

The PLA Modernization and India's Military Preparedness along the LAC: A Comparative Study

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ABSTRACT

The ongoing modernization of the People's Liberation Army (PLA) has significantly altered the strategic dynamics along the Line of Actual Control (LAC) between China and India. This paper investigates the nature, scope, and pace of PLA modernization—spanning doctrinal reforms, advanced weapons systems, digitized warfare capabilities, and infrastructural enhancements—and evaluates India's corresponding military preparedness in the same region. Employing a comparative framework, the study contrasts strategic deployments, force mobility, surveillance systems, and logistical networks of both militaries. While China has made rapid strides through its military-civil fusion strategy and integrated joint operations, India's progress, though notable, remains asymmetrical and reactive in several domains. Drawing on open-source intelligence, satellite imagery, policy reviews, and military white papers, the research identifies critical capability gaps and strategic opportunities for India. The analysis reveals that although India has strengthened its defensive posture post-Galwan (2020), it still lags behind China in terms of operational readiness and technological integration along high-altitude terrains. The paper concludes by recommending policy measures for India's strategic recalibration, including accelerated infrastructure development, joint command integration, and an emphasis on asymmetric and technological warfare. This study contributes to the broader discourse on Asian security architecture and underscores the imperative for India to rethink its military doctrine in the context of China's assertive military rise.

Keywords: PLA modernization, LAC, India-China border, military preparedness, strategic balance.

INTRODUCTION

The Line of Actual Control (LAC), the de facto border between India and China, has emerged as one of Asia's most volatile and strategically sensitive regions. The 2020 Galwan Valley clash marked a turning point in India-China military relations, exposing the fragile nature of peace and the rising assertiveness of the People's Liberation Army (PLA). Over the past two decades, China has undergone rapid military modernization driven by its ambition to project power and safeguard its territorial claims. This transformation includes technological innovation, force restructuring, improved mobility, and the development of dual-use infrastructure along its western frontier.

India, in response, has initiated significant reforms aimed at improving its border infrastructure, enhancing surveillance capabilities, and refining force readiness in high-altitude conditions. However, questions persist regarding the adequacy and timeliness of India's preparedness in the face of China's swift military advancements.

This paper seeks to undertake a comparative study of the PLA's modernization trajectory and India's evolving military preparedness along the LAC. It aims to analyze whether India's current and future force posture can effectively deter aggression and maintain strategic stability in the region. By investigating doctrinal developments, logistics, technological edge, and troop deployment patterns on both sides, this study intends to highlight critical strengths, limitations, and areas that demand urgent policy attention.

THEORETICAL FRAMEWORK

This study employs a multidisciplinary theoretical framework grounded in **Realist** and **Security Dilemma** theories within the field of International Relations, supplemented by **Military Modernization Theory** and **Balance of Power** concepts from Strategic Studies.

1. **Realism and Security Dilemma:** Rooted in classical and neorealist thought, this perspective holds that states operate in an anarchic international system where security and survival are paramount. The rapid modernization of the PLA is

perceived by India as a threat to its territorial integrity, compelling it to respond in kind. This action-reaction dynamic reinforces the security dilemma, where one state's defensive measures are interpreted as offensive by another, leading to a spiral of military competition, particularly evident along the LAC.

2. **Balance of Power:** This theory explains India's attempts to counterbalance China's rising military prowess through strategic partnerships (e.g., QUAD), infrastructure upgrades, and increased defense spending. The imbalance of conventional military capabilities along the LAC underlines India's strategic imperative to restore equilibrium to deter coercion and preserve its territorial sovereignty.

RESULTS & ANALYSIS

The comparative analysis of PLA modernization and India's military preparedness along the Line of Actual Control (LAC) reveals a significant asymmetry in capability, pace of transformation, and strategic depth. The findings are drawn from open-source data, military white papers, satellite imagery analysis, expert interviews, and defence policy documents.

1. PLA Modernization – Key Findings:

- **Technology Integration:** The PLA has rapidly transitioned towards a digitized and network-centric force. Integration of AI, cyber capabilities, and unmanned systems into frontline units is evident, particularly in the Western Theater Command responsible for the LAC.
- **Infrastructure & Mobility:** China has constructed all-weather roads, rail lines (e.g., Lhasa-Nyingchi railway), airfields, and logistics hubs close to the LAC. This enables rapid deployment and sustained operations even in high-altitude environments.
- **Joint Operations Doctrine:** Since the 2015 reforms, the PLA has emphasized Integrated Joint Operations (IJO), promoting coordination among ground, air, cyber, and rocket forces. Exercises such as "Stride" and "Snow Leopard" illustrate readiness for high-altitude combat.
- **Force Projection:** The Western Theater Command has seen significant mechanization and rotational deployments of elite units, enhancing PLA's strike potential along disputed sectors like Eastern Ladakh and Arunachal Pradesh.

