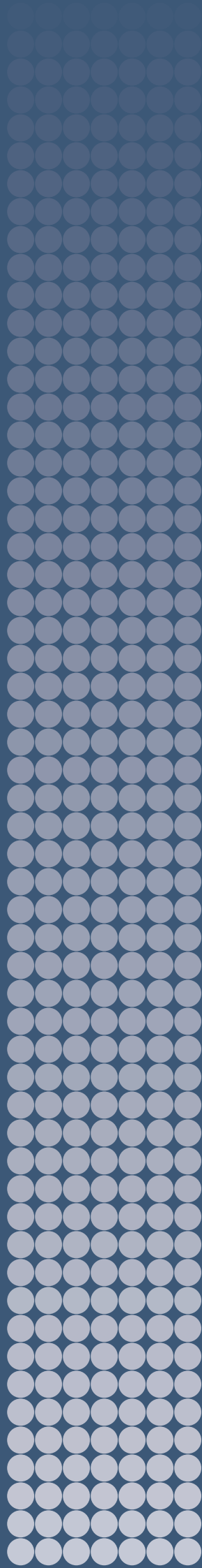


SOUTH ASIA'S NUCLEAR CHALLENGES

Interlocking Views from India, Pakistan,
China, Russia and the United States

LORA SAALMAN AND PETR TOPYCHKANOV



**STOCKHOLM INTERNATIONAL
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April 2021

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Acknowledgements

This publication was prepared in the framework of the project Assessing Nuclear Deterrence Risks and Challenges in South Asia. We would like to express our sincere gratitude to the German Federal Foreign Office for its generous financial support of the project.

We are indebted to the experts who participated in the research interviews in 2020 and a workshop on 8–9 December 2020 and agreed to share their insights. The contents of this publication reflect the findings of the authors and the views expressed by the interviewees; they should not be taken to reflect the views of SIPRI or the German Federal Foreign Office.

We are also grateful to our SIPRI colleagues Dr Sibylle Bauer, Shannon Kile, Dr Lucie Béraud-Sudreau and Dr Jingdong Yuan and the anonymous external reviewer for their comprehensive and constructive comments on the draft. We are also thankful to the SIPRI Editorial Department for its invaluable work in editing the text and preparing it for publication.

Lora Saalman and Petr Topychkanov

Summary

This study provides an overview of views on nuclear postures and escalation affecting South Asia, based on 119 interviews conducted in 2020, without attribution, with military, nuclear, political and regional experts from India, Pakistan, China, Russia and the United States. These discussions revealed a number of interlocking points that offer building blocks for both official and non-official engagement on such issues as no first use (NFU), lowered nuclear thresholds, conventional and nuclear entanglement, escalate to de-escalate, and emerging technology development.

On China and India, there was a prevailing view among experts from both countries that they shared the same stance on NFU, and that nuclear escalation between the two was not only unlikely but also unthinkable. While stabilizing in the context of tensions at the China–India border, the assumption that both parties are operating from the same starting point merits greater examination—in relation not just to NFU but also to a range of nuclear postures from de-mating to targeting. Assumptions of ‘postural parity’ may bring stability in the short term but could contribute to misunderstanding and mis-signalling in the longer term.

On China and the USA, experts from each tended to see the other country as playing a larger and more destabilizing role in South Asia. Chinese experts focused on past US weapon sales to the region, the Indian–US nuclear deal, the US Indo-Pacific Strategy and the Quadrilateral Security Dialogue, which have had a strong focus on China as well as India. US experts cited China’s conventional and nuclear weapons outreach to Pakistan, military training, and the China–Pakistan Economic Corridor under the Belt and Road Initiative (BRI). This different focus and pattern of engagement led some US experts to express concern that the region could break into two camps, with the USA and India on one side and China and Pakistan on the other.

On India and the USA, there was a shared view among experts from both countries that the Chinese entanglement of conventional and nuclear platforms and command and control could filter into Pakistan’s posture and planning. Despite this commonality, there were limited avenues for nuclear discussion between the two countries. US experts cited the difficulty of engaging Indian interlocutors on nuclear issues, particularly at the official level. Meanwhile, in India there was a tendency to regard US assessments as projections that did not reflect India’s reality, such as with US discussions of India’s potential shift towards counterforce doctrine.

On India and Pakistan, while experts from both countries focused on how the other has engaged in lowering the nuclear threshold, there was a mutual interest in how Chinese–US competition in emerging technologies may have cascade effects that shape South Asia’s deterrence landscape. Both Indian and Pakistani experts expressed concerns over how such technologies as hypersonic weapons, artificial intelligence (AI) and autonomy may change the deterrence landscape, particularly in terms of surveillance, command and control, and even shorter reaction times.

On Pakistan, Russia and the USA, Chinese experts’ discussion of parallels between Pakistan and Russia on escalate to de-escalate coincided with US experts’ mention of the US use of a similar concept in extended deterrence and the fielding of low-yield nuclear weapons. Their respective analyses revealed that experts’ discussion of third countries and re-evaluation of their own countries’ nuclear posture may bridge some of the gaps in understanding that are often entrenched in traditional Russia–USA and India–Pakistan dyadic interactions.

Overall, these findings illustrate the need for greater, and more comprehensive, engagement that features flexible bilateral, trilateral and multilateral groupings of India, Pakistan, China, Russia and the USA when discussing targeted aspects of

nuclear dynamics in South Asia. Doing so would allow for greater transparency and dynamism when engaging on sensitive posture and escalation trends. This in turn would encourage experts to look beyond India–Pakistan dyadic strategic relations in South Asia to explore the broader dynamics and linkages shaping nuclear stability in the region and beyond.

Abbreviations

AI	Artificial intelligence
ALCM	Air-launched cruise missile
ASAT	Anti-satellite
BMD	Ballistic missile defence
BRI	Belt and Road Initiative
HGV	Hypersonic glide vehicle
IRBM	Intermediate-range ballistic missile
LOC	Line of Control
MIRVs	Multiple independently targetable re-entry vehicles
MRBM	Medium-range ballistic missile
NFU	No first use
NPT	Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty)
PLA	People's Liberation Army (of China)
SLBM	Submarine-launched ballistic missile
SSBN	Nuclear-powered ballistic missile submarine
USCENTCOM	United States Central Command
USPACOM	United States Pacific Command
WMD	Weapons of mass destruction

1. Introduction

Over the past two decades, a series of escalatory events have taken place in South Asia under what some have dubbed the ‘nuclear shadow’—in which countries possessing nuclear weapons conduct low-intensity military operations against each other over disputed territories.¹ These included the India–Pakistan tensions following attacks on the Indian Parliament in 2001, on Mumbai in 2008, on Uri in 2016, and on Pulwama and Balakot in 2019, as well as the China–India tensions over the Depsang incursion, the 2017 Doklam stand-off and the 2020 Galwan River Valley skirmishes.² While each case has elicited debate, less attention has been given to the role of nuclear weapons, or lack thereof, in these various stand-offs. From one perspective, even when not actively engaged, nuclear postures and technologies are seen as looming in the background and limiting events from spiralling out of control. From another, they are seen as potential triggers for accidents or further escalation, particularly when deployed at a tactical level.

To better explore the postures and technologies that lie behind escalation under the nuclear shadow, the authors conducted a series of 119 not-for-attribution interviews between May and August 2020 with military, nuclear, political and regional experts from India, Pakistan, China, Russia and the United States on nuclear postures and escalation affecting South Asia. The interviews consisted of identical questionnaires, which some experts answered in writing and others discussed via video call. These experts included retired military personal who had served in nuclear command structures in their respective countries; retired officials who had taken part in negotiations of nuclear confidence-building measures; nuclear experts who had worked on nuclear-related technologies and postures within their respective countries; and experts with regional knowledge working on South Asian dynamics. While both senior and emerging experts were consulted during the interview process, those with more extensive experience in their respective fields dominate the unattributed quotes and analysis below. All experts presented their views in their personal capacity. To allow the interviewees to speak freely, they are not named in the text, but their general roles and affiliations are identified in boxes 2.1–6.1 below.

The resulting overviews in chapters 2–6 do not claim to be comprehensive; instead, they are representative of the issues that were most frequently raised during the interview process. In identifying linkages, it is important to recognize that there were both commonalities and tensions among the experts from each country in terms of how they approached deterrence relations in South Asia. The aim of this report is to provide a snapshot of perspectives from within five countries that have had a formative impact on South Asia and nuclear issues. A better understanding of these varied viewpoints is essential to any evaluation of the national defence narratives on which nuclear posture and technology decisions are often based. These perspectives are presented here as delivered by the interviewees, without verification or refutation; instead, the reader is referred to the three appendices on official nuclear postures (appendix A), strategic technologies (appendix B) and escalatory events (appendix C) as a basis to compare and contrast the expert assertions and assessments.

Expert availability and timing mean that there are more interviewees from some countries than from others. While an effort was made to achieve a balance in

¹ Sasikumar, K., ‘India–Pakistan crises under the nuclear shadow: The role of reassurance’, *Journal for Peace and Nuclear Disarmament*, vol. 2, no. 1 (Apr. 2019), pp. 151–69; Saalman, L. (ed.), *The China–India Nuclear Crossroads* (Carnegie Endowment of International Peace: Washington, DC, Aug. 2012); Roy, K. and Gates, S., *The Nuclear Shadow over South Asia, 1947 to the Present* (Routledge: New York, Apr. 2011); and Tanveer, K. and Balooch, A., ‘The nuclear shadow over South Asia’, *South Asian Studies*, vol. 10, no. 1 (Jan. 1993), pp. 24–35.

² On these incidents see appendix C.

expertise, the selection of interviewees was shaped in part by the scope of the authors' expert networks and the background of those who agreed to the interview requests. Despite these constraints, this expansive survey of experts reveals a wide range of views and interlocking concerns over nuclear challenges affecting South Asia. Using this foundation, this report concludes in chapter 7 by exploring the crossover of viewpoints from India, Pakistan, China, Russia and the USA on how nuclear posture and escalation are shaping South Asia and how they may serve as building blocks for further engagement.

2. India

Views on nuclear posture in South Asia

Interviews with Indian military, nuclear and political experts revealed a broad scope for examining how nuclear posture is evolving within South Asia. In fact, the majority cited ‘Southern Asia’ as the correct term for the region, since ‘South Asia’ tends to focus narrowly on India and Pakistan.³ Military and nuclear experts framed this broader expression in terms of the ‘two-front’ dynamic of asymmetric strategic challenges posed to India by China and Pakistan.⁴ However, several political experts also referred to a ‘domino’ effect of Russian and US nuclear dynamics having an impact on China and thereby affecting India and Pakistan.

Yet not all evaluations simply listed a chain of countries affecting each other in a linear fashion. One nuclear expert described a ‘twin triangle’, in which China sits at the nadir of an inverted triangle with Russia and the USA at the top, and at the apex of a lower triangle with India and Pakistan at the base.⁵ China’s position connecting these two triangles typified Indian experts’ discussion of nuclear dynamics extending beyond South Asia. Further, many looked even further afield to criticize countries outside the region for their impact. Central among these, they highlighted the hypocrisy of countries such as China, Russia and the USA in lecturing India for not signing onto arms control agreements—such as the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT)—while they themselves are unwilling to live up to their own arms control commitments.⁶ However, when it came to factors that directly determine South Asian nuclear postures, Indian experts largely focused on two other countries: China and Pakistan and their asymmetric but interlinked challenges to India’s nuclear posture.

On China, experts argued that India only superficially understands its opponent. Several nuclear and political experts lamented the lack of a routine China–India nuclear dialogue as detrimental to enhanced mutual understanding. They drew attention to China’s unwillingness to engage India, citing the latter’s non-accession to the NPT as an excuse.⁷ Yet these same experts also stressed the stabilizing properties of the two countries’ similar nuclear postures. The Indian military, nuclear and political experts in nearly every interview mentioned India’s and China’s unwavering commitments to no first use (NFU) and credible minimum deterrence.⁸ They took it for granted that both shared the same position. One nuclear expert even stressed that the absence of ‘nuclear fear’ and the perpetual ‘sense of nuclear stability’ between China and India ensures a lack of nuclear escalation at the border.⁹ This being said, several military and nuclear experts also noted India’s NFU caveats on chemical and biological weapon attacks, as well as China’s ambiguities on NFU as it modernizes its nuclear arsenal and engages India in territorial disputes in the Himalayan region.¹⁰ They noted that, irrespective of debates on NFU, India should promote greater stra-

³ Author interviews, 10 June, 19 June, 24 July, 31 July and 13 Aug. 2020.

