *Kaan* fifth-generation fighter project and is also poised to develop a locally designed and manufactured 4.5-generation Pakistan Fighter Project (PFX).⁴⁹ These acquisitions will enable the PAF to replace the remaining six to seven operational legacy squadrons of *Mirage*-III, *Mirage*-V, and F-7PG fighter aircraft that are due for retirement. The PAF operates nine Saab 2000 *Erieye* airborne early-warning and control (AEW&C) and seven special-mission aircraft for electronic warfare, surveillance, and reconnaissance, while the IAF has ten such

aircraft in service.⁵⁰ The induction of the J-35AE in the PAF will allow it to conduct deep-strike missions, while further orders of the J-10CE and JF-17C will help the PAF maintain a near-peer capability with the IAF. China has also offered Pakistan the sale of the KJ-500 AEW&C aircraft, while the PAF is cooperating with Turkey for the acquisition of an airborne standoff jammer (ASOJ) based on the Bombardier *Global* 6000 aircraft, for “a communications E[electronic] W[arfare] (C-EW) for communications intelligence (COMINT) and multi-band jamming roles, GPS denial systems, passive electronic intelligence (ELINT).”⁵¹ The PAF has over the past three years raised an Unmanned Force comprising Unmanned Combat Aerial Vehicles, Electronic Warfare, and Cyber and Space Commands.⁵² Pakistan’s space programme Vision 2047 is in its infancy with only two remote sensing satellites in orbit as the country relies on China’s *Beidou* satellite navigation system for intelligence, surveillance, and reconnaissance (ISR) and military applications.⁵³

Within the next decade, the PAF is poised to deploy a force mainly consisting of 4.5-generation JF-17s, J-10CEs, and J-35s, while the IAF will have to grapple with the challenge of maintaining, operating, and sustaining a diverse fleet—including French *Rafale*, Russian SU-30MKI, and potentially SU-57 and *Tejas*—which can pose logistical strains, thereby affecting the IAF’s serviceability and operational readiness and impacting sortie generation capability during a crisis. Learning the lessons from U.S. sanctions of the 1990s, the PAF resolved not to rely on a supplier that could turn the tap off at will. The Chinese supply chain offers the Pakistani armed forces the added advantage of leveraging the fruits of China’s military industrial complex and R&D base to build a state-of-the-art air force. Both the PAF and the IAF, however, are extensively adding stand-off precision strike capabilities to all their existing fighter aircraft, including subsonic,

46 See the IISS Military Balances from 2023 to 2025; Akhil Kadidal: Update – Pakistan shows JF-17 Block III fitted with PL-15 missiles for first time, *Janes*, 05.05.2025, <https://www.janes.com/osint-insights/defence-news-details/air/update-pakistan-shows-jf-17-block-iii-fitted-with-pl-15-missiles-for-first-time>.

47 Sebastian Robin: Minister. Pakistan Bought Chinese J-10 Jets to Counter India’s Rafales, *Forbes*, 03.01.2022, <https://www.forbes.com/sites/sebastienrobin/2021/12/31/minister-pakistan-bought-chinese-j-10-jets-to-counter-indias-rafales/>.

48 See International Institute for Strategic Studies 2025, 173–175; Akhil Kadidal: Pakistan announces Chinese J-35 aircraft offer, *Janes*, 09.06.2025; Pakistan says China has offered to sell new military equipment, including J-35 fighter jets, *Arab News*, 10.06.2025.

49 Farhan Bokhari: Pakistan unveils JF-17 PFX fighter, *Janes*, 26.11.2024, <https://www.janes.com/osint-insights/defence-news/air/pakistan-unveils-jf-17-pfx-fighter>; Akhil Kadidal: Turkey to engage Pakistan over officially joining *Kaan* project, *Janes*, 08.08.2023, <https://www.janes.com/osint-insights/defence-news/air/turkey-to-engage-pakistan-over-officially-joining-kaan-project>.

50 Amir Husain: The Rise of the PAF. Asia’s Third Air Power, *The Medium*, 04.05.2025, https://medium.com/@amirhusain_tx/the-rise-of-the-paf-asias-third-air-power-1236f5fbef; Anil Chopra: Woefully Short On AEW&C. China, Pakistan Lead India in Eye in the Sky, How Can IAF Push Forward?, *The Eurasian Times*, 26.01.2025, <https://www.eurasiantimes.com/woefully-short-on-aewc-as-pakistan-china-lead-india-in-eye-in-the-sky-how-can-iaf-push-forward-rule-the-skies>.

51 Pakistan says China has offered to sell new military equipment, including J-35 fighter jets, *Arab News*, 10.06.2025; Bilal Khan: Pakistan and Türkiye Sign Agreements on EW and Other Projects, *Quwa*, 17.02.2025, <https://quwa.org/pakistan-defence-industry/pakistan-and-turkiye-sign-agreements-on-ew-and-other-projects>.

52 Baqir Sajjad Syed: Situationer. PAF’s cyber-space blitz humbles PAF, *Dawn*, 15.05.2025, <https://www.dawn.com/news/1911123>.

53 Pakistan becomes first country to deploy China’s BeiDou GPS network, *The Express Tribune*, 23.05.2014, <https://tribune.com.pk/story/712376/pakistan-becomes-first-country-to-deploy-chinas-beidou-gps-network>.



AJ-10CE for the PAF at the Zhuhai Airshow, 15 November 2024

supersonic and hypersonic cruise missiles. These include the dual-use *Nirbhay* (1000 km), the dual-use *BrahMos* (290–800 km), the SCALP (250–550 km), the *Hammer* (70 km), and *Rampage* missiles (250 km) in the IAF. The PAF has introduced the *Taimoor* ALCM (290 km), the KaGeM V3 (150 km), the H-2 (60 km), the H-4 (120 km), the variants of the *Azb*-series stand-off weapons (30–280 km), and the CM-400 AKG ALCM (290–500 km).⁵⁴ These stand-off weapons coupled with drone swarms, artificial intelligence-enabled cyber and reconnaissance capabilities, electronic warfare assets and space-based target acquisition and ISR for remote sensing are being integrated in the doctrines of both the IAF and PAF. India and Pakistan are also developing and acquiring surveillance and medium- to long-endurance armed drones for their land, air, and naval forces.⁵⁵

While the IAF and the PAF have been extensively engaged with friendly air forces through military exercises, the PAF has had a more extensive experience in exercis-

ing with the People's Liberation Army Air Force (PLAAF), operating locally produced AESA-equipped variants of the *Sukhoi* aircraft (J-11, J-16, SU-30, and SU-35) that are superior to the IAF SU-30MKI. It has also trained with the Turks operating the S-400, which is the mainstay of the Indian air-defence network, and with the Qatari *Rafale* aircraft. These exercises, particularly with the PLAAF have helped PAF to co-develop a kill chain employing multi-domain operations involving cyber, space, electronic warfare capabilities.⁵⁶ On the night of 6/7 May 2025, the largest BVR air battle of the 21st century was fought between the IAF and the PAF. The result was the shooting down of four IAF *Rafale* aircraft, one SU-30MKI and a MiG-29 and a *Mirage* 2000 aircraft—mainly by no. 15 squadron of PAF equipped with J-10CEs along with JF-17Cs employing the PL-15 long-range BVR missiles and Saab 2000 *Erieye* AEW&C aircraft at distances of more than

⁵⁴ See the International Institute for Strategic Studies 2025.

