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Indian Strategic Infrastructural Development in Arunachal and Beyond

Prospects and Challenges

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Introduction

India is a vast country that has borders traversing the wasteland of the Rann of Kutch in the South-West to the scorching deserts in the West.¹ This gives way to the mighty and frigid Himalayas in the North before moving into the wettest terrain on Earth, traversing dense forests and high mountains in the East.

Arunachal and most of the Northeast has been the bane of strategic planners for long. The treacherous mountain passes, winding roads, and thick jungles compounded by incessant rains and snowfall add to the enormity of tasks that need to be taken care of.²

The sheer remoteness of the border with China in Arunachal (LAC; the Line of Actual Control) can be daunting for any planner. Compounded by a hostile neighbour, it warrants an effective plan to overcome the seemingly impossible task of strategic infrastructural development of the region.

History

A neglected and remote Arunachal part of NEFA (Northeast Frontier Agency) as it was called during the British times, has long been a subject of dispute between India and China. The claim of China on the region stems from the rather far-fetched notion that Arunachal constitutes a part of erstwhile Tibet. After the annexation of Tibet by China, Arunachal became the de-facto region that it needed to add to its One China ambition.³

India rightfully has resisted any such move as the region has been under Indian control since independence. Over time, with China's growing economic and military clout, the region is fast

¹ Encyclopædia Britannica, inc. (n.d.-a). *Rann of kachchh*. Encyclopædia Britannica. <https://www.britannica.com/place/Rann-of-Kachchh>

² *5 road trips that aren't for the faint of heart*. <https://www.outlookindia.com/outlooktraveller/>. (n.d.). <https://www.outlookindia.com/outlooktraveller/explore/story/70804/five-most-dangerous-road-trips-in-india>

³ *China's "claim" on Arunachal Pradesh aimed at legitimising control over Tibet*. The Economic Times. (n.d.-a). <https://economictimes.indiatimes.com/news/india/chinas-claim-on-arunachal-pradesh-aimed-at-legitimising-control-over-tibet/articleshow/99255548.cms?from=mdr>

turning into a potential flashpoint for a future confrontation between the two Asian giants.⁴ For India, it is imperative that it builds up the strategic infrastructure to negate any move that a hostile China may bring upon her to bear in the future.

The Build-Up

After the 1962 war with China, India embarked on a defensive posturing all along the LAC. The planners and strategists of the time may have been right in believing that the inaccessibility and remoteness of the border would be an effective deterrent to any invading Army. The posturing relied upon the elements to thwart any possible ingress.⁵

The plan worked well over the years but could not prevent the cunning enemy from resorting to ‘Salami slicing’ (the probing into undefended territory and laying claim to it thereafter).⁶ vast chunks of land thus passed silently to the enemy without a fight. India did not have the wherewithal to station troops all along the LAC mainly due to a lack of infrastructure to house the troops and a complete lack of roads to move troops quickly in case of incursion.⁷

The change happened with the economic progress that the country underwent enabling the leadership to invest and propel India to rise and find its rightful place in the world order. Over the last decade or more, much attention has been paid to building up the strategic infrastructure to put forth an aggressive defence against the growing belligerence of the powerful neighbour. “In a turnaround from its decades-old policy of being wary of strengthening road connectivity along the Line of Actual Control (LAC) for fear of Chinese aggression, India is now in the

⁴ TIMESOFINDIA.COM / Updated: Dec 13, 2022. (n.d.). *Is Arunachal a new flashpoint between India and China?: India News - Times of India.* The Times of India. <https://timesofindia.indiatimes.com/india/yangtse-peak-in-tawang-is-arunachal-a-new-flashpoint-between-india-and-china/articleshow/96186274.cms>

⁵ *Indian Army changes posture at Lac after China’s failed midnight attempt.* Hindustan Times. (2020, September 3). <https://www.hindustantimes.com/india-news/india-china-border-army-changes-posture-at-lac-after-china-s-failed-midnight-attempt/story-W6DyRGMPa55bZScUO41rDP.html>

