

THE ORIENTATION FOR SUSTAINABLE AND SUFFICIENT DEVELOPMENT OF RAILWAYS IN VIET NAM

Trinh Van CHINH
Head of Transport Planning Department
Hochiminh City University of Transport
QQ 3 Ba Vi P15 District 10
Hochiminh City, Viet Nam
Tel: 84 908105917
Fax: (84-8) 839770898
E-mail: trinhvchinh@yahoo.com

Trinh Thu THUY
Lecturer
Hanoi Politechnic University
30 Le Duan
Ha Noi - Vietnam
Tel: 84 0989 550 108
Email: thuytt-fem@mail.hut.edu.vn

ABSTRACT:

This paper presents the characteristics of Vietnam's railway with existing weakness, the orientation for sustainable and sufficient development, towards a modern rail system, to meet the travel demand of the country. It includes the development of high speed railway system on north-south corridor.

KEY WORDS: Transport planning, Railways development, Sufficiency transport, Sustainable development

1. GENERAL ABOUT VIET NAM RAILWAY

At present day, the rail network of Viet Nam is approximately 2,600km of single & non – electrified track. Vietnam Railways network connects residential area to cultural, agricultural and industrial center, except the Mekong river delta area and Highland area.

The former national railway network was put in disrepair as a result of the war and neglect during that time. Since then much of the focus has been in the rehabilitation of the network.

However, track infrastructure remains unsatisfactory with problems of weak bridges and bottlenecks, i.e. restricted speed sections, as well as numerous at – grade crossings with the roads.

The system utilizes mainly single track and narrow gauge with maximum passing capability of 25 up and down trains per day.

Signal and communication systems are outdated.

Typical operating train speeds are as follows:
(1) Hanoi – HCMC Line: 90% at 70 – 80km/h;
(2) Hanoi – HaiPhong Line: 94% at 70km/h;
(3) Hanoi – Lao Cai line: 63% at 45 – 55km/h, 14% at 70km/h; and
(4) Hanoi – Lang Son Line: 47% at 40km/h and 34% at 70km/h.

Rail condition between Hanoi and HCMC: manually managed at – grade crossings.

Rolling Stock of rail network: 346 diesel locomotives, of which 291 are operational. About 75% are greater than 15 years old; most of them are more than 20 years old.

There are 842 passenger cars and 4,856 wagons (Source: Vitrans 2, May 2010).

Table 1 The length of Vietnam railway network

Main routes	Length (km)	Track gauge
1) Ha Noi - Ho Chi Minh city	1726	1000 mm
2) Ha Noi - HaiPhong	102	1000 mm
3) Ha Noi - Lao Cai	296	1000 mm
4) Ha Noi - Dong Dang	163	dual gauge (1435 & 1000 mm)
5) Ha Noi - QuanTrieu	75	dual gauge (1435 & 1000 mm)
6) Kep – Uong Bi - Ha Long	106	1435 mm
7) Kep - LuuXa	57	1435 mm

