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BENEFITS AND CHALLENGES OF HIGH SPEED RAIL IN VIEW OF URBAN AND RURAL DEVELOPMENT: AN ALTERNATE VISION

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ABSTRACT

High-Speed Rail projects are part of the development process in developed and developing countries in the world. Since the running of 1st High-Speed train from Tokyo to Osaka in Japan on 1st October, 1964 world has reached to 42978 km of High-Speed Rail lines under operation. India has also taken a giant step by starting its first High-Speed Rail project between Mumbai-Ahmedabad. India has planned to have many more High-Speed Projects. These projects will definitely benefit society. Mainly these projects would be connecting major urban areas and have some effect on the catchment area. However, there is a need to have a different approach to leverage the benefits of High-Speed Rail Projects for the development of the Urban and Rural area.

KEYWORDS: *High-Speed Rail, Urban Development, Rural Development, Transportation, Migration, Decongestion, Employment*

INTRODUCTION

High-Speed Rail transportation is one of the latest modes of transportation. The developed countries and developing countries are opting for High-Speed Rail transportation systems to cater to the transportation demand. High-Speed Rail System provides various benefits to the economy and society. The world over 42,978 kms of High-Speed Rail lines is under operation (01.10.2018). The approximately 56,000 kms of lines are at various stages of construction, planning and long-term planning. The importance of High-Speed Rail connectivity in the world and India's plans to provide High-Speed Rail connectivity provides an opportunity to study the effect of High-Speed Rail connectivity on economic and development process in the country. Study of High-Speed Rail connectivity will provide an idea about its effect on Urbanisation and Rural Development process.

The definition of High-Speed Rail as accepted by the Union of International Railways is that it is a system that encompasses a number of systems like rolling stock, infrastructure and operating conditions that runs a train at or above 250 km/h on new tracks and 220 km/h on upgraded tracks.

The High-Speed Rail Connectivity is an instrument to further economic growth and also a parameter to assess the development of a country. India has also begun a journey to enter into the League of Nations having High-Speed Rail Systems.

The main advantages of High-Speed Rail are:

- Reduction in journey time
- Creation of high capacity to transport people
- Being environmental friendly
- High level of safety
- Economic development

India has taken a two-way approach in the field of High-Speed Rail Connectivity. The first one is to increase the speed of existing trunk routes using conventional technology to 160 to 200 kmph. The same is called Semi High-Speed connectivity projects. The second one is to identify a few routes connecting major cities and build up state of the art High-Speed Rail Connectivity with a speed up to 350 kmph.

Two routes viz. New Delhi-Mumbai (including Vadodara-Ahmedabad) and New Delhi-Howrah (including Kanpur-Lucknow) have been identified by Ministry of Railways to raise speed to 160/200 at an estimated cost of ₹ 18,000 Cr. These projects will help in reducing the journey time to 12 hours as against present 17 hours for Howrah Rajdhani and 15 hours 35 minutes for Mumbai Rajdhani.

The studies for Semi High-Speed corridors for Delhi-Chandigarh (244 km), Nagpur-Secunderabad (575 km), Chennai-Kazipet and Mysuru-Bengaluru-Chennai are at various stages.

The Railway budget of the year 2007-08 declared five corridors to be developed for High-Speed Rail connectivity. Ahmedabad-Mumbai-Pune with a route length of 650 km. was one of the five corridors. Expert group on Modernization of Indian Railways recommended in 2012 to construct a High Speed Rail line between Mumbai and Ahmedabad with 350 Km/h speed. The Railway budget of the year 2013-14 mentioned about High Speed Rail connectivity of 534 kms between Mumbai-Ahmedabad.

The Memorandum of Understanding (MOU) for conducting a feasibility study for Mumbai-Ahmedabad High-Speed Rail system was signed with Japanese International Cooperation Agency (JICA) on 07.10.2013. The feasibility report was submitted in the year 2015. The Government of India sanctioned the 508 km Mumbai-Ahmedabad High-Speed Rail project in December, 2015.

National High-Speed Rail Corporation Limited (NHSRCL) is commissioned in 2016 to implement the project of Mumbai-Ahmedabad High-Speed Railway Corridor with 350 kmph speed.