⁴ Author interviews, 30 May, 10 June, 24 June, 26 June, 30 June, 24 July and 31 July 2020. The two-front dynamic is a long-standing concept that posits that India faces dual challenges from Pakistan and China, which may result in the need to fight a two-front war or conflict with both countries simultaneously. See Kapoor, D., ‘Challenge of a two front threat’, *Journal of the United Service Institution of India*, vol. 146, no. 603 (Jan.–Mar. 2016); and Malik, H. B., ‘India’s frustration amid a two-front challenge’, *South Asia Journal*, 17 Sep. 2020.

⁵ Author interview, 21 June 2020.

⁶ Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), opened for signature 1 July 1968, entered into force 5 Mar. 1970, IAEA INFCIRC/140, 22 Apr. 1970.

⁷ Author interviews, 10 June, 23 June, 26 June, 2 July, 3 July and 2 Aug. 2020.

⁸ On India’s and China’s nuclear postures see appendix A.

⁹ Author interview, 31 July 2020.

¹⁰ Author interviews, 23 June, 26 June, 30 June, 1 July, 2 July and 24 July 2020.

Box 2.1. Indian interviewees

Thirty-three Indian experts were interviewed. Among them were retired ranking officers and officials from the Indian Army, Navy and Air Force, the National Security Advisory Board of the National Security Council, and the Strategic Forces Command. They also included a variety of senior-level and emerging experts from the Centre for Air Power Studies (CAPS), the Centre for Policy Research (CPR), the Indian Council of World Affairs (ICWA), the Institute of Peace and Conflict Studies (IPCS), the Manohar Parrikar Institute for Defence Studies and Analyses (IDSA), the National Institute of Advanced Studies (NIAS), the Observer Research Foundation (ORF), the Takshashila Institution, the United Services Institution of India (USI), Jawaharlal Nehru University and Shiv Nadar University.

tegic ambiguity in its own policies to confront the evolving dual-pronged threat from China and Pakistan.¹¹

On Pakistan, the majority of Indian experts argued that India understands its opponent and that this is stabilizing. One nuclear expert highlighted that the two countries' existence in the 'same cultural space' allows them to 'avoid bang-on force-on-force engagement' in which they engage in large-scale armed conflict.¹² However, these Indian experts also emphasized the conflicting nature of the two sides' positions on such issues as tactical nuclear weapons and the role of terrorism.¹³ Within this, Pakistan's employment of full spectrum deterrence received the greatest attention.¹⁴ Nearly every military and nuclear expert cited concerns over how the concept of a tactical nuclear response to India's alleged Cold Start strategy has contributed to Pakistan's greater delegation of authority, lack of division between custodian and controller, use of terrorism, and ambiguous redlines.¹⁵ One military expert argued that, as long as Pakistan incorporates instability as part of its doctrine and continues to internationalize crises through nuclear threats, then crisis stability—which may be defined as the 'probability that political tensions and low-level conflict will not erupt into a major war'¹⁶—in South Asia will remain elusive.¹⁷

Views on nuclear escalation in South Asia

At least five Indian nuclear experts were adamant that nuclear escalation would never occur in South Asia. They explained that the majority of such scenarios are unrealistic and come from Western—particularly US—tabletop exercises. One political expert summed up this view by stating 'Indians don't recognize themselves in descriptions coming out of the West. This means something is off-kilter.'¹⁸ Others posited that, while nuclear escalation remains unlikely, there are still cases in which it could occur. They cited Pakistan's potential engagement in accidental nuclear use through pre-delegation, provocation or miscalculation of Indian response, as well as both non-state and state-supported terrorist acts. Indian experts further noted the role of the Hatf-9/Nasr surface-to-surface short-range ballistic missile (SRBM) in lowering the nuclear threshold.¹⁹

¹¹ On the debate on India's NFU policy see Saalman, L., 'India's no-first-use dilemma: Strategic consistency or ambiguity towards China and Pakistan', SIPRI WritePeace Blog, 2 Dec. 2020.

¹² Author interview, 10 June 2020.

¹³ On tactical nuclear weapons see appendix B.

¹⁴ On Pakistan's nuclear posture see appendix A.

¹⁵ On Pakistan's nuclear modernization see Nuclear Threat Initiative (NTI), 'Pakistan: Nuclear', Nov. 2019. On Cold Start see appendix A.

¹⁶ Lynch, T. F., *Crisis Stability and Nuclear Exchange Risks on the Subcontinent: Major Trends and the Iran Factor*, Institute for National Strategic Studies, Strategic Perspectives no. 14 (National Defense University Press: Washington, DC, Nov. 2013), p. 1.

¹⁷ Author interview, 30 May 2020. See also Ganguly, S. and Biringer, K. L., 'Nuclear crisis stability in South Asia', *Asian Survey*, vol. 41, no. 6 (Nov./Dec. 2001), pp. 907–24.

¹⁸ Author interview, 24 June 2020.

¹⁹ Author interviews, 3 June, 10 June, 18 June, 19 June, 21 June, 30 June, 1 July, 3 July, 10 July, 24 July, 31 July and 2 Aug. 2020. On the Hatf-9/Nasr see appendix B.

On potential triggers for nuclear escalation, Indian military and nuclear experts cited the 1999 Kargil War, the 2001 terrorist attacks on the Indian Parliament followed by Operation Parakram, the 2008 terrorist attacks on Mumbai and subsequent tensions, and the military stand-off following strikes in 2019 in Pulwama and Balakot.²⁰ Notably, however, these were noted as instances in which nuclear escalation did not occur. One military expert stressed that Kargil was the only valid example of ‘nuclear sabre-rattling’ and that with the Pulwama–Balakot crisis in 2019 the lack of nuclear threats indicated that ‘there was at least some rationality within the irrationality’.²¹ A political expert further called the Pulwama–Balakot crisis a ‘watershed moment’ that—while rapidly crossing several thresholds—showed that Pakistan was no more prepared for escalation than India.²² Nevertheless, one Indian military expert stated that India’s nuclear submarines were at the ready when confronting such conflicts as at Pulwama and Balakot, stressing that this debunked Pakistan’s belief in its ‘nuclear impunity’.²³

Further, Indian military, nuclear and political experts repeatedly highlighted allegations that China has enabled Pakistan’s nuclear and missile programmes over the decades.²⁴ Several nuclear experts added that China’s entanglement of conventional and nuclear platforms and command and control may contribute to similar postural and technological ambiguities within Pakistan.²⁵ These Indian experts emphasized that China has a tendency to embolden Pakistan. In their view, this has occurred through China’s refusal to condemn Pakistan’s alleged terrorist activities and even, as asserted by one expert, through its engagement in the material advancement of Pakistan’s ability to miniaturize nuclear warheads for short-range ballistic and cruise missile systems.²⁶

As such, China’s impact on the strategic balance in South Asia has been readily apparent through its multipronged political, economic and military cooperation with Pakistan. More directly, Indian military and nuclear experts cited Chinese escalation at the Line of Actual Control (LAC) alongside military exercises and mobilizations in Tibet as triggers for greater instability.²⁷ Among these, nearly one-third of Indian experts cited the events at Doklam and Galwan as harbingers of future conflict.²⁸ Still, they highlighted that such impulses have been mitigated by Russian efforts to provide a dialogue platform for China and India to engage at the height of the skirmishes at

²⁰ Author interviews, 10 June, 18 June, 19 June, 21 June, 24 June, 26 June, 30 June, 1 July, 3 July and 24 July 2020. On the 1999 Kargil War, the 2001–2002 India–Pakistan military stand-off, the 2008 Mumbai attacks and the 2019 Pulwama–Balakot crisis see appendix C.

²¹ Author interview, 10 June 2020.

²² Author interview, 10 June 2020.

²³ Author interview, 1 July 2020. See also Som, V., ‘India deployed nuclear missile-armed submarine during standoff with Pak’, NDTV, 18 Mar. 2019; and Rao, U., ‘Post-Balakot, navy on the prowl’, *Deccan Herald*, 13 Mar. 2019.

²⁴ On China’s alleged nuclear assistance to Pakistan see US Central Intelligence Agency, ‘Unclassified report to Congress on the acquisition of technology relating to weapons of mass destruction and advanced conventional munitions, 1 January through 30 June 2002’, 2002; Federation of American Scientists, ‘Chinese nuclear exports to Pakistan’, Intelligence Resource Program, 1996; and Paul, T. V., ‘Chinese–Pakistani nuclear/missile ties and the balance of power’, *Nonproliferation Review*, vol. 10, no. 2 (summer 2003).

²⁵ On entanglement see appendix A. The PLA Rocket Force is reportedly composed of conventional missiles, strategic nuclear missiles, and a set of dual-capable missiles that can deliver both conventional and nuclear warheads. Acton, J. M. (ed.), *Entanglement: Chinese and Russian Perspectives on Non-nuclear Weapons and Nuclear Risks* (Carnegie Endowment for International Peace: Washington, DC, 2017).

²⁶ Author interview, 31 July 2020.

²⁷ Rajagopalan, R. P. and Mohan, P., *PLA Joint Exercises in Tibet: Implications for India*, Observer Research Foundation (ORF) Occasional Paper no. 238 (ORF: New Delhi, Feb. 2020); Kou, J., ‘China raises Tibet Military Command’s power rank’, *Global Times*, 13 May 2016; and Liu, Z., ‘PLA reveals live-fire drill in eastern Tibet mountains as China–India border dispute claims at least 20 lives’, *South China Morning Post*, 17 June 2020.

²⁸ Author interviews, 2 June, 10 June, 17 June, 24 June, 26 June, 10 July and 24 July 2020. On the 2017 Doklam border stand-off and the 2020 Galwan River Valley skirmishes see appendix C; and Topychkanov, P., ‘New trends and developments in border tensions between China and India’, SIPRI WritePeace Blog, 29 June 2020.

Galwan. Indeed, the positive role of Russia was mentioned in nearly all interviews, particularly in the light of its impartial mediating role during the tensions at Galwan.²⁹

Beyond the border, a majority of Indian experts cited the increased size and survivability of China's nuclear arsenal; the expansion of its nuclear submarine capabilities and the related mating of nuclear weapons, and its anti-access/area-denial (A2/AD) systems; as well as expansion and basing in the Indian Ocean and its periphery.³⁰ To address these trends and tensions at the border, a number of interviewees brought up India's renewed interest in the Quadrilateral Security Dialogue (a strategic forum for Australia, India, Japan and the USA, known as the Quad) and the US Indo-Pacific Strategy.³¹ They pointed to the importance of maritime-based nuclear assets in solidifying longer-term deterrence aims both at the border and at sea.³²

Among Indian experts, emerging technologies also received strong attention due to their impact on escalation. They highlighted Chinese advances in hypersonic weapons on such platforms as the DF-17 medium-range ballistic missile (MRBM), and over half focused on the potential for the hypersonic glide vehicle Wu-14 (DF-ZF) to have a nuclear-armed variant.³³ One nuclear expert noted that 'China's work on hypersonic systems and many of the advanced technological platforms displayed in the 2019 [National Day] parade will have a decisive impact on the South Asian scene'.³⁴ Another added 'There is an additional danger posed by hypersonic weapons because they could possibly erase the line between conventional and nuclear weapons that could give rise to more unstable scenarios'.³⁵ In fact, 12 Indian military, nuclear and political experts cited Chinese advances in an array of technologies as having the potential to be decisive in future warfare, including artificial intelligence (AI), machine learning, autonomy, cyber operations and quantum computing.³⁶ Even if driven by US advances, China's technological developments attracted greater attention from Indian experts as important benchmarks as India prepares for the future. For example, one political expert advocated that India invest in greater technical collaboration through promoting the formation of an AI Quad or Digital Quad, which would build on the Quadrilateral Security Dialogue to focus on AI and digital technologies.³⁷ Thus, even while India-Pakistan dynamics continue to dominate the discussion of nuclear trends in South Asia, Indian experts' frequent mentions of advances by China suggest that it will increasingly serve as an inextricable and pivotal variable in Indian calculations on nuclear posture and escalation.

²⁹ Chaudhury, D. R., 'Multilateral forums will be an ideal platform for India and China to iron out differences: Russia's deputy envoy to India', *Economic Times* (New Delhi), 8 Sep. 2020.

³⁰ On China's nuclear modernization see US Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2020*, Annual report to Congress (Department of Defense: Washington, DC, 21 Aug. 2020). On China's expansion in the Indian Ocean see Singh, A., 'India has a bigger worry than LAC: China now expanding military footprint in Indian Ocean', *ThePrint*, 12 June 2020.

