



## **ARUNACHAL PRADESH AND NATIONAL SECURITY: INDIA'S SECURITY MEASURES AMIDST BORDER DISPUTES WITH CHINA**

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### **Abstract**

Arunachal Pradesh holds a very important place when it comes to India's national security architecture because of its 1,080 plus km border with China's Tibet Autonomous Region which a very difficult terrain and with a history of border standoffs between India and China. Over the last decade especially since 2020, the New Delhi has implemented a layered strategy to enhance deterrence, resilience and rapid response along the eastern sector of the Line of Actual Control (LAC). This article examines the Indian government's security measures in Arunachal Pradesh particularly discussing the six mutually reinforcing pillars: (1) military posture and logistics; (2) strategic infrastructure, notably all-weather surface connectivity via tunnels, bridges and border



roads; (3) forward air mobility through the reactivation and upgrading of Advanced Landing Grounds (ALGs); (4) border management and surveillance, including the expansion of border outposts and technology-enabled monitoring; (5) whole-of-government and community-centric initiatives to stabilize border villages; and (6) legal-administrative steps affecting adjacent frontiers that shape Arunachal's security ecology. Examining the official releases and credible reporting, the paper highlights milestones such as the Sela Tunnel's commissioning to secure all-weather access to the Tawang axis, the dedication of the Nechiphu Tunnel, the upgrading of multiple ALGs (Pasighat, Ziro and Aalo/Along among others) and the Border Roads Organisation's (BRO) accelerated programme of roads and bridges. It assesses the Vibrant Villages Programme's role in the state and the problem face by India - Myanmar border issue that indirectly influence the eastern-sector security. The analysis underscores capability gain such as faster troop induction, improved winter sustainment and greater operational endurance while acknowledging persistent challenges such as terrain, weather, dispersed settlements, logistics tails and crisis-communications with China. The article concludes with policy recommendations in order to deepen civil-military integration, scale resilient logistics, institutionalize risk-reduction mechanisms and accelerate the use of development to anchor long-term stability and deterrence of border tensions with China along the Arunachal frontier.

**Keywords:** Arunachal Pradesh, Advanced Landing Grounds (ALGs), Border Roads Organisation (BRO), Border Tensions, National Security Strategy, Security Measures, Vibrant Villages Programmes (VVP)

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## Introduction

Arunachal Pradesh is India's easternmost Himalayan state and it is strategically important for three reasons. First, it shares boundary with Tibet (China) and have a high-altitude frontier where infrastructure and weather historically constrained India's military mobility. Second, it contains religious and cultural sites such as Tawang Monastery at Tawang that heighten the symbolic and geopolitical stakes. Third, the region has witnessed periodic friction like patrol face-offs with Chinese armies which lead to differing perceptions of the LAC from both sides and also it is a



crises that require calibrated signaling and assured logistics. Since the Ladakh crisis of 2020, India has moved to compress response timelines, harden logistics and normalize round-the-year access to frontiers of Arunachal Pradesh. This effort is not a single project but a responsibility of India. So, tunnels and bridges that neutralize mountain passes, border roads that reduce isolation, airstrips that bring lift closer to forward areas, tech-enabled surveillance that multiplies the reach of border forces and community-centric development have been carried out in the state that also helps retain population and livelihoods in remote villages.

### **Objectives**

1. To analyse the strategic security measures implemented by the Indian government in Arunachal Pradesh amidst ongoing border tensions with China in terms of military posture, infrastructure development and border management.
2. To evaluate the role of dual-use infrastructure and community-based initiatives such as the Vibrant Villages Programme in strengthening both national security and socio-economic resilience in border areas.
3. To identify gaps, challenges and opportunities in India's existing security architecture in Arunachal Pradesh and provide policy recommendations for enhancing deterrence, stability and sustainable development in the region.

### **Methodology**

This research adopts a qualitative, descriptive and analytical methodology. The study is based on secondary data sources collected from official government documents, press releases, parliamentary debates, academic articles, Defence analyses and credible media reports.

#### **1. Research Design:**

A descriptive research design is employed to systematically examine the security measures taken by the Indian government in Arunachal Pradesh. An analytical approach is integrated to interpret the implications of these measures on military preparedness, developments and regional stability.



## **2. Data Collection:**

Secondary data is gathered from the Press Information Bureau (PIB), Ministry of Defence reports, Ministry of Home Affairs publications, Parliamentary documents and reputed international news agencies. Academic journals, policy think tank reports and government white papers are also included for contextual analysis.

