

Regional Economic Integration and Transportation Network Improvement: A Case of Great Mekong Subregion

Trung-Dien Vu¹, Kiyoshi Kobayashi² and Bui Trinh³

Abstract

The paper introduces a multi-regional computable general equilibrium (CGE) for GMS economies. It deals with the effects of infrastructure transportation investment in commodities transportation cost of interregional trade and output production among countries in the GMS. Prior to develop the multi-regional CGE model, the paper summarized the effectiveness from transport investment projects over the GMS countries in recent years. A deep review describes the current status of GMS's transport policies implementation as well as methodologies for measuring the effects of the transportation infrastructure investments on the countries' economy. The simulation results of the research show the changes in real GDP, international trade and output production among countries in the GMS. The conditions applied to the transportation in the three scenarios are assumed as the transportation technology coefficient in the GMS is uniformly increased. Reductions in transportation cost are reflected by changing a technology-related coefficient in the multi-regional CGE model. The results show that they will surely accelerate the development of Vietnam and the other GMS members by

¹ Graduate School of Engineering, Kyoto University, 615-8540, Japan,
e-mail: wru.info@gmail.com

² Graduate School of Management, Kyoto University, 606-8501, Japan,
e-mail: kobayashi.kiyoshi.6n@kyoto-u.ac.jp

³ Center for Sustainable Development Policy Studies of Vietnam,
e-mail: buitrihcan@gmail.com

enhancing economic integration among them. The results indicate that the economic growth in Vietnam is particularly significant. More imports become available in Vietnam because the market price of imports decreases, both from other GMS members and from the rest of the world. This enhances production and consumption in the country.

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Keywords: Regional economic integration, Transport network, CGE model, Vietnam and GMS

1 Introduction

The rapidly growth of international/regional trade and the globalization of production, international transportation systems have been under increasing pressures to support the demands in volume and distance carried, passenger movement and freight transport. The economist's researches have paid great attention on the linkages between transportation infrastructure improvements and sustainable economic performance. Efficient and effective transport networks for freight transport and people movement are the backbone of sustainable economies. Recently, we faced with increased constraints in financing transport infrastructure; the country's leaders need evaluation methods for project appraisals which enable their resources to be allocated in the most efficient way in order to optimal the net return to society as a whole. In many developing countries, especially in Great Mekong Subregion (GMS) countries, however, are following the trend of inefficient transportation by becoming (i) increasingly incompetent transportation investment management; (ii) lacking of appropriate methodology to estimate economic effects of transportation infrastructural investment; and (iii) inadequate data base documentation. And rose a question that how can those countries best be spent infrastructural investment to support a plan for a sustainable economic development? This paper provides background on current situation and trends of transportation infrastructure investment in Great Mekong Subregion countries including Vietnam, Laos PDR, Cambodia, Myanmar and Thailand as well as proposed a most appropriate methodology to estimate the economic effects of transportation infrastructural investment.

Vietnam is laid in a strategic location in Asia and it situated in one of the world's most dynamic transport nodes. The country holds the huge potential for development of transport networks and services for Vietnam to integrate into regional and international economy communities and improve Vietnamese transportation infrastructure's position in networks in Asia and the rest of the world. Vietnam is a developing country in Southeast Asia region, shares common borders with the People's Republic of China (PRC), Laos and Cambodia and its total area of about 330,000 square kilometres. The total land area, 21 percent or

about 6.9 million ha, is used in agriculture and the remaining 9.8 million ha (29 percent) are productive forest lands. The population of Vietnam in 2009 was 85.79 million. Vietnam became the third most populous country in Southeast Asia (after Indonesia and the Philippines) and the thirteenth most populous country in the world. The population in urban areas was 25,37million, accounting for 29.6% of the total population.

The rapidly growth of international/regional trade and the globalization of production, international transportation systems have been under increasing pressures to support the demands in volume and distance carried, passenger movement and freight transport. Efficient and effective transport networks for freight transport and people movement are the backbone of sustainable economies. Recently, we faced with increased constraints in financing transport infrastructure; the country's leaders need evaluation methods for project appraisals