³¹ On the Quad see Mehra, J., *The Australia-India-Japan-US Quadrilateral: Dissecting the China Factor*, Observer Research Foundation (ORF) Occasional Paper no. 264 (ORF: New Delhi, Aug. 2020). On the US Indo-Pacific Strategy see US Department of State, *A Free and Open Indo-Pacific: Advancing a Shared Vision* (Department of State: Washington, DC, 4 Nov. 2019); and US Department of Defense (DOD), *Indo-Pacific Strategy Report: Preparedness, Partnerships, and Promoting a Networked Region* (DOD: Washington, DC, 1 June 2019).

³² Author interviews, 10 June, 18 June, 19 June, 24 June, 26 June, 30 June, 1 July, 3 July and 24 July 2020.

³³ Author interviews, 30 May, 3 June, 10 June, 19 June, 21 June, 23 June, 30 June, 2 July, 3 July, 31 July, 2 Aug. and 13 Aug. 2020. On the DF-17 see appendix B. See also Sawhney, P., 'China's new missile is a wake-up call for India', *Tribune* (Chandigarh), 4 Oct. 2019; and Panda, A., 'Questions about China's DF-17 and a nuclear capability: Does the DF-17 really have a nuclear role?', *The Diplomat*, 16 Feb. 2020.

³⁴ Author interview, 12 July 2020.

³⁵ Author interview, 13 Aug. 2020.

³⁶ Author interviews, 30 May, 2 June, 10 June, 18 June, 19 June, 21 June, 23 June, 24 June, 26 June, 30 June, 1 July, 2 July, 3 July, 12 July, 24 July, 31 July, 2 Aug. and 31 Aug. 2020. See also Boulanin, V. et al., *Artificial Intelligence, Strategic Stability and Nuclear Risk* (SIPRI: Stockholm, June 2020).

³⁷ Author interview, 10 July 2020.

3. Pakistan

Views on nuclear posture in South Asia

Interviews with Pakistani military, nuclear and political experts revealed their view that the nuclear threshold in South Asia is lowering. As a significant contributing factor, they focused on India's nuclear posture and the ambiguity behind its pillars of credible minimum deterrence and no first use.³⁸ One Pakistani nuclear expert noted that there remains a contradiction between India's claims of credible minimum deterrence and its nuclear modernization, which emphasizes a strategic nuclear triad.³⁹ This expert noted that India probably considers China to be its primary competitor, suggesting that India may pursue a nuclear arsenal equivalent to that of China. In connecting India's response to China's advances, however, this expert noted that such Indian pursuits also have natural 'spin-off effects' for Pakistan. Other Pakistani experts tended towards a more Pakistan-centric view of India's military pursuits. One stated that the bulk of Indian nuclear weapons 'aim at Pakistan'.⁴⁰ Another noted a fundamental discrepancy between India's claim that its primary adversary is China, while the bulk of its nuclear and conventional capabilities threaten Pakistan.⁴¹ This expert emphasized that this discrepancy has contributed to the prevailing view in Pakistan that India's nuclear deterrent targets Pakistan rather than China.

On NFU, Pakistani experts explored imbalances between India's nuclear policies and capabilities. A number mentioned the caveats that India introduced to its NFU pledge in 2003, including nuclear response to biological and chemical weapon attacks.⁴² They suggested that these exceptions meant that India is likely to have a broad interpretation of threats related to the use of weapons of mass destruction (WMD) against Indian assets. One Pakistani expert cited India's flexibility in posture and development of new strike capabilities to suggest that it may have a much wider range of nuclear options available than it admits—with one end of the spectrum marked by NFU and mass retaliation, and the other end marked by pre-emptive strikes.⁴³

Pakistani military, nuclear and political experts framed Pakistan's own shift from minimum deterrence to full spectrum deterrence as stemming mainly from factors originating in India.⁴⁴ One political expert emphasized that India's military modernization is targeted explicitly at Pakistan.⁴⁵ A nuclear expert expressed concerns over Indian attempts to explore limited conflict scenarios under its alleged Cold Start strategy framework.⁴⁶ Further, one military expert took issue with the characterization of Cold Start as 'alleged', stating that India's leadership 'owns this politico-military doctrine that seeks space to wage a limited conventional war under nuclear overhang'.⁴⁷ By and large, Pakistani experts argued that nuclear weapons have become an essential part of Indian domestic political debates, and that this has diminished the Indian leadership's room for manoeuvre when deciding on the use of force against Pakistan. One Pakistani expert highlighted tactical nuclear weapons as an effective means of countering the risk of a limited war initiated by India and

³⁸ On India's nuclear posture see appendix A.

³⁹ Author interview, 5 June 2020. On nuclear triads see appendix B.

⁴⁰ Author interview, 6 June 2020.

⁴¹ Author interview, 5 June 2020.

⁴² Indian Ministry of External Affairs, 'The Cabinet Committee on Security reviews [o]perationalization of India's nuclear doctrine', Press release, 4 Jan. 2003.

⁴³ Author interviews, 6 June and 29 June 2020.

⁴⁴ On minimum deterrence and Pakistan's nuclear posture see appendix A.

⁴⁵ Author interview, 6 June 2020.

⁴⁶ Author interview, 18 June 2020. On Cold Start see appendix A.

⁴⁷ Author interview, 4 Jan. 2021.

Box 3.1. Pakistani interviewees

Ten Pakistani experts were interviewed. Among them were retired ranking officers and officials from the Pakistan Army and Air Force and the Ministry of Foreign Affairs. They also included a variety of senior-level and emerging experts from the Center for International Strategic Studies (CISS), the Centre for Aerospace & Security Studies (CASS), the Institute of Strategic Studies Islamabad (ISSI), Quaid-i-Azam University and South Asian Strategic Stability Institute University (SASSI University).

expressed confidence in this deterrent to both nuclear and conventional threats.⁴⁸ The majority stressed that even with tactical nuclear weapons, Pakistan continues to demonstrate restraint.

While not the central focus of their regional coverage, some Pakistani experts described China's role in South Asian nuclear deterrence. Stressing that there is no military alliance between China and Pakistan, one nuclear expert argued that the Chinese nuclear posture 'deters India from using nuclear weapons against any country in the region'.⁴⁹ According to this logic, this expert presented China as an essential stakeholder in peace and security within South Asia. Nevertheless, several Pakistani political and military experts highlighted that China's stakes in South Asia are more economic than military. They suggested that China generally supports the status quo since instability and armed conflict are antithetical to long-term Chinese interests. However, one Pakistani military expert noted that asymmetries in the nuclear postures and capabilities of India, Pakistan and China would continue to drive instability and arms racing in South Asia.⁵⁰

Views on nuclear escalation in South Asia

While one Pakistani military expert described India's strategic cooperation with 'some leading extra-regional powers' as disturbing the balance within South Asia, the bulk of military, nuclear and political experts placed their strongest focus on the India–Pakistan dyad. They cited the long-standing dispute over Kashmir as the central issue and the most likely impetus for nuclear escalation, while also indicating the potential contribution of political, military and technological developments.⁵¹ In doing so, several nuclear and political experts noted the strong role played in nuclear decision-making by domestic politics in India. In their view, India's current leadership uses the issue of nuclear weapons in connection to Kashmir to achieve domestic political aims, such as expanding their electorate and diverting attention from other political and economic problems.

In emphasizing this point, one Pakistani military expert noted that the threat of the use of force against Pakistan may also undermine India's nuclear command and control credibility.⁵² According to this logic, India's nuclear command and control may become vulnerable to domestic political processes that use threats from Pakistan as a political tool. Still, several Pakistani political experts noted that the Indian leadership is not alone in using the nuclear factor to gain political benefits, as this also occurs in Pakistan. One expert described how both India and Pakistan are beset by domestic political circles advocating for war, along with the politicization of their militaries.⁵³

Beyond politics, Pakistani military and political experts stressed that India's military posture has become increasingly aggressive. One expert cited the conventional strikes that India claimed to have conducted against Pakistan at Balakot in February 2019,

⁴⁸ Author interview, 29 June 2020. On tactical nuclear weapons see appendix B.

⁴⁹ Author interview, 23 May 2020.

⁵⁰ Author interview, 5 June 2020.

⁵¹ Author interviews, 18 June and 23 June 2020.

⁵² Author interview, 29 June 2020.

⁵³ Author interview, 23 May 2020.

suggesting that it was trying to ‘establish conventional strikes as the new normal’ in deterrence relations with Pakistan.⁵⁴ Another noted that Pakistan had been able to respond in the case of the 2019 crisis by downing intruding aircraft and thwarting India’s efforts.⁵⁵

On technology, several Pakistani military and nuclear experts cited India’s enhanced nuclear and missile capabilities, as well as its ballistic missile defence (BMD), early-warning and non-nuclear strategic systems. One Pakistani military expert noted that these exacerbate pre-existing asymmetries—challenging the nuclear deterrence architecture and changing perceptions on mutual vulnerability.⁵⁶ One nuclear expert argued that advanced BMD and early-warning capabilities would cause a ‘false sense of security’ among the Indian leadership, making them act more aggressively in crises and leaving Pakistan vulnerable to Indian coercion, intervention and pre-emption.⁵⁷

Facing such advances in India, Pakistani experts argued that Pakistan is left with few options other than to pursue qualitative and quantitative changes to its nuclear and missile deterrent. Notably, there was a recognition among these experts that changes made by Pakistan in response to Indian technological developments have increased the salience of nuclear weapons in South Asia. To emphasize this point, a Pakistani military expert cited on several occasions the statement of a former director-general of Pakistan’s Strategic Plans Division, retired Lieutenant General Khalid Kidwai, on the full spectrum deterrence and Pakistan’s thresholds for nuclear response to Indian threats.⁵⁸ The same expert also cited potential moves by Pakistan towards miniaturization of nuclear warheads for a variety of short-range delivery systems and its focus on multiple independently targetable re-entry vehicles (MIRVs).⁵⁹

While most Pakistani experts focused on escalation dynamics on land, India’s pursuit of naval nuclear capabilities also drew the attention of some. One Pakistani nuclear expert noted that the expansion of India–Pakistan nuclear deterrence relations to the Indian Ocean destabilizes nuclear deterrence.⁶⁰ This expert cited a series of weapons to be deployed on India’s nuclear submarines, including the short-range K-15 and intermediate-range K-4 variants of submarine-launched ballistic missiles (SLBMs).⁶¹ When addressing these systems, Pakistani experts stressed their potential for accidental nuclear escalation due to India’s lack of experience operating a sea-based nuclear deterrent. On India’s developments in autonomous weapons, anti-satellite (ASAT) systems and military applications for AI, one Pakistani military expert noted that such emerging technologies would increase India’s situational awareness, enhance terrain analysis and decrease Pakistan’s ‘element of strategic surprise’.⁶² Thus, while acknowledging tensions between China and India, the Pakistani experts tended to posit that escalatory events involving India and Pakistan are likely to pose the greatest threat in both the near and long terms.

⁵⁴ Author interview, 6 June 2020. On the 2019 Pulwama–Balakot crisis see appendix C.

⁵⁵ Author interview, 16 July 2020.

⁵⁶ Author interview, 10 July 2020.

⁵⁷ Author interview, 6 June 2020.

⁵⁸ Author interviews, 10 July and 21 July 2020; and Kidwai, K., Keynote address and discussion session, Workshop on ‘South Asian Strategic Stability: Deterrence, Nuclear Weapons and Arms Control’, International Institute for Strategic Studies (IISS) and Centre for International Strategic Studies (CISS), 6 Feb. 2020.

⁵⁹ On MIRVs see appendix B.

⁶⁰ Author interview, 6 June 2020.

⁶¹ On the K-15 and the K-4 see appendix B.

⁶² Author interview, 5 June 2020. See also Topychkanov, P. (ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk*, vol. III, *South Asian Perspectives* (SIPRI: Stockholm, Apr. 2020).

