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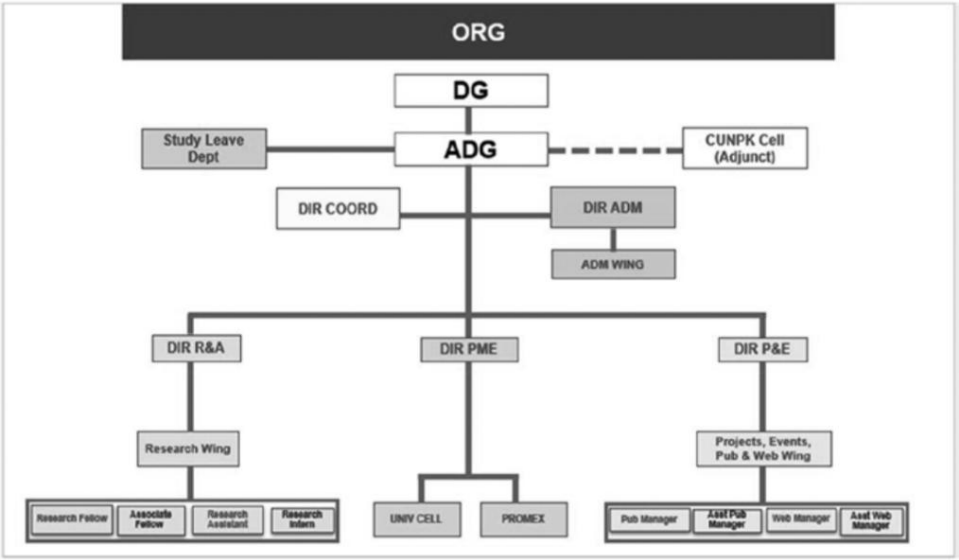

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SCHOLAR WARRIOR

SECTION 1

ARTICLES

CENTRE FOR LAND WARFARE STUDIES

Indian Strategic Culture and Non-Contact Warfare

R C SRIKANTH AND PRASHANT AGARWAL

Abstract

The articulation of national security priorities and responses in respect of any nation or community is underscored by its strategic culture. In the Non-Contact Warfare realm, the responses are also guided by societal preferences drawn from its unique contextualisation through generations – ancient to present. The conceptualisation of Indian Strategic culture is owed to its rich history chronicled in the epics and treatises as well as its experiences through the colonial period. The article examines the construct of Indian strategic culture and attempts to understand its orientation to internal and external threats from a cultural perspective with specific reference to China.

Indian mythological epic 'Mahabharata' brought the attribute of '*Dharma Yudh' or* the ideal war amongst warriors to the fore. In many aspects, antagonists in Mahabharata remained loyal to the vow of fighting a 'just war' by 'just means' and with 'warriors of equal class/ capability' with 'same type of astras'. The epic provides a unique dimension to the discourse on 'why do we need to go to war' and 'how should the warfare

be conducted or the relevance of military force in seeking a decision'. The role of Lord *Krishna* was central to ensuring that resource-deficient *Pandavas* prevailed over the militarily stronger *Kauravas*. The ability to alter the argument on righteousness by *Krishna* based on the premeditated requirement to facilitate the victory of *Pandavas* is the central pillar of the epic. The diplomatic clout to modulate, modify and obfuscate arguments on use of force/resources against the opponents in battle, alter the battlefield environment in pursuance of the ultimate perceived right and the ingenuity to bring these out as the ultimate truths underline the ultimate lessons of the epic.

The *Arthashastra,* treatise on economy, statecraft, diplomacy and governance laid down four distinct principles of engagement – these were *Sama* – the power of persuasion and praise to obtain strategic objectives from an adversary; *Daama* – the art of obtaining support, favor, submission or subservience by offering monetary benefits, incentives, bribery or disproportionate gains; *Danda* – the muscle or perceived strength to exert military force to punish a recalcitrant state, individual or group of individual; and finally *Bheda* – the unique influence of exploiting information, intelligence, perception, propaganda, disinformation, disagreements and disenchantment in a neighboring state/ institution to further own interests. The composite whole of S*ama, Daama, Danda and Bheda* merged with innovation, cunning and ingenuity, can create a disproportionate impact on the adversary. In the hierarchy of influence, Kautilya laid the most emphasis on S*ama* and *Bheda*—the ability to bring an adversary to one's requirements either by offering them an option that meets their short-term goals or exploiting information to discredit/ devastate an opponent to force him/her to tow your line. These two attributes were suitably reinforced by the projection of a strong-armed forces and providing for economic benevolence to states that fell into line. The entire purpose of Chanakya's foreign policy was to increase one's power at the cost of one's enemies[1].

Power was understood by Chanakya as: the **power of knowledge** reflected by the **power of counsel**, the **power of the treasury** and the army were construed as the **power of might**, the **power of valour** was the **power of energy**[2]. **He believed that warfare should not be the only means to increase power**. Chanakya saw three kinds of warfare that could be waged: **Open war** (traditional war), **Concealed war** (guerrilla war), and **Silent war** (openly praising the enemy, giving him inducements, denying him the resources, controlling/breaking his allies, sending spies to assassinate him, sabotage his kingdom, and sowing dissention amongst his officials etc.). *Kautiliyan* thought of exploiting every conceivable vulnerability of an adversary even to the extent of exploiting occult / superstition to generate war-winning effects is unique and unparalleled[3]. **The strategic thought emphasised conceptualising effects not only on opponents but equally upon supporters by precise application of power and influence may probably be the first documented instance of 'Effect Based Operations'.**

The renditions recorded in mythological epics and the various treatises on statecraft indicate decided proclivity of strategic thinkers to lean towards achieving considered end states without expending precious military might. **It was understood that most successful wars were best fought far removed from the battlefield, and the greatest strategic victories are achieved without fighting, that too during periods of peace and tranquility.** The efforts obligate targeting critical strengths/ vulnerabilities of the enemy that sustain him and in general are not very well defended by indirect faculties that appear harmless and utterly complex to recognise and through periods/ environments that an adversary least expects them[4].

Indian Strategic Culture – Post Independence

Kanti Bajpai believes that India's strategic culture has long been dominated by the worldview of the country's first Prime Minister, Jawaharlal Nehru.[5] The concept of **Non–alignment, Non-violence and Non-**

interference has had a direct impact on how the Indian state has grown militarily and economically[6]. The questions that beget answers are:-

i. Have we allowed ourselves to be modulated by our neighbours, mainly China or Pakistan – that we have been forced to have a reactive strategic outlook? The answer is 'Yes'.

ii. Do we have any/ adequate leverage to control the environment that affects our security? The answer is largely 'No'.

iii. Have we bound ourselves by rigid strategic choices in terms of exploiting our core national capabilities, military and non–military? India has been dogmatic about not altering national security structures to fully synergise our capacities.

iv. Have we been strategically guileless, as to allow our adversaries to exploit our fault lines (religious, cultural, ethnic, sub-regional, etc.), or in other words, are we an apt target for Non-Contact Warfare by an adversary? The answer is 'Yes'.

The number of insurgencies/proxy wars that India has fought since independence and continues to contend with the unpalatable fact that India's internal fault lines have been exploited by Pakistan/ China to create grave internal security challenges. This has forced India to commit a disproportionately large quantum of national effort (economic and military) to contain these threats rather than progressing economically, socially and promoting influence in the region and beyond. **In other words, India has not been able to adequately exploit its geography, resources, economy, diplomacy, social and cultural ties within the regional neighbourhood as well as its superior military capabilities to lean on and shape the region to its requirements.** In sum, India has been a ripe target for Non-Contact Warfare despite its huge armed forces and reasonably large and expanding economic industrial and economic base. Indian strategic orientation should therefore be to generate dependencies

and engagements to ensure that the South Asian Region resonates to the Indian pulse of peace, security and growth. However, post-1999 Kargil incursion by Pakistan sponsored, there has been more stridency in the Indian approach towards cross-border terror. Op Parakram, post Parliament attack, Uri Strike post, terror attack in Uri, Balakot strike post Pulwama and Op Sindoor post Pahalgam, reflects a new normal in India's approach towards cross-border terrorism from Pakistan. Similarly, anti-naxal operations in the erstwhile 'Red Corridor' have also seen an intense muscular approach coupled with population assimilation measures, while in the North East, reconciliation and negotiations with a large number of insurgent groups have resulted in spell of peace, only punctured by ethnic violence in Manipur owing to issues.

Competing Strategic Cultures of India and China and Impact on Strategy. The grand strategic vision of India (Viksit Bharat 2047) and China (Peaceful rise to a developed nation by 2049) are following a colliding trajectory and will play out as fierce competitors in the global landscape in general, and the Asian milieu in particular. Straddling the Himalayas, the two nations have to unprove the maxim '*There cannot be two suns in the sky, nor two emperors on the earth*' especially with respect to the geopolitical jungle of Asia for them both to achieve their Centurion goals without conflict and without compromising their core strategic orientations. The distinctive strategic cultures of India and China weigh heavily on their respective strategic choices.

Indian strategic thought draws heavily from the *Arthashastra,* the iconic *treatise* on statecraft by *Chankaya,* the epic tales of Ramayana and Mahabharata (epitomising the virtues of Dharma Yudh and maintaining honor amongst enemies) and has been rocked by the treachery of *Mir Jafar* and *Jai Chand*, stirred by the rule of Mughal Empire, inspired by the bravery of the Sikh empire (1799 to 1849) and the ingenuity of Maratha empire (Guerilla Warfare) (1674 to 1818) and conditioned by the colonial subjugation and contemporarised by the Independence Struggle that had

both the violent and non-violent streams of agitations. *Ahimsa* (non-violence) and secular thought, however, got embedded in the Indian strategic dictionary as a consequence of the Indian Independence struggle. Non-alignment and Self-reliance, in all aspects, were concepts that joined the lexicon of strategic discourse post-independence. However, what is normally not included and discussed is the impact on India's strategic culture of the Chola empire (9th to 13 Century CE). India may probably be the country that has fought conventional and counterinsurgency/ Proxy War since its independence. These include India – Pakistan War of 1947-48, the Hyderabad and Junagarh operations, Liberation of Goa, 1965, 1971, Operation Meghdoot (Siachen Glacier), 1999 (Kargil), 2003 (Operation Parakaram), limited conflicts Post Uri Strike (2016), Post Pulwama (2019), Operation Sindoor (2025), besides the unabated proxy war in Jammu and Kashmir and Punjab (sponsored by Pakistan). The India–China War of 1962 brought some stark lessons for Indian Strategic thinkers. The Line of Control with Pakistan and the Line of Actual Control remain and numerous flash points exist along these that have the potential to escalate into skirmishes, conflicts or full-blown wars. Despite such a volatile neighbourhood, India's vision for the world still rests on an all-inclusive dictum of *Vasudhaiva Kutumbakam* (World is one Family). In effect, the strategic thought has evolved from being idealist as rendered in *Ramayana* and *Mahabharata* and evolved to self-centred pursuit of multiple rulers till India embraced non-violence and non-alignment as the cornerstone of its strategic outlook.

India's shunning of a realist strategic outlook to a near-idealist self-reliant non-expansionist anchor has impacted its standing in power ratings in Asia and beyond. Despite its accommodative and assimilative culture, India is viewed as a sub-regional hegemon by the neighbours with whom it shares a land border (Pakistan, Sri Lanka, Maldives, Nepal, Bhutan, Bangladesh, Myanmar) and it remains dominated by a towering China to whom it has conceded the strategic high ground of Tibet as part of 'goodwill'. India's investment in defence capability has been equally tardy

owing to its diffused strategic orientation has compromised its 'Smart Power' capabilities as compared to its principal regional competitor China, with successive governments prioritising diplomacy, détente, and accommodation to developing 'Hard Power' capabilities. The gap in India–China capability is likely to accentuate further across domains in the coming decades, especially till the key inflection point of 2047.

China's Strategic culture has grown out of his long history of conflicts across the 'Warring State' period and the intense 'Century of Humiliation' that preceded the ascension of Communists to the saddle of power in China in 1949 under the leadership of Mao Zedong. Throughout its post-Communist history, China has unabashedly followed a 'China Centric' self-centred strategic outlook and has employed every ruse, means, alliance and stratagem enunciated by *Confucius* and *Sun Tzu* to manipulate the environment around it. The single-minded focus on creating strategic independence matured under Deng Xiaoping and China used the relative leverage of statecraft to draw intellectual knowledge, critical technologies, diplomatic engagements, as well as keeping a single-minded focus to 'Revise the existing World Order' into 'China Led World Order'. Thus, the strategic orientation of China is directed towards upstaging the United States of America as the current 'Unipolar' power and it hopes to realise this dream by 2049. There is growing conviction in China that the United States is a power in decline, and Europe is caught in conflict and Russia is no longer in a position economically and militarily to contest the United States. This provides China with the opportunity of a century to upstage and realign the 'World Order with Chinese Characteristics'. In the Chinese strategic calculus, India is a minor regional irritant, which needs to be managed through engagement, persuasion and containment[7,8]. Public surveys of the Chinese view of India are highlighted in the table below[9]:

Pew Research Centre (2023)	Percentage of Indians who hold an unfavourable view of China.	67% of Indians vs median average of 33% among other middle-income countries
India Today 'Mood of the Nation' (2020)	Can China be Trusted?	No (84%)
	Are you in favour of boycotting Chinese products in India?	Yes (90%)
Observer Research Foundation Foreign Policy Survey (2023)	India's trust in China has severely depleted following Galwan clashes in 2020.	Agree (80%)
	China uses its influence in multilateral institutions to restrict India from promoting its interests	Agree (79%)
	India and China should boost their economic engagement	Agree (58%)
Global Times survey (2024)	In what areas do you most hope that India and China will cooperate in the future?	• Industry/manufacturing – China (31%) vs India (24%) • Internet and digital economy – China (21%) vs India (16%) • Climate change/ environmental protection – China (21%) vs India (16%)

Pew Research Centre (2023)	Percentage of Indians who hold an unfavourable view of China.	67% of Indians vs median average of 33% among other middle-income countries
Tsinghua University (2024)	How influential India is in world politics?	• 1.8% – Very influential • 13.9% – Substantively influential • 40.9% – Indifference/ neutral • 30.7% – Less influential • 12.7% – Irrelevant

The Chinese view of India is similar to how the United States viewed China in 70s and 80s. The most crucial difference lies in the fact that China recognises the emerging strategic challenge from India, whilst the United States anchored China to counter the then USSR, only to realise that China's rise was without adhering to western values and portends to be anything but peaceful. Therefore, in the India-China context, China would be a fierce competitor and not a partner to India in any of its developmental ventures. The two civilisational nations, following their destiny, are seemingly on a collision course by virtue of their respective natural growth trajectory, akin to the inexorable shift of tectonic plates that would produce an 'earthquake' or a 'Tsunami'—the only question is 'WHEN'?

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"Perceptual asymmetry is less apparent but equally as influential. Beijing has long been unwilling to recognize India as a peer and an equal. This was true even when India and China maintained similar-sized economies. The lack of recognition is a constant source of frustration to New Delhi. While India perceives itself as an independent pole of influence in an emerging multipolar international system, China sees India as a mere pawn in the more consequential geopolitical rivalry between itself and the US".

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Indian National Security: Dimensions, Challenges, and the Road Ahead

RS SHEKHAWAT

Abstract

India's national security landscape is profoundly shaped by its strategic geography, vast population, and $81 billion defence budget, positioning it as a global powerhouse amid multifaceted threats. Beyond traditional military challenges – nuclear rivalries with Pakistan and China, and internal insurgencies, a holistic strategy that emphasises on indigenous modernisation, cyber resilience, self-reliance, inclusive development, and global partnerships to foster comprehensive resilience and influence South Asian stability, is the call of the hour.

Introduction

India, with its population of over 1.4 billion people and a landmass of 3.28 million square kilometres, is not just the world's largest democracy but also one of the most strategically important nations. Its geography — stretching from the Himalayas in the north to the Indian Ocean in the south — places it at the crossroads of global trade routes, energy corridors, and

geopolitical rivalries. However, this unique position also makes India highly vulnerable. Surrounded by two nuclear-armed adversaries — Pakistan and China, dealing with internal insurgencies, and facing emerging threats in cyberspace, environment, and health, India's national security challenges are diverse and multi-layered. India spends approximately $81 billion annually on defence (2023), ranking as the third largest military spender in the world after the United States and China. Yet, despite such investments, non-traditional threats like climate change, pandemics, and cyberattacks continue to test the resilience of its security architecture. To understand Indian national security, one must explore its different dimensions, assess the challenges in each sector, and analyze the strategies required for a secure future.

Traditional / Military Security

India's Defence Strength

- **Personnel**: Over 1.4 million active military personnel, making India the second-largest standing army in the world.
- **Nuclear capability**: India maintains a credible minimum deterrence policy with an estimated 164 nuclear warheads (2023).
- **Budget**: Defence spending accounts for 13% of India's total government expenditure.

Key Military Challenges

Pakistan

- Ongoing disputes over Jammu and Kashmir.
- Cross-border terrorism supported by Pakistan-based groups like Lashkar-e-Taiba and Jaish-e-Mohammed.
- Frequent ceasefire violations along the Line of Control (LoC).

China

- Border disputes along the 3,488 km Line of Actual Control (LAC).
- The Galwan Valley clash (2020), which resulted in the deaths of 20 Indian soldiers, highlighted escalating tensions.
- China's growing presence in the Indian Ocean Region (IOR) through its "String of Pearls" strategy.

Internal Security

- Naxalite–Maoist insurgency across central and eastern India remains one of the longest-running insurgencies in the world.
- Separatist movements in the Northeast pose challenges to integration.

Cyber Security

India is one of the world's fastest-growing digital economies, with over 800 million internet users and a booming digital payments market. However, this digital revolution has exposed the country to a wave of cyber threats.

Cyber Threat Landscape in India

- In 2022, India reported 1.39 million cybersecurity incidents, according to CERT-In (Indian Computer Emergency Response Team).
- **Financial sector attacks**: The Reserve Bank of India reported multiple phishing and ransomware attempts on banking networks.
- **Government data breaches**: Attacks on Aadhaar databases and other government platforms raise concerns about data security.

- **Social media manipulation**: Fake news and disinformation campaigns often fuel communal tensions.

Example

The Mumbai power outage of 2020 was suspected to have been caused by a cyberattack possibly linked to Chinese hackers, underlining how digital warfare can disrupt physical infrastructure.

Economic Security

India's economy, valued at $3.7 trillion GDP (2023), ranks as the fifth largest in the world. However, its size does not shield it from vulnerabilities.

Challenges

- **Trade imbalance**: India imports nearly 85% of its crude oil needs, making it vulnerable to global price shocks.
- **Unemployment**: Around 7.9% unemployment rate (2023), especially among youth, poses risks of social unrest.
- **Global disruptions**: The COVID-19 pandemic pushed over 230 million Indians into poverty, according to Pew Research.
- **China factor**: China accounts for 14% of India's imports, particularly in electronics and machinery.

Atmanirbhar Bharat

Launched in 2020, this initiative seeks to make India more self-reliant, especially in defence manufacturing, renewable energy, and digital technologies.

Political Security

India's democratic framework, while robust, faces challenges that threatens its political stability.

Major Issues

- **Cross-border terrorism** aimed at destabilising governance.
- **Electoral interference** through fake news and online propaganda.
- **Internal insurgencies** in Jammu and Kashmir and the Northeast.
- **Communal and caste tensions** sometimes exploited for political gains.

Case Study

The revocation of Article 370 in 2019 altered the political landscape of Jammu and Kashmir, creating both internal challenges and external diplomatic tensions with Pakistan and China.

Social and Cultural Security

India's diversity is both its strength and vulnerability. With 22 official languages, multiple religions, and hundreds of ethnic groups, maintaining social cohesion is crucial.

Threats

- **Communal violence**: Incidents of Hindu–Muslim clashes strain unity.
- **Illegal immigration**: From Bangladesh and Myanmar, raising demographic and security concerns.

- **Radicalisation of youth**: Exploited by extremist groups online.
- **Cultural erosion**: Westernisation and globalisation are threatening traditional values.

Example

The **Assam NRC (National Register of Citizens)** controversy shows how demographic changes can spark large-scale political and social unrest.

Environmental Security

India is among the most vulnerable nations to climate change.

Key Facts

- India ranks 7th on the Global Climate Risk Index (2022).
- Air pollution causes over 1.6 million deaths annually, according to The Lancet.
- Rising sea levels threaten 40 million people in coastal areas.
- **Water scarcity**: By 2030, India's water demand is projected to be double its supply.

Examples

- The 2013 Uttarakhand floods killed thousands and displaced millions.
- Heatwaves in 2022 affected over 70% of India's landmass, disrupting agriculture and energy supply.

Energy Security

Energy is central to India's growth.

Current Scenario

- India is the third-largest consumer of energy in the world.
- Imports 85% of crude oil **and** 50% of natural gas.
- Heavy reliance on coal (70% of electricity generation) makes India the third-largest emitter of CO_2 globally.

Strategy

- India aims to achieve 50% renewable energy capacity by 2030.
- International Solar Alliance (ISA) spearheaded by India demonstrates leadership in sustainable energy.

Food Security

Feeding 1.4 billion people is a monumental task.

Key Issues

- Agriculture employs 42% of India's workforce but contributes only 18% to GDP.
- Climate change threatens staple crops like wheat and rice.
- **Malnutrition**: 35% of Indian children under 5 are stunted, according to NFHS-5 (2021).

Programs

- Public Distribution System (PDS) provides subsidized food grains to 800 million people.

- National Food Security Act (2013) is a backbone of India's food safety net.

Health Security

India's health sector is vast but under strain.

Facts

- India spends only 2.1% of its GDP on healthcare (2022), among the lowest for major economies.
- The COVID-19 second wave in 2021 overwhelmed hospitals and exposed gaps in oxygen supply and critical care.
- High burden of diseases like tuberculosis (26% of global cases) and rising lifestyle diseases such as diabetes.

Initiatives

- Ayushman Bharat, launched in 2018, provides health insurance coverage to 500 million Indians.

Technological Security

Technology is both a strength and vulnerability for India.

Threats

- **Cyber espionage** targeting IT and defence sectors.
- **5G technology concerns** regarding foreign equipment.
- **Space security risks**: satellites are vulnerable to attacks.

Example

In 2019, India successfully tested an Anti-Satellite (ASAT) missile, becoming the fourth nation to demonstrate this capability.

Critical Infrastructure Security

India's infrastructure is vast but fragile.

Vulnerabilities

- Terrorist attacks on public transport (e.g., Mumbai train blasts, 2006).
- Cyberattacks on energy grids.
- Safety issues in dams, bridges, and smart cities.

Initiatives

- **National Critical Information Infrastructure Protection Centre (NCIIPC)** was set up to safeguard vital digital assets.

Psychological Security

Psychological warfare has emerged as a subtle but dangerous form of threat.

Issues in India

- Fear of terrorism erodes public confidence.
- Disinformation on social media spreads panic.
- Propaganda from adversaries seeks to demoralise the population.

Example

During the COVID-19 pandemic, fake WhatsApp forwards about treatments and shortages caused widespread fear and chaos.

Strategies for India's National Security

India must adopt a holistic approach that integrates multiple dimensions:

- Modernise defence with indigenous production.
- Build a national cyber command for digital warfare.
- Promote economic self-reliance through industrialization.
- Strengthen democratic institutions against foreign interference.
- Foster social unity through inclusive development.
- Invest in climate adaptation and green energy.
- Expand healthcare infrastructure for resilience.
- Develop regional and global partnerships for collective security.

Conclusion

India's national security is multifaceted and evolving. It is not confined to the battlefield but extends to cyberspace, economy, politics, society, health, environment, and psychology. In the decades ahead, India's ability to secure itself will depend not only on its military strength but also on resilience across all sectors of national life.

A secure India combines strong defence, economic stability, social harmony, technological innovation, and sustainable development. As India rises as a global power, its national security will not only define its

own future but also influence the balance of power in South Asia and the wider world.

Lieutenant Colonel RS Shekhawat, is a serving Indian Army Officer with varied field experience. The Officer is also a PhD aspirant. Views expressed are personal.

Unlocking Billions: Harnessing AI to Revolutionise Sustenance in the Indian Armed Forces

RAJEEV SABHERWAL AND MUNISH TULI

Abstract

The Indian Armed Forces spend approximately 1.14 lakh crore yearly on sustenance, including purchase, transportation and maintenance. However, inefficiencies persist due to legacy forecasting methods, reactive maintenance and suboptimal logistics planning. Modern militaries, like the United States Army and the South Korean Armed Forces, have shown that Artificial Intelligence (AI) can significantly improve efficiency and lower costs across logistics functions. This paper investigates the applicability and cost-effectiveness of AI-driven inventory optimisation, predictive maintenance and transportation route planning in the Indian Armed Forces.

Using data from global case studies and Indian budget allocations, the analysis forecasts potential savings of ₹7,500 to ₹15,500 crore per year. These savings could considerably help modernisation efforts without requiring additional funding. Intangible benefits include increased operational preparedness, speedier deployment and data-driven decision-making.

Considering the unique structure and limitations of the Indian Armed Forces, the paper proposes a five-year, phased AI implementation strategy supported by specific feasibility studies and pilot project deployments. It also highlights impediments, such as data inconsistencies and institutional inertia and suggests mitigating techniques. The development of indigenous AI solutions is key to enabling this transformation. Collaboration with Indian technology companies and academic institutions will ensure that AI systems are tailored to logistics needs, data sensitivities and battlefield situations. Indigenous AI development also improves digital sovereignty and security, making India's military AI infrastructure more resilient, self-sufficient and future-ready. In short, AI is more than a cost-cutting tool; it is a strategic requirement for enhancing the efficiency and readiness of the Indian Armed Forces. By unlocking cost efficiencies, enhancing readiness and securing digital sovereignty, AI adoption in sustenance is not just an opportunity but a strategic imperative for India's military future.

Introduction

In 2005, the US Army took a revolutionary step by implementing predictive maintenance on its Apache AH-64 helicopter fleet. Over the next decade, this AI-driven approach saved 215 million dollars and thousands of maintenance hours by predicting critical equipment failures before they occurred. The Indian Armed Forces stand poised to harness similar AI-driven efficiencies, not just in maintenance, but across inventory management, transportation and sustenance at large. Can AI unlock billions in savings in sustenance of the Indian Armed Forces?

Every year, the Indian Armed Forces are allocated a huge budget for sustenance, yet inefficiencies in logistics, outdated forecasting methods and reactive maintenance drive up costs unnecessarily. The effective and efficient sustenance of any military force is a critical component of its operational success. Military sustenance is a complicated and resource-intensive subject that requires crucial decision-making to ensure that the field force's logistics needs are met on a continuous basis. The traditional processes of demand forecasting for military inventories and supplies,

transportation route planning and equipment maintenance are inefficient, resulting in high costs for maintaining a large military force such as the Indian Armed Forces. Sustenance, for this paper, refers to the recurring logistical and operational expenses of the Indian Armed Forces, encompassing procurement of stores, repair and maintenance and transportation.

Artificial intelligence (AI) opens new prospects for optimising various functions of military sustenance. By analysing historical logistics data, AI can significantly enhance demand forecasting accuracy, enable predictive maintenance and optimise transportation resource allocation and route scheduling. The paper explores the cost-saving potential of leveraging AI in military sustenance and shows that there is a substantial cost-saving potential from the annual sustenance budget allocated to the Indian Armed Forces for procurement of stores, equipment maintenance and transportation costs. The cost savings unlocked from the sustenance budget could itself be used to boost the Indian Armed Forces' modernisation budget, without raising the gross allocation.

Review of Sustenance Budget Allocation for The Indian Armed Forces

The Indian government has allocated ₹1.14 lakh crore for the sustenance of the Indian Armed Forces in FY 2025-26 to assist the acquisition of rations, gasoline, ordnance stockpiles, transportation and repair and maintenance of equipment (PIB Delhi, 2025). In FY 2024-25, the operational and sustenance budget was ₹92,088 crore, 48% greater than the budgetary allocation for FY 2022-23 (PIB Delhi, 2024). In FY 2023-24, the operational and sustenance budget allocation was ₹90,000 crore (PIB Delhi, 2023) indicating that the government has consistently allocated more funds for the Indian Armed Forces' sustenance and operational readiness since FY 2022-23.

The sustenance (revenue) budget allocation for FY 2025-26 includes ₹17,596 crore for transportation (fuel, oil, lubricants) and ₹64,902 crore for

stores (rations, ordnance, spares and supplies). In FY 2024-25, the revised budget allocation for transportation and stores was ₹7,865 crore and ₹60,701 crore respectively. In FY 2023-24, the Indian Armed Forces spent ₹6,712 crore on transportation and ₹63,085 crore on stocks (MoD, 2025).

Cost-Saving Potential of AI-Driven Military Sustenance

AI-driven military sustenance can save costs across several logistics' operations, including inventory optimisation, predictive maintenance and transportation route optimisation. Some modern armies have already taken an early lead in this direction. The Defense Logistics Agency (DLA) of the US Military collaborated with Accenture to investigate the use of Artificial Intelligence Demand Forecast (AIDF)—to improve demand forecasting of military spare parts and supplies for its clients across nine worldwide supply chains. The purpose was to save costs from overstocking and reduce inventory stockouts (Accenture, 2019). The study found that over-forecasting errors were reduced by $102 million without increasing the likelihood of under-forecasting errors across a sample of 48,000 inventory items.

The US Army first implemented predictive maintenance on its Apache AH-64 helicopters in 2005. By 2012, predictive maintenance was implemented on UH-60 Black Hawk helicopters, and by 2019, 65% of CH-47 Chinook helicopters were covered under predictive maintenance. As a result, the servicing interval of the CH-47 fleet was extended from 400 to 620 flight hours, due to effective analysis of historical maintenance data. Over six years, predictive maintenance saved 24 million dollars and 6,237 maintenance hours on the CH-47 fleet and $215 million and 5,324 maintenance hours on the UH-60 fleet (Judson, 2020).

Another study (Jae-Dong-Kim, 2023) on demand forecasting of spare parts for the South Korean Army's KX main battle tank demonstrated that machine learning approaches can increase the accuracy of demand forecasting in military logistics. In this work, ML models were trained on

historical data from 2011 to 2016 to forecast the annual need for spare parts in 2017. The models demonstrated an accuracy of 80.5%, compared to 72.5% for the legacy Simple Moving Average (SMA) method.

Inventory Optimisation

The current challenges of overstocking and shortages (or stockouts) in various military depots and stores may arise due to inaccurate demand forecasting during inventory preparation leading to high inventory holding costs (especially for perishable stocks like medicines and food supplies) and low satisfaction levels or missed opportunities of meeting actual demands while serving the end users (military units, ships, bases, formations and establishments). AI-driven inventory optimisation can reduce inventory holding costs significantly, minimising wastage in military sustenance.

According to McKinsey and Company, integrating AI in supply chain operations can produce value, such as reductions of 20 to 30% in inventory levels, 5 to 20% in logistics expenses and 5 to 15% in procurement expenditure (McKinsey & Company, 2024). Logistics cost savings are seen as reductions in expenses related to storing, handling and transporting goods due to AI-driven inventory placement, route planning and warehouse automation. On the other hand, procurement spend savings are cost reductions achieved in acquiring goods and services due to AI-driven demand forecasting which enables more accurate and economical purchasing decisions.

The sustenance budget allocation for procurement of stores (including spares) for the Indian Armed Forces for FY 2025-26 stands at ₹64,902 crore (Army ₹28,654 crore; Navy ₹11,248 crore; and Air Force ₹25,000 crore) [MoD, Govt of India, 2025]. Inventory level reduction refers to lowering the capital locked in stores held in stock. Military inventory levels typically range around 25% of annual procurement spend. Thus, the estimated inventory value held would be ₹16,225 crore. Applying the 20 to 30% AI-

driven reduction to this held inventory would result in inventory level savings of ₹3,245 crore to ₹4,868 crore. On the other hand, applying procurement savings of 5 to15% translates to procurement cost savings of ₹3,245 crore to ₹9,735 crore.

Apropos, AI-driven inventory optimisation can lead to cost savings of ₹6,488 crore to ₹14,603 crore due to reduction in inventory levels and procurement spends (Army ₹5,730 to ₹8,596 crore) for FY 2025-26. Adopting AI-driven inventory optimisation itself could have saved ₹17,908 to ₹ 40,248 crore (Army ₹7,422 to ₹16,703) on inventory stores expenditure across all three services (refer to **Table 1**) during the last three years (FY 2022-23, FY 2023-24 and FY 2024-25). Thus, even a conservative 20% AI-enabled inventory optimisation cost savings could redirect over ₹6,000 crore annually towards modernisation efforts.

Table 1: Potential Inventory Optimisation Cost Savings

FY (Actual/ Revised/ Budget)	**Stores (₹Crore) (Army+Navy+ Airforce) (a)**	**Potential Inventory Level Reduction Savings (₹Crore) (20-30% of 25% of a) (Army+Navy+ Airforce) (b)**	**Potential Procurement Spend Savings (₹Crore) (5-15% of a) (Army+Navy+ Airforce) (c)**	**Potential Inventory Optimisation Savings (₹Crore) (Army+Navy+ Airforce) (d=b+c)**
2022-23 (Actual)	55,100 (24,366+9,602+ 21,132)	2,755 to 4,132 (1,218 to 1,827 + 480 to 720 + 1,057 to 1,585)	2,755 to 8,265 (1,218 to 3,655 + 480 to 1,440 + 1,057 to 3,170)	5,510 to 12,397 (2,436 to 5,482 + 960 to 2,160 + 2,114 to 4,755)
2023-24 (Actual)	63,085 (23,663+11,349 +28,073)	3,154 to 4,731 (1,183 to 1,775 + 567 to 851 + 1,404 to 2,105)	3,154 to 9,462 (1,183 to 3,549 + 567 to 1,702 + 1,404 to 4,211)	6,308 to 14,193 (2,366 to 5,324 + 1,134 to 2,553 + 2,808 to 6,316)
2024-25 (Revised)	60,701 (26,210+10,892 +23,599)	3,045 to 4,553	3,045 to 9,105	6,090 to 13,658

FY (Actual/ Revised/ Budget)	Stores (₹Crore) (Army+Navy+ Airforce) (a)	Potential Inventory Level Reduction Savings (₹Crore) (20-30% of 25% of a) (Army+Navy+ Airforce) (b)	Potential Procurement Spend Savings (₹Crore) (5-15% of a) (Army+Navy+ Airforce) (c)	Potential Inventory Optimisation Savings (₹Crore) (Army+Navy+ Airforce) (d=b+c)
		(1,310 to 1,966 + 555 to 817 + 1,180 to 1,770)	(1,310 to 3,931 + 555 to 1,634 + 1,180 to 3,540)	(2,620 to 5,897 + 1,110 to 2,451 + 2,360 to 5,310)
2025-26 (Budget)	64,902 (28,654+11,248 +25,000)	3,244 to 4,868 (1,432 to 2,149 + 562 to 844 + 1,250 to 1,875)	3,244 to 9,735 (1,432 to 4,298 + 562 to 1,687 + 1,250 to 3,750)	6,488 to 14,603 (2,864 to 6,447 + 1,124 to 2,531 + 2,500 to 5,625)

(All figures are rounded off to nearest one crore rupee) (Source: Authors)

Predictive Maintenance

The current challenges of unexpected equipment failures increase repair costs and downtime. AI-driven preventive maintenance enables early identification of maintenance needs through predictive models, thus reducing equipment failures and improving equipment availability and uptime during its lifecycle. Integration of AI with IoT-based sensors and digital twins can further refine predictive models for equipment health, enabling condition-based logistics. PricewaterhouseCoopers (PwC's) 'Predictive Maintenance 4.0' report highlights a 20% to 40% reduction in maintenance costs through early fault detection. As per Deloitte, predictive maintenance increases equipment uptime by 10% to 20% while reducing overall maintenance costs by 5% to 10% (Deloitte, 2017).

Adopting predictive maintenance can save the Indian Navy repairs and refits cost up to ₹136 to ₹272 crore in FY 2025-26. Early adoption of predictive maintenance in the Indian Navy could have saved ₹4,22 crore to ₹845 crore in the repairs and refits expenditure (refer to **Table 2**) over the previous three years. Thus, even a conservative 5% AI-driven predictive

maintenance could redirect over ₹130 crore annually from the Indian Navy itself towards modernisation efforts. Since, repairs and refits cost of the Indian Army and Indian Air Force were not available in the budget allocation, the cost savings have been estimated only for the Indian Navy.

Table 2: Potential Predictive Maintenance Cost Savings

FY (Actual/ Revised/ Budget)	Repairs and Refits (₹Crore) (Navy) (a)	Potential Predictive Maintenance Savings (₹Crore) (5-10% of a) (Navy) (b)
2022-23 (Actual)	2,376	119 to 238
2023-24 (Actual)	3,388	169 to 339
2024-25 (Revised)	2,683	134 to 268
2025-26 (Budget)	2,726	136 to 272

(All figures are rounded off to nearest one crore rupee) (Source: Authors)

Transportation and Fuel Efficiency

The current challenges of suboptimal routing lead to higher fuel and transport costs. AI-powered route optimisation systems learn from large amounts of historical supply chain data to identify patterns of traffic flow, consumer demand, weather or natural phenomena, road conditions and any other trends or seasonality that emerge over time to optimise routes based on specific target variables such as costs, distance, delivery delays and resource utilisation. When AI-based systems work with real-time data, they maximise efficiency through dynamic route optimisation, which entails altering routes to take into account the present state of factors such as weather, road conditions and other potential outcomes. According to research by McKinsey,

AI-driven optimised transportation schedules and route planning can save up to 15% on fuel expenses and cut travel time up to 20%.

The sustenance budget allocation for transportation for the Indian Armed Forces for FY 2025-26 stands at ₹7,927 crore (Army ₹5,400 crore, Navy ₹1,307 crore and Air Force ₹1,220 crore) [MoD, Govt of India, 2025]. Adopting AI-driven transportation resource and route optimisation can save the Indian Armed Forces up to ₹1,189 crore (Army ₹810 crore, Navy ₹196 crore and Air Force ₹183 crore) in transportation costs, assuming a 15% potential cost savings in fuel and transportation. Savings of up to ₹3,166 crore (Army ₹2,249 crore) could have been made on transportation expenses for all three services combined (refer to **Table 3**) over the last three years. Thus, even a conservative 15% AI-driven transportation fuel savings could redirect over ₹1,000 crore annually towards modernisation efforts.

Table 3: Potential Transportation Fuel Cost Savings

FY (Actual/ Revised/ Budget)	Transportation(₹Crore) (Army+Navy+ Air Force) (a)	Potential Transportation Fuel Savings (₹Crore) (15% of a) (Army+Navy+Air Force) (b)
2022-23 (Actual)	6,529 (4,641+796+1,092)	979 (696+119+164)
2023-24 (Actual)	6,712 (4,808+878+1,026)	1,007 (721+132+154)
2024-25 (Revised)	7,865 (5,548+1,097+1,220)	1,180 (832+165+183)
2025-26 (Budget)	7,927 (5,400+1,307+1,220)	1,189 (810+196+183)

(All figures are rounded off to nearest one crore rupee) (Source: Authors)

Gross Potential Sustenance Cost Savings

Adopting AI in the Indian Armed Forces' sustenance operations as early as possible will lead to significant cost savings, as seen in the last three financial years. Adopting AI for inventory optimisation, predictive maintenance and transportation route optimisation in the Indian Armed Forces could have resulted in gross savings ranging from ₹22,685 crore to ₹44,259 crore, which is approximately 10% to 20% of the sustenance budget allocated for stores, transportation & repairs and refits (refer to **Table 4**) in the last three years. Thus, even a conservative 10% AI-driven sustenance cost savings could redirect over ₹7,500 crore annually towards modernisation efforts.

Table 4: Total Potential Sustenance Cost Savings

FY (Actual/ Revised/ Budget)	Sustenance Budget (Stores+Transportation+ Repairs) (₹Crore) (Army+Navy+Air Force) (a)	Total Potential Savings(₹Crore) (b)
2022-23 (Actual)	64,005 (29,007+12,774+22,224)	6,608 to 13,614
2023-24 (Actual)	73,185 (28,471+15,615+29,099)	7,484 to 15,539
2024-25 (Revised)	71,249 (31,758+14,672+24,819)	8,593 to 15,106
2025-26 (Budget)	75,555 (34,054+15,281+26,220)	7,813 to 16,064

(All figures are rounded off to nearest one crore rupee) (Source: Authors)

Ensuring Realistic Cost Savings for the Indian Armed Forces

While studies from global militaries and organisations such as PwC and McKinsey suggest significant cost savings from AI-driven logistics, it is critical to recognise that the variables in play differ significantly for the Indian Armed Forces. Direct extrapolation of global findings may not fully capture the savings potential in the Indian Armed Forces. To ensure a realistic and convincing projection of cost-saving potential, the following steps must be taken:-

- ***Indian Military Specific Feasibility Studies***. Conduct AI-powered logistics pilot projects in selected Indian Armed Forces depots to generate real-world efficiency metrics.
- ***Custom AI Models***. Develop AI solutions that are suited to the Indian Armed Forces' specific logistics demands, taking into account local supply chain limits and regional operational challenges.
- ***Gradual Scaling and Data Validation***. Begin with small-scale deployments, test AI-driven cost reductions and then incrementally expand operations based on quantifiable success.
- ***Operational Testing and Real-Time Adjustments***. AI-powered logistics models must be regularly tested against real-time operating scenarios to refine cost estimations and increase efficiency.

By using a step-by-step, military logistics-focused approach to AI implementation, decision-makers must assure that promised cost savings are not only theoretical but also grounded in operational realities. This will not only boost trust in AI adoption but will also create a strong, data-backed rationale for continued investment in AI-driven logistics in the Indian Armed Forces.

AI Technologies for Optimising Sustenance

To effectively leverage AI in military sustenance, different AI technologies can be deployed across key areas:-

- ***Machine Learning (ML) for Inventory Optimisation***. ML models can assess past consumption trends and forecast future demand, thereby decreasing both overstocking and shortfall. Reinforcement learning can help optimise procurement strategies and improve supply chain efficiency.

- ***Deep Learning for Predictive Maintenance***. Deep neural networks can process massive amounts of equipment sensor data in order to detect early warning signals of mechanical failure. This enables preventive maintenance, which reduces unplanned downtime and repair costs.

- ***Natural Language Processing (NLP) for Logistics Command and Coordination***. NLP can automate and improve logistics communication by analysing unstructured data from reports, field updates and maintenance records, hence increasing decision-making efficiency.

- ***AI-Driven Route Optimisation for Transportation***. AI-powered route optimisation systems can assess real-time data, such as weather conditions, traffic patterns and fuel consumption to establish the most efficient logistics routes, thereby reducing both transportation costs and delays.

Strategic Competitive Advantage in a Geopolitical Context

In today's rapidly changing geopolitical scenario, AI-powered logistics can act as a force multiplier, offering a significant strategic edge. With adversaries rapidly modernising their military capabilities, efficient and intelligent logistics operations are crucial to sustaining operational superiority. AI-powered sustenance enables:

- ***Rapid Force Mobilisation***. AI-driven predictive analytics and real-time supply chain monitoring ensure that military assets are deployed quickly, reducing response times in crises.

- ***Adaptive Logistics in Conflict Zones***. AI can dynamically improve supply routes in response to battlefield situations, reducing the risks associated with supply chain disruptions caused by enemy activity or environmental factors.

- ***Enhanced Interoperability***. AI-powered logistics solutions can provide seamless coordination across the three services, resulting in synchronised supply chains and joint operational preparedness.

- ***Resource Optimisation in Extended Conflicts***. AI can assess long-term operational requirements, ensuring sustainable resource allocation for extended engagements and lowering reliance on emergency procurements.

By incorporating AI into military sustenance operations, the Indian Armed Forces can gain both budgetary efficiencies and strategic dominance in an increasingly complex threat environment.

Potential Roadblocks and Mitigation Strategies

While the adoption of AI in military sustenance presents a promising opportunity, several challenges must be addressed to ensure successful implementation:-

- ***Data Scarcity and Inconsistency***. Military logistics often lacks structured, AI-ready datasets, making it difficult to train accurate prediction models. As a result, it is necessary to establish uniform data collection and management protocols, digitise legacy records and integrate AI-ready logistics systems with real-time data inputs.

- ***Cybersecurity Risks***. AI systems are subject to cyber attacks, data breaches and aggressive AI threats. Thus, deploying robust cybersecurity measures, such as end-to-end encryption, AI-driven anomaly detection and secure military cloud infrastructure, is critical to protecting sensitive logistics data.

- ***Resistance to Change***. Militaries around the world are often sluggish to adopt new technologies due to bureaucratic inertia and established hierarchical structures. To counter resistance to change, AI training for key personnel and phased integration of AI solutions with strong leadership advocacy must be implemented.

The Indian Armed Forces can successfully integrate AI into their sustenance operations by addressing challenges through well-structured mitigation actions, resulting in increased efficiency, data security and operational preparedness.

Quick Wins for AI in Military Sustenance

Long-term and successful integration of AI in sustenance must begin with taking initiatives that can show early tangible impact. Some of the pilot projects which can be undertaken for scoring quick wins for the adoption of AI in military sustenance in the Indian Armed Forces are listed below:-

- AI-driven ration and fuel stock forecasting for high-altitude posts.