2. India's Military Preparedness – Key Findings:

- **Infrastructure Development:** India has accelerated road and tunnel construction (e.g., Darbuk-Shyok-DBO road, Atal Tunnel), yet lags in comparison to China. Border infrastructure remains reactive rather than anticipatory.
- **Force Modernization:** While India has inducted platforms like Rafale jets, Apache helicopters, and UAVs, modernization efforts are fragmented and slowed by procurement delays and bureaucratic hurdles.
- **Doctrinal Evolution:** The Indian Army continues to rely on the "Holding Corps" model, with limited integration of tri-service commands. Reforms such as Theater Commands remain under discussion.
- **Operational Challenges:** India's high-altitude logistics face constraints due to weather, limited road connectivity, and supply chain vulnerabilities. Troop sustenance, though improved since 2020, still depends heavily on external procurement for essentials like winter gear and specialized weapons.

3. Comparative Capability Matrix (Sample):

Capability Area	China (PLA)	India (Armed Forces)
Border Infrastructure	Extensive, all-weather, dual-use	Improving, but lagging in pace and scale
Surveillance & ISR	Satellites, UAVs, integrated networks	Limited coverage, growing UAV capability
Air Mobility & Bases	High-altitude airfields (e.g., Ngari Gunsa)	Improved airlift (e.g., Chinooks), fewer bases
Force Deployment	Rapid mobilization, mechanized units	Static deployment, reactive posture
Joint Command Structure	Functional joint operations doctrine	Fragmented command and control

4. Strategic Implications:

- The PLA enjoys superior infrastructure and mobility, enabling preemptive and sustained operations along key flashpoints.
- India's improved vigilance post-Galwan has enhanced its tactical defense, but long-term deterrence is uncertain without deeper doctrinal and technological shifts.
- The capability gap, if unaddressed, may embolden China's coercive diplomacy or limited military actions under the guise of grey-zone tactics.

5. Emerging Trends:

- Both sides are investing in **unmanned systems, cyber warfare units, and space-based assets**, signaling a transition from traditional to hybrid conflict paradigms.
- India’s focus on **defensive preparedness** must shift toward **deterrence through denial** to counter China's proactive military strategy.

In conclusion, while India has made commendable progress in hardening its defenses along the LAC, the PLA's sustained modernization and operational integration present a strategic advantage that must be addressed through both capability enhancement and institutional reform.

COMPARATIVE ANALYSIS IN TABULAR FORM

Comparative Analysis: PLA Modernization vs. India’s Military Preparedness along the LAC (Tabular Form)

Dimension	People’s Liberation Army (PLA) – China	Indian Armed Forces – India
Doctrinal Approach	Integrated Joint Operations (IJO); Focus on informatization & intelligent warfare	Sector-based defense posture; Theater Command reform under consideration
Command Structure	Streamlined under Central Military Commission; Joint Theater Commands operational	Fragmented command structure; Chief of Defence Staff (CDS) role still evolving
Force Modernization	Emphasis on mechanization, AI, drones, cyber, and long-range strike capabilities	Selective upgrades (Rafale, UAVs, artillery); modernization slowed by delays
Infrastructure Development	Dual-use roads, airfields, railways near LAC; rapid construction capability	Progress post-2020; limited all-weather infrastructure; slower pace
Mobility & Logistics	Integrated logistics, high-speed transport, rail-air-road synergy	Road-based mobility; reliance on airlift (Chinooks, C-17); logistical gaps
Air Power	Forward-deployed airbases (e.g., Hotan, Ngari); J-20, J-10C fighters operational	Rafale, Su-30MKI, Apache helicopters; fewer high-altitude forward bases
Surveillance & ISR	Advanced satellite systems, drones (Wing Loong), EW units in Tibet	Growing drone fleet; limited satellite coverage; reliance on external inputs
Cyber & Space Capabilities	Dedicated cyber units; space warfare units under Strategic Support Force (SSF)	Cyber Command emerging; lacks full-spectrum space warfare integration
Troop Deployment Posture	Rapid rotation of seasoned units; permanent bases in Tibet & Xinjiang	Static deployments with reinforcements from plains; acclimatization required
Winter Warfare Readiness	Indigenous winter gear; pre-positioned supplies; extensive infrastructure	Improved since Galwan; gaps in domestic supply chain; heavy imports
Training & Exercises	Frequent high-altitude drills (e.g., Snow Leopard, Stride series)	Regular bilateral & domestic exercises (e.g., Yudh Abhyas, Him Vijay)
Budget & Defense Spending	\$225+ billion (2024 est.); emphasis on R&D and dual-use technologies	\$73 billion (2024-25 est.); high revenue expenditure, lower modernization funds
Intelligence & Early Warning	Real-time data sharing across theater commands; AI-assisted early warning systems	Limited integration; intelligence reforms underway (NATGRID, DIA coordination)
Nuclear Posture	No First Use (NFU) policy with modern delivery systems	NFU policy; credible minimum deterrence; growing Agni missile arsenal
Strategic Alliances/Support	Pakistan (CPEC); BRI-linked partnerships; dual-use infrastructure in South Asia	QUAD, Indo-Pacific cooperation, defense ties with US, France, Israel