⁵⁵ International Institute for Strategic Studies 2025, 89–96, 170–175; Altaf/Javed 2024; Also see Khan 2024.

⁵⁶ Directorate General Public Relations (Pakistan Air Force): *PAF Contingent lands back after successful participation in Exercise Spears of Victory-2025*, 14.02.2025, <https://www.youtube.com/watch?v=5Em8QexMajM>; Directorate General Public Relations (Pakistan Air Force): *Indus Shield – Chinese*, 05.11.2024, <https://www.youtube.com/watch?v=SG9utfRsxMQ>.

190 km. The HQ-9BE air-defence system also shot down an armed drone, while all IAF aircraft were targeted without crossing the LoC or the international border. The PAF thus established local air superiority, and the IAF was pushed back for two days in Operation *Sindoor*, whereafter it began launching ALCMs from standoff ranges on PAF air bases on 10 May 2025.⁵⁷

In the maritime domain, the Indian Navy has long maintained an overwhelming numerical superiority over the Pakistan Navy, especially in the surface fleet. The Indian Navy fields two conventionally powered aircraft carriers, thirteen destroyers including three modern *Kolkata*-class and four *Visakhapatnam*-class destroyers, seventeen frigates including eight modern *Talwar*-class (Project 11356), three *Shivalik*-class (Project 17), and three *Nilgiri*-class (Project 17A) warships. It also deploys eighteen corvettes of various types including one indigenous *Arnala*-class anti-submarine warfare (ASW) corvette with another sixteen on order, four *Kamorta*-class ASW corvettes, and four *Kora*-class guided-missile corvettes.⁵⁸ Seventeen warships including seven Project 17B frigates, six modern conventional attack submarines (Project 75-India) and three *Scorpena* submarines (Project 75-add-ons) and eight Next Generation Corvettes (NGCs) are under advanced stages of approval.⁵⁹ The Indian Navy also has a fleet of seventeen conventional attack submarines and three *Arihant*-class nuclear-powered ballistic missile submarines (SSBN) with a fourth under construction and plans to develop more than six S-5 class SSBNs and six Project 75A nuclear attack submarines (SSN) over the next fifteen years.⁶⁰ Several of these major surface combatants and conventional submarines will replace legacy platforms in the Indian surface and sub-surface fleet over the next decade.⁶¹ In April 2025, India and France signed a deal for twenty-six *Rafale*-M jets for India's aircraft carriers

that will replace the ageing MiG-29Ks in the Indian Navy.⁶² Under the long-term acquisition programme of the Indian Ministry of Defence, the Indian Navy is poised to add a third aircraft carrier, which is likely to be nuclear powered and equipped with the U.S. Electromagnetic Aircraft Launch System (EMALS), along with ten next-generation destroyers and frigates, twenty high-endurance autonomous underwater vehicles, one hundred next-generation fast interceptor craft, and nuclear propulsion for ten aircraft carriers and principal surface combatants.⁶³

The Pakistan Navy has historically been a much smaller force and has a ten times smaller coastline to defend than the Indian Navy (1,000 km vs. 11,000 km).⁶⁴ Until 2021, the Pakistan Navy only had eleven frigates: four relatively modern *Zulfiqar*-class (F-22P) frigates acquired from China; one *Alamgir*-class (upgraded *Oliver Hazard Perry*-class) frigate; and six obsolete *Tariq*-class (Type-21) frigates. Since 2021, it has inducted four Chinese *Tughril*-class (Type-54A/P) frigates, four *Yarmook*-class (offshore patrol vessels by Damen), and one *Babur*-class (*MilGem*) heavy corvette/light frigate, with the second expected to join the fleet before the end of 2025 and the third and fourth in 2026. The *Babur*-class corvette programme involved complete transfer of technology with two ships being built in the Karachi Shipyard & Engineering Works (KS&EW). It has provided the design, engineering, and technological basis for Pakistan's first indigenously designed *Jinnah*-class frigate programme, with the first ship expected to be delivered by 2027–2028, and a planned total of six to eight *Jinnah*-class frigates to be developed at KS&EW within the next decade and a half. This is part of a major naval expansion and modernisation programme that was launched in 2015 with the aim of expanding the surface fleet to include fifty warships, with twenty-five major surface combatants operating in three surface task groups. Pakistan Navy is also modernising its submarine arm with the mid-life-upgrade of three existing *Agosta*-90B conventional attack submarines equipped with air independent propulsion (AIP), and the acquisition of eight Chinese Type-39B/S-26 (*Hangor*-class) AIP-equipped conventional attack submarines under a transfer of technology agreement. Four of these *Hangor*-class submarines are being built in China of which three have been

57 Shahzad Iqbal: Bunyan-um-Marsoos. How PAF cut IAF down to size after Indian attack on Pakistan, *The News International*, 14.05.2025, <https://www.thenews.com.pk/print/1311389-bunyanum-marsoos-how-paf-cut-iaf-down-to-size-after-indian-attack-on-pakistan>; Alan Warnes: AFM in Pakistan: Understanding the Rafale Kills, *AirForces Monthly*, 19.09.2025, <https://www.key.aero/article/full-article-understanding-rafale-kills>.

58 See International Institute for Strategic Studies 2025, 90–92.

59 Mayank Singh: 17 warships, nine submarines await approval, *The New Indian Express*, 07.07.2025, <https://www.newindianexpress.com/nation/2025/Jul/07/17-warships-nine-submarines-await-approval>.

60 Khushboo Kumari: L&T in focus. India clears two nuclear-powered attack submarines armed with supersonic, hypersonic missiles, *The Financial Express*, 08.07.2025, <https://www.financialexpress.com/business/industry-lampt-in-focus-india-clears-two-nuclear-powered-attack-submarines-armed-with-supersonic-hypersonic-missiles-3906761>.

61 Kumar 2025.

62 Dinakar Peri: Rafale-M once inducted, will ensure full fighter strength on both aircraft carriers, *The Hindu*, 03.05.2025, <https://www.thehindu.com/news/national/rafale-m-once-inducted-will-ensure-full-fighter-strength-on-both-aircraft-carriers/article69535020.ece>.

