



Development and Impact of Railway Line Project to Leh and Tawang

Ashwini Purekar

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

October 20, 2021

Development And Impact of Railway Line Project to Leh and Tawang

Mrs. Ashwini Purekar
Department of Civil Engineering
Thakur College of Engineering and Technology Kandivali, Mumbai, India
ashwini29purekar@gmail.com

Abstract - The Indian Railways is all eager to expand railway connectivity in Arunachal Pradesh, and is planning to make all efforts to turn this into a reality. Development of Bhalukpong -Tawang railway line will prove to be useful from a security point of view besides accelerating socio-economic development of the people. Jammu and Kashmir (J&K) termed as “Paradise on Earth” which is most popular tourist destinations of the world. Ladakh, also known as, “Moon on Earth” with its naked peaks and barren lands is a famous destination for adventure tourism, known across the world. Bilaspur-Manali-Leh will reduce the distance between Delhi to Leh from the present 40 hours to 20 hours. The new railway brings a significant reduction in transport costs and is projected to facilitate increased movements of goods. J&K tourism will get capable of not only earning credibility back to the economy but also could be helpful in accelerating economic growth in short to medium term by generating revenues and employment opportunities.

Keywords: DEM, Geological hazard map, Electrification, BRO, LAC.

I. INTRODUCTION

Indian Railways' ambitious Bilaspur-Manali-Leh line along the India-China border, is touted to be the world's highest rail track. After its completion Taglang La will become the highest railway station in the world at a height of 5,359 metres above sea level.

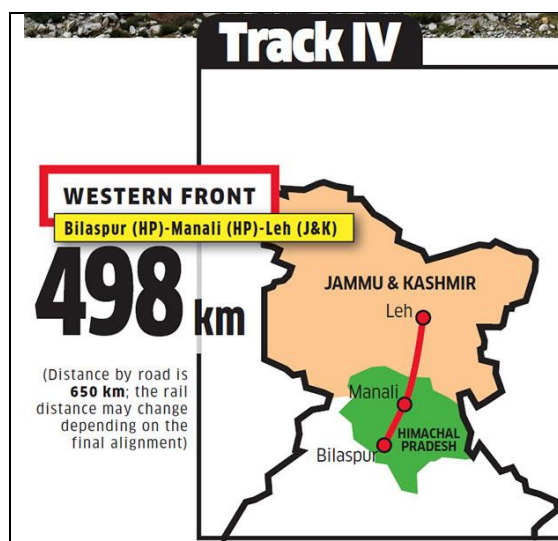
This new rail line will not only increase tourism but, will also help the armed forces. It might prove to be significant for Ladakh's development as well. Railway Ministry has proposed for the project to be declared a national project.

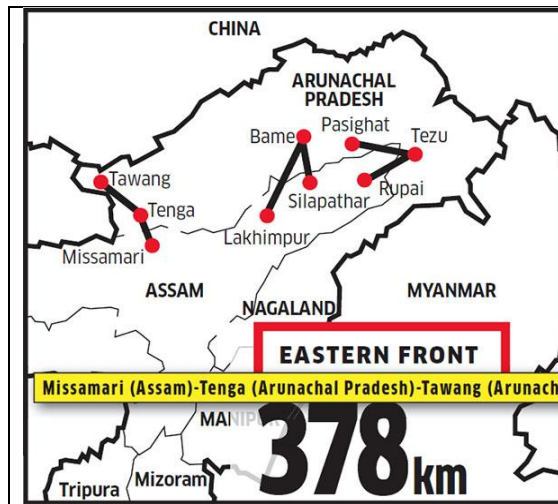
- The Railways should use aircraft-like pressurized coaches in trains for the Bilaspur-Manali-Leh line along the India-China border, which will be the world's highest rail track, so that passengers do not have breathing difficulties on board.

Tawang is a centre of Buddhist culture and religion. Its proximity to the north-eastern border and LAC (line of actual control) adds additional strategic significance to this region. The glorious beauty of Tawang is ever so slightly surmounted by the treacherous and challenging journey to this destination. Accessibility to Tawang from mainland Arunachal Pradesh is essential given its strategic character.

India's North-East, especially important regions like Tawang, face major infrastructural problems, including bad roads, according to CMDE RS Vasan, director of the Chennai Centre for China Studies.