4. China

Views on nuclear posture in South Asia

Chinese military, nuclear, political and regional experts revealed fault lines in their views on nuclear deterrence in South Asia, with some emphasizing that little had changed and others tracking postural shifts in the region. Chinese military experts tended to accept India's and Pakistan's nuclear postures at face value, and even as fixed.⁶³ One military expert stated that there has been 'little change and deterrence prevails' in the nuclear postures of India and Pakistan, likening this postural certitude with that of China.⁶⁴ Another military expert provided a brief overview of India's posture of credible minimum deterrence, no first use and negative security assurances for non-nuclear weapon states, contrasting it with Pakistan's posture of containment of conventional aggression with the threat of first use.⁶⁵ Only in one case did a Chinese military expert cite the debate in India over NFU, but the implications of any shifts in posture went unexplored.⁶⁶

In contrast, while some noted the lack of change in South Asia, Chinese nuclear experts highlighted the mutability of the Indian and Pakistani postures.⁶⁷ Several cited cases in which India's NFU policy has come under question, such as with an attack from a non-nuclear weapon state bound by an alliance to a nuclear-armed state or an attack by chemical or biological weapons.⁶⁸ Another nuclear expert stressed that Russian and US stances on such issues as compliance with the 1987 Intermediate-range Nuclear Forces (INF) Treaty and low-yield weapon deployment have compelled India to move from a 'posture of idealism' to a 'posture of realism' based on a nuclear triad and solidification of its 'major power' status.⁶⁹ Chinese nuclear experts also recognized that, as one put it, 'India's introduction and development of missile defence technology may disrupt the nuclear balance between India and Pakistan, breaking their balance in strategic offence and defence'.⁷⁰

In terms of how Pakistan might be responding to these trends, Chinese nuclear experts provided much less commentary. A number omitted any mention of Pakistan's technological advances and one nuclear expert questioned the accuracy of foreign—in particular US—reports on Pakistan's tactical nuclear weapon developments.⁷¹ Despite the tendency to gloss over Pakistan, a few Chinese nuclear experts highlighted the ambiguity in Pakistan's conditions for the potential first use of nuclear weapons.⁷² In fact, one expert labelled Pakistan's posture as 'escalate to de-escalate', reminiscent of the concept associated with Russia's alleged plans to use limited nuclear strikes to compel or force an adversary to end a conventional attack.⁷³ This nuclear expert predicated this view on Pakistan's need to rebalance its conventional military asymmetry, while highlighting the impact of Russian and US postures. Another noted that,

In the past few years, Pakistan has emphasized the role of tactical nuclear weapons. On the one hand, this is due to the conventional pressure of India. On the other hand, it also follows the US and

⁶³ Author interviews, 28 May, 30 May, 31 May and 19 June 2020. On India's and Pakistan's nuclear postures see appendix A.

⁶⁴ Author interview, 28 May 2020.

⁶⁵ On Pakistan's nuclear deterrence and lack of NFU policy see Press Trust of India, 'Pakistan military says it doesn't follow no first use nuclear policy', *ThePrint*, 4 Sep. 2019.

⁶⁶ Author interview, 30 May 2020.

⁶⁷ Author interviews, 30 May, 2 June, 3 June and 2 Aug. 2020.

⁶⁸ Author interviews, 30 May, 31 May, 3 June and 16 June 2020.

⁶⁹ Author interview, 3 June 2020. On nuclear triads see appendix B.

⁷⁰ Author interview, 2 Aug. 2020.

⁷¹ Author interview, 30 May 2020.

⁷² Author interviews, 2 June, 11 June and 2 Aug. 2020.

⁷³ Author interview, 2 June 2020. On escalate to de-escalate see appendix A.

Box 4.1. Chinese interviewees

Forty-nine Chinese experts were interviewed. Among them were both serving and retired ranking officers from the People's Liberation Army (PLA) and the PLA Academy of Military Sciences. They also included a variety of senior-level and emerging experts from the Carnegie-Tsinghua Center for Global Policy, the Charhar Institute, the China Academy of Engineering Physics (CAEP), the China Institute of International Studies (CIIS), the China Institutes of Contemporary International Relations (CICIR), the Chinese Academy of Social Sciences (CASS), the Shanghai Academy of Social Sciences (SASS), the Shanghai Institutes for International Studies (SIIS), Beijing Institute of Technology, Beijing International Studies University, China University of Political Science and Law, the Center for Maritime Strategy Studies of Peking University, China Foreign Affairs University, East China Normal University, Fudan University, Jiangxi University of Finance and Economics, Jilin University, the National University of Defense Technology, Renmin University of China, Shanghai International Studies University, Shanghai Normal University, Sichuan University, Tongji University, Tongren University, Tsinghua University, the University of Leeds (UK), Zhejiang Sci-Tech University and Zhejiang University.

Russian policies on tactical nuclear weapons and limited nuclear use. Although India often pays attention to China's development trends—since China's nuclear policy is relatively stable—its actual impact on India is not large. The development of US and Russian missile defence, low-yield nuclear weapons, and non-strategic nuclear weapons and related declaration policies have the greatest impact on India and Pakistan.⁷⁴

In contrast with the gap between the views of Chinese military and nuclear experts, political and regional experts largely agreed on how India's and Pakistan's nuclear postures bolstered, rather than weakened, regional stability. These experts cited the regional balance fostered by India's NFU policy when juxtaposed with Pakistan's posture of first use.⁷⁵ Several experts denied that nuclear escalation would occur, much less that China would play a role. One political expert cited the stability of India's and Pakistan's 'hedging deterrents' that are 'controllable, defensive and stable', stressing that the two countries' 'deterrence of attack or invasion' is integral to maintaining a nuclear balance.⁷⁶ Thus, even when acknowledging India's and Pakistan's nuclear modernizations, India's conditionality on NFU, and Pakistan's ambiguity on its nuclear redline, Chinese military, nuclear, political and regional experts largely maintained that, while India and Pakistan could encounter future tensions, the two countries would probably remain cautious and would contain a conflict from reaching the nuclear level.⁷⁷

Views on nuclear escalation in South Asia

On nuclear escalation, several Chinese nuclear, political and regional experts briefly raised the issue of the China–India border, but they felt that the two sides could control any escalatory tensions.⁷⁸ Instead, the vast majority focused on the India–Pakistan border and the dispute over Kashmir.⁷⁹ One military expert cited 'the 1999 [Kargil War] between India and Pakistan, when the two sides threatened to use nuclear weapons', as a negative precedent.⁸⁰ Another highlighted more recent events in 2019, after the Pulwama–Balakot crisis.⁸¹ On future developments, one nuclear expert cited the potential that a major conventional loss on the battlefield by either India or

⁷⁴ Author interview, 3 June 2020.

⁷⁵ Author interviews, 28 May, 30 May, 31 May, 1 June, 3 June, 4 June, 16 June and 2 Aug. 2020.

⁷⁶ Author interview, 2 June 2020.

⁷⁷ Author interviews, 30 May, 4 June, 28 June and 12 Aug. 2020.

⁷⁸ Author interviews, 30 May, 2 June, 4 June, 9 June and 17 Aug. 2020.

⁷⁹ Author interviews, 29 May, 30 May, 31 May, 2 June, 3 June, 9 June, 16 June, 24 June, 28 June, 29 July, 2 Aug., 4 Aug., 17 Aug. and 19 Aug. 2020.

⁸⁰ Author interview, 30 May 2020. On the 1999 Kargil War see appendix C.

⁸¹ Author interview, 29 July 2020. On the 2019 Pulwama–Balakot crisis see appendix C.

Pakistan could lead to nuclear retaliation.⁸² Nevertheless, not all agreed. A military expert cautioned that,

In South Asia, conflicts around the land border between India and Pakistan occur from time to time. If a conventional military conflict deteriorates, it may trigger nuclear escalation. But this is unlikely, because the nuclear balance of power between India and Pakistan has been formed, and neither party will take the initiative to shatter strategic stability.⁸³

On technologies, Chinese military and nuclear experts detailed those with direct applications in India–Pakistan territorial disputes. These include India's Prithvi Air Defence (PAD), Advanced Air Defence (AAD), fifth-generation combat aircraft, hypersonic weapon advances and MIRVs.⁸⁴ In the case of Pakistan, Chinese military and nuclear experts highlighted tactical nuclear weapons and such MRBM technology as the Ababeel, which notably may be capable of carrying MIRVs.⁸⁵ Indeed, Chinese experts mentioned MIRVs in the cases of both India and Pakistan, demonstrating an awareness of both the destabilizing nature of such systems as attractive targets for a pre-emptive strike and their ability to overwhelm missile defences. Moreover, the experts noted that India's advances in BMD, fifth-generation aircraft and hypersonic technology, while nascent, expanded India's ability to have an impact on China's security.

Chinese political and regional experts further broadened the discussion to external inputs into India's and Pakistan's military capabilities. These include India's Su-30MKI combat aircraft and BrahMos supersonic cruise missiles and India's discussions with Russia on the lease of Tu-22M3 long-range strategic bombers.⁸⁶ In citing the JF-17 combat aircraft—jointly developed by China and Pakistan—one expert noted that this platform could be equipped in the future with air-launched cruise missiles (ALCMs) with nuclear payloads 'that would lower the threshold for use'.⁸⁷ Throughout, however, the Chinese experts paid more attention to India's long-range ballistic missile technology—such as the Agni-III intermediate-range ballistic missile (IRBM) and the long-range Agni-V—the Arihant-class nuclear-powered ballistic missile submarines (SSBNs) INS *Arihant* and INS *Arighat*, and SLBMs.⁸⁸ This emphasis revealed a sizeable Chinese interest in future India–China nuclear dynamics, as the ranges of these systems exceed the territory of Pakistan and bring a broader swathe of Chinese territory into range.

Ultimately, this focus on longer-range systems revealed a core tension in Chinese analyses. The vast majority of experts highlighted the India–Pakistan border as the main source of escalation. Yet, these same Chinese experts focused their technological discussion on India's development of intermediate- and long-range missiles and maritime platforms with a higher likelihood of reaching China's cities or confronting Chinese vessels in the Indian Ocean.⁸⁹ Chinese military, nuclear, political and regional

⁸² Author interview, 30 May 2020.

⁸³ Author interview, 17 Aug. 2020.

⁸⁴ Author interviews, 30 May, 4 June, 11 June, 16 June, 2 Aug. and 12 Aug. 2020. On these technologies see appendix B.

⁸⁵ Author interviews, 30 May, 4 June, 11 June, 16 June, 2 Aug. and 12 Aug. 2020. On tactical nuclear weapons, the Ababeel and MIRVs see appendix B.

⁸⁶ Author interviews, 31 May, 4 June, 2 Aug., 12 Aug. and 17 Aug. 2020. On the Su-30MKI see appendix B; Huánqióu jūn píng [Global Military Review], [Comparing India's Su-30MKI with the Su-30MKK combat aircraft: The standards are different and one-on-one is not at all cost-effective], 14 Aug. 2020 (in Chinese); and Saalman, L., 'Divergence, similarity and symmetry in Sino-Indian threat perceptions', *Journal of International Affairs*, vol. 64, no. 2 (spring/summer 2011), pp. 169–94. On the Tu-22M3 see Defence Update, 'India to buy 12 S-400 systems, 4 Tu-22M3 bombers, 2 Akula-2 SSN & 1000 T-90 MBTs', Indian Defence News, [n.d.]; TASS, 'Press review: Moscow gunning for arms deals with India and gets branded "the enemy" by US', 14 Dec. 2018; and United Press International, 'China buys Russian bombers', Space Daily, 23 Jan. 2013. On the BrahMos see appendix B.

⁸⁷ Author interview, 2 Aug. 2020. On the JF-17 see appendix B.

⁸⁸ Author interviews, 30 May, 4 June, 11 June, 16 June, 2 Aug. and 12 Aug. 2020. On the Agni-III, Agni-V and Arihant-class SSBNs see appendix B.

⁸⁹ Author interviews, 30 May, 31 May, 2 Aug. and 12 Aug. 2020.

experts all placed their greatest emphasis on advances in India's aircraft carrier battle groups and SSBNs, as well as expansion of its SLBM range from the short-range K-15 to the intermediate-range K-4.⁹⁰ On the latter, one regional expert noted that 'the theoretical strike range [of the K-4] can cover the entirety of Asia. Thus, it can be regarded as a strategic weapon because it can also carry nuclear warheads. India's particular mindset makes neighbouring countries very worried that this weapon will be abused.'⁹¹ This statement is all the more China-centric when weighed against Chinese experts' mention of India's Indo-Pacific aims and major power strategy, as well as its ASAT and cyber developments.⁹² Thus, while the India–Pakistan border remains the focal point of Chinese analyses on South Asia, interviews revealed an interest in the longer-range technologies and maritime platforms that may pose a future strategic challenge for China.

⁹⁰ On India's K-15 and K-4 see appendix B. Author interviews, 30 May, 2 Aug. and 11 June 2020.

⁹¹ Author interview, 2 Aug. 2020.

⁹² Author interviews, 29 May, 30 May, 31 May, 2 June, 6 June, 11 June, 19 June, 28 June, 12 Aug. and 17 Aug. 2020.

5. Russia

Views on nuclear posture in South Asia

Russian military, nuclear, political and regional experts focused their attention on two distinct dyads within South Asia: India–Pakistan and China–India. This was the case even though Russian experts debated China’s status as a regional power in South Asia. The fact that the interviews were conducted during the China–India tensions at Galwan could explain the greater attention paid to China.⁹³ Nonetheless, it is noteworthy that China factored into their view.