- Predictive maintenance of key vehicle fleets (TATRAs, BMPs, Battle Tanks).

- Route optimisation for ammunition and supply convoys.

- Spare parts demand forecasting for Aviation Base Repair Depots (BRDs).

Successful fructification of some of the pilot projects within 12 to 18 months would demonstrate that AI integration can deliver tangible results

in optimising sustenance operations and financial gains resulting from cost savings, building momentum for large scale transformation of military sustenance in the Indian Armed Forces.

Role of Indigenous AI Development

To ensure that AI use in military sustenance is both effective and secure, India should prioritise the development of indigenous AI technologies. The Indian Armed Forces can develop AI systems that are specifically designed for domestic operational situations by cooperating with national research organisations, startups and defence PSUs. These AI systems can be fine-tuned to account for variance in logistics practices, climatic conditions and threat perceptions. It also reduces the risk of relying on foreign-origin software, which can be difficult to secure, control, and maintain in the long run.

Furthermore, investing in indigenous AI capabilities contributes to the larger national objective of 'Aatmanirbhar Bharat'. It fosters in-house intellectual capital, promotes defence innovation and boosts India's position in the rapidly evolving global military-tech landscape. Indigenous solutions also provide better flexibility in customising, upgrading and integrating AI into existing command, control, and logistics systems. This self-sufficient approach not only provides cost efficiency and operational security, but also serves as a strategic asset in increasing India's defence preparedness in times to come.

A Practical Roadmap for AI Adoption in the Indian Armed Forces

To fully realise the benefits of AI-driven sustenance, the Indian Armed Forces should adopt a phased five-year implementation strategy:-

- **Short-Term (1 to 2 Years): Pilot Projects and Feasibility Studies**
    - Identify critical logistics areas for AI integration, including inventory forecasting, predictive maintenance and transportation optimisation.

- Conduct feasibility studies and proof-of-concept trials at selected military depots and locations.
- Work with commercial sector AI companies and academic centres of excellence to create tailored AI models.
- Create AI task forces in each service branch to manage pilot implementations.

- **Mid-Term (3 to 5 Years): AI Deployment and Capacity Building**
  - Expand AI deployment to selected logistics units and depots depending on the successful pilot projects' outcomes.
  - Train personnels, such as logisticians and maintenance teams on AI-powered decision-making and tools.
  - Develop and improve AI algorithms using real-world data and operational inputs.
  - Integrate AI with existing logistics management systems to provide seamless data flow and interoperability.
- **Long-Term (Beyond 5 Years): Full-Scale Implementation and Tri-Service Integration**
  - Increase AI adoption in military logistics operations to ensure full coverage throughout the Army, Navy and Air Force.
  - Create a centralised logistics command and employ AI by improving coordination across services.
  - Updating AI models with new data improves accuracy and efficiency over time.
  - Combine AI-driven logistics with emerging technologies like IoT and blockchain to improve security and transparency.

By adopting a structured roadmap, the Indian Armed Forces can gradually migrate to AI-driven sustainability, resulting in considerable cost savings while improving operational preparedness and efficiency.

Conclusion

The Indian Armed Forces stand at a pivotal moment. By embracing AI-driven logistics, we can unlock billions in cost savings while strengthening operational readiness. Global military leaders have already demonstrated the power of AI in logistics; it is now time for the Indian Armed Forces to move beyond conceptualising and into large-scale implementation. To achieve this, military leadership must act decisively. A structured roadmap involving pilot programs, phased deployment and full-scale integration should be pursued without delay. Investments in AI infrastructure, cybersecurity measures and personnel training must be prioritised to ensure seamless adoption.

AI is not just a tool; it is the next frontier in military efficiency. The sooner we integrate it into sustenance operations, the stronger, more agile and better-prepared our forces will be for the battles of tomorrow. The choice is clear: adapt now or risk falling behind in an era where technological superiority defines military success. Beyond financial savings, AI also provides significant intangible benefits, including improved operational readiness, faster response times and enhanced decision-making capabilities. AI-driven logistics systems thus ensure that troops and equipment are always ready for deployment, reducing delays and logistics bottlenecks. Delaying adoption risks strategic obsolescence in an era of accelerated warfare innovation.

Finally, as a way forward, it is recommended that the Ministry of Defence should consider initiating AI logistics pilots in at least two depots per service in FY 2025–26 as a launchpad for scalable transformation. Hence, decisive early action will determine future competitiveness.

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Ideating the Evolving Nature of Warfighting, Incorporating Technology and Visualising Emerging Role of DIME Stakeholders

SANJIV SINGH SLARIA

Abstract

Technology is the driver of future warfare. Technology and Warfare have evolved over centuries and they feed on one another. Technological dominance has become one of the key determinant of military supremacy as it influences the multi-domain battlespace. Transformational changes are taking place due to absorption of technology and there is a need to understand the nuances of using all elements of national power (DIME-Diplomatic, Informational, Military, Economic) in an integrated manner, to provide a more comprehensive approach to national security. Technology has become an integral part of life of the society, and it should be considered as an important instrument of power. Above all the organisational structures, the leadership should be able to adapt to the advancements in technology.

"In the present day, technology will drive capability and countries with cutting edge technologies will lead the world. It is vital that India's Military Power is based on IndigenousTechnology which will enable us to exercise Strategic Autonomy."

—Shri Rajnath Singh, RM

Introduction

War is a conflict between two entities; **warfare** is the methodology that evolves with time and **war fighting** is the actual activity which is undertaken at the field formation level. **Technology and Warfare** have evolved over centuries; they feed on one another. Whether the war of Mahabharata in ancient India, or the Trojan Wars in the Greek world, or the ongoing Russia-Ukraine and Israel-Hamas conflict, technology has always played a significant role in warfare. Ancient and post-classical period wars were fought with a large number of men, utilising **line and column tactics** control (Creveld, 2023). Then, the discovery of metals enabled battle **chariots** (sangramika) to be used as command vehicles, carrying the archers who could shoot their arrows on the move. In 6th century BCE, **elephants** replaced chariots, providing shock value, i.e. the psychological impact on the enemy. Then came the **cavalry** in North, Central and Western India (Lal, 2018) and later, the '**Gunpowder Revolution'** of the 11th century, that led to the development of firearms, replacing bows and arrows.

The last two decades have witnessed a paradigm shift like conflicts. The **conflicts aim at achieving political objectives** by non-military means, concealed use of military means and extensive use of new technology-enabled systems. Technological dominance has become one of the key determinants of military supremacy. As witnessed during Operation Sindoor, technology has influenced the multi-domain battlespace and today, countries have to guard against cyberattacks, disinformation, non-contact warfare, attacks on digital infrastructure, as also economic warfare by attacking banking, financial, and transportation as well as law and order

systems. Hence, it is imperative to explore and understand the niche technological underpinnings that are going to shape the future battlefields. These technologies would encompass conventional kinetic means merged with non-kinetic, non-lethal means spread across the cyber, information and space continuums.

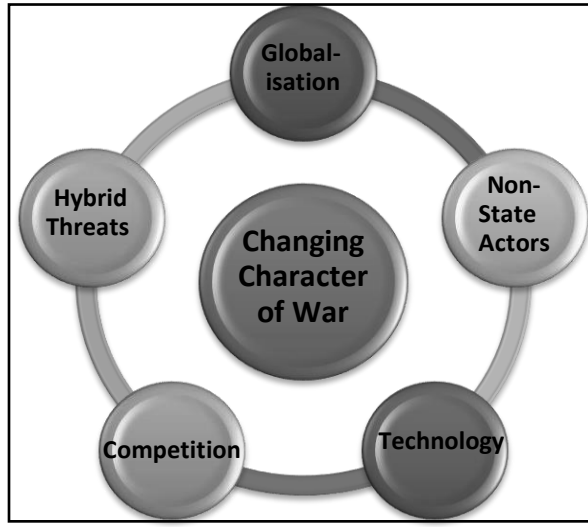
Shri Ajit Doval, in November 2021, remarked to *The Print* that 'civil society is the new frontier of warfare'. With the advent of the internet, the states are constantly at war, generally in non-kinetic activities, such as social engineering, disinformation campaigns, artificial intelligence and deep fakes. Transformational changes are taking place and old notions of war, while still valid, have undergone a makeover in the new century. Force alone is not enough to break the will of an enemy and to advance the interests of nations. War must include the use of all elements of national power and therefore, the instruments of national power (DIME - Diplomatic, Information, Economic, Military) should be used in an integrated manner, in order to provide a more comprehensive approach to national security. Technology has become an integral part of the life of society, and it should be taken into consideration as an instrument of power and highlighted as a major component of a national security strategy (Constantinescu, 2021).

Envisioning Future Conflicts Involving Changing Nature and Character of War

War is a competition between adversaries, unfolding in multiple domains accessible to each competitor. The threat today is of an unstable world order, non-state actors, collusivity between our adversaries, fundamentalism, contestations in Europe and Asia, and the contested strategic space of the Indo-Pacific.

- **Nature vs Character of War.** The contradiction between war's nature and character remains one of the most contentious issues of interpretation for the phenomenology of war (Caliskan, 2022). The

unchanging and the constant essence of war is the 'Nature' while the 'Character' of war could be described as the manifestation of the war itself which has been described in the diagram. It does manifests into different forms. Therefore, the 'nature' of war is the continuity or the constants and the 'character' is the application of the phenomenon, which keeps transcending different boundaries and in different domains.



Source: Prepared by Author

- **Characteristics of Warfare.** Rapid changes in the geopolitical and strategic environment have transformed the basic characteristics of warfare. The calculus of 'end, ways, and means' are infinitely adapting to evolving strategic constructs. Though the nature of war remains constant, transformative changes are taking place in the character of war, and forms of warfare are constantly metamorphosing, transcending boundaries in different domains. Battlegrounds are getting far more complex, highly contested and increasingly lethal. The **trends** responsible for changing the character of warfare are—**Globalisation, empowered non-state actors, technological innovation, acute competition and arrival of**

hybrid threats; these are operating concurrently and in close proximity of each other. The complex interaction of these trends is potentially game-changing and demands a new approach that places strategic adaptability and flexibility at its core.

Contours of Future Warfare

It can be assumed with certainty that future wars will be multi-dimensional and multi-domain wherein adversaries will blend conventional, asymmetric, and hybrid capabilities across all domains, thereby compelling re-examination of existing military concepts and doctrines. Domination in a future war will necessitate focus on achieving cross-domain synergy. Therefore, in future conflicts, India should expect all domains to be highly contested.

The future battlespace would not be restricted by traditional battle spaces, boundaries or clear distinction between combatants and non-combatants, often avoiding direct military engagements and resorting to extensive use of proxy actors. Also, the battle of perception and narratives has gained such pre-eminence that the belligerence today is more focused on winning the battle of narratives than an actual victory on the ground. There are ongoing hostilities between states, in the Cyber, Information, Sub-conventional and Hybrid domains, without a formal pronouncement of War. However, the aim of an adversary remains to exercise control over the other—disintegrating sources of power and rendering the command-and-control systems ineffective and making physical forces redundant.

The Russia-Ukraine conflict has highlighted that although conventional wars are still relevant, conflicts are likely to be ambiguous and prosecuted in the Grey Zone, through Diplomatic, Informational, and Economic coercive activities, that is 'hybrid' in nature—the focus increasingly shifting to multiple domains varying from non-contact to contact and non-kinetic to kinetic warfare. These forms of conflict are transcending the conventional understanding of what equates to irregular

and regular military action. The conflict paradigm has shifted and we must adapt our approaches if we are to succeed in any ongoing or future conflict. Challenges of the future will demand even greater institutional agility in face of major resource constraints.

Indian Perspective

India faces unique, substantial and multi-domain challenges as well as disputed borders with nuclear neighbours, collusively coupled with state-sponsored Proxy War. These challenges stretch our security apparatus and resources. China's doctrine of 'Winning Informatised Local Wars' (Mallick, 2021) enshrines the centrality of information as an instrument of prosecuting and winning contemporary wars. Their concept of 'Unrestricted Warfare' combines elements of information & cyber-space operations, irregular warfare and foreign relations, carried out in peace time as well as during conflict. Our adversaries shall continue with their efforts to achieve their strategic aims, by conducting 'warfare' in multiple domains (DIME) and Grey Zone and do so in a collusive manner.

In order to improve effectiveness, we need to augment our capabilities in both the non-contact and contact modes of warfare. There is a need to identify the main drivers of military technology in the digital era of warfare. The Indian Armed Forces will need to suitably modify war-fighting doctrines, organisations & structures, and training methodology & leadership to challenge the adversary's strategy. Developing strategies to overcome the challenges of future wars is not a single or a tri-Service issue, but one that warrants focus, time and resources of every organ of the government in a synergised manner. The independent silos will have to be broken and cross-organisational linkages at all levels will have to be established.

Conceptual Shift in War Fighting

The strategic paradigm of a unipolar world does not fit into the realities of today's scenario. This is the **first**, perhaps the most important

and most difficult conceptual shift wherein the USA's hegemony in world affairs is being challenged by the People's Republic of China, which is capable of pursuing and implementing 'intelligentised' Revolution in Military Affairs (RMA), driven by Artificial Intelligence (AI) systems. The US is no longer the only superpower and is no longer willing or able to be the "world's policeman"; at the same time, it does not want others to assume the task (Bitzinger and Raska, 2022). China is likely to overtake the United States in real GDP in the 2030s (Jennings, 2022) and reach de facto military parity with the US military by the 2050s. Overall, China is on its way to be a superpower with a voice in every major Asian and global issue.

The **second** conceptual shift involves refining the understanding of how to use the military forces. The concept of war is usually understood in terms of conventional combat. Every other act of violence, use of force or hostility is categorised as Grey Zone/ Unrestricted warfare. These categories are quite useful as they allow a strategist to plan for the use of military force under a variety of graduated circumstances. Emerging technologies have enabled new forms of hybrid warfare. These include space-based hybrid operations, long-range unmanned vectors, swarming of unmanned systems with artificial intelligence, directed energy weapons, high-power microwaves, electronic operations (jamming, spoofing, etc.) and attacks on satellites.

War Fighting Domains

Sun Tzu said that "to subdue the enemy without fighting is the acme of skill" (Griffith, 1963). He argued that force should be the last resort if the enemy is not been compelled by other means. Wars, inclusive of diplomacy, information and economics, and now even technology, are likely prescriptions for the least cost in lives, without having to resort to fighting.

- **DIME-L Domain.** The emergence of new strategic environment necessitates an orchestration of multiple instruments of power i.e., DIME and Legal (DIME-L). China, USA and Russia have already developed alternative concepts to leverage these instruments of power, to compete below the threshold of conflict. One of the key features of the current security environment is the blurring of lines between war and peace, between competition and conflict, into the Grey Zone. It provides for greater operating space across varied war-fighting domains, to the extent of justifying actions by attributing them to domestic opposition or to "people's movement". Most states are unprepared for this second generation of **'weaponisation of everything'.** As adversaries develop such fluid and threshold-based grey zone concepts, India must adapt to compete in ever changing threat environment. To succeed, leaders at all levels especially strategic and operational, need 'to understand, select and synchronise' activities of DIME-L to ensure a whole-of-nation approach to these problems.

- **Cognitive Domain.** One of the most important emerging war fighting domains is the cognitive domain. It is where dilemmas, decision paralysis and influences exist and it is the singular domain that will define victory in a conflict. This new domain is not just about influencing the hearts and minds of the people seeking information; it is about involuntarily penetrating, shaping and coercing the mind to compel an adversary to submit to another. The most powerful tool in this war is the brain-computer interface technologies that connect the human brain to various devices (Kosal, 2019). There is less emphasis in this domain on bloodshed and more on incapacitating the adversary, the key to the capabilities in domains of cyber, space and electromagnetic spectrum. This domain is neither isolated nor removed from other domains; coordinated attacks across all domains are going to be the norm and the military thinkers will have to account for the

subtleties of the human mind and the increasing reliance on the brain-computer interface.

Traditional Threats vs Technological Development: Indian Context

Despite the technological advancement, the **traditional threats are ever-present** and shall not go away. India is part of a volatile neighbourhood. Given that India, China and Pakistan, all possess nuclear weapons, and both China & Pakistan exhibit an adversarial relation with India, the collusion between China and Pakistan, including Chinese support to Pakistan in all domains of DIME, compels India to be even more cautious.

- **Capability Enhancement.** The situation along the Northern borders has not changed, and the legacy challenges remain, even growing in speed and intensity, although newer threats emerge on the horizon. While the Indian Army must adopt futuristic technologies, the more proximate real and present dangers on our active borders cannot be ignored. The principal challenge is to enhance the capability in an era of finite budgets and transform the structures, inventories, and human resources keeping in mind present and future challenges. China's Grey Zone strategy is consequently incremental, slowly nibbling away at the edges and inching forward making use of diverse military and non-military measures, being careful not to drive others into a major war (Layton, 2021). This reinforces the need for India to invest in, both technology and traditional war-fighting capabilities.

- **Mix of Modern and Legacy System.** Warfare at its core is a human endeavour; war is a fundamentally human clash of wills. When one capability is taken away from the enemy, it is but obvious that the enemy will regroup and come back with a new form of resistance or force. Both during Operation Desert Storm in Iraq and

operations in Afghanistan—initially US executed brilliant network-centric operations to achieve phenomenal success, but could not sustain it to achieve complete capitulation of the enemy. The Ukraine war has shown that the future of emerging technologies is here, but there is still a large scope for legacy systems, artillery and ground troops, because they remain at the core of warfare.

- **Primacy of Land Warfare.** India has predominantly mountainous terrain along its borders and, therefore, the primacy of 'Land Warfare/Continental Warfare' would remain supreme. As the threats and challenges continue to grow in intensity and complexity, there is a need to regularly war-game and analyse the options and responses, to be able to effectively respond to any contingency. Primary imperatives are to be prepared for techno-centric combat by imbibing technology, using human resources efficiently, ensuring optimal force modernisation and, most importantly, enhancing synergised, joint and integrated operations.

Technology-Infused Multi-Domain Operations in the Indian Context

The current speed of innovation breakthroughs has no historical precedent and is characterised by a fusion of technologies with blurred lines between the physical, digital, and biological spheres. Almost all of these technologies have potential military applications and a disruptive impact on modern-day warfare. In the non-kinetic domain, Information Warfare has seen the impact of social media in conflict zones to create disinformation and panic. The capabilities of AI to create deep fakes or hyper-realistic doctored images and videos have made disinformation campaigns vicious and easier to execute.

These technologies will bring humans and robots fighting alongside each other. Improved situational awareness, fusion of sensors, faster decision making, use of autonomous weapons, drone swarms, loitering

ammunition, and integration of AI into every facet of warfare will necessitate change to warfighting doctrines, organisations, structures and training. Though military leadership and the soldiers are irreplaceable, it will drastically alter the manner in which information is processed, disseminated and decisions are taken.

Multi-Domain Operations (MDOs)

The rate and speed of future events will preclude time for synchronised solutions. To present the enemy with multiple dilemmas, we must cohesively integrate our solutions before the battle starts or ensues. In future wars, a nation will no longer use armed forces alone. The whole nation and society would become part of the battle, bringing an integrated multi-domain approach to war-fighting to try and counter conventional strength. They will leverage technological advances to blend space and cyber operations as the battlefield acquires a multi-domain complexion. The threats of the future will undoubtedly compel us to change the way we fight. Therefore, we must develop multi-domain capability to create desired impact, which will have to be configured to a net-centric war-structure and orchestrated like so.

India must embrace MDOs with renewed vigour and purpose but all the actions must be rooted in the Indian reality. Indian Armed Forces of the future will need to be adept in the prevailing strategic military competition. Following the examples of LAC and LC, India must take similar propensities down to the Indian Ocean Region (IOR) and to the aerospace domain. The MDOs may come useful to address how to imaginatively penetrate the anti-access bubble and how to imaginatively create an anti-access bubble from Malacca to our shores.

Operations in the Non-Military Domain

- **Counter Strategy against Grey Z (DIME less M).** India should adopt a two-pronged strategy against China, **firstly**, to safeguard

own neighbourhood and **secondly**, go offensively against the Chinese neighbourhood. India should aggressively engage with immediate neighbours and the littorals of the South China Sea. There is a need to increase engagement with CAR countries, who have large business interests with China. Inviting the State Heads of CAR countries as Chief Guests during the Republic Day Parade in 2022 was a step in the right direction; however, it could not fructify due to Covid-19 restrictions. India's stance at international forums on the Russo-Ukraine war has definitely brought both the countries closer. Vietnam's position and approach to regional security also align with our goals and the wider perspective of other partners in the region to check China's influence in the South China Sea. India's interests in the SCS, and expanding strategic heft of the Indo-Pacific region, are in conflict with the Chinese rise in the area. India's interests in the maritime region and rule based regional order and Chinese policy of 'salami slicing' with the posting of military equipments, calls for a need to have a reliable partner in the region.

Technology Infusion in War Fighting

- **Desired Capabilities in Emerging Technologies.** India must invest in multiple emerging technologies. Yet, the predicament is that, not all emerging technologies are at a mature and implementable stage. Hence, India must diversify by simultaneous investments of human and financial capital in multiple fields—cyber, electronic, AI, quantum, nano and other emerging technologies. These newer technologies would help India prepare for the relentless demands of future wars. There is a need to focus on specific key military technologies like autonomous ground vehicles, loitering missiles (LMs), unmanned stealth UCAVs, hypersonic weapons, counter-UAS etc. It is in India's national interest to leverage the multiple benefits of emerging technologies with its core strength in

Information technology (IT), to achieve maximum preparedness for future warfare.

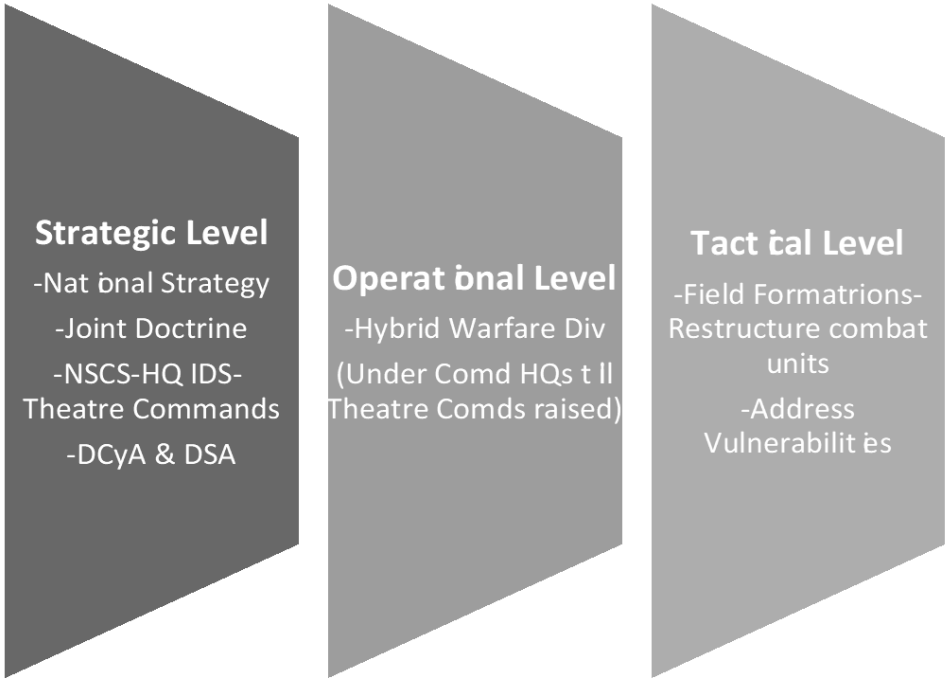
Structures Required for Embracing Emerging Technologies

- **Strategic Level.** The starting point could be the evolution of a national strategy and joint doctrine. Here on, a new set of guidelines and procedures for integration among the three services can be formulated. Apex level integration could be organised at the National Security Council Secretariat level, which could be followed by next level integration at the HQ Integrated Defence Staff (IDS) level. Organisational structures in theatre command could be evolved in a phased and time bound manner. The raising of the Defence Cyber Agency (DCyA) and the Defence Space Agency (DSA) are steps that will lead to further integration and optimisation of tri-services resources for gaining operational edge over our adversaries. To enhance our technological quotient and transfer of niche defence technologies, it is requisite for India to have strategic partnerships with the USA, Russia, Japan, Brazil, South Korea, and Vietnam.

- **Operational Level.** Hybrid warfare is a necessity. Cyber, electronic and information warriors should be part of this to fight day- to-day battle to ensure that the military capabilities are not disabled during peace and war.

- **Tactical Level.** There is a need to suitably restructure the combat units of the Indian Army so as to prepare to face future emerging challenges. Therefore, there is a need to break out from the conventional war fighting methodology. Today, mechanised columns, artillery units, command and control centres, logistic areas and even field defences are vulnerable to drone attacks and loitering smart bombs. Though conventional forces still remain irreplaceable to capture, hold and deny ground to the adversaries,

but there is a need to rethink the organisational structure of combat units to fight and win ground campaigns.



Source: Prepared by Author

Technology Roadmap

In line with the advances in niche technology by our adversaries and the Indian Army Technology roadmap, considerable impetus needs to be given for the infusion and integration of niche technology. The Equipment Philosophy focuses on infusion of futuristic niche technology, in line with the evolving/ assessed threat scenarios. This will get further impetus with the recent efforts to introduce the Integrated Capability Development System (ICADS) for Tri-Services Capability Development Planning. The Technology Perspective and Capability Roadmap (TPCR) is being evolved to provide long-term overview of capability development plans, focused direction and sufficient lead time to the defence industry for planning

technology development, partnerships and production arrangements. However, considering the nascent domestic defence industrial base, it may take some time before it truly evolves into a modern industry. Therefore, there is a need for focused impetus on 'collaboration, cooperation, and handholding' of the domestic defence industry and supporting the desired capability development goals, including lateral linkages for R&D.

- **Atmanirbhar Bharat.** To become a world power, that too when technologies are changing at a rapid pace, one cannot survive on imported technologies or weapons. No nation, in a highly competitive environment would like to share the technological edge. Critical technologies held with few advanced countries are either denied or made available with prohibitive cost and conditions. Thus, the need of the hour is to develop technologies indigenously to remain ahead of technological curve over adversaries. Self-reliance through bold and structural reforms, indigenous design and development capabilities, importing only key and critical technologies while concurrently ramping up own R&D with large-scale in-house manufacturing is the key to modernisation. It may not be possible to develop all technologies simultaneously; however, there is a need to focus on a few technologies that are considered vital and essential. Transition to the digital age requires India to shed old mindsets and re-orient our acquisition procedures more flexible and adaptive to facilitate organic growth based on long-term strategy.

- **Indian Space Programme.** The Indian space programme has made astounding progress in the field of space science and has been a game changer for India and it has made India self-reliant in the field of communication and the forecasting of natural disasters such as cyclones well in advance. In June 2020, the government announced a new organisation—**IN-Space**, as part of reforms to increase private participation in the space sector. The space sector can play

a catalytic role in technological advancement and expansion of the Indian industrial base. It would allow industries and others like students, researchers, or academic bodies greater access to space assets, that would lead to much better utilisation of Indian space resources. The economic benefits are immense in the future which can be shared by the private sector and ISRO, and ISRO can only gain by making its facilities and data available to private players. IN-SPACe will attempt to enhance the activities, including access to space assets data and activities.

Recommendations

- **Whole of Government Approach.** Rapidly changing geo-political-economic environment along with emerging technologies is impacting character of war and making future of environment more complex, ambiguous, uncertain, multi-layered and multi-dimensional. Indian Army is taking the emerging operational challenges in its stride and is well disposed to address these challenges across the entire spectrum of conflict. A whole-of-government approach towards R&D, a robust defence industry base and a marriage of interests of all stakeholders could be a way ahead.

- **Transformation.** In our methods, conducting warfare can be attributed to the top-down concept. The major difficulty is exploring future concepts, while keeping intimately involved in the current ones. It is imperative that the nation and the military must strengthen the ability to respond and escalate a conflict across virtual domains. The complexity of integrated military operations across domains, must lay down a foundation to operational doctrines, concepts which are for the future and the strategy to achieve those concepts.

- **Technological Development Roadmap for Defence Forces – Doctrinal Changes.** Unlike the conventional war wherein the direct impact is felt only by the armed forces of a nation, the impact of techno-wars will be felt by the entire nation. Thus, all instruments of power have to work in concert to fight through such an ambiguous scenario. Treading the path for developing and optimally harnessing the benefits of disruptive technology would require a top-down approach and creation of a web of linkages upwards, horizontally and downwards. The Indian Armed Forces should be intrinsically linked with these initiatives and structures. The Armed Forces have enunciated and declared doctrines for conduct of operations. Induction of disruptive technologies would certainly entail major changes. There is a need therefore, to 're-align the doctrines, structures and procedures'.

- **Structural Changes.** Eventually, the Indian Armed Forces will have to evolve to new structures to fight the next generation war. Creation of Theatre Commands and joint structures for operation, logistics and training is the way ahead. The progress towards theaterisation needs to be hastened and the Services HQ need to move towards integration. HQ IDS will have to be strengthened by giving it more teeth. Leaner, agile and technological adaptable organisation would be required to fight the high-tech war. Integrated Capability Development System (ICADS) for Tri-Services Capability Development Planning needs to be refined and implemented with full efficiency. The Technology Indigenisation Directorate could be formed as part of the Transformation Division. The current methods of fighting conventional wars may not be suitable in the future. In light of new and emerging technologies, and their successful applications, there is a need for innovative ways of force restructuring right down to the unit level.

- **Professional Military Education.** Future conflicts and wars are not likely to follow the pattern of the past as recent conflicts and events have clearly demonstrated. The present challenge therefore is to educate and adequately prepare national security leaders to enable them to look at the strategic challenges in a holistic manner and to formulate policies based on well-researched and informed inputs. This calls for a new approach to the education of national security leaders.

- **Harnessing National Talent Pool.** Ensuring greater participation of armed forces personnel, like those who hold M.Tech in systems development, should be a priority. Indian Institute of Technology (IITs) and other premier science institutes in India must be exhorted for greater integration with the Ministry of Defence (MoD), Defence Public Sector Undertakings (DPSUs) and colleges like Military College of Electronics and Mechanical Engineering (MCEME) and College of Military Engineering (CME). China is an excellent example of having structured its efforts to incorporate academia into its national security strategy, with 862 universities assigned to the defence ministry. The defence industry oversees research in the relevant areas at these universities. Every year, hundreds of students from the top Chinese universities are absorbed by the defence ministry as interns and those with the best performance are given employment. Currently, these figures are not very encouraging in India. The talent needs to be given attractive packages for such recruitment. There is, thus, a need for a conceptual reorientation if India wants to leap forward.

- **Preparing for Future Wars**. Preparing for future will involve doctrinal push or technological pull. Securing the right talent for the armed forces and the military-industrial complex is an absolute necessity. National level integration of top institutes with the Armed Forces and industry will streamline our future

requirements and make a strong support base for indigenous technologies by reducing reliance on imports.

- **Leadership.** Future leaders in the information and digital age will need to be trained through innovative instructional delivery means across a range of disciplines centred on analytical and critical thinking, technology interface, cooperative learning, and simulations. Information age future leadership will have to be collaborative, based on a shared vision, joint ownership, mutual values and technology-interfaced decision making. Leaders will have to deal with an entirely new set of cultural, intellectual and equipment challenges that were not present even a decade ago. These leaders will have to think strategically, have clarity on organisational goals, foster group cohesion, enforce discipline, and make pragmatic decisions in chaotic dynamic situations.

Conclusion

"**War is still a contest of wills, but technology and geopolitical competition are changing its character**". Though technology is the driver of future warfare but geopolitical competitions are equally important, including the ones in the economic domain. War fighting concepts have been changed primarily to exploit the opportunity that the adversary offers in a similar way to what happened between Armenia and Azerbaijan's conflict over Nagorno-Karabakh. There is a requirement to ensure that we analyse our doctrines, strategies, warfighting concepts, organisational structures, and lay greater focus on the leadership, which, in today's scenario, must have a technological mindset and acceptance to digitalisation.

The diffusion of niche technologies and connected militarisation of non-traditional domains must spur rapid integration and exploitation of technologies to prevail in all domains. China has leapfrogged far ahead in domains of space, cyber and information by adopting novel ways to absorb

disruptive technologies. The present asymmetry can only be bridged through focused and curated integration of technologies and organisational structures in identified domains. Moreover, a shared vision for future warfare is required. The ability of the armed forces to be able to fully exploit a new approach to warfare and to synchronise capabilities across all domains shall depend highly on the development of India's professional military education, starting from the soldiers to the leadership. Lastly, empowerment of all levels of leadership and acquiring the skill-set in higher leadership for decision making in a multi-domain conflict is paramount.

Major General Sanjiv Singh Slaria was commissioned into Armoured Corps in June 1990. An alumnus of National Defence Academy, the General Officer commanded an Armoured Regiment, an Independent Armoured Brigade in High Altitude Area, and the elite Counter Insurgency Force (KILO). He has been Major General (Administration) at HQ Command, before assuming the appointment of Additional Director General Armoured Corps Directorate. Views expressed are personal.

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Adaptability, Defensibility and Sustainability in the Space Domain is Imperative for Multi-Domain Operations

BISWAJIT BARICK AND GOPAL BHUSHAN

Abstract

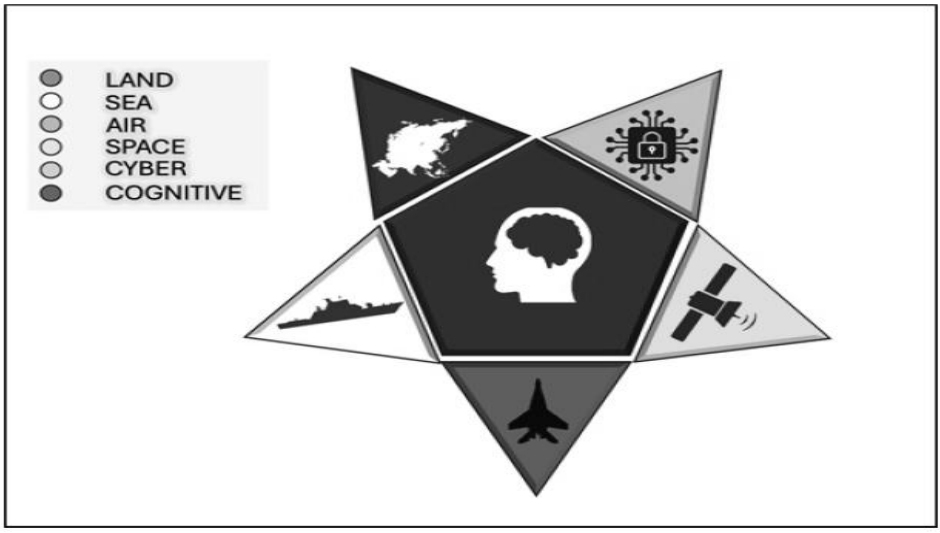
Over the centuries, warfare has changed due to the advancement of technologies and societal changes. Modern warfare has transformed traditional boundaries of the battlefield and incorporated Cyber and Space domains. This paper brings out that space as a domain has emerged and became an essential component in Multi-Domain Operations (MDO). It is also observed that the strategic success of a nation in MDO depends on its ability to ensure adaptability, defensibility and sustainability in the space domain. The paper analyses the MDO and its core challenges, lessons learnt from the Russia-Ukraine and Israel conflicts. It delves into the strategic imperatives of adaptability – from non-linear command and control to on-orbit servicing and defensibility, examining both kinetic and non-kinetic challenges. The paper also explores the critical challenge of sustainability, from space debris, anti-satellite weapons and the limitations of existing international law. Finally, it delves into the broader geopolitical consequences of space militarisation and implications for India's strategic posture

and robust space defence architecture. Towards the end, it is determined that the space domain requires institutional and doctrinal transformation, blending innovative technology and international cooperation in the ever-increasing contested orbital domain.

Introduction

On 27 August 2025, as part of the event, RAN SAMWAD, a first-of-its-kind Tri-service seminar on war, warfare and warfighting, Shri Rajnath Singh released the Joint Doctrine for Multi-Domain Operations (MDO)[1]. The Doctrine charts the way forward for integrated and synergised employment of the Armed Forces across land, sea, air, space, cyber & cognitive domains—strengthening jointness and future readiness[2]. The six domains are depicted in **Figure 1** below. MDO represents a central and evolving concept in modern military doctrine, developed primarily by the US Army to counter and defeat adversaries in all domains of competition and armed conflict[3]. This framework evolved from the Multi-Domain Battle (MDB) concept, that was introduced in 2017 following extensive wargames and exercises with joint and multinational partners[4]. The core objective of MDO is to orchestrate the "convergence of effects" by rapidly and continuously integrating capabilities across air, land, sea, cyber and space domains, including non-military activities, to present the adversary with multiple, simultaneous dilemmas and gain desired outcomes at the right place and time. The shift from a "joint" to a "multi-domain" approach is not merely a semantic change; it is a fundamental mindset transformation. “Joint operations” promotes coordination with all military domains, while in a “multi-domain” mindset, the operations go beyond military and include non-military assets, which is the key differentiating factor. NATO, in formalising its own approach, defines MDO as "the orchestration of military activities across all domains and environments, synchronised with non-military activities, to enable the Alliance to deliver converging effects at the speed of relevance"[5].

Figure 1 - Classification of Domains in Multi-Domain Operations[6]



This definition acknowledges the augmented complexity of the modern operating landscape and the need to integrate non-military instruments of power, such as diplomacy, informational and economic influence, at all stages of a conflict.

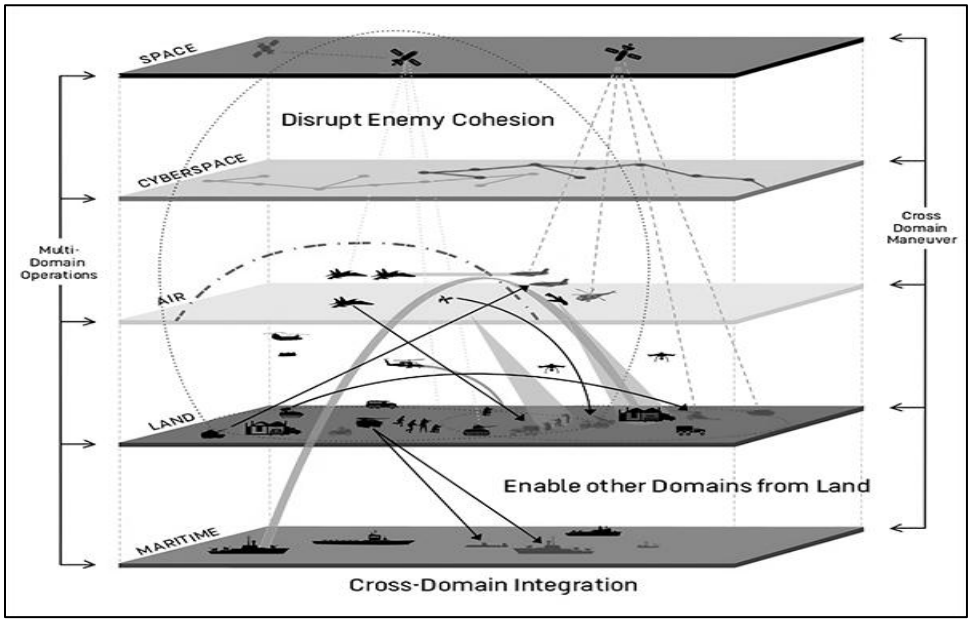
Emerging Trends in Modern Conflicts

The global landscape is undergoing a rapid transformation, and the same is experienced by the defence sector, which is shaping the modern-day strategy and operations worldwide. From the autonomous and unmanned systems to the integrated command, frameworks are setting the stage for the next era of battle. Historically, the military worldwide has been centred around manned, high-value platforms, but that is changing quickly. Militaries are now prioritising autonomous systems capable of operating across diverse conditions with minimal human intervention to ensure adaptability in contested and denied environments.

In the Indian context also, during a recent address at the tri-services conference, the Chief of Defence Staff, General Anil Chauhan, mentioned the four identified emerging trends defining modern conflicts. **First** is the **blurring of war and peace,** wherein the conflicts span a continuum from competition to combat rather than being discrete wars. The **second** trend is the **increased readiness to use force,** in which nations are viewing **s**hort-duration conflicts as a means for achieving political objectives. The **third** trend identified is the **importance of people,** in which human and moral dimensions now play a larger role in warfare. The **fourth** trend is **redefining victory,** wherein success in battle today hinges on speed, precision, and narrative dominance and not just enemy casualties[7]. **Rightly so, it is aptly clear that all these four aspects need to be applied simultaneously and coherently to achieve a decisive victory in any Multi-Domain Operations.** The emphasis on joint operations across conventional and emerging domains—particularly space and cyber—reflects a strategic shift essential for future resilience.

During the same address, General Anil Chauhan introduced the **Sudarshana Chakra** project[8], which is India's indigenous equivalent of the Iron Dome. Designed to act as both shield and sword, this tri-services air-defence system emphasises multi-domain ISR (Intelligence, Surveillance, Reconnaissance) integration across ground, air, maritime, undersea, and space domain. It relies on AI, advanced computation, data analytics, and quantum technologies[9]. Therefore, space domain forms the central part of MDO due to its persistent ISR, assured communications, resilient PNT, global missile warning, and the data transport that fuses sensors to shooters. MDO without space is largely blind, mute, and disjointed.

Figure 2 - Multi-Domain Contemporary Battlespace



The space has emerged as a war-fighting domain in the contemporary battle space depicted in Figure **2**[10], where the ISR, communications, navigation and precision targeting have become indispensable. Any means to disrupt or disable these systems will cripple the operations. Therefore, the relevance and need of anti-satellite weapons (ASATs) and jamming/spoofing threats to space-based assets need to be debated and incorporated into the doctrines for the future. Before exploring the Space domain, let us analyse the challenges in the implementation of MDO.

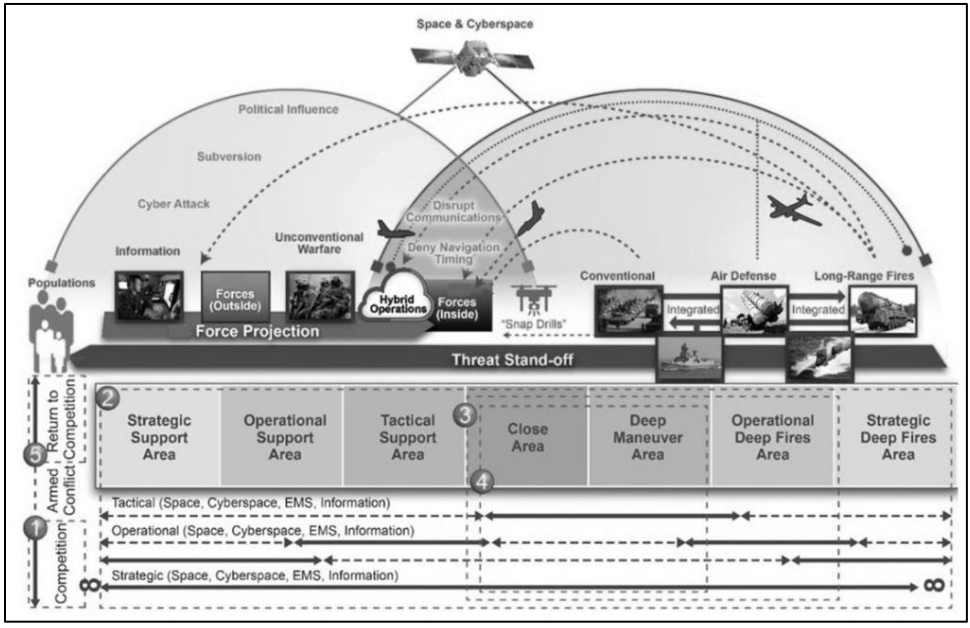
Challenges in Implementing MDO

The implementation of MDO, while conceptually simple on paper, faces significant doctrinal, organisational and technological challenges. Organisational and institutional blocks present some of the most formidable obstacles. While doctrine may evolve to reflect the need for integration, the organisational structures and training processes often lag,

creating a long-standing issue in coordinated and efficient acquisition and operationalisation. The primary challenges that emerged during various discussions and brainstorming at expert levels are listed below.

