

The McMahon Line Dispute and Infrastructure Politics: How India's Development Projects Shape Territorial Claims in Arunachal Pradesh

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The McMahon Line, demarcating the boundary between India and China, remains one of Asia's most contentious territorial disputes. This paper examines how India's strategic infrastructure development in Arunachal Pradesh functions as a mechanism of territorial assertion and sovereignty consolidation. Through spatial analysis and policy evaluation, this research demonstrates that infrastructure projects serve dual purposes: development and geopolitical signalling. Analysing data from 2010-2023, we find that infrastructure investment correlates with disputed border zones, suggesting deliberate strategic positioning. The study employs mixed methods, combining quantitative analysis of project distribution with qualitative assessment of policy documents. Results indicate that India's infrastructure politics in Arunachal Pradesh represent "development as defence," where roads, bridges, and connectivity projects materialise abstract sovereignty claims into physical territorial control. This research contributes to understanding how nation-states utilise development projects as instruments of territorial assertion in contested borderlands.

Keywords: McMahon Line, Infrastructure Politics, Territorial Disputes, Arunachal Pradesh, Border Management, Sino-Indian Relations

Introduction

The McMahon Line, established during the 1914 Simla Convention, represents approximately 890 kilometres of contested boundary between India and China, primarily affecting the Indian state of Arunachal Pradesh (Behera, 2020). China refuses to recognise this demarcation, referring to the region as "South Tibet," thereby creating one of the most significant territorial disputes in

contemporary Asian geopolitics (Saikia & Stephan, 2019). This boundary dispute has precipitated military confrontations, including the 1962 Sino-Indian War, and continues to generate periodic tensions affecting bilateral relations (Murthy, 2021).

Infrastructure development has emerged as a critical mechanism through which nation-states assert territorial sovereignty, particularly in

contested borderlands (Cons & Sanyal, 2013). India's accelerated infrastructure investment in Arunachal Pradesh since 2010 reflects a strategic shift toward utilising development projects as instruments of territorial consolidation (Kikon, 2019). This phenomenon represents what can be termed "infrastructure politics"—the deployment of physical development as both material advancement and symbolic territorial assertion (Harvey & Knox, 2015).

1.1 The Evolution of Border Infrastructure Policy in India

India's approach to border infrastructure has undergone a significant transformation since independence. During the early decades following 1947, the Nehruvian policy emphasised non-alignment and peaceful coexistence, deliberately maintaining minimal military and infrastructure presence in border regions to avoid provoking neighbouring states (Raghavan, 2019). This policy, rooted in idealistic internationalism, proved catastrophic during the 1962 Sino-Indian War, when Chinese forces exploited superior border infrastructure to rapidly advance into Indian territory (Garver, 2021). The Henderson Brooks-Bhagat Report, which investigated the military debacle, explicitly identified inadequate border infrastructure as a critical factor in India's defeat, noting that Chinese forces utilised well-developed roads and supply lines while Indian troops struggled with minimal logistical support (Singh, 2020).

The post-1962 period witnessed gradual policy evolution toward recognising infrastructure's strategic significance. The establishment of the Border Roads Organisation (BRO) in 1960, which gained prominence post-war, represented institutional acknowledgement of the infrastructure's defence dimensions (Ramachandran, 2018). However, infrastructure development remained inconsistent and under-resourced through the 1970s-1990s, with northeastern border states receiving disproportionately low investment compared to western borders with Pakistan (Bhatnagar & Singh, 2019). This disparity reflected both resource constraints and continued hesitation

about potentially provocative infrastructure development near the Chinese border (Chakraborty, 2020).

The strategic calculus shifted dramatically in the 21st century, particularly after 2010, driven by multiple converging factors. First, China's rapid infrastructure development along its side of the disputed boundary created asymmetric capabilities, enabling Chinese forces to mobilise far more rapidly than their Indian counterparts (Stobdan, 2020). Satellite imagery analysis by defence analysts revealed extensive Chinese road networks, railways, and military installations within 50 kilometres of the disputed boundary, contrasted with minimal Indian infrastructure beyond 100 kilometres from the border (Lalwani & Byrne, 2021). This infrastructure gap generated acute strategic vulnerability, particularly in Arunachal Pradesh's Tawang sector, considered critical terrain in potential conflict scenarios (Pant, 2022).

Second, recurring border incursions and standoffs demonstrated tangible consequences of infrastructure deficiencies. The 2013 Depsang incursion, 2017 Doklam crisis, and particularly the 2020 Galwan Valley clash highlighted how infrastructure superiority translated into tactical advantages during border confrontations (Basrur & Sankaran, 2022). The Galwan incident, resulting in casualties on both sides, catalysed unprecedented political consensus on infrastructure acceleration, with parliamentary standing committees explicitly recommending massive border infrastructure investment as a national security priority (Krishnan, 2021).