- So, it is very important to develop strategic road network to accelerate the development of Bhalukpong- Tawang rail corridor.
- Making electric railway network which will reduce the stress of pollution for corresponding area and provide clean environment condition to maintain ecological balance.
- Attracting private sectors to invest in project.





II. PURPOSE AND SCOPE

BRO still employs manual labour at these high altitudes despite the many advances in technology. Private sector participation in these road projects is completely absent, albeit possessing the means (technology, manpower and experience) to deliver these challenging projects. Reluctance to bid for these projects can be attributed to unattractive returns and difficult working conditions. Hence BRO is burdened with construction and even partly maintenance with limited resources and backward technology. Road transports necessary construction equipment's, manpower, construction materials and goods required to lay down railway tracks thereby first aimed to provide good connectivity of roads and approaches at the corresponding area.

- **Motivations:**

Despite the strategic significance of the corridor leading to Bomdila, Selapass, Tawang and Bumla Pass, the state of the road infrastructure is deplorable. Accessibility to food, proper sanitation, waste disposal and more importantly transport and logistics are some of the key concerns which motivates us to build a strong road network for easement of railway construction.

Kokan railways electrification motivates us to develop electric locomotive railway track for Leh and Tawang region. Electrification of Kokan railway is in progress at an estimated cost of ₹8 billion, and in February 2021, a test train ran on the line for the first time using electric power. Electrification will be completed on the full line by July 2021.

The Qinghai-Tibet railway which uses world's first pressurized coaches. Running for over 1,956km from Xining, capital of China's Qinghai province to Lhasa, through some of the planet's harshest natural conditions, it is an impressive catalogue of world records. With its highest point at an altitude of 5,072m – 200m or more above the Peruvian railway, further it motivates to use pressurized coaches to reduce breathing problem and provide air comfort to passenger's.

III. STRATEGY AND PLANNING

- Providing a steady and reliable signalling and communication system over so long a distance in such a harsh environment presented its own problems, not least in terms of guaranteeing the continuity of electrical supply.

To meet this need, an assistant solar power supply system or hydropower plant should be established. It found that Arunachal Pradesh, Jammu and Kashmir is one of states with high potentials for hydropower generation. This offers huge opportunity to the state when the requirement for the energy is increasing at very high speed in India and demand for electricity is expected to rise because of positive policy response to electric locomotives.

- The thin air at this altitude made construction difficult, although special oxygen facilities should provide for the workforce, and poses a challenge for passengers too. Aircraft cabins are pressurized because the air is very thin at the altitude planes fly. To prevent complications, the cabins of many aircraft should be adjusted to near sea-level pressure, which makes breathing almost the same as at sea level.
- Before embarking, a passenger health registration card must be filled in – requiring travelers to read and sign a high-altitude travel disclaimer.

IV. DESIGN

Rangapara is existing railway junction of north-east railway corridor near Bhalukpong, Bhalukpong station is closed permanently now but there exists railway route here. Railway line from Bhalukpong to Tawang will be 198 km of which 177 km will be underground tunnels with very little disturbance to the ecology. This shows that around 80% of rail line

will pass through tunnels. Construction of tunnel require heavy machines that should be transported on the site if there exist good road networks. Optimized network should be prepared for which we need to look for local parameter like DEM, Drainage map, Geological hazard map, also need to design 3-dimensional criteria to find best route.

DEM gives detail of how slope and aspect of area is changing, drainage map gives detail about river and existing streams, geological hazard map gives detail of fold, faults and dykes these all contribute to find best possible route.

Public safety and national safety is major aspect involved when we consider such projects. There are a number of threats to public safety and national security in the physical world that do not emanate from the cyber domain but which could be mitigated or even eliminated through deployment of appropriate technologies. There are several important facets of public safety, the most important of which is the maintenance of law and order. Technological interventions could be extremely beneficial in maintaining general law and order.

Also, public safety from animals should be taken into consideration. Public safety networks, which basically pertain to proper communication and sharing of information between different agencies charged with the responsibility of ensuring public safety, therefore assume critical importance.

Climate study should also take into consideration as these two areas has wide aggressive environment and weather condition.

V. IMPLEMENTATION AND EXPECTED OUTCOMES

While tunnelling operation we will may come up with numerous technical problems due to poor geological condition, logistics and climate problem so we need to deploy several safeguards to such problem which will ease project construction, safe site condition and ultimately cost of project. In order to save lives during train collisions and accidents, technologies similar to deployable airbags need to be developed. Given the age of our country's transportation infrastructure, technologies for sensing and predicting bridge and tunnel collapse would also be extremely important. Use of technology to predict crowd behaviour and identify miscreants in crowded areas would enhance public security.