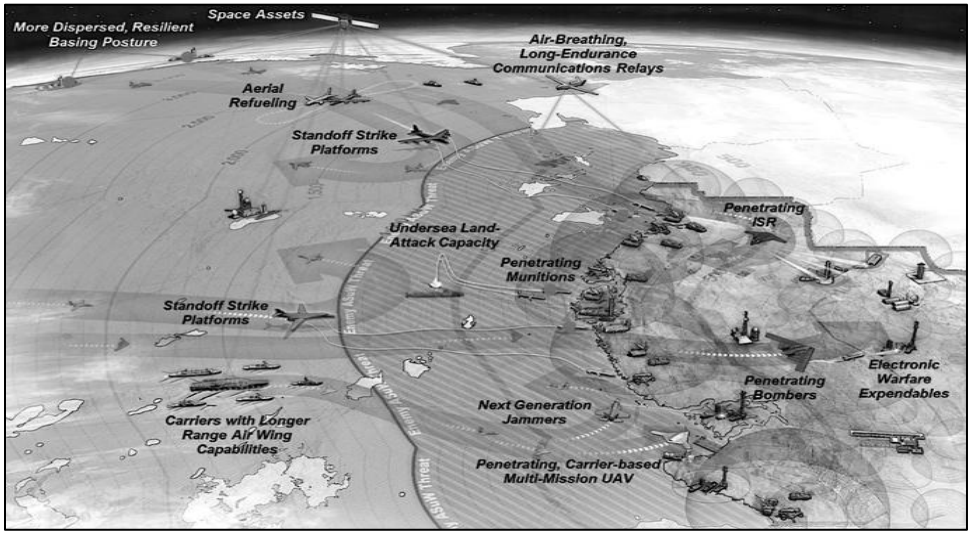
Integration and Interoperability Across Domains[11]. Traditionally, characteristics of military branches working in capability silos are required to be shattered for a successful MDO. The need for extensive interagency collaboration and information sharing across different services, components, and departments—a 'whole of government' approach—is a significant cultural and procedural hurdle that must be overcome[12]. For instance, human and procedural interoperability remains fundamental but is complicated by coalition dynamics and the rapid pace of modern warfare. This is further compounded by the obscuring of domain restrictions, where cyber, space and electronic warfare must integrate with kinetic actions in real-time[13]. The complex interplay in MDO is depicted in **Figure 3**[14].

Figure 3 – Complex Interplay in MDO



Anti-Access/Area Denial (A2/AD) Capabilities. In today's scenarios, the adversaries' sophisticated A2/AD systems create 'no-go' zones that restrict access and manoeuvrability, challenging traditional military approaches[15]. Penetrating these defences requires coordinated multi-domain efforts, such as combining cyber attacks, electronic jamming, and unmanned systems with conventional strikes[16]. The same is depicted in **Figure 4**[17]. However, accelerating targeting cycles—using AI-driven tools and live data to achieve 'simultaneity of effects'—is difficult in contested environments, where delays can prove fatal. Lessons from the Ukraine conflict highlight the need for updated doctrines to counter these threats effectively[18].

Figure 4 – Assets Needed to Counter A2/AD Systems in MDO



Technological, Institutional and Doctrinal Coordination. From a technological and logistical perspective, MDO demands an unprecedented level of resource availability and interoperability. The convergence of capabilities at the tactical level creates unique demands and potential resource shortages across all domains. The concept relies on a secure, cross-domain "network-of-networks" and "combat clouds" that can handle

immense complexity and dynamics. Thus, there is a need to shift from centralised control and decentralised execution to a distributed control approach. The decisions should be delegated to the lowest operationally competent level. Such a shift requires new doctrinal concepts to enhance flexibility, redundancy, and decision-making speed. The organisations in today's scenario need to reorganise and adapt to the latest technologies and evolve in the MDO in future.

Ready Force vs. Future Force Gap. MDO requires all the available forces to operate in a particular manner for deeper integration with seamless coordination. There exists a gap between the ready force and the future force. The critical gap between current operational capabilities and future systems is, firstly, maximising existing platform capabilities through focused upgrades; secondly, developing autonomous systems as force multipliers rather than replacement; and thirdly, building sustainable logistics and domestic weapons production[19].

In summary, while MDO offers advantages in contested environments, overcoming these challenges requires investment in joint doctrines, technology convergence and agile procurement to prepare the force for the desired future. Therefore, understanding every domain in MDO holds the key to success. Now, that we have seen the challenges, let us explore the space domain, which has gained a prominent place in the layers of MDO.

Imperatives of Space Domain in MDO

Lessons from Contemporary Conflicts. The conflicts in Russia-Ukraine and Israel have provided a crucial test bed for MDO principles, demonstrating the essential and contested nature of the space domain in modern warfare. The conflict in Ukraine is widely regarded as the first major war where both sides relied on spatial capabilities, marking a new paradigm in orbital confrontation[20]. A key novelty has been the unprecedented and rapid involvement of private space corporations,

which have provided a significant tactical and strategic advantage to Ukraine. In the opening hours of the war, a Russian cyber attack disabled much of Ukraine's Viasat commercial internet, a critical communication link for fire missions and situational awareness. In response, Ukraine swiftly adopted SpaceX's Starlink satellite internet, which filled the void and proved so vital that some Ukrainian commanders believed the war could have been lost without it. Similarly, commercial ISR providers such as Maxar, Planet Labs, and ICEYE supplied high-resolution satellite imagery, enabling Ukrainian forces to locate and destroy hundreds of Russian assets[21].

While the use of these commercial assets was a decisive advantage, it also served as a poignant example of the 'double-edged sword' of reliance on non-state actors. The informal agreement between Ukraine and SpaceX, struck initially over social media, demonstrated a lack of governmental oversight and contractual safeguards. This exposed a profound geopolitical vulnerability, as a company's goals and corporate interests could conflict with a nation's strategic priorities. The experience highlighted the critical need for formal contracts and indemnification clauses to protect government interests and ensure the continuity of services during a conflict. The reliance on private industry for critical military capabilities is a new and complex dynamic that necessitates a re-evaluation of government-private sector partnerships in an era of "space capitalists"[22].

While the **Israel-Gaza conflict** is a localised ground war, its context reinforces the status of space as a contested domain. It has been observed that the reliance of militaries on space-based capabilities for ISR, command and control (C2), and positioning, navigation, and timing (PNT) creates a constant struggle in orbits by any warring states. The ongoing anti-space activities of jamming and spoofing satellite signals to degrade the effectiveness of precision-guided munitions and ground communications

demonstrated that space has transformed itself from just a supporting theatre to an integral and active part of MDO in every modern war.

Adaptability in the Space Domain

Every terrestrial war is now simultaneously a space and cyber war, requiring identification and active monitoring of threats from space assets and threats to space assets from rival states[23]. Adaptability is a fundamental requirement for success in MDO, and it is particularly vital for the space domain. As modern warfare becomes non-linear and unpredictable, traditional, rigid plans are becoming less effective. The new paradigm demands an ability to adapt to a constantly changing operational picture, which can only be achieved through a distributed control approach. This means modern C2 systems must evolve away from a single, centralised commanding node, which is a vulnerable target, towards "adaptive networks of networks" that enhance redundancy and resilience[24]. These distributed networks are designed to allow units to work offline and later rejoin the network, ensuring the flow of data and information even when a central node is compromised.

On-Orbit Servicing (OOS). A key component of this adaptability is OOS, which is the process of repairing, refuelling or upgrading satellites in space. OOS is a pathway to a responsive space enterprise, as it enhances the operational life and flexibility of spacecraft without the need for a costly and time-consuming new launch[25]. Historical projects, such as the Space Shuttle missions to the Hubble Space Telescope, and modern initiatives, including DARPA's Orbital Express program and commercial successes like Northrop Grumman's Mission Extension Vehicle (MEV-1), demonstrate the growing feasibility of these capabilities[26]. The strategic value of OOS is amplified in the context of attrition warfare. The development of low-cost, 'attritable' satellites[27] has enabled nations to target and destroy adversaries' space assets with minimal economic effect. The OOS capability by a nation provides an operational edge, reduces the economic burden of new launches and enhances strategic flexibility and

resilience. This makes OOS a critical component of a nation's adaptability and long-term defence posture in the space domain.

Defence: Countering Threats in a Contested Domain

The strategic shift of space from a benign operational environment to a warfighting domain has made defence a paramount concern for spacefaring nations[28]. The US Space Force, for example, has evolved from a historical "deliver" mission to a "protect and defend" mission in response to the expanding counterspace threats from Russia and China[29]. These threats exist across a spectrum, from kinetic to non-kinetic attacks.

Kinetic threats involve the physical destruction or incapacitation of satellites. Anti-satellite weapons (ASATs), which can be launched from the ground (direct-ascent) or another satellite in orbit (co-orbital), have been successfully tested by a few countries, including China, India, Russia, and the US. These tests are demonstrations of capability and deterrence, but they pose a grave threat to the long-term viability of the orbital commons.

Non-kinetic threats are less visible but no less destructive. They include jamming and spoofing, which disrupt or falsify satellite signals for communications and navigation[30]. The Russia-Ukraine conflict showed how Russian electromagnetic attacks degraded the hit rates of advanced GPS-guided munitions, forcing a "cat-and-mouse game" of developing counter measures. Cyber attacks on ground-based infrastructure and C2 systems also pose a significant vulnerability, as demonstrated by the Russian cyber attack on Viasat at the start of the conflict.

A more complex and challenging dimension of modern space warfare is "grey zone" conflict[31]. Grey zone tactics operate below the threshold of declared armed conflict, characterised by strategic ambiguity and actions that are difficult to attribute or define as an act of war. In space, this could involve a satellite performing 'close proximity manoeuvres' to another asset, which could be an inspection or a deliberate act to render the satellite unreliable without physically destroying it[32]. The dual-use capability of

space assets makes them more vulnerable, wherein state actors can also wrap their military objectives behind civilian operations. This strategic ambiguity in space operations permits an adversary to carry out non-kinetic anti-space activities and make it difficult for the target nation to justify a proportional military response[33].

Sustainability: Navigating a Congested and Contested Environment

The proliferation of counterspace capabilities and the increasing number of space actors pose a severe threat to the long-term sustainability of the space environment. A primary concern is the creation of space debris, particularly from kinetic ASAT tests, which can lead to a 'cascading chain of collisions' known as the Kessler Syndrome[34]. This debris poses an indiscriminate threat to all space assets—from military satellites to civilian navigation systems, and could effectively limit or deny access to certain orbital altitudes for generations.

The international legal framework governing space is currently insufficient to address these modern threats[35]. The Cornerstone Treaty, the 1967 Outer Space Treaty (OST), prohibits the placement of nuclear weapons or other weapons of mass destruction in orbit but does not explicitly ban conventional weapons. The lack of a clear legal definition of a "space weapon" and the inability of treaties to enforce their provisions against "grey zone" tactics create a permissive environment for weaponisation[36]. While a recent UN resolution on a moratorium on destructive direct-ascent ASAT tests has garnered wide support, such measures are often voluntary and fail to address the full spectrum of non-kinetic and 'grey zone' threats[37].

The debate over space security reflects a core theoretical dilemma in international relations between neorealism and neoliberal institutionalism[38]. Neorealists argue that in an anarchic international system, militarisation and capability development are the most effective means of ensuring national security in space. Neoliberals, conversely,

believe that international institutions and treaties are a more effective method. The empirical reality of the space domain, to date, seems to support the neorealist position—despite international efforts towards cooperation, the development and testing of military capabilities are driving the security debate, and the mere subscription to treaties has not been shown to have a positive influence on security outcomes.

Global Implications and India's Strategic Imperative

The New Geopolitical Landscape. The global balance of space power is being reshaped due to the growing accessibility of space and the rapid development of counterspace capabilities by nations[39]. The space domain, which was once the exclusive domain of few nations, has become a critical arena for strategic competition. The growing potential of the space arms race and the dual-use nature of space technology further complicates this landscape. The lines between peaceful and aggressive activities[40] are getting blurred in today's scenario. This strategic ambiguity contributes to a climate of distrust and rising tensions amongst the space-faring nations.

Implications for India's Space Security. India's space program, historically focused on civilian development and socio-economic applications, has undergone a profound strategic awakening. The 1999 Kargil War served as a crucial catalyst, exposing the significant disadvantage of Indian forces due to lack of dedicated satellite imagery[41]. This experience augmented the integration of space assets into national security planning and marked a shift from a passive reliance on satellites as a force multiplier to an active posture of space denial and resilience. India has established key institutions, including the Defence Space Agency (DSA) to operationalise counterspace capabilities and the Defence Space Research Organisation (DSRO) to strengthen military-civilian coordination and explore emerging technologies. This institutional restructuring is further reflected in India's new MDO doctrine, which charts a path for the integrated employment of armed forces across all domains, including space and cyber. The ₹26,968-crore Phase 3 of the Space-Based Surveillance

(SBS) programme, which was cleared by the Prime Minister-led Cabinet Committee on Security in October last year, is a positive step. The project includes the launch of 52 satellites—21 to be built and launched by the Indian Space Research Organisation (ISRO) and 31 by three private Indian companies. The Defence Space Agency (DSA), which functions under the Integrated Defence Staff (IDS) of the Ministry of Defence, is leading the project.[42] The creation of a Chief of Defence Staff (CDS) and the move towards Integrated Theatre Commands are also central to this effort, promoting the jointness and synergy necessary to conduct complex MDO[43].

Lessons Learnt during Op Sindoor

The implications for India's space domain can be interpreted and aligned with the briefing of General Anil Chauhan, Chief of Defence Staff, during 'Ran Samvad' are listed below: -

- In modern conflicts, satellites for ISR, communication, navigation, and precision targeting are indispensable. Disabling or disrupting these systems could cripple operations. Therefore, India's MDO doctrine must anticipate **anti-satellite weapons (ASATs)**, **cyber intrusions on space assets**, and **jamming/spoofing threats;** remedial measures could also be outlined.

- The proposed **Sudarshana Chakra air defence shield**[44] relies heavily on **space-based ISR and early warning systems**. Integration across multiple domains need resilient space infrastructure—both indigenous satellites and protected constellations. Therefore, India must invest not only in missile interceptors but also in **LEO satellite constellations, space situational awareness (SSA), and counter-jamming capabilities**.

- There is a need for "Scholar, Tech, and Info Warriors" to understand the space domain and work to capitalise on the same

for future conflicts. 'Scholar Warriors' should study global trends in space militarisation, legal loopholes in the Outer Space Treaty, and space deterrence models. 'Tech Warriors' should design AI-driven satellite networks, counter-ASAT systems, and resilient communications, and 'Info Warriors' should shape the narratives around India's space posture, countering disinformation about 'weaponisation vs defensive preparedness.'

India's strategic posture is unique in its commitment to strategic autonomy while navigating a complex security environment with adversaries like China and partners like the United States[45]. This stance is evident in its new Indian Space Policy 2023, which formalises the role of non-government entities and a public-private partnership model[46]. This mirrors the US reliance on commercial space, signifying a global convergence on the idea that national security in space cannot be achieved by government agencies alone. Furthermore, India's indigenous approach is highlighted by the Indian Space Research Organisation (ISRO)'s active development of technologies for "in-orbit servicing," including a "Walking Robotic Arm" and a "Debris Capture Robotic Manipulator"[47]. This demonstrates a proactive, indigenous approach that directly addresses the strategic imperatives of adaptability and sustainability, positioning India as a key player in the new space paradigm, rather than a mere acquirer of foreign technology.

Conclusion

The space domain is no longer an ancillary feature of modern warfare but a central theatre of operations, inextricably linked to the success of MDO. The evidence from contemporary conflicts underscores the dual nature of space—it is an indispensable enabler for intelligence, command, and precision, yet its centrality makes it a primary vulnerability. The Russia-Ukraine conflict demonstrated the tactical advantage conferred by a robust commercial space ecosystem, while simultaneously exposing the geopolitical and contractual risks of reliance on non-state actors. The global

security environment is increasingly defined by 'grey zone' conflicts, where strategic ambiguity and dual-use technologies are leveraged to achieve military objectives without crossing the threshold of armed conflict. Addressing these realities requires nations to move beyond traditional military silos and embrace the principles of adaptability, defence, and sustainability. This includes a shift to distributed, resilient command and control networks, the development of robust counterspace capabilities across the kinetic and non-kinetic spectrum, and a proactive posture to ensure the long-term sustainability of the orbital commons. However, the analysis shows that the current international legal framework is ill-equipped to regulate this new era of competition, confirming that capability development, rather than treaty commitments, is the primary driver of national security in space[48].

For India, the path forward is clear—it must continue to leverage its strategic autonomy to build a resilient, indigenous, and integrated defence architecture. This involves fostering a dynamic public-private space ecosystem, investing in cutting-edge, dual-use technologies, and evolving its military doctrine to ensure full integration across all domains. By doing so, India can secure its position in the new multi-domain geopolitical landscape, deterring adversaries and shaping norms for a more stable orbital future.

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India–Russia Energy Cooperation: Strategic Stability and Geopolitical Realignments in the 21st Century

SHANTONU ROY

Abstract

The strategic and geopolitical cooperation between India and Russia has undergone drastic changes in the present scenario of the unipolar world, with China and Russia striving to be the other poles other than the USA. India and Russia also are striving to have regional partnership to the dislike of many. This friendship is rooted in history with mutual interests and must align with geopolitical changes, such as the rise of China and fluid dynamics in global security. Chances created for deeper economic integration, technology exchange, and joint geopolitical strategies provide better potential gains. Balancing national interests and calling out to global pressures will require both countries to innovate and reinforce their strategic cooperation in the face of emerging global uncertainties. Now, after the tariff arm twisting by Trump with Russia, India and China, there is an emergence of a new Asian Triad to downplay the unipolar world created by the US. The essence of today's world geopolitics is a creation of a multipolar world which will give the dollar a run for its worth. In conclusion, the

India-Russia strategic partnership is at a critical juncture, requiring adaptive strategies and innovative approaches to thrive in the new global order. While the partnership faces considerable challenges from shifting global dynamics, it also has the potential to evolve and strengthen through focused collaboration. Navigating these complexities effectively will determine the future trajectory of this enduring yet dynamic relationship.

Introduction

The strategic and geopolitical bonhomie between India and Russia has seen sea changes in the present arena of the unipolar world, with China and Russia trying to be the other poles other than the USA. India and Russia also are trying to have regional cooperation to garner support for each other against the present world powers and their partnership faces separate challenges. This friendship goes deep into history with mutual requirements and needs. This has to align with the geopolitical changes, like the stellar progress of China and the fluid dynamics of the global security postures. Chances created for deeper and constant economic integration, technology exchanges, and joint geopolitical strategies provide better potential gains for cementing ties for progressive growth of all concerned. Balancing national interests, requirements and calling out to global pressures will need both countries to innovate and reinforce their strategic cooperation alongwith varied postures and alliances in the face of emerging global uncertainties, with the constant tariffs and sanctions by America to arm twist. The Russia –Ukraine war has also been a grave bone of criticism and holds a cloudy sky over growing India-Russia relations.

Historical Foundation of Strategic Relations

India and Russia has been maintaining good record of strategic involvements and cooperation to assist each other, which have come forth significantly since India's independence. The basis of this relationship was founded during the Cold War era, when India, supported a policy of non-alignment, but had alignments towards the Soviet Union for economic and

military support. The Soviet Union's assistance towards India during critical moments, such as the Indo-Pak War of 1971, forged this relationship into signing of the Treaty of Peace, Friendship, and Cooperation of 1971. The arrival of the Soviet fleet stalled the move of the Seventh Fleet into the Bay of Bengal and India could get a decisive victory over Pakistan.

The historical roots of India-Russia relation dates back to the pre-independence era, with initial contacts formed during the Soviet period. After independence, India wanted to become a sovereign nation with a vibrant foreign policy. But, geopolitical ups and downs and similar interests got India closer to the Soviet Union, not to talk about USA favouring Pakistan at that point of time over India. The Soviet Union gave substantial military, economic, and technological assistance to India, assisting it to build a strong defence and industrial base.

During the Cold War, Indo-Soviet relations was highlighted by mutual trust and cooperation. The Soviet Union became India's largest defence partner, giving it advanced weaponry and technology like the fighter planes, ships and tanks. Majority of our military hardware is Russian till date and we have found these to be effective in all our conflicts with our adversaries. This partnership was not merely skin deep but had depth as it was giving out a common vision of a multipolar world and mutual support to each other in international arenas. The Soviet Union constantly helped us during the nascent days of growth on major issues, including its stance on Kashmir and its opposition to apartheid in South Africa including constantly backing us for our seat in the UN General Assembly.

The disintegration of the Soviet Union in 1991 was a flash point in India-Russia relations. Despite these initial hitches and the changing global dynamics, both nations continued to strengthen the strategic relation. The Russian Federation, as the subsequent state to the Soviet Union, constantly considered India as a key ally in Asia. The declaration of strategic partnership in 2000 and the elevation of this relationship to a "special and

privileged strategic partnership" in 2010 reflected the depth and resilience of India-Russia ties.

Throughout the 21st century, India and Russia kept cooperating in various sectors, including defence, nuclear energy, space, and technology. The annual India-Russia forums and constant multi-level exchanges have assisted in solidifying this partnership. Both countries have also assisted in multilateral forums such as BRICS, the Shanghai Cooperation Organisation (SCO), and the United Nations, calling out for a multipolar world dynamics and try out for reformations of various global governance structures.

The foundation of India-Russia partnership is founded on the basis of trust, mutual respect, and partnerships. Inspite of global geopolitical dynamics, this relation has stayed robust and continues to flourish, adapting to the new challenges and opportunities in the changing new world order. Presently, energy or oil is the bone of contention with US as India still stands firm with Russia by purchasing its oil to keep its economic condition stable. In turn, Russia may provide India with fifth generation fighter aircraft as this is a dire requirement in today's scenario with Pakistan. India has not marked out the SU 57 from its list of probables.

Energy Security

Energy security is another critical area wherein India and Russia are enhancing their strategic partnership. Russia, with its vast reserves of oil and natural gas, plays a crucial role in India's expanding energy requirements. Here, it is impertinent to mention that the world and European nations also need this gas and oil to cater to their energy requirements. Long-term agreements for the supply of crude oil and natural gas, tied up with investments in all kinds of sectors, will create a stable energy supply for India. Also, cooperation in the field of renewable energy, particularly in solar and wind energy, can be mutually helpful. Collaborated ventures in nuclear energy, building on the success of the

Kudankulam Nuclear Power Plant, can further bolster energy ties. Such partnerships not only helps to maintain energy security but also gives way to technological exchange and capacity building as energy is also a key factor for a growing industrial base.

Cooperation in the Energy Sector

In 2023, Russia was the oil supplier with maximum gallons given to India. The energy sector is an area of importance in the Indian–Russian coalition. In 2001, ONGC-Videsh had a 20% stake in the Sakhalin-I oil and gas project in the Russian Federation. There was an investment of about US$1.7 billion in the venture. Gazprom, a Russian company, and Gas Authority of India have partnered together in a joint development of a block in the Bay of Bengal. Kudankulam Nuclear Power Project with two units of 1000 MW each is a shining enterprise of the India–Russia nuclear energy cooperation. Russia and India have both expressed interest in the growing cooperation in the ever fluid energy sector.

In 2012, Gazprom Group and India's GAIL got together for LNG shipments to India—of 2.5 million tons a year for a period of 20 years. LNG shipments for this agreement were regularly delivered between 2017 and 2021. Indian oil companies have invested in Russia's oil sector, a clear example is ONGC-Videsh which has invested over $8 billion with major stakes in oil fields such as Sakhalin-1. In a joint statement both the governments stated that, "It is expected that Indian companies will strongly participate in projects related to new oil and gas fields in the territory of Russian Federation. The sides will study the possibilities of building a hydrocarbon pipeline system, connecting the Russian Federation with India."

In the ensuing war between Russia and Ukraine, India brought discounted Russian oil and Russia became India's second biggest supplier of oil in May, pushing Saudi Arabia into third place but behind Iraq which remains at first place. The data analysis is that, Russian oil is 18% of India's

crude imports. Indian energy reliance on Russia is increasing, as imports of Russian liquid gas, crude oil and coal became three times, reaching to almost US$5 billion in the first half of 2022. After January 2023, Russia has become India's topmost oil supplier, replacing Iraq. India's oil imports from Russia went to fifth straight month in November, accounting for 23% of India's overall import of 4 million bpd oil—4% higher than imports from Russia in October.

Russia is committed to create more than 20 nuclear reactors in the coming 20 years. Putin stated in an interview, "Russia contains plans to build over 20 nuclear power units in India, as well as cooperation in building Russia-designed nuclear power stations in third countries, in the joint extraction of natural uranium, production of nuclear fuel and waste elimination."

In June 2025, most of the US senators gave support for secondary sanctions against Russia that would impose 500% tariffs on countries that purchase Russian oil, natural gas, uranium and other exports. India is one of the main purchaser of Russian energy and seemingly will stay that way. Now, there seems to be an Asian Triad of India – Russia – China coming up against Trump's maverick ways of arm twisting and isolating US in trade and other sectors. This has caused Trump to soften his stand and also has tried considering the tariffs and sanctions.

Bilateral Economics

Bilateral trade of the two countries are revolving around the major value chain sectors. The sectors spreads across varied fields of machines, aerospace, electronics, automobile, chemicals, commercial shipping, pharmaceuticals, precious stones, fertilizers, apparels, industrial metals, coal, petroleum products, high-end tea and coffee products.

Bilateral trade in 2002 was staked at $1.5 billion and was hiked up by more than seven times to $11 billion in 2012—just five months after 2022

impact, bilateral trade between Russia and India reached a record growth of $18.229 billion. Just for records and comparison, last year this figure went to $13.124 billion, and the year before that to $8.141 billion during pandemic. Presently, Russia is India's seventh largest trading partner, coming up to this place from the 25th position last year. Russia's share in India's total trade volume went upto 3.54% in comparision to 1.27% in 2021–2022, and with this growing trend, both governments are creating a bilateral money target of over $30 billion by 2025 which they are achieving with cooperation.

Now, after the tariff arm twisting by Trump with Russia, India and China, there is an emergence of a new Asian Triad to downplay the unipolar world created by the US. The essence of today's world geopolitics is the creation of a multipolar world which will give the dollar a run for its worth.

The India-Russia-China Triad

The present state of India, as one of the fastest growing economies, has got a slight jolt with the 50% tariff hike by USA. Trump is ready to damage ties with India because of its closeness to Russia and also his personal business agenda in Pakistan dealing with rare earth minerals in Balochistan and cryptos. Also, it has been proved in the past during the Cold War and 1971 that USA will side with Pakistan. USA has never been vocal about Kashmir either or has supported India about its seat in the UN General Assembly. However, US will keep some defence ties in place to keep the QUAD alive, because it serves their purpose to keep the Indian Ocean and Pacific Ocean open for trade routes.

In this situation, the next best option is to garner up a Triad within the Asian countries to improve trade. China is also growing at a fast rate and has given US a run for its dollar and also has been a victim of the trade war with tariffs being pushed upto 125 to 150 %, but then there has been a lull in the tariff battle with them. This is because, though US is China's major

market with 20% imports, but China can deviate its markets to other countries. But, here USA will have problems because their manufacturing agencies will not be able to fulfill the requirements at the cost at which China gives the products. This will cause a product deficit in the US. Also, the US is scared of the currency which the BRICS want to initiate, as this will make the dollar lose its sheen. The economies of the BRICS are large economies with which India can establish trade ties to offset the US tariff rise. Out of the BRICS countries, Asia has China and Russia. Though, Russia is presently on a low ebb due to the ongoing Ukraine war, but yet it is a power to reckon. Here, it is impertinent to mention that Europeans were purchasing Russian oil, that had to take a backseat due to the ongoing Russia-Ukraine war. Thereafter, Saudi Arabia came into fill the void. India, alternatively, could purchase the Russian oil and sell the same to European countries at a cheaper rate. So it is a win - win situation for all except US and Saudi Arabia which the US did not like.

The recently concluded SCO Summit at China brought out a new global dynamics with the Russia – China – India partnership, though there are challenges. China has openly supported India in this tariff war with US. President Xi Jinping and Prime Minister Narendra Modi have decided together to expand trade and investment ties to bolster global commerce, and deepen bilateral ties to combat the challenges in global dynamics. This is alongwith the backdrop of tariff warfare that Asia's two largest economies face from the US. Then, there was this visit by the Chinese Foreign Minister to India where many tie-ups were discussed, showing a positive upsurge. The only dark shadow is whether the Chinese be trusted. Then, we have their open support for Pakistan and our land disputes which have reached no logical conclusion. And, we are against their Belt Road Initiative and our IMEEEC (India-Middle East-Europe Economic Corridor) is their equivalent. If there are dynamics where China opens its market, to some extent, it can help reduce the deficit. The markets of Russia and China are very important to tap on. If the US tariffs cause a 15–25%

dent, getting the pressure down by strengthening ties with China and Russia would be critical.

Conclusion

The India-Russia strategic cooperation, laid forward by ages of cooperation and common interests, faces a changing and growing global dynamics that presents both challenges and opportunities. As the world goes on to a multipolar order with emerging world power centres, traditional pillars of the India-Russia partnership are being tested and redefined. The emergence of the new Asian Triad also gives India–Russia relation a new look in the global arena.

Consequently, the relationship holds significant potential. Both countries have a common interest in countering terrorism, ensuring regional stability, and fostering economic growth. The confluence of their strategic objectives offer a base for enhanced cooperation in fields such as defence, energy, and technology. By asserting their respective strengths, India and Russia can address common challenges and gain on emerging opportunities, such as advancements in energy technology and regional security collaborations.

In conclusion, the India-Russia strategic partnership is at a critical juncture, requiring adaptive strategies and innovative approaches to thrive in the new global order. While the partnership faces considerable challenges from shifting global dynamics, it also has the potential to evolve and strengthen through focused collaboration. Navigating these complexities effectively will determine the future trajectory of this enduring yet dynamic relationship.

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Green Alternative to the Strategic Petroleum Reserve (SPR) of India

KUNAL KASHYAP

Abstract

The SPR of India is a buffer against global oil supply disruptions. However, the economic, operational, and environmental burdens of storing crude oil, which include high capital costs, limited refining flexibility, and a large carbon footprint, necessitate a more sustainable solution. The paper proposes partial to full replacement of crude-based SPR with a green ammonia-based Strategic Energy Reserve (SER) powered by solar photovoltaics. It captures the technical, financial, and environmental feasibility of transitioning to a green ammonia reserve. It also explores retrofitting existing SPR rock caverns for safe ammonia storage. Leveraging India's abundant solar potential and expanding the hydrogen economy, the SER presents a low-carbon, future-ready model for energy security. Beyond energy security, the SER offers multiple strategic advantages: reducing crude oil imports, strengthening domestic fertiliser supply through ammonia and creating export opportunities for green ammonia. These benefits align with India's net-zero ambitions while enhancing industrial and agricultural resilience.

Introduction

India's pursuit of energy security, economic resilience, and climate sustainability stands at a decisive turning point. For decades, the country's growing dependence on imported crude oil has underscored the importance of its Strategic Petroleum Reserve (SPR)—a critical safeguard against geopolitical disruptions, supply shocks, and price volatility. While the SPR has historically served as an indispensable tool for national energy security, the accelerating global transition toward low-carbon systems presents new challenges to its relevance and sustainability. Conventional fossil fuel-based reserves increasingly impose economic, operational, and environmental burdens, making them less compatible with India's long-term decarbonisation and energy independence goals. Against this backdrop, this paper advances a bold alternative to SPR infrastructure: replacement or integration of fossil-based strategic reserves with a green ammonia-based Strategic Energy Reserve (SER) powered by solar photovoltaic (PV) energy. Green ammonia, produced using renewable electricity, water electrolysis, and nitrogen separation followed by Haber–Bosch synthesis, offers a zero-carbon, domestically sourced energy carrier capable of serving as a scalable and sustainable reserve.

An emphasis is also placed on the storage of enormous volumes required to match India's existing reserve capacity with an unconventional yet potentially cost-effective option of retrofitting underground rock caverns. By critically analysing the techno-economic dimensions of this energy paradigm shift—including production costs, infrastructure requirements, and policy support—the study provides a comprehensive basis for decision-making. Ultimately, this paper seeks to offer a strategic blueprint for India's transition toward sustainable energy independence.

SPR System and Proposed SER

SPR. India's SPR program, developed under the aegis of Indian Strategic Petroleum Reserves Ltd. (ISPRL), plays a vital role in ensuring

energy security by storing crude oil for emergencies. As of 2025, India's SPR infrastructure comprises underground rock caverns in Visakhapatnam (1.33 MMT), Mangalore (1.5 MMT), and Padur (2.5 MMT), totalling 5.33 million metric tonnes (MMT) of crude oil storage. The International Energy Agency (IEA) mandates member countries to maintain reserves covering 90 days of net petroleum imports to ensure stability during supply shocks. However, these facilities are designed to offer a buffer stock equivalent to approximately 9.5 days of India's oil demand, supplementing the commercial reserves held by refiners. Despite its strategic importance, maintaining SPRs has proven economically demanding, dependent on the external supply chain and environmentally detrimental. The capital-intensive nature of constructing and operating underground storage caverns, coupled with non-revenue-generating nature of the reserves, poses significant financial challenges. For instance, the first phase of SPR development cost an estimated ₹5,000–6,000 crore ($600–700 million), with Phase II expansions underway in Chandikhol (Odisha) and Padur (Karnataka) adding further fiscal burden, amounting to an estimated 5,800 crore. Moreover, SPRs are operationally rigid—requiring extensive downstream infrastructure for refining and transport—and are vulnerable to global crude market dynamics. It should be noted that every ton of crude oil stored and eventually consumed results in approximately 3.38 tons of CO_2 emissions. Over the full 5.33 million tons in the SPR, this translates to a whopping 18 million tons of CO_2.

Figure 1: SPR Sites of India

Green Ammonia-Based SER

Ammonia is emerging as a leading hydrogen carrier due to its favourable storage and transport properties. Unlike liquid hydrogen, which requires cryogenic conditions of around –253 °C, ammonia can be stored as a liquid at –33.6 °C and 0.1 MPa, or even at ambient temperature under moderate pressure, making it easier and cheaper to handle. With a volumetric hydrogen density of 121 kg H_2/m^3, ammonia is 1.7 times denser than liquid hydrogen, reducing storage needs and transport costs. Its existing infrastructure, including chemical tankers, supports efficient global transport. Furthermore, ammonia production can be carbon-neutral when synthesised via a renewable energy route and termed 'green ammonia'. Here, hydrogen is generated through water electrolysis powered by renewable energy and combined with nitrogen via the Haber–Bosch process. Green ammonia integrates solar PV-generated electricity with proton exchange membrane (PEM) based electrolysis and air separation units (ASUs). This sustainable process yields ammonia with minimal greenhouse gas emissions, making it suitable for multiple sectors: fertilisers, power generation, marine fuel, and hydrogen transport.

India is particularly well-positioned to harness the potential of green ammonia. With its abundant solar radiation, rapidly falling renewable energy costs, and supportive government policies (such as the National Green Hydrogen Mission), India can become a global leader in clean fuel production. The paper envisions a transformative strategy where green ammonia, produced from solar PV installations, replaces fossil fuels in India's energy security framework. This would mark a significant shift from import-dependent crude oil storage to self-reliant, clean energy-based reserves. This paper proposes replacing or partially substituting crude oil-based SPR with green ammonia-based Strategic Energy Reserve (SER).

Strategic Objectives of the SER. The proposed Strategic Energy Reserve (SER) anchored on green ammonia, aims to achieve five primary national objectives:

- ***Reducing Import Dependency:*** By substituting crude oil with domestically produced green ammonia, India can drastically lower its crude oil import bill, which currently exceeds $100 billion annually.
- ***Creating a Green Export Ecosystem:*** Green ammonia can position India as a clean fuel exporter to countries like Japan, South Korea, and the EU, which are aggressively pursuing decarbonisation goals.
- ***Supporting the Agricultural Sector:*** Ammonia is a key feedstock in fertiliser production. Domestic green ammonia can stabilise fertiliser prices, reduce import dependency, and bolster food security.
- ***Cutting GHG Emissions:*** By replacing fossil fuels with green ammonia produced from renewable electricity, India can reduce CO_2 emissions from SPR operations and align with global climate targets.
- ***Enabling Energy Flexibility and Resilience:*** Unlike SPRs, which are monolithic and fossil-centric, SERs based on green ammonia are modular, scalable, and adaptable to future clean energy applications.

SPR Volume

India's oil import and export volumes form a critical foundation for national energy security analysis, with the Petroleum Planning and Analysis Cell (PPAC) serving as the main repository of statistical data. The PPAC regularly publishes extensive monthly and annual figures, detailing both crude oil and refined petroleum product import and export statistics. By leveraging this data, analysts can estimate India's net daily oil imports,

which constitute a key input for determining the adequacy of the Strategic Petroleum Reserve (SPR). For example, in the fiscal year 2023–24, India imported roughly 232.5 million tonnes (MMT) of crude oil while exporting approximately 62.44 MMT of petroleum products, indicating a robust trade movement and the country's position as both a major importer and a significant exporter due to its large-scale refining capacity.

Despite PPAC's rich datasets, a notable limitation remains: the lack of publicly available data on oil stock changes, which refers to fluctuations in the quantity of oil stored within the country. Stock change figures are essential for precisely calculating net imports, as they reflect whether the nation's inventories have increased or decreased during a given period, representing oil that has entered or exited storage rather than being directly consumed or exported. In the absence of this data, assessments of India's net oil imports are based exclusively on annual import and export volumes. While this approach is reasonable for estimating consumption trends and benchmarking SPR requirements, it does introduce an element of approximation, as it cannot fully capture unexpected surges or reductions in domestic storage inventories.

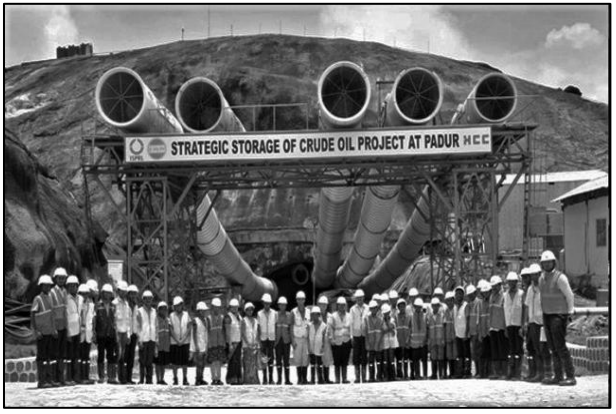

Figure 2: SPR Site at Padur

Nevertheless, the import and export volume data remain indispensable for planning and policy. Based on 2022–23 and 2023–24 figures, India's annual net crude oil import requirements consistently hover above 230 MMT, with the country importing close to 88% of its total consumption as domestic production continues to lag. These volumes serve as benchmarks for sizing

of the SPR infrastructure, which currently includes sites at Visakhapatnam, Mangalore, and Padur. The present SPR capacity is approximately 5.33 MMT—enough to cover about nine days of national demand at today's consumption rates, much lower than the International Energy Agency (IEA) standard of 90 days. This shortfall has prompted ongoing expansion plans, with volume targets and infrastructure investments set according to the rolling aggregate of net import and export data. In summary, volume statistics sourced from PPAC, even without stock change provisions, play an indispensable role in India's petroleum security projections and strategy formulation.

Volume of Green Ammonia: Replacing the Crude Oil

Phase 1 of the SPR currently holds approximately 5.33 million metric tons of crude oil, offering an energy reserve equivalent to about 9.5 days of the country's net crude oil imports. However, given India's growing emphasis on sustainability and decarbonisation, there is growing interest in exploring alternative, green energy carriers that could complement or substitute for conventional petroleum-based reserves. One such promising candidate is green ammonia—produced using renewable electricity, electrolysers, and the Haber-Bosch process.

A comparative energy analysis based on the Lower Heating Values (LHV) depicts that crude oil generates approx. 40 MJ/kg and 18.6 MJ/kg by ammonia. This reveals that to match the energy content of Phase 1 of the SPR, India would need approximately 12.4 million metric tons of green ammonia. Given the extensive timeframes and infrastructural demands associated with constructing crude oil storage facilities—Phase 1 of the SPR took over 12 years to develop—a more flexible and faster-deploying alternative like green ammonia becomes attractive. Green ammonia production facilities, including solar photovoltaic systems, hydrogen electrolysers, air separation units, and synthesis plants, can be established

relatively quickly compared to deep underground rock caverns used for oil storage.

To make this transition viable, it is proposed that the required volume of 12.4 million metric tons of green ammonia be produced and deployed over four years. This equates to an annual production goal of roughly 3.1 million metric tons. Such a phased implementation approach not only aligns with realistic infrastructure development timelines but also enhances India's energy resilience while advancing its clean energy and climate commitments.

Solar PV-Based Green Ammonia Production

A solar photovoltaic (PV)-based green ammonia system presents a pioneering and sustainable pathway to fortify India's energy security while simultaneously addressing its decarbonisation goals. Solar PV stands out for its minimal environmental footprint and vast scalability. Compared to traditional fossil fuel systems, solar PV reduces Global Warming Potential (GWP) by approximately 92%, making it one of the most climate-friendly power sources currently available. The paper assumes a solar PV plant designed to support green ammonia synthesis operating under optimal peak solar conditions of 7 hours per day is considered. The plant functions for 337 days annually, allowing for 28 days of scheduled maintenance and unforeseen shutdowns. The system's capital expenditure is set at USD 300

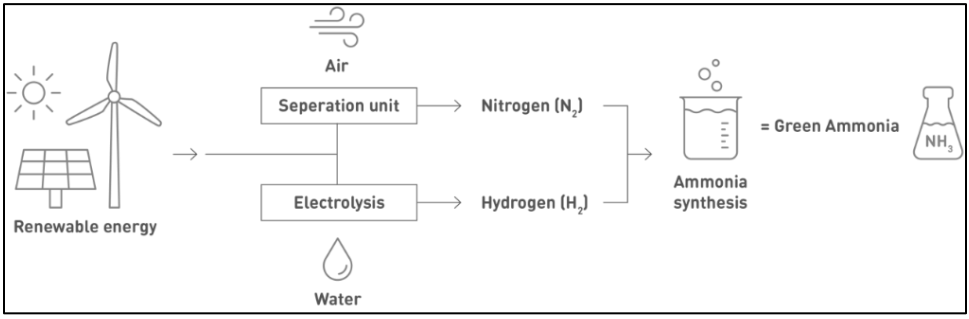

Figure 3: Simplified Diagram of Green Ammonia Synthesis

per kilowatt, aligning with current industry benchmarks for utility—scale PV. Subsidy of 20% of the capital cost is considered in line with GoI, MNRE promulgation. In this context, green ammonia—a storable, energy-rich molecule synthesized from renewable electricity—offers a dual advantage: it functions as both an energy storage medium and a carbon-free fuel. Green ammonia not only avoids combustion-related CO_2 emissions but also bypasses the extensive infrastructure and long timelines associated with oil-based reserves. Importantly, the deployment of such a system is projected to result in a reduction of nearly 16 million tons of CO_2 emissions annually, underscoring its strong climate mitigation potential.

The proposed solar-powered green ammonia system is composed of four interconnected technological components:

- **Electrolyser Unit**: Using electricity generated from solar PV arrays, water is split into hydrogen and oxygen through electrolysis. The produced hydrogen serves as a critical input for ammonia synthesis and ensures the system's zero-carbon credentials. In this analysis of a PEM electrolyser plant, 55 kWh of specific energy consumption is considered for each kg of hydrogen production. Further, for green hydrogen synthesis, two cost scenarios—optimistic and conservative—have been considered to evaluate techno-economic feasibility. The optimistic case assumes a capital cost of USD 559 per kilowatt, incorporating a 20% capital subsidy under the Government of India's MNRE initiative. In contrast, the conservative scenario assumes a higher capital cost of USD 750 per kilowatt with no subsidies applied. These assumptions directly influence the projected levelised cost of ammonia (LCOA), allowing a comparative assessment of policy impact and market dynamics on project viability and long-term economic sustainability.

- **Air Separation Unit (ASU):** This unit extracts nitrogen from the air using cryogenic separation or pressure swing adsorption. The purity and reliability of nitrogen supply are essential for efficient ammonia production. This study models an air separation unit (ASU) for nitrogen and oxygen synthesis with a capital cost of USD 250 per ton of nitrogen production capacity. The ASU's specific energy consumption is assumed to be 0.8 kWh per kilogram of nitrogen produced. Two economic scenarios are considered. In the optimistic case, revenue from oxygen byproduct sales is factored in at USD 0.05 per kilogram, reflecting potential market value. In contrast, the conservative scenario excludes oxygen revenue, assuming limited market access.

- **Haber-Bosch Reactor**: This well-established chemical process combines hydrogen and nitrogen at high pressures (150–250 bar) and temperatures (400–500°C) in the presence of a catalyst to synthesise ammonia (NH_3). It acts as the central conversion hub of the SER system. Here, the Haber-Bosch plant employed for green ammonia synthesis is modelled with a capital cost of USD 400 per ton of annual ammonia production capacity. This assumption aligns with industry estimates for modular, energy-efficient green ammonia systems operating under renewable energy inputs. The cost framework reflects current trends in scaling sustainable ammonia production infrastructure.

- **Refrigeration Unit**: Ammonia is stored in its liquefied form at −33.3°C under atmospheric pressure. Efficient refrigeration is vital for maintaining the ammonia's physical state for safe storage and transportation. It is noted that the refrigeration unit for green ammonia liquefaction is assumed to have a specific energy consumption of 1.5 kWh per kilogram of ammonia. This value reflects the energy required to compress and cool ammonia to its liquefied state under ambient pressure conditions, enabling efficient

storage and transportation. The assumption is based on standard performance metrics for industrial-scale refrigeration systems used in ammonia handling.

By seamlessly integrating renewable energy and advanced chemical processing, this system offers a scalable, replicable, and environmentally sound model for India's future energy reserves—enhancing both energy autonomy and climate resilience.