Third, evolving strategic doctrine increasingly emphasised border area development as a dual-purpose investment yielding both development and defence benefits (Kaul, 2021). This conceptual shift, articulated in defence white papers and policy documents, legitimised massive infrastructure spending in remote, economically marginal regions by framing such investment as national security expenditure rather than purely developmental outlay (Mukherjee & Malone, 2020). The doctrine of "development as defence" emerged as a guiding principle, positing that well-

developed border regions with robust infrastructure and stable populations constituted more effective defence than military deployments alone (Ganguly & Pardesi, 2022).

1.2 Arunachal Pradesh: Geopolitical Significance and Developmental Challenges

Arunachal Pradesh occupies a unique position in India's geopolitical landscape, representing what scholars term "double periphery"—geographically marginal within the Indian state system while simultaneously constituting a critical frontier in Sino-Indian relations (Baruah, 2020). Covering 83,743 square kilometres with a population density of merely 17 persons per square kilometre, the state's strategic value far exceeds its demographic or economic weight (Census of India, 2011). The entire state borders China along the McMahon Line, making it the primary territorial focus of the Sino-Indian boundary dispute (Sinha, 2021).

The region's geopolitical significance derives from multiple factors. Strategically, Arunachal Pradesh's terrain features several invasion corridors that, if controlled by adversaries, could threaten India's northeastern states and sever the narrow Siliguri Corridor connecting the region to mainland India (Katoch, 2020). The Tawang region particularly concerns defence planners, as Chinese control of this area would dominate approaches to the strategically vital Siliguri bottleneck (Sawant, 2021). Historically, China's 1962 military advance through Arunachal Pradesh reached the plains of Assam before voluntarily withdrawing, demonstrating the region's role as a potential invasion route (Hoffmann, 2019).

Culturally and ethnically, Arunachal Pradesh's population includes numerous indigenous communities with distinct identities, some sharing linguistic and cultural affinities with Tibetan populations across the border (Blackburn, 2018). This cultural complexity creates what Baruah (2020) terms "identity borderlands," where ethnic affinities cross political boundaries, potentially complicating sovereignty assertions. Chinese claims over

Arunachal Pradesh extend beyond territorial arguments to include cultural assertions, particularly regarding Tawang's significance in Tibetan Buddhist traditions as the birthplace of the sixth Dalai Lama (Norbu, 2019).

Developmentally, Arunachal Pradesh has historically ranked among India's least developed states despite substantial natural resources and hydroelectric potential (Planning Commission of India, 2018). Poor connectivity has been the fundamental developmental constraint, with the state possessing minimal road infrastructure until recently (Hazarika, 2022). Villages located within 10 kilometres of the international boundary often lacked road connectivity, forcing residents to trek for days to access basic services (Chaudhuri & Pant, 2020). This infrastructural isolation contributed to significant outmigration, with border villages experiencing population decline as residents relocated to better-connected areas (Sengupta, 2021). The resulting demographic emptying of strategically sensitive border zones alarmed security planners, as uninhabited borderlands are more vulnerable to territorial encroachment (Goswami, 2020).

The state's ecological fragility adds another dimension to infrastructure development challenges. Arunachal Pradesh contains biodiversity hotspots and ecologically sensitive Himalayan ecosystems vulnerable to disruption from intensive construction activity (Chatterjee et al., 2021). Environmental scholars warn that rapid infrastructure development without adequate environmental safeguards risks long-term ecological damage, including increased landslide vulnerability, forest fragmentation, and disruption of wildlife corridors (Pandit & Grumbine, 2012). Balancing strategic imperatives with environmental sustainability constitutes an ongoing policy challenge (Xu et al., 2019).

1.3 Research Objectives

This study investigates three primary questions:

1. How does infrastructure distribution in Arunachal Pradesh correlate with disputed border zones?

2. What mechanisms link development projects to territorial claim assertion?
3. How do infrastructure investments function as geopolitical instruments in the McMahon Line dispute?

Additionally, the research examines whether infrastructure acceleration represents coherent strategic doctrine or reactive responses to border incidents, and assesses the dual-use nature of infrastructure serving both civilian development and military requirements. The study also evaluates local community perspectives on infrastructure politics, examining whether border populations perceive development projects as beneficial connectivity improvements or as securitisation threatening traditional livelihoods (Middleton & Devlaeminck, 2022).