63 Manu Pabby: Defence Min unveils 15-year roadmap: Nuclear-powered warships, hypersonic missiles, more on the horizon, *The Economic Times*, 05.09.2025.

64 Amitabh Sinha: How India 'added' more than 3,500 km to its coastline, *The Indian Express*, 28.06.2025, <https://indianexpress.com/article/explained/india-coastline-island-10078625>.

launched and the other four are being built at KS&EW. The first four *Hangors* will be commissioned in the Pakistan Navy fleet by 2026 with the rest expected to join the fleet by 2028.⁶⁵ These submarines will be supplemented with three or more STM-500 shallow-water attack submarines (SWATs) being acquired from Turkey, with both countries expected to closely cooperate in the Turkish MILDEN submarine programme. The STM-500 will replace the two *Agosta-70* attack submarines in service.⁶⁶ It is also likely that the Pakistan Navy acquires SWATs from the Italian shipbuilding group Fincantieri to expand its conventional attack submarine fleet.⁶⁷ India has modernised its long-range maritime patrol aircraft (LRMPA) and ASW fleet with the acquisition of twelve P-8I *Poseidon* aircraft from the United States, with another six being planned. Pakistan has added five ATR-500 ASW and maritime patrol aircraft and is acquiring ten customised *Sea Sultan* LRMPA based on the Embraer *Lineage 1000* commercial aircraft. These will supplement the six P-3C *Orions* in service. Besides, new naval and submarine bases are being developed and the 280 km-range C-602 anti-ship missile mobile batteries have been deployed along the coast.⁶⁸

The Indian Navy, however, has continued to maintain a steady momentum in building new classes of frigates and destroyers by leveraging India's impressive homegrown shipbuilding capacity. The Indian Navy has also revamped its ASW and maritime patrol capability with the acquisition of the P-8I and MQ-9 *Reaper* drones and MH-60R helicopters from the United States.⁶⁹ Pakistan is only beginning to catch up with the setting up of an Integrated Maritime Industrial Complex at port Qasim in Karachi and a new commercial-scale shipyard at Gwadar with Chinese assistance that will exponentially expand the country's fledgling

shipbuilding capacity.⁷⁰ The Pakistan Navy has embarked on the largest and most ambitious expansion and modernisation effort since 2015. This has put Pakistan Navy on the path to expanding the size of its surface fleet from eleven to twenty-five major warships, increasing the size of its long-range naval aviation two fold, and fielding the largest fleet of eleven AIP-equipped submarines in the Indian Ocean, when the Indian Navy has yet to install the first AIP on its seventeen conventional attack submarines.⁷¹ The addition of the four Type-54A/P, four *Babur*-class (*MilGem*), four *Yarmook*-class (Damen) and the upcoming *Jinnah*-class warships have exponentially increased Pakistan Navy's ASW capabilities and have filled a critical gap in fleet air defence and long-range anti-ship and land-attack capability on the surface fleet which was previously non-existent. Each of these warships, with the exclusion of two *Yarmook*-class ships, will have vertical launch systems/cells (VLS) for air-defence missiles, with the 70 km-range LY-80N on the Type-54A/P and the 40 km-range CAMM-ER (Common Anti-Air Modular Missile - Extended-Range) on the *Babur*-, *Yarmook*-, and *Jinnah*-class ships. The Type-54A/P frigates deploy the domestically produced 280-400 km-range CM-302 and the other frigates including the F-22P, *Babur*-, and *Yarmook*-class corvettes will deploy locally produced 450 km-range *Harbah* and 350-500 km-range SMASH supersonic anti-ship ballistic missiles with the *Jinnah*-class expected to deploy the long-range P-282 hypersonic anti-ship cruise missile. The four existing *Zulfiqar*-class frigates are also being upgraded with the addition of the CAMM-ER and the SMASH missiles.⁷²

65 International Institute for Strategic Studies 2025, 171–172; Arshaf 2025; Amir Husain: Pakistan's Multi-Domain Military Modernization Blitz, *The Medium*, 30.01.2024, https://medium.com/@amirhusain_tx/pakistans-multi-domain-military-modernization-blitz-050dcb396f2f; Usman Ansari: How are Pakistan's naval modernization plans coming along?, *Defense News*, 14.02.2023, <https://www.defensenews.com/smr/defending-the-pacific/2023/02/13/how-are-pakistans-naval-modernization-plans-coming-along/>; Zafar Mahmood Abbasi: Farewell speech of the Chief of the Naval Staff Admiral Zafar Mahmood Abbasi in Karachi on 7 October 2020, *24 News HD*, <https://www.youtube.com/watch?v=4veP2J6aDTY>.

66 STM Brings Ships and UAVs to Pakistan, *TurDef*, 11.11.2022, <https://turdef.com/article/stm-brings-ships-and-uavs-to-pakistan>.

67 Fincantieri signs MoU with Pakistan Navy in the field of maritime technology and innovation, *European Defence Review Online*, 21.11.2024, <https://www.edrmagazine.eu/%E2%96%BA-fincantieri-signs-mou-with-pakistan-navy-in-the-field-of-maritime-technology-and-innovation>.

68 David Oliver: Embraer MPAs for Pakistan Navy, *The Asian Military Review*, 18.12.2024, <https://www.asianmilitaryreview.com/2024/12/embraer-mpas-for-pakistan-navy/>.

69 International Institute for Strategic Studies 2025, 93–94.

70 China eyes 1,000-acre maritime hub at Port Qasim to revive Pakistan's shipbuilding, *Pakistan Today*, 29.08.2025, <https://richpakistan.com/2025/09/02/china-eyes-1000-acre-maritime-hub-at-port-qasim-to-revive-pakistans-shipbuilding/>; The Pakistan Navy: Operating in a Resource-constrained Environment. Interview with MDM, Admiral Muhammad Amjad Khan Niazi, Chief of Naval Staff, Pakistan Navy, *European Security and Defense*, 05.06.2023, <https://euro-sd.com/2023/06/articles/31381/the-pakistan-navy-operating-in-a-resource-constrained-environment>.

71 H. I. Sutton: AIP Submarines Will Increase the Lethality of the Indian Navy, *Forbes*, 22.07.2020, <https://www.forbes.com/sites/hisutton/2020/07/22/aip-submarines-will-increase-the-lethality-of-the-indian-navy>.