Storage

Overground Ambient and Cryogenic Conditions. Safe and cost-effective ammonia storage is a critical element of the green ammonia value chain, influencing overall project economics and operational reliability. Two dominant storage approaches are used worldwide: ambient-temperature pressurised tanks and cryogenic refrigerated tanks. In ambient storage, liquid ammonia is maintained at approximately 10 bar and 20 °C,

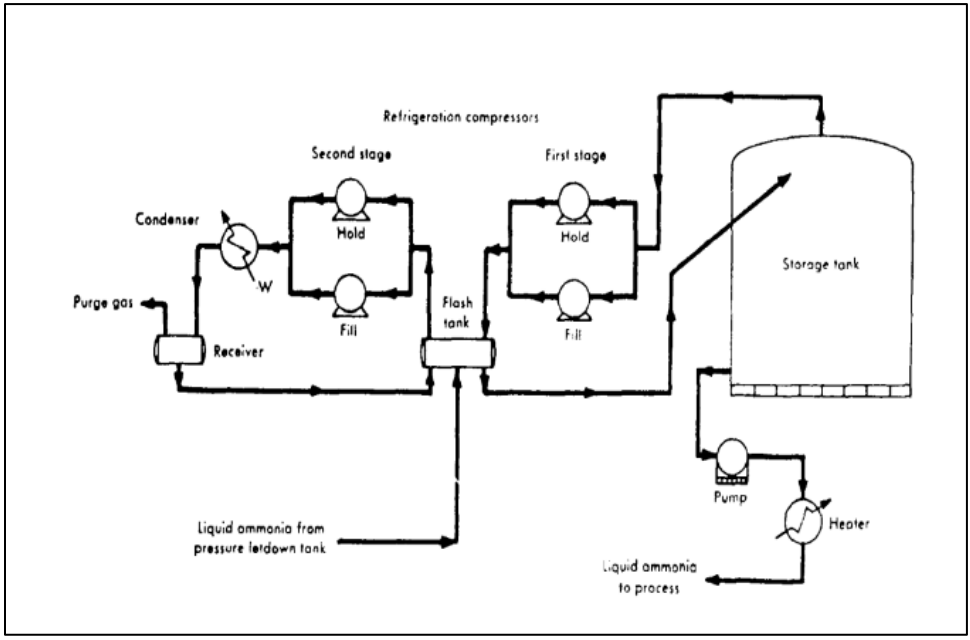

Figure 4: Simplified Diagram of Refrigerated Ammonia Storage Facility

avoiding the need for deep refrigeration. This reduces operational complexity and energy demand but imposes higher mechanical and material requirements. For instance, a typical pressurised tank designed to hold 270 tons of liquid ammonia requires roughly one ton of steel for every 2.8 tons of ammonia, equating to about 96 tons of steel per tank. The estimated capital expenditure (CAPEX) is USD 3 per kg of ammonia capacity, or USD 3,000 per ton, covering materials, fabrication, auxiliary systems, and commissioning. By contrast, cryogenic storage maintains ammonia at −33 °C and 1 bar. Under these conditions, ammonia stays liquid without pressurisation, enabling larger tank volumes and reduced structural stresses. Cryogenic systems employ double-walled, insulated tanks with advanced vapor-management features to minimise thermal losses. Steel demand is much lower—around one ton of steel per 45 tons of ammonia stored—due to lower mechanical loading. A typical cryogenic tank can hold 50,000 tons of ammonia, creating strong economies of scale. CAPEX for such systems is estimated at USD 0.81 per kg, or USD 810 per ton, significantly less than pressurised storage.

Retrofitting the SPR Rock Cavern

The paper explores another promising pathway—retrofitting of existing underground rock cavern facilities—originally constructed for crude oil storage—to accommodate ammonia under cryogenic conditions. Currently, India's Strategic Petroleum Reserves (SPR) comprise three rock cavern sites located in Visakhapatnam, Mangalore, and Padur, with a combined capacity of approximately 5.33 million tons of crude oil. Repurposing these secure and geologically stable locations provides a strategic advantage by significantly reducing the capital expenditure and time required compared to constructing entirely new ammonia storage terminals. However, storing ammonia presents distinct engineering and safety challenges compared to crude oil. While crude oil caverns typically remain unlined, relying on rock permeability and passive ventilation, ammonia's high vapour pressure, toxicity, and cryogenic nature demand stringent containment measures such

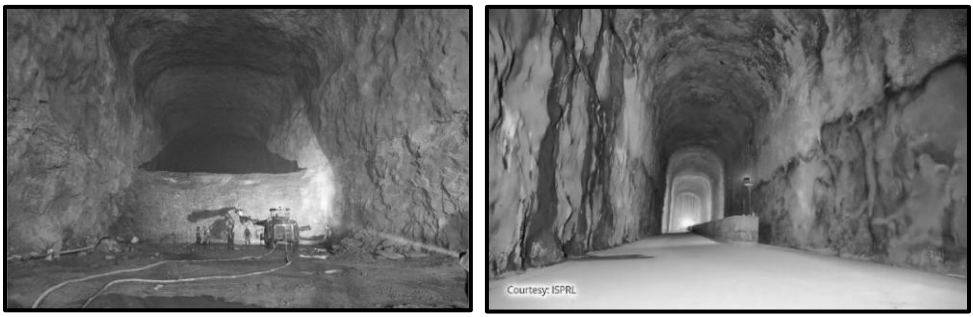

Figure 5: SPR (Rock Cavern) site

as tight sealing, specialised insulation, and vapour suppression systems. Consequently, significant engineering upgrades are necessary to adapt these caverns for ammonia storage, addressing both operational safety and environmental.

International Precedent: Glomfjord, Norway—Retrofitting for Ammonia Storage

A notable international precedent for successful rock cavern retrofitting for ammonia storage is the Glomfjord project in Norway. This project involved the transformation of former liquefied petroleum gas (LPG) storage caverns into dedicated ammonia storage facilities, offering valuable insights into both the technical feasibility and critical engineering considerations required for such conversions.

One of the key interventions implemented at Glomfjord was the introduction of specialised internal lining systems. These linings were designed to address ammonia's high chemical reactivity, particularly its tendency to interact with unsealed rock surfaces and cause degradation. By applying corrosion-resistant materials such as thermoplastics and epoxy layers, the facility effectively mitigated the risk of ammonia leakage through microfractures within the rock mass, thereby preserving both structural integrity and environmental safety.

Another crucial modification was the installation of water curtain systems. These systems were constructed around the perimeter of the caverns and served the essential function of maintaining a stable hydraulic gradient. This inward gradient prevents the outward migration of ammonia vapour, ensuring that any potential leaks are contained and that adjacent geological formations or infrastructure remain unaffected. To achieve gas-tight sealing at access points and structural joints, the project employed reinforced concrete plugs integrated with chemical grouting techniques. This combination provided a highly secure barrier capable of withstanding the internal pressure and thermal variations associated with ammonia storage.

These engineering controls enabled the facility to operate safely under storage conditions of −28 °C to −33 °C and internal pressures ranging from 0.1 to 0.13 MPa. The Glomfjord example not only validates the technical viability of retrofitting rock caverns for ammonia but also illustrates the importance of precision engineering in maintaining containment integrity and thermal stability under demanding conditions.

Economic Analysis of a Green Ammonia-Based Strategic Energy Reserve

The economic feasibility of establishing a green ammonia-based Strategic Energy Reserve (SER) hinges on a comprehensive assessment of production, infrastructure, and operational costs over the entire life cycle of the project. This analysis applies the Levelized Cost of Ammonia (LCOA) as a central metric to evaluate the long-term affordability and competitiveness of green ammonia relative to conventional energy reserves. By modelling a system capable of producing approximately 3.1 million metric tons of green ammonia annually, this study aligns the scale of production with India's current Strategic Petroleum Reserve (SPR), offering a renewable, zero-carbon alternative to bolster national energy security.

System Design and Energy Demand

The proposed SER is designed to be powered entirely by solar photovoltaic (PV) energy, reflecting India's abundant renewable resource base. The plant requires 36.96 million MWh of electricity annually to meet the energy needs of hydrogen electrolysis, nitrogen extraction via air separation, and ammonia refrigeration. To achieve this capacity, the facility must deploy approximately 71.22 GW of installed solar PV capacity, a scale comparable to the largest renewable installations worldwide. This configuration allows the project to maintain a consistent supply of green ammonia independent of fossil fuel inputs.

Capital Expenditure (CAPEX)

The total gross capital expenditure (CAPEX) for the project is estimated at $32.95 billion prior to subsidies. This expenditure encompasses the cost of each major system component:

- **Solar PV installation**: $21.37 billion
- **PEM electrolyser units**: $9.56 billion (at an assumed cost of $559/kW)
- **Haber–Bosch synthesis units**: $1.24 billion
- **Air Separation Units (ASU)**: $775 million

This breakdown highlights the dominant share of solar PV and electrolyser infrastructure in overall capital costs, underscoring the importance of technology cost reductions and financial incentives to achieve project viability. With subsidies on solar PV and electrolyser units amounting to $6.19 billion, the net CAPEX is reduced to $26.91 billion, improving the project's economic competitiveness.

Operational Expenditure (OPEX)

Annual operational expenditure (OPEX), inclusive of maintenance, land lease, and insurance, is modelled at 2% of CAPEX for each major component. The estimated annual costs include:

- **Solar PV operations and maintenance**: $427 million
- **Electrolyser maintenance**: $191 million
- **Haber–Bosch operations**: $24.8 million
- **ASU operations**: $15.5 million

Additional costs include land lease charges over 25 years, estimated at $155.79 million, and insurance costs at 2% of CAPEX (approximately $538.3 million). The resulting gross OPEX totals $927.1 million annually. However, the system is expected to generate by-product revenues from oxygen sales, estimated at $270.1 million annually, which partially offsets the operational costs. This revenue stream demonstrates the potential for ancillary value recovery in green ammonia production.

LCOA: Optimistic/ Conservative Scenarios

Using a discount rate of 10%, the Capital Recovery Factor (CRF) is calculated at 0.114, enabling the annualized capital cost (ACC) to be derived at $3.07 billion. Combining the ACC with the net OPEX yields a total annual cost of approximately $3.99 billion. When divided by the annual output of 3.1 million metric tons of ammonia, the resulting Levelized Cost of Ammonia (LCOA) is $1,288.58 per ton. This value reflects both the capital and operational expenses distributed across the project's 22-year lifespan, offering a robust measure of the project's long-term affordability.

The analysis evaluates both optimistic and conservative scenarios to illustrate how technology cost reductions, subsidies, and value recovery influence the overall project economics. In the optimistic scenario, the cost

of PEM electrolysers is assumed to be $559 per kW, compared to $750 per kW in the conservative case, resulting in a notable reduction in capital costs. Additionally, a 20% capital expenditure subsidy on the solar PV plant and PEM electrolyser system is factored into the optimistic scenario but excluded in the conservative one.

Furthermore, the optimistic case incorporates revenues from oxygen sales at $0.05 per kg, whereas the conservative case omits this benefit. These differences translate into a net CAPEX of $26.92 billion under optimistic conditions versus $36.37 billion in the conservative scenario. Consequently, the levelised cost of ammonia (LCOA) falls to $1.288 per kg in the optimistic case, compared to $1.805 per kg conservatively, underscoring the significance of cost reductions, supportive policies, and co-product monetisation in improving project viability.

Key Structural Reforms: Recommendations

India currently lacks a dedicated institutional framework for managing non-fossil Strategic Energy Reserves (SERs), unlike crude oil, which is overseen by the Indian Strategic Petroleum Reserves Limited (ISPRL) under the Ministry of Petroleum and Natural Gas (MoPNG). To address this gap, a National Strategic Energy Reserve Authority (NSERA) should be established under the Ministry of New and Renewable Energy (MNRE) or as a cross-ministerial task force involving MoPNG, the Ministry of Chemicals and Fertilizers, and the Ministry of Railways. This authority would define clear mandates for planning, funding, procurement, storage management, and emergency response, focusing on green ammonia, hydrogen, and energy-dense batteries as strategic reserve candidates. Integrating SER targets into the Green Hydrogen Mission, which aims for 5 MMT production by 2030, is essential by introducing a minimum reserve mandate (1–1.5 MMT green ammonia) across 4–5 strategic hubs and revising policy guidelines to incentivise facilities supporting SER goals. Existing crude oil caverns in Visakhapatnam, Mangalore, and Padur should be assessed for retrofitting to store ammonia through feasibility studies,

pilot projects, and PPP-based financing. Parallelly, production facilities should adopt advanced catalysts, modular electrolysis, and digitalisation.

Conclusion

This paper underscores a pivotal and timely objective within India's evolving energy landscape—the transformation of the nation's fossil-based Strategic Petroleum Reserve (SPR) into an equivalent, future-ready energy reserve grounded in green ammonia. India's existing SPR system, while vital for ensuring energy security, leaves the country vulnerable to significant risks, including global oil price volatility, geopolitical disruptions, trade imbalances, and an enduring dependence on imported crude oil. Furthermore, the storage and downstream consumption of petroleum contribute substantially to greenhouse gas emissions. The analysis presented in this paper begins by discussing the capital costs and volumetric capacities of India's current petroleum-based SPR. From these parameters flows the essential challenge of planning, scaling, and implementing a green energy reserve capable of matching the energy equivalence of the existing system. In response to this challenge, the paper introduces a novel concept: a green ammonia-based Strategic Energy Reserve as a potential substitute or complement to the traditional petroleum-based reserve.

A solar photovoltaic (PV)-driven green ammonia production model is mooted. This integrated system harnesses renewable electricity for water electrolysis, extracts nitrogen through air separation, and synthesises ammonia using the Haber–Bosch process. The approach exemplifies a closed-loop system in which domestic renewable energy resources form the backbone of a secure and sustainable energy reserve. In evaluating storage options for green ammonia, it is noted that while ambient and cryogenic temperature storage are well-established, the analysis highlights the relatively underexplored, but strategically advantageous, option of retrofitting existing underground rock caverns. Drawing on a case study from Norway, the paper illustrates how such infrastructure could be adapted

to store green ammonia at scale, potentially yielding cost savings and leveraging India's existing geological assets.

Crucially, the future cost trajectory of green ammonia is expected to decline as electrolyser technologies mature and scale economies are achieved. This dynamic, combined with India's abundant solar potential and strategic need to diversify energy reserves, positions a green ammonia-based SPR as not only feasible but also forward-looking. By integrating renewable production, innovative storage solutions, and existing infrastructure, India can transform its strategic energy reserves from a liability rooted in fossil fuels into a resilient, low-carbon asset. This paper, therefore, concludes that establishing a green ammonia-based strategic reserve is not merely an academic exercise but a pragmatic, high-impact pathway for achieving both energy security and sustainability in the decades ahead.

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The Inner Force: Harnessing Spirituality for Military Leadership

ARUN AWASTHY

Abstract

The 21st century security environment presents the armed forces with challenges that are more complex, volatile, and unpredictable than ever before. Military leaders today must simultaneously manage fast-evolving operational scenarios, rapid technological changes, and the psychological pressures of prolonged deployments. While leadership development programmes have long emphasised intellectual capability (Intelligence Quotient, IQ) and emotional regulation (Emotional Quotient, EQ), they have largely overlooked the third dimension of human potential — the Spiritual Quotient (SQ).

Spirituality, in this context, is not confined to religious belief or ritual; rather, it represents an inner strength, a clarity of purpose, and an ethical compass that sustains a leader under the severest trials of command. SQ underpins resilience, moral courage, and decisiveness — qualities that have historically distinguished exceptional commanders from merely competent ones. From Alexander the Great's philosophical grounding under Aristotle, to Guru Gobind Singh's saint-soldier ethos, spiritually centred leadership has been a decisive force multiplier.

This paper examines the concept of spirituality as an "ultimate reality" and explores its integration into modern military leadership. Drawing upon philosophical traditions, scientific analogies, and historical precedents, it argues for a deliberate cultivation of SQ alongside IQ and EQ in the grooming of officers at all levels. Practical pathways to enhancing SQ — rooted in faith, detachment, and disciplined practice — are presented, alongside policy recommendations for embedding spiritual development within existing training frameworks.

By fostering leaders who are as grounded in inner strength as they are proficient in tactical and technological domains, the armed forces can enhance not only their combat effectiveness but also the ethical and moral fabric that underpins their operational success.

Introduction

The contemporary security landscape is undergoing a profound transformation. Geopolitical realignments, asymmetric threats, cyber warfare, and hybrid conflicts have created an environment in which military leaders must navigate complexity at an unprecedented pace. In such conditions, operational readiness demands not only mastery of modern technology and tactics, but also a level of mental resilience and ethical grounding that can withstand sustained stress and moral ambiguity.

Historically, the armed forces have approached leadership grooming through the cultivation of four cardinal traits — courage, candour, commitment, and competence. These qualities, while indispensable, focus largely on outward-facing abilities: decisiveness in action, technical proficiency, and interpersonal effectiveness. The training frameworks that develop them tend to emphasise cognitive skills (IQ) and emotional regulation (EQ), while leaving a significant gap in the inner dimension of leadership — the capacity for self-awareness, purpose, and moral clarity.

Military history consistently demonstrates that victory in war rests on three interdependent pillars: Man, Machine, and Morale. The 'Man' denotes the trained human resource; the 'Machine' embodies technology and equipment; and 'Morale' encompasses the intangible drivers of performance such as courage, integrity, and motivation. Of these, 'Morale' has repeatedly proven decisive—armies equipped with superior weapons but lacking moral strength have faltered, while those with strong inner resolve have prevailed against formidable odds.

In today's high-stakes operational climate, this moral strength cannot be left to chance. It must be deliberately cultivated — and the most effective means of doing so lies in developing the **Spiritual Quotient (SQ)**. SQ equips leaders to anchor their actions in enduring values, navigate uncertainty with equanimity, and inspire confidence both in subordinates and in themselves. This inner growth is not a luxury; it is a strategic necessity.

Scope

This paper examines the concept of spirituality as a critical but underdeveloped dimension of military leadership. It approaches spirituality from a secular, universal, and leadership-oriented perspective, distinct from religious doctrine or ritual observance. While spirituality can draw upon the ethical and philosophical wisdom of various traditions, its emphasis here is on personal transformation, self-mastery, and the cultivation of inner strength.

The focus is on leaders across all levels of command, from junior officers in the formative stages of their careers to senior commanders bearing the weight of strategic decision-making. The argument presented applies equally to those serving in combat arms, support services, and higher defence management, as the internal qualities shaped by spirituality — clarity of judgement, steadiness under pressure, and moral courage — are universally relevant.

The discussion is bounded by three key considerations:

- **Integration with Existing Leadership Frameworks**. SQ is considered alongside IQ and EQ, not as a replacement but as a reinforcing element. The paper seeks to complement, not overhaul, current military training philosophies.
- **Operational Relevance.** All references to spirituality are tied back to concrete benefits in the military context, including operational performance, team cohesion, ethical decision-making, and resilience in adversity.
- **Actionable Pathways.** The paper identifies specific practices and institutional approaches that can be realistically adopted within the armed forces to foster SQ development without compromising the secular character of the institution.

Methodology

The analysis in this paper is grounded in a multi-disciplinary approach, combining insights from classical philosophy, modern psychology, military history, and leadership studies. It draws upon both primary sources — such as historical accounts, philosophical texts, and autobiographical writings of military leaders — and secondary literature from organisational behaviour, behavioural science, and strategic studies.

The structure of the paper follows a logical progression designed to move from conceptual understanding to practical application:

- **Spirituality as the Ultimate Reality**. Establishes the theoretical foundation of spirituality by tracing the evolution of human intelligence models from IQ to EQ to SQ, examining how spirituality has been conceptualised across civilisations, and using scientific analogies to clarify its relevance to human functioning.

- **Importance of Spirituality in Soldiering**. Connects the abstract principles of SQ to the concrete realities of military life. Historical and contemporary examples illustrate how spiritual grounding influences leadership performance, decision-making under pressure, and the ability to inspire trust and loyalty.
- **Enhancing the Spiritual Quotient**. Focuses on methods to cultivate SQ in the military context, organised around three universally recognised pillars: Faith, Detachment, and Practice. Each is explained with reference to its operational utility and feasibility for integration into military training and professional development programmes.

Part I – Spirituality: The Ultimate Reality

From IQ to EQ to SQ

For much of the 20th century, leadership potential was measured primarily through the **Intelligence Quotient (IQ)** — the ability to learn, reason, and solve problems. High IQ was assumed to correlate with success, particularly in complex and technical fields. However, the 1990s brought a paradigm shift with the work of psychologists such as **Daniel Goleman**, who argued that **Emotional Quotient (EQ)** — the capacity to perceive, regulate, and respond to emotions in oneself and others — was often a better predictor of leadership effectiveness than IQ alone.

Yet even leaders with strong IQ and EQ sometimes fail to inspire, to act decisively in moments of uncertainty, or to maintain ethical clarity under pressure. This observation led researchers and philosophers to identify a missing dimension viz. the **Spiritual Quotient (SQ)**.

SQ refers to a holistic intelligence that integrates self-awareness, purpose, compassion, creativity, and the ability to align actions with higher values. It is the foundation upon which IQ and EQ can be effectively applied, providing the moral and existential framework within which

intellect and emotion operate. A leader with SQ is not simply reacting to circumstances; they are guided by a deeply rooted sense of meaning that transcends immediate self-interest.

In the context of the armed forces, SQ serves as the **bedrock of moral courage**, enabling leaders to endure hardship, make principled decisions, and maintain unity of purpose amidst chaos. As the **Bhagavad Gita** (3:42) expresses:

"The working senses are superior to dull matter; the mind is higher than the senses; intelligence is higher still; and the soul is higher than intelligence."

This hierarchy underscores that beyond intellect lies the inner self — the true source of resilience and wisdom.

Philosophical Roots of SQ

While the term "Spiritual Quotient" is a relatively recent construct in psychology and leadership theory, the essence of the concept has been explored by philosophers, saints, and scholars for millennia. Across cultures and eras, thinkers have recognised an inner dimension of human capability that surpasses both rational intellect and emotional sensitivity.

In ancient Greece, the aphorism **"Gnōthi Seauton"** — *Know Thyself* — was inscribed on the Temple of Apollo at Delphi, urging seekers to look inward for wisdom and moral guidance. The Latin phrase **"Nosce te ipsum"**, popularised in the Renaissance, carried the same imperative. In Islamic tradition, the Prophetic saying *"He who knows himself knows his Lord"* (*Arafa nafsahu faqad arafa rabbahu*) affirms self-knowledge as the gateway to understanding the divine order. In India, **Saint Kabir**'s counsel — *"Ghut hi khojo bhai"* (Search Him within) — directs the seeker inward rather than outward.

Such teachings, though framed in the idioms of different civilisations, converge on a single principle: **the journey to mastery begins within**. The leader who understands their own motives, limitations, and values is better equipped to lead others with clarity and authenticity.

Scientific analogies further reinforce this universality. Physics teaches that all forms — from the smallest atom to the largest celestial body — are combinations of matter and energy. Matter manifests in countless forms, but energy is the unifying constant. Similarly, in human beings, the physical body is the visible form, but the animating force — consciousness, awareness, or spirit — is the essence. It is this essence that SQ seeks to cultivate.

In military leadership, recognising and nurturing this inner energy transforms decision-making from a reactive process into a purposeful, value-driven act — a crucial distinction in the fog and friction of war.

Scientific Perspective on Spirituality

Spirituality is often seen as an abstract or intangible concept, yet its foundations can be explained through principles that resonates with scientific reasoning. At the most basic level, all existence in the universe consists of two inseparable elements: matter and energy. Matter provides the form; energy animates it.

Physics identifies 108 known chemical elements, yet ancient traditions have long simplified these into five primal elements — earth, water, fire, air, and ether. When these elements combine with energy, they create form, whether living or non-living. Human beings, like stars and planets, are thus manifestations of energy embodied in matter.

Crucially, the same force that propels electrons around an atomic nucleus also governs the motion of planets around stars. This suggests a continuity of energy across scales — from the microcosmic to the cosmic — and places humanity within an interconnected system. The inquiry into

this energy, whether through the external path of scientific research or the internal path of self-discovery, has been a constant theme in human thought.

The great scientist **Isaac Newton**, after a lifetime of scientific achievement, humbly remarked in his final years:

"I do not know what I may appear to the world, but to myself I seem to have been only like a boy on the seashore, playing with the pebbles, whilst the great ocean of truth lay all undiscovered before me."

This admission mirrors the spiritual seeker's recognition: the more one explores, the more one realises that the ultimate reality lies beyond what is immediately perceivable.

For the military leader, accepting this perspective encourages intellectual humility, resilience in uncertainty, and a broader sense of purpose — qualities that enhance leadership far more than technical skill alone.

Part II – Importance of Spirituality for Military Leaders

Spirituality and the Profession of Arms

The profession of arms is unlike any other. It demands not only technical proficiency and physical endurance, but also the moral fortitude to make life-and-death decisions under extreme pressure. History shows that military leaders who were spiritually grounded often demonstrated exceptional **clarity of purpose**, **moral courage**, and **resilience** in adversity.

Consider **Alexander the Great**, tutored by the philosopher Aristotle, whose education in ethics and metaphysics imbued him with a sense of destiny that fuelled his conquests. **Emperor Ashoka**, once a formidable warrior, transformed into a ruler guided by compassion and moral law after his spiritual awakening. **Emperor Akbar**, despite being illiterate,

developed a reputation for just and inclusive governance, drawing on a deep commitment to ethical principles. **Guru Gobind Singh**, the saint-soldier, articulated the ethos of righteous force, declaring that when all other means fail, it is not wrong to take up the sword in defence of justice. Lastly, in the **Bhagavad Gita**, Lord Krishna counsels Arjuna — paralysed by moral dilemma — to recognise his true self and fulfil his duty without attachment to the outcome.

These examples illustrate a consistent pattern: **spiritual insight amplifies military effectiveness**. It equips leaders with the ability to rise above personal ambition, resist the distortions of fear and anger, and commit fully to a cause greater than themselves.

In contemporary contexts, where military leaders face prolonged operational deployments, complex coalition dynamics, and the psychological burdens of modern warfare, spirituality offers a reservoir of inner strength. It is not an abstract ideal, but a **practical asset** that enhances decision-making, strengthens cohesion, and sustains morale over the long term.

Core Leadership Qualities Strengthened by Spirituality

The impact of spirituality on leadership is best understood through the specific qualities it cultivates — attributes that are directly relevant to the demands of military command. These qualities form the bridge between internal growth of the leader and tangible operational outcomes.

- **Selflessness**. Spiritually attuned leaders recognise the impermanence of worldly gains and the futility of excessive material pursuit. This awareness reorients effort towards service and mission accomplishment, fostering trust and loyalty within their commands.

- **Fearlessness**. A deep spiritual perspective reframes death as a transformation rather than an end, freeing a leader from the paralysing grip of fear.
- **Truthfulness**. Spiritual grounding strengthens a leader's resolve to act with honesty and transparency, even when truth is inconvenient or costly.
- **Righteousness**. Spirituality deepens the alignment between national duty and moral conviction, resisting corruption or expediency.
- **Farsightedness**. SQ cultivates the mental clarity to assess the present while anticipating long-term consequences.
- **Inspiring Conduct**. Ethical consistency and principled decisiveness encourage subordinates to emulate the leader.
- **Equanimity**. Composure in both triumph and adversity provides stability to the unit and sustains morale.

Part III – Enhancing the Spiritual Quotient

While the concept of SQ may appear abstract, its cultivation is both practical and achievable within the military context. Across cultures and traditions, the pathways to spiritual growth converge around three interrelated pillars: **Faith**, **Detachment**, and **Practice**. These are not rigid doctrines, but flexible principles that can be adapted to the armed forces without compromising its secular ethos.

- **Faith**

In the context of SQ, faith has a dual meaning. First, it is the conviction that an inner dimension of strength and clarity exists within each individual. Second, it is trust — whether in a higher purpose, in the moral

arc of justice, or in the capacity of human beings to rise above selfish impulses.

Faith serves as the starting point for any spiritual journey. Without it, the exploration of SQ is reduced to a purely intellectual exercise, devoid of transformative impact. For a soldier, faith is not blind belief, but a disciplined confidence grounded in experience and reflection.

History offers abundant examples. Alexander's drive to conquer, Guru Gobind Singh's defiance against overwhelming odds, and Swami Vivekananda's exhortations to harness "tremendous will" all reflect leaders who drew upon an unshakable inner certainty. This faith enabled them to act with boldness, endure hardship, and inspire others to do the same.

In the military sphere, such faith translates into **trust in one's training, comrades, and mission**, while retaining the humility to acknowledge forces larger than oneself. It is this balance — between confidence and humility — that allows leaders to operate effectively in uncertainty.

- **Detachment**

Detachment, in the spiritual sense, is often misunderstood. It does not imply indifference, apathy, or withdrawal from responsibility. Instead, it is the disciplined capacity to remain emotionally and mentally balanced regardless of circumstances, and to act without being unduly swayed by personal gain, fear of loss, or attachment to outcomes.

For the soldier, detachment is not a disengagement from the mission; it is a refinement of focus. By reducing mental clutter, it sharpens situational awareness and enables better judgement under stress. Research into cognitive performance shows that excessive emotional entanglement clouds decision-making, while a detached mind processes information more clearly and responds more effectively.

In operational contexts, detachment protects leaders from the corrosive effects of both victory and defeat. In success, it prevents overconfidence and complacency; in adversity, it shields against despair and impulsiveness. The detached leader remains steady, ensuring that decisions are guided by principle and fact, rather than by transient emotional states.

Philosophical traditions also link detachment to truthfulness, selflessness, and righteousness. A leader free from the pull of personal ambition is more likely to act with integrity, resist coercion, and hold the line against corruption.

- **Practice**

Faith and detachment form the conceptual pillars of SQ, but without **practice** they remain theoretical. Practice is the process by which spiritual principles are integrated into daily life, transforming abstract ideals into habitual modes of thought and action.

Across cultures, the methods of spiritual practice vary — from prayer and meditation to self-inquiry, reflective journaling, or disciplined physical routines. In the military environment, the choice of practice must respect both the **secular character** of the institution and the **operational demands** placed upon personnel. The key is not uniformity of method, but **consistency and sincerity** of engagement.

For some leaders, practice might mean beginning the day with a brief period of mindfulness to centre their thoughts before the pressures of command take hold. For others, it might involve structured reflection on the ethical dimensions of recent decisions, or quiet contemplation during moments of respite in the field. Even routine activities — such as physical training or drill — can become spiritual exercises when performed with full awareness and intentionality.

The test of an effective spiritual practice is twofold:

- **Nirmalta**. purity of heart, free from corrosive emotions such as envy, hatred, or arrogance.
- **Nishchalta**. steadiness of mind, unshaken by praise or blame, victory or setback.

When faithfully maintained, such practices cultivate an inner stability that not only enhances personal resilience but also strengthens the cohesion and morale of the unit.

Conclusion

The evolution of warfare has always been shaped by the balance between material capability and the moral strength of those who wield it. While advancements in technology, strategy, and operational doctrine continue to redefine the battlefield, the **human dimension of war** remains constant. Weapons may win battles, but it is the will, clarity, and resilience of the soldier that wins wars.

In the modern era, the armed forces face not only external threats but also the internal strains of prolonged operations, high-stakes decision-making, and the moral complexities of asymmetric and hybrid conflict. Traditional leadership development — with its emphasis on intelligence and emotional regulation — has served the military well, but it leaves a critical gap: the deliberate cultivation of **Spiritual Quotient (SQ)**.

SQ offers leaders a stable internal compass. It deepens self-awareness, strengthens moral courage, and enables principled action under uncertainty. History affirms that leaders grounded in spirituality — whether Alexander the Great, Ashoka, Akbar, or Guru Gobind Singh — were able to inspire, endure, and achieve beyond the limits of ordinary leadership.

For the armed forces, integrating SQ into leadership training is not a diversion from core competencies; it is an amplifier of combat

effectiveness. By fostering faith, cultivating detachment, and embedding daily practices of reflection and mindfulness, military institutions can shape leaders who are as strong within as they are skilled without.

As Swami Vivekananda observed, "You have to grow from the inside out. None can teach you, none can make you spiritual. There is no other teacher but your own soul." The challenge — and opportunity — for the armed forces is to create conditions in which that inner growth can occur, ensuring that future leaders carry not only the weapons of war, but also the moral and spiritual strength to wield them wisely.

Brigadier Arun Awasthy got commissioned in 1996. During his 29 years career, the Officer has served in various Operational Environment including Counter Terrorist operations, Line of Control (LC) and Line of Actual Control (LAC). His international exposure includes Two Challenging tenures in Democratic Republic of Congo as part of United Nations, where he has served as Military Observer and later as Deputy Commander & Chief of Staff of an Indian Brigade Group. Views expressed are personal.

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Operation Sindoor and Its Impact

MANISH ANAND BHAVE

Abstract

Operation Sindoor, launched on May 7, 2025, was India's military response to a terrorist attack, involving precision airstrikes on nine terrorist hubs in Pakistan. The operation showcased new tactical approaches, including the use of decoy drones to expose and deplete Pakistan's air defence assets. This short, intense conflict demonstrated the success of India's indigenous defence program. The BrahMos missile system and domestically developed air defence systems like SAMAR and Akash proved effective in live combat. India's multi-tiered air defence architecture came of age, successfully intercepting multiple drone swarms and a Fatah-II missile. The operation marked a significant shift in India's military doctrine, lowering the threshold for cross-border action against terrorism and holding state sponsors accountable.

Broad Contours of Operation Sindoor

On 7 May 2025, the Government of India initiated Operation Sindoor as a calibrated military response to the terrorist attack perpetrated in Pahalgam on 22 April, which resulted in the deaths of 26 Hindu civilians—reportedly targeted based on their religious identity. The operation

comprised precision airstrikes on nine locations within Pakistan and Pakistan-administered Kashmir, which had been identified as critical operational hubs for terrorist groups including Lashkar-e-Taiba (LeT), Jaish-e-Mohammed (JeM), and Hizbul Mujahideen. Among the key sites reportedly targeted were facilities in Bahawalpur, Muridke, and Muzaffarabad.

Executed within a timeframe of approximately 23 to 25 minutes, the operation was marked by both rapid execution and deliberate strategic restraint. Indian Air Force (IAF) platforms, notably Rafale fighter jets equipped with SCALP cruise missiles and AASM Hammer precision-guided munitions, conducted the strikes without breaching Pakistan's sovereign airspace. According to Indian official sources, the operation resulted in the neutralization of over 100 militants, including several close associates of JeM chief Masood Azhar.

In response, the Pakistan Air Force (PAF) scrambled fighter aircrafts in an attempted interception, followed by what Indian authorities described as retaliatory aerial incursions into Indian airspace. While Indian sources claimed the successful downing of advanced Pakistani aircraft, Pakistani authorities acknowledged only minor damage to a single jet and denied sustaining substantial losses. India reported the death of five military personnel during the broader escalation, although these were not directly attributable to the initial airstrikes. Pakistan admitted to incurring casualties but refrained from disclosing detailed figures.

The hostilities escalated further on 8 May with the launch of large-scale Pakistani counter offensive, codenamed Operation Bunyan al-Marsoos, involving the deployment of a significant number of drones and missile systems aimed at Indian military infrastructure. In retaliation, India activated its layered air defence architecture, which reportedly succeeded in intercepting multiple incoming threats and executing strikes that destroyed several Pakistani airbases and air defence assets. Hostilities subsided with the suspension of operations on the evening of 10 May.

Preview

Although the operation lasted for barely three days, it has shattered several glass ceilings and established 'new normals'. It has not just showcased the technological advances in India's arsenal but also has implications at the tactical and operational levels and immensely impacted the very geo-strategic calculus.

This paper shall be covered under the following heads: -

- Technologically supported operation by the Armed Forces.
- Tactical and operational implications.
- Impact at geo-strategic level.

Technologically Supported Operation by the Armed Forces

Possibly for the first time in modern history post-independence, the Indian Armed Forces were able to achieve their stated aims and send a strong message to the world community at large and Pakistan in particular without even crossing the IB/ LC. In the Indian context, Operation Sindoor was probably equivalent to the American Operation Desert Storm launched against Iraq, which is internationally recognised as the first Hi-Tech war in modern times. The deployment of BrahMos and other advanced technologies demonstrated India's ability not only to develop and acquire sophisticated weapon systems but also to effectively integrate and utilize them in real-world scenarios.

Strategic Significance of BrahMos Deployment. Operational deployment of the BrahMos missile system, in a live combat environment, substantially enhances its credibility as a deterrent, transforming it from a theoretical asset to a proven strategic tool. Its use in this context was not solely a tactical decision but a deliberate strategic signal, conveying potential adversaries about India's readiness and capability to employ advanced precision-guided munitions in defence of its national interests.

The successful development and combat integration of the BrahMos system underscores India's advancing technological self-sufficiency in the defence sector. Developed through Indo-Russian collaboration, BrahMos exemplifies the country's growing competence in the indigenous design, development, and production of sophisticated weapon systems. This trajectory not only diminishes India's reliance on external suppliers but also reinforces its strategic autonomy in military affairs.

As a force multiplier, the BrahMos enables a limited number of platforms—be they aircraft, surface ships, or mobile land-based units—to deliver disproportionately significant offensive capabilities. Its supersonic speed (up to Mach 3), combined with a conventional warhead weighing between 200 and 300 kilograms, generates formidable kinetic energy upon impact, making it highly effective against fortified targets and critical infrastructure. The resultant destructive effect is sufficient to incapacitate an area comparable in size to a football field, thereby reducing the necessity for larger and more resource-intensive operations.

Beyond its physical impact, deployment of such a high-precision and high-lethality weapon system exerts a psychological influence on adversaries. It cultivates strategic ambiguity and uncertainty regarding India's operational reach and intent, potentially acting as a powerful instrument of deterrence through the projection of credible punitive capability.

Air Power Projection. The operation highlighted the Indian Air Force's (IAF) capability to project power with precision and efficacy deep into adversary-held territory. It underscored the IAF's proficiency in key operational domains, including mission planning, intelligence collection, aerial refuelling (required for extended-range missions), and the effective integration of advanced stand-off weaponry such as the BrahMos cruise missile.

A particularly noteworthy innovation during the operation was the use of unmanned aerial vehicles (UAVs) such as the Lakshya and Banshee Jet-40+, which were employed to replicate the radar and electronic signatures of Indian combat aircraft. This electronic deception strategy proved effective, as the Pakistan Air Force (PAF) reportedly expended a significant number of surface-to-air missiles against these decoy platforms under the assumption that they were engaging genuine Indian fighter aircrafts. The premature and misdirected defensive response not only depleted valuable Pakistani missile stockpiles but also inadvertently revealed the operational positions of PAF fighter aircrafts, ground-based radars, and air defence systems. This intelligence was subsequently exploited by the IAF, resulting in the reported destruction of at least two J-10C fighter jets and multiple radar and air defence installations.

In a public statement, the Prime Minister of Pakistan acknowledged the incursion of UAVs into Pakistani airspace, stating that the decision not to engage them was deliberate, to avoid exposing critical air and ground-based military assets. However, this admission inadvertently validated the effectiveness of India's deception and suppression tactics during the operation.

Air Defence. Pakistan resorted to targeting civilian areas as well as places of worship such as the Golden Temple. These were never classical VA/VPs for which the Indian Armed Forces had dedicated AD resources. Therefore, India's armed forces may have to plan a multi-fold increase in AD resources in order to cater for AD of at least border towns and important infrastructure including places of worship along the international boundary.

The proliferation of unmanned aerial systems (UAS), particularly low-cost drones, presented a distinct set of challenges to India's air defence architecture—their small size, low radar cross-section, and unconventional flight profiles rendered them difficult to detect, track, and intercept using conventional radar and missile defence systems. While the immediate

physical damage inflicted by such platforms may be limited, their strategic utility lies in imposing sustained operational and economic pressure on the defending state. This tactic, emblematic of hybrid warfare, is not designed to achieve decisive battlefield outcomes through singular, high-impact strikes; rather, it aims to generate attritional costs, induce radar operator fatigue, and trigger frequent false alarms, thereby degrading the long-term efficacy and responsiveness of India's surveillance and air defence networks. The need for constant high-alert status imposes significant logistical and financial burdens on India's military infrastructure, particularly along sensitive border regions. Despite these asymmetrical challenges, Indian air defence units have demonstrated growing operational effectiveness, having successfully intercepted multiple drone swarms across various sectors, including Punjab, Jammu and Kashmir, and Rajasthan. These engagements highlights both—the adaptability of India's air defence posture and the evolving nature of regional security threats. There is thus a need to have a surveillance mechanism in place wherein our counter-drone systems can distinguish between drones with munitions from drones that hide such drones in a swarm and indulge our AD resources to fire at them thereby not only inducing them to waste ammunition but also forcing them to give away their locations. As drones get more and more autonomous with AI and human out of the loop, soft kill by EW will become ineffective. Therefore, the Indian Armed Forces will have to innovate and rely on a variety of counter-drone solutions.

Air Defence (AD) apparatus needs cheap solutions so that these can be deployed in large numbers. This short, intense conflict saw deep coordination between the IAF and the AAD. The time is ripe to move from coordination to integration by establishing the much-delayed Air Defence Command. However, in doing so, the strengths and weaknesses along with aspirations of all the stakeholders will have to be taken into account. Needless to say that all such decisions will have to be top-driven beyond a point of consultative process.

The operation also saw the employment of Strike Corps AD resources, thereby suggesting that, in all future conflicts, the resources available at one's disposal will be utilised without distinguishing between Strike Corps and Pivot Corps resources. In fact, a de novo assessment of the employment of Army AD resources will have to be carried out; only a few AD elements that are grouped with Armoured Divisions may remain with Strike Corps, while all other available AD resources be deployed to create a layered AD umbrella within which our troops and infrastructure can remain protected.

Re-Writing the War Doctrine

Operation Sindoor, launched in response to the Pahalgam massacre, marks a paradigmatic shift in India's approach to modern warfare—widely regarded as the country's first high-technology-enabled conflict. This operation appears to signify a reorientation of India's military doctrine, emphasising technological primacy—a conceptual shift from "soldier-first" to "silicon-first", where digital and automated systems form the frontline of defence.

The operation leveraged a suite of advanced capabilities, including precision-guided munitions (PGMs), long-range delivery vectors, satellite-based reconnaissance, smart munitions, and artificial intelligence (AI)-enabled targeting mechanisms to inflict significant damage on identified hostile infrastructure within Pakistani territory. Strikes were executed with remarkable accuracy, exemplified by Rafale aircraft delivering PGMs from altitudes of approximately 40,000 feet, guided by pre-programmed mission data and real-time intelligence.

A notable aspect of the operation was the integration of real-time geospatial intelligence. Live terrain mapping and movement modelling were enabled through Indian space assets such as CARTOSAT (providing radar, optical, and infrared imagery), GSAT, and RISAT (Radar Imaging Satellite), even within contested environments including GPS-denied

zones. These datasets were processed, fused, and verified using AI-driven surveillance and decision-support systems, ensuring triple-layered target validation before weapon release.

Further, deployment of a Bangalore-based private defence technology startup showcased the increasing role of India's indigenous innovation ecosystem. This entity employed autonomous drones for close-range reconnaissance and precision targeting, incorporating real-time detection algorithms, adaptive flight path correction, and robust fail-safe protocols for mission assurance.

The effectiveness of Operation Sindoor is attributable to the synergy among various actors in India's defence ecosystem: DRDO's contributions to targeting and payload integration, Bharat Electronics Limited's (BEL) radar systems and electronic countermeasure (ECM) capabilities, Bharat Dynamics Limited's (BDL) fire control logic, and real-time intelligence synchronization facilitated by the National Technical Research Organisation (NTRO) and the Research and Analysis Wing (RAW).

With the ongoing development of autonomous battlefield agents, predictive intelligence frameworks, and low-latency encrypted battlefield communication networks, India is increasingly positioning itself to build a technology-first deterrence architecture. This model not only enhances operational efficacy but also redefines conventional notions of force projection and strategic dominance in the 21st-century battle space.

Tactical and Operational Implications

Integration of Military Force as a Primary Response Option

- While diplomatic engagement and economic instruments continue to constitute essential components of India's broader counter-terrorism framework, Operation Sindoor underscores a notable shift towards the increased operational integration of military force—particularly air power and precision strike capabilities—as

a central element of India's strategic response to cross-border terrorism. This evolution reflects a heightened institutional confidence in the efficacy of India's military apparatus and a corresponding willingness to deploy kinetic means in the defence of national security interests. The scale and complexity of the operation suggest a high degree of inter-service coordination, likely involving seamless collaboration among the Indian Air Force, intelligence agencies (such as RAW and NTRO), the Indian Army (for the provision of tactical ground intelligence and potential contingency support), and the Indian Navy (in ensuring maritime domain awareness and securing critical sea-based assets). Such joint operational conduct is indicative of India's maturing capacity for integrated, multi-domain military engagements—an essential capability in modern warfare scenarios that demand synchronisation across service branches, intelligence networks, and real-time decision-making architectures.