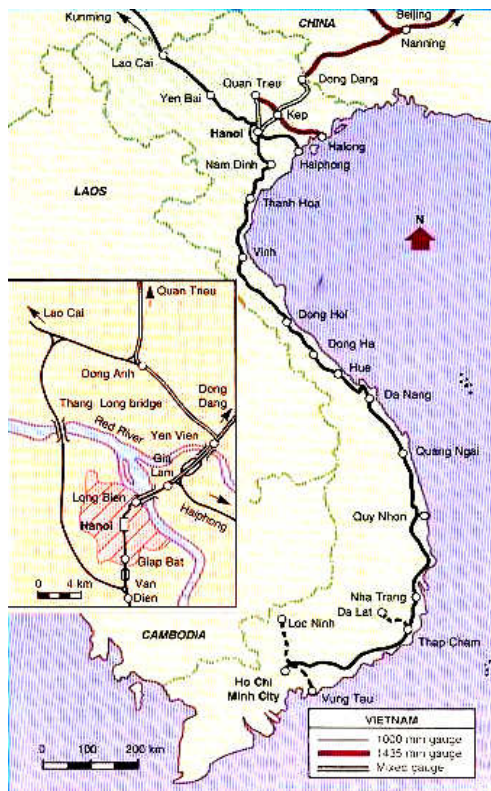


Figure 1 Existing railway system

General service: in the main corridor North – South alongside the country: 7 couple trains run every day on Ha Noi– Ho Chi Minh city railway line, with the travel time from 29.5 to 40.8 hours. Beside main corridor railway, there are some regional passenger trains for other rail lines: Yen Vien – Ha Long, Ha Noi – HaiPhong, Ha Noi – Lao Cai, Ha Noi – Dong Dang, Ha Noi – QuanTrieu etc. The safety issues: in 2010, happened 482 accidents, with 230 fatalities, increased 7.5 % in comparison with 2009.

2. ORIENTATION OF RAILWAY DEVELOPMENT

According to The Overall Strategy for Transport Development to 2020 and Vision to 2030, by the Prime Minister’s Decision no. 35/2009/QĐ–TTg dated 03/03/2009, in relation to intercity passenger transport, some main contents are described below:

For railway development: complete renovation and upgrading of existing railway lines to reach the technical standards for the national railway and the region to achieve speeds of 120km/h; building new high speed railway (HSR) lines; give priority to building north - south high - speed rail line with a speed of 350 km/h. Rapidly develop rail transport in urban area, internal suburbs railway, play an important role of public passenger transport, in the first time, give priority to deploy in the capital of Hanoi and Ho Chi Minh City.

Development goals of transport by 2020: To develop appropriate all modes of transport. Railway transport mainly take on long – distance with cargo and passenger transport; and on medium distance, which also has a large volume of passenger transport between cities, urban zones and public passenger transport in the big cities. Vision to 2030: to 2030 will be fundamentally perfects transport network in the country as well as external traffic corridors. Ensure the quality of transport to reach the international standard:

quiet convenient, fast, safe and reasonable connection between transport modes, especially among long - distance passengers transfer point with passenger transportation in cities. Basically complete construction of North - South expressways and high speed railways (HSR). System of roads, railways of Vietnam is sync with technical standards, facilitate connection with a road system in ASEAN, and expand the Mekong sub-region and Trans-Asia railway.

The Development Strategy for Vietnam Railways to 2020 and Vision to 2050, no 1686/TTg dated 20/11/2008 and The Adjusted Master Plan for Vietnam Railways Development 2020, vision to 2030, no 1436/QĐ-TTg dated 10/09/2009, are other most important documents, approved by the Prime Minister. By this document, railway infrastructure needs to focus its investment priorities to be one step ahead, quick, synchronous, reasonable, combining firm development steps, to break through to go straight on modern, to motive for promoting the socio - economic development of country; to develop international railway network to link with foreign ports and countries with the same common border, to promote international integration, to fast develop urban rail network for core of public transport in big cities, with immediate priority for Hanoi capital and Ho Chi Minh.

Railway transport development towards a modern, high quality, reasonable cost, fast, safe, energy saving, environmental protection, saving society cost; associates with major centers of commodities distribution, with land ports (ICD) and other transport modes; undertakes long-distance transporting, high volume, urban public passenger transport , focuses to services for inner city - suburban passenger, meets the needs of socio - economic development .

Specific objectives

- **to 2020 year** Railway transport shall take a share the demand at least 13% on passengers turnover and 14% on goods turnover of the whole transport volume; in which urban passenger transported by rail at least 20% of public passenger transport demand in Hanoi capital and in Ho Chi Minh

- **Period to 2030** the proportion will reach 20% of the transport needs on passengers & goods; will reach 25% of the needs on public passenger transport in urban areas.

To formulate and promulgate mechanisms to encourage all economic sectors to participate in the railway transport investment & business, striving to attract non – government budget capital for infrastructure construction at least 10% (to 2020) and 20% (to 2030) of total investment.