Ahmedabad – Mumbai High-Speed train project has an initial estimated cost of approx. ₹ 98,000 crores (Revised to ₹ 1, 10,000 Cr.) and will be executed with participation by Central government, Gujarat govt. and Maharashtra govt. The project will be partially financed by the Japan International Cooperation Agency (JICA).

The other projects identified for High-Speed Rail Connectivity in India are –

- Delhi – Mumbai
- Mumbai – Chennai

- Delhi – Kolkata
- Delhi – Chandigarh – Amritsar
- Delhi – Chennai
- Chennai – Bangalore – Mysore

The Ahmedabad-Mumbai High-Speed Rail project has projected internal rate of return of 4.0 per cent and economic internal rate of return of 11.8 per cent as per the feasibility study. The project will definitely benefit the people and area. However, there is a scope to leverage the High-Speed Rail connectivity to help Urbanisation process and Rural Development.

The population of India is increasing every year. With the increasing population, there is a number of problems attached regarding economic growth and development in the Rural and Urban area. The pace of urbanization in the country is very rapid. The state like Gujarat has approximately 43 per cent population living in urban area. The increasing urbanization comes with its own costs and benefits. The governments are hard-pressed to keep pace with the demand for urban infrastructure. Even after so many years of independence, there is a lot to be done for the Rural Development. The transportation infrastructure is one of the most important requirements for the growth of society.

There is a continuous movement of people from the rural area to urban area in search of gainful employment. Male population move to the urban area for employment, a female move mainly on account of education and marriage. The fast Pace of Urbanization may result in the haphazard growth of the cities. This may result into a deficiency of Proper housing and resultant slum areas, Sanitation facilities, Water supply system, Education facility, Health facility, Transportation system, Public utility, Recreation facilities, Electricity supply, etc.

There is a huge gap in the growth and development of the urban and rural area. The central and state governments have taken various steps for the improvement of urban infrastructure. Development of Mobility infrastructure is one of the steps taken by the governments. Numbers of cities have been identified to be developed as smart cities. Metro Rail, Bus Rapid Transit System (BRTS), Mono-Rail, etc. are some of the mobility solutions provided in many cities in India.

REVIEW OF LITERATURE

Sahni, J. N. in Indian Railways (1953) mentions that during the last hundred years, railways have played a vital role in the progress and development of the country. The Railways have maintained a standard of efficiency to render service to the nation. It can do better but for the various constraints like political and economic factors. Any nation will be proud of Railway's contribution.

BegonaGuirao, Antonio Lara-Galera, Juan Luis Campa (2017) in their article have mentioned that HSR is a key variable for understanding the growth of labor contracts. The impact of HSR on labor markets in commuting relation has been examined. The High-Speed Rail lines cost very high for building and operating and therefore requires detailed scientific analysis to examine for spillover impacts.

David Banister (2007) in working paper, Quantification of the Non-Transport benefits resulting from Rail Investment, concludes that there do seem to be substantial additional non-transport benefits from rail investment at all three levels identified, but in particular at the meso and micro levels. It is concluded that Rail and Transportation investments to

be seen from a larger perspective of National, Regional and Local development objectives. The cost-benefit analysis should be done accordingly and not be done only with respect to transport terms.

Pol, Peter m. J. (2003) in the paper The Economic Impact of the High-Speed Train on Urban Regions concludes that the impact of new transport system depends on the spatial behavior of urban actors. The High-Speed Rail connectivity means generalized transportation costs (GTC) will be reduced and commuters' acceptance to maximum transportation distances will increase. It is also mentioned that individuals can either travel further or reach their destinations earlier. The relevant region for the commuters becomes larger. The advent of the High-Speed Train can play an important role in improving simultaneously the quality of urban life.

Shuping Zhang and Zhu Qian (2016) observed that urban transportation needs a revolution to deal with dwindling energy supplies, severe air pollution, and increasing traffic congestion. China has considered clean transportation mode and energy efficiency of High-Speed Rail system as recurring justification for its implementation. To provide efficient transport solution to the massive population of the country and to connect the various cities and regions HSR development is essential for China. China has used HSR development as one of the critical strategies for the nation to transform from an inefficient model of economic growth to a course of sustainable development.