- For the Pakistan Army and its affiliated militant organizations, the use of violence against India functions not as a calculated policy tool, but rather as a constitutive element of their institutional identity and political legitimacy. Sub-conventional warfare—particularly terrorism— remains embedded in the strategic culture of these actors. As such, they are likely to persist in their provocations irrespective of, and in some cases even incentivized by, the prospect of Indian retaliation. In this context, New Delhi appears to have adopted a strategic paradigm oriented towards attritional coercion rather than persuasion. Given the intransigence of the adversary's intent, India has seemingly shifted focus towards systematically degrading the operational capacity of both terrorist networks and their state sponsors within the Pakistani military establishment. This approach aligns with the logic of 'Cumulative Deterrence'—a model particularly applicable to protracted rivalries in which cycles of violence are expected to recur. Rather than

aiming to eliminate the adversary's motivation, this strategy seeks to impose recurrent and measurable costs, thereby constraining the adversary's ability to execute large-scale or frequent attacks. By routinely subjecting Pakistan-based terrorist actors to the threat of direct and precise military reprisal, India compels these groups to divert resources towards protective measures and operational survival. This reallocation may undermine their offensive capabilities and disrupt strategic planning. A historical precedent for this approach is evident in the United States' use of drone strikes against Al-Qaeda leadership in Pakistan, which not only neutralized key figures but also forced surviving operatives to prioritize self-preservation over operational innovation. Over time, repeated application of such measures may erode trust between terrorist organizations and their military patrons, potentially introducing uncertainty and friction within their strategic alliance. This indirect effect could have long-term implications for the cohesion and efficacy of Pakistan's proxy warfare apparatus.

Cold Start Doctrine. This Doctrine is designed to provide India with the capacity to execute rapid, limited conventional military operations against Pakistan while deliberately managing escalation to avoid breaching the nuclear threshold. The principal objective is to impose punitive costs on Pakistan for its sponsorship of cross-border terrorism or other forms of provocation, without precipitating a full-scale conventional conflict or triggering a strategic nuclear response. At the operational level, the strategy is underpinned by the development and deployment of Integrated Battle Groups (IBGs)—self-contained, agile, and highly responsive combat formations capable of swift mobilisation and offensive actions. These units are structured to deliver calibrated military responses that emphasizes speed, tactical surprise, and precision. The intent is to achieve discrete and politically significant military objectives within a compressed timeframe, thereby limiting the adversary's capability to

escalate or internationalise the conflict. This had essentially resulted in pushing forward the permanent locations of units and formations.

Operation Sindoor has now forced us to rethink this forward posture. It was seen during the operation that conventional forces did not cross the borders and the entire duel was fought from standoff ranges. It was also seen that those units and formations that were closer to the border were at risk and faced the maximum brunt of Pakistani retaliation; however, equipment and infrastructure located deeper into central India or peninsular India were totally safe. This operation has also established the fact that, there may not be a need to mobilise in the manner envisaged earlier immediately after an incident or terrorist inflicted violence.

Force Preservation. What this short and intense conflict has also proven is that, nothing is hidden and anything static, anything that is open and anything that is emitting electromagnetic radiation is a fair target. Therefore, emphasis will have to be on force protection. Some of the measures that our ground forces will have to adopt are as under: -

- ***Dig Deep***. Ensure that all static installations have overhead protection for protection against Kamikaze drones and the like. All weapons in the Tactical Battle Area will have to be dug into the ground or have pillboxes for firing.

- ***Shoot and Scoot***. All radars and guns will have to change positions after every engagement or radiation. Else, the Gun Locating Radars coupled with Artillery guns or Aircraft or Anti-Radiation missiles will cause damage to own assets.

- ***Camouflage and Concealment***. This assumes a whole new meaning. Gone are the days when camouflage and concealment were reserved for the last line during the making of war plans. In all future battles, this will have to be given primacy or else one will have to face annihilation from the enemy. Normal camouflage nets are useless as satellite imagery and IR cameras

will give locations easily. Multi-Spectral Camouflage Nets will have to make way for standard jute/cotton camouflage nets to be used across the armed forces.

War of Attrition. Russia-Ukraine and Israel-Hamas have established that the era of short and swift war is no more applicable. We are faced with a new paradigm wherein the requirement of ammunition, spares, logistics and even spare equipments (War Wastage Reserve) will be immense. We need to go back to the drawing board and work out the WWR scales again. This will obviously be dependent upon several factors such as the nature of equipment/ammunition (i.e. imported or indigenous), our production capability, the capability of our adversaries viz. China and Pakistan etc.

Conflict Outcome and Deterrence Dynamics.

- ***Strategic Outcome and Operational Superiority***. Operation Sindoor concluded with India establishing clear tactical and strategic dominance, representing a watershed moment in South Asian military affairs. US military strategist John Spencer characterised the operation as a 'decisive victory'—one that not only fulfilled but surpassed India's stated strategic objectives. These included the systematic degradation of terrorist infrastructure, a demonstrable assertion of military-technological superiority, the restoration of credible deterrence, and the articulation of an emergent national security doctrine. Spencer further described the operation as an exemplar of "disciplined military strategy", marked by well-defined objectives, proportional application of force, and adaptive operational execution.

- ***Escalation Management and Deterrence Signaling***. India's calibrated approach to escalation reflected a new doctrinal paradigm, best described as a strategy of 'controlled yet overwhelming' response. By imposing substantial costs on

adversaries while carefully modulating the tempo and scope of military engagement, Bharat succeeded in projecting both resolve and restraint. This approach conveyed a sophisticated deterrent signal—asserting India's capability to retaliate forcefully without breaching escalation thresholds. Crucially, measured restraint exercised by the Indian forces was not indicative of strategic hesitation but rather a demonstration of operational maturity and escalation dominance, effectively recalibrating regional thresholds for conventional and sub-conventional conflict.

- ***Role of Air Defence in Defensive Deterrence***. India's multi-tiered air defence architecture was instrumental in preserving strategic stability and reinforcing defensive deterrence during the conflict. Advanced systems such as the S-400 Triumph, the Medium Range Surface-to-Air Missile (MRSAM), Akash, and DRDO-developed D4 anti-drone platform, collectively mitigated the effectiveness of Pakistan's drone swarms and missile salvos. A particularly notable instance was the reported interception of the Fatah-II missile by the S-400 system, underscoring India's capability to counter saturation attacks and degrade the adversary's offensive potential. The performance of these systems contributed to the overall deterrent posture by denying Pakistan escalation success through high-impact strikes.

Impact at the Geo-Strategic Level

Signalling a Lower Threshold Against Terrorism. In the past, India was engaged in diplomatic outreach and intelligence-sharing with Pakistan concerning the activities of terrorist networks operating from its territory. The subsequent occurrence of large-scale terrorist attack, despite these measures, underscored the limitations of a primarily diplomatic and reactive posture. In this context, Operation Sindoor represented a decisive

shift in India's counter-terrorism strategy—from a predominantly defensive approach to one characterized by 'proactive and coercive action'. It reflects an increasing willingness on the part of the Indian state to undertake preemptive or retaliatory operations beyond its borders, aimed at neutralizing threats at their point of origin. This operation thus marks a significant evolution in India's doctrinal and operational response to cross-border terrorism—signalling a transition towards a more assertive and strategically autonomous security posture. It has graduated from 'Kadi Ninda' to 'Surgical Strikes' post Uri massacre to 'Aerial Strikes' on a terrorist camp in Balakot to finally 'Operation Sindoor'. This operation likely established a precedent, signalling to Pakistan and the international community that India has a lower threshold for resorting to cross-border military action in response to terrorism. This could act as a deterrent against future attacks, as the potential consequences for harbouring terrorist groups become more pronounced.

New Redlines. Prime Minister Narendra Modi's first address following Operation Sindoor reinforced India's firm position regarding its relations with Pakistan. In his 22-minute address, Modi explicitly stated that "India will not succumb to nuclear blackmail." PM Modi laid down clear conditions for any potential diplomatic engagement with Pakistan, emphasising that "terror and talks, and terror and trade cannot go together." He also stated that "an act of terror will be considered as an act of war". This principled stance indicates that normal relations cannot be restored while terrorist activities continue to be supported by Pakistan. Perhaps most significantly, Modi declared that India "will not differentiate between the government sponsoring terrorism and terrorists", effectively holding the Pakistani state directly accountable for terrorist actions emanating from its territory. The Prime Minister also narrowed the scope of potential future talks with Pakistan, stating that they would only focus on terrorism and Pakistan-occupied Kashmir, further limiting the diplomatic avenues available.

Emphasis on Accountability. The operation conveyed a strong message that India holds state actors, who supports or harbours terrorist groups, accountable for terror attacks on India. This challenges the notion of plausible deniability and puts pressure on countries to actively prevent their territory from being used for launching terrorist attacks against India.

"No First Use" Policy and Conventional Deterrence. PM Modi, during his televised address to the nation on 12 May 2025, stated that India will not be coerced by nuclear blackmail. While adhering to a "no first use" nuclear policy, the emphasis on a strong conventional military capability and the willingness to use it offensively strengthens India's conventional deterrence. This aims to dissuade adversaries from initiating conflict by demonstrating India's ability to inflict significant damage with conventional forces.

Collusivity. Until now, India has been used to discussing a two-front war, meaning assistance from China in case of a confrontation with Pakistan. During the present conflict, not only China's involvement in terms of weapons and equipment was evident, but Türkiye too helped with men and material. Specifically, while Türkiye provided Pakistan all types of drones, China assisted the Pakistani military by providing satellite pictures and intelligence during the conflict.

Prognosis

India must critically engage with emerging trends in future warfare, particularly with the increasing integration of advanced technologies by potential adversaries. A key consideration is whether non-contact kinetic operations, such as Beyond Visual Range (BVR) engagements, will dominate the character of future conflicts. In an operational environment defined by comprehensive Battlefield Transparency (BFT), real-time situational awareness, seamless sensor-to-shooter connectivity, enhanced lethality and precision of long-range weapon systems, and layered air defence networks, traditional doctrines—such as mechanised cross-border manoeuvres—require significant reassessment.

Strategic planning, force modernisation, and structural reorganisation must therefore be both imaginative and adaptive, grounded in a realistic appraisal of how contemporary and future wars are likely to be waged. India's military transformation must aim to establish a position of conventional overmatch vis-à-vis Pakistan, while simultaneously developing a credible deterrence posture against China, which remains India's principal strategic adversary. This imperative becomes even more critical in an era of fiscal constraints, where defence allocations must be optimally aligned with long-term capability development and strategic preparedness.

Defence Budget and Atmanirbharta. As previously established, India's future strategic calculus must extend beyond assessing Pakistan's standalone military capabilities, and should also include the broader network of external defence support Islamabad receives—particularly from China, Türkiye, and other aligned states. This evolving geopolitical landscape necessitates rapid and comprehensive military modernisation; it cannot be approached as a protracted, multi-decade endeavour.

First, India's current capital outlay—approximately 26% of the defence budget—is insufficient, especially given that a significant portion continues to be allocated towards the acquisition of high-cost foreign platforms. Moreover, the overall defence budget, at approximately 1.9% of projected GDP, falls short of the minimum 2.5% benchmark widely regarded as necessary to counter the dual challenge posed by the China–Pakistan axis.

To optimise defence spending and enhance strategic autonomy, India must accelerate the indigenisation of defence production. This includes not only reinforcing the role of public sector undertakings but also aggressively promoting private sector participation through policy incentives, procurement contracts, and research collaboration.

Second, the recent conflict—dominated by aerial engagements, with limited ground-based hostilities along the Line of Control (LoC) and

International Border (IB)—highlighted the growing centrality of air power and integrated air defence systems. India's air defence apparatus performed with notable effectiveness. In addition to the S-400 system, indigenous platforms such as the SAMAR (short-range surface-to-air missile) and Akash systems demonstrated commendable operational capability, showcasing the potential of domestic research and development. However, sustaining and expanding these capabilities will require continued and focused government investment.

Nevertheless, significant vulnerabilities remain. The Indian Air Force currently operates with only 31 active fighter squadrons—well below the sanctioned strength of 42, raising serious concerns regarding force adequacy. Additionally, critical enablers such as Airborne Warning and Control Systems (AWACS) require urgent modernisation, as platforms like the Phalcon are increasingly approaching obsolescence. Meanwhile, Pakistan's induction of Chinese J-10C fighters equipped with PL-15E long-range air-to-air missiles has further shifted the regional air power balance. Accordingly, India's Multi-Role Combat Aircraft (MRCA) procurement programme must be expedited without further delay to restore operational parity and enhance strategic deterrence.

It's Your Fight. Neither the United States nor China appeared to have anticipated the decisiveness and assertiveness of India's response, nor its public articulation of a sovereign military posture capable of undertaking unilateral trans-border action against a nuclear-armed adversary. This deviation from established expectations has reportedly generated a degree of unacknowledged disquiet within strategic circles in both the West and China. The operation appears to have catalysed renewed efforts to constrain India's ascent through a combination of economic pressure, geopolitical distractions, and the instrumentalisation of Pakistan as a conduit for controlled instability in the region.

One of the most consequential outcomes of the operation was the clarification of India's strategic environment—particularly in terms of discerning the reliability of both allies and adversaries. While the identity of

India's adversaries remain relatively unambiguous, the stance adopted by Western nations, including the United States, revealed a marked ambivalence—certain official statements issued during the conflict were not only unsupportive but were at times perceived as undermining India's position, with renewed efforts to equate India and Pakistan diplomatically. The approval of an IMF bailout package for Pakistan during the hostilities further reinforced concerns about the West's strategic calculus. The absence of any coordinated response from the Quadrilateral Security Dialogue (QUAD)—a grouping often touted as central to Indo-Pacific security—was especially notable. Aside from expressions of support from Israel and, to a lesser extent, Russia, India received limited international backing.

These developments underscore the imperative for India to exercise greater strategic prudence in selecting defence and diplomatic partners. The memory of past episodes, such as the denial of GPS access by the United States during the Kargil conflict, continues to inform Indian threat perceptions. There still remains a palpable reluctance in Western capitals to fully acknowledge India's emerging global role, its economic trajectory, and its increasing assertion of strategic autonomy. As such, India must prepare to navigate its strategic challenges independently, at least over the medium term. For the foreseeable future, India's security burden will remain largely self-managed, necessitating a robust doctrine of self-reliance in both defence and diplomacy.

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Empowering Tactical Commanders in the Age of Non-Contact Warfare: Lessons from Operation Sindoor

PRABHAT MISHRA

Abstract

Operation Sindoor, a recent joint operation conducted by the Indian Armed Forces, demonstrated the country's growing focus on integrated and technologically driven warfare. As the nature of warfare evolves from traditional kinetic conflicts to a contactless environment of precision strikes, cyber capabilities, and stand-off engagements, the role of tactical commanders is rapidly becoming complex. This paper examines the broader implications of non-contact warfare (NCW) for tactical-level leadership in the Indian Army.

Drawing lessons from Operation Sindoor and other contemporary military experiences, this paper explores the operational challenges posed by new domains of warfare, which include unmanned aerial systems (UAS), electronic warfare, and information dominance. It identifies key gaps in doctrine, training, and institutional readiness that must be addressed for the Indian Army to become a truly network-centric force. This paper concludes by offering practical, scalable recommendations to empower tactical commanders—the mid-level officers in the

ranks of Captains to Colonels—with tools, knowledge, and flexibility to operate effectively in today's increasingly complex and multi-domain battlefield environment.

> *"In today's warfare, you cannot win with yesterday's weapon systems. Today's warfare has to be fought with tomorrow's technology."*
>
> —General Anil Chauhan
> PVSM, UYSM, AVSM, SM, VSM
> Chief of Defence Staff

Introduction

Warfare today is no longer confined to the trenches or frontlines. The rise of cyber capabilities, drones, and real-time surveillance has steadily transformed the battlefield into a multi-dimensional, contactless domain. For the Indian Army — long accustomed to terrain-bound, conventional operations— this presents a fundamental challenge. COAS General Upendra Dwivedi recently described future battlefields as ones "where boots must share space with bots". Rather than relying solely on boots on the ground or direct firepower, modern operations increasingly involve tools that disrupt communications, deceive sensors, and exploit vulnerabilities without ever physically engaging the enemy. This shift was clearly reflected in Operation Sindoor, which embodied India's recognition of this change (PIB, 2025a).

While such operations signify the transformation of the Indian Armed Forces, they also bring out challenges for tactical commanders to be prepared for this new environment. These commanders — often in charge of sub-unit or unit-level decisions — must now process real-time intelligence, collaborate with EW and drone units, and operate in highly networked settings. The current training and command structures, however, have not fully kept pace with these demands. This paper

analyses the strategic and operational implications of non-contact warfare for the Indian Army's mid-level officers, drawing from the context of Operation Sindoor.

Operation Sindoor: A Glimpse into Future Warfighting

Launched on May 7, 2025, Operation Sindoor was India's rapid military response to the Pahalgam terror attack that killed 26 civilians (PIB, 2025c). It brought together elements from the Army, Air Force, and Navy, underlining the shift toward integrated, tri-service operations.

Figure 1: Op Sindoor

Source: ADGPI & PIB

The Indian Air Force played a leading role, conducting precision strikes on strategic targets deep within Pakistani territory. High-value assets like the Nur Khan and Rahimyar Khan air bases were targeted using long-range capabilities coordinated via the Integrated Air Command and Control System (PIB, 2025b). These operations were backed by a layered air defence network, combining new-age systems like the Akash SAM with legacy platforms such as the L-70 (CAPS India, 2025).

What made Operation Sindoor stand out was not just the use of firepower, but the seamless integration of non-kinetic capabilities. Unmanned aerial vehicles were employed for real-time surveillance, targeting, and post-strike assessment. Simultaneously, counter-UAS units worked to neutralise drone-based threats, reflecting how quickly the airspace has become contested even at the tactical level. In addition to kinetic operations, the operation witnessed extensive use of information warfare techniques by both India and Pakistan, including cyber operations, psychological operations, and electronic deception forming a parallel

battlefield. Both sides aimed to manipulate public perception, disrupt communications, and gain psychological advantage — all without confrontation (Seqrite, 2025).

Throughout the operation, tactical commanders had to stitch together these diverse elements in real time. While the technological tools enhanced situational awareness and lethality, their effective utilisation depended heavily on commanders' ability to lead hybrid teams, process ISR inputs, and make swift decisions. The operation has brought out valuable lessons for the requirement of requisite clarity and exposure to integrate these digital tools with ground manoeuvre tactics. These insights highlight the crucial need for reforms in doctrine, leadership development, and technology integration at the tactical level, to adapt and evolve to exploit the full potential of emerging contactless warfare capabilities (PIB, 2025b).

The Rise of Non-Contact Warfare

Warfare has moved beyond line-of-sight confrontations. In today's context, power is increasingly exercised through precision fires, cyber disruption, electronic warfare, and control of the information environment. Non-contact warfare (NCW), once an abstract concept, is now central to military strategy (Yadav, 2025).

Operation Sindoor clearly demonstrated India's evolving capability to engage the enemy without direct combat. Air and missile strikes launched from standoff positions, combined with drone-based intelligence, allowed forces to hit critical targets with precision — minimising risk to troops while maximising psychological and strategic impact.

Equally significant was the use of information operations. India and Pakistan engaged in psychological campaigns, online propaganda, and misinformation, underscoring the growing importance of the 'grey zone' — the space between peace and open war. In this zone, perception

Figure 2: Major Elements of NCW

Source: Infographic synthesised by author

management, cyber deterrence, and media influence become strategic tools. From a doctrinal standpoint, India's adversaries, particularly China, have already embedded non-contact warfare into their strategic framework under the concept of 'intelligentised warfare', which emphasises AI, big data, and electronic disruption, pushing its military toward contactless dominance (Baughman, 2024). For India, catching up is not an option — it is essential for strategic parity and regional deterrence.

Yet, the shift to NCW is not without friction. The Indian military's current structure is still largely optimized for conventional engagements. While the upper echelons may understand the digital battlefield, the tactical level often lacks autonomy, resources, and training to operate independently in this space. This places additional burdens on mid-level commanders, who are expected to bridge the gap between old doctrines and new operational demands.

Implications for Mid-Level Commanders

This new era of warfare demands far more from the Indian Army's mid-level leadership. These officers—typically young Captains and Majors, and seasoned Lieutenant Colonels and Colonels— are expected to

lead complex operations involving kinetic and non-kinetic assets, often with limited direction and under high-pressure conditions.

- **Decision-Making in a Multi-Domain Context**. During Operation Sindoor, Mid-level commanders were no longer limited to manoeuvring troops and coordinating fire support—they were also tasked with processing ISR feeds, liaising with cyber and air assets, and managing counter-UAS protocols in real time (TOI, 2025). This requires digital fluency, rapid situational awareness, and the ability to process cross-domain inputs under stress.

- **Training and Institutional Preparedness**. The current training structure for Indian Army officers is robust in traditional leadership and fieldcraft. However, officers in command of tactical operations must now understand how to employ space-based surveillance, neutralise drone swarms, and manage cross-domain linkages without real-time instructions from higher echelons. This highlights an imperative need to revise training curricula at training institutions such as the Infantry School, Army War College, and Defence Services Staff College to include hands-on experience through modules on networked operations, AI-based decision support systems, and multi-domain integration.

- **Command Autonomy and Decentralisation**. Modern, fast-paced digital battlefields often leave little room for delays caused by centralised command hierarchies. Operation Sindoor showed that operational outcomes improved wherever commanders were empowered to act decisively. Institutionalising this agility requires delegation of decision-making authority, clearer rules of engagement for digital and psychological warfare, and the creation of tactical data fusion centres at brigade and battalion levels.

- **Psychological and Ethical Strain**. The psychological burden of leading in a non-contact battlefield—where the enemy may not be

visible, but information warfare and digital manipulation are constant—can be profound (Johnson, 2022). In addition to physical risks, mid-level officers must now manage troop morale in the face of misinformation, prepare for rapid shifts in public and political perceptions, and ensure ethical use of emerging capabilities such as AI-enabled targeting systems. Effective leadership, therefore, demands not just technical competence, but also resilience, adaptability, and moral clarity.

Advancing Preparedness: Lessons from Operation Sindoor

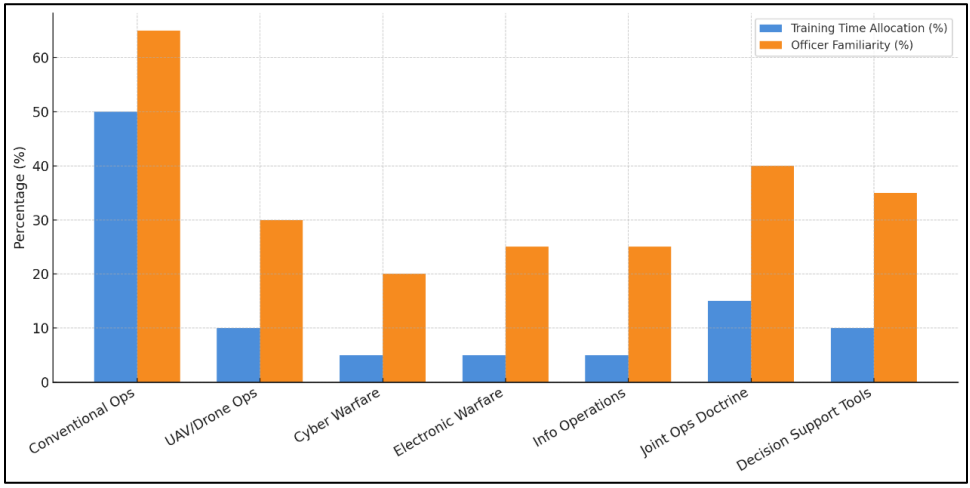
Operation Sindoor reinforced the adaptability and professionalism of India's forces while also offering clear lessons for future readiness. By showcasing strengths and identifying areas for enhancement, it has created momentum for more joint, technology-enabled, and multi-domain approaches to warfare. It has highlighted not only the strengths of current training systems but also areas where further emphasis can enhance effectiveness in future conflicts. Certain areas of development are as under:-

- **Legacy Foundations and Evolving Doctrinal Priorities**. The Indian Army's training and doctrinal emphasis has traditionally relied on conventional, contact-based operations, with core competencies in infantry, armour, and artillery manoeuvre forming the foundation of military instruction. As warfare continues to evolve, marked by the increasing relevance of cyber operations, cognitive effects, and cross-domain coordination, there is a growing opportunity to adapt existing frameworks to incorporate these emerging domains (Akshat, 2023). Enhancing preparedness across both traditional and non-contact scenarios will be key to developing a force that is agile, resilient, and aligned with contemporary operational demands.

- **Expanding Focus on Non-Contact Threats**. Premier institutions such as the Defence Services Staff College and Army War College,

while maintaining strong expertise in conventional warfare, have begun incorporating modules on cyber denial, drone swarming, and space-based ISR. With continued emphasis, these emerging domains are transitioning from supplementary subjects to integral elements of the curriculum, ensuring that tactical commanders are prepared for hybrid and decentralised conflict environments. The grouped bar chart below illustrates the current variation between training time allocation and expected officer familiarity across key domains of warfare (Patil, 2025). It clearly shows that while major training curriculum still focuses on conventional operations, familiarity with emerging domains like cyber, UAVs, and information warfare remains low.

Figure 3: Training Time Allocation vs Expected Officer Familiarity



Source: 'Digital leadership practices in global military forces: insights for governance and technological adaptation in defense organizations', Journal of theoretical accounting research; Data synthesized by author.

- **Technology Integration at Tactical Level**. While emerging technologies such as UAV swarms, electronic warfare systems, and cyber capabilities are increasingly being fielded, consistent exposure and hands-on familiarity at the battalion and brigade

levels remain areas for development. Unlike conventional kinetic platforms, which are deeply embedded in routine training and operations, non-kinetic and digital tools are often concentrated within specialised units or higher command structures (Bommakanti, 2019). Expanding practical engagement with these technologies across broader echelons will be important for improving adaptability and responsiveness in tech-driven scenarios.

- **Leadership in Complex Multi-Domain Teams**. Future combat teams will increasingly combine signals, cyber, intelligence, UAV detachments, and conventional combat units. For mid-level commanders trained primarily in terrain-focused leadership, managing such hybrid groups introduces new layers of complexity. Effective leadership now demands not only technical understanding but also the ability to communicate and make decisions across multiple disciplines (Akshat, 2023).

- **Integrating Advanced Technologies**. The Armed Forces have successfully inducted advanced systems, ranging from UAVs and long-range artillery to secure communications. However, often they have been introduced in isolation without an integrated doctrinal or tactical framework. The result is a situation where tactical commanders encounter these tools in modern operations but lacks the institutional guidance to employ them effectively. Building on these rapid acquisitions, the next step is to unify these capabilities within a broader doctrinal framework (Kumar, 2024b).

- **Strengthening Cross-Domain Training**. Exercises such as Operation Sindoor have already provided valuable lessons in synchronising with EW units, drone detachments, and psychological operations cells. Expanding opportunities for mid-level commanders to engage in joint planning and attachments with specialised units will ensure greater confidence and agility in real-time integration during complex operations (Bedi, 2022).

- **Fostering a Joint Training Culture**. India's training system has traditionally emphasised service strengths, and efforts toward greater 'jointness' are gaining traction. Extending this emphasis to battalion - and company-level exercises will further empower mid-level officers to practice integrated planning and operations. By reinforcing joint culture throughout training pipeline, the Indian Armed Forces can cultivate a generation of agile

Recommendations and the Way Ahead: Tactical Focus for Mid-Level Commanders

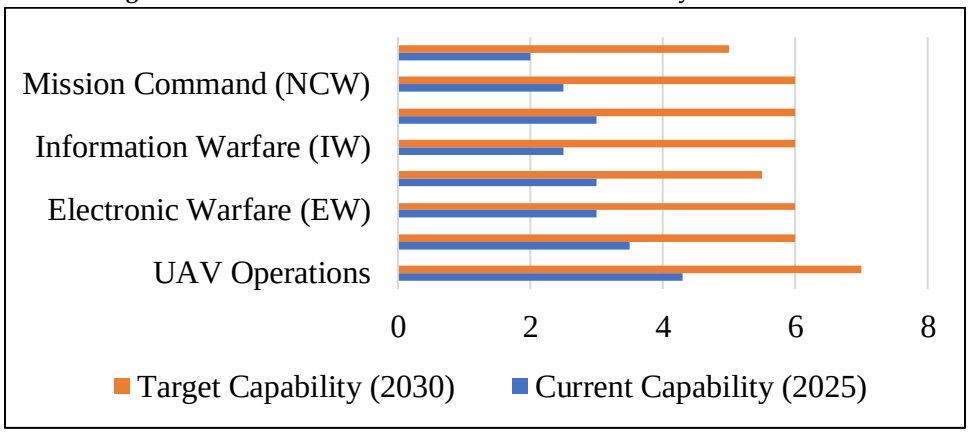
The transformative nature of warfare, as seen in Operation Sindoor, calls for a ground-up recalibration of how tactical leaders are trained, equipped, and empowered. Company and Battalion Commanders form the crucial link between higher-level directives and battlefield execution. Their ability to adapt to non-contact warfare will directly shape the Indian Army's operational effectiveness. The bar chart below represents the current and conceptual target capability across various key NCW domains.

- **Reforming Officer Education and Staff Courses.** A root-level overhaul of curricula at the Junior Command, Staff, and Higher Command courses is essential (Akshat, 2023). Modules on UAS, cyber warfare, artificial intelligence, spectrum operations, and information warfare should be treated as core, not electives. Tactical wargames must simulate drone swarms, cyber denial, disinformation, and satellite-denied environments.

- **Institutionalising Cross-Domain Command Training.** The Army should experiment with Cross-Domain Combat Teams (CDCTs) combining EW, UAV, signals, artillery, and combat arms under unified tactical command. These teams would comprise officers from EW, signals, UAV, medium artillery, and combat arms branches, operating under a unified command structure. Mid-level officers would rotate through these units during staff tenures to

gain operational exposure to multi-domain integration and build tactical interoperability (Felix, 2025). Tactical commanders must undergo mandatory familiarisation modules during their sub-unit and unit-level tenures.

Figure 4: Readiness of Mid-Level Officers Across Key NCW Domains



Source: Current & Target Domain readiness capabilities. Data synthesised by author.

This could include:

- Short attachments (1 - 2 weeks) with signal regiments, drone & counter drone detachments, or EW units.
- Participation in live or virtual exercises simulating cyber denial, drone swarms, and GPS spoofing.
- Cross-functional training capsules and live field firing with newly inducted platforms, ensuring hands-on exposure to tools and countermeasures relevant to modern battlefield threats.

- **Tactical Empowerment and Mission Command Doctrine**. The concept of Mission Command—wherein subordinates are entrusted with achieving intent-based objectives using their judgement—must be actively promoted. This entails reworking the

chain-of-command protocols to delegate more operational autonomy to tactical commanders, especially in various domains of NCW. During Operation Sindoor, prompt responses were often a result of decentralised decision-making. Empowering tactical commanders with clearer mandates in such domains would increase agility and responsiveness. Recommendations include:

  - Pre-briefed mission orders allowing officers to engage in EW, drone, or info-warfare capabilities without repeated authorisation.
  - Delegation of limited cyber and UAV tasking to battalion level ops rooms.
  - Tactical SOPs enabling real-time decision-making by ground leaders in hybrid environments.

- **Tech Familiarisation and Wider Induction**. Access to modern tools must not remain confined to specialised units. Every battalion should be equipped with basic drones, jamming devices, and cyber-defence kits. Officers should train regularly with these systems through field trials, live simulations, and joint integration exercises.
- **Incorporation of Multi-Domain Tactics in Exercises**. Brigade and battalion-level exercises should regularly incorporate NCW elements, which will embed multi-domain thinking at the grassroots and reduce over-reliance on conventional fire and movement templates (Kumar, 2024a). The exercises may include scenarios such as:
  - Drone reconnaissance and counter-drone operations.
  - Electronic deception and jamming.

- Scenario-based cyber disruptions (e.g, communication blackouts, spoofed ISR).

- **Non-Kinetic Enablers at Battalion level**. Introduce organic EW and drone elements at battalion level with clear tasking responsibilities. Mid-level officers should aim to gain expertise in these domains. Certain recommendations are:

  - Every battalion should have a trained Drone Platoon/ UAV team and at least one EW/ counter UAS detachment (Katoch, 2025).

  - Cyber defence drills and social media monitoring are integrated into routine ops room functions.

- **Digital Decision Support and Data Literacy**. Officers must be proficient in data-driven tools for predictive insights. Field-level refresher courses on databases, battle management systems, and GIS overlays should be standard. Unit training should include tablet-based wargaming and decision-making exercises with real ISR feeds.

- **Tactical Information Warfare Awareness**. Commanders must be educated on how adversaries use misinformation, deepfakes, and online influence operations. Training should include countermeasures for maintaining morale and public trust in contested information environments.

- **Short Courses and Micro-Credentials**. Officers should be encouraged and supported to pursue short-term online certifications or micro-courses at personal/ organisational level with command tenures rewarding technological adaptability domains like Cyber Security, Drone and Counter-Drone operations, and Tactical Data Analysis and GIS which can be integrated into career progression frameworks. The same has

already been implemented through domain specialisation drive among officers in the Indian Army (Dutta, 2024).

Conclusion

Operation Sindoor was not merely a demonstration of India's advancing technological arsenal — it was a call to reimagine how the Indian Army prepares its tactical leaders for the future battlefield. The shift from traditional, contact-heavy warfare to dispersed, digital, and multi-domain operations requires ability of tactical commanders to embrace it. These officers — Captains to Colonels — form the operational backbone of the Indian Army.

Their ability to lead, adapt, and integrate kinetic and non-kinetic tools will decide the outcome of modern conflicts. Therefore, bridging doctrinal, training, and cultural divides at the tactical level is imperative. This transformation requires not just updated syllabi or modern equipment, but a fundamental shift in mindset: one that values initiative, embraces technological fluency, and fosters decentralised leadership in complex, contested environments. As the Indian Army prepares for a future shaped by contactless warfare, empowering its tactical commanders with the skills, exposure, and autonomy to act decisively in such scenarios will be the most crucial investment.

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Understanding the Chinese Leadership's Mindset - *The 'Joseph Stilwell' Way*

JK ACHUTHAN

Abstract

Gen Joseph Stilwell was an American General who held the important Appointment of "Deputy Supreme Allied Commander for South East Asia" during World War II. He directly commanded Two USAF Groupings involved in the crucial airlift of military supplies to the KMT Govt of China. He was despised by the British as he did not hesitate to call "A Spade a Spade!" He was equally uncomfortable to the Chinese Govt as he held the Appointment of Chief of Staff to Generalissimo Chiang Kai-shek, an essential prerequisite for China to receive American Aid! Joe Stilwell had a bird's eye-view of the strategic compulsions in the China-Burma-India Theatre of Operations and could influence the course of events to end the military isolation of China, and cause the early defeat of imperial Japan.

The Supreme Allied Commander in South East Asia was Admiral Louis Mountbatten. The very fact that an Admiral was chosen to be the Supreme Allied Commander of this Theatre was proof that the British High Command was

obsessed with the idea of carrying out a large-scale Amphibious Operation onto the Malayan Peninsula and roll down for the recapture of Singapore. This invoked bypassing Burma and the transfer of the shipping involved in the Normandy Landings to the East Coast of India. Gen Stilwell caused the abandonment of this Plan by making operational the Ledo-Bhamo Road in North Burma and caused the 'Link-up' by December 1944, using two US-equipped Chinese Corps. This forced the British to launch the Invasion to recapture Burma using Gen Slim's 14th Army. Gen Stilwell was a China expert of the first order because of his long exposure in the Chinese mainland. He was on good terms even with Mao Zedong's CCP and all the regional Warlords. Chiang Kai-shek paid tribute to him by making the remark that Stilwell was more influential within China, than even himself!

Introduction

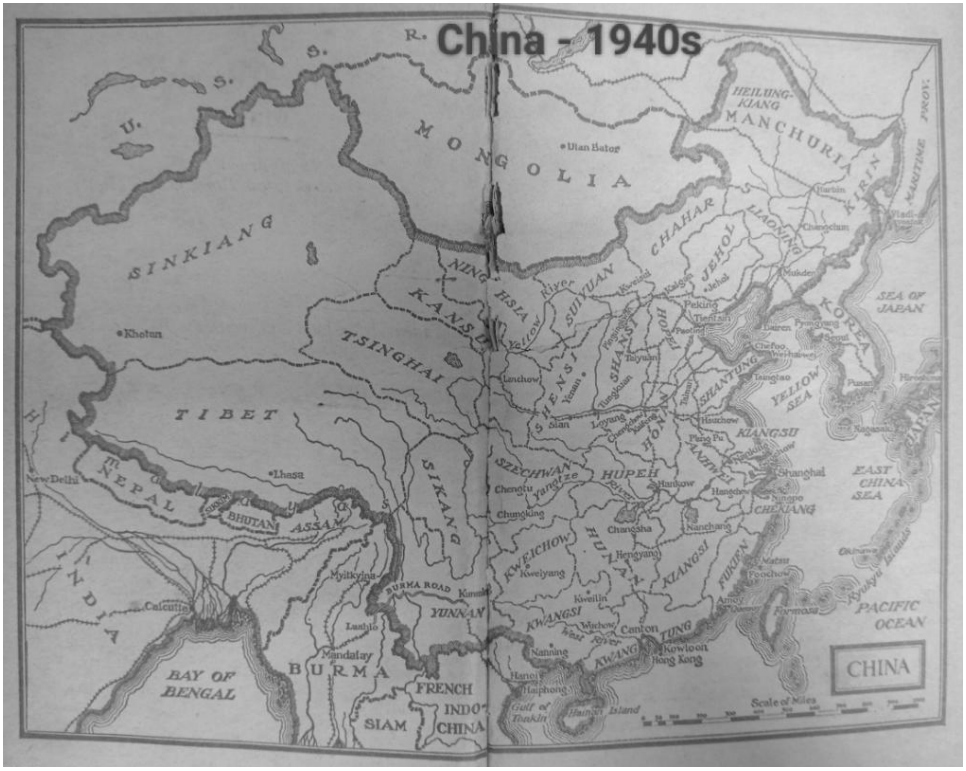
"Why Stilwell?" This is the first thing that comes to one's mind! General Joseph Warren Stilwell was the US 10th Army's Commander at the end of WW II—located in Guam, he was tasked to carry out the main amphibious invasion of 'Honshu' in Japan Proper from the East, under the codename 'OP CORONET' in end-Feb 1946 using 12 Divisions, including a British Army Corps consisting of one Indian, one Australian and one Canadian Divisions. That eventuality did not arise because of the success of the Top Secret 'Manhattan Project' in New Mexico on 16 July 1945, which led to the 'nuking' of Japan on 06 August and 09 August 1945. Imperial Japan thereafter unconditionally surrendered on 14 August.

General Joseph Stilwell, who was a Course junior to Gen MacArthur at the US Military Academy at West Point, had combined a military career focused on China from a period spanning the Chinese Revolution of November 1911 which overthrew its monarchy, up to the end of 1944 when the treacherous 'Ledo-Bhamo Road' in North Burma got operationalised, ending China's isolation in the War against Japan after seven long years. His long stint in China had started as a Chinese language-proficient officer with the HQ of the American Military Contingent at 'Tientsin', in the

strategic Shandong Peninsula from 1920-1923 in the time of the 'Warlords'; as a Commanding Officer in the US Army's 15th Infantry Brigade there, from 1926 to 1929 during the time of the rise of Chiang Kai-shek; as the US Military Attache to China from 1935 to 1939 at the time of the Japan-China War; and as the Four Star Theatre Commander of all US Forces in the China-Burma-India Theatre during most of WW II, combined with the responsibility of being Allied Chief of Staff to the Supremo in China - *Chiang Kai-shek* in the War against Japan, and Deputy Supreme Allied Commander of South-East Asia Command! He also had a bird's -eye view of the reasons for the 'Change of Power' from the 'Kuomintang' to the Communists under *Mao Zedong*. He had kept a meticulous Diary of his experiences and opinions, which later got published as the Best-selling 'The Stilwell Papers'. *Chiang's* parting remark about him was "General Stilwell has more Power in China than I have", due to his control over the American 'Lend-Lease' Stores.

Lt Stilwell was 28 years old when he first stepped into China, and this vast country was at its lowest nadir both in political organisation and military strength. He had the truthfulness and vigorous energy of a well-established Yank from Yonkers, New York. He was a superb athlete and sportsman—qualities admired in the military. He had been commissioned into the Infantry on 15 June 1904 at the age of 21. He had done an active-duty tenure in the Philippines in the 'Cebu' Island from the year of his commission. Thereafter, he served as an Instructor at West Point in the Foreign Languages Department because of his proficiency in Spanish and French. Later, he worked as an Instructor in Tactics. Thereafter, he was posted back to his Regiment to do duty again in the Philippines. He first reached Shanghai while on a vacation to see the Orient in November 1911. After visiting Hong Kong, Stilwell left for Manila on 09 December 1911. He did another tenure as an Instructor at West Point before America joined WW I in 1917. In September 1916, after 12 years' service as a Lt, he was made Captain. In August 1917, he was made a Major and Adjutant of a Brigade under the newly raised 80th American Division at Camp Lee in

Virginia. In January 1918, he reached France, after being assigned to the 'American Expeditionary Force' under that iron-willed cavalryman—General John J Pershing, to serve as the Chief Intelligence Staff Officer of the American IV Corps deployed for an offensive at the 'St Mihiel' Salient. In Sep 1918, he was promoted to Lt Col. In October 1918, the new Republican German Govt sued for an Armistice. On 05 November 1918, Marshal Foch, the Overall C-in-C acquiesced to the Armistice Request, after his strict Terms were accepted by the German Government. Stilwell got promoted to Colonel rank in December 1918, during IV Corps' occupation of the Coblenz area of Germany. In May 1919, the Treaty of Versailles was signed, and American troops returned from Europe. Stilwell came home in July 1919 and reverted to the rank of Captain.



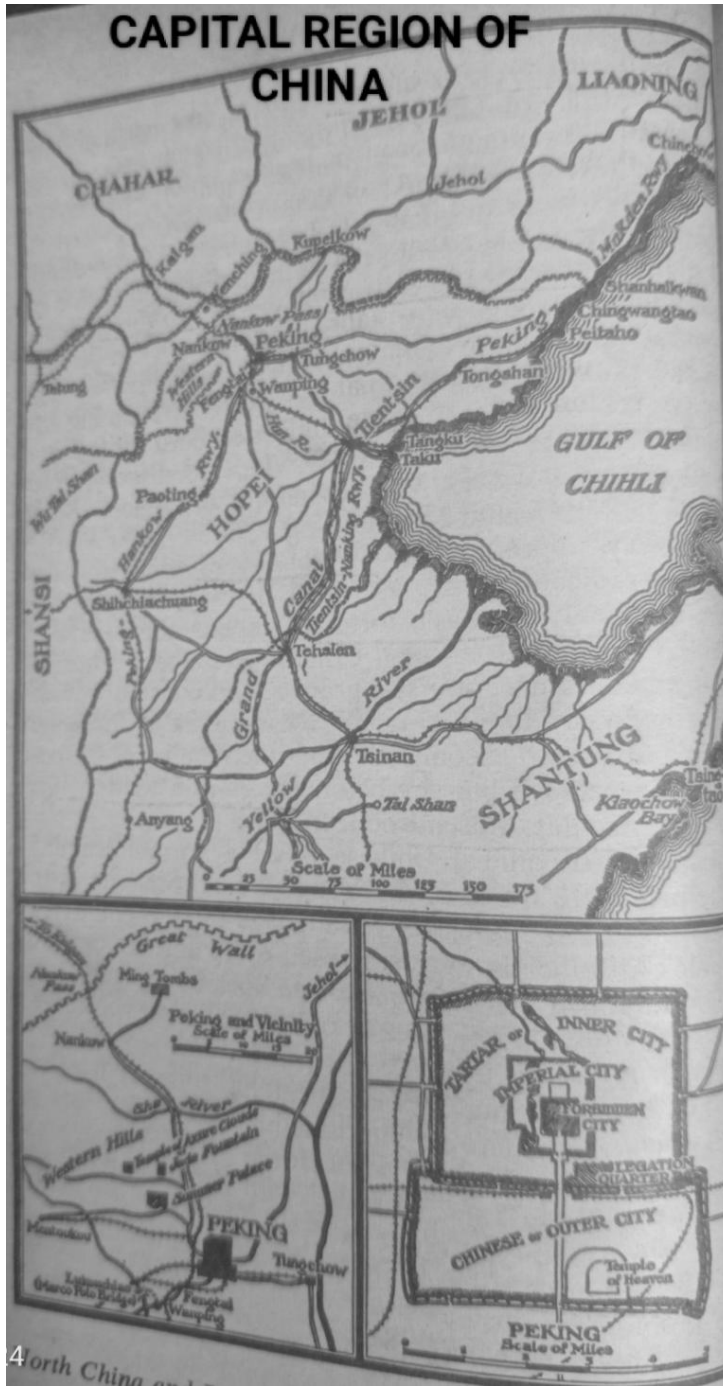
The US Army's Military Intelligence Division after WW I, had started a programme of giving exposure to suitable volunteer officers to get practical language proficiency in important foreign languages, by giving a tenure of 3-4 years in target countries, which may come of use in the future. Ten days after his return from Europe, Stilwell volunteered for such an assignment in China! Only such language-proficient officers would get the chance to be appointed as Military Attaches in US Embassies in such countries, when they rose up in rank. Stilwell was 36 years of age in August 1919, and was detailed for a One Year's Chinese Language Studies Course at the University of California, Berkeley. He was amazed to know that every Chinese word was expressed as a unique pictorial character in the written form and had four different 'tones' when spoken, which conveyed different meanings. A daily-use level of speaking ability needed about 1100 word-characters' memorization. Each such word is composed from 214 'radicals' which conveyed a basic meaning and followed by the addition of a 'phonetics' character, which made the word convey a specific meaning. There are 880 'phonetics' in the Chinese language. '*Pai Hua*' is the written form of the vernacular Chinese, which is akin to our 'Hindustani'. Stilwell was promoted as Major in July 1920, and he sailed for China in August 1920 after attaining basic proficiency in the Chinese language.