Describing the nuclear postures of India, Pakistan and China, nuclear experts argued that China’s nuclear posture is the most articulated, while that of Pakistan is the least.⁹⁴ In the middle of this spectrum sits India, which in their view ‘lacks clarity’ on its nuclear doctrine.⁹⁵ Yet they highlighted that India has issued a few official documents that describe key principles of nuclear deterrence and cases in which it may use nuclear weapons. Among these is the 2003 document from India’s Cabinet Committee on Security on the principles of credible minimum deterrence and no first use.⁹⁶ Still, citing their view that India continues to lack a credible second-strike capability—much less early-warning and BMD—several Russian experts doubted that India strictly adheres to NFU.⁹⁷

On India’s nuclear posture, Russian military, nuclear and political experts focused on its alleged strategy of Cold Start.⁹⁸ While noting that this strategy applies to India’s non-nuclear strikes against targets within Pakistan’s territory, one linked it directly to nuclear deterrence.⁹⁹ A nuclear expert argued that Cold Start suggests that India does not rule out preventive strikes against a neighbouring nuclear-armed state and that this has strengthened Pakistan’s view of conventional strikes as a rationale for nuclear retaliation. Given the geographic vulnerability of Pakistan’s political, economic and military centres to India’s short-range delivery systems and high-precision munitions, this expert argued that ‘if a massive conflict begins between India and Pakistan, it will jeopardize the survivability of Pakistan’, compelling Pakistan to consider the use of nuclear weapons.¹⁰⁰ Yet in the event of a mixed conventional and nuclear attack from India, this nuclear expert argued that Pakistan might not have a chance to execute a retaliation. The expert explained that Pakistan has understandably built up its number of nuclear warheads for a greater sense of protection against India’s combined conventional and nuclear capabilities. In this expert’s view, any armed conflict between India and Pakistan would have a nuclear dimension, even when nuclear weapons are not used.

Another Russian nuclear expert examined Cold Start in the light of India’s position sandwiched between Pakistan and China. This expert contrasted deterrence between India and Pakistan with that between China and India, stating that the former relies on a balance between nuclear postures and capabilities, while the latter depends

⁹³ On the 2020 Galwan River Valley skirmishes see appendix C.

⁹⁴ On China’s and Pakistan’s nuclear postures see appendix A.

⁹⁵ Author interview, 9 June 2020. On India’s nuclear posture see appendix A.

⁹⁶ Indian Ministry of External Affairs (note 42).

⁹⁷ Among non-Russian authors that have similarly noted the challenges surrounding operationalization of India’s second-strike capability, early-warning and BMD are Joshi, Y., ‘Angles and dangles: Arihant and the dilemma of India’s undersea nuclear weapons’, *War on the Rocks*, 14 Jan. 2019; Ahmed, U., ‘The credibility of India’s second strike capability’, *South Asia Journal*, 15 May 2018; and Ahmed, A. and Kausar, S., ‘An illusion of the Indian ballistic missile defense system’, *Politeja*, vol. 16, no. 2 (2019), pp. 39–53.

⁹⁸ On Cold Start see appendix A.

⁹⁹ Author interview no. 1, 7 July 2020.

¹⁰⁰ Author interview no. 1, 7 July 2020.

Box 5.1. Russian interviewees

Seven Russian experts were interviewed. Among them was a retired ranking officer from the Soviet/Russian armed forces. They also included a variety of senior-level and emerging experts from the Carnegie Moscow Center, the Higher School of Economics, the Institute of Oriental Studies of the Russian Academy of Sciences, and the Primakov National Research Institute of World Economy and International Relations of the Russian Academy of Sciences (IMEMO).

on conventional deterrence.¹⁰¹ Several Russian experts emphasized that the role of nuclear weapons remains insignificant in China–India deterrence. One nuclear expert cited the shared border’s mountainous terrain as making the nuclear option an ineffective way of achieving Chinese or Indian military goals. The expert further noted that China ‘does not consider India’s nuclear arsenal to be an imminent threat’, citing China’s efforts to avoid permanent deployments of strategic capabilities in the region to mitigate Indian concerns that they might be ‘launching pads for nuclear strikes against targets’ on Indian territory.¹⁰²

On Pakistan’s nuclear posture, one Russian nuclear expert described it as a ‘proto-doctrine’, relying more on sporadic statements than transparency from official documents.¹⁰³ In this expert’s view, an articulated doctrine would limit Pakistan’s room for manoeuvre. While noting that Pakistan declared in 1999 that it would adhere to minimum deterrence, another Russian expert suggested that Pakistan’s nuclear posture and operational plans ‘change according to risks of pre-emption and interception’ that stem from India’s nuclear and conventional advances.¹⁰⁴ This expert highlighted the increase in Pakistan’s stock of nuclear warheads—despite its declaration of minimum deterrence—as reflecting a ‘changeable vision’ of the role of its nuclear arsenal. The expert argued that, if Pakistan were to officially pledge a minimum deterrence posture within an official document, it might commit its leadership to a fixed vision for its nuclear arsenal. However, this expert also recognized that Pakistan would be unlikely to abandon its postural flexibility.

On China’s nuclear posture, one Russian political expert noted that China has recently shifted from research and development of strategic military technologies to the stages of production and introduction. This expert cited China’s commissioning of SSBNs as marking the implementation of the sea component of its nuclear triad. The expert agreed with open-source assessments of China’s efforts to increase the number of its warheads and suggested that the size of its nuclear arsenal may be equivalent to those of Russia and the USA within 10 years.¹⁰⁵ Nevertheless, Russian experts generally shared the view contained in Russia’s most recent nuclear posture document, which refuses to perceive China as a nuclear threat and removed nuclear-armed states in Asia from Russia’s list of such threats.¹⁰⁶ Several supported the concept of ‘latent nuclear deterrence’ between Russia and China, contrasting it with the case of India in which military mobilizations suggest a genuine concern over the growing capabilities of China.¹⁰⁷

¹⁰¹ Author interview no. 2, 7 July 2020.

¹⁰² Author interview no. 2, 7 July 2020.

¹⁰³ Author interview no. 1, 7 July 2020.

¹⁰⁴ Author interview no. 1, 7 July 2020. On minimum deterrence see appendix A.

¹⁰⁵ Author interview no. 2, 7 July 2020. See also Kristensen, H. and Korda, M., ‘Chinese nuclear forces, 2019’, *Bulletin of the Atomic Scientists*, vol. 75, no. 4 (July 2019).

¹⁰⁶ Author interviews, 16 June and 3 July 2020. See also ‘Basic principles of state policy of the Russian Federation on nuclear deterrence’, Approved by Russian Presidential Executive Order no. 355, 2 June 2020; and Topychkanov, P., ‘Russia’s nuclear doctrine moves the focus from non-Western threats’, SIPRI WritePeace Blog, 1 Oct. 2020.

¹⁰⁷ Author interviews, 6 June, 9 June and 7 July 2020.

Views on nuclear escalation in South Asia

Russian experts tended to agree that land borders have the greatest potential for escalation between India and Pakistan and between China and India, while noting these countries' respective advances in the maritime, space and cyber domains.¹⁰⁸ One political expert suggested that China's military actions along the border with India, and most recently at Galwan, have stemmed from a combination of political decisions by the Chinese Government and military attempts to adhere to these political directives.¹⁰⁹ Other Russian experts contrasted this top-down situation with that of India and Pakistan, where bottom-up public opinion serves as a driving force. A political expert suggested that, in the face of ongoing border tensions, government support for nuclear restraint, arms control and disarmament measures could result in the loss of political support for leaders in India and Pakistan.¹¹⁰

Russian nuclear experts cited domestic politics and external threats as central to decisions within India, Pakistan and China to change the quality and quantity of their nuclear arsenals. One argued that these countries are not only producing new nuclear warheads and delivery systems, but also 'creating conditions for a relatively quick nuclear build-up'.¹¹¹ A regional expert described the modernization of India's nuclear arsenal—particularly if it successfully realizes BMD and early warning—as a 'potential game-changer'.¹¹² A political expert emphasized that several Indian strategic systems—specifically, the BrahMos and Nirbhay cruise missiles—are 'China-centric' and a potential challenge for China in border disputes.¹¹³ This expert also noted the strategic impact of India's long-range Agni-V ballistic missile and expanding nuclear submarine fleet as longer-term considerations for China.¹¹⁴

However, several Russian nuclear and political experts stressed that China remains self-confident in its ability to manage such challenges, particularly with its BMD and air defence systems. One highlighted China's introduction of an array of MRBM and IRBM systems—such as the DF-21C, the DF-26C and the DF-17—combined with its growing ALCM capabilities as having just as much if not more strategic importance for India's calculations.¹¹⁵ From the perspective of strategic calculations, while these missiles are generally categorized as conventional, there are indications that some may also be capable of carrying nuclear warheads.¹¹⁶

Russian experts spent less time talking about Pakistan's conventional and nuclear pursuits and their impact on India. One cited Pakistan's quantitative additions to its nuclear arsenal as one of the primary channels for addressing asymmetry with India, given that Pakistan 'does not have many options to respond'.¹¹⁷ Beyond quantity, a few nuclear and regional experts concentrated on the qualitative threats posed to India's civilian and military assets by Pakistan's tactical nuclear weapons, as well as its con-

¹⁰⁸ Author interviews, 16 June and 7 July 2020.

¹⁰⁹ Author interview no. 2, 7 July 2020.

¹¹⁰ Author interview, 6 July 2020.

¹¹¹ Author interview no. 1, 7 July 2020.

¹¹² Author interview, 3 July 2020.

¹¹³ Author interview no. 2, 7 July 2020. On BrahMos and Nirbhay see appendix B. On the reported deployment of the Nirbhay during the 2020 Galwan River Valley skirmishes see Azam, T., 'LAC standoff: India deploys long-range missile Nirbhay to tackle Chinese threat', Zee News, 29 Sep. 2020.

¹¹⁴ On the Agni-V see appendix B.

¹¹⁵ Author interview no. 2, 7 July 2020. On the DF-21C, the DF-26C and the DF-17 see appendix C. See also Kristensen, H., 'DF-21C missile deploys to central China', Federation of American Scientists, 28 Sep. 2010; Pollack, J. and LaFoy, S., 'China's DF-26: A hot swappable missile?', Arms Control Wonk, 17 May 2020; and Gertz, B., 'China fields new intermediate-range nuclear missile: DF-26C deployment confirmed', Washington Free Beacon, 3 Mar. 2014.

¹¹⁶ On China's entanglement see appendix A; and Acton, ed. (note 25).

¹¹⁷ Author interview no. 1, 7 July 2020.

ventional submarines armed with cruise missiles.¹¹⁸ Within the India–Pakistan and China–India dyads of tensions, some Russian experts considered a potential crisis-mitigation role for Russia and the USA on border tensions in South Asia. While they did not see India, Pakistan or China agreeing to mediation by a third party, several suggested that Russia and the USA could play an early-warning role in ‘spotting hostilities’ and in preventing further escalation through their channels of communication with leaders in South Asia.¹¹⁹ One political expert noted that China would probably be averse to a repeat of the recent events in Galwan, citing as evidence for this its reluctance to establish a permanent missile base in Tibet and its relatively ‘limited military presence’ in the region so far.¹²⁰ Thus, among Russian experts, military action in the border areas between India and Pakistan remained paramount. While some may have focused on the China–India dyad and the future role of emerging technologies and maritime assets, these challenges remained secondary and distant.

¹¹⁸ On tactical nuclear weapons see appendix B. As of 2019, Pakistan’s Navy operated a fleet of 5 diesel-electric submarines and 3 MG110 mini submarines. Pakistan Navy, ‘Submarine force’, [n.d.]; and Nuclear Threat Initiative (NTI), ‘Pakistan submarine capabilities’, 16 Oct. 2019.

¹¹⁹ Author interviews, 16 June, 6 July and 7 July 2020.

¹²⁰ Author interview no. 2, 7 July 2020.