Alain L'Hostis, Liu Liu et Thomas Leysens (2017) have implemented contact potential indicator in a European context and mapped to produce an analysis in two distinct fields: indications about the territorial organization of a network of cities, and indications about the connectivity of high-speed transport networks, both rail, and air. The contact potential indicator is tested in the context of the opening of a new section of high-speed rail between Tours and Bordeaux.

The mobility statistics in France for the year 2010 show that business purposes accounted for one-fifth of all long-distance trips. Of these, more than half were one-day business trips, the rest involving one or several nights away (Roussel, 2011). For economic development business travel related mobility is very important.

Christopher Auffrey, Xin Fu, Xinhao Wang, Alyssa WisselMcClearnon (2017) have conceptualized a Moving Platform Infrastructure Network (MPIN) to provide access to high-speed rail and a major airport to connect Tongzhou with Beijing and mega-region.

The sustainable development of Beijing requires relocation of 400,000 Beijing municipal employees to Tongzhou. It will help in reducing congestion and pollution in the city center. The relocation will also help in economic cooperation and integration of the Beijing-Tianjin-Hebei mega-region. The relocation requires addressing the issue of the connectivity of Tongzhou to the rest of Beijing and the mega-region. The concept suggests that it will reduce congestion at the Beijing South Railway Station.

Ming Zhang, Qing Wu, Dianting Wu, Lin Zhao, Xi Liu (2014) have analyzed the effect of High-Speed Railway in Wuhan-Guangzhou sector. Authors have concluded that High-Speed Railway effects regional economy through economic growth, industrial structure and cities' spatial structure optimization and improvement of regional cooperation. Authors have also observed that the economic effects of High-Speed Railway are different in regions with different scales and development stages, which may increase the gaps between big cities and small cities.

Kenneth Button (2017) has examined the information available regarding the world's three HSR systems i.e. China, Japan, And Spain. The Political leadership and supports of Rail infrastructure have supported investment for HSR

systems to further the economic development. The academic writings are also having considerable scepticism about the economic value of such investment. The author mentions that the development argument presented in support of HSR has proved to be overly optimistic, and the anticipated economic growth effects have been minimal or negative.

Xiao KE Wang, Haiqiang CHEN Wang, YongmiaoHONG,Cheng (2017) found that HSR projects have raised local real GDP per capita among most of the studied HSR cities (Ningbo-Taizhou-Wenzhou-Fuzhou-Xiamen corridor). The treatment effect of receiving a new HSR project occurs even before the project actually opens. The local gains are highly different among targeted city nodes and the spatial distribution pattern differs by HSR segments/lines. The treatment effect from HSR projects is greater for cities that are more industrialized, and those with high capacity of the service sector to absorb enough labor.

Alternate Vision

Mumbai-Ahmedabad High-Speed Rail project is the first High-Speed project in India and likely to be completed by the year 2022. The project will have 12 stations and primarily cater to the area around these 12 stations. The other area will also benefit in the sense that people can travel through the conventional mode of transportation and transfer to High-Speed Rail to save distance. The present project is envisioned to satisfy requirements of mainly Safety, High Capacity, High Frequency, Network Expansion, High Energy Efficiency, and Strong Infrastructure to tackle Natural Disaster.

The implementation of various Semi High-Speed and High-Speed projects will definitely provide multiple benefits. However, the High-Speed Rail Connectivity can be utilized as a leverage to multiply the economic benefits for the development of Urban and Rural areas. The project like Mumbai-Ahmedabad High-Speed Rail Connectivity should be developed along with the cluster of High-Speed Rail Connectivity projects connecting major urban centers like Ahmedabad, Rajkot, Vadodara, Surat with their catchment of urban and semi-urban areas in a radius of 100 kmph plus. The state of art urban/semi-urban centers may be developed at a suitable distance on the project area. The suggested clusters with High-Speed or Semi High-Speed Rail connectivity are:-