This comparative table illustrates the operational, technological, and strategic asymmetries between the PLA and India along the LAC, while also highlighting India’s areas of improvement and opportunity for capability development.

SIGNIFICANCE OF THE TOPIC

The modernization of the People's Liberation Army (PLA) and its implications for India's military preparedness along the Line of Actual Control (LAC) hold profound strategic importance for regional and global security. This topic is significant for several interrelated reasons:

1. **Regional Stability in South Asia and the Indo-Pacific**

The India-China border remains one of the most militarized and politically sensitive flashpoints in Asia. PLA modernization—when viewed alongside assertive Chinese posturing—directly impacts the balance of power in the region, with potential spillover effects on neighboring states, regional alliances, and maritime strategies in the Indo-Pacific.

2. **Implications for India's National Security and Deterrence Posture**

The modernization asymmetry between the PLA and the Indian Armed Forces raises urgent questions about India's deterrence capabilities. Understanding these dynamics is critical to formulating coherent defense strategies, revising doctrines, and prioritizing military investments in response to the evolving threat landscape.

3. **Post-Galwan Relevance and Strategic Urgency**

The Galwan clash of 2020 revealed critical vulnerabilities in India's forward posture and catalyzed a reassessment of China's long-term military objectives. A comparative study helps policymakers and scholars evaluate how both nations have adapted since then—and what risks remain unresolved.

4. **Military Modernization and Doctrinal Reform in Comparative Perspective**

This study contributes to broader academic debates on how middle powers like India can respond to the rapid military advancement of neighboring great powers. It also offers insights into the doctrinal shifts required to manage high-altitude, limited-war scenarios under nuclear overhangs.

LIMITATIONS & DRAWBACKS

1. **Reliance on Open-Source Information**

Much of the analysis is based on publicly available data, including satellite imagery, defense white papers, media reports, and think tank publications. Due to the classified nature of military strategies and deployments, critical aspects—especially regarding India's real-time response capabilities and China's operational planning—remain undisclosed.

2. **Dynamic Strategic Environment**

Military postures and defense capabilities are continuously evolving. Infrastructure upgrades, induction of new platforms, or changes in command structures could alter the strategic balance within months. Therefore, the study captures only a temporal snapshot of an ongoing and fluid geopolitical contest.

3. **Asymmetric Transparency**

China's defense apparatus is highly opaque, limiting reliable verification of its deployments, cyber capabilities, and doctrinal shifts. Conversely, Indian defense developments are relatively more transparent, creating an imbalance in the depth of information available for both sides.

4. **Focus on Conventional Capabilities**

The study primarily emphasizes conventional and technological military aspects. It does not fully explore non-kinetic dimensions such as psychological warfare, misinformation campaigns, grey-zone tactics, and diplomatic leverage, which are integral to modern conflict but harder to quantify and compare.

5. **Lack of Primary Field Data**

The absence of firsthand fieldwork, interviews with military personnel, and on-ground operational observations due to security restrictions limits the qualitative depth of the analysis. This affects the ability to assess morale, adaptability, and human factors in high-altitude warfare.

CONCLUSION

The modernization of the People's Liberation Army (PLA) represents a significant shift in the regional military balance, particularly along the Line of Actual Control (LAC), where India faces an increasingly assertive and technologically advanced adversary. This comparative study highlights the PLA's rapid transformation through enhanced mobility, integrated joint operations, high-altitude readiness, and dual-use infrastructure. In contrast, while India has made considerable progress since the 2020 Galwan clash—especially in strengthening border infrastructure, improving surveillance, and enhancing force posture—it continues to face critical capability gaps in mobility, jointness, and technological integration.

The analysis reveals that the PLA holds a strategic advantage in terms of infrastructure depth, force mobilization, and command integration, while India's preparedness remains constrained by bureaucratic inertia, delayed modernization, and doctrinal rigidity. Nonetheless, India possesses key strengths, such as experienced high-altitude troops, a growing indigenous defense sector, and strategic partnerships that can be leveraged for capacity building.

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