The Capital Region of China was then controlled by the Combine of three Warlords viz. Marshal Wu Pei Fu, the staunch Christian General Feng Yu-hsiang and Marshal Chang Tso-lin from Mukden in Manchuria. Sun Yat-sen, a Methodist Christian, was the nominal President of China based at Canton, but was unable to unite China during this period, as the Kuomintang did not have a strong 'military' component. This was the first important observation of power politics in China that Stilwell learnt.

The Three Principles which the KMT expounded were Nationalism, Democracy and People's Livelihood, but the KMT then had no Foreign Backers. In 1919, Soviet Russia announced the waiving of All 'unequal' Czarist Treaties and Concessions in China, causing a tremendous

impression in China. Sun Yat-sen made an alliance with revolutionary Russia in January 1923, to achieve national Unity and Independence from exploitation by the Western Powers and Japan. The Chinese Communist Party, founded in 1921, was coopted as Allies. The Soviets helped the KMT to set up the Whampoa Military Academy in 1924 with Col Vassili Bluecher and 30 Instructors. It had Chekiang Province's Chiang Kai-shek aged 37, as its Commandant.

Stilwell had spent six months in Peking when he got the opportunity to become acquainted with China at the working level. Following the severe Famine of 1920 in China, the International Famine Relief Committee which was funded and led by the USA needed a director to lead a road-building programme in Peking's neighbouring 'Shansi' Province, to efficiently move agricultural produce. Stilwell volunteered for this duty, and from April-July 1921 worked wholeheartedly to make it a success. He was helped in this effort by the Tuchun (Warlord) of this Province, Yen Hsi-chan. This road-link was 131 km long, starting at 'Fenchow' and ending at 'Jung-tu', on the Hwang-he (Yellow River). Stilwell succeeded in mastering the local language and learning its idioms, and could crack jokes in Chinese and even give speeches when warranted. Stilwell was thereafter invited by General Feng Yu-hsiang, the *Tuchun* of the neighbouring 'Shensi' Province in 1922, to build a proper 135 km road from 'T'ung Kuan' to 'Sian', supported with funds from the Famine Relief Committee. It was here that Stilwell earned the Chinese name "Shih Ti-wei" belonging to the "Ou Chou" (friendly European) Clan. This road-building effort got cancelled due to a threatened takeover of Peking by Gen Chang Tso-lin, which was thwarted. Stilwell was thereafter able to travel extensively on official duty in South China & Japanese-controlled Manchuria, Vladivostok, Korea, and Japan. He returned to America in July 1923.


CAPITAL REGION OF CHINA
JEHOL
LIAONING
CHAHAR
Jehol
Kupeikow
Kalgan
Nankow
Peking
Tungchow
Wanping
Tientsin
Tangku
Taku
GULF OF CHIHLI
Peitaho
Tongshan
HOPEI
Paoting
Hankow
Shihchiachuang
SHANSI
Grand Canal
Tientsin-Nanking Rly.
Tehsien
River
Tsinan
SHANTUNG
Tai Shan
Anyang
Yellow
Kiaochow Bay
Scale of Miles
Great Wall
Ming Tombs
Nankow
Peking and Vicinity
Western Hills
PEKING
Tungchow
TARTAR or INNER CITY
IMPERIAL CITY
FORBIDDEN CITY
CHINESE or OUTER CITY
Temple of Heaven
PEKING
Scale of Miles

Stilwell took the Infantry Commanders' Course at Fort Benning in 1923-24 and qualified for the Command & General Staff Course at Fort Leavenworth at Kansas, in 1925-26. Dwight Eisenhower was the topper of this Course. He was, thereafter, in August 1926, made Battalion Commander of the US 15th Infantry Brigade stationed at 'Tientsin', China. Meanwhile, Sun Yat-sen had died of cancer at Peking on 12 March 1925. Chiang Kai-shek emerged as the leader of the KMT in 1926, with support of the Warlords of 'Kwangtung' and 'Kwangsi' Provinces viz. Li Tsung-jen & Pai Ch'ung-hsi. He immediately undertook preparations for the Military "Northern Expedition" to extend the writ of the KMT Regime over the whole of China. It began in July 1926 with the three great cities of the Yangtze Valley, viz. Hankow, Nanking and Shanghai as the first objective. The KMT Forces numbered 100,000. They took Hankow by September 1926. Chiang Kai-shek was a "political" genius who did not have prowess in the military domain. His policy was, "To win the War 30% by Fighting, and 70% by Propaganda!" He knew the Chinese masses were on his side.

In March 1927, KMT forces entered Nanking. The Nationalists then built up their forces around Shanghai by the end of March-April. Chiang Kai-shek was very clear that he needed the backing of the Capitalists of Shanghai for his future ventures and political stability. Hence, instead of straightaway taking this city, he first struck against the Communists and Left-Wing supporters of the KMT on 12-13 April 1927 and eliminated them. He then went on to establish his Govt, with capital at Nanking. The KMT forces captured 'Hsuchow' by end-May 1927, and made no further efforts to proceed North due to logistics difficulties and political quarrels. Hsuchow was at the junction of the main North-South & East-West Railways, and below the border of the vital Shantung region. As per the old Chinese saying, "Who holds Tsuchow, holds T'ien-hsia (meaning The Mandate of Heaven i.e. China)." Tsuchow was held by the Forces of Shantung Tuchun—Chang Tsung-chang. Chiang Kai-shek's ally, the Shensi Tuchun, Feng Yu-hsiang had taken 'Chengchow' which

dominated the Western end of the transverse Railway, causing the Northern Alliance Forces' to retreat behind the Yangtze, which also forced Chang Tsung-chang to retreat from Tsuchow.

The US 15th Infantry Brigade had two Battalions at 'Tientsin' and one Battalion located in the Philippines. Tientsin, located 96 kms up the Pei-Ho River from the sea, was the main port and business centre of North China. The US Infantry Brigade's main mission was to protect the American Legation Staff in Peking, should the need arise. Lt Col George C Marshall was the Executive Officer of the 15th Infantry Brigade. Capt Mathew B Ridgeway was one of Stilwell's Company Commanders. In the last week of May 1927, Major Stilwell was assigned the daring task to go on a 'Reconnaissance' to Tsuchow, to get a reliable Report about the advance of the KMT Forces and the state of preparedness of the defending forces of the Shantung Tuchun—Chang Tsung-chang, who had a very notorious reputation for cruelty. This Tuchun had, as mercenaries, a Brigade of 'White' Russians under the Czarist General Netchaeff with four armoured trains and a fearsome squadron of cavalry who killed without asking any questions.

Stilwell found the Tuchun's Forces at Tsuchow, both under-armed and in a poor state of morale to fight. On 02 June 1927, the KMT Troops entered Tsuchow after the Tuchun's Forces fled North. Stilwell got into a South-bound train and escaped to 'Pu Kou' on the Yangtze, opposite Nanking. He had with him a very loyal Chinese companion. Crossing by ferry to Nanking they boarded another train to Shanghai. He ultimately reached the anchored American cruiser, 'Pittsburgh'. From there he was quickly conveyed to Peking, where he gave his 'firsthand' Report to the US Ambassador & Military Commander. His Report praised the discipline exhibited by the KMT Troops and firm leadership of their 'Whampoa'-trained young officers. He correctly opined that the KMT offensive had come to a halt at Tsuchow, as they ran out of the rolling

stock to bring up the needed supplies for further advance. He reported adversely about the fighting qualities of the Northern Forces.

Due to bickering and internal conflict within the KMT, Chiang Kai-shek stepped aside in August 1927 and went to Japan. He was unanimously recalled by all factions in November 1927 to again lead the KMT Forces in the "Northern Military Expedition", to reunite the country. He strengthened his position by marrying Miss Mayling Soong, who belonged to the influential US-educated Soong family and was the younger sister of Mrs Sun Yat-sen, in December 1927 at the age of 40 in Shanghai. He converted to Christianity, thus getting abiding support from the influential US Missionary Interests. In Jan 1928, Chiang Kai-shek became a de facto Dictator by redesignating himself as the 'Generalissimo' of the Nationalist Forces and Chairman of the Central Executive Committee of the KMT. He resumed the "Northern Expedition" in April 1928. Stilwell had meanwhile assumed the office of Chief of Staff to the US General in China in January 1928. In May 1928, he was promoted Lt Col.

In May 1928, a serious incident happened. As the Nationalists advanced towards 'Tsinan' the capital of Shangtung, the Japanese accused them of attacks on Japanese nationals and dispatched 2000 Troops from their Naval Base at 'Tsingtao'. They then killed the Nationalists' Commissioner of Foreign Affairs of Shantung Province and Fourteen KMT officers at Tsinan, to provoke a retaliation, which could form the basis for a major military intervention. This was the brainchild of the then Japanese PM, Baron Tanaka. He advocated the conquest of Northern China & Eastern Seaboard of China. Chiang Kai-shek astutely swallowed this Insult and withdrew from 'Tsinan'. He held to his aim of taking Peking first and switched his Army away from Shantung Province, by crossing the Hwang He and moving to Peking from the West. Stilwell correctly predicted the Japanese intentions to his superiors. He returned to the US in April 1929 and was posted as Head of the Tactical Section of

the Infantry School, Fort Benning where Col George Marshal was the Commandant. Lt Col Omar Bradley was Head of the Weapons Section, and other Instructors included Mathew B Ridgway, Courtney Hodges, J Lawton Collins and Walter Bedell Smith, who became key Generals during World War II. Stilwell continued there till May 1933 and earned his nickname 'Vinegar Joe' there!

As the KMT Forces closed on to Peking, the reigning Tuchun there, Chang Tso-lin pulled out to 'Mukden' in Manchuria. While reaching there, the Japanese assassinated him by blowing up the rail coach in which he was travelling. The Nationalists formally took control of Peking on 03 July 1928. Simultaneously, they also took control of its dependent Port of 'Tientsin'. On 10 October 1928, on the 18th Anniversary of the Chinese Revolution, the KMT proclaimed the new modus of governance in China based on a 'One Party State' having all executive Power vested in the "Executive Committee" of the Party having 36 Members. In actual fact, real power was in the hands of the Five Member "Steering Committee" of the Executive Committee, whose Chairman was ex-officio the C-in-C of the Armed Forces viz. Chiang Kai-shek. Peking was not made the National Capital, because it housed the Foreign Powers' Legation Quarters Sub-district, where the Chinese Govt did not have its writ as per the 'Unequal Treaty' imposed in September 1901 after the Boxer Rebellion. 'Nanking' remained the capital of the KMT Regime. Despite two Rounds of negotiations, the Central Govt was unable to merge the Provincial Armies of the Tuchuns Feng Yu-hsiang (Shensi), Yen Hsi-chan (Shansi), Chang Hsueh-liang (Manchuria), Pai Ch'ung-tsi and Li Tsung-jen (Kwangsi) and Chang Fa-kwei (Kwangtung) into the National Army – 80% of Central Tax Revenues was spent on the Armed Forces.

In January 1935, Stilwell was appointed the US Military Attache in Peking, which was essentially a diplomatic post. In the meanwhile, in China the ruling KMT Dictator Chiang Kai-shek had conducted five

'Bandit Suppression Campaigns' to wipe out the Communists. He was assisted by the brilliant German former Army Chief Hans von Seeckt, as his Military Advisor.

In October 1934, the remnants of the Chinese Communist Forces, numbering 90,000 were forced to break out into the hinterland in the West from the more developed coastal Provinces. These Columns then conducted the historic year-long, nearly 9000 kms "Long March" to the 'Yenan' region in Northern Shensi to escape destruction by Chiang Kai-shek's military. Chiang was less bothered by the Japanese belligerence which started in September 1931 with the "Mukden Incident", and then continued to conquer Chinese territories in Manchuria and the Northern Provinces. He ordered his "Nationalist" Armies to retreat without giving fight to the advancing Japanese, so that they do not get decimated. This and his 'capitalists-supporting" policies, and lack of implementing badly needed Reforms in every sphere of national life, made him quite unpopular and a hated figure amongst the general Public. Japan thus got complete control of the areas North of the Yangtze which included the Provinces of Hopei, Chahar, Suiyuan, Shansi and Shantung, leaving the "Open" commercial Port of Shanghai and surrounding areas with the "Nationalists". This was the era of "Appeasement Policy" in China, to the brazen Japanese aggression and conquests.

Stilwell was promoted to Col rank in July 1935. By then, the US had changed the name of their "Legation" Territory in Peking to that of "Embassy", as was done by both the Japanese and British. China was then a country where half the people died before reaching the age of 30, and where 75% of these deaths were attributed to preventable filth-borne diseases. The American policy in China then was essentially "Wu Wei Erh, Wu Pu Wei" which meant "Through Not doing Anything, All Things will Get Done Naturally". Or in other words, "Why activate Japan's Enmity by Helping China, if China could not or would not Defend herself?" As far as Russia was concerned, it was in her interest to deflect

the Japanese Southwards from Manchuria, where they would be absorbed in the quicksand of endless struggle with the Chinese. In 1936, Stilwell was 53 years old, yet he toured extensively all over China to see things for himself. He found the KMT Govt to be not the least prepared to resist the Japanese militarily, and stated so in his Report to the Military Intelligence Division. Chiang's Army consisted of 1,300,000 Troops and under the guidance of the successor German Govt Advisor Gen von Falkenhausen, they were trying to build up a modern Army. The Communists had created the "Fourth Army" in their mountain Redoubt in Northern Shensi. He also met the influential Manchurian Tuchen Chang Hsueh-liang who was now based at 'sian'. In China, the Communists appeared to be bearing the 'Torch of Resistance' to the Japanese. They made a notable impression by launching an Offensive in August 1936 in Shansi Province against the Japanese as well as the local Tuchen Yen Hsi-chan. In November 1936, Edgar Snow who was the first Western journalist to tour extensively in the Communist-controlled regions wrote a series of articles in the 'China Weekly Review', which was later reprinted in book form as the best-seller "Red Star Over China". In December 1936, Chiang Kai-Shek went to 'sian' to unleash his "Sixth Anti-Bandits Campaign" but found himself 'kidnapped' by the Christian Tuchen, Chang Hsueh-liang, who was the intended Commander of the First Phase of this anti-Communists Offensive! He forced Chiang to come to an understanding with the Communists for a nominal "United Front", to defeat the Japanese Aggression. No Faction in China wanted a vacuum, with the elimination of Chiang Kai-shek. The Communists readily agreed to the 'Deal' and agreed not to carry out any hostile acts against large landlords, and to place their Army under Chiang's command. The Communist Divisions formed the 8th Route Army under the authority of Nanking. Stilwell, in his studies of the Taiping Invasions of the North during 1853-55, and the remarkable Campaign of the Imperial General Tso Tsung-t'ang to suppress the Muslim rebellion in Eastern Turkestan Province during the 1870s, had found a lesson for those who believed that the Chinese had degenerated beyond hope. He also toured the Soviet

Frontier in Inner Mongolia and Suiyuan during early 1937, and submitted a Report to the MID. His reputation as a China-expert became established, who knew the people there better than anyone else!

The Sino-Japanese War started on 7th July 1937. The opening shots were fired near the strategic railroad bridge at 'Lukouchiao', 19 kms to the West of Peking, on the Peking-Hankow rail-line. This railway was the only line not under Japanese control and Lukouchiao was a key junction, from where a shuttle connected to the key port of 'Tientsin'. Alongside the railway bridge was the ancient and beautiful road bridge better known as the "Marco Polo Bridge". The Peking region was defended by the Nationalists 29 Army under Gen Sun Che-yuan. Five Divisions of the Japanese' Kwangtung Army in Manchuria burst into Hopei Province. The Japanese planned to complete their Campaign in 90 Days. In Four Days, they had attained most of their initial Objectives. Chiang reinforced the Shanghai Sector, to give a strong fight there, which could spill over into the suburbs controlled by the USA, Britain & France. On 24 September 1937, Japan captured 'Paoting', the capital of Hopei and the Headquarter of Sun Che-yuan, who then withdrew. The Shanghai Defenders were commanded by the Tuchun Chang Fa-kwei. He put up stiff resistance for three months before disintegrating. The first victory over the Japanese was achieved in the end of August 1937 at 'Pinghsingkwan' in North Shansi by a Communist Division led by Lin Piao, which wiped out a Japanese Brigade.

The next Japanese Objective was the Nationalists' capital of 'Nanking' which was 320 kms up the Yangtze-kiang. Chiang Kai-shek followed the strategy of "Winning by Outlasting"! Capt Maxwell Taylor who was a Japanese linguist, was detailed to assist Stilwell. While a student at Harvard in 1902, President Roosevelt recollected that he had been told by a fellow Japanese student on a Map, that Japan's "100 years program of expansion" was — (i) War with China and annexation of Korea; (ii) War with Russia and decimation of its strategic Threat against Japan; (iii)

Annexation of Manchuria; (iv) Annexation of Jehol Province of China; (v) Establish a pro-Japanese Protectorate over North China up to the Yangtze; (vi) Acquisition of Australia and New Zealand at an opportune time, by making a winning alliance against Great Britain; (vii) Gain Mastery over all the Island chains in the Pacific including Hawaii, if possible; and (viii) Culminating, by establishing a Japanese Commonwealth encompassing All the Yellow Races! But President Roosevelt very well knew the strength of the "Isolationist" and had to steer America from getting into any War with Japan. Yet he fought against tremendous domestic opposition in Congress, and started the program of "Re-armament". His motto was to encourage "Gung-ho" (meaning work together in Chinese) between the Nationalists & Communists in China, so that they were able to put up effective opposition against Japan. The US therefore withdrew on 06 October 1937 from the '9 Powers Conference' called at Brussels to find a way to end the Japanese aggression in China. On 13 December 1937, Japan captured 'Nanking' and its troops thereafter behaved atrociously against the civil population, thus earning the ire of the civilised world. The Nationalist Govt withdrew to 'Hankow' (now Wuhan), to further 640 kms upstream on the Yangtze. Japan had by now committed a million men besides its Air Force in the War against China. The US decided to pull out its existing military contingent and gunboats from China in February 1938, thus setting a good example of respecting China's sovereignty. Stilwell was able to tour extensively the Battlefront and other places, as the Chinese wanted military and other assistance from the United States. He was also able to go to 'Lanchow' near the Western part of Inner Mongolia which was the Point of Entry for Soviet Aid. He was impressed to know that the Soviets had supplied the Nationalists nearly 300 military aircraft and were now training the Chinese pilots. Their main supply item was kerosene for these planes. In April 1938, the Chinese forces gained a significant battle-victory at 'Taierchuang' in Shantung. Taierchuang was a town on the Path to 'Hsuchow'. This was achieved by the Kwangsi Tuchun Gen Li Tsung-jen assisted by the Army of Gen Tang En-po. This

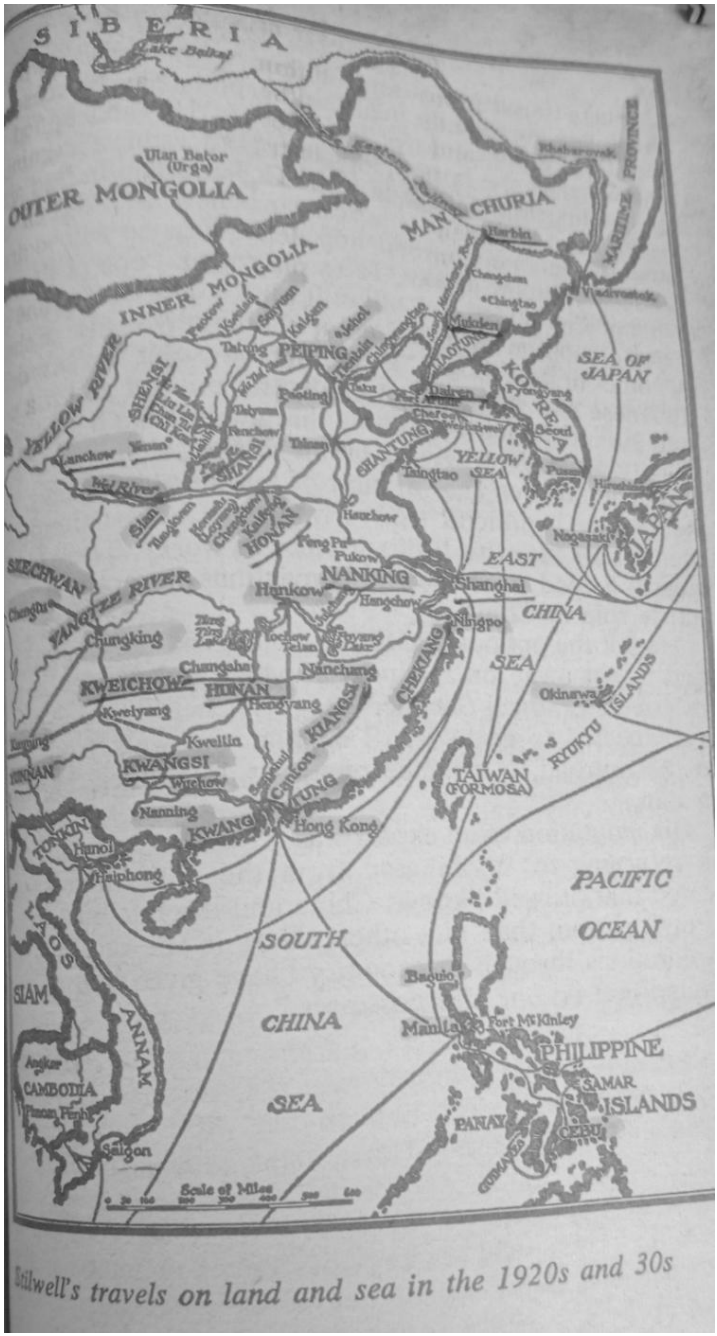
victory happened after a 17 days battle and the Japanese suffered nearly 16,000 casualties and losses of about 40 light tanks, 70 armoured cars, and 100 motor vehicles, besides several guns. But they failed to consolidate their gains by not giving chase. The Japanese bounced back in strength in May 1938 and took 'Hsuchow'. This triggered Chiang to break the dikes on the Hwang-ho at 'Chenchow'. 11 cities and 4000 villages were flooded and the crops in three Provinces were ruined, and two million people were rendered homeless. In August 1938, the Japanese resumed their offensive towards 'Hankow'. Chiang Kai-shek was forced to withdraw to 'Changsha', the capital of Hunan Province in September 1938. The Japs then captured 'Nanchang' the capital of Kiangsi Province, by attacking Southwards from the Yangtze. Col Wang Lia-chi of the Nationalist Army put up an effective fight. It was here that Stilwell made his famous observation about the Chinese fighting capability in his Report of September 1938, "*Suppose the Chinese soldiers were well-fed, well-armed and equipped, well-cared for, and well-led……?*"

The Sino-Japanese War came to a climax in the five days of October 21-25, 1938 when the Japanese took over not only 'Hankow' but also 'Canton', China's last access by sea to the outside world. The Japanese took their cue from Munich (28 September 1938)! On 12 October 1938, two weeks after that "Day of Defeat without War" as Winston Churchill had criticised in the British Parliament, Japanese Troops landed at 'Bias Bay', 46 km North of Hong Kong in the now 'Shengten' Region, and in four days they captured Canton facing only light opposition. They then set up a puppet government at Nanking overseeing the captured regions of China under Wang Ching-wei the ex-Vice President of the KMT, whom they had persuaded to defect.

Stilwell was stuck with his friend, Gen Shang Chen, at 'Changsha' in Hunan during this period. The Nationalists had shifted their capital to the remote city of 'Chungking' in Szechwan Province. This remained China's wartime capital for the next seven years. Making his way by road

through 'Hengyang' to 'Kweilin' in Kwangsi Province, Stilwell carried on through 'Kweichow' to reach Chungking on 19 December 1938. He had a cordial meeting with the Generallisimo and Madam Chiang who beseeched him to persuade his superiors in the US State Dept to extend sizeable military aid to China, for resisting the Japanese effectively. Stilwell returned to Peking in January 1939, as his period of tenure as the US Military Attache was to end in May 1939. He firmly believed that the way things were happening, the US and Japan would come to War one day, and the US and China would have to work as Allies in the future. He was more interested in identifying who all could become reliable Commanders in the Nationalists' Army in the future, and preparing their detailed dossiers. He had dinner at 'Kunming' in Yunnan Province on his way to Peking with his future adversary Claire Chennault, who had been hired by Chiang Kai-shek in 1938, to build up the Nationalists' Air Force. Stilwell's reading of the Japanese military commanders was that they were industrious, brave, persevering, organized, disciplined, and patriotic. However, they had bad qualities viz. arrogant, cynical, ruthless, treacherous, lying, unscrupulous, and hysterical! And all this was due to the fact that Japan had not tasted "Defeat" ever….

Stilwell sailed from China on 01 May 1939 with a high degree of disillusionment, as promotion to the Brigadier General Rank had eluded him. But the unexpected development four days earlier of the astute President Roosevelt's decision to appoint George Marshal as the next Chief of Army Staff, changed the scenario totally! Stilwell stepped on the American shore as a Brigadier General!



Stilwell's travels on land and sea in the 1920s and 30s

Conclusion

Stilwell's contribution to the War in Burma during WW II is quite well-known in military circles. He is derided quite rightly as an unforgiving 'Task Master' during the epic Battle for the capture of Myitkyina in November 1944. Not only the US "Merril's Marauders". but also, two whole Chindit Brigades of the British Indian Army got written off in that epic effort. But most of what we know of him is as seen through 'British eyes'! And they naturally give him very little credit, and castigate him as the eminently insufferable 'Vinegar Joe' who had to be tolerated and lived with, as American support was indispensable to the British War Effort. American and British strategic viewpoints on China were contradictory, as the British did not view favourably the Rise of China as an independent and strong Asian Power. Whereas, in America's viewpoint, this was vital to keep tied up a million Japanese soldiers and a thousand military aircraft from being employed in the Pacific Theatre! And Stilwell was only doing his bit to achieve this Aim and make the KMT Forces fight the Japanese instead of avoiding battle and sitting back, once the US and Britain got embroiled in the War against Japan.

By 1941, the Japanese had successfully coerced Britain into closing the Frontier in Hong Kong and Burma. The lifeline of the Burma Road from 'Kunming' to 'Lungling' had been cleaved from the mountain sides in two years of effort using the labour of 200,000 Chinese. Stilwell had become a Divisional Commander in July 1940. The US Presidential Election got over in November 1941, and thereafter President Roosevelt started tightening the screws on Japan. But anti-war sentiment in the US was still very strong and the US did not have an answer to belligerent Japan striking at British and Dutch colonial possessions in the Far East.

However, their dilemma was solved when the Japanese Cabinet accepted Admiral Yamamoto's views that Japan can have no hope of securing its oil supplies unless the US Pacific Fleet located at Hawaii gets

destroyed first, giving Japan a window of two years to reach a negotiated settlement based on a Fait Accompli.

The Communists in China also had a prominent hand in provoking the Japanese when they launched their 'Hundred Regiments Offensive' under Marshal Peng De-huai from 20 August – 05 December 1940 in Hopei and Shaansi, without authorisation by Chiang Kai-shek. This provoked terrible retaliation by the Japanese under their "Senko-Seikaku" Policy, which meant 'Kill All, Burn All, Destroy All'! This caused America to sanction the Provisions of the 'Lend-Lease Act' to China in March 1941. Gen John Magruder was appointed as Head of the American Military Mission to China to oversee the creation of 'American Volunteer Group' of military aircraft with pilots, and the conversion of 30 Chinese Army Divisions to American standards.

The German Invasion of Russia in June 1941 startled the US, and opinion in the US War Dept generally concluded the defeat of Russia in Three Months' time! 'Pearl Harbour' was the most 'pre-monitored' surprise attack in history, as the Americans had broken the Japanese Diplomatic code, yet they had no clue about the Target! Stilwell was made Corps Commander on 22 December 1941 and assigned to lead an Amphibious Assault to seize Casablanca.

This Operation, codenamed Gymnast later cancelled due to logistics difficulties. He was then assigned to Chunking as 'Chief of Staff' to the Generalissimo for the China War-Theatre, Commander of All Allied Forces in North Burma including Chinese Formations consisting of Four Divisions and the US 10th and 14th Air Forces; Considerable American Engineers, Equipment & Material Resources for Airfield Construction, Building of the Ledo-Myitkyina Road, and Doubling of the Railway Rolling Stock and New Oil Pipelines to the Burma Front; and as Ultimate Arbiter for all US Lend-Lease Supplies to China, including 'how' and 'where' it would be utilised. Chiang gave his clearance on 22 January 1942. And that was how the 'Stilwell-saga' started. He reached 'Chunking' on 03 March 1942.

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China: The Middle Kingdom Syndrome and the Quest for Centrality

NEERAJ NAITHANI

Abstract

This paper examines how the "Middle Kingdom Syndrome" – an enduring worldview rooted in China's historical self-perception as the civilisational centre of the world – shapes its political, economic, cultural, and military behaviour today. The syndrome emerged from early imperial notions of Tianxia – 'All under Heaven', was scarred by the "Century of Humiliation", and is now driver of the Chinese project of 'National Rejuvenation'. It traces its influence from ancient Confucian philosophy and the tribute system to Maoist revolutionary ideology and contemporary infrastructure and connectivity initiatives. It also explores the implications of this worldview for regional politics at the global level. The paper argues that the 'Middle Kingdom Syndrome' provides the lens through which China interprets its past, justifies its present, and envisions its future – making it central to understanding the trajectory of both China and 21st century geopolitics.

Introduction

China's rise in this century is often measured in economic or military terms, but behind material power lies a deeper force – a worldview shaped by history, philosophy and civilisational identity. The 'Middle

Kingdom Syndrome' is the modern form of China's age-old conception of itself as the civilisational core of the world. While dynasties rose and fell, and ideologies shifted from Confucianism to Communism to "Socialism with Chinese Characteristics", the underlying mentality of centrality persisted. The term 'Middle Kingdom' (*Zhōngguó*) has its origins in the Zhou dynasty, when Chinese states described themselves as the cultural and political centre surrounded by 'barbarian' peripheries. Over successive dynasties, this belief evolved into a deeply ingrained outlook; the conviction that China was not simply another nation, but the axis of a moral and political order extending all under Heaven. The endurance of this worldview is striking. Despite foreign invasions, dynastic collapse, ideological revolutions, and modernisation, the sense of centrality persists. Today, it underlies China's political rhetoric, its pursuit of sovereignty, its infrastructure initiatives, its cultural diplomacy, and its rapid military modernisation.

Understanding this syndrome is crucial. It explains why China treats questions of sovereignty in Taiwan, Xinjiang or Tibet as existential issues instead of negotiable disputes. It sheds light on the scale and ambition of the Belt and Road Initiative (BRI), which aspires to link continents through infrastructure and commerce in ways that subtly re-centre China in global networks. It provides context for the combative style of 'Wolf Warrior' diplomacy and for cultural outreach through Confucius Institutes. It also reveals why China's military expansion is framed as defensive yet results in assertive behaviour in the South China Sea and the Himalayas.

The article argues that the 'Middle Kingdom Syndrome' is both a source of confidence and a driver of insecurity. It motivates China to reclaim its historical role but also makes it highly sensitive to perceived slights. It analyses the role of the "Middle Kingdom Syndrome" across history, politics, economics, culture, and security to illustrate how this mindset manifests in practice. It references India, another ancient civilisation and rising power, which finds itself both competing with and

constrained by China's claim to centrality. Finally, it discusses the implications for the international order — whether China's worldview can be accommodated within a multipolar system or whether it will intensify rivalry and mistrust.

Historical Memory and the Roots of Centrality

The origins of the 'Middle Kingdom Syndrome' lie in China's early dynasties. During the Western Zhou period (1046–771 BCE), rulers conceived of their domains as the 'Central States', the axis of civilisation surrounded by uncivilised peripheries, The concept of *Tianxia,* literally 'All under Heaven', placed the emperor at the apex of a universal moral-political order. The Mandate of Heaven, a political and spiritual doctrine, legitimised the ruler as the divinely sanctioned guardian of order (Fairbank & Goldman, 2006). Confucianism, which later shaped imperial institutions, reinforced hierarchy and virtue, promoting the emperor as a moral exemplar whose authority radiated outward. Over time, this worldview became institutionalised in a system of diplomacy and commerce known as the Tribute System. By the Han dynasty (206 BCE–220 CE), emperors positioned themselves as the centre of a vast expanding tributary empire. Foreign polities sent envoys to the imperial court, presenting symbolic tribute in return for recognition and access to trade. Subsequent dynasties notably The Tang dynasty (618–907 CE) reinforced this system with the underlying message remaining that other states might be prosperous or strong, but they remained within a hierarchy with China at its apex. The Ming dynasty (1368–1644 CE) projected this worldview abroad through the voyages of Admiral Zheng He, whose fleets reached as far as East Africa. These expeditions were not primarily about conquest but about projecting cultural prestige and reaffirming centrality. By the Qing dynasty, till its downfall, the tribute system had reached its peak. Foreign emissaries from East Asia and beyond paid ritual homage to the emperor, affirming his supremacy while receiving trading privileges.

This practice was more than a set of diplomatic practices — it was a cultural and ideological structure that confirmed China's belief in its uniqueness and universality. The tribute system institutionalised this worldview, where foreign envoys would pay homage to the emperor, symbolically acknowledging China's superiority in exchange for access to trade. The system reflected a hierarchical but stable order in East Asia, where Chinese cultural prestige often carried more weight than military force. (David Kang 2010).

The collapse of this order during the 19th century was a profound rupture. The Opium Wars of 1839–42 and 1856–60 exposed China's military weakness and forced China into humiliating treaties, ceding ports and privileges to Western powers. The defeat in the first Sino-Japanese War of 1894-95 further undermined China's claim to centrality, and signaled the collapse of the Sinocentric order. This period, remembered as the "Century of Humiliation", left an enduring scar and became the defining trauma of modern Chinese history, and left a deep imprint of vulnerability, injustice, and a determination that China would never again be subordinated. It embedded in Chinese memory both a sense of loss and a determination that such weakness would never recur.

The 20th century produced new interpretations of centrality. Sun Yat-Sen's republican vision aimed to rejuvenate a fractured nation, while Mao Zedong recast China as the revolutionary heart of the Third World. Mao placed emphasis in his doctrine of "People's War" on collective mobilisation and enduring resilience, reflecting both Marxist ideology and the deep-seated belief in survival against stronger adversaries. Under Deng Xiaoping, the focus shifted to modernisation and integration with the global economy, encapsulated in his pragmatic dictum (*Tao Guang Yang Hui*), literally translated 'hide brightness nourish obscurity' or 'hide your strength, bide your time'. Yet even this cautious approach was animated by the conviction that China's destiny was to regain its central place in the world (Fairbank & Goldman, 2006).

This long history explains why China today frames its rise not as an unprecedented transformation but as the resumption of a natural order. The Middle Kingdom mentality has endured dynastic collapse, foreign occupation, and ideological upheaval. It continues to shape how China interprets its past and justifies its present.

Political Assertiveness and the Quest for Rejuvenation

The Xi Jinping period has witnessed the resurgence of the 'Middle Kingdom Syndrome' as a key political narrative. Xi's articulation of the 'China Dream' promises the "Great Rejuvenation of the Chinese Nation" (Xi Jinping, 2014) explicitly linking modern policy to ancient pride. The language of rejuvenation is deliberate. It casts China's rise not as the establishment of a new order but as the reclamation of its historically rightful position. This rhetoric is infused with both pride and insecurity. It celebrates China's return to prominence but also invokes the trauma of past humiliations as a warning against complacency.

This duality is evident in China's diplomatic posturing in the form of 'Wolf Warrior' diplomacy—a confrontational and coercive style of public diplomacy which has entered the Chinese media lexicon very recently (Peter Martin, 2021). Derived from a popular Chinese action film of 2015 by the same name, it is now emblematic of China's new assertiveness. China is now observed to be harsher and more assertive on diplomatic occasions, a distinctive variation from old style. The practice of being more assertive on perceived national interests, combined with government hardline policies, manifests in the form of many Chinese diplomats responding sharply, whether it is the United States, the European Union, or any nation. This diversionary use of assertive diplomacy to directly confront foreign interferences and viewpoints on the perceived 'Core Interests' rallies behind public support at home and is celebrated as a defence of sovereignty and dignity (Duan Xiaolin, 2023).

When it comes to perceived 'Core Interests', the political centrality is the driver behind Beijing's hard stance, especially on territorial issues. Taiwan, Tibet, and Xinjiang are treated not as negotiable disputes but as "Core Interests." Thus, Taiwan is portrayed as a sacred part of China's territory, and reunification is framed as a historic duty. Tibet and Xinjiang are seen not as contested spaces but as integral components of national unity. The refusal to compromise stems from more than nationalism—it reflects the conviction that fragmentation would undermine China's very identity as the Middle Kingdom. This explains the intensity of China's 'Wolf Warrior' reaction to foreign criticism, which is well evident in recent times in the form of controversial comments and actions by diplomats relating to sensitive and controversial issues such as the Chinese response to handling of COVID pandemic, issues relating to Xinxiang, Hong Kong, Taiwan and the Ukraine conflict. For China, such interventions are not merely external critiques but existential challenges to sovereignty and centrality. Internationally, it is often perceived as arrogance or coercion (Elizabeth Economy, 2021). Both interpretations are accurate when seen through the syndrome—China seems to be determined to prevent humiliation while insisting on deference to its status.

China's growing political assertiveness is particularly visible in its regional diplomacy, with the South China Sea disputes serving as a clear example. China's construction of artificial islands and militarisation of contested waters are justified as defensive measures to protect sovereignty, yet they also signal an ambition to dominate the regional order. For others, this appears as coercion—for Beijing, it is the fulfilment of a civilisational responsibility to safeguard national dignity. In this sense, the political expression of the 'Middle Kingdom Syndrome' produces a paradox—China insists it seeks peaceful development, yet its actions often appear threatening to others. The syndrome ensures that China's politics are not only about material interests but also about the restoration of historical centrality.

Economic Expansion and the BRI

Economics is a powerful tool for projecting centrality. The BRI, launched in 2013, is the flagship of this effort. By building ports, railways, highways, and pipelines across Asia, Africa, and Europe, China seeks to re-anchor global trade networks around itself (Rolland N, 2017). The symbolic resonance of this ambitious project is deliberate; it evokes the ancient Silk Roads, reasserting China as the hub of global commerce. China presents BRI as a framework of 'Peace, Openness, and Mutual Benefit' (National Development Commission, 2015). The official narrative emphasises cooperation and shared prosperity. Yet many analysts describe it as a modern form of tribute system, creating dependency on Chinese capital and standards. Numerous examples illustrate this duality. In Sri Lanka, the Hambantota Port project became a symbol of China's influence when Colombo, unable to repay Chinese loans, leased the port to Beijing for 99 years (Rolland N, 2017). In Pakistan, the China–Pakistan Economic Corridor (CPEC) connects Xinjiang to Gwadar Port, thus providing strategic access to the Arabian Sea. In Europe, China's acquisition of the Port of Piraeus in Greece turned it into a major gateway for Chinese exports. These projects bring real economic benefits but also extend China's geopolitical reach.

For India, BRI poses particular challenges. The CPEC runs through Gilgit-Baltistan, very close to India, (Rajgopalan RP, 2022), Chinese economic engagements in Sri Lanka, the Maldives, and Nepal are interpreted in India as elements of a broader 'String of Pearls' design intended to contain its influence. Consequently, India has opted out of the BRI, instead pursuing other alternatives and regional connectivity projects. Thus, economic expansion becomes an arena of rivalry as much as cooperation, and also reflects a clash of civilisational visions.

At the same time, China pursues self-reliance through the "Dual Circulation" strategy (Yu Yongding, 2020). This model aims to boost domestic consumption and technological independence while maintaining

global engagement. It reflects the syndrome's dual impulses: the insecurity rooted in the Century of Humiliation, which warns against over-dependence on foreign markets, and the confidence of restored centrality, which seeks to make China indispensable to global supply chains.

Cultural Confidence and Military Modernisation

Cultural diplomacy is another domain where the "Middle Kingdom Syndrome" is expressed. Xi Jinping often invokes 5,000 years of civilisation to assert China's uniqueness and resilience (William Callahan, 2013). Confucius Institutes, cultural festivals, and state-sponsored media campaigns are designed to 'Tell China's Story Well' (Paradise J, 2009). These efforts aim to project cultural legitimacy alongside material power. While supporters describe them as benign exchanges, critics see them as instruments of influence, coordinated perception-shaping efforts designed to alter global narratives in Beijing's favour.

Military modernisation complements this cultural confidence and illustrates the syndrome's duality even more starkly. The People's Liberation Army (PLA) has experienced a significant transformation, shifting from Mao's doctrine of "People's War" to Deng Xiaoping's emphasis on modernisation, to the informatised warfare concepts of the 1990s, and now to Xi's emphasis on "intelligentised warfare" (Fravel Taylor, 2019). China currently invests heavily in the latest and futuristic technologies such as artificial intelligence, cyber, robotics, drone, missile, space capabilities, etc. These advances are more often presented as defensive measures, ensuring that China will never again be vulnerable to foreign coercion. Official defence White Papers insist that China—"Will never seek hegemony" (State Council Information Office, PRC, 2019). Yet China's actions often tell a different story.

In the South China Sea, China has constructed artificial islands, deployed missiles, and expanded naval capabilities. These moves are justified domestically as safeguarding sovereignty but are viewed by

others as coercive assertions of power. In this context, cultural confidence and military modernisation are inseparable. Both are expressions of the Middle Kingdom mentality—China must project strength to secure its dignity and to reassert its central role.

For India, the military dimension is particularly salient and the syndrome's impact is particularly visible in China's relationship with India. The Galwan Valley clash of 2020, which resulted in fatalities on both sides for the first time in decades, illustrated how sovereignty, pride, and historical memory intersect. For China, building roads and airfields in Tibet is a strategic necessity; for India, countering with its own infrastructure is equally vital. The syndrome ensures that border disputes are not merely tactical matters but touch on existential questions of dignity and centrality. The Himalayas are not merely a border but a civilisational frontier where two ancient powers project their authority.

Discussion

The endurance of the 'Middle Kingdom Syndrome' reveals that China's rise cannot be explained solely in terms of economics or power politics. It is an identity framework shaped by history, trauma, and pride. It explains why Beijing insists on sovereignty, why it invests in infrastructure abroad, why it promotes cultural legitimacy, and why it modernises its military.

For the world, this produces a dual image of China. To many developing states, China is a partner offering infrastructure and development. To established powers, it is a revisionist actor seeking to reshape norms. The dual image is not a contradiction but the natural outcome of a worldview that insists on both pride and protection.

India illustrates the complexity of this dynamic. As another ancient civilisation with its own sense of destiny, India both understands and resists China's self-image. Their rivalry is not only over territory or influence, but also over civilisational authority. The competition across

borders, infrastructure projects, and regional diplomacy reflects a deeper struggle over who will define Asia's order.

Looking ahead, the 'Middle Kingdom Syndrome' will continue to shape China's behaviour. It will drive Beijing to defend sovereignty uncompromisingly, expand economic networks, promote cultural legitimacy and modernise its military. Whether this leads to conflict or cooperation or selective co-existence depends on the willingness of the international order and China to accommodate each other. If integrated into a multipolar framework, China's worldview could coexist with other powers, creating a hybrid order that blends liberal and Sinocentric norms. If not, rivalry and mistrust are likely to deepen, with Asia as the primary theatre of contestation. The third scenario is selective coexistence—China may dominate regionally while cooperating globally on shared challenges such as climate change or pandemics.

Whatever is the outcome, the 'Middle Kingdom Syndrome' will remain central. It has survived dynastic collapse, imperial humiliation, revolutionary upheaval, and modernisation. The syndrome is not a relic but a durable framework that, in current times, underpins China's self-image and global strategy. For scholars and policymakers, understanding this syndrome is essential not only to comprehend China's rise but also to anticipate the evolving dynamics of the global order.