## **3. Data Analysis:**

Content analysis is used to classify measures into six pillars: military posture, infrastructure development, air mobility, border management, community initiatives and diplomatic efforts.

A case study approach is applied to examine critical projects (e.g., Sela Tunnel, Vibrant Villages Programme) as testbeds of India's evolving security strategy. Comparative insights are drawn from past border management approaches to assess progress and persisting challenges.

## **4. Limitations:**

The study relies solely on publicly available information; therefore, operational details classified for national security reasons are excluded. Findings are interpretive in nature, emphasizing strategic trends rather than tactical-level specifics.

## **Security measures taken up by Indian government in the state of Arunachal Pradesh amidst border tensions between India and China**

The following sections organize the measures taken up by Indian government and these measures are divided into six pillars tracing their rationale, key milestones and cumulative impact followed by gaps and policy suggestions.

### **Pillar 1: Military posture, logistics and readiness**

Doctrinal shift to persistent readiness: The Indian Army's eastern formations already covered the Arunachal Pradesh sector, but after 2020, only the emphasis has sharpened on persistent winter readiness, pre-positioned stocks and rapid reinforcement. The aim is very simple. The



developments are carried out to reduce the “distance penalty” of mountains and to make winter day’s long movements more easily accessible and possible to reach in short hours when needed.

Logistics as a war-winning determinant: In high Himalayan operations usually sustainment often matters more than that of initial numbers. Hence, the government’s investment often prioritizes arteries that keep supplies moving despite snowfall and landslides and they are supported by redundancy (multiple routes), weather-proofing (tunnels) and heavy-lift aviation staging via ALGs.

Inter-service integration: Eastern Air Command’s bases in Assam support the Arunachal frontage. Reactivated ALGs in state shortens the “last hundred miles” for air maintenance and casualty evacuation as well as enabling quick movement of light troops and high-value stores.

### **Pillar 2: Strategic surface connectivity—tunnels, roads and bridges**

Sela Tunnel was commissioned on March 9, 2024. The Sela Tunnel system on the Balipara-Chariduar-Tawang (BCT) road is the centerpiece of Arunachal Pradesh’s all-weather access to the Tawang sector. Dedicated to the nation by the Prime Minister in March 2024, the project constructed by the Border Roads Organisation (BRO) at 13,000 ft—provides year-round connectivity through the Sela Pass. It reduces weather closures and lessens travel time as well as risk on a critical axis. The tunnel enhances the speed and predictability of troop induction and logistical runs to Tawang which is strategically sensitive in any eastern-sector contingency.

Nechiphu Tunnel was dedicated on September 12, 2023. Located on the same Tezpur-Tawang artery in West Kameng district, the Nechiphu Tunnel (≈500 m) was among 90 BRO projects dedicated to the nation in September 2023. By bypassing fog-prone and landslide-susceptible stretches, it improves safety and cuts delays along the approach to Tawang.

BRO’s accelerated build-out projects have immensely affected the state’s security measures. The BRO has markedly increased roads/bridges delivery across the high Himalaya since 2020. The September 2023 tranche alone included 36 projects in Arunachal Pradesh pointing to a sustained



push to densify lateral links, strengthen bridges for heavy military loads and reduce single-point failures (PIB, 2023a).

Operational implications: In combination, these surface projects deliver: (i) all weatherproofed mobility; (ii) route redundancy; (iii) improved mean-time-to-repair via better access for engineering assets; and (iv) shorter turnaround cycles for convoys—key to winter stockpiling and crisis surge.

### **Pillar 3: Forward air mobility—ALGs and tactical airlift**

Reactivating and upgrading ALGs: The Indian Air Force (IAF) has progressively upgraded and re-opened Advanced Landing Grounds inside Arunachal Pradesh to support tactical airlift and maintenance. The upgraded ALGs at Ziro and Aalo were inaugurated in March 2016 (PIB, 2016a) and Pasighat became operational in August 2016 which is marked by the first Su-30MKI landing—an important signal of runway quality and logistics potential (PIB, 2016b; also reported in mainstream outlets). Additional ALGs in the state (e.g., Walong, Mechuka, Tuting, Ziro, Aalo, Vijaynagar) have been revived over the last decade through a phased programme.

Why ALGs matter?

In mountainous terrain like that of Arunachal Pradesh, a forward ALG is a logistics multiplier. It helps in air maintenance (ration, fuel, and ammunition), casualty evacuation and rapid light-troop moves that are otherwise sometime compromise due to road conditions. ALGs also serve dual-use roles such as supporting limited civil flights and disaster response and thereby aligning security with developments.