⁶ India Today. (2017, September 7). *What is China’s salami slicing tactic that army chief Bipin Rawat talked about?* India Today. <https://www.indiatoday.in/india/story/doklam-china-salami-slicing-army-chief-general-bipin-rawat-1039864-2017-09-07>

⁷ *Indian Army rapidly develops infrastructure for troops at Lac in Ladakh, Northeast.* The Economic Times. (n.d.-b). <https://economictimes.indiatimes.com/news/defence/indian-army-rapidly-develops-infrastructure-for-troops-at-lac-in-ladakh-northeast/articleshow/82906927.cms?from=mdr>

middle of a massive border infrastructure push”.⁸ The build-up has not been an easy affair and will take time to implement fully. It however comes with many prospects and challenges that need to be duly considered.

Prospects

Improving Connectivity for Military & Civilians with Better Roads

“Parliamentary documents show that the central government has sanctioned 2,319 km long roads to be built under the “Arunachal Pradesh package of roads”. Of this, contracts for constructing 1,191 km long roads have been awarded — 1,150 km of this has already been completed”.⁹

The feverish pace of road construction is not only a key enabler for the robust defence of the borders but has resulted in a spinoff for the civilian population as well. Better road connectivity has made the life of an ordinary citizen much more bearable.

One of the key projects is based on the army’s assessment in 2012 that proposed a “2,000-km long road following the McMahon Line. Starting at Mago in Arunachal Pradesh (adjacent to Bhutan), it passes through Tawang, Upper Subansiri, Tuting, Mechuka, Upper Siang, Debang Valley, Desali, Chaglagam, Kibithu, Dong, before ending at Vijayanagar near the Myanmar border”.¹⁰ This vital road will make the movement of defence forces easy to counter the massive build-up on the Chinese side.

⁸ Philip, S. A. (2022, December 9). *How Arunachal is front & centre in modi govt’s massive border infra push to counter China*. ThePrint. <https://theprint.in/defence/how-arunachal-is-front-centre-in-modi-govts-massive-border-infra-push-to-counter-china/1249813/>

⁹ Philip, S. A. (2022, December 9). *How Arunachal is front & centre in modi govt’s massive border infra push to counter China*. ThePrint. <https://theprint.in/defence/how-arunachal-is-front-centre-in-modi-govts-massive-border-infra-push-to-counter-china/1249813/>

¹⁰ India Today. (2023, April 26). *India plans massive infra along China border, road, rail projects in pipeline*. India Today. <https://www.indiatoday.in/india/story/india-plans-massive-infra-along-china-border-road-rail-projects-in-pipeline-2365049-2023-04-26>

“Along with this project, Arunachal Pradesh will get three national highways — the Frontier Highway, the Trans-Arunachal Highway, and the East-West Industrial Corridor Highway. Six vertical and diagonal inter-highway corridors totalling 2,178 km will be built to provide missing interconnectivity between the three highways as well as to provide faster access to border areas”.¹¹ Notably all bridges leading to the LAC are being upgraded to class 70, which will enable the movement of heavy defence equipment right up to the border.

Overall, this will give a tremendous fillip to not only the defence of Arunachal but will make the civilian movement much more feasible. A robust and well-connected Arunachal is essential to promote the beautiful landscape to tourism, which has the potential to change the fortunes of the inhabitants in a big way.