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From Border to Airspace: The Evolution of Pakistan's Drug Smuggling Tactics Using Unmanned Aerial Vehicles (UAVs)

UPENDRA KUMAR SRIVASTAVA

Abstract

Evolution of new ways of drug smuggling by Pakistan including the employment of unmanned aerial vehicles (UAVs) has posed a unique and serious security threat to India. Historically, the system of smuggling was confined to the usage of human carriers or transportation through the border and tunnels; however, during recent years, this has been complemented or substituted with use of drones. Drug money has always been used by the military and the intelligence agencies (ISI) of Pakistan to finance covert operations in the Indian states of Jammu & Kashmir and Punjab. These two states are at the centre of drone-based narcotics trafficking due to proximity, convergence of terrorism, drug trafficking and introduction of niche technology. The accuracy and pace of UAV incursions across the International Border (IB) and the Line of Control (LoC) are growing, making the work of security forces, police, and anti-narcotics agencies challenging. This article will look at the trends in drug smuggling through drones over the last five years, geographical areas prone to the use of drones, the capabilities of narco-drones currently in use, and the mitigation measures that the Indian government is already employing. Solutions to this problem include developing operational

intelligence, inter-agency coordination, and provision of an overall multi-layered defence system, which involves the application of technology, patrolling of borders, community interactions, legal changes, and diplomatic engagements.

Introduction

The global narcotics economy is increasingly intertwined with national security dynamics, particularly in South Asia, where both state and non-state actors have historically exploited drug trafficking for financial and geopolitical gains. Pakistan is a major part of the global heroin trade. The 'Golden Crescent', that includes Afghanistan, Iran, and Pakistan, is one of the top areas for making opiates in the world. Geographically, India is located at the crossroad of the world's largest heroin and synthetic drugs producing regions viz. the 'Golden Crescent' (Afghanistan, Pakistan, and Iran) in the Southwest and the 'Golden Triangle' (Laos, Myanmar, and Cambodia) in Southeast. Its geographic location makes India a transit point and a major consumption region. Along with Western and Eastern borders on either side, the international border with Nepal, Bangladesh and a long maritime boundary make the challenge more complex[1].

Map 1: Major Drug Trafficking Routes into India

Source: ijreportika.com (2022), The Unearthing of the Global Drug Trafficking Networks

In recent years, the convergence of terrorism, drug trafficking and the advent of advanced technology have presented a unique security challenge for India. Pakistan's modus operandi of drug smuggling has witnessed a strategic and technological transformation. Traditional smuggling methods through human carriers or shipments via borders and tunnels have been either supplemented or replaced by Unmanned Aerial Vehicles (UAVs), or "Drones". This phenomenon has extended the threat from land borders to the airspace domain.

India's Northern and Western states, Punjab and Jammu & Kashmir in particular, have emerged as primary targets for drone-enabled narcotics trafficking. With every passing day, Unmanned Aerial Vehicle (UAV) incursions originating from across the International Border (IB) and the Line of Control (LoC) are increasing in both frequency and sophistication,

thereby complicating interdiction efforts of security forces, police, and anti-narcotics agencies.

Pakistan and Drug Terror Network

It is a well-known and widely documented fact that since the 1980s, Pakistan has been facilitating and deriving benefits from narcotics trafficking, in which it adopted a unique strategy of facilitating militant activities in the Indian states of Jammu & Kashmir and Punjab. The Inter-Services Intelligence (ISI) made use of drug proceeds to fund Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed, and other terror groups to fuel insurgencies in Jammu and Kashmir. Apart from the same, ISI also used drug money to fund the Khalistani extremist groupings in Punjab.

Pakistan is a cog in the wheel when it comes to the "Golden Crescent" drug trade, facilitating the transit of heroin from Afghanistan to the world. Numerous reports, including those of the United States Drug Enforcement Administration (USDEA), United Nations Office on Drugs and Crime (UNODC) and Financial Action Task Force (FATF), have specified Pakistan as a transit and refining centre for narcotics. By strategically linking narcotics with terrorism, Pakistan has always tried to attack India's stability using the asymmetric warfare strategy, while maintaining plausible deniability.

Pakistan has long been a crucial player in the illegal drug trade, using it to support its proxies against India and maintain its underground economy. The country's involvement in narcotics trafficking has not only fuelled regional instability but also led to its own internal security and socio-political challenges. After going through various reports and investigations carried out by independent think tanks and international organisations, it has been proven that Pakistan's military and intelligence agencies have been using drug money to fund covert operations and support various militant groups operating against India. During an interaction with the Washington Post in 1994, former Prime Minister of

Pakistan Nawaz Sharif accepted that in 1991, he was advised by then Pakistan's Army Chief and the ISI Head with the proposal of supporting illegal drug trafficking to fund foreign covert operations, which at that time meant mainly Kashmir[2]. The allegations were later denied by both General Beg, the then Pakistan Army Chief and Mr Asad Durrani, the Head of ISI. But Sharif's allegations were corroborated by a Central Intelligence Agency (CIA) report in 1992, wherein it was analysed and confirmed that drug corruption in Pakistan was rampant in every walk of society and governance.

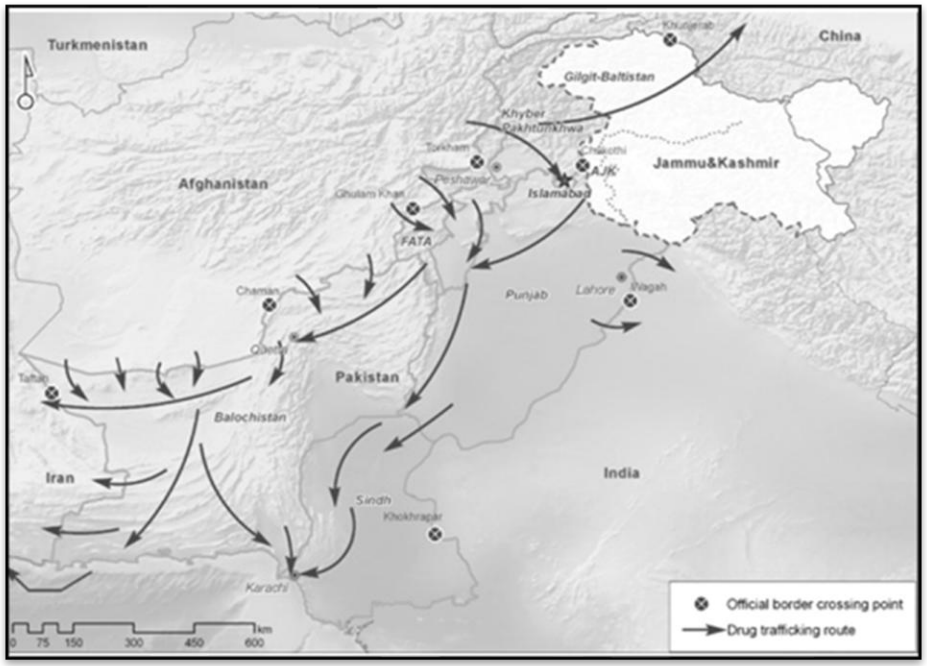
In its hybrid warfare strategy against India, Pakistan has been successfully exploiting narco-terrorism by combining its terrorist activities with drug trafficking to aid terrorism, destabilise Indian states, and threaten India's national security. This approach has been instrumental in the ongoing proxy war of Pakistan against India since the advent of insurgency in Jammu and Kashmir (J&K) in 1989. The use of narcotics by militant groups and separatists to finance activities to destabilise the internal security and authority of the democratically elected government is an old practice in the realm of asymmetric warfare. Narco-terrorism has played an important role in Pakistan's proxy war against India, as it has always provided clandestine support to Pakistan's state and non-state actors in terms of disproportionate fund generation, networking and organisational support.

Traditional Smuggling Routes

Pakistan has been using numerous routes and innovative methods to smuggle drugs through the International Border (IB) and the Line of Control (LoC), which also includes maritime boundaries. These techniques include narcotics being hidden in vehicles, being transported by human carriers, and being pushed through porous border areas. Besides, maritime trade routes are also used to smuggle narcotics and weapons into Indian states. In the last couple of years, smugglers have become more sophisticated in their methods, and uses drones to transport drugs across

the border. This technological shift has presented law enforcement agencies in India with new challenges to navigate, necessitating the adaptation of their strategies and the investment in counter-drone technologies. It is important to explore the traditional smuggling routes along the India-Pakistan border. These time-tested routes will still be used to complement the aerial routes.

Map 2: Afghanistan-Pakistan-India Drug Route



Source: United Nations Office on Drugs and Crime (UNDOC), 2015

Jammu and Kashmir Sector

The Line of Control (LoC) and International Border (IB) in Jammu & Kashmir have been used to smuggle arms and drugs since the inception of militancy in the state. Poonch, Rajouri and Kupwara are traditional areas of smuggling. The Pakistan Army, militants and couriers have been taking advantage of the long, treacherous and

porous border with India to facilitate the drug trafficking and infiltration of terrorists. These activities are more often supported by ceasefire violations from the Pakistani side. In Samba and Kathua regions, smugglers and Pakistan Rangers are also using tunnels to infiltrate terrorists and smuggle drugs.

Punjab Sector

Historically, Punjab has been the most exploited drug trafficking route into India from Pakistan because of the long and porous International Border (IB), cultivation up to IB by both sides, shared cultural and linguistic ties and extensive rail and road networks. Fazilka and Ferozepur sectors of Punjab provide proximity to Kasur and Bahawalnagar districts in Pakistan. Areas closer to IB in Tarn Taran, Amritsar and Gurdaspur districts have always been used for arms and narcotics infiltration. The modus operandi of the smugglers in Punjab to push narcotics has been through tunnels, throwing of packets over the fence, riverine crossings and concealment in agricultural equipment and produce. Punjab is the transit route of drugs destined for Jammu & Kashmir, Punjab, Delhi and other parts of India.

Rajasthan Sector

Rajasthan shares 1,037 kilometres of border with Pakistan, which is marked by long stretches of desert. Pakistani smugglers in Rahim Yar Khan, Bahawalpur and Tharparkar have been using areas close to the IB in Sri Ganganagar, Bikaner and Jaisalmer to smuggle narcotics and arms into the Indian Territory. Sparse population, limited fencing in remote areas and night movements through dunes and dry riverbeds facilitate the smuggling. Smugglers have been using camels and foot caravans to smuggle narcotics, which are concealed in salt and gypsum consignments. Rajasthan is the transit route of drugs destined for Delhi, Mumbai and Gujarat.

Gujarat Sector

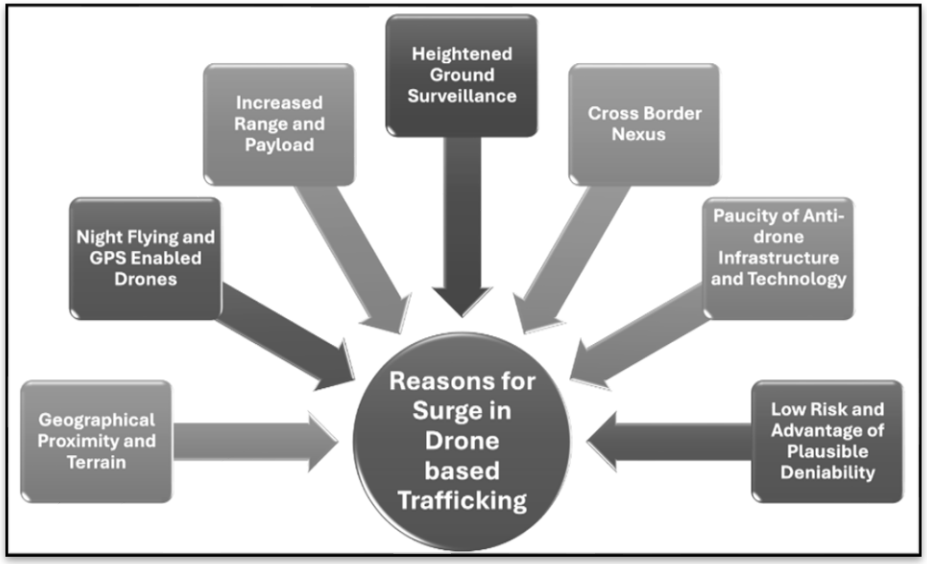
Gujarat has 1,600 kilometres of coastline along the Arabian Sea, and it has emerged as a significant maritime route for drug trafficking through Jamnagar, Porbandar and Kutch. Drugs smuggled into Gujarat via maritime route originate from Karachi, Ormara and Gwadar ports in Pakistan. The modus operandi of smugglers from Pakistan has been to transfer narcotics and arms from deep-sea vessels to smaller boats in the ocean. Besides, fishing trawlers and dummy cargo to mask the shipments are also used to push the contrabands into Indian territory.

Emergence of Unmanned Aerial Vehicles (UAVs) in Narco-Trafficking

In response to the heightened security measures adopted by security forces to combat drug trafficking, such as the construction of electrified barriers, deployment of sensors, and the installation of floodlights in border areas, criminal organisations have increasingly resorted to the use of drones. In the past, similar techniques were used by the Latin American drug cartels to smuggle narcotics, wherein they employed low-flying drones to breach the security apparatus[3]. Drones present a low-cost, high-reward alternative to narco-trafficking means. They have the capabilities of evading radar and visual detection because of their low radar signature, GPS-enabled precision and remote-controlled operations.

Various reasons for the unprecedented surge in drone intrusion to facilitate drug trafficking along the IB and the LoC can be realised by the following pictorial presentation:

Picture 1: Reasons for the surge in drone-based trafficking



Source: Author's own

Drone Sightings and Recoveries

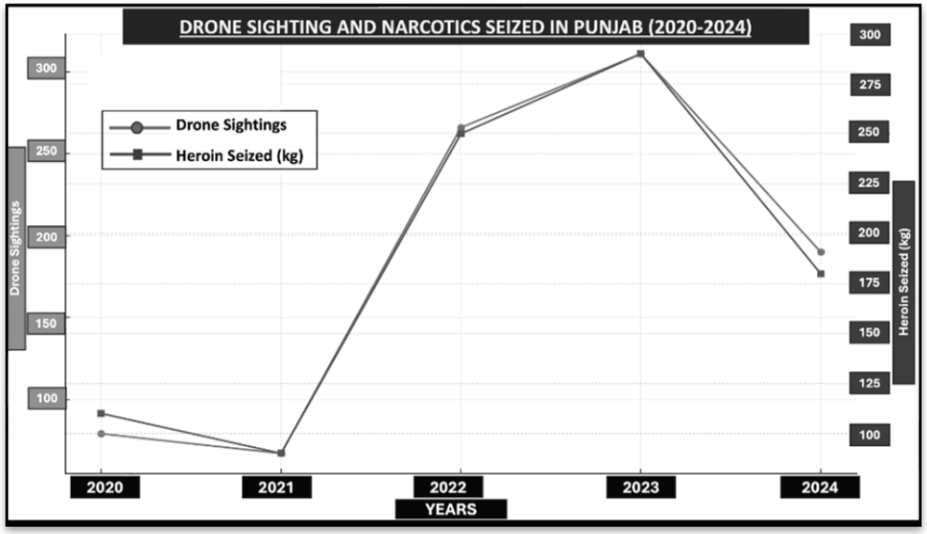
On 13 August 2019, the first Pakistani Hexacopter Drone (with commercial name of T-Motors) designed and manufactured by Jiangxi Xintuo Enterprises Co. Ltd, a Chinese company, with a 21 kg payload capacity, was recovered by the Border Security Force from Mohawa village in Amritsar district of Punjab[4]. Since then, the threat has been expanding in frequency and magnitude. Between the years 2019-22, BSF and Punjab Police recorded 82 drone seizures and 593 drone sightings in Punjab and recovered 317 kg of heroin, 10 kg of RDX, 10 IEDs, 512 firearms, 56 grenades, 12 AK-47 rifles, 128 pistols and Rs 18 lakh in cash[5]. In the year 2023, BSF had intercepted and seized 119 drones along Punjab and Rajasthan borders, which led to the confiscation of 254 kg of heroin, 37 weapons and 409 live rounds[6]. In the year 2024, BSF intercepted between 294 drones in Punjab, which led to the recovery of 145 kg of heroin, 15 kg of opium, 18 firearms and 313 live rounds along with other explosives[7]. In

2025, between January and June, over 130 drones were seized in Punjab, with a recovery of 135 kg of narcotics and 79 firearms[8].

Punjab

The following graph and chart shows the drone sighting trends and heroin seizures in the Punjab sector from 2020 to the first half of 2024. It highlights a sharp increase in drone activity and narcotics smuggling, which validates the escalating use of UAVs in Pakistan's narco-terror operations.

Chart 1: Drone Sightings and Narcotics Seized in Punjab Sector (2020-2024)

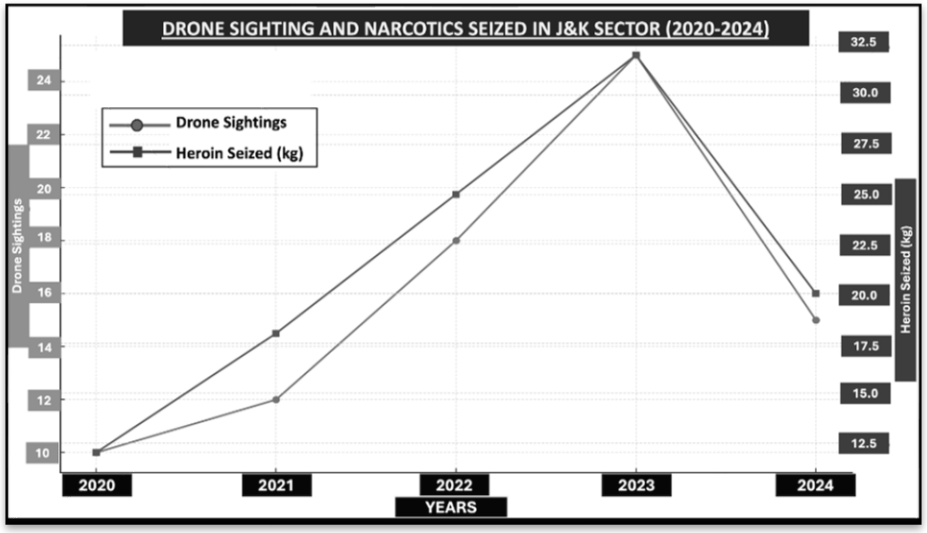


Source: Author's own

Jammu and Kashmir (J&K)

Similarly, J&K also shows a consistent increase in both drone intrusion and heroin seizures, especially around border areas like Samba, Kathua, Poonch and Rajouri, as indicated by the chart below.

Chart 2: Drone Sightings and Narcotics Seized in J&K Sector (2020-2024)

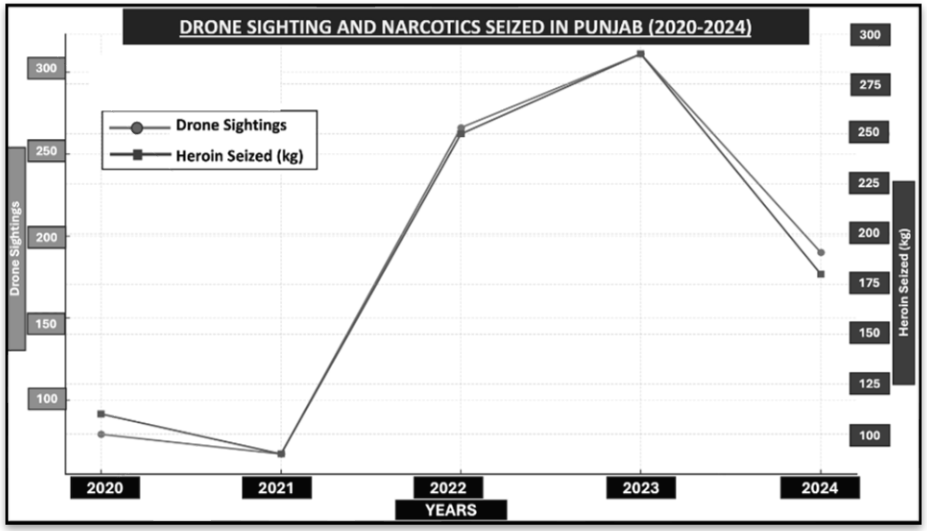


Source: Author's own

Rajasthan

In Rajasthan, though drone activity is comparatively lower, there is a clear upward trend since 2022, especially in Sri Ganganagar and Bikaner districts.

Chart 3: Drone Sightings and Narcotics Seized in Rajasthan Sector (2020-2024)



Source: Author's own

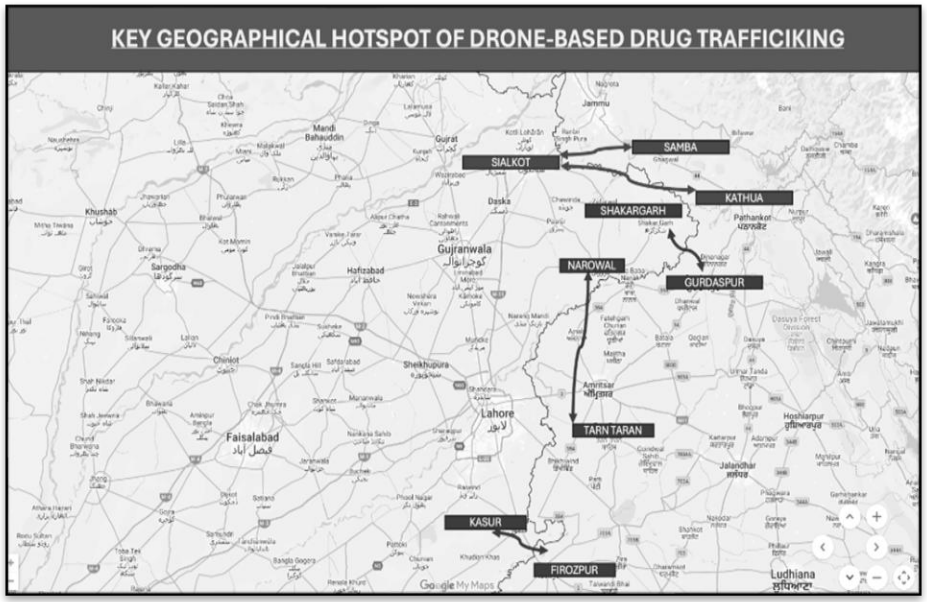
Geospatial Overview of Drone-Based Drug Trafficking

Along the Indo-Pakistan border, there are certain key geographical hotspots of drone-based drug trafficking that are being used by Pakistan-based drug syndicates, in collusion with ISI, Rangers and terror groups. Amongst all the bordering states of India, Punjab accounts for over 70% of drone-based narco-drops detected by security forces since the year 2020[9]. The terrain of Punjab, Jammu, and Rajasthan facilitates unobstructed line-of-sight communication, thereby simplifying drone manoeuvrability. The

villages and homes are close to the border fence, which makes it easy for drones to land in fields or other hidden places.

The region of J&K has also been fast catching up with Punjab in drug smuggling and consumption. The landscape of J&K is characterised by the presence of a wide variety of features, such as low and high mountains, valleys, and plains, providing various places for concealing such illegal activities. Difficult and remote regions, combined with its proximity to the Golden Crescent region, makes it easy for transportation of drugs. Of late, bordering parts of Rajasthan and Gujarat have also reported about narco-dropping through drones. The vast desert areas and sparsely populated areas bordering the IB in Rajasthan and Gujarat are connected to the practice of drug trafficking by drone. Historically, camel-back smuggling routes have been used by criminal networks and terrorist organisations based in Pakistan who crosses the vast area of the Thar Desert in Rajasthan and the Rann of Kutch in Gujarat. However, their ways have changed as newer modes of transport have become their favourite.

Map 3: Geographical Hotspots of Drone-based Drug Trafficking-Punjab and J&K Sector



Source: Author's own

According to the Border Security Force (BSF), the main routes for drones carrying drugs and weapons from Pakistan into India over the last three years have been from Lahore to Amritsar, Narowal to Firozpur, and Bahawalnagar to Sri Ganganagar. Following an analysis of the flight trajectories of approximately 500 drones, the Border Security Force (BSF) reached this conclusion at their drone forensic laboratories situated in Delhi and Punjab. The forensic examination of these unmanned aerial vehicles has revealed that the largest group, comprising 184 drones, originated from Lahore and proceeded to the border region of Amritsar.[10] In contrast, 42 drones were launched from the Narowal border area and reached the Firozpur border region. Additionally, 14 drones from Narowal made their way to the Gurdaspur border area[11]. In addition to Punjab, six drones also took off from Bahawalnagar and flew to the border regions of

Sri Ganganagar in Rajasthan. The Ministry of Home Affairs (MHA) has confirmed that two drones travelled from Toba Tek Singh to the Bikaner border area[12]. The following table summarises the likely launch locations and destinations through the border states of India and Pakistan:

Table 1: State-wise Drone Intrusion Pattern

Region	Launch Location	Destination
Jammu & Kashmir	Sialkot →	Samba, Kathua, Arnia
Punjab	Narowal →	Tarn Taran
	Kasur →	Ferozepur
	Shakargarh →	Gurdaspur, Pathankot
	Lahore →	Amritsar
Rajasthan	Bahawalnagar Rahim Yar Khan ↕→	Sri Ganganagar
	Tharparker → Umerkot →	Barmer Jaisalmer
Gujarat	Badin → Sujawal → Karachi →	Narayan Sarovar Lakhpat Sir Creek & Mandvi

Source: Author's own

Capabilities of Narco-drones in Use for Trafficking

Pakistan's smuggling networks have evolved from low-cost, rudimentary hexacopters to **highly capable commercial drones** like Matrice 300 RTK, Mavic and stealth **micro-drones** and **High Definition (HD) autonomous UAVs** with Artificial Intelligence (AI) navigation and IR/HD cameras. These systems are capable of accurate payload placement,

minimal detection risk, and high efficiency via autonomous flight. The Matrice 300 RTK drone, made by the Chinese company DJI, is popular with smugglers at the IB and LoC. This drone is more reliable than other assembled drones. It can deliver items accurately to the right places. The following table summarises the types of drones with their capabilities, being used by narco-smugglers from Pakistan along the Indian border:

Table 2: Capabilities of Drones used by Pakistan for Trafficking

Drone Type	Payload	Flight Time/Range	Key Features
DJI Matric 300 Real Time Kinematics (RTK)	2-6 kg	55 minutes/15 km	RTK GPS, Night camera, Reliable modular built
DJI Mavic 3 & Smaller Mavic Drones	0.5 kg	30 to 40 minutes	Compact, Quiet, AI powered, sub-radar
Chinese Hexacopters	Up to 9 kg	30 to 60 minutes	Heavy payloads, IR/Night Camera, Stealth enabled
High End HD UAVs	2 to 6 kg	1 hour/80 to 90 km	Altitude capable, fast, sensor-rich and AI flight

Source: Author's own

Current Threat Mitigation Strategy

The Border Security Forces (BSF) and respective State Police are working hard to detect and stop drone incursions along the International Border (IB). They have been using various kinetic and non-kinetic means to mitigate the threat. Creation of the Drone Emergency Response System (DERS) all along the Western border is one of the steps towards a threat mitigation strategy. The MHA has set up a group called the Anti-Rogue Drone Technology Committee (ARDTC) with the BSF to check and approve new technologies. The BSF also runs campaigns to encourage people to report any suspicious drone activities. In Jammu & Kashmir, the security forces train local Village Defence Committees (VDCs) to assist in the prevention of smuggling. Collaboration between the Government, the Defence Research and Development Organisation (DRDO) and companies is underway in developing new technologies to combat the increasing menace of drones to ferry drug and weapon shipments.

After the 2016 Pathankot terror incident, the BSF initiated the Comprehensive Integrated Border Management System (CIBMS). In 2022, BSF also established a drone repair lab in Delhi to research the activity of drones and work out countermeasures. The Indian Navy too has collaborated with Bharat Defence, a public sector unit (PSU) Navratna, to develop a Naval Anti-drone System which will be capable of detection, jamming and disabling micro-drones with the help of laser technology. India is also exploring alternative anti-drone technologies such as DRDO's D-4 anti-drone system, which is capable of countering unauthorised drones in its own airspace. Besides, it is also evaluating the efficacy of the Israel-made SMASH 2000 Plus system, which is a hard kill option against hostile drones. The SMASH 2000 Plus solution comprises the combination of artificial intelligence, computer vision, and algorithms to provide a mobile fire control system to counter the drones. Developed by Hyderabad Technology Research and Development Organisation, the 'Indrajaal Drone Defence System', designed in India, is capable of tracking vast territories

by identifying several UAVs in real-time. These programs underline the commitment of India in enhancing defences against rogue drones by incorporating technologies and making use of both domestic and global anti-drones Southerners. All these measures are testimony to India's commitment towards finding a foolproof solution to drone threats.

Way Ahead

Despite all the efforts, as mentioned earlier, own security forces, police and intelligence agencies have not been able to completely counter the menace. The reasons for the same are numerous, but the most glaring ones are a lack of real-time intelligence and inter-agency coordination. Practically, it is impossible to seek kinetic measures along 3,323 km of the IB between India and Pakistan[13]. Besides, kinetic measures against low-cost drones are expensive and economically unviable with a low percentage of hard kills. Non-kinetic means in terms of jammers and spoofers are effective, but **Chinese drones are hard to jam or spoof due to their advanced technology, encrypted communications, autonomous navigation, and challenging border conditions.** Therefore, it is imperative to develop real-time intelligence capabilities in the border states of the country. Both the BSF and local police need to create a Joint Operations and Intelligence Cell dedicated to drug smuggling through aerial routes.

An in-depth analysis of the aerial routes for drug trafficking through drones clearly indicates certain patterns in terms of launch and reception areas. Own agencies need to carry out mapping of drone activities along the IB in all the border states of India to include Jammu & Kashmir, Punjab, Rajasthan and Gujarat. To accurately map the activity, own agencies need to invest in human intelligence (HUMINT) and technological intelligence (TECHINT). Towards this end, a system of commensurate rewards and incentives to the locals residing along the IB and the LoC can play a key role. Therefore, states need to scale up the Drone Emergency Response System (DERS) by expanding VDCs and mobilisation of local home guards as a second line of defence across villages near the IB. Integration of 'Seeker

and Shooter' links by co-opting radars with dedicated hard kill weapons like 'Bhargavastra' micro-missile, SMASH 2000, high-powered laser guns, and Indrajaal domes can play a crucial role in shortening the Observe-Orient-Decide-Act (OODA) loop.

Effective coordination between the BSF, Narcotics Control Bureau (NCB), Research and Analytics Wing (RAW) and local police forces is needed to overcome the menace of drug smuggling using aerial means. A Narco-Drone Monitoring Cell should be formed within the Ministry of Home Affairs to track suspicious drone activities along the borders. Moreover, it is important to incorporate big data analytics and artificial intelligence to detect trends in drone flights and drug recoveries.

The second important intervention to counter this problem is to strengthen legal deterrence by expediting the prosecution and sentences with heavy penalties, by creating special Narcotic Drug and Psychotropic Substances Act (NDPS) courts in every state. Currently, because of a lack of foolproof prosecution, the absence of evidence, and the inability of multiple agencies to coordinate, the perpetrators get away with bail or release without punitive punishment. Therefore, it is necessary to amend the NDPS Act and the Aircraft Act and categorise drone-based trafficking as an independent offence to be punished accordingly. A comprehensive and multi-layered defence system, incorporating technology, border patrolling, community engagement, legal reform, and diplomatic pressure, is vital to counter drone-based narcotics smuggling.

Conclusion

During Operation Sindoor, India witnessed the swarm drone capability of Pakistan along the IB and the LoC. Pakistan has developed this capability with the help of countries like China and Turkey, which are its "all-weather friends". Therefore, the adoption of drone technology has provided Pakistani smugglers with a low-risk, high-reward method to circumvent traditional border security measures. This technological

advancement has not only increased the efficiency and reach of drug trafficking operations but also posed new challenges for law enforcement agencies. The rapid progression from basic hexacopters to more sophisticated drones underscore the adaptability of criminal and terror organisations and the urgent need for enhanced counter-drone strategies. As this trend continues, security forces must develop innovative detection and interdiction capabilities to effectively combat this emerging threat to border security and public health.

Colonel Upendra Kumar Srivastava, SM was commissioned into the Regiment of Artillery in the year 2000. He is an alumni of DSSC, Wellington and College of Air Warfare, Secunderabad. The Officer has commanded his regiment on the LoC, and served as Colonel Quarter Master General of a Sub Area on Chinese borders and Colonel General Staff of a Corps Artillery Brigade on the LoC. He has also represented the country in the UN Mission in South Sudan. Currently, he is serving as Colonel Instructor in FDT Wing of the School of Artillery, Devlali. Views expressed are personal.

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Balochistan: The New Great Game: US–China Competition, Resource Exploitation and its Geopolitical Implications for India

PANKAJ BISHT, RAJAN BAKSHI AND REETESH SAH

Abstract

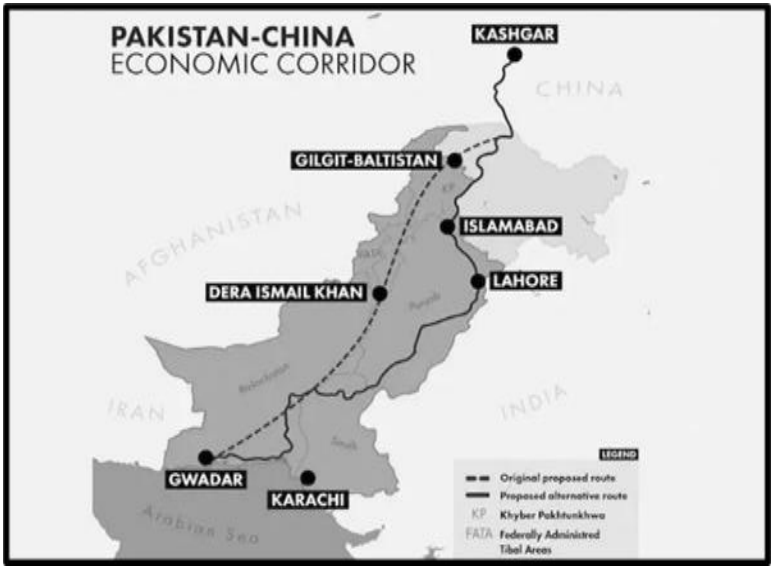
Balochistan stands at the epicentre of a renewed Great Game as the United States and China intensify their strategic competition over its vast mineral wealth and geostrategic location. Rich in copper, gold, and rare earth minerals, the region presents enormous economic opportunities that are being unlocked through major projects such as Reko Diq and critical infrastructure investments. Amid these developments, Pakistan is navigating a complex diplomatic balance—strengthening its partnership with the US through mineral development agreements and cooperation, while maintaining its longstanding alliance with China centred on the China-Pakistan Economic Corridor (CPEC). The United States designation of the Balochistan Liberation Army (BLA) and its alias, the Majeed Brigade as Foreign Terrorist Organizations (FTOs) marks a significant development with regional security implications. Balochistan's evolving dynamics have substantial geopolitical ramifications, particularly for India, which opposes the CPEC on sovereignty grounds and has shown concerns over strategically located Gwadar port along key Indian Ocean Sea lanes.

Introduction

Balochistan has emerged as a critical arena in the intensifying geopolitical competition between the United States and China. Its strategic location at the crossroads of South Asia, Central Asia, and West Asia, coupled with direct access to the Arabian Sea via the Gwadar Port, places it at the heart of emerging regional and global power struggles. The province's vast mineral wealth and rare earth elements has transformed it into an important economic zone amid the global race for critical resources essential for technological and energy transitions (Khan, 2025).

China's ambitious CPEC project (See Fig 1), a cornerstone of Beijing's Belt and Road Initiative (BRI), has transformed Balochistan into a critical region of infrastructural development and connectivity. The Gwadar Port, a fulcrum of CPEC, symbolises China's strategic push into the Arabian Sea, providing an alternative route for energy supplies and trade that bypasses traditional chokepoints like the Malacca Strait. However, fragile political conditions persist, as longstanding local nationalist movements such as the BLA continue to challenge state authority, hampering project progress and regional stability (Ali, Saqib, Anwar, & Ali, 2025). Meanwhile, the United States is recalibrating its strategies to counter China's ascendancy by forging closer ties with Pakistan, focusing especially on mineral cooperation and security collaboration. The US Department of State' designation of the BLA and its alias, the Majeed Brigade, as a FTO underscores the intertwining of security concerns with geopolitical rivalry in the region (Bukhari, S. R. H, 2025).

Figure 1. Map Showing Approximate Route of CPEC



Source: Khan, U. (2025, September 26). Crossing the divides: China's gamble to bring CPEC to Afghanistan – OpEd. EurAsia Review.

This complex overlay of strategic ambitions, economic interests, and security imperatives not only defines Balochistan's contemporary significance but also shapes broader regional dynamics. India, watching closely, remains cautious of the shifting balance of power and the implications of these developments on its own regional security and economic interests. This paper examines multifaceted dynamics within the geopolitical landscape, offering insights on how Balochistan's geostrategic importance and resource potential are leveraged within the evolving US–China–Pakistan triangular competition, its implications, and way forward for India as it navigates this complex New Great Game.

Ethnic Profile of Balochistan and its Reflection on BLA

The ethnic composition of Balochistan province fundamentally shapes the ideological framework and operational strategy of the BLA, creating a complex interplay between demographic realities and insurgent mobilisation. Understanding this relationship is crucial for

analysing contemporary security dynamics in the region. Balochistan's multi-ethnic landscape consists of three primary groups: Baloch (39.91%), Pashtuns (34.03%), and Brahui (17.22%), alongside smaller minorities including Sindhi (3.81%) and Hazara communities (Pakistan Bureau of Statistics, 2017; Voice of Balochistan, 2017). This distribution creates inherent political tensions, particularly since ethnic Baloch, despite being the largest single group, constitute less than 40% of the provincial population.

If we look at the BLA's recruitment patterns, it clearly reflects ethnic selectivity, primarily aiming educated Baloch youth, which comprises 65% of the population under 30, while leveraging historical grievances related to political marginalisation and resource extraction. The organisation has successfully transitioned from tribal-based leadership to educated and middle-class professionals (Al Jazeera, 2025). Tribal structures, particularly the traditional confederations of Marri, Bugti, and Mengal tribes, provide both organisational frameworks and recruitment networks. The organisation capitalises on perceived demographic changes, particularly concerns about becoming minorities within their ancestral territories, to mobilise ethnic nationalist sentiments (Hassan, M., & Jan, A., 2024). This ethnic mobilisation strategy reflects deeper identity formation processes rooted in historical resistance to external control, linguistic preservation, and territorial claims that have evolved over centuries of colonial and post-colonial experience. The BLA's operational geography corresponds closely to areas of Baloch demographic concentration, demonstrating how ethnic boundaries influence insurgent territorial control and recruitment effectiveness within Pakistan's multinational federal framework (Müller-Crepon, C., Hunziker, P., & Cederman, L. E., 2023).

This ethnic focus creates both opportunities and limitations. While Baloch nationalism provides a strong ideological foundation, the province's demographic reality means the movement cannot achieve

mass popular support across all communities. Baloch-Pashtun tensions, particularly evident in Quetta—where Pashto speakers comprise 60.02%, Brahvi 15.51%, and Balochi 7.38% (CityPopulation.de, 2024)—limit the BLA's urban appeal and foster counter-mobilisation dynamics. The organisation's targeting of non-Baloch communities and infrastructure projects reflects efforts to resist perceived demographic changes while simultaneously alienating potential allies. The BLA is protesting primarily due to longstanding grievances related to economic exploitation, political marginalisation, and alleged human rights abuses against the Baloch people by Pakistan. The BLA opposes the Pakistani military presence in Balochistan and the exploitation of its rich natural resources without fair local benefit. The group strongly resists projects like the China-Pakistan Economic Corridor (CPEC), viewing them as foreign exploitation benefiting outsiders rather than the Baloch. The insurgency is fueled by a desire for an independent Baloch state and is motivated by ethnic nationalism and reaction to coercive government policies and military crackdowns in the region. (Samad.Y, 2025).

Geostrategic and Resource Importance of Balochistan

Balochistan's significance derives from its unique geostrategic location at the crossroads of South Asia, Central Asia, and West Asia. Covering almost 44% of Pakistan's landmass, it shares long borders with Iran and Afghanistan and boasts roughly 770 kilometers of coastline along the Arabian Sea. Gwadar Port, strategically situated near the Strait of Hormuz and the mouth of the Persian Gulf, plays a pivotal role in the Arabian Sea (Ali, Saqib, Anwar, & Ali, 2025). Its location near some of the world's busiest shipping lanes is invaluable for maritime trade, energy security, and naval presence within the Indian Ocean Region. As the flagship node of the CPEC, Gwadar is central to China's BRI, enabling Beijing to project influence into South Asia and further into the West Asia and Africa (Oxnevad, 2025).

Balochistan's geostrategic weight is amplified by its abundant natural resource base. The province is known to harbour vast mineral deposits including copper, gold, and rare earth elements essential in the transition to clean energy, electronics manufacturing, and defence technologies. Recent geological surveys reaffirm Balochistan's position as holding one of the world's largest reserves of copper and gold, especially at the Reko Diq site in Chagai district (Zadeh, 2025). This mine is estimated to contain billions of tons of mineralised material and is considered a globally significant asset. Additionally, newer discoveries in the wider Chagai region suggest that the true mineral potential exceeds current exploitation levels and could shift global mineral supply dynamics once developed. These resources hold economic promise that extends well beyond Pakistan's borders, attracting international attention and competitive interest (Bukhari, 2025).

According to the latest survey, Balochistan holds mineral reserves worth between $6 and $8 trillion. Key mineral estimates in the region include approximately 42 million ounces of gold, around 6.5 billion tons of copper, and significant coal reserves supporting energy production. Major deposits span over 230,000 square miles, notably at Reko Diq, Muslim Bagh, Khuzdar, and Chagai, positioning Balochistan as a transformative economic resource with strong development potential (Wajid, 2025). To fully realise this economic potential, developing strong infrastructure is essential. One key effort is the $390 million railway project linking mining regions with Gwadar Port and other major economic hubs. This initiative aims to streamline mineral exports, lower transportation costs, and boost regional trade integration, ultimately providing more efficient access to global markets (Hidayat, 2025).

However, despite these promising developments, Balochistan's path to economic transformation is impeded by persistent security and governance challenges. The province has long experienced insurgency, sectarian violence, and sporadic attacks by militant groups including the

BLA. Insurgency threatens the security of infrastructure projects and poses risks to foreign investment, hampering the pace and scale of economic progress. Governance issues such as administrative inefficiency, corruption, and inadequate local representation further complicate efforts to foster sustainable growth (Tahir et al., 2024). Moreover, environmental sustainability and social equity concerns related to mining activities require effective policy interventions to ensure inclusive benefits and minimise adverse impacts on local communities (The Diplomat, 2023).

In this context, Balochistan embodies the confluence of opportunity and risk. Strategic geography and mineral wealth provide a platform for transformational development and play into larger geopolitical contests between major powers, principally the US and China. The province's developmental trajectory and its stability will heavily influence South Asia's regional security architecture and economic landscape for years to come. Managing the nuanced balance between leveraging geostrategic assets and securing political and social stability remains a formidable challenge for Pakistan and to US and China engaged in the region.

China-Pakistan-US Dynamics: Navigating New Alliances

Balochistan's geostrategic importance and resource wealth have propelled it into the centre of a triangular dynamic involving the United States, China, and Pakistan. The evolving interactions among these states illustrate shifting alliances and strategies amid intensifying US-China global competition.

China-Pakistan relations have long been described as an 'all-weather' strategic partnership, cemented by decades of cooperation in defence, infrastructure, and economic development. A flagship symbol of this alliance is the CPEC—a $62 billion initiative aimed at linking China's western Xinjiang region through Pakistan to the Arabian Sea via Gwadar Port. CPEC offers China critical overland access to the Indian Ocean,

diversifying its supply routes beyond the vulnerable Strait of Malacca. Pakistan views CPEC as transformative for its economy, projecting infrastructure modernisation, energy security, and enhanced regional connectivity. Chinese Foreign Minister Wang Yi has pledged his country's continued support for Pakistan and urged an acceleration of the CPEC, a flagship BRI infrastructure project. He also acknowledged that "China has always been Pakistan's most reliable partner and strongest backer" (Ziwen, 2025).

Amid these entrenched ties, Pakistan's recent diplomatic and economic outreach to the United States reflects a nuanced recalibration. The US, confronting the strategic challenge of China's rise, identified Balochistan's vast mineral reserves as critical for global supply chain diversification. In a significant development in September 2025, Pakistan and the United States formalised a $500 million mineral cooperation agreement with US Strategic Metals (USSM), marking Pakistan's first-ever formal shipment of rare earth and critical minerals to the US (US Strategic Metals, 2025). Prime Minister Shehbaz Sharif hailed this partnership as a milestone for Pakistan's integration into secure and diversified global supply chains, emphasising Pakistan's role as a "credible and trusted partner" in these efforts (Rare Earth Exchanges, 2025).

Further, the US designated the BLA and its alias the Majeed Brigade as a FTO in August 2025, a move Pakistan hailed as strengthening counterinsurgency efforts and regional security cooperation (Mehmood, 2025). The BLA's designation has strategic implications beyond security. It legitimises Pakistan's narrative of combating terrorism, thereby encouraging Western investment confidence, particularly from the US, in Balochistan's resource sector. However, such cooperation with US requires Pakistan to deftly manage its existing commitments with China, ensuring that the mineral and counterterrorism ties with the US do not erode its China partnership, which remains foundational.