6. The United States

Views on nuclear posture in South Asia

The survey of US military, nuclear, political and regional experts revealed that, while there is strong recognition of South Asia's strategic importance, US coordination with the region on nuclear issues has been fraught, due to both limited access and structural imbalances. A variety of US experts referred to the dynamism of South Asia in that all nuclear-armed states both within and outside the region are engaged in various stages of modernizing their nuclear forces and postures. One regional expert described the tightening of India–USA and China–Pakistan ties as having neither alleviated nor slowed arms racing, but rather as having exacerbated it.¹²¹

At the same time, US experts cited difficulties in identifying reliable information about Indian and Pakistani capabilities and doctrines. Even nuclear experts who closely follow these trends expressed concern over the lack of reliable public information about numbers of warheads and nuclear postures, also questioning long-standing positions on de-mating and alert levels.¹²² Thus, while mentioning India's no-first-use policy and alleged Cold Start strategy and Pakistan's shift from minimum deterrence to full spectrum deterrence, the majority of US experts emphasized that ongoing strategic ambiguities make South Asia vulnerable to nuclear miscalculation.¹²³

On India, US nuclear experts cited the Indian domestic debate about changes to NFU and whether this shift is real and has been adequately examined for its impact on its nuclear relations with China and Pakistan.¹²⁴ Several pointed to India's challenges in balancing the strategic needs of confronting both China and Pakistan, compounded in their view by a lack of think tanks similar to the USA's RAND Corporation, which through government consulting contracts has a significant impact on official policy.¹²⁵ In doing so, three US experts explicitly cited the 'two-front' threat confronted by India in its relations with China and Pakistan.¹²⁶ Among these, one political expert suggested that India's 'split personality'—with its army looking west towards Pakistan and the navy looking east towards China—make it difficult for India to have a coherent nuclear posture.¹²⁷ A regional expert echoed this assessment, arguing that India 'talks China, but acts Pakistan'.¹²⁸ As such, when it came to the recent skirmishes in Galwan, one US nuclear expert stated that 'nuclear weapons do not hang over India–China relations' in the same way that they do with India–Pakistan relations.¹²⁹ Despite this view, much like Chinese experts, the majority of US experts cited India's development of systems that are likely to have greater strategic import for China than Pakistan, such as intermediate- and long-range ballistic missiles (e.g. the Agni-V and the K-4) as well as MIRVs.¹³⁰

On Pakistan, US experts discussed its nuclear posture largely in response to India. In the view of one regional expert, it is 'not trivial' that Pakistan has never believed India's NFU pledge.¹³¹ A number of US experts suggested a greater potential for

¹²¹ Author interview, 24 June 2020.

¹²² Author interviews, 16 June and 9 July 2020.

¹²³ On India's and Pakistan's nuclear postures, Cold Start, and minimum deterrence see appendix A.

¹²⁴ Author interviews, 2 June and 29 June 2020.

¹²⁵ Author interviews, 2 June and 16 June 2020. On the organizations that this assessment may be overlooking see box 2.1; and Chandran, D. S., 'The rise of think-tanks in India', Institute of Peace and Conflict Studies, 21 June 2016. On RAND see RAND Corporation, 'RAND at a glance', [n.d.].

¹²⁶ Author interviews, 12 June and 24 June 2020.

¹²⁷ Author interview, 24 June 2020. On the 'two-front' threat see Kapoor (note 4); and Malik (note 4).

¹²⁸ Author interview, 25 June 2020.

¹²⁹ Author interview, 16 June 2020. On the 2020 Galwan River Valley skirmishes see appendix C.

¹³⁰ Author interviews, 2 June, 16 June and 29 June 2020. On the Agni-V, the K-4 and MIRVs see appendix B.

¹³¹ Author interview, 2 June 2020.

Box 6.1. United States interviewees

Twenty US experts were interviewed. Among them were retired ranking officers and officials from US Central Command (USCENTCOM), US Indo-Pacific Command (USINDOPACOM), the US Navy and the US Department of State. They also included a variety of senior-level and emerging experts from the Brookings Institution, the Carnegie Endowment for International Peace, the Congressional Research Service, the Global Catastrophic Risk Institute (GCRI), the Hudson Institute, the National Academy of Sciences, RAND Corporation, the School of Advanced International Studies (SAIS) of Johns Hopkins University, the Stimson Center, the China Aerospace Studies Institute (CASI) of Air University, the Georgia Institute of Technology and the National Defense University (NDU).

Pakistan to escalate from conventional to nuclear, particularly as it has lowered the threshold on nuclear use with such platforms as the Hatf-9/Nasr.¹³² One nuclear expert drew parallels between Pakistan's posture on tactical nuclear weapons and Russia's alleged strategy of escalate to de-escalate, further noting that US nuclear posture under extended deterrence has similar tendencies.¹³³ The expert noted that it is hard to define Pakistan as a status quo or revisionist power, but that it is more likely 'something in between' deriving its support from China. Thus, despite one US military expert's view that Pakistan has clearer nuclear planning and control than India, several US nuclear experts expressed concern that China's entanglement of conventional and nuclear platforms and command and control systems may filter into Pakistan's own deployments.¹³⁴

Views on nuclear escalation in South Asia

While one US regional expert assumed 'a similar logic' among countries when looking at escalation, others were less likely to see this unity of viewpoint.¹³⁵ Some highlighted how power asymmetries and limits to engagement among these nuclear powers contribute to misunderstanding and compromised signalling. Pointing to difficulties of access for experts on nuclear issues within South Asia, several US experts hypothesized that India and Pakistan have a relative lack of bodies working on nuclear stability. One expressed concern that this could lead to 'escalation manipulation' in which foreign think tanks end up driving the nuclear discourse.¹³⁶ As just one example, a number of US experts referenced the debate over whether India may be trending towards counterforce doctrine.¹³⁷ While this has been refuted in India, the tendency of US experts to build scenarios based on such concepts drives how South Asian escalation and crisis management are viewed abroad.¹³⁸

On escalation drivers in South Asia, there was a greater tendency among US experts to use a scenario-based approach when discussing vulnerabilities of nuclear materials when in transit, tactical nuclear weapons and terrorism. One US nuclear expert explained this by stating that the USA is 'very situational when it comes to escalation', such that it has a situation-specific designation for how it will escalate under certain conditions.¹³⁹ In contrast to often abstract nuclear concepts, the expert argued that

¹³² Author interviews, 16 June and 26 June 2020. On the Hatf-9/Nasr see appendix B.

¹³³ Author interview, 9 July 2020. On escalate to de-escalate and extended deterrence see appendix A.

¹³⁴ Author interviews, 2 June, 10 June, 24 June and 9 July 2020. On China's entanglement see appendix A; and Acton, ed. (note 25).

¹³⁵ Author interview, 12 June 2020.

¹³⁶ Author interview, 9 July 2020.

¹³⁷ Author interviews, 2 June and 16 June 2020. On counterforce doctrine see appendix A. For an argument that India may be developing a nuclear arsenal that extends beyond its declared policy of credible minimum deterrence and NFU see Clary, C. and Narang, V., 'India's counterforce temptations: Strategic dilemmas, doctrine, and capabilities', *International Security*, vol. 43, no. 3 (winter 2018/19), pp. 7–52.

¹³⁸ Clary and Narang (note 137) on India's potential shift to counterforce is refuted by Rajagopalan, R., *India and Counterforce: A Question of Evidence*, Observer Research Foundation (ORF), Occasional Paper no. 247 (ORF: New Delhi, May 2020).

¹³⁹ Author interview, 9 July 2020.

US scenario-based tabletop exercises are meant to test the logic underpinning its policies and postures. In contrast, several nuclear experts noted that US understanding of Indian and Pakistani nuclear postures is largely hindered by strategic ambiguities cultivated by both countries, as well as the unique US partnerships with each marked by tensions and non-ally status. One US military expert went one step further, noting a 'latent animosity towards US officers' found within South Asia, resulting in the USA, India and Pakistan being 'partially blind about each other'.¹⁴⁰

Further, US military, political and regional experts cited the historically fractured nature of US treatment of South Asian affairs, in which India falls under US Indo-Pacific Command (USINDOPACOM, formerly US Pacific Command, USPACOM) and Pakistan under US Central Command (USCENTCOM).¹⁴¹ One retired US military expert noted the complexity, while serving, of having to coordinate with three combatant commands—USPACOM, USCENTCOM and US Africa Command (USAFRICOM)—to engage South Asia on everything from policy to weapon sales, and how this has contributed to incoherence in US policies and strategy.¹⁴² US nuclear experts also cited a range of additional barriers to engagement of India and Pakistan on arms control and nuclear issues. Beyond both countries' position outside the NPT, US nuclear experts expressed concern over the lack of robust high-level nuclear dialogues, in particular with Indian experts and officials.¹⁴³ Noting the relatively small size of the nuclear expert community in India and the USA, combined with Indian reluctance to engage with US counterparts, several nuclear and political experts cited the difficulty of finding those with whom they could interact.¹⁴⁴

Despite these barriers, US experts proved to be informed about incidents between India and China at Galwan and between India and Pakistan at Pulwama and Balakot.¹⁴⁵ On Galwan, US experts highlighted the fact that both sides had refrained from nuclear escalation.¹⁴⁶ Yet on the Pulwama–Balakot crisis, multiple regional experts noted that all parties had learned the wrong lesson that 'crisis is easy to control and easy to win', with one military expert adding that China has a similar 'unrealistic expectation that it can control escalation'.¹⁴⁷ One US nuclear expert emphasized that this crisis should have led to the realization that nuclear weapons did not deter as much as Pakistan thought, with another noting that India's Arihant-class nuclear submarine was fully operational and deployed at the height of the stand-off.¹⁴⁸ One regional expert further highlighted US-targeted English-language statements from Pakistan that 'nuclear weapons remained on the table' after the Pulwama–Balakot crisis, with another citing retired Lieutenant General Khalid Kidwai's speech as supporting the idea in Pakistan that 'instability works in its favour'.¹⁴⁹ While both experts noted Pakistan's pursuit of external intervention, one questioned whether the USA would be willing or even able to play a crisis management role, similar to the one it had played in 2001. A US military expert stressed that one of the major obstacles in any US tabletop exercise on South Asia has always been how to end a nuclear crisis.¹⁵⁰

¹⁴⁰ Author interview, 10 June 2020.

¹⁴¹ Author interviews, 2 June, 10 June and 25 June 2020.

¹⁴² Author interview, 10 June 2020.

¹⁴³ Author interviews, 16 June, 18 June, 24 June and 24 July 2020.

¹⁴⁴ Author interviews, 9 June and 18 June 2020.

¹⁴⁵ Author interviews, 2 June, 9 June, 10 June, 12 June, 16 June, 24 June, 25 June and 9 July 2020. On the 2019 Pulwama–Balakot crisis see appendix C.

¹⁴⁶ Author interview, 29 June 2020.

¹⁴⁷ Author interview, 9 July 2020.

¹⁴⁸ Author interviews, 16 June and 24 June 2020. See also Som (note 23); and Rao (note 23). On the INS *Arihant* see appendix B.

¹⁴⁹ Author interviews, 9 June and 24 June 2020; and Kidwai (note 58).

¹⁵⁰ Author interview, 9 July 2020.

In the absence of a role for the USA as a mediator and given structural challenges to its engagement in South Asia, these experts tended not to see the USA as having a major impact, compared with China or Russia. One US regional expert summarized this view by stating, ‘While [US] experts tend to see China’s regional role as having the potential to embolden Pakistan, Chinese experts see the US role in the region as emboldening India’.¹⁵¹ Political and regional experts further expressed concerns that China–Pakistan military trade and training could shape the region in new and unanticipated ways, as China ‘throws its weight around [in] its periphery’ and the USA remains both absent and preoccupied.¹⁵² Facing such a future, US experts stressed that, if the USA remains unable to engage with and understand South Asia in the face of a deteriorating relationship with China, it may encounter future obstacles in the realization of its Indo-Pacific Strategy.

¹⁵¹ Author interview, 26 June 2020.

¹⁵² Author interviews, 2 June, 9 June and 25 June 2020.

7. Conclusions

Based on the five country overviews, a number of interlocking points can be identified that could serve as building blocks for both official and non-official engagement among India, Pakistan, China, Russia and the United States. Such interaction is even more consequential in the wake of a number of low-intensity military operations that have occurred under the ‘nuclear shadow’ over the past two decades.

Even with recent progress—as with the February 2021 India–Pakistan joint statement on the ceasefire at the border and withdrawal of Chinese and Indian forces from the Pangong Tso Lake area in the aftermath of the Galwan River Valley skirmishes—systemic problems remain that suggest the need for more flexible and sustainable dialogue mechanisms.¹⁵³ Throughout the interviews, experts from India, Pakistan, China, Russia and the USA emphasized the lack of external understanding and expertise on nuclear issues in South Asia, combined with concerns over external trends filtering into the region. Their insights demonstrate the need for greater and more flexible engagement to enhance not merely understanding of South Asia, but rather how it interlocks with broader international nuclear dynamics. The following sections offer a few recommendations for areas in which crossover among expert viewpoints could be further explored.