72 Mike Yeo/Nigel Pittaway/Usman Ansari/Vivek Raghuvanshi/Chris Martin: Hypersonic and directed-energy weapons. Who has them, and who's winning the race in the Asia-Pacific?, *Defense News*, 16.03.2021, <https://www.defensenews.com/global/asia-pacific/2021/03/15/hypersonic-and-directed-energy-weapons-who-has-them-and-whos-winning-the-race-in-the-asia-pacific/>; Pakistan's Jinnah-Class Frigate to Be Armed with Deadly SMASH Anti-Ship Ballistic Supersonic Missiles, *Defense Security Asia*, 03.02.2025, <https://defencesecurityasia.com/en/pakistans-jinnah-class-frigate-to-be-armed-with-deadly-smash-supersonic-missiles/>.

The Indian surface fleet by comparison is much more heavily armed and is equipped with many more VLS cells for medium-range air-defence missiles and the 280-800 km-range *BrahMos* anti-ship supersonic missiles.⁷³ While the Indian Navy will maintain at least a 2:1 numerical superiority in principal surface combatants, with much more heavily armed and bigger tonnage warships, the Pakistan Navy's addition of medium-range air-defence and longer-range anti-ship missiles will greatly enhance the survivability of its surface fleet and offer an offensive capability at stand-off ranges which it previously lacked. In the sub-surface domain, the Pakistan Navy is poised to become a peer in conventional attack submarine capability by deploying a modern force of more than eleven AIP equipped submarines between 2028 and 2032, as opposed to seventeen Indian conventional attack submarines, many of them awaiting retirement over the next decade, while the Pakistani submarine fleet will be nearly brand new. Pakistan Navy's *Sea Sultan* is expected to help in neutralising the Indian Navy's long-range maritime patrol and fixed-wing naval aviation capability in the Arabian Sea and the northern Indian Ocean in conjunction with the PAF.⁷⁴ With much of the surface, sub-surface, and maritime patrol aircraft fleet of the Pakistan Navy being modernised between 2015-2025, it will allow greater operational readiness to pursue effective anti-access/area-denial (A2/AD) missions in the Arabian Sea and the northern Indian Ocean.⁷⁵ The Indian Navy's Western Command is typically deployed for operations against Pakistan, and while the Eastern Command can be called on to add assets to the Western Command during a crisis, it is highly unlikely that the Indian Navy will be in a position to vacate the area of responsibility in the east due to the growing presence of the People's Liberation Army Navy (PLAN) and Chinese commercial shipping passing through the Strait of Malacca. As the Indian Navy consolidates its interoperability and intelligence collaboration and joint exercises with the United States and the Quad countries, the Pakistan Navy is stepping up its maritime cooperation with the PLAN in the Arabian Sea and the Indian Ocean Region. The Pakistan Navy and the PLAN have been holding annual *Sea Guardian* exercises for several years including their first joint maritime patrol in November 2023 for enhancing inter-operability. Naveed Ashraf, the Pakistani naval chief, remarked in February 2025: "We have a unique relationship

between the two navies. I always say, we are two nations and one navy, and we are working together for the common purpose of maintaining security and stability at sea."⁷⁶

3 Doctrinal Evolution and Growing Nuclear Asymmetries

Soon after the 1998 nuclear tests, India and Pakistan announced they were going to adhere to the doctrine of minimum credible deterrence. Within the next decade, as both countries operationalised their respective nuclear deterrents, India formally declared its nuclear doctrine in 2003, which centred on a No First Use (NFU) policy, credible minimum deterrence, and massive retaliation in response to any weapons of mass destruction attack on Indian forces anywhere within or outside Indian territory. Pakistan has not officially released a formal or declaratory nuclear doctrine, but it follows a policy of first use of nuclear weapons should the integrity and sovereignty and survival of the country be at risk. Pakistan therefore is likely to resort to the first use of nuclear weapons as a last resort.⁷⁷

However, technological evolution and the need for military modernisation have sharply impacted doctrinal evolution in South Asia in the conventional and nuclear domains over the past two decades. As India's 2004 Cold Start Doctrine (CSD) sought to explore space for limited war below Pakistan's perceived nuclear thresholds, Pakistan added another layer to its nuclear posture in 2011 with the development of short-range and low-yield battlefield nuclear weapons.⁷⁸ This was followed by the announcement of Pakistan's doctrine of Full Spectrum Deterrence (FSD) in 2013, which includes "the full spectrum of nuclear weapons in three categories: strategic, operational and tactical, with full range coverage of the large Indian land mass and its outlying territories; there is no place for India's strategic weapons to hide." It also calls for Pakistan to possess "an entire range of weapons yield coverage in terms of kilotons, and the numbers strongly secured, to deter the adversary's declared policy of massive retaliation; Pakistan's 'counter-massive retaliation' can therefore be as severe if not more." This ca-

73 International Institute for Strategic Studies 2025, 90–91.

74 Directorate General Public Relations (Pakistan Air Force): *Chief of the Naval Staff Visits AHQ – Strategic Synergy Discussed Between PAF & Pak Navy*, 02.05.2025, <https://www.youtube.com/watch?v=ZpYwXamFlhc>.

75 Ali 2021; Usman Ansari: How are Pakistan's naval modernization plans coming along?, *Defense News*, 14.02.2023.

76 Liu Xuanzun: China, Pakistan hold first joint naval patrol to safeguard China-Pakistan Economic Corridor, *Global Times*, 16.11.2013, <https://www.globaltimes.cn/page/202311/1301985.shtml>; Maritime Drills in Full Swing in 2nd Phase of Multinational Military Exercise AMAN 2025, *CCTV Video News Agency*, 12.02.2025, <https://www.youtube.com/watch?v=SwmlDvjxDDI>.

77 See Levesques 2021.

78 Kurita 2025.

pability is designed to provide Pakistan's National Command Authority "the liberty of choosing from a full spectrum of targets in a 'target-rich India,' notwithstanding the indigenous Indian [ballistic missile defence] or the Russian S-400, to include counter value, counter force and battlefield targets."⁷⁹ The lower end of Pakistan's FSD consists of the 70 km-range *Nasr* (*Hatf-X*), while the upper end of the capability spectrum is represented by the 2.750 km-range *Shaheen-III*. This spectrum also includes South Asia's first Multiple Independently Targetable Re-entry Vehicle (MIRV)-capable system, the 2.200 km-range *Ababeel*, developed to counter India's emerging ballistic missile defence (BMD) shield, as well as the 450 km-range submarine-launched cruise missile (SLCM) *Babur-3*, both tested for the first time in January 2017. The other nuclear-capable ballistic missile systems in Pakistan's strategic forces include the *Hatf-IA* (100 km), the *Abdali* (180 km), the *Abdali-I* (450 km), the *Ghanavi* (280 km), the *Shaheen-I* (700 km), the *Shaheen-IA* (900 km), the *Ghauri* (1.300 km), and the *Shaheen-II* (1.500-2.000 km). The nuclear-capable cruise missiles include the *Babur-1A* (450 km), the *Babur-1B* (700 km; land-attack cruise missile – LACM), and the *Raad* (350–600 km; ALCM).⁸⁰