China, cognizant of rising US presence, has doubled down on its protective posture towards CPEC investments amid persistent insurgency risks in Balochistan. On 02 September 2025 during a meeting in Beijing, both Chinese Premier Li and Prime Minister Shehbaz Sharif reaffirmed their shared resolve to further strengthen the iron-clad, all-weather strategic cooperative partnership between Pakistan and China and reaffirmed to work together on the CPEC 2.0 with its five new corridors namely Growth Corridor, Innovation Corridor, Green Corridor, Livelihood Corridor and Regional Connectivity Corridor (PID, 2025). However, attacks on CPEC projects and Chinese workers by militant groups highlight vulnerabilities that threaten long-term project sustainability.

Pakistan's geopolitical manoeuvring unfolds against this backdrop of overlapping economic, security, and diplomatic imperatives. Pakistan's Defence Minister Khwaja Ashif has said that China is not worried about Pakistan 'flirting' with the US, noting that the two countries have a time-tested partnership. He asserted that China is not concerned by Pakistan's US engagement, reaffirming their strong, reliable partnership (ANI, 2025). This balancing diplomacy involves courting US economic and security investments while reassuring China of Pakistan's unwavering strategic partnership.

China's skepticism about US intentions in Balochistan runs deep, fearing US efforts could undermine Beijing's long-term influence and destabilise CPEC. Conversely, the US is wary of Pakistan's dual legacy with China and its internal governance challenges, which complicate trust and cooperation levels. Nonetheless, Pakistan's pursuit of mineral cooperation with the US signals a broader pragmatic policy to diversify partnerships and reduce dependency on a single power. Statistical data underscores the growing importance of this trilateral engagement. Between January and June 2025, Pakistani exports of mineral concentrates, particularly copper and gold, increased by 15% compared

to the previous year, with a significant share destined for markets in the US and China (News Wire, 2025). CPEC-related infrastructure spending also rose by 20% in the first half of 2025, reflecting continued Chinese commitment despite security challenges (News Desk, 2025). These figures demonstrate the tangible progression of economic ties within the US-China-Pakistan triangle.

Moreover, to cement its ties with the Trump administration, Pakistan has prepared a blueprint for building and operating Pasni, a deep-sea port in the country. Should the proposal be realised, it may significantly influence the strategic landscape of the Arabian Sea by affording the United States a foothold in this highly sensitive region. Islamabad is basing the proposal on Washington's quest to secure a supply chain for rare earth minerals to support its energy and security industries (Roy, 2025). Positioned on the Arabian Sea, Pasni could serve as a key naval and logistical hub for the US, granting Washington closer access to crucial maritime routes and strengthening its influence in the region. Pakistan's strategy thus involves a delicate diplomatic balancing act—leveraging both US and Chinese partnerships to maximise economic and security gains while maintaining strategic autonomy.

Geopolitical Implications for India

The unfolding contest over Balochistan's resources and geostrategic landscape profoundly shapes India's geopolitical environment and regional strategy. As the United States and China vie for influence over Pakistan and its western province, India faces complex challenges and potential opportunities that will define its trajectory in South Asia and the IOR. India's opposition to the CPEC is rooted fundamentally in its stance on sovereignty and territorial integrity. The corridor traverses the Pakistan-administered region of Gilgit-Baltistan (GB) in Jammu and Kashmir—an area India claims as an integral part of its territory. New Delhi views CPEC as a violation of its sovereignty and a threat to its national security. This position is reflected in an official statement by the

Indian Ministry of External Affairs spokesperson Arindam Bagchi, wherein he said, "India firmly and consistently opposes projects in the so-called CPEC, which are in Indian territory that has been illegally occupied by Pakistan. Such activities are inherently illegal, illegitimate and unacceptable, and will be treated accordingly by India" (Arab News, 2025).

Moreover, the strategic importance of Gwadar Port, located in Balochistan, further complicates India's position. Gwadar's location near the entrance of the Persian Gulf and relatively close to India's western maritime boundaries provides China and Pakistan with substantial naval and commercial leverage in the Indian Ocean. The port not only supports energy imports from West Asia into China but, through its connectivity with CPEC, offers a potential strategic bottleneck affecting India's sea lines of communication (SLOCs). About 2 million barrels per day—roughly 36% of India's total daily crude imports—pass through the Strait of Hormuz, connecting India with major oil-exporting countries like Iraq, Saudi Arabia, UAE, and Kuwait (BT, 2025). These shipping lanes are vital for India's energy security, trade, and naval operations. Consequently, India views Gwadar as a critical node in expanding Chinese maritime influence, which could potentially constrain Indian naval operations and affect the balance of power in the IOR (Ali & Bukhari, 2024).

Way Forward

Given the evolving geopolitical landscape shaped by the CPEC, intensifying US-Pakistan mineral cooperation, and the broader regional power competition, India must adopt a comprehensive and multi-dimensional policy framework to safeguard its strategic interests and promote regional stability.

Sustain Diplomatic Engagement

Diplomatically, India must firmly and consistently voice its concerns at global platforms like the United Nations, highlighting how the CPEC infringes on disputed territories and threatens regional peace and stability. Simultaneously, India should deepen strategic collaborations with Indian Ocean littoral nations such as Sri Lanka, the Maldives, Seychelles, and Mauritius, while coordinating closely with Quad partners to uphold a free, open, and inclusive Indo-Pacific. India's active participation in regional and multilateral organisations— South Asian Association for Regional Cooperation (SAARC), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and the Shanghai Cooperation Organisation (SCO)—remains vital to asserting its stance on CPEC and protecting its sovereignty interests. Strengthening bilateral relationships with Afghanistan, Iran, and Central Asian countries will further help India build coalitions advocating for lawful, transparent, and inclusive regional connectivity, offering alternatives to initiatives that bypass India's legitimate concerns and territorial claims. This approach aligns with India's ongoing diplomatic strategy of safeguarding its sovereignty while promoting stability and connectivity grounded in recognised international norms (PTI, 2025).

Enhance Maritime Security

India should place high priority on strengthening its maritime security framework as a strategic move to counter China's expanding footprint in Balochistan and across the IOR. Protecting vital economic channels and preserving India's regional leadership demands a holistic maritime policy grounded in advanced capabilities, robust regional partnerships, and integrated institutional mechanisms. Establishing an Inter-Ministerial Task Force focused exclusively on maritime security would enhance coordination among defence, foreign affairs, environment, and trade departments. Such integrated governance will

facilitate optimal allocation of resources and clear strategic focus, empowering India to proactively manage maritime risks and fully realise its SAGAR and MAHASAGAR visions for securing and developing the Indian Ocean. This reflects India's ongoing shift toward a coordinated, multi-sectoral approach to maritime security, emphasising collaborative regional engagement and institutional innovation to address evolving challenges in the maritime domain (Ghosh,2025).

Invest in Alternative Connectivity

India must accelerate its efforts in advancing regional connectivity as a strategic alternative to the CPEC. Priority projects include the expansion of the Chabahar Port in Iran to secure access to Afghanistan and Central Asia, and the rapid development of the International North-South Transport Corridor (INSTC), as well as the India-Middle East-Europe Economic Corridor (IMEC)—a strategic transport and trade initiative linking India to Europe via the Middle East. As part of its Act East Policy, India should fast-track progress on the India-Myanmar-Thailand (IMT) (see Figure 2) Corridor while also expediting domestic infrastructure upgrades through flagship programs like Bharatmala Pariyojana for highways and Sagarmala Project for port modernisation (PIB, 2025). Enhanced connectivity in the Northeast will link India more closely with Southeast Asia, complemented by investments in digital infrastructure and energy networks that strengthen economic resilience across South Asia. Furthermore, establishing Special Economic Zones along these corridors will attract investment and foster economic integration, positioning India as a central node in regional connectivity and economic leadership.

Economic and Technological Resilience

India must intensify efforts to expand domestic exploration and processing of critical minerals while fostering technology-sharing partnerships with strategic allies. Investing in innovation and advanced

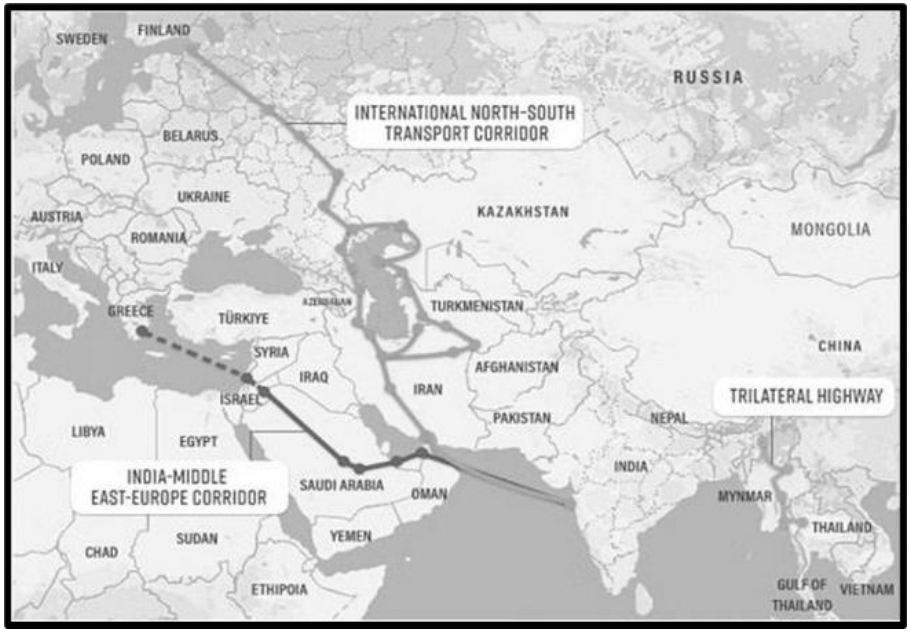
extraction methods will strengthen supply chain resilience against geopolitical uncertainties. Coordinated collaboration through Quad partners and bilateral agreements will be crucial to securing essential resources for defence and green energy industries. This multi-pronged approach aims to reduce import dependence, boost indigenous capabilities, and ensure long-term resource security for India's strategic sectors (PIB, 2025).

Integrated Strategic Vision

Adopting a comprehensive, whole-of-government strategy is essential for India to seamlessly integrate its security, infrastructure development, diplomatic efforts, and economic initiatives. This coordinated approach will empower India to effectively defend its sovereignty, maintain regional stability, and foster sustainable development. Through such unified governance, India can solidify its role as the pre-eminent regional power and champion a free, open, and inclusive Indo-Pacific framework that upholds international norms and promotes shared prosperity (Ladwig, 2024).

In conclusion, these strategies underscore India's overarching framework for navigating the intricate geopolitical environment of South Asia and the Indian Ocean, particularly amid the evolving dynamics of the US-China-Pakistan strategic triangle.

Fig 2. Map Showing IMEC, INSTC and IMT Corridors



Source: Krishnakutty, P., & Padhmanabhan, K. (2024, April 1). From east to west, India is making a big push for transnational transport corridors. *The Print*. https://theprint.in/diplomacy/from-east-to-west-india-is-making-a-big-push-for-transnational-transport-corridors-heres-why/2021786/.

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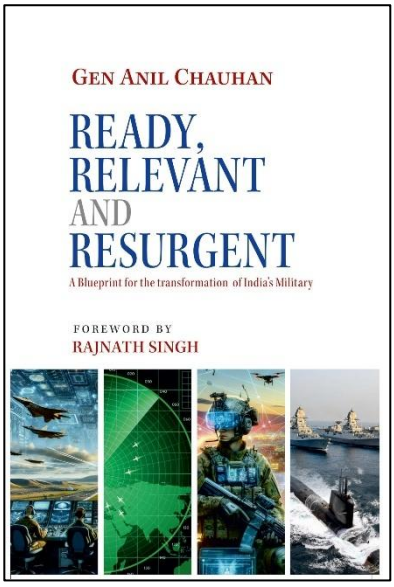
SCHOLAR WARRIOR

SECTION II

BOOK REVIEWS

CENTRE FOR LAND WARFARE STUDIES

Book Reviews



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Book Review by: Colonel Amit Gupta

Introduction: A Military Blueprint doe a Rising India

In the rapidly evolving landscape of global geopolitics, where national power is measured not just by economic growth but by military prowess, "**Ready, Relevant and Resurgent (RRR)**" emerges as a landmark contribution to India's strategic thought. Authored by General Anil Chauhan, India's second and current Chief of Defence Staff, the book is more than a reflection on defence reforms; it is a blueprint for transformation deeply rooted in operational experience, civilisational awareness and strategic foresight. It represents a vital ideological and

structural leap towards building a modern, integrated, and self-reliant Indian Armed Forces.

Unlike previous military writings that remain theoretical or retrospective, this work is remarkable in both tone and timing. Coming from a serving four-star general who leads the newly formed Department of Military Affairs (DMA), RRR carries both institutional weight and an air of immediacy. Its title encapsulates its mission: **to prepare India's Armed Forces to be combat–ready (Ready), tailored to the contemporary battlefield (Relevant), and aligned with the country's resurgence as a global power (Resurgent)**.

General Chauhan's extensive military career, which spans more than four decades and includes pivotal roles in counter-insurgency operations, border management and doctrinal reforms, lends the book an insider's authority. His perspectives are not mere speculation – they are grounded in the harsh field realities and bureaucratic challenges, which he has personally experienced and negotiated. Thus, the book offers both strategic depth and implementable guidance. It outlines a long–overdue vision of integration, agility and technological primacy, guided by the spirit of "**Atmanirbhar Bharat**" (self–reliant India). This book is a celebration of possibility, radiating optimism about India's ability to transform its armed forces into a world-class institution. General Chauhan's writing is not just a strategic treatise but a heartfelt invitation to envision a **Sashakt, Surakshit, Samridh, and Viksit Bharat (Strong, Secure, Prosperous, and Developed India)**. His enthusiasm for reforms, rooted in his global interactions and deep operational experience, makes this work a shining beacon of hope for India's defence community and beyond.

This review delves deeply into the book's themes, dissecting each core concept, analysing its proposals against existing military frameworks, and presenting an optimistic view of how India's defence reforms can catalyse national power. By extending the review to a broader discussion on military transformation and national vision, I aim to showcase how **Ready,**

Relevant and Resurgent is not merely a policy outline but a nation-building manifesto in uniform.

A Joyful Celebration of Key Themes

The book's essays weave together a tapestry of bold ideas, practical solutions, and cultural pride—each thread sparkling with optimism and purpose. Below, I highlight the book's most uplifting themes, showcasing how General Chauhan's vision inspires confidence and action.

Jointness and Integration: The Cornerstone of Modern Warfare

One of the book's central tenets is the need for greater jointness among the Army, Navy, and Air Force to optimise resources and enhance operational effectiveness. General Chauhan emphasises that the future of warfare demands seamless integration across domains—land, sea, air, cyber, and space. He argues that the creation of Integrated Theatre Commands is not just a reform but a necessity to ensure unified command and control in complex, multi-domain conflicts. In the book, he writes, "The concept of establishing theatre commands is to create two parallel and complementary streams for 'Force Application' and 'Force Generation'. The Force Application component will become the responsibility of a Theatre Commander, whereas Service Chiefs will preside over the 'Raise, Train and Sustain' function".

This vision is particularly relevant in the context of recent operational successes, such as Operation Sindoor, where coordinated strikes involving fighter jets, missiles, drones, and artillery underscored the importance of jointness. General Chauhan's blueprint proposes that Theatre Commanders, rather than Service Chiefs, take responsibility for operations and war-fighting, allowing for more agile and decisive responses to threats. This restructuring aims to eliminate silos between services, fostering a culture of collaboration that is essential for addressing the "rising uncertainty in the nature, type, and timing of future threats". His

emphasis on jointness is not merely structural but also cultural, urging the armed forces to shed outdated mindsets and embrace a unified approach to national security.

The positive outlook here is clear: by advocating for Theatre Commands, General Chauhan is laying the groundwork for a more efficient and responsive military. His vision aligns with global best practices, where integrated command structures have proven effective in modern conflicts. For India, with its diverse and complex security challenges—from unsettled land borders with China and Pakistan to maritime threats in the Indian Ocean—this reform promises to enhance strategic coherence and operational readiness.

Self-Reliance (Atmanirbharta) and Indigenous Capability Development

Another cornerstone of the book is its passionate advocacy for Atmanirbharta (self-reliance) in defence manufacturing. General Chauhan argues that strategic autonomy is contingent on reducing dependence on foreign arms and developing indigenous solutions tailored to India's unique geopolitical challenges. He writes, "Faith in indigenous capability development, bolstered by original, innovative and critical thinking abilities, is the foundational pillar for progress". This emphasis on self-reliance is particularly timely, given India's increasing focus on the Indigenously Designed, Developed, and Made (IDDM) category, with over 75% of the defence capital procurement budget allocated to indigenous systems in recent years.

The book highlights the importance of fostering a robust defence industrial base, which not only strengthens national security but also contributes to economic growth and technological innovation. General Chauhan's vision is optimistic, envisioning a future wherein India's military capabilities are underpinned by homegrown technologies—from advanced weaponry to cyber defence systems. He draws inspiration from

Prime Minister Narendra Modi's 2014 Combined Commanders' Conference address, which called for a modern, joint force capable of securing India's interests across traditional and emerging domains. By linking Atmanirbharta to the broader national goal of Viksit Bharat by 2047, General Chauhan positions the armed forces as key enablers of India's rise as a global power.

This focus on self-reliance is a source of optimism for India's defence ecosystem. It encourages innovation, empowers local industries, and reduces vulnerabilities associated with supply chain disruptions in times of crisis. General Chauhan's roadmap for indigenisation is not just a call to action but a celebration of India's potential to emerge as a leader in defence technology.

Adapting to the Evolving Nature of Warfare

General Chauhan's book is forward-looking in its analysis of the changing character of war. He acknowledges the "stormy geopolitical arena" of the 21st Century, characterised by uncertainty and the proliferation of threats across multiple domains. The book includes thought-provoking essays such as "Preparing for the Third Revolution in Military Affairs," "Evolving Battlefield Architecture," and "Tactics Led Force Modernisation," which explore how emerging technologies like Artificial Intelligence (AI), cyber warfare, and unmanned systems are reshaping the battlefield.

His discussion of the Third Revolution in Military Affairs (RMA) is particularly insightful. He argues that the armed forces must build capabilities for integrated multi-domain operations to remain relevant in an era where traditional and non-traditional threats coexist. For instance, he refers the need to adapt to hybrid warfare, as demonstrated in Operation Sindoor, where India's response to a terror attack involved a combination of kinetic and non-kinetic measures. This adaptability is a key strength of

the book, as it encourages the military to anticipate and prepare for future conflicts rather than remain anchored to past paradigms.

General Chauhan's optimism shines through in his belief that India's armed forces can rise to these challenges by leveraging technology and strategic foresight. His emphasis on "deliberation, diligent prognosis, and informed assimilation" underscores the need for proactive planning and continuous learning. This forward-thinking approach is inspiring, as it positions India's military as a dynamic force capable of navigating the complexities of modern warfare.

Drawing on India's Strategic Culture

A unique and refreshing aspect of the book is its integration of India's ancient wisdom into contemporary military strategy. General Chauhan draws on texts like the Mahabharata, Ramayana, Bhagavad Gita, and Kautilya's Arthashastra to argue that India's strategic culture offers timeless lessons for modern statecraft and warfare. He writes, "The conceptual and intellectual moorings of India's military need the anchorage of Indian ideas and thoughts. The geopolitical environment that we face and the challenges and opportunities that lie before us are unique to us. We need to find Indian solutions to Indian problems".

For example, he cites the Mahabharata to highlight principles of war termination and consolidation, noting how the Pandavas' inclusive approach toward the vanquished offers lessons for modern conflicts. Similarly, he underscores the relevance of Dharma—principles of duty, righteousness, and moral balance—as a guiding framework for military strategy. This fusion of ancient wisdom with modern needs is a powerful narrative, reinforcing India's ability to draw on its 5,000-year-old heritage to address contemporary challenges.

This aspect of the book is particularly uplifting, as it celebrates India's rich cultural and intellectual legacy while applying it to practical ends. By

rooting military transformation in indigenous thought, General Chauhan instills a sense of pride and confidence in India's ability to carve its own path in the global security landscape.

The National Security Strategy Debate

One of the book's most provocative contributions is General Chauhan's stance on the National Security Strategy (NSS). While some strategic analysts, including former CDS General Bipin Rawat and former Army Chief General M.M. Naravane has emphasised the need for a written NSS. General Chauhan argues that India already has a functional strategy embedded in its policies, processes, and structures. He cites strategic actions like the abrogation of Article 370, the Balakot and Uri strikes, and the creation of the Department of Military Affairs as evidence of a coherent security framework. He writes, "The absence of a document should not be mistaken for the absence of a strategy".

While acknowledging his later statement in November 2024 about a written NSS being prepared, the book's position is optimistic in its assertion that India's security apparatus is robust and effective, even without a formalised document. This perspective challenges conventional wisdom and encourages readers to appreciate the strategic coherence underlying India's actions. It also highlights General Chauhan's confidence in the nation's ability to adapt and respond to threats without being constrained by bureaucratic formalities.

Analytical Commentary and Strategic Implications: Bridging Vision with Execution

What distinguishes ***Ready, Relevant and Resurgent*** is its ability to move beyond aspirational discourse into the domain of practical reform. General Chauhan is not content with merely identifying problems. He offers a scaffold for solving them—not just with policy ideas but with

mechanisms of implementation. This is particularly valuable in a policy environment where intentions often fail at the altar of execution.

His approach resonates with what scholars of strategic studies call "optimistic realism." He does not deny India's institutional challenges: bureaucratic delays, inter-service rivalry, the pace of acquisition reforms, and the legacy of colonial and Cold War-era practices. But rather than dwelling on these as insurmountable barriers, he reframes them as transformation triggers. By doing so, he offers a narrative of empowerment to military personnel, policy actors, and technocrats alike. His optimism is also supported by progress already underway. The creation of the Department of Military Affairs (DMA), the implementation of theatre commands, and the integration of various tri-service structures are not hypothetical. They are happening. He uses these as proof points to argue that the Indian defence apparatus can, and indeed is, moving toward convergence.

Importantly, the book also tackles geopolitical urgency. India is increasingly surrounded by security threats—from hostile neighbours to grey zone conflicts involving cyber and psychological warfare. General Chauhan argues that these cannot be countered through conventional force structures alone. A resilient, agile, and technologically enabled military is required, and India is in a unique position to leapfrog legacy burdens through its youthful innovation ecosystem and robust civil society.

Another important insight is his emphasis on doctrine. Too often, India's military strategy has been reactive or borrowed from external models. General Chauhan insists that for reforms to be lasting, they must be doctrinally anchored. He envisions doctrine not as a static set of rules, but as a living philosophy, evolving with threat dynamics and national priorities. This doctrinal awareness is what turns strategy into culture. By linking these macro-strategic insights to ground-level realities, General Chauhan has transformed the book into an interlinking web of vision, structure, and ethos. His clarity of thought and belief in the capability of

Indian institutions to rise to the occasion injects a rare hopefulness into national security literature.

Strengths of the Book

Ready, Relevant and Resurgent is a *tour de force* in several respects, making it a must-read for anyone interested in India's defence and national security. Below are some of its key strengths:

Authoritative Perspective: As a serving CDS, General Chauhan brings unparalleled credibility to the book. His firsthand experience in operational command and strategic planning, coupled with his interactions with global leaders, lends authenticity and depth to his arguments. The rarity of a four-star general writing a book while in service adds to its significance.

Clarity of Vision: The book articulates a clear and actionable roadmap for military transformation, with a focus on jointness, integration, and self-reliance. General Chauhan's ability to distill complex issues into a coherent narrative makes the book accessible to both military professionals and lay readers.

Timeliness: The book's release aligns with critical developments in India's defence landscape, including the push for theatre commands and the aftermath of Operation Sindoor. Its insights are directly relevant to ongoing reforms, making it a timely contribution to the national security discourse.

Cultural Resonance: By grounding his vision in India's strategic culture, General Chauhan makes the book uniquely Indian. His references to ancient texts and philosophies resonate with readers, fostering a sense of national pride and identity.

Inspirational Tone: The book is infused with optimism about India's potential to emerge as a global leader in defence. General Chauhan's belief

in the armed forces' ability to rise to future challenges is infectious, encouraging readers to share his vision of a Viksit Bharat.

Areas for Further Exploration

While the book is a comprehensive and inspiring work, there are areas where readers might seek additional clarity or depth:

Implementation Challenges: While General Chauhan provides a roadmap for reforms, the book could delve deeper into the practical challenges of implementing theatre commands, such as inter-service rivalries or resource constraints. However, this does not detract from the book's optimistic vision, as it focuses on setting a strategic direction rather than micromanaging implementation.

Technological Specifics: The book discusses emerging technologies like AI and cyber warfare, but could offer more specific recommendations for integrating these into India's defence framework. Given General Chauhan's expertise, future works could expand on this aspect to provide a more granular blueprint.

Civil-Military Fusion: While the book emphasizes civil-military fusion as a goal, further exploration of how to bridge the gap between civilian policymakers and military leaders could enhance its impact. Nevertheless, the book's focus on fostering awareness of this issue is a positive step.

These areas do not diminish the book's value but rather highlight opportunities for future discourse, which General Chauhan himself encourages, noting, "This book is just the beginning of nuanced thoughts".

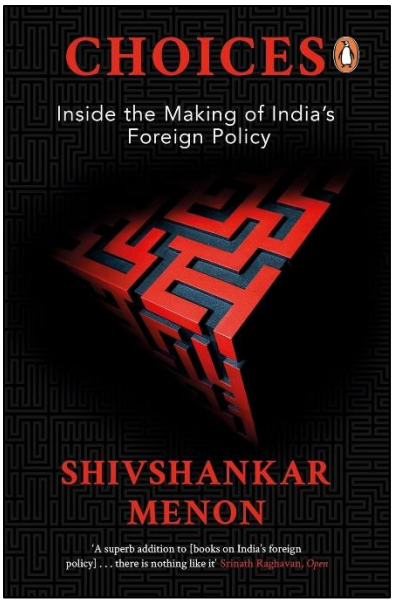
Conclusion

In ***Ready, Relevant and Resurgent: A Blueprint for the Transformation of India's Military***, General Anil Chauhan has crafted a visionary and optimistic roadmap for the Indian Armed Forces. The book's focus on

jointness, self-reliance, and adaptability, combined with its grounding in India's strategic culture, makes it a landmark contribution to the nation's security discourse. It is a testament to General Chauhan's leadership and his unwavering commitment to building a military that is prepared for the challenges of the 21st century.

For readers, the book offers a compelling blend of strategic insight, practical recommendations, and cultural pride. It is a celebration of India's potential to rise as a global leader, with its armed forces playing a pivotal role in realising the vision of a *Sashakt, Surakshit, Samridh, and Viksit Bharat*. As General Chauhan writes, "Resurgence will lead to resilience, which is what we aspire for". This book is not just a blueprint for military transformation but a source of inspiration for all Indians to contribute to a stronger, more secure nation.

Colonel Amit Gupta, is an Officer on Study Leave at the Centre for Land Warfare Studies (CLAWS). Views expressed are personal.



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Book Review by: Yuvvraj Singh

Shivshankar Menon's *Choices: Inside the Making of India's Foreign Policy* is one of those rare books that manage to be both deeply intellectual and quietly personal. Written by one of India's most seasoned diplomats and a former National Security Adviser, it is not a conventional memoir or a boastful account of policy triumphs. Instead, it's a reflective exploration of how crucial decisions get made in the high-pressure world of diplomacy.

Rather than narrating his career chronologically, Menon structures the book around five pivotal foreign policy moments that, in his view, shaped India's modern diplomatic outlook. These include India's intervention in the 1971 Bangladesh crisis; the negotiation of the India–US civil nuclear deal; the handling of a border incident with China; India's delicate role

during the end of Sri Lanka's civil war; and the country's response to Pakistan after the 26/11 Mumbai attacks. Through these episodes, he lays bare not just what India did, but how and why decisions took the form they did. Each chapter stands on its own, yet together they form a coherent reflection on the nature of Indian statecraft.

The section on the Bangladesh war of 1971 sets the tone for the entire book. Menon revisits this episode not as a participant—he was still a young diplomat then, but as someone who has since come to appreciate the calculated patience behind India's actions. Instead of glorifying the war as an inevitable triumph, he frames it as an outcome of deliberate restraint and timing. Indira Gandhi, he argues, was neither reckless nor hesitant, she waited until the political, military, and international conditions aligned before committing India to intervene. Menon's admiration for her pragmatism is clear, but he stops short of turning her into a mythical figure. He portrays her as a leader who understood that moral conviction had to coexist with hard realism. In that sense, the story of 1971 becomes an early illustration of how Indian diplomacy blends principle with prudence.

From this historical foundation, Menon shifts to a much more recent and controversial chapter: the India–US civil nuclear agreement. This deal, struck during the UPA years, redefined India's global position in ways that are still debated today. Having been closely involved in the negotiations, Menon offers an insider's view without falling into either self-congratulation or defensiveness. He describes the deal as a conscious strategic choice rather than a capitulation to American interests. In his telling, it was India's way of moving beyond the limitations of the Cold War mindset and claiming a more confident role on the world stage. Menon explains that this was not about aligning with the West, but about enlarging India's room to manoeuvre, retaining autonomy while acknowledging the realities of global power. What makes this part of the book compelling is his honesty about the complexity of it all: the domestic political wrangling, the bureaucratic challenges, and the constant need to

balance ideals with pragmatism. He makes it clear that diplomacy, at its core, is the art of finding imperfect but workable solutions.

The chapter on China is among the most quietly revealing parts of the book. Drawing on his experience as Ambassador to Beijing, Menon recounts the 2010 border incident when Chinese troops crossed into Indian-claimed territory. Many accounts of India–China relations are either alarmist or overtly defensive, but Menon's approach is calm and layered. He neither exaggerates China's aggression nor downplays the seriousness of the event. What emerges instead is a sense of disciplined patience—India's choice to de-escalate tensions rather than escalate them. Menon explains that diplomacy often depends less on grand gestures than on steady and careful management of words and timing. In his view, maintaining long-term stability in such relationships requires emotional restraint and a deep understanding of history. His narrative here is almost meditative, showing that what appears as 'doing nothing' in the headlines is often the most difficult and deliberate act of all.

When he turns to Sri Lanka, the tone shifts. The chapter on India's role during the final phase of the Sri Lankan civil war carries a certain moral weight, and Menon does not shy away from its discomfort. India found itself in a terrible bind: on one hand, it needed to maintain influence in its neighbourhood and prevent external powers from stepping in; on the other, it couldn't ignore the enormous civilian suffering in Tamil areas. Menon acknowledges that India's decisions were not perfect, that moral clarity was sometimes sacrificed for strategic necessity. What makes his account resonate is his refusal to paper over this tension. He admits that foreign policy, particularly for a democracy like India, often involves living with guilt and compromise. The chapter reads less like a justification and more like an introspection, an acknowledgment that the human cost of state decisions can never be fully rationalised away.

The chapter on the 26/11 Mumbai attacks is perhaps the most personal and sobering. As National Security Adviser during that period, Menon was

directly responsible for advising the Prime Minister on how to respond. Public anger was overwhelming, and the calls for retaliation were loud. Yet India chose restraint, avoiding a military response that might have spiralled into a full-blown conflict. Menon explains this decision with disarming simplicity: sometimes doing less preserves more. Retaliation would have satisfied immediate anger, but at the cost of India's international standing and long-term security. It is here that his understanding of statecraft is most visible, the insistence that strength is not always about visible power, but about knowing when not to use it. At the same time, he doesn't gloss over the frustration and political cost of that restraint. The episode becomes a lesson in how leadership often means absorbing criticism for the sake of the larger picture.

Across the book, Menon's prose mirrors the temperament of a seasoned diplomat: measured, precise, but never detached. He writes not as a storyteller but as a thinker, someone who has spent decades weighing the balance between national interest and moral responsibility. His voice is calm and rational, yet underneath it there's a quiet intensity—a sense of deep respect for the seriousness of decision-making in government. The style reflects not just his personality but the nature of diplomacy itself, where every word must be chosen with care.

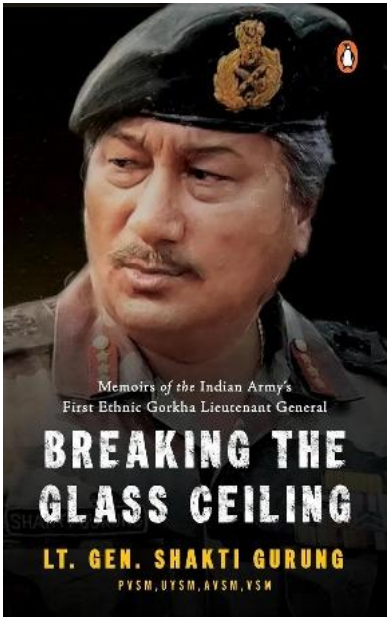
At a broader level, *Choices* works as both an insider's reflection and a philosophy of governance. Menon's central point is that foreign policy is not driven by destiny or ideology, but by judgement, that is, by the ability to choose wisely when none of the options are ideal. In his view, India's approach to the world has always depended on finding balance: between power and principle, autonomy and cooperation, caution and ambition. This idea of "strategic autonomy," which runs through the book, isn't just a policy term for Menon; it's a mindset, a way of navigating a world where certainty is rare and every decision carries both risk and opportunity.

Some readers may wish Menon had been a little more candid or personal, revealing more of the behind-the-scenes personalities and

conflicts. But his discretion is part of what makes the book credible. He doesn't gossip or dramatise, because the story he's telling isn't about individuals, it's about institutions, ideas, and choices that define a nation's conduct in the world. That modesty, far from being a flaw, lends the book its authenticity.

In the end, *Choices* is less about foreign policy per se and more about the human dimension of decision-making. Menon reminds us that every major turn in India's diplomatic journey has been the result of a choice, not a foregone conclusion. His reflections make one realize that the strength of a country lies not just in its power, but in the wisdom and restraint with which it chooses to use it. For anyone trying to understand how India sees the world—and how the world might see India, this book is essential reading, thoughtful and quietly profound in equal measure.

Yuvvraj Singh is a Research Assistant at the Centre for Land Warfare Studies (CLAWS) and focuses on the United States. Views expressed are personal.



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Book Review by: Dokku Nagamalleswara Rao

Breaking the Glass Ceiling is a memoir of service, identity and determination. It is an engaging story that moves beyond the traditional boundaries of military memoirs. The book tells the inspiring story of the first ethnic Gorkha officer to reach the pinnacle of command in the Indian Army, and gives readers an intimate portrait of professional achievements, cultural identity and institutional navigation within one of the world's largest military establishments.

The memoir has been organised over seventeen chapters, each reflective of unique stages in Lt Gen Gurung's professional and personal journey.

From his early days and formative lessons to the command of a frontline Corps along the Line of Actual Control, the journey unfolds on the trajectory of determination, adaptability, and resilience. The author's service from being commissioned into the Grenadiers, a regiment where Gorkhas do not traditionally serve, to eventually retiring as the Military Secretary, encapsulates the metaphorical "glass ceiling" that gives the book its title. This organisational structure allows Lt Gen Gurung to interweave professional milestones with wider musings on identity, belonging and the nuances. What sets this memoir apart from standard military writing is its dual approach of focusing both on operational experiences and socio-cultural commentary.

Lt Gen Gurung spends considerable effort in describing who the Gorkhas are, their traditions and mores, and the historical context in which they came to be part of India. The book explores the crisis of identity that the Indian Gorkha community faces, their sacrifices for the country and their continuing quest for recognition and a homeland. Such thematic depth raises the memoir above the status of career documentation, placing it as an important work of scholarship examining the overlap of ethnicity, military service and national identity. The writing style of the author is straightforward and reader-friendly, as appropriate for an officer who is used to clarity in communication. Lt Gen Gurung adopts a pedagogic style of writing throughout, often grouping his observations into numbered points and actionable advice.

This style comes through especially in chapters covering lessons on operations, leadership qualities and professional development. For example, his guidance on how to prepare for the Defence Services Staff College exam, the qualities of a Defence Attaché, what has been learnt from counter-insurgency operations, and the qualities of higher leadership are all sequentially structured guidance. Lt Gen Gurung ascribes to the brevity of language typical of military usage and omits unnecessary verbiage. This utilitarian prose does not in any way detract from the emotional impact of

the story. The writer's descriptions of working difficulties, professional victories and experiences of bias are presented in subtle emotion that enables readers to understand the seriousness of his experiences without melodramatic overstatement.

The tone is consistent throughout as being measured, analytical and contemplative, implying a writer with confidence in introspection yet mindful of not crossing professional boundaries.

One of the strong points of the memoir is its exhaustive coverage of operational experience in a wide variety of theatres. Lt Gen Gurung's long tenure in counter-insurgency and counter-terrorist operations in Jammu and Kashmir and the north-east forms the background for incisive operational narratives. Lt Gen Gurung's insights into military diplomacy—focusing on inclusion in embassy groups, recognising geostrategic value, maintaining cordial relations with other military diplomats and showcasing India's defence strength—show a mature grasp of soft power and strategic messaging. This chapter sheds light on a comparatively under-documented area of military life, making it highly relevant for readers specialising in defence diplomacy. A unique aspect of the memoir is its confrontation with controversial issues of the day. Lt Gen Gurung has no hesitation in voicing his opinions on politically charged issues, such as the abrogation of Article 370, issues between India and Nepal, the Agnipath recruitment scheme, and the permanent commissioning of women officers. These openly stated views, positive or negative, lend credibility to the memoir and set it apart from more guarded official accounts. The crisis of identity facing the Indian Gorkha community is dealt with by the chapter in this memoir, perhaps its most important socio-political contribution.

The memoir ends with 'Twenty Life Lessons', a reflective distillation of the author's philosophy.

These aphorisms—covering everything from the value of giving, upholding high moral and serving others to staying rooted and true to oneself—disclose a sense of values. Although, some might find the final chapter a little preachy, it effectively humanises the author, showing him not just as a professional soldier but as an individual shaped by diverse experiences and dedicated to sharing acquired wisdom. The author's firm institutional allegiance, as understandable as it is, sometimes limits critical analysis of systemic problems. Nevertheless, these limitations are outweighed by the strengths of the memoir—its genuineness, operational richness, socio-cultural insights, and the importance of its author's feat as the first ethnic Gorkha Lieutenant General.

Breaking the Glass Ceiling is, in the end, a memoir of great significance. It documents the professional journey of a pioneering military officer while at the same time grappling with larger questions of identity, belonging and organisational dynamics. Lt Gen Shakti Gurung's own voice—frank, seasoned and introspective—guides readers through operational complexities, strategic considerations and personal dilemmas with grace and certainty. This memoir warrants acknowledgement not just as an individualist testament but as a significant addition to modern Indian military writing.

Dokku Nagamalleswara Rao is a Research Assistant at the Centre for Land Warfare Studies (CLAWS), focusing on the geopolitical dynamics, foreign policy, and security affairs of China and East Asia. Views expressed are personal.

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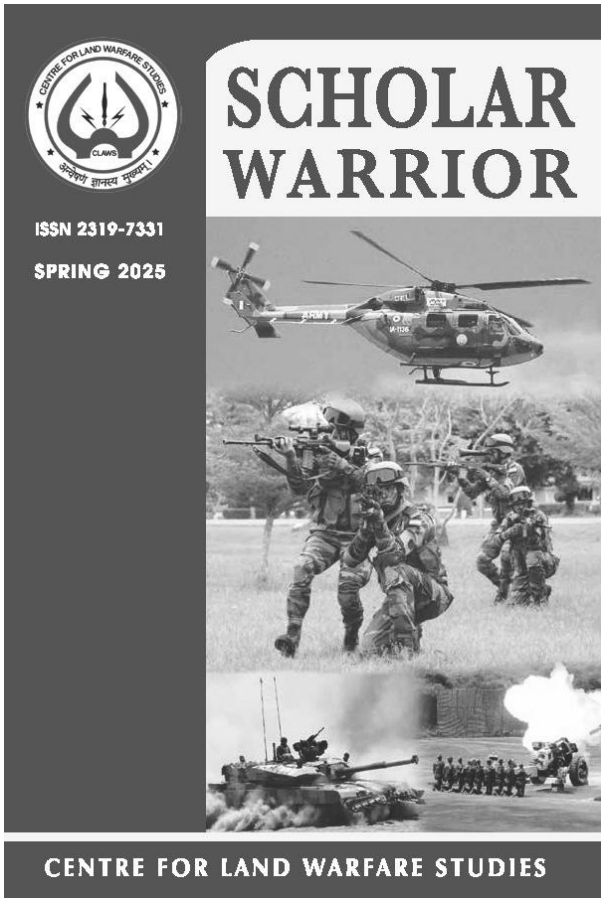

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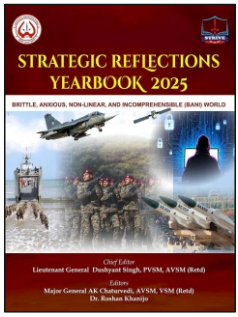

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Edts: Lt Gen Dushyant Singh, Maj Gen AK Chaturvedi & Dr Roshan Khanijo

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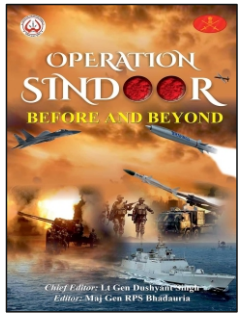
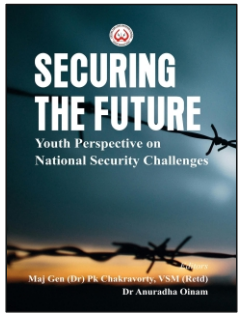


Operation Sindoor: Before and Beyond

Edts:

Lt Gen Dushyant Singh & Maj Gen RPS Bhadauria

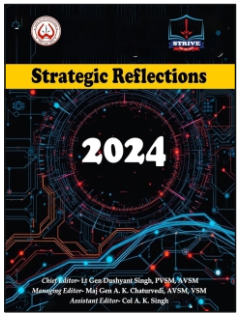
INR 1,199/- (PB)



Securing the Future Youth Perspective on National Security Challenges

Edts:
Maj Gen (Dr) PK Chakravorty & Dr Anuradha Oinam

INR 695/- (PB)



Strategic Reflections 2024

Edts:

Lt Gen Dushyant Singh, Maj Gen AK Chaturvedi & Col AK Singh

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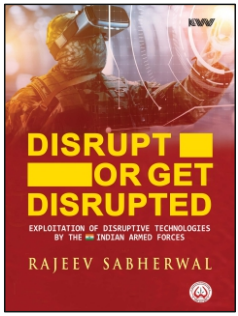
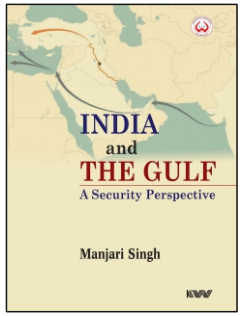


Disrupt or Get Disrupted Exploitation of Disruptive Technologies by the Indian Armed Forces

Lt Gen Rajeev Sabherwal

2,580/- (HB)



India and the Gulf A Security Perspective

Dr Manjari Singh

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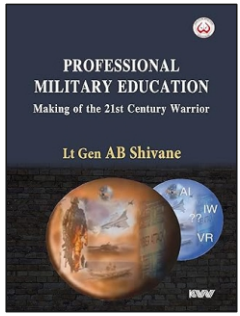
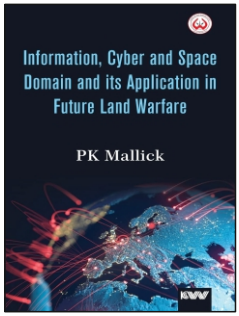


Professional Military Education: Making of the 21st Century Warrior

Lt Gen AB Shivane

1,680/- (HB)



Information, Cyber and Space Domain and its Application in Future Land Warfare

Maj Gen PK Mallick

1,580/- (HB)

CHANAKYA
DEFENCE DIALOGUE
REFORM TO TRANSFORM
SASHAKT, SURAKSHIT AUR VIKSIT BHARAT
सशक्त, सुरक्षित और विकसित भारत
27-28 NOV 2025 | NEW DELHI

The Chanakya Defence Dialogue 2025 Curtain Raiser opened with a wide-ranging fireside chat featuring General Upendra Dwivedi in conversation with Ms Sweta Singh, setting the strategic tone for the Dialogue. Speaking in Hindi to reach a broader audience, the Chief outlined how the Army's reform agenda aligns with the theme “Reform to Transform – Sashakt, Surakshit aur Viksit Bharat” and the larger vision of Viksit Bharat 2047. He framed the transition from the “Year of Transformation” to the “Year of Reform” as part of a longer decade-long roadmap, culminating in a data-centric, AI-enabled force.

Drawing on the lessons of Operation Sindoor, the Chief underscored India's clear deterrence posture, anchored in political will, military capability and the adversary's belief that India will act. He highlighted the changing character of war—compressed, multi-domain and technology-intensive—requiring agility, integration and rapid decision-making. The conversation reinforced that a reforming,

The transition from the “Year of Transformation” to the “Year of Reform” is part of a longer decade-long roadmap, culminating in a data-centric, AI-enabled force.