Ahmedabad Area

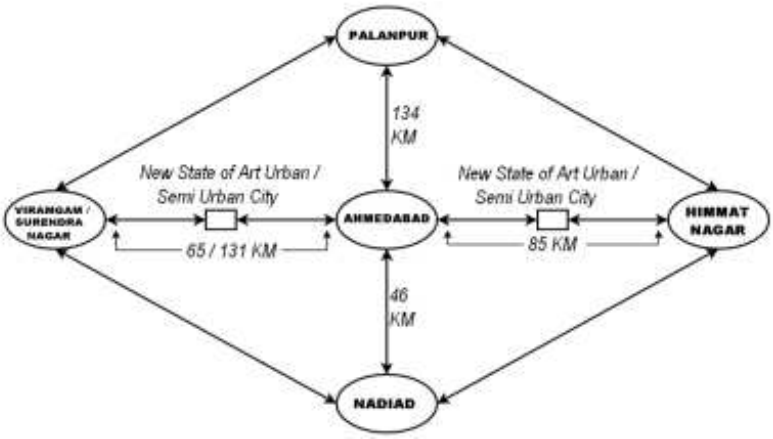

Figure 1

Rajkot Area

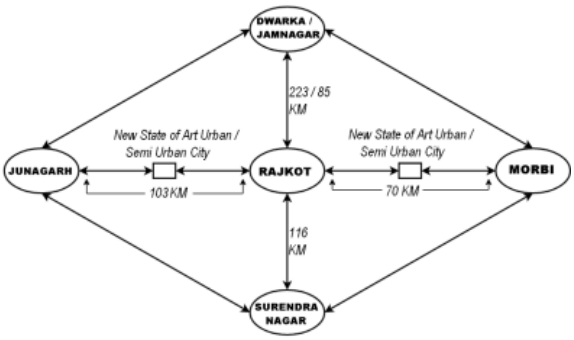

Figure 2

Vadodara Area

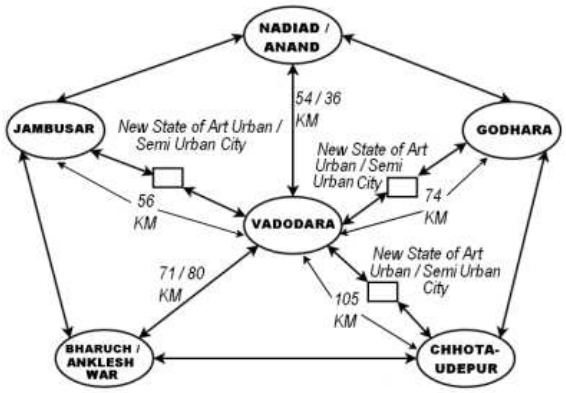

Figure 3

Surat Area

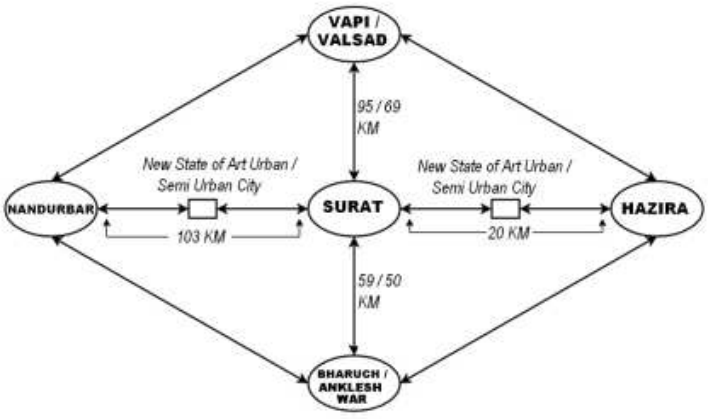

Figure 4

The above-mentioned clusters may be planned to have High-Speed or Semi High-Speed Rail connectivity between major urban centres, i.e. Ahmedabad, Rajkot, Vadodara, Surat, and their surrounding towns/cities. The existing Railway network may be upgraded for providing Semi High-Speed Rail connectivity.

The new state of the art cities/urban center s may be developed at suitable locations on these High-Speed or Semi High-Speed Connectivity routes. These will work as a buffer between Rural and Urban area. Some people may want to

relocate to these centers with all urban amenities from the urban area. At the same time, it may provide alternate for migration from Rural to the Urban area. These will help reducing pressure on the urban area and provide opportunities to the rural population.