With the introduction of the 70 km-range nuclear-capable *Nasr* ballistic missile in April 2011, Pakistan's FSD posture began to be seen as having transitioned to war-fighting and showcased the country as nuclear trigger happy, with India's strategic enclave claiming to have called Pakistan's nuclear bluff in 2019 and in 2025.⁸¹ Yet, the introduction of TNWs in 2011 was a deliberate risk manipulation strategy designed to lower the nuclear use threshold to deter India's limited war options and plug the perceived gaps in Pakistan's overall nuclear deterrent posture. It was clear that India was seeking to exploit gaps in Pakistan's strategic force posture at the tactical level and fight a limited conventional war below the country's nuclear use thresholds—military, territory, economy, and domestic stability—which when breached would potentially threaten the country's territorial integrity and sovereignty leading to the first use of nuclear weapons in a conflict. Pakistani planners therefore

hoped that injecting instability at the lower levels of conflict would serve to enhance stability at the strategic level. FSD did help to "pour cold water on Cold Start", and neutralised India's limited war plans. However, in response, India began to explore ways to offset Pakistan's FSD through doctrinal evolution accompanied by the required counterforce capabilities for deterrence by punishment. India has since 2016 introduced the doctrine of Surgical Strike later codified through its doctrine of Punitive Retaliation in the *Joint Doctrine of Indian Armed Forces 2017* and the *Indian Army Land Warfare Doctrine 2018*. The latter explicitly states the need to achieve "operational ascendancy and also enhance our punitive response options to greater depth, effect, sophistication and precision," while seeking minimum escalation with China along the LAC. It also calls to prepare for the full spectrum of conflict and operations including the ability to "maintain [the] tempo of operations" in a "nuclear contaminated zone."⁸² This was followed by the Dynamic Response doctrine in 2020 that calls for "actions below the threshold of an all-out war," for which India has been developing plans and capabilities along the borders with Pakistan and China.⁸³ Four years prior to the induction of tactical nuclear weapons (TNWs) in 2011, Pakistan began working to develop plans and doctrines through a series of annual *Azm-e-Nau* military exercises involving the Pakistan Army and PAF to calibrate operational strategy and determine the requirements of a long-term Armed Forces Development Programme (AFDP) initiated in 2005.⁸⁴ The *Azm-e-Nau* and the AFDP aimed at consolidating conventional deterrence and warfighting capabilities to neutralise the threat of limited or full-scale war without resorting to early nuclear use. These exercises and its future iterations led to the formulation of Pakistan's Comprehensive Response doctrine in 2011 that morphed into the New Concept of Warfighting (NCWF) two years later.⁸⁵ Six years later, Pakistan implemented the Quid-Pro-Quo-Plus (QPQP) doctrine or the doctrine of Disproportionate Response, by retaliating to India's surgical air-strikes in February 2019, that also resulted in the downing of a MiG-21, whose pilot was taken prisoner, coupled with claims

⁷⁹ Khalid Kidwai: *25 Years of Yom Takbeer: Promoting Peace, Stability and Development*, speech by Lt. Gen. (Retd) Khalid Kidwai, Advisor, National Command Authority and Former DG SPD, on 25th Youme-e-Takbeer, Institute of Strategic Studies Islamabad, delivered on 24 May 2023, <https://issi.org.pk/speech-by-lt-gen-ret-d-khalid-kidwai-advisor-national-command-authority-and-former-dg-spd-on-25th-youme-e-takbeer>.

⁸⁰ Kristensen/Korda/Johns/Knight-Boyle 2025.

⁸¹ Kamlesh Singh: Operation Sindoor and The Myth of Nuclear Deterrence," *India Today*, 07.05.2025, <https://www.indiatoday.in/opinion/story/operation-sindoor-and-the-myth-of-nuclear-deterrence-india-strikes-pakistan-pak-terror-camp-2721104-2025-05-07>.

⁸² Government of India 2018, 2, 3, 5, 12.

⁸³ Focusing on dynamic response that is below threshold of all-out war. Indian Army chief, *The Economic Times*, 04.03.2020, <https://timesofindia.indiatimes.com/india/focusing-on-dynamic-response-that-is-below-threshold-of-an-all-out-war-army-chief/articleshow/74475189.cms>.

⁸⁴ Khan 2022, 136; Ali Ahmed: India and Pakistan. *Azm-e-Nau* as a Response to the Cold Start, *Institute of Peace and Conflict Studies*, 28.07.2013, https://www.ipcs.org/comm_select.php?articleNo=4056.

⁸⁵ *Pakistan Army Doctrine 2011: Comprehensive Response* (Rawalpindi: Doctrine and Evaluation Directorate, Pakistan Army, 2011), quoted in Khan 2022, 137.

of downing a SU-30MKI.⁸⁶ The NCWF essentially aimed at developing warfighting capabilities to meet the full-weight of the Indian Army's offensive posture without resorting to an early use of nuclear weapons. The QPQP doctrine is designed to exponentially raise the costs of a limited or all-out conventional conflict through a one-notch higher retaliation to anything that India throws at Pakistan.⁸⁷

Pakistan's raising of the Army Rocket Force Command in August 2025 is the latest development in building strategic conventional response options for both "deterrence by denial (making conventional aggression harder) and deterrence by punishment (imposing high costs)."⁸⁸ Just as the 2019 Pulwama-Balakot crisis and 2025 India-Pakistan conflict saw the practical manifestation of India's Surgical Strike, Punitive Retaliation, and Dynamic Response doctrines, Pakistan gave a calibrated and effective response against military targets according to its QPQP doctrine.⁸⁹

For over a decade, India has been building a diverse range of dual-use and conventional counterforce capabilities for acquiring the ability to conduct decapitating or splendid first strikes against Pakistan's nuclear forces during a crisis using conventional precision strike capabilities at stand-off ranges. This also includes the development of a triad of dual-use cruise missiles, including different versions of the dual-use Indo-Russian *BrahMos* and nuclear-capable *Nirbhay*. India used the conventionally armed *BrahMos*, SCALP ALCMs against Pakistani civilian and military targets on 6 May and 10 May 2025.⁹⁰ India is believed to have several hundred *BrahMos* cruise missiles and is developing lighter air-launched versions such as the *BrahMos*-NG and a hypersonic version, the *BrahMos*-II with a range of 1,500 km.⁹¹ When employed in large numbers, these capabilities allow the implementation of a counterforce strategy for India to escape the limitations of India's NFU doctrine given that many influential voices (Defence