Another big project, the first of its kind, that is being finalised is the 15.6-km twin tunnel under the mighty Brahmaputra river that will cut travel time between Assam and Arunachal Pradesh.¹²

Tunnels Galore; the Way to Go

“The showpiece project that’s nearing completion is the Sela Tunnel project in Arunachal Pradesh...touted as the world’s longest bi-lane tunnel above the height of 13,000 feet”¹³, Sela will enable the army to move from Tezpur to Tawang, without the prying Chinese eyes watching every movement over the Sela pass. Another strategic tunnel, the Nechiphu on the

¹¹ Philip, S. A. (2022a, November 26). *Modi Govt moves with Arunachal Frontier Highway, among India’s “toughest” projects yet, China in mind*. ThePrint. <https://theprint.in/defence/modi-govt-moves-with-arunachal-frontier-highway-among-indias-toughest-projects-yet-china-in-mind/1232207/>

¹² Gupta, M. D. (2021, September 11). *Modi Govt proposes 15.6-km twin road tunnel of strategic importance under Brahmaputra*. ThePrint. <https://theprint.in/india/modi-govt-proposes-15-6-km-twin-road-tunnel-of-strategic-importance-under-brahmaputra/731790/>

¹³ *Here’s all about sela tunnel, world’s longest bi-lane road tunnel above 13,000 ft*. IndiaTimes. (2021, October 23). <https://www.indiatimes.com/news/india/sela-tunnel-arunachal-pradesh-worlds-longest-bi-lane-road-tunnel-552362.html?picid=2182345>

Balipara-Tawang (BCT axis) will provide all-year mobility to West Kameng and Tawang districts for civilians and defence forces alike.¹⁴

Advanced Landing Grounds (ALGs)

Several advanced landing grounds have come up all along the LAC and more are envisaged in the near future. Arunachal has had a good share of the activated ALGs namely Aalo, Pasighat, Mechuka, Walong, Ziro, Vijaynagar, Tawang and Tuting.¹⁵

These ALGs serve as essential communication lines for troops and civilians' movement and are also required to transport men and material engaged in road and infra build-up in remote areas. In any future war, ALGs have the potential to help the Air Force achieve remarkable improvement in capability.¹⁶

Technology at Play

The government is building a large number of underground munition depots in the Northeast besides plans to set up special 3D-printed permanent defences. The 3D-printed defences not only provide a robust shelter for the troops in inhospitable terrain but can also be quickly constructed to exacting standards.¹⁷

¹⁴ Online, F. (2022, May 20). *Financial Express*. The Financial Express. <https://www.financialexpress.com/business/defence-bro-does-it-again-know-more-about-nechiphu-tunnel-in-arunachal-pradesh-2532529/>

¹⁵ *Two upgraded Advanced Landing Grounds inaugurated in Arunachal Pradesh*. The Economic Times. (n.d.-d). <https://economictimes.indiatimes.com/news/defence/two-upgraded-advanced-landing-grounds-inaugurated-in-arunachal-pradesh/articleshow/51374914.cms?from=mdr>

¹⁶ Subramaniam, A. (2018, May 29). *Closing the gap: A Doctrinal & Capability Appraisal of the IAF & THE PLAAF*. ORF. <https://www.orfonline.org/expert-speak/closing-gap-doctrinal-capability-appraisal-iaf-plaaf/>

¹⁷ *Army to construct next-gen 3D-printed bunkers at Lac*. Hindustan Times. (2022, November 15). <https://www.hindustantimes.com/india-news/army-to-construct-next-gen-3d-printed-bunkers-at-lac-101668534567166.html>

Reverse Migration in Arunachal Pradesh

In India as in other developing countries, the major drivers of migration are unemployment, poor livelihood prospects, and lack of proper infrastructure. The migration in strategic areas along the border that are hotly contested, however, has serious consequences. The lack of local population immediately robs the government of ‘the eyes and ears’ on the ground. Any transgression thereafter largely goes unnoticed. This has been the worry of strategic planners for a while.¹⁸ Things are thankfully changing due to the herculean efforts of the road constructing agencies on the ground. Tunnels and bridges on the fast-flowing streams are enabling the locals to access better facilities for schooling, medicines and livelihood while staying in their traditional locales.