Figure 2 Conventional Railways planning to 2003

The railway development Planning are defined as follows:

- **By 2020** to complete construction works:
 - Renovation and upgrading the existing railways.
 - Some first sections of North - South high speed Railway,
 - Some railways: Yen Vien - Pha Lai - Ha Long - CaiLan, Bien Hoa - Vung Tau, Lao Cai - Hanoi - HaiPhong, Dong Dang - Hanoi, Railway for servicing bauxite exploit (DakNong - BinhThuan)
 - Railways connecting to ports, industrial parks, economic zones, mines zone etc
- **By 2030** complete construction:
 - The rest of high speed north - South railways
 - Highlands railway network, consisted of main axes: Da Nang - Kon Tum - DakLak - Buon Ma Thuot - Chon Thanh - Ho Chi Minh City and the branch railways: Buon Ma Thuot - TuyHoa, DakNong - BinhThuanetc

3. THE HIGH SPEED RAILWAY IN THE NORTH – SOUTH CORRIDOR

Methodology

- Base on the social-economic development needs of country and the national target in period of 2020-2030
- Forecast the travel demand in the most important corridor of the country, with the characteristics of the urban areas stretching across this corridor. To develop the scenarios and to choose development options
 - Analyze and evaluate the impact of the route uninterrupted HSR for travel demand and urban development, industrial parks, tourism and services in the future.
 - Learn the experience from other countries in the construction of HSR.
 - Analysis the economic - financial efficiency and environmental impact of projects.

- Develop the necessary mechanisms and policies, focusing more funding resources to mobilize

The first pre-feasibility study with four options have made by The Transport Investment & Construction Consultant Joint Stock Company (TRICC JSC) of Viet Nam Railways. It was submitted to the Prime Minister to prepare the project of north-south high speed railway. The study present the explanation of the research and selection, specifying the four options for transporting passengers and goods by rail on the North - South corridor.

In 2030, passenger demand on North -South corridor in both directions will be 195 million pax/year for inter-provincial trips. By 2030, if not build high speed rail, the total capacity of all modes of transport on the North - South corridor will be only about 138 million pax/year; Thus, lack of 57 million pax/years. With HSR, the high capacity is about 100-140 million pax/year in both directions.

Option 1 is to expand the existing railway line (single track, 1000 mm gauge) into the 1435 mm gauges railway and build one more 1435 mm line for double track line.

Option 2 is the removal of existing rail line to build the modern double 1435 track lines with the speed of 200km/h, using only a part of existing railway.

Option 3 is to upgrade the existing rail line for short term demand and concurrently to build new second double track line of 1435 mm gauge for both cargo and passenger transport, with operating speed of 200 km/h.

Option 4 is to upgrade the existing railway lines to meet the local needs, and also to build double track of high speed rail from Hanoi to Ho Chi Minh City, with 300 km/h speed of exploitation. Design speed of 350 km/h.

After carefully analyzing the options mentioned above, the Government proposed selection option 4.

About the elimination of option 1 and 2, reported that, these two options for actual construction of the 1435 mm gauge railway are based on the current basis of 1000 mm railway. So the construction would not be feasible due to the expansion of at least 15m, the resettlement work is great for clearance, the land acquisition in urban areas is not feasible. In addition, the construction will disrupt traffic on the railway between Hanoi and Ho Chi Minh City.

For Option 3, the transportation of both passengers and cargoes on the new double track of 1435 mm gauge railway will increase the volume of transport goods, but will limit passenger transport, because it can not run fast passenger trains. Meanwhile, in the natural conditions of Viet Nam, for transporting cargoes in north - south corridor, can use the sea and road transport for share.

By this study for HSR, accordingly, in the period of 2020-2025, expected to put the Hanoi-Da Nang and NhaTrang-HCMC routes in exploitation.... By 2030, will put the Vinh - Danang route to exploit and in 2035 will explore the entire line of HSR.