All the stations on High-Speed or Semi High-Speed Rail connectivity may be developed as Centers with modern amenities, which will expedite the economic development of Rural and Urban area. The centers may have School, PanchayatBhavan, Medical Center, Recreation Facilities, Shopping Mall, Temple, etc. It can work as one point all amenities center for the rural area. The same will facilitate the Provision of Urban amenities in the rural area. The stations with all amenities connected with all-weather road to the habitation area will change the landscape of the rural area and may result into a happy life for people.

Similar High-Speed Rail Projects may be planned for other states with cities like Delhi, Jaipur, Lucknow, Patna, Kanpur, Chandigarh, Bangalore, Chennai etc. as a center connected to surrounding areas.

Benefits

Each of above-mentioned clusters will provide benefits other than the normal benefits of High-Speed Rail like:–

- Mitigation of problems of urbanization with less no. of people migrating to the urban area for various purposes like employment, education, etc. It will reduce pressure on urban infrastructure.
- For example, if a person cannot find a suitable job at Junagarh/Gondal but find one at Rajkot, he/she may either decide to move house to Rajkot or consider commuting daily between Junagarh and Rajkot depending on transportation choice available
- The reduced migration pressure on urban infrastructure will result into better facilities for citizens like proper housing, sanitation, water supply, health facilities, education, electricity, public utility, lesser no. of slums, improved law and order, recreation facilities, transportation system, etc.
- It will act as an instrument of rural development by the provision of urban amenities in the rural area. The High-Speed Rail stations will become a magnet for economic activities.
- It will open up rural areas for consumption and production activities.
- It will encourage Doctors, Teachers, Engineers, and other professionals to go to the rural area for work.
- It will help in the development of tourist / religious places.
- It will lead to planned development for Urban and Rural clusters.
- Certain businesses and industries may also find profitable to relocate their business to new cities or smaller towns due to lesser travelling time and availability of urban amenities.
- Some people may find it attractive to shift to the new state of art cities/urban centers with amenities and thereby reducing pressure on urban infrastructure and decongestion of cities.
- Small cities connected by High-Speed Rail will attract new investments, new inhabitants and activities in their station areas and cities due to their improved accessibility.

- The investments in High-Speed Rail projects will generate massive employment opportunities and fuel the growth of the economy.
- The model will help in reducing the gap in growth and development between urban and rural area.

Challenges

The High-Speed Projects are capital intensive and require huge investments. The arrangement of the fund will require great skill. The country like India will have a debate on whether to go for such projects requiring heavy investment or invest in other sectors and projects.

The land acquisition for High-Speed Rail Project will be a big challenge. It is a great challenge to convince the people to give agriculture land for infrastructure projects. The rehabilitation and resettlement of project affected people is also a challenge.

The speed of execution of infrastructure project is very critical. Any delay in project implementation will result in time and cost overrun. India is at a nascent stage in High-Speed Rail project execution. The eco-system in the area of High-Speed Rail technology is yet to develop in the country. The first High-Speed Project in India is expected to be operation in the year 2022. The skilled manpower required for the planning, development, operation, and management of the number of High-Speed Rail Projects will take time to develop. The first project has a transfer of technology provision. It will take some time to master the technology to have indigenous production of High-Speed Rail related products and services.

The national agreement for having a model for development may be crucial for avoiding resistance at an execution stage by some group for short-term gains.

Modality Suggestions

The concerned State government may set up a separate organization for planning, development, and execution of the projects with the partnership of other stack holders. Area wise unified planning and development agencies may be formed to comprehensively plan, develop and manage the projects.

The State governments, Local Self-governments, Municipal finance boards, temple authorities (Dwarka, Somnath, Dakor Etc.), international funding agencies may be roped into finance the projects. The funds linked to Rural Area development and Urban Projects may be utilized (for ex. MNREGA). Municipal corporations may be encouraged to find innovative means to fund such projects. The expanded municipal limits may generate resources which may be utilized for funding of mobility projects.

The Central Government should encourage the State Governments interested in taking up High Speed or Semi High-Speed Rail Projects.

The long-term land acquisition plan may be prepared for various projects like Road, Highways, Railway, Irrigation Projects, High-Speed Rail Projects, etc. Possibilities for integrated land acquisition may be checked for all projects.

The compensation for land acquisition may be such to encourage people to contribute to the projects of national importance. The rehabilitation and resettlement agency may develop best practices to fulfill the need of the project affected people. India may learn from the best practices within and outside country.