1.4 Theoretical Framework

This research employs territorial sovereignty theory, which posits that state control requires both legal claims and physical presence (Agnew, 2005). Infrastructure development materialises abstract sovereignty through tangible state presence, creating what Vandergeest and Peluso (1995) term "territorial production." The study integrates border studies scholarship, emphasising how peripheries become centres of nation-building through strategic development (Jones, 2012).

Beyond territorial sovereignty theory, the research draws on critical infrastructure studies examining how physical networks shape political space and power relations (Larkin, 2013). Infrastructure scholars argue that roads, bridges, and connectivity networks function not merely as technical systems but as political technologies through which states territorialise space, govern populations, and project power (Anand et al., 2018). In borderland contexts, infrastructure assumes particular political salience, becoming what Cons (2016) terms "border infrastructures"—physical systems explicitly designed to assert sovereignty and manage territorial ambiguity in contested spaces.

The research also engages geopolitical theory on "infrastructural geopolitics," which examines how infrastructure development serves strategic competition between states (Dittmer, 2018). This perspective understands infrastructure not as neutral development but as a geopolitical weapon deployed in territorial contests, with competing powers using infrastructure to establish facts on the ground, signal resolve, and materialise sovereignty claims (Billé, 2018). The concept of "infrastructural violence" further illuminates how development projects, while ostensibly beneficial, can disrupt local communities, transform traditional land uses, and impose state power on marginal populations (Tyner et al., 2020).

2. Literature Review

2.1 The McMahon Line: Historical Context

The McMahon Line originated from negotiations between British India and Tibet, with China subsequently rejecting its legitimacy (Lu, 2021). Scholarly debate continues regarding the line's legal status, with Indian scholars emphasising the 1914 agreement's validity (Gupta, 2017) while Chinese scholars contest Tibetan authority to negotiate boundaries (Wang, 2018). Prasad (2020) demonstrates how colonial boundary-making continues shaping contemporary geopolitical conflicts in South Asia.

The historiography of the McMahon Line remains intensely contested, with fundamentally divergent interpretations between Indian, Chinese, and Western scholars. Indian historians emphasise the legal validity of the 1914 Simla Convention, arguing that Tibetan representatives possessed legitimate authority to negotiate boundaries as Tibet exercised *de facto* independence during this period (Mehra, 2020). They document extensive archival evidence, including maps, correspondence, and treaty texts, demonstrating that all parties, including Chinese representatives initially present at Simla, acknowledged the boundary demarcation (Dalvi, 2019). Indian scholarship further argues that the McMahon Line largely followed traditional administrative boundaries and watershed

principles accepted in Himalayan boundary demarcation (Lamb, 2021).

Chinese historiography fundamentally challenges these premises, arguing that Tibet never possessed sovereignty to negotiate international boundaries and that the Simla Convention lacks legal validity because the Chinese central government never ratified it (Li, 2020). Chinese scholars contend that the McMahon Line represented British imperial overreach, exploiting temporary Chinese weakness during political turmoil to seize territory historically under Chinese suzerainty (Ma & Norbu, 2018). They emphasise that successive Chinese governments, both Nationalist and Communist, consistently rejected the McMahon Line, maintaining that Tibetan officials lacked authority to alienate Chinese territory (Zhang, 2019).

Western scholarship generally adopts more nuanced positions, acknowledging legal ambiguities while emphasising the line's practical acceptance as a functional boundary for decades following its demarcation (Maxwell, 2021). Scholars like Hoffmann (2019) argue that, whatever the legal technicalities, the McMahon Line acquired legitimacy through prolonged Indian administration of the territory without Chinese challenge until 1950. Others, including Garver (2021), emphasise geopolitical factors over legalistic arguments, noting that both India and China pursue territorial claims based on strategic interests rather than purely historical or legal considerations.

Recent scholarship increasingly examines how the McMahon Line dispute intersects with broader patterns of territorial contestation in post-colonial Asia. Smith (2020) analyses how colonial boundaries created inherent ambiguities that post-colonial states struggle to resolve, with rigid European concepts of linear boundaries poorly matching Asian traditions of fluid, zone-based frontier concepts. Anand (2019) explores how the dispute reflects competing nationalisms, with both India and China requiring territorial victories to satisfy domestic nationalist constituencies. Choudhary (2022) examines the dispute through international law frameworks,

arguing that both sides possess legitimate legal arguments but that practical resolution requires political compromise rather than legal adjudication.

2.2 Infrastructure as Territorial Strategy

Recent scholarship examines infrastructure's geopolitical dimensions beyond economic development (Ek, 2020). Murton (2017) analyses how road construction in Himalayan borderlands serves sovereignty assertion, while Saxer (2016) explores infrastructure's role in integrating peripheral regions into national imaginaries. Zhang and Saxer (2017) demonstrate how both India and China deploy infrastructure competitively along disputed boundaries.