Minister Rajnath Singh and former Strategic Forces Commander B. S. Nagal) are already advocating revisiting India's NFU.⁹² Nagal argues that "by limiting the role of nuclear weapons to retaliation for nuclear threat or attacks, NFU requires that primary emphasis be on conventional forces. NFU would, thus, make it necessary and important on the armed forces to develop strategies and capabilities to fight conventional and sub-conventional wars without escalating to nuclear threshold."⁹³ In the wake of India's emerging "Two-Front Dilemma" with Pakistan and China since 2020, India has been forced to divide deployments of high-tech weapon systems for both adversaries. This includes the S-400 long-range air-defence systems, *Rafale* fighter aircraft, and *BrahMos* cruise missile batteries, besides deployments of infantry, armour, and artillery.⁹⁴ As China continues to assert its claims on Arunachal Pradesh and consolidates its logistics and military infrastructure along the LAC, and Pakistan emerging as a near-military peer, India is heavily investing in conventional and dual-use counterforce capabilities for ensuring escalation dominance and effecting punitive retaliation.⁹⁵ India's emerging Integrated Rocket Force will be equipped with short and intermediate range dual-use ballistic missiles. This includes the dual-use *Prahaar* (150 km), *Pralay* (500 km) ballistic missiles, the *BrahMos* (290 km; including ground-, sea-, and air-launched variants), *BrahMos*-A ALCM (400 km), *BrahMos*-ER ALCM (600 km), *BrahMos*-NG ALCM (290 km), *BrahMos*-II ALCM (1,000-1,500 km), and the *Nirbhay* LACM (1,500 km) among other missile systems.⁹⁶ India's Strategic Forces Command (SFC) is the sole repository and operator of all nuclear-capable and dual-use ballistic and cruise missile systems in

⁸⁶ Ahmed/Ashraf 2019.

⁸⁷ Baqir Sajjad Syed: Analysis. 27 years after Chagai — nuclear shadows & doctrinal dilemma, *Dawn*, 28.05.2025, <https://www.dawn.com/news/1913803>.

⁸⁸ Raashid Wali Janjua: A rocket force, *The News International*, 01.09.2025, <https://www.thenews.com.pk/latest/1340452-a-rocket-force>; Shahzad Masood Roomi: Quest for Rocket Force. New Operational Paradigm, *Strathea*, 21.08.2025, <https://strathea.com/quest-for-rocket-force-new-operational-paradigm/>.

⁸⁹ Akhtar 2025.

⁹⁰ Clary 2025.

⁹¹ Dinakar Peri: Development of longer range BrahMos missile as well as sleeker BrahMos-NG variant on track, *The Hindu*, 21.05.2025, <https://www.thehindu.com/news/national/development-of-longer-range-brahmos-missile-as-well-as-sleeker-brahmos-ng-variant-on-track/article69602331.ece>.

⁹² Shubhajit Roy: A nuke flutter from careful Rajnath. No-first-use may not be cast in stone, *The Indian Express*, 17.08.2019, <https://indianexpress.com/article/india/a-uke-flutter-from-careful-rajnath-no-first-use-may-not-be-cast-in-stone-5911640>; Joshi 2014.

⁹³ Balraj Singh Nagal: Nuclear No First Use Policy, *FORCE India*, December 2014, <https://forceindia.net/blog/guest-column-nuclear-no-first-use-policy>.

⁹⁴ Rajat Pandit: India deploys Rafale fighters on eastern front with China, *The Times of India*, 28.07.2021, <https://timesofindia.indiatimes.com/india/india-deploys-rafale-fighters-on-eastern-front-with-china/articleshow/84832519.cms>; Amit Chaturvedi: Indian Army deploys K9-Vajra howitzer regiment along LAC, *The Hindustan Times*, 02.10.2021, <https://www.hindustantimes.com/india-news/indian-army-deploys-k9-vajra-howitzer-regiment-along-lac-know-all-about-the-gun-101633166922888.html>.

⁹⁵ Xinlu Liang: China reasserts India border claims with fresh list of 'standard' place names, *South China Morning Post*, 14.05.2025, <https://www.scmp.com/news/china/politics/article/3310209/china-reasserts-india-border-claims-fresh-list-standard-place-names>; Clary/Narang 2018/2019.

⁹⁶ Ransing 2025.

the country's strategic forces. The SFC's arsenal includes the *Prithvi*-I, II, and III (150-350 km) ballistic missiles, the *Agni*-I (900-1,200 km), the *Agni*-P (1,000-2,000 km), the *Agni*-II (2,000-3,500 km), the *Agni*-III (3,500-5,000 km), the *Agni*-IV (4,000 km), the *Agni*-V (5,500-8,000 km), and the upcoming *Agni*-VI (10,000-12,000 km). The sea-leg of India's nuclear triad comprises the K-series submarine-launched ballistic missiles (SLBMs), including the K-15 (750 km), K-4 (3,500 km), both of which are deployed on India's *Arihant*-class SSBNs; and the K-5 (5,000 km) and the K-6 (6,000-8,000 km) SLBMs, that are under development for India's S-5 class SSBNs. The SFC like Pakistan's NCA exercises centralised control over all nuclear forces in the nuclear triad including some *BrahMos* ALCMs integrated with the SU-30MKIs.⁹⁷ Since becoming a member of the Missile Technology Control Regime (MTCR) in 2016, India has made great strides in developing and testing new missile technologies and systems reflected through the number of missile tests that are over three times greater than Pakistan's. Notably, India conducted the first test of an anti-satellite (ASAT) weapon on 27 March 2019, followed by three tests between June 2021 and October 2022 and the latest test conducted in September 2025 of the nuclear-capable *Agni*-P, equipped with manoeuvrable warheads.⁹⁸ On 11 March 2024, India conducted the first flight test of the 5,000-8,000 km-range *Agni*-V intercontinental ballistic missile (ICBM) with at least three to four MIRVs. A second test of an MIRVed *Agni*-V was conducted in August 2025, but on a depressed trajectory.⁹⁹ India is reportedly developing at least three versions of the *Agni*-V, an MIRVed version tested in March 2024, a bunker-buster conventionally armed version of the *Agni*-V with a single large warhead, or multiple conventional warheads similar to the *Oreshnik* Russian MIRVed ballistic missile, and the latest which is likely to form the basis of the *Agni*-VI with ranges between 8,000-12,000 km. The *Agni*-V is also a technological demonstrator for India's emerging K-5 and K-6 SLBMs.¹⁰⁰ On 15 August 2025, Prime Minister Narendra Modi announced that India would invest in developing a multi-layered national missile defence shield over the next decade.¹⁰¹ This



Test of the Indian *Agni*-P in Balasore, 28 June 2021

is being buttressed with additional S-400 and S-500 batteries being acquired from Russia, and inductions of another eleven regiments of the highly-mobile QRSAM system to supplement the existing fifty-five regiments of different air-defence systems.¹⁰²

India is on the path to acquire a comprehensive and assured/highly survivable ICBM-range global naval strategic strike capability through its *Arihant*, S-4, and S-5 class SSBNs over the next five to ten years, that will deploy K-4, K-5, and K-6 SLBMs.¹⁰³ Depending on the configuration of the warheads for India's SLBMs (if they are deployed as single-warhead missiles or in a MIRVed configuration), India will be able to deploy anywhere between 200-300 warheads on four *Arihant*-class and four to six S-5 class SSBNs, with another six Project 75A nuclear attack (SSN) submarines planned over the next two decades. India is set to commission the S-4, the third *Arihant*-class SSBN, by 2026,

⁹⁷ Kristensen/Korda/Johns/Knight 2024.