Expected total cost of project implementation is about 56 billion USD. A part of project cost will be invested by the State, a part by debt and a part by funding of businesses. To mobilize capital from all economic sectors. State capital will be available at a reasonable level for "stimulus" to the project in the early stages. Regarding funding, the first phase of construction (expected before 2025) will need about average 3-4 billion USD/year.

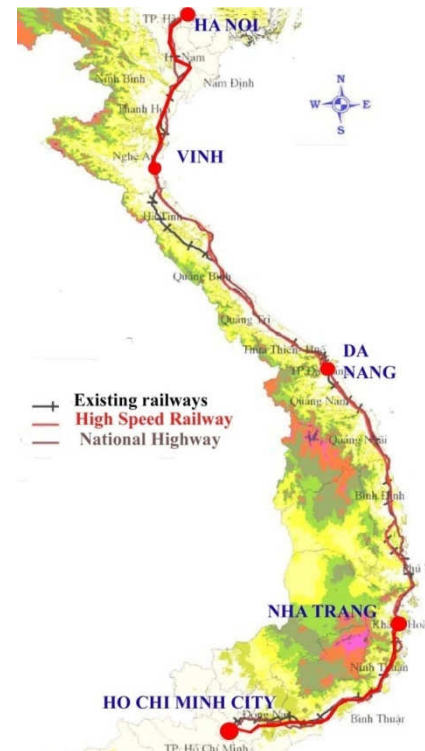


Figure 3 High speed railways planning

In our country today, the fares of North-South route railway are between 40 -60% of economy class airfare. So in the assumption fare by scenario of the project, the using the fare for high speed rail by 50% - 75% of economy class airfare is acceptable.

In the Analysis Report, the total investment in transportation at present is only 7% of the total social investment. Counting the project of high-speed railway with capital mobilized above-mentioned, the investment for transportation is in the range of 10 to 15% of the total social investment.

The Basic Plan for The North-South High-Speed Railway was presented in The Comprehensive Study on the Sustainable Development of Transport System in Vietnam (VITRANSS 2). Travel Time Hanoi – HCMC is estimated with Max. speed of 300km/h as: 6 hours 50 minutes when stopping at all 26 stations; 5 hours 40 minutes when stopping at 6 priority stations only. The total length of the completely new alignment would be 1,570km.

4. CONCLUSION

The Government is expected to ensure arrangements the state budget for infrastructure components (about 31 billion USD), while the transport rolling stock component will mobilize investment of enterprises (about 10 billion USD), based on the kinds of PublicPrivate Partnership (PPP) and Private Sector Participant (PSP). Element to change the preliminary total investment is mainly the compensation for site clearance, estimated about 1.8-2.5 Bill.USD.

Although the preliminary financial analysis is not so high, but must take into account the general efficiency of economic development - social as well as the joint interdisciplinary pervasive effect of the project, and reduction in road traffic accidents.

The opinion of the Ministry of Transport is still to continue to study more, to give the efforts in some next years to be able to keep the land demarcation for the project. The land use planning will avoid huge clearance work later. Construction projects required by Congress, while planning of the land is the authority of the Government.

To further scrutinize the economic - technical solutions and policy mechanisms, to ensure the feasibility of the project

Learning more experience, exchange and cooperation with other countries, including the Asian countries construction and exploitation of HSR

REFERENCES

- Almec Cor.; Oriental Consultants Co.Ltd.; Nippon Koei Co. Ltd. (2010)*The Comprehensive Study on the Sustainable Development of Transport System in Vietnam (VITRANSS 2)*. Japan International Cooperation Agency, Viet Nam Ministry of Transport, Ha Noi.
- Transport Investment & Construction Consultant JSC., JTC, JARTS & NK. (2010) *The Pre-Feasibility Study of Hanoi – Hochiminh City High Speed Railways*. Viet Nam Railways, Hanoi.
- Viet Nam Government web Portal (2011, 2010) <http://baodientu.chinhphu.vn>, Ha Noi.