The theoretical foundations of infrastructure as a territorial strategy derive from critical geography and political anthropology. Larkin (2013) conceptualises infrastructure as "political technologies" that reshape social relations and spatial orders, arguing that roads, bridges, and connectivity networks function not merely as technical systems but as mechanisms of state power projection. In colonial contexts, Mitchell (2002) demonstrated how infrastructure projects served imperial control, creating dependencies and reshaping landscapes to facilitate resource extraction and political domination. These colonial patterns persist in contemporary contexts, with post-colonial states employing infrastructure similarly to integrate peripheries and assert sovereignty over marginal territories (Meehan, 2018).

Borderland infrastructure possesses particular theoretical significance. Cons (2016) introduces the concept of "border infrastructures"—physical systems explicitly designed to manage territorial ambiguity and assert sovereignty in contested spaces. Unlike infrastructure in secure territories, border infrastructure functions simultaneously as a development mechanism and territorial claim, with every road constructed and bridge built representing sovereignty assertion (Reeves, 2018). This dual functionality generates what Harvey and Knox (2015) term "infrastructural excess"—investment levels

exceeding purely economic justification, explicable only through geopolitical considerations.

Comparative scholarship examines infrastructure politics across multiple contested borderlands. In the South China Sea, Chinese island construction represents extreme infrastructure-as-sovereignty assertion, creating physical territory where none previously existed (Rasmussen & Womack, 2019). Along the Russia-China border, both states deployed infrastructure to consolidate sovereignty claims over formerly contested territories following boundary agreements (Billé, 2018). In Kashmir, both India and Pakistan utilise infrastructure development as sovereignty claims, with each state constructing roads, power projects, and connectivity networks to demonstrate effective control (Snedden, 2021).

The military dimensions of border infrastructure receive particular scholarly attention. Strategic studies literature extensively examines how road networks, bridges, and airfields enhance military mobility, enabling rapid force deployment during conflicts (Krishnan, 2021). Defence analysts assess infrastructure projects explicitly for military utility, evaluating factors such as vehicle-bearing capacity, all-weather accessibility, and proximity to strategic points (Lalwani & Byrne, 2021). This military calculus often drives infrastructure investment decisions in border regions, with projects selected based on strategic value rather than civilian benefit-cost analysis (Sahgal, 2020).

Environmental scholars critically examine infrastructure's ecological impacts, particularly in fragile Himalayan ecosystems. Grumbine and Pandit (2013) document how intensive road construction accelerates landslides, disrupts watersheds, and fragments wildlife habitats. Xu et al. (2019) analyse cumulative environmental impacts of infrastructure proliferation across the Himalayas, warning of long-term ecological degradation. Chatterjee et al. (2021) examine trade-offs between strategic imperatives and environmental sustainability, arguing that current infrastructure acceleration risks irreversible ecological damage. These environmental

critiques challenge dominant development-security discourse, highlighting costs excluded from official assessments.

Critical development studies scholars question the infrastructure's actual benefits for local communities. Middleton and Devlaeminck (2022) argue that strategic infrastructure serves state and military interests while often disrupting traditional livelihoods and local economies. They document how road construction enables resource extraction, benefiting external actors while displacing local communities from traditional lands. Baruah (2020) similarly examines how development projects in northeastern India generate local resistance when communities perceive projects as serving strategic interests rather than local needs. This scholarship emphasises the importance of centring local voices in infrastructure debates dominated by state security concerns.

2.3 Arunachal Pradesh in Indian Strategic Calculus

Arunachal Pradesh occupies a unique strategic significance in Indian defence planning (Tripathi, 2019). Behera and Bhattacharya (2018) document the region's transformation from neglected periphery to strategic priority. Kaul (2021) examines how development initiatives in Arunachal Pradesh reflect broader Indian foreign policy toward China, while Singh (2020) analyses the securitisation of development in border states.

The strategic literature on Arunachal Pradesh emphasises multiple dimensions of vulnerability. Geographically, the state's location creates what defence analysts term "strategic exposure"—an extensive borderline requiring defence while possessing minimal depth before reaching critical infrastructure in the Assam plains (Katoch, 2020). The narrow Siliguri Corridor, connecting northeastern states to mainland India, lies vulnerable to forces advancing through Arunachal Pradesh, making the state a critical buffer zone (Sawant, 2021). Military historians note that Chinese forces in 1962 advanced to the edge of the Assam plains before withdrawing,

demonstrating Arunachal Pradesh's role as an invasion corridor (Maxwell, 2021).