⁹⁸ Kaushal/Byrne/Byrne/Somerville 2021.

⁹⁹ Rajat Pandit: India tests its most formidable Agni-5 missile, *The Times of India*, 21.08.2025, <https://timesofindia.indiatimes.com/india/india-tests-its-most-formidable-agni-5-missile/articleshow/123413406.cms>.

¹⁰⁰ Kristensen/Korda/Johns/Knight 2024; Abid Hussain: India-Pakistan missile race heats up, but China in crosshairs, too, *Al Jazeera*, 28.08.2025, <https://www.aljazeera.com/news/2025/8/28/india-pakistan-missile-race-heats-up-but-china-in-crosshairs-too>.

¹⁰¹ Saurabh Trivedi: Mission Sudarshan Chakra to develop indigenous aerial defence system by 2035, says PM Modi, *The Hindu*, 15.08.2025,

<https://www.thehindu.com/news/national/pm-modi-announces-sudarshan-chakra-project-to-boost-defence-shield/article69936196.ece>.

¹⁰² Rajat Pandit: Army issues tender for highly mobile air defence system, *The Times of India*, 28.09.2025, <https://timesofindia.indiatimes.com/india/army-issues-tender-for-highly-mobile-air-defence-system/articleshow/124188088.cms>.

¹⁰³ Defence Research and Development Organisation 2020, 20-22; Abdul Moiz Khan: Evolving Missile Technologies in India and Pakistan, *The Diplomat*, 22.03.2025, <https://thediplomat.com/2025/03/evolving-missile-technologies-in-india-and-pakistan>.

with plans to build six 13,000-tonne S-5 class SSBNs beginning in 2027.¹⁰⁴ The *Arihant*-class and S-5 class SSBNs, while providing assured second strike capability against China and Pakistan, will also enable India to hedge against potential future adversaries such as the United States, with some senior Indian military leaders advocating plans for such contingencies, citing North Korea's "strategic clarity".¹⁰⁵ As India is poised to deploy the largest nuclear submarine fleet in the Indian Ocean second only to the United States and China over the next two decades, this will inevitably result in pre-delegation of launch authority for a continuous-at-sea deterrence posture for India's SSBN and SSNs. India's counterforce capabilities coupled with emerging ballistic and cruise missile defences, and ASAT capabilities showcase India's sustained pursuit of a damage limitation strategy which is being buttressed with an expansion of its fissile material production and nuclear-capable ballistic missile systems for achieving nuclear superiority over its adversaries, particularly Pakistan.¹⁰⁶

The United States and European powers have viewed and encouraged India to act as a net security provider as part of the U.S.-led Indo-Pacific Strategy. They have facilitated India's rise through military-technical cooperation, arms sales, intelligence and maritime collaboration, but most importantly through the 2008 India-U.S. civil nuclear deal and the Nuclear Suppliers Group's 2008 waiver that helped India secure a de-facto nuclear weapon status outside the Nuclear Non-Proliferation Treaty (NPT)—the only country that was granted such exceptional recognition without any obligations of an NPT signatory. The India-U.S. civil nuclear deal has directly facilitated an exponential growth of India's fissile material capabilities, that enabled India to divert all its domestic uranium for the weapons programme, while importing uranium and fuel for its civilian nuclear energy programme under safeguards.¹⁰⁷ India possesses the largest stockpile of weapon-usable reactor-grade (civilian) plutonium outside safeguards in any non-NPT state. According to the estimates of the International Panel on Fissile Materials (IPFM), as of 2024, India has produced 5.7 ± 2 tonnes of highly enriched uranium (HEU) with 30-45 % uranium-235

content (or about 1.7 tonnes of U-235), and about 11 tons of separated reactor-grade plutonium (of which 2 tonnes has been fabricated as start-up fuel for India's 500 MW Prototype Fast Breeder Reactor – PFBR), in addition to 0.7 ± 0.16 tonnes of weapons-grade plutonium, all of which is outside International Atomic Energy Agency (IAEA) safeguards. Pakistan has produced 0.58 tonnes of weapons-grade plutonium, and 5.3 ± 1.5 tonnes of weapons-grade HEU while China is estimated to possess 4 ± 3 tons of weapons-grade HEU and 2.9 ± 0.6 tonnes of weapon-grade plutonium.¹⁰⁸ With 3 kg weapons-grade plutonium and 5 kg reactor-grade plutonium required for one nuclear warhead, and 15 kg of weapons-grade HEU for a modern implosion device, this material is sufficient for: 2.146 warheads for India, 546 warheads for Pakistan, and 1.234 warheads for China.¹⁰⁹ The amount of weapon-usable fissile materials for nuclear warheads will substantially decrease if the warheads are boosted with tritium, as both India and Pakistan are known to have developed tritium production facilities. India also presents a unique case, where much of its civilian nuclear energy programme and associated nuclear fuel cycle infrastructure is outside IAEA safeguards, and all its civilian plutonium produced in CANDU type pressurised heavy-water power reactors (PHWRs) (of which eight were kept outside safeguards under the 2008 nuclear separation plan for the India-U.S. civil nuclear deal), is designated as a "strategic reserve." Together, these eight PHWRs produce 1.2 tonnes of reactor-grade plutonium annually.¹¹⁰ Ostensibly, 11 tonnes of India's civilian or reactor-grade plutonium earmarked to fuel the upcoming fleet of fast breeder reactors (FBRs) has a higher content of Pu-239 (as India's PHWRs operate at lower burn-ups of 6,700 megawatt-days/tonne, compared to the reactor-grade plutonium produced in light-water reactors, that operate at higher burn-ups of 33,000 megawatt-days/tonne).¹¹¹ India also claimed to have used reactor-grade plutonium in one of its May 1998 tests.¹¹² The technical feasibility of civil or reactor-grade plutonium, including plutonium of any isotopic composition, for use in modern nuclear weapon designs was confirmed in a 1997 declassified inter-laboratory U.S. Department of Energy Study.¹¹³

104 Abid Hussain: India-Pakistan missile race heats up, but China in crosshairs, too, *Al Jazeera*, 28.08.2025; Kalyan Ray: Third Indian N-powered ballistic missile submarine to be inducted this year, *The Deccan Herald*, 04.02.2025, <https://www.deccanherald.com/india/third-indian-n-powered-ballistic-missile-submarine-to-be-inducted-this-year-3387338>. Akhtar/Ullah 2021.