China and India

Among Chinese and Indian experts, there was a prevailing view that they shared the same stance on no first use, and that nuclear escalation between the two countries was not only unlikely but also unthinkable. So, while some cited nuances in India’s approach towards NFU and an evolving discussion in the country on its future and others pointed to some of the past debate in China on NFU, they largely disregarded these caveats when it came to escalation. In most cases, there was a steadfast view that both countries were on the same page when it came to nuclear posture, with NFU as just one example.¹⁵⁴

While stabilizing in the context of recent tensions at the China–India border, the assumption that both parties are operating from the same starting point merits greater attention—in relation not just to NFU but also a range of nuclear postures from de-mating to targeting. Assumptions of ‘postural parity’ may bring stability in the short term, when altercations are largely limited to skirmishes at the border, but in the longer term—as both China and India extend the ranges of their systems and deployments—such assumptions may lead to misunderstandings and mis-signalling. Further, the continued dominance in Indian analyses of the concept of a ‘two-front’ threat from China and Pakistan means that greater consideration of how deterrence operates among these three countries is needed, even if it requires more countries at the table.¹⁵⁵

China and the United States

Among Chinese and US experts, there was a strong tendency for experts from each to see the other country as playing a larger and more destabilizing role in South Asia. While much of the commentary from Chinese experts centred on India–Pakistan

¹⁵³ Masood, S., Mashal, M. and Kumar, H., ‘Pakistan and India renew pledge on cease-fire at troubled border’, *New York Times*, 25 Feb. 2021; and BBC, ‘Pangong Lake: India and China complete pull-back of forces’, 21 Feb. 2021.

¹⁵⁴ Saalman (note 1).

¹⁵⁵ Saalman, L., ‘China’s detachment from the South Asian nuclear triangle’, SIPRI WritePeace Blog, 8 Sep. 2020.

dynamics, when it came to external influences, the USA's role was paramount. While citing past US weapon sales to the region and the 2005 India–US nuclear deal for their role in strengthening India and freeing up its nuclear material for military aims, Chinese experts also focused on forward-looking initiatives such as the US Indo-Pacific Strategy and the Quadrilateral Security Dialogue, which have a focus on China as well as India.¹⁵⁶ Among US experts, China's outreach to Pakistan in terms of conventional and nuclear assistance, military training and more recently the China–Pakistan Economic Corridor under the Belt and Road Initiative (BRI) demonstrate China's far-reaching aspirations in the region.¹⁵⁷

While Chinese experts characterized China's role as stabilizing, US experts were more cautious in evaluating its long-term implications. Nonetheless, they cited tensions generated by China's arms sales to South Asia and economic engagement under the BRI, combined with the most recent incidents along the China–India border, as presenting an opportunity for greater US collaboration with India. For this very reason, however, some US experts expressed concern that the region could break into two camps, with the USA and India on one side and China and Pakistan on the other. This conflicting view of regional dynamics and their own countries' roles indicates the importance of greater China–US engagement on South Asia.

India and the United States

Among Indian and US experts, there was a shared concern that Chinese entanglement of conventional and nuclear platforms and command and control could filter into Pakistan's posture and planning. Despite this commonality, interviews revealed limited avenues for nuclear discussion. In particular, US experts cited the difficulty of engaging Indian interlocutors on nuclear issues, particularly at the official level. Further, Indian experts expressed scepticism about the US approach to South Asian dynamics, which is built on US scenario-building and tabletop exercises. A number stated that they did not recognize South Asia within these US assessments, suggesting that there was an inherent artificiality in the US approach. There was a tendency to view US assessments as projections that did not reflect India's reality, as with US discussions of India's potential shift towards counterforce doctrine.

Nevertheless, a number of Indian experts emphasized a growing willingness within India to move beyond its historical reticence driven by non-alignment and to cultivate more active involvement in such initiatives as the Quadrilateral Security Dialogue and the US Indo-Pacific Strategy and even to propose such concepts as an AI Quad or Digital Quad. While they noted that this shift in India has been largely shaped by recent events on the India–China border, this willingness to engage suggests that a window may be open in the near term for more high-level India–USA interactions on nuclear issues.¹⁵⁸

India and Pakistan

Among Indian and Pakistani experts, while each side focused on the other's impact on lowering the nuclear threshold, there was an interest in how China–USA competition in emerging technologies may have cascade effects that shape South Asia's deterrence landscape. Experts from both India and Pakistan expressed concerns over how such technologies as hypersonic weapons, AI and autonomy may change the deterrence

¹⁵⁶ On the India–US nuclear deal see US Department of State, 'US–India: Civil nuclear cooperation', [2008].

¹⁵⁷ China–Pakistan Economic Corridor (CPEC), 'Introduction'.

¹⁵⁸ Saalman, L., 'USA–India strategic continuity in the Biden administration transition', SIPRI WritePeace Blog, 29 Jan. 2021.

landscape, particularly in terms of surveillance, command and control, and even shorter reaction times.¹⁵⁹ While some among them questioned whether there would be much of an impact in a region already characterized by close geography and short flight times, a larger number cited concerns that the push factors of Chinese, Russian and US pursuits in these areas may be driving similar trends in South Asia.

Given the pre-existing need for greater interaction among China, Russia and the USA on the longer-term impact of these emerging technologies, a multilateral platform that includes India and Pakistan may be just such a launching point for examining these strategic stability dynamics. This framework would allow for the flexibility and scope to focus on the broader nuclear implications of these developments.

Pakistan, Russia and the United States

Interestingly, a potential avenue for engagement among Pakistani, Russian and US experts came from interviews with Chinese and US experts. Chinese discussion of parallels between Pakistan and Russia on escalate to de-escalate, when paired with US experts' mention of the USA's use of a similar concept in extended deterrence and the fielding of low-yield nuclear weapons in the 2018 Nuclear Posture Review, merits greater exploration.¹⁶⁰ While there remains much debate over whether escalate to de-escalate exists within Pakistan, Russia and the USA, the fact that it continues to be raised in the cases of these three countries indicates that greater discussion is needed on the topic.

Further, escalate to de-escalate is one of the few nuclear concepts that directly bridges the gap between nuclear postures that are often defined in terms of the Russia–USA or India–Pakistan dyads. Given this fact, it is possible to engage in a discussion over the strategic underpinnings of how this posture either does or does not operate, without focusing solely on one set of strategic relations.

Overall, these findings illustrate the need for more comprehensive engagement that features flexible bilateral, trilateral and multilateral groupings of India, Pakistan, China, Russia and the United States when discussing nuclear dynamics in South Asia. This inclusive and dynamic approach would enable greater transparency and interaction on sensitive posture and escalation trends, as with NFU, lowered nuclear thresholds, conventional and nuclear entanglement, escalate to de-escalate, and emerging technology development. Furthermore, it would encourage experts to look beyond solely dyadic strategic relations between India and Pakistan in South Asia to explore the broader dynamics and linkages that are shaping nuclear challenges in the region and beyond.

¹⁵⁹ On India and AI see Saalman, L., 'China and India: Two models for AI military acquisition and integration', eds K. Bajpai, S. Ho and M. Chatterjee Miller, *Routledge Handbook of China–India Relations* (Routledge: New York, 2020).

¹⁶⁰ US Department of Defense (DOD), *Nuclear Posture Review* (DOD: Washington, DC, Feb. 2018), pp. 54–55; and US Department of Defense, 'Statement on the fielding of the W76-2 low-yield submarine launched ballistic missile warhead', 4 Feb. 2020.

Appendix A. Nuclear postures featured during interviews

Nuclear postures	
<i>General</i>	
Counterforce doctrine	Counterforce doctrine in nuclear strategy is the targeting of an opponent's military infrastructure with a nuclear strike. It differs from countervalue doctrine, which targets an adversary's cities. Counterforce doctrine asserts that a nuclear war can be limited and can be fought and won. ^a
Entanglement	Entanglement, or co-mingling, describes how militaries' nuclear and non-nuclear capabilities are increasingly intertwined. In a conventional war, one state could use non-nuclear weapons to attack its adversary's nuclear weapons or their command-and-control systems, pressuring the latter into using its nuclear weapons. Some countries are developing and deploying missiles that can carry nuclear or non-nuclear warheads, which leads to problems of discrimination and questions on how to retaliate. ^b
Negative security assurances	A negative security assurance is a pledge by a state possessing nuclear weapons not to use or threaten to use nuclear weapons against any state that does not possess nuclear weapons. ^c
No first use	In the strictest interpretation, no first use is a 'commitment to never use nuclear weapons first under any circumstances, whether as a preemptive attack or first strike, or in response to non-nuclear attack of any kind'. ^d
<i>India</i>	
Nuclear posture	India summarized its nuclear posture in 2003 as follows: 'I. Building and maintaining a credible minimum deterrent; II. A posture of "No First Use": nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere; III. Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage; IV. Nuclear retaliatory attacks can only be authorised by the civilian political leadership through the Nuclear Command Authority; V. Non-use of nuclear weapons against non-nuclear weapon states; VI. However, in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons'. ^e
Cold Start	Cold Start is a military strategy allegedly developed by the Indian armed forces for use in a possible war with Pakistan. It involves the various branches of India's military conducting conventional offensive operations as part of unified battle groups. This strategy is thought to allow India's conventional forces to conduct holding attacks to prevent nuclear retaliation from Pakistan in the event of a conflict. Even though Cold Start is not an official doctrine of India, observers continue to discuss it as an option being developed, due to the inability of the Indian armed forces to exploit India's conventional superiority against Pakistan's nuclear deterrent. ^f
<i>Pakistan</i>	
Nuclear posture	Pakistan's National Command Authority announced full spectrum deterrence as a part of the national nuclear policy in 2013. Full spectrum deterrence may be defined as maintaining the credibility of deterrence at strategic, operational and tactical levels, thereby covering the entire threat spectrum. In December 2017 a former director-general of Pakistan's Strategic Plans Division reportedly stated that Pakistan is developing a 'full spectrum of nuclear weapons in all three categories—strategic, operational and tactical, with full range coverage of the large Indian land mass and its outlying territories'. ^g
Minimum deterrence	Minimum, or minimal, deterrence is an application of deterrence theory in which a state possesses no more nuclear weapons than are necessary to deter an adversary from attacking. Pakistani experts have traditionally applied this term to describe Pakistan's application of deterrence. ^h
<i>China</i>	
Nuclear posture	China summarized its nuclear posture in 2019 as follows: 'China is always committed to a nuclear policy of no first use of nuclear weapons at any time and under any circumstances, and not using or threatening to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones unconditionally. China advocates the ultimate complete prohibition and thorough destruction of nuclear weapons. China does not engage in any nuclear arms race with any other country and keeps its nuclear capabilities at the minimum level required for national security. China pursues a nuclear strategy of self-defense, the goal of which is to maintain national strategic security by deterring other countries from using or threatening to use nuclear weapons against China'. ⁱ

Russia

Nuclear posture	Russia has described its nuclear posture as defensive as recently as 2018. ^j This posture combines the elements of 'launch under attack' and 'launch on warning', and some experts have described it as a 'reciprocal counterstrike'. ^k In 2020 a new document—Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence—was approved. ^l While clarifying some aspects, the document maintains ambiguity in Russia's nuclear posture, such as with the use of nuclear weapons in response to a conventional attack. ^m
Escalate to de-escalate	Escalate to de-escalate is not an official Russian policy. It is instead based on statements by Russian officials and public interpretations of Russia's nuclear posture that state that Russia reserves the right to use nuclear weapons in response to the use of nuclear and other types of WMD against it or its allies, as well as in response to large-scale aggression using conventional weapons in situations critical to the national security of Russia and its allies. ⁿ

The United States

Nuclear posture	The most recent document on US nuclear posture is the 2018 US Nuclear Posture Review. This calls for low-yield or tactical nuclear weapons as a flexible nuclear option. While maintaining a degree of ambiguity, it states that the USA could employ nuclear weapons to respond to 'significant non-nuclear strategic attacks', including those against 'U.S., allied, or partner civilian population or infrastructure', as well as 'U.S. or allied nuclear forces, their command and control, or warning and attack assessment capabilities'. ^o
Extended deterrence	Extended deterrence is premised on the provision of US military forces, particularly nuclear forces, to deter intimidation, coercion or attack on US allies. It is also sometimes called a 'nuclear umbrella'. ^p

^a McKenna, A., 'Counterforce doctrine', *Encyclopaedia Britannica*, 19 Aug. 2014.

^b Acton, J. M. (ed.), *Entanglement: Chinese and Russian Perspectives on Non-nuclear Weapons and Nuclear Risks* (Carnegie Endowment for International Peace: Washington, DC, 2017).