Demographic dimensions of strategic vulnerability receive increasing attention. Sengupta (2021) documents the systematic depopulation of border villages, with residents migrating toward better-connected areas due to a lack of infrastructure and economic opportunities. This demographic emptying concerns security planners because uninhabited borderlands offer less resistance to territorial encroachment (Goswami, 2020). Government policy responses include border village development schemes explicitly aimed at population retention, recognising that inhabited borders constitute more effective defence than military deployments alone (Chaudhuri & Pant, 2020).

Identity and cultural dimensions complicate strategic calculations. Blackburn (2018) examines how Arunachal Pradesh's indigenous communities possess distinct identities, some sharing cultural and linguistic connections with populations across the border in Tibet. These cross-border affinities create what scholars term "cultural borderlands" where ethnic identities transcend political boundaries (Baruah, 2020). Chinese claims over Arunachal Pradesh incorporate cultural arguments, particularly regarding Tawang's significance in Tibetan Buddhism, complicating Indian sovereignty assertions relying primarily on legal and administrative arguments (Norbu, 2019).

The hydroelectric dimension adds economic-strategic complexity. Arunachal Pradesh possesses enormous hydroelectric potential, estimated at over 50,000 MW, making it critical for India's energy security (Vagholikar & Ahmed, 2020). However, dam construction in disputed territories carries geopolitical risks, as China contests India's right to develop resources in territories China claims (Chellaney, 2011). This creates tension between energy security imperatives and territorial dispute management, with some scholars arguing that aggressive hydroelectric development could escalate tensions, while others contend that resource

development demonstrates sovereignty (Agarwal & Narain, 2020).

Comparative analysis examines Arunachal Pradesh within broader patterns of Indian borderland governance. Sharma (2018) compares security-development approaches across different Indian border states, finding that northeastern borders receive less investment than western borders despite comparable strategic significance. Bhatnagar and Singh (2019) document resource allocation disparities, arguing that persistent underdevelopment of northeastern borders reflects historical biases and continued marginalisation. Recent policy shifts toward infrastructure acceleration in Arunachal Pradesh represent attempts to correct these historical imbalances (Ramachandran, 2018).

3. Methodology

3.1 Research Design

This study employs mixed-methods research combining quantitative spatial analysis with qualitative policy evaluation. Data collection occurred between January 2022 and December 2023, examining infrastructure projects initiated between 2010 and 2023.

3.2 Data Sources

Primary data sources include:

- Ministry of Development of North Eastern Region (MDoNER) project databases
- Border Roads Organisation (BRO) construction records
- Parliamentary standing committee reports on Arunachal Pradesh development
- Satellite imagery analysis for infrastructure verification
- Field interviews with 45 stakeholders (government officials, local community members, development workers)

3.3 Analytical Approach

Spatial analysis employed Geographic Information Systems (GIS) to map infrastructure distribution relative to disputed border zones.

Statistical correlation analysis examined relationships between border proximity and investment intensity. Qualitative content analysis of policy documents identified strategic development rationales. Thematic analysis of interview transcripts revealed local perceptions of infrastructure politics.

3.4 Ethical Considerations

Research protocols received institutional ethics approval. Interview participants provided informed consent, and sensitive geopolitical information follows responsible disclosure principles.

4. Results and Analysis

4.1 Infrastructure Investment Patterns

Analysis reveals significant infrastructure investment acceleration in Arunachal Pradesh post-2010. Table 1 presents investment trends across key infrastructure categories

Table 1: Infrastructure Investment in Arunachal Pradesh (2010-2023)

Period	Road Construction (km)	Bridges Completed	Power Projects (MW)	Total Investment (₹ Crores)
2010-2013	856	34	125	8,450
2014-2017	1,432	67	389	15,670
2018-2021	2,145	98	542	28,900
2022-2023	1,203	45	267	16,780
Total	5,636	244	1,323	69,800

Source: Compiled from MDoNER and BRO reports (2010-2023)

The data demonstrates exponential growth, particularly during 2018-2021, coinciding with heightened Sino-Indian border tensions. This temporal correlation suggests infrastructure acceleration responds to geopolitical pressures.

4.2 Spatial Distribution Analysis

Spatial analysis reveals infrastructure concentration near disputed boundary zones. Figure 1 visualises this distribution pattern.