A sound policy should be devised to exploit the potential in the sectors of strength. The development of potential sectors such as horticulture, handloom and handicrafts, biotechnology, tourism and information technology will have strong inter-linkages with the rest of the sectors. In a nutshell, sound policy and good governance can lead the state of Jammu and Kashmir to a faster development path.

• Mitigation Measures:

While interacting with villagers about the project area, it is found that they are very well conversant with the utility and positive impact of the new railway project. They were also expecting adequate compensation of loss of their assets during process of land acquisition. Government authorities have organized the interaction with the villagers and their representatives like Gram Panchayat's, Revenue Officials etc. before taking up the process of land acquisition. The local development of the area shall bring about growth as well as economic development due to construction of this new railway line. Such new railway line projects will play most powerful role in connecting residents of the area and creating awareness.

It will reduce the distance between Delhi to Leh from the present 40 hours to 20 hours. Tourism holds a strategic place in J&K economy by providing economic benefits like Employment, Foreign Exchange, Infrastructure development and development of local industries like Handicrafts and Handlooms which has placed J&K always in the limelight at the national as well as international level. It is estimated that almost 50-60% of total population of J&K is directly and/or indirectly engaged in tourism related activities. Tourism contributes about 15% to State Gross Domestic Product.

VI. FUTURE SCOPE

Once this railway line is developed, we can find easy accessibility to reach in interior part of the J&K state. Further approaches and new railway line combining to this line will provide new railway corridor for the state which will increase the potential in tourism, economy and other sector.

Considering the economic base and natural conditions in J&K, there are many sectors which could offer huge opportunities to the investors. Those sectors include hydropower generation, transportation, tourism, pharmaceuticals,

biotechnology information technology, horticulture, sericulture, dairy products, food processing and real estate etc. But to make these into attractive investment opportunities, there is need for policy response from the government as the Article 370 and 35A along with continued disturbance have already costed to the growth and development of the state economy (Kiran, 2019) however the government has already repealed Article 370. This may open gates of opportunities if there is proper policy response from the government.

VII. LIMITATIONS

Uncertain hazard conditions like land sliding, cloud bursting, avalanches can create trouble while construction phase or complete stoppage of project. To overcome from this condition each site should be geologically investigated and equipped to manage such hazard. Additionally, effect of change in climate should also be considered with the use of projected climate data from climate model.

Attracting investors is challenging task in such project due to low and long-term returns. Therefore, govt need to provide some leverages or any other attractive benefits such that they can start to invest without hesitation.

CONCLUSION

The monitoring of implementation as well as disbursement of amount of compensation to the land owners shall be an effective tool to mitigate the grievances of the land owners. There is no doubt in the overall perspective that the Bhanupali-Bilaspur-Beri New Railway Line Project would provide connectivity of the region with National Railway Network. In addition, it will give a boost for tourism, industrial development and general awareness in the project area. As a state with unique features and a strategic location, the speedy development of Jammu and Kashmir needs an integrated approach. The top priority of the government should be to create a secure environment by improving the law-and-order situation in the state. State finance should also receive proper attention in order to ensure better fiscal management.

REFERENCES

[1] Jaiswal, S., 2018. Looking beyond the idyllic representations of the rural: The Konkan Railway controversy and middle-class

environmentalism in India. *Journal of Political Ecology* 25, 261–278.

[2] Bakari, S., & Mabrouki, M. (2017) “Impact of exports and imports on economic growth: New evidence from Panama”, *Journal of Smart Economic Growth*, 2(1), 67-79.

[3] Jaiswal, S., Bensch, G., 2018, “A methodological framework to address gaps in the evidence on infrastructure impacts: the case of an Indian railway project evaluation”, *Journal of Economic Methodology* 1–13.

[4] Sharma S (2010) Role of handicrafts industry in production, employment and export promotion: “A case study of J&K state”, *Kashmir journal of social sciences* 4: 43-61.

[5] Hilal Ahmad Mir, “Impact of Tourism Industry on Economic Development of Jammu and Kashmir”, *International Journal of Scientific & Engineering Research*, Volume 5, Issue 6, June-2014.

[6] Datta, S., 2012, “The impact of improved highways on Indian firms”, *Journal of Development Economics* 99, 46–57.