The centralized organisation may be set up to provide one stop solution for turnkey projects for High-Speed or Semi High-Speed Rail connectivity. It will help in reducing time cycle from conceptualization to commissioning. The same organisation may promote research and indigenization of High Speed and Semi-High Speed related technology. The development of trained manpower required on large scale will have to be looked after by a dedicated organization. Once there is a proliferation of projects the cost of construction and running of High-Speed Rail lines will decrease.

The communication process may be devised for conveying cost and benefits of having High-Speed Rail connectivity projects to the society and opinion builders.

CONCLUSIONS

Since long High-Speed Rail Projects have been very crucial in the growth and development of Japan, Europe, China, Taiwan, South Korea etc. The similar Projects with new vision can play a very important role for India and will help the country to be among the developed nations. The High-Speed Rail Projects are required for the country. However, only the following model adopted by other countries may not help in Indian conditions. The present speed of project execution may take decades to reach the benefits of High-Speed Rail technology to the nook and corner of India. The model for Urban and Rural development also requires to be modified to bridge the gap and prepare for the future. The High-Speed and Semi High-Speed Rail connectivity projects may be used to leverage the growth of the Urban and Rural area.

The planned approach is required to develop competencies during the proliferation of High-Speed Rail Projects in India. The competencies developed in High-Speed Rail technology to be leveraged for diplomatic gains and exporting products and skilled manpower. In future, India can help countries of African, South American and Asian continents to build up and run High-Speed Rail Projects.

High-Speed or Semi High-Speed Rail projects with associated urban amenities around Ahmedabad, Surat, Vadodara, and Rajkot will become a game changer for Rural Development and planned Urban Development. The similar approach may be followed for development in other parts of India by having cluster development around Delhi, Lucknow, Chandigarh, Patna, Jaipur, Kolkata, Hyderabad, Bhubaneswar, Bengaluru, Chennai, Nagpur, etc.

REFERENCES

1. *J. N. Sahni in Indian Railways (1953). One Hundred Years – 1853 to 1953*
2. *BegonaGuirao, Antonio Lara-Galera, Juan Luis Campa(2017). High Speed Rail commuting impacts on labour migration: The case of the concentration of Metropolis in the madrid functional area. Land Use Policy*
3. *David Banister (2007). Quantification of the Non-Transport benefits resulting from Rail Investment. Working Paper, Transport Studies Unit, Oxford University Centre for Environment.*

4. *Pol, Peter M.J. (2003). The Economic Impact of the High-Speed Train on Urban Regions, 43rd Congress of the European Regional Science Association: "Peripheries, Centres, and Spatial Development in the New Europe", 27th - 30th August 2003, Jyväskylä, Finland, European Regional Science Association (ERSA), Louvain-la-Neuve*
5. *Zhang, S. and Qian, Z. (2016). The impacts of high-speed rail on Shanghai's suburban communities: social sustainability and environmental justice. In Caprotti, F. and Yu, L. (eds.) Sustainable Cities in Asia. Surry: Ashgate (Forthcoming).*
6. *Alain L'Hostis, Liu Liu et Thomas Leysens(2017). Using contact potential measurements to analyse future intercity links made possible by the Tours–Bordeaux High-Speed Rail line – Belgian Journal of Geography. Open Edition Journals, National Committee of Geography of Belgium.*
7. *Christopher Auffrey, Xin Fu, Xinhao Wang, Alyssa WisselMcClearnon(2017). Enhancing Beijing's Resilience by Improving Tongzhou's Access to High-Speed Rail Transportation. Urban Rail Transit.*
8. *Ming Zhang, Qing Wu, Dianting Wu, Lin Zhao, Xi Liu (2014). Analysis of the influence on regional economic development of High-Speed railway. Journal of Chemical and Pharmaceutical Research.*
9. *Button, Kenneth (2017). High Speed Railways: Do they produce Economic Growth? Mercatus Research, Mercatus Centre at George Mason University, Arlington, VA.*
10. *Xiao KE Wang, Haiqiang CHEN Wang, YongmiaoHONG, Cheng (2017). Do China's High-Speed-Rail Projects Promote Local Economy? - New evidence from a panel data approach. China Economic Review.*