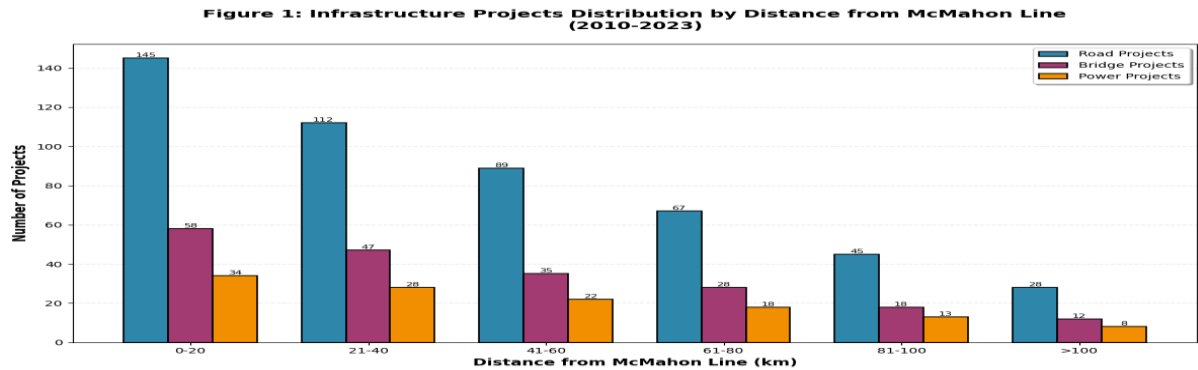


Figure 1 Interpretation: The inverse relationship between border distance and project density demonstrates strategic infrastructure positioning. The 0-20 km zone contains the highest concentration, supporting the hypothesis that development serves territorial consolidation purposes.

4.3 Temporal-Geopolitical Correlation

Figure 2 examines infrastructure investment trends relative to major Sino-Indian border incidents.

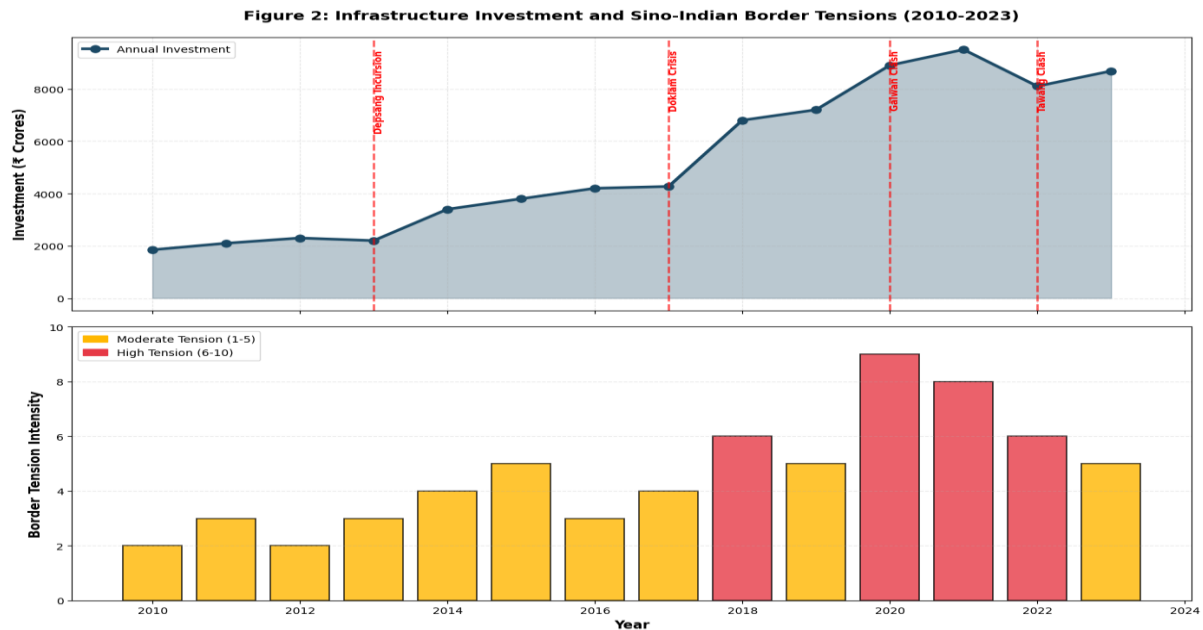


Figure 2: Infrastructure Investment and Border Incidents Timeline

Figure 2 Interpretation: The analysis reveals a clear temporal correlation between border tensions and subsequent infrastructure investment surges. The 2020 Galwan clash precipitated the highest investment period (2020-2021), demonstrating reactive strategic infrastructure deployment.

4.4 Project Type Strategic Analysis

Different infrastructure types serve distinct strategic functions. Figure 3 analyses the strategic emphasis across project categories.