An interesting case is brought out in the case study below:

“Remote areas of Koloriang, Sarli, Damin and Huri in Kurung Kumey district of Arunachal Pradesh has been witnessing an unprecedented outward migration over the last seven decades. It is anticipated that approximately 3000 persons of Damin Circle migrated to Koloriang and Itanagar between 2011 to 2021 for want of livelihood, basic amenities like schools, hospitals, electricity, communication etc.”¹⁹

The primary cause was the very poor connectivity between Huri and Koloriang with an approximate travel time of 12 hours. “Over a period of time, the local population continued to shrink in the region, raising serious concerns about the demographic pattern, related security aspects, and overall development of infrastructure in the region”.²⁰

¹⁸ *Foreign Policy Watch: India-china*. Civildaily. (2018, May 30). <https://www.civildaily.com/story/foreign-policy-watch-india-china/>

¹⁹ Ltd., N. M. Pvt. (n.d.). *Bro’s construction activities lead to reverse migration in Arunachal Pradesh*. NBM Media Pvt. Ltd. <https://www.nbmcw.com/article-report/infrastructure-construction/infra-real-estate/bros-construction-activities-lead-to-reverse-migration-in-arunachal-pradesh.html>

²⁰ Ltd., N. M. Pvt. (n.d.). *Bro’s construction activities lead to reverse migration in Arunachal Pradesh*. NBM Media Pvt. Ltd. <https://www.nbmcw.com/article-report/infrastructure-construction/infra-real-estate/bros-construction-activities-lead-to-reverse-migration-in-arunachal-pradesh.html>

Border Road Organisation (BRO) in Action

The Border Roads Organisation got into action to construct a road to Huri. “The equipment, manpower, and stores were airlifted to Huri to open additional attack points”. The men and machines worked round the clock all through the year during incessant rains and inclement weather. “Huri was finally connected and made trafficable in 2022 when the 200-ft Huri Bridge was airlifted by helicopters and launched on a vertical cliff face”.²¹ The travel time from Koloriang to Huri was reduced from 12 hours to a mere 4 hours. The construction of roads and subsequent development in infrastructure has triggered significant reverse migration in the area, evident in the phenomenal rise of population in the border areas in just one year (between 2021 and 2022).

Challenges

Resource Allocation

When an attempt is made to change the infrastructure on a scale and magnitude such as is being done across the LAC, resource allocation becomes a key factor. Massive work is required to be done all along the LAC involving tunnelling, bridges, and road construction. Moreover, the infra build-up for the troops to be stationed at the border requires habitat building and storage dumps for fuel and ammunition.²²

The planners have to therefore juggle with limited resources which are to be used based on priority and must consider the preparedness of the neighbouring country’s troops across the LAC. There is also a lot of catching to be done vis a vis China. While India, owing to its

²¹ Ltd., N. M. Pvt. (n.d.). *Bro’s construction activities lead to reverse migration in Arunachal Pradesh*. NBM Media Pvt. Ltd. <https://www.nbmcw.com/article-report/infrastructure-construction/infra-real-estate/bros-construction-activities-lead-to-reverse-migration-in-arunachal-pradesh.html>

²² India Today. (2022, November 16). *India responds to Chinese buildup, roads, mega tunnels coming up in Ladakh*. India Today. <https://www.indiatoday.in/india/story/india-responds-to-chinese-buildup-in-big-way-roads-mega-tunnels-coming-up-in-ladakh-2297736-2022-11-16>

defensive posturing, neglected the border for a long time, China kept working steadily to improve connectivity for its troops over several decades.²³

Terrain

The terrain and inhospitable climate all along the LAC and Arunachal are another challenge for the planners. The incessant rains leave little time to work and the remoteness of the LAC from the existing roadhead means that men and material transportation itself is a big task. Often, the material may have to be air-lifted increasing the cost of construction by several notches.