### **Pillar 4: Border management, surveillance and law-and-order enablers**

Border guarding and outpost network: Arunachal Pradesh's long and sparsely populated frontier requires a lattice of Border out Posts (BOPs), winterized shelters and patrol tracks. While granular deployment details are understandably not public but since 2020 the Centre has emphasized denser BOP spacing and have improved habitat (heated shelters, prefab structures)



and patrol connectivity. These measures shorten patrol cycles and improve presence in high-altitude subsectors.

Technology infusion: Across the Northeast, Ministry of Home Affairs and armed forces have pushed sensors, cameras, UAVs and have installed pilot stretches hybrid surveillance systems that blend physical barriers with smart monitoring. Although much of this detail is not discussed in the public domain but official and academic reporting notes are somehow allowed even on India-Myanmar border which also affects outside the LAC and affects Arunachal's wider security ecosystem too (SNU CoEHS, 2024).

Legal - administrative steps on adjacent borders. In February 2024, the Government announced the scrapping/suspension of the Free Movement Regime (FMR) with Myanmar and advanced plans to fence the India-Myanmar border, citing security and demographic concerns (PIB, 2024c; Reuters, 2024a; 2024b). Though this policy primarily concerns Manipur, Nagaland and Mizoram but it has second-order effects on cross-border movement and illicit flows in the far-eastern corridor that includes eastern Arunachal adjoining Myanmar too which secures Arunachal Pradesh from illegal migration from the neighboring country.

### **Pillar 5: Whole-of-government development—holding the border through livelihoods**

Vibrant Villages Programme (VVP): Announced in February 2023, VVP funds last-mile amenities such as roads, housing, renewable energy, telecom, health, education facilities and livelihood projects across border villages in various states including Arunachal Pradesh. Parliamentary and official documents affirm VVP's mandate to prevent out-migration and strengthen the social-economic fabric in forward areas, which is a vital complement to hard security measures (Sansad Document, 2024; Govt. of Arunachal Planning Dept., 2024). By improving services and connectivity, VVP increases population resilience and reduces the incentives for relocation, thereby bolstering border presence over the long term.

Dual-use infrastructure logic: A recurring theme in Arunachal is dual-use design like roads, bridges, tunnels and airfields serve both military logistics and civilian development. This



approach improves utilization, sustains local buy-in and gives projects a stable budgetary foundation beyond purely defence lines.

### **Pillar 6: Diplomacy, crisis management and confidence building**

While the People's Liberation Army and Indian Army maintain differing LAC perceptions, corps-commander-level talks and sectoral mechanisms continue to manage incidents and seek disengagement where feasible. Infrastructure build-out on the Indian side is framed as defensive and sovereignty affirming enabling credible deterrence and a stable negotiating posture rather than signaling offensive intent. The policy objective is to close vulnerability gaps that once invited coercive pressure while keeping channels for crisis communication open.

### **Impact assessment: What has materially changed?**

1. All-weather access to Tawang: With the Sela tunnel and the Nechipu tunnel operational, winter closures no longer paralyze the Tawang axis. Convoy predictability and safety have improved a lot reducing the erosion of stockpiles during long winters (PIB, 2024a; 2023a).
2. Faster reinforcement and evacuation: Upgraded ALGs, especially Pasighat's reinforced runway (and others reactivated since 2015-16), allow quicker lift of troops and critical stores and faster Casualty Evacuation (CASEVAC) when minutes matter (PIB, 2016a; 2016b).
3. Habitat and patrol endurance: Better forward habitat and logistics nodes enable longer patrols, wider coverage and improved soldier health as well specially in sub-zero degree conditions also and it helps the armies to keep border zone in day-to-day control.
4. Community resilience along the frontier: VVP's integration of basic services, livelihood enablers and connectivity addresses the root problem of depopulation in remote villages. Villages that stay viable always act as eyes and ears to the armed forces in times of crisis and civil solidarity towards and local knowledge of the geography can always help the armed forces to win any battle in case of armed conflict.



5. Redundancy and survivability: Multiple routes, bridges and tunnels along with air options reduce the risk of single weather event blockage or disruption or isolation of a sector. Such development helps the frontier population to be resilient and develops the capability to survive even in war like situation.