105 Statements by Lt. Gen. Raj Shukla (Retd) in "Pak-KSA Pact: What Should India Do" on 27 September 2025, *The Gunners Shot*, <https://www.youtube.com/watch?v=KauilyZwi08>.

106 Dalton/Perkovich 2016; Ahmed 2022; Clary/Narang 2018/2019.

107 Ahmed 2017.

108 International Panel on Fissile Materials: Fissile material stocks, *IPFM*, 28.04.2025, <https://fissilematerials.org/>.

109 The minimum quantity of fissile materials for a modern nuclear warhead is derived from International Panel on Fissile Materials 2015b, 35.

110 Ahmed 2017.

111 Saurav Jha: India's Closed Fuel Cycle, *Nuclear Engineering International*, 15.03.2018, <https://www.neimagazine.com/advanced-reactorsfusion/indias-closed-cycle-6084799/>.

112 Perkovich 2001, 428–429.

113 United States Department of Energy 1996; also see Jones 2019.

Moreover, the IAEA considers all isotopic combinations of plutonium as “direct-use material.”¹¹⁴

The Federation of American Scientists, and The Bulletin of the Atomic Scientists estimate that India has 180, Pakistan 170, and China 600 deployed and deliverable warheads.¹¹⁵ India is expected to commission its 500 MW PFBR by December 2026. Once operational, the PFBR will annually yield 145 kg of weapons-grade plutonium, increasing overall production to 170 kg. India plans to build five FBRs as part of the second stage of India’s dual-use nuclear energy programme—which, along with most nuclear fuel cycle facilities, remains outside IAEA safeguards.¹¹⁶ India is also expanding its HEU production capacity from 16,000–31,000 separative work units/year in 2021 to 126,000 separative work units/year in 2025, that will produce HEU for India’s nuclear submarine fleet and for its nuclear weapons programme.¹¹⁷ India is also expanding its fuel reprocessing capacity from the existing 350 tonnes of heavy metal/year to 1,900 tonnes, including construction of a commercial-scale Fast Reactor Fuel Cycle Facility (FRFCF).¹¹⁸ China on the other hand stopped fissile material production for nuclear weapons in 1989. After India began work on the PFBR in 2004, China also started construction of the first two 600 MW FBRs in 2017 and 2020, ostensibly for its dual-use nuclear energy programme. These FBRs will enable China to restart weapons-grade plutonium production to 400 kg per annum. China also stopped reporting on its civilian separated plutonium stockpiles in 2017.¹¹⁹ India’s expansion of fissile material production capacity outside IAEA safeguards, coupled with advances in its missile and nuclear submarine programmes, have thus placed India squarely on the path to emerge as the fourth nuclear peer after China within the next decade.

4 Conclusion

South Asia has witnessed a steady buildup and modernisation of conventional forces even as India and Pakistan develop their strategic nuclear triads. As the conventional imbalance between the two nuclear-armed rivals decreases, it has helped elevate Pakistan’s nuclear use threshold and enhanced crisis stability. However, doctrines, policies, and technologies have equipped both countries with the option to employ capabilities more assertively and accept greater risks. The arms race dynamics in the region are also driven by multilateral arrangements such as the Quad, bilateral agreements such as the India-U.S. civil nuclear deal, India’s strategic partnerships with Russia, the United States, France, and Israel that are India’s major arms and military technology suppliers. This has pushed Pakistan to leverage its strategic alliances with Turkey and China as trusted and reliable sources of state-of-the-art military equipment, especially as Pakistan has privileged and secured access to the latest Chinese military technology.¹²⁰ Pakistan’s successes against India during the four-day conflict in May 2025, that saw extensive and maiden employment of Chinese-origin equipment, is likely to consolidate China’s confidence that its all-weather and iron-clad strategic ally offers the most effective option to balance India’s growing military potential. It has also raised Pakistan’s geo-strategic standing among the Arab countries, with the Saudi-Pakistan mutual-defence pact signed in September 2025 and improving relations with the United States—the latter also likely being driven by growing U.S. interests in Pakistan’s rare-earth and hydrocarbon reserves. Given India’s challenges in replacing Russian-origin legacy weapon platforms, Pakistan’s strengthening conventional deterrence offers the prospect of exacerbating India’s “Two-Front Dilemma”, by presenting itself as a “Reinforced One-Front Theatre” fully backed by China’s emerging military-industrial complex. This, in turn, has brought the Indian counterforce ambitions to the forefront of its evolving force posture, which is supplemented with India leveraging its latent but huge nuclear potential that is being harnessed, and has placed it at the cusp of a major capability breakout. Therefore, even as the conventional force balance stabilises in South Asia, the crisis and arms race instabilities in the nuclear domain are exacerbating. As strategic stability is undermined due to the absence of dialogue, acute mistrust, and a chronic lack of incentives to engage in nuclear risk reduction and arms control (not-

¹¹⁴ Ahmed, 2017.

¹¹⁵ Hans Kristensen/Matt Korda/Eliana Johns/Mackenzie Knight-Boyle/Kate Kohn: Status of World’s Nuclear Forces, *Federation of American Scientists*, 26.03.2025, <https://fas.org/initiative/status-world-nuclear-forces/>.

¹¹⁶ Glaser/Ramana 2007.

¹¹⁷ Ibid.; Ahmed 2017; Levy 2015. It takes about 4,500–5,000 separative work units/year capacity to produce 25 kg of weapons-grade HEU for one nuclear device.

¹¹⁸ Ravindranath Prasad: Our policy is to reprocess all the fuel put into a nuclear reactor, *The Hindu*, 21.09.2016, <https://www.thehindu.com/opinion/interview/our-policy-is-to-reprocess-all-the-fuel-put-into-a-nuclear-reactor/article4041223.ece>; International Panel on Fissile Materials 2015a, 56.

¹¹⁹ Patel 2023.

¹²⁰ China says willing to share military gear achievements with friendly countries, *Xinhua*, 08.07.2025, <https://www.chinadailyhk.com/hk/article/615481>.

withstanding Pakistan's long-standing offer for engaging in strategic restraint negotiations, that India dismisses due to its Chinese threat perceptions), South Asia cannot escape the dynamic of reactive arms racing and vertical proliferation.

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