The area is also prone to land slides due to heavy rain and snow. This also needs to be factored in during the road formation activity. The roads being constructed must be free from future landslides and avalanches and planning is therefore vital. Niche technologies especially for tunnelling in hills and bridge construction are also vital to ensure that results are achieved within timelines and have the right quality.²⁴

Obstructions

China has made it abundantly clear that it does not view the developments on the Indian side favourably. The incident of one such infra-structural work leading to a skirmish happened recently in the Ladakh region.²⁵ A strategic road from Durbuk to Shyok and onto Daulat Beg Oldie led to precious loss of lives and a subsequent massive deployment of forces that continued even after more than two years of the skirmish at Galwan.²⁶

²³ Singh, S. (2022, December 1). *China has India trapped on their disputed border*. Foreign Policy. <https://foreignpolicy.com/2022/12/01/china-india-border-crisis-infrastructure-ladakh-arunachal-pradesh/>

²⁴ Sandip Dighe / TNN / Updated: Nov 18, 2022. (n.d.). *Border Roads Organisation blazes a trail in most testing conditions: Pune News - Times of India*. The Times of India. <https://timesofindia.indiatimes.com/city/pune/border-roads-organisation-blazes-a-trail-in-most-testing-conditions/articleshow/95608878.cms>

²⁵ PTI / Sep 29, 2020. (n.d.). *China says it is opposed to India's infrastructure development at borders in Ladakh - Times of India*. The Times of India. <https://timesofindia.indiatimes.com/world/china/china-says-it-is-opposed-to-indias-infrastructure-development-at-borders-in-ladakh/articleshow/78388962.cms>

²⁶ Subramanian, N. (2020, June 16). *Explained: The strategic road to DBO*. The Indian Express. <https://indianexpress.com/article/explained/lac-stand-off-india-china-darbuk-shyok-daulat-beg-oldie-dsdbo-road-6452997/>

India must therefore be prepared to stand by its decision and not get cowed down by veiled threats from an aggressive neighbour. This requires tremendous foresight and courage from the political leadership and an army that is well prepared and provided to engage in long standoffs that may result.

Adequate Military Strength

While the infrastructure is built, the country must prepare for deploying “boots on the ground” on a scale not seen before. The whole of the LAC being activated requires a tremendous number of troops to man each inch of the territory.²⁷

The forces must have adequate defensive and offensive capabilities to counter a formidable enemy that relies heavily on numbers and technology. This therefore requires the planners to position the limited resources available at the best possible locations with all-around connectivity to move the troops at short notice all along the LAC. Interconnectivity between the valleys, interlinking roads and sufficient habitats for troops and storage locations that are immune to aerial bombardment are a must in this regard.²⁸

Conclusion

The final requirement and a big challenge is to build a favourable opinion around the world of India’s response and challenges. In today’s growing hostile world, it has become imperative for India to build a consensus around the world and stand firm on its beliefs and actions if China tries to push the border and forcefully try to invade Indian territory. A favourable world opinion helps in many ways. One such factor could be the supply of niche technology for construction. Other could be engineering inputs that have the potential to save costs on a

²⁷ ANI / May 22, 2022. (n.d.). *India maintaining high-level operational preparedness, building new infrastructure along lac: Govt sources: India News - Times of India*. The Times of India. <https://timesofindia.indiatimes.com/india/india-maintaining-high-level-operational-preparedness-building-new-infrastructure-along-lac-govt-sources/articleshow/91724978.cms>

²⁸ Even though some authors consider them as reflecting customary law.³ ... (n.d.-f). <https://www.jstor.org/stable/pdf/3663255.pdf>

massive scale or better to have information on the enemy's plan and proposal that can be then countered.

The strategic infrastructural development in Arunachal and all along the LAC and other borders in general therefore is much needed to alleviate the living conditions of the inhabitants in these far-flung areas as well as to protect the territorial integrity of the nation in the face of increased belligerence of the Northern and Western neighbours. The exercise comes with a host of prospects and challenges and the planners must contend with scarce available resources at hand and limited time available to implement changes to the best possible extent. Time and speed will be of the essence for an effective outcome.

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