^c Nuclear Threat Initiative (NTI), 'Proposed internationally legally-binding negative security assurances (NSAs)', 29 Apr. 2019; and Conference on Disarmament, Statement by India on negative security assurances, CD/PV.1284, 26 Mar. 2013, p. 13.

^d Global Zero, 'No first use FAQs', [n.d.].

^e Indian Ministry of External Affairs, 'The Cabinet Committee on Security reviews [o]perationalization of India's nuclear doctrine', Press release, 4 Jan. 2003.

^f Chari, P. R., 'Defining India's security: Looking beyond limited war and Cold Start strategies', Institute of Peace and Conflict Studies (IPCS) Issue Brief no. 169, July 2011, p. 1.

^g Dawn, 'Rare light shone on full spectrum deterrence policy', 7 Dec. 2017. See also Khan, M., 'Understanding Pakistan's full spectrum deterrence', *Journal of Strategic Affairs*, vol. 1, no. 2 (winter 2016).

^h Salik, N., 'The evolution of Pakistan's nuclear doctrine', eds F. H. Khan, R. Jacobs and E. Burke, *Nuclear Learning: The Next Decade in South Asia* (Naval Postgraduate School: Monterey, CA, June 2014), pp. 71–84, pp. 82–83; and Zhara, F., 'Pakistan's road to a minimum nuclear deterrent', *Arms Control Today*, vol. 29, no. 5 (July/Aug. 1999).

ⁱ Chinese State Council, *China's National Defense in the New Era*, White paper (Information Office of the Chinese State Council: Beijing, July 2019).

^j President of Russia, 'Meeting of the Valdai International Discussion Club', 18 Oct. 2018.

^k Stowe-Thurston, A., Korda, M. and Kristensen, H. M., 'Putin deepens confusion about Russian nuclear policy', *Russia Matters*, 25 Oct. 2018; and Saradzhyan, S., 'Putin's remarks on use of nuclear weapons are confusing, but unlikely to constitute a shift in nuclear posture', *Russia Matters*, 28 Nov. 2018.

^l 'Basic principles of state policy of the Russian Federation on nuclear deterrence', Approved by Russian Presidential Executive Order no. 355, 2 June 2020

^m Topychkanov, P., 'Russia's nuclear doctrine moves the focus from non-Western threats', SIPRI WritePeace Blog, 1 Oct. 2020.

ⁿ Schneider, M. B., 'Escalate to de-escalate', *Proceedings* (US Naval Institute), vol. 143, no. 2 (Feb. 2017).

^o US Department of Defense (DOD), *Nuclear Posture Review* (DOD: Washington, DC, Feb. 2018), pp. 54–55; and US Department of Defense, 'Statement on the fielding of the W76-2 low-yield submarine launched ballistic missile warhead', 4 Feb. 2020; and Gautam, B., 'Summary of the 2018 Nuclear Posture Review', *Lawfare*, 9 Feb. 2018.

^p US Air Force, *Nuclear Operations: Annexe 3-72* (Air University, Curtis E. LeMay Center for Doctrine: Maxwell AFB, AL, 18 Dec. 2020), 'Extended deterrence', p. 10; and Bush, R. C. et al., *US Nuclear and Extended Deterrence: Considerations and Challenges*, Brookings Arms Control Series no. 3 (Brookings Institution: Washington, DC, May 2010).

Appendix B. Strategic technologies featured during interviews

Strategic technologies

General

Fifth-generation combat aircraft	Fifth-generation combat aircraft typically possess such technologies as all-aspect stealth even when armed, advanced avionics features, highly integrated computer systems, low-probability-of-intercept radar and high-performance airframes. ^a
Hypersonic weapons	Hypersonic weapons are manoeuvrable platforms, with speeds in excess of Mach 5. They are generally divided into cruise missiles and hypersonic glide vehicles (HGVs). ^b
Multiple independently targetable re-entry vehicles (MIRVs)	MIRVs are capable of delivering multiple nuclear warheads to different targets from a single missile. Land-based MIRVed missiles are vulnerable as they are attractive targets for adversaries to destroy multiple warheads. However, they are also of utility for their ability to overwhelm missile defences. ^c
Nuclear triad	A nuclear triad is a three-pronged force structure that consists of (a) land-based intercontinental ballistic missiles (ICBMs), (b) nuclear-powered ballistic missile submarines (SSBNs) armed with submarine-launched ballistic missiles (SLBMs), and (c) strategic bombers equipped with nuclear bombs and missiles. The purpose of the triad is to significantly reduce the possibility that an enemy could destroy the entirety of a state's nuclear forces in a first strike. In turn, this ensures a credible threat of a second strike. ^d
Tactical nuclear weapons	A tactical (or non-strategic) nuclear weapon typically refers to short-range weapons, including land-based missiles with a range of less than 500 kilometres and air- and sea-launched weapons with a range of less than 600 km. These weapons are generally low yield and are designed to be used on a battlefield. They include gravity bombs, short-range missiles, artillery shells, landmines, depth charges and torpedoes equipped with nuclear warheads, as well as nuclear-armed ground-based or shipborne surface-to-air missiles and air-to-air missiles. ^e

India

Agni-III	The Agni-III intermediate-range, two-stage, solid-fuel ballistic missile has an estimated range of 3200 km. It is potentially capable of carrying MIRVs. ^f
Agni-V	The Agni-V is long-range, three-stage, solid-fuel missile with an estimated range of 5000 km. It is potentially capable of carrying MIRVs. ^g
Ballistic missile defence (BMD)	The Indian BMD system is two-tiered. The first tier consists of the Prithvi Air Defence (PAD/Pradyumna) and Prithvi Defense Vehicle (PDV) for exo-atmospheric intercepts. The second tier uses the Advanced/Ashvin Air Defense (AAD) for endo-atmospheric intercepts. ^h
BrahMos	The BrahMos medium-range, ramjet supersonic cruise missile can be launched from submarines, ships, aircraft or land. It has an estimated range of 300–500 km. Its origins are in BrahMos Aerospace, a joint venture between India's Defence Research and Development Organisation (DRDO) and NPO Mashinostroyeniya of Russia. ⁱ
BrahMos II	The BrahMos II is the second of the BrahMos series of cruise missiles. It is anticipated to have a range of 600 km. ^j
K-4	The K-4 is a nuclear-capable, intermediate-range, solid-fuel SLBM with an estimated range of 3000 km. ^k
K-15	The K-15 is a nuclear-capable, short-range, solid-fuel SLBM with an estimated range of 700 km. ^l
Nirbhay	The Nirbhay solid-fuel, subsonic cruise missile has an estimated range of 800–1000 km. It can be launched from multiple platforms and is capable of carrying conventional and nuclear warheads. ^m
Nuclear-powered submarines	The INS <i>Arihant</i> was India's first indigenous nuclear-powered submarine and a significant part of its efforts to operationalize its nuclear triad. The INS <i>Arihant</i> can reportedly carry 12 K-15 SLBMs and versions of the nuclear-capable Nirbhay cruise missiles. India has also reportedly begun construction of two other Arihant-class submarines, the S-3 (or INS <i>Arighat</i>) and the S-4, which are reportedly to be equipped with K-4 SLBMs. ⁿ A total of six Arihant-class submarines is expected. ^o
Su-30MKI	The Su-30MKI multirole combat aircraft is being jointly developed by Russia's Sukhoi Design Bureau and India's Hindustan Aeronautics Limited (HAL). It is built under licence by HAL for the Indian Air Force. ^p

Pakistan

Ababeel	The Ababeel is a solid-fuel, surface-to-surface medium-range ballistic missile (MRBM), with an estimated range of 2200 km. It is potentially capable of carrying MIRVs. ^q
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Joint Fighter-17	The JF-17 lightweight, single-engine, multirole combat aircraft was jointly developed by the Pakistan Aeronautical Complex and the Chengdu Aircraft Corporation of China. Its multiple roles include interception, ground attack, anti-ship and aerial reconnaissance. ^f
Nasr/Hatf-9	Based on the limited information available, the Hatf-9/Nasr is a potentially nuclear-capable tactical weapon with an estimated range of 70 km. It may be a modified Norinco AR-series launcher procured from China. ^g
<i>China</i>	
Dong Feng-17	The DF-17 is a road-mobile, solid-fuel MRBM equipped with an HGV. It has an estimated range of 2500 km. It may be nuclear-capable. ^t
Dong Feng-21C	The DF-21C, a variant of the DF-21, is a road-mobile, solid-fuel MRBM with an estimated range of 2150 km. It may be nuclear-capable. ^u
Dong Feng-26C	The DF-26C is a road-mobile, solid-fuel intermediate-range ballistic missile (IRBM) with an estimated range of 3500 km. It may be nuclear-capable. ^v
Wu-14 (DF-ZF)	The Wu-14 is an HGV under development for use by the People's Liberation Army Rocket Force. It may be nuclear-capable. ^w

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^m Missile Threat, 'Nirbhay', Center for Strategic and International Studies (CSIS), 27 Nov. 2018.

ⁿ Kristensen and Kile (note f), pp. 366–67; Unnithan, S., 'A peek into India's top secret and costliest defence project, nuclear submarines', *India Today*, 18 Dec. 2017; Naval Technology, 'Arihant class submarine', [n.d.]; and Nuclear Threat Initiative (NTI), 'India submarine capabilities', 11 Oct. 2019.

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Appendix C. Escalatory events featured during interviews

Date	Event	Description
1999	Kargil War	This conflict between India and Pakistan took place between May and July 1999 in Kashmir. It began with infiltration into positions on the Indian side of the Line of Control (LOC), which serves as the de facto border between the two countries. While Pakistan blamed the fighting on independent Kashmiri insurgents, there have been indications of involvement by Pakistani paramilitary forces. The Indian Army, supported by the Indian Air Force, attacked the infiltrators' positions and eventually forced a withdrawal across the LOC. This was the first major military conflict between the two countries following their nuclear tests in 1998. ^a
2001	Indian Parliament attack	This attack began in December 2001, when five terrorists associated with two Pakistan-based organizations, Jaish-e-Mohammed and Lashkar-e-Taiba, attacked the Indian Parliament. Indian security forces killed all 5 terrorists, and 10 civilians reportedly died as a result of this attack. The event triggered the 2001–2002 India–Pakistan military stand-off. ^b
2001–2002	India–Pakistan military stand-off	This stand-off resulted in troops massing on both sides of the India–Pakistan border and along the LOC in Kashmir. India saw this military mobilization—known as Operation Parakram—as an effort to compel Pakistan to end its alleged cross-border terrorism and renounce terrorism as an instrument of policy against India. It was the second major military stand-off between the two countries following their nuclear tests in 1998. ^c
2008	Mumbai attacks	In November 2008, 10 members of Lashkar-e-Taiba, a Pakistan-based terrorist organization, carried out 12 coordinated shooting and bombing attacks lasting four days across the Indian city of Mumbai. ^d
2013	Depsang incursion	This incursion began in April 2013, when 50 Chinese troops established an encampment within Aksai Chin, which is claimed by both China and India. The crisis ended in May following negotiations between China and India, with the sides agreeing to remove several fortifications and withdraw their troops. ^e
2017	Doklam border stand-off	This stand-off occurred over Chinese construction of a road in the Bhutan–China boundary area near Doklam, close to where the borders of Bhutan, China and India meet. In response, under Operation Juniper, Indian troops armed with weapons and two bulldozers crossed into Doklam to stop Chinese troops from constructing the road. ^f
2019	Pulwama–Balakot crisis	This crisis started on 14 February 2019 with the ambush of an Indian paramilitary convoy near Pulwama, on the Indian side of the LOC. The attack, claimed by the Pakistan-based Jaish-e-Mohammed terrorist organization, was the deadliest terrorist incident in Kashmir in three decades. This incident was followed on 26 February by an Indian airstrike on Balakot, on the Pakistani side of the LOC. Pakistan shot down an Indian warplane and took its pilot prisoner. The pilot was later returned. ^g
2020	Galwan River Valley skirmishes	These skirmishes were part of an ongoing border dispute between China and India along their mutual Line of Actual Control (LAC). In June 2020, clashes occurred at various locations including near the disputed Pangong Tso Lake in Indian-administered Ladakh and near the border between the Indian state of Sikkim and the Tibet Autonomous Region in China. These events began with Chinese objections to Indian road construction in the Galwan River Valley, which degenerated into a stand-off and violence resulting in injuries and deaths on both sides. ^h In February 2021, Chinese and Indian forces reportedly completed their withdrawal from the Pangong Tso Lake area. ⁱ

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