### **Case study: The Tawang axis as a test bed for resilience**

The Tezpur-Bhalukpong-Bomdila-Tawang route has evolved from a weather-dependent mountain road into a two-tunnel and multi-bridge lifeline. Operational winter closures used to impose a long logistics “tax” and hard constraints on convoys. Today, the Sela and Nechipu tunnels mitigate snow and fog vulnerabilities, normalize transit even during heavy precipitation and very importantly reduce accident risk on treacherous hairpins. This improves not only troop movement but also civilian access to markets, hospitals and schools deepening the security-development synergy the government seeks (PIB, 2024a; 2023a).

### **Constraints and enduring challenges**

1. Terrain and climate: Even with all year round tunnels landslides, avalanches and freeze-thaw cycles gives stress to roads and slopes. Maintenance budgets and quick-reaction engineering must keep pace with climate variability.
2. Dispersed settlements and long supply lines: Many villages lie far from district hubs. Ensuring year-round medical evacuation, telemedicine and stocking at block level remains a big challenge.
3. Interoperability and data fusion: As surveillance, tech proliferates (UAVs, cameras, sensors), the fusion of feeds into actionable border pictures and their distribution to patrols at the tactical edge is a continuing task.
4. Crisis communications: Even robust infrastructure cannot substitute for incident-management protocols and hotlines that prevent local friction from escalating.
5. Adjacent-border dynamics: Instability along the India-Myanmar frontier can redirect illicit flows of refugees putting pressures on armed forces and civilians as well which indirectly touch



Arunachal Pradesh's eastern districts. Policy shifts (e.g., FMR suspension, fencing) must therefore be implemented with sensitivity to local communities while achieving security aims (PIB, 2024c; Reuters, 2024a).

## **Policy recommendations**

### **1) Finish the redundancy map.**

Prioritize lateral connectors off the main Tawang axis to create alternative spurs and loops so that maintenance or a blockage on one segment does not hamper the entire free flow route. Continue slope stabilization, snow galleries and avalanche mitigation on exposed stretches must always be kept in mind while carrying out development projects.

### **2) Scale resilient logistics.**

Pre-position modular logistics nodes such as fuel, rations and spares should be carefully chosen placed at altitudes to minimize weather penalties. Heated storage and micro-warehouses should be expanded near ALGs to compress turnaround time.

### **3) Expand the ALG envelope.**

Wherever feasible, extend runway surfaces, navigation aids and night-landing capability at selected ALGs to widen the weather window for tactical airlift. Maintain dual-use profiles to keep civilian utilization and political support very high.

### **4) Tech-enabled border management.**

Institutionalize hybrid surveillance by integrating patrol tracks, sensor nets, UAVs and secure communications while ensuring last-mile power (solar-battery hybrids) and winterized shelters at Border out Posts (BOPs). Adopt common operating picture tools that function in low-bandwidth environments.



**5) Invest in human terrain and services.**

Accelerate VVP-style projects in drinking water, primary health, telecommunication, education and clean energy for border villages. Add community response teams trained in first aid, search-and-rescue and communications to complement formal forces during weather events.

**6) Institutionalize crisis-management drills.**

Regular joint exercises for mountain casualty evacuation, road clearance and communication blackout contingencies should include civil agencies, BRO, Army, IAF and state disaster authorities.

**7) Dialogue architecture with deterrence.**

Sustain infrastructure modernization while continuing military-to-military talks and local commander meetings from time to time. Explore sector-specific standard operating procedures to manage inadvertent transgressions along complex ridgelines.

**Conclusion**

Arunachal Pradesh's security is a function of mobility; endurance and societal anchoring (do people live, work, and thrive in border villages?). Over the last few years, Indian policy has made decisive progress on all these three. The commissioning of Sela and dedication of Nechiphu have transformed the Tawang artery from a seasonal route into an all-weather lifeline. BRO has accelerated road and bridgework has thickened connectivity. The IAF's revitalized ALGs have shortened the air-maintenance loop. Border guarding has been strengthened and augmented by technology. VVP's development focuses and seeks to hold the frontier with livelihoods not just barbed wire alone. Still challenges are there when it comes to terrain and climate and still there is need to fuse sensors, logistics and civil-military systems into a seamless whole. Yet the direction of travel is clear because of its resilient, redundant and development-anchored security posture that enhances deterrence and stabilizes the eastern sector. Continued investment, maintenance, community participation and prudent diplomacy will be essential to



consolidate these gains and ensure that Arunachal Pradesh remains secure, connected and confident along the Himalaya's most rugged edge.

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