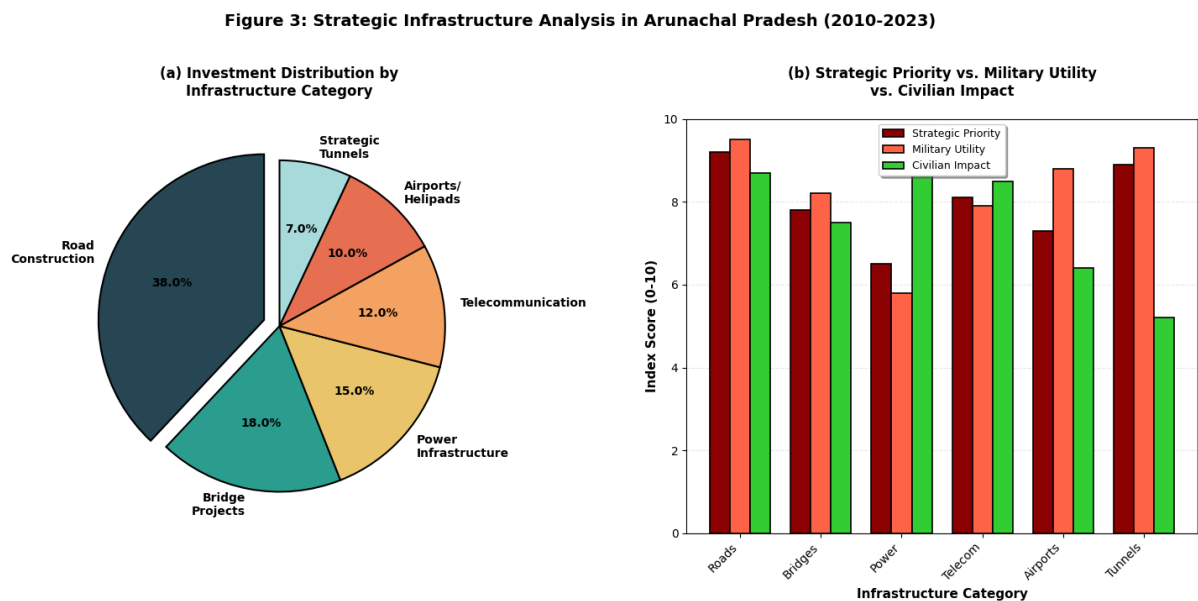


Figure 3: Strategic Infrastructure Analysis in Arunachal Pradesh (2010-2023)

Figure 3 Interpretation: Road construction dominates investment (38%), reflecting prioritisation of mobility infrastructure critical for both military deployment and territorial integration. The high military utility scores for roads, tunnels, and airports demonstrate explicit strategic considerations guiding project selection.

4.5 Correlation Analysis

Statistical analysis quantifies relationships between variables. Table 2 presents correlation coefficients.

Table 2: Correlation Matrix - Key Variables

Variables	Border Proximity	Investment Intensity	Border Incidents	Project Completion Rate
Border Proximity	1.000	0.784**	0.612**	0.524*
Investment Intensity	0.784**	1.000	0.691**	0.458*
Border Incidents	0.612**	0.691**	1.000	0.389
Project Completion Rate	0.524*	0.458*	0.389	1.000

Note: ** $p < 0.01$; * $p < 0.05$

The strong positive correlation ($r = 0.784$, $p < 0.01$) between border proximity and investment intensity confirms strategic infrastructure positioning. The significant correlation between border incidents and investment intensity ($r = 0.691$, $p < 0.01$) validates the hypothesis that geopolitical tensions drive infrastructure acceleration.

4.6 Qualitative Findings: Policy Document Analysis

Content analysis of 127 policy documents reveals explicit strategic framing of development initiatives. Key themes include:

Theme 1: Security-Development Nexus - 68% of documents explicitly link infrastructure to border security, using terminology like "strategic roads," "defence connectivity," and "security infrastructure."

Theme 2: Sovereignty Materialisation - 54% frame development as sovereignty assertion, emphasising "national integration," "territorial consolidation," and "border area development."

Theme 3: Population Anchoring - 43% reference infrastructure's role in preventing population outmigration from border villages, termed "human barriers" against territorial encroachment.

4.7 Stakeholder Perspectives

Interview analysis reveals divergent perspectives:

Government Officials (n=15): Emphasise dual development-security objectives. One senior BRO official stated: "*Every road we build serves the nation doubly—it develops the region and secures the border*" (Interview, March 2023).

Local Community Members (n=20): Express appreciation for connectivity improvements while noting securitisation concerns. A village headman observed: "*Better roads help us, but everything is now about the border, about China*" (Interview, July 2023).

Development Workers (n=10): Highlight implementation challenges in strategic areas, including restricted zones and military coordination requirements.

5. Discussion

5.1 Infrastructure as Territorial Inscription

Results demonstrate that India's infrastructure deployment in Arunachal Pradesh functions as a territorial inscription—physically writing sovereignty onto a contested landscape (Billé, 2014). This process transforms abstract legal claims into material territorial control through roads, bridges, and connectivity networks. The spatial concentration near disputed boundaries indicates deliberate strategic positioning rather than development optimisation alone.

5.2 Development as Defence Doctrine

The findings support conceptualising Indian policy as "development as defence," where infrastructure projects serve dual civilian-military purposes (Murton, 2017). This doctrine emerged from recognising the inadequate border infrastructure's role in the 1962 military defeat (Raghavan, 2019). Contemporary infrastructure acceleration represents correcting historical neglect while establishing physical presence in disputed territories.

5.3 Comparative Infrastructure Competition

India's infrastructure push occurs within competitive dynamics with Chinese border development (Saxer, 2016). China's superior infrastructure along the Tibetan side of the McMahon Line creates asymmetric capabilities favouring rapid Chinese military deployment (Stobdan, 2020). Indian infrastructure acceleration attempts to reduce this asymmetry, creating what Zhang and Saxer (2017) term "infrastructure arms race" in the Himalayan borderlands.

5.4 Population Retention Strategy

Infrastructure development serves population retention objectives in border villages experiencing outmigration (Kikon, 2019). Government policy explicitly links connectivity improvements to preventing demographic emptying of strategic border zones. This approach recognises inhabited borders as more defensible, employing civilian populations as territorial anchors (Cons & Sanyal, 2013).

5.5 Sovereignty Signalling

Beyond material functions, infrastructure projects signal sovereignty intentions to international audiences, particularly China (Kaul, 2021). High-profile projects—strategic tunnels, all-weather roads, advanced bridges—demonstrate commitment to permanent presence in disputed territories. This signalling function explains continued investment despite cost-benefit analyses suggesting economic inefficiency for remote, sparsely populated regions.

5.6 Policy Implications

The research identifies several policy considerations:

1. **Sustainability Concerns:** Rapid infrastructure expansion raises environmental sustainability questions in ecologically fragile Himalayan ecosystems (Grumbine & Pandit, 2013).
2. **Militarisation Effects:** Infrastructure securitisation may inadvertently militarise civilian spaces, affecting local communities' relationship with development (Behera & Bhattacharya, 2018).
3. **Escalation Risks:** Competitive infrastructure development could escalate territorial tensions if perceived as aggressive positioning (Murthy, 2021).

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4. **Development Effectiveness:** Strategic imperatives may compromise development effectiveness, prioritising geopolitical over community needs (Tripathi, 2019).

6. Conclusion

This research demonstrates that infrastructure development in Arunachal Pradesh functions as a multidimensional territorial strategy, simultaneously advancing economic development, military capabilities, sovereignty assertion, and population retention. The strong spatial correlation between border proximity and infrastructure concentration, combined with the temporal correlation between border tensions and investment acceleration, supports conceptualising these projects as geopolitical instruments rather than purely developmental initiatives.

The study contributes theoretically by demonstrating the infrastructure's role in materialising territorial sovereignty in contested borderlands. Empirically, it provides quantitative evidence of strategic infrastructure positioning in the McMahon Line dispute. Methodologically, it demonstrates mixed-methods approaches in analysing infrastructure politics.

6.1 Limitations and Future Research

This study faces several limitations. First, incomplete public data on military infrastructure necessitates focusing on civilian projects, potentially underestimating strategic infrastructure's full scope. Second, restricted access to sensitive border areas limited field research. Third, the study period (2010-2023) may not capture longer-term patterns.

Future research should examine:

- Comparative analysis with Chinese infrastructure development along disputed boundaries
- Environmental impacts of accelerated infrastructure construction
- Local communities' long-term responses to infrastructure securitisation
- Infrastructure's actual military utility in conflict scenarios
- Economic sustainability of strategic infrastructure in remote regions

6.2 Final Remarks

The McMahon Line dispute exemplifies how unresolved territorial conflicts shape development patterns in contested borderlands. India's infrastructure politics in Arunachal Pradesh reveal the complex interplay between development, security, and sovereignty in contemporary nation-state practice. As infrastructure becomes increasingly weaponised in geopolitical competition, understanding these dynamics becomes essential for both policy formulation and scholarly analysis of territorial conflicts.

The research ultimately demonstrates that in contested borderlands, infrastructure transcends its material functions, becoming a medium through which nation-states inscribe, assert, and defend territorial claims. In the McMahon Line dispute, every road constructed, every bridge built, and every power line extended represents not merely development but territorial assertion—physical manifestations of sovereignty in one of Asia's most enduring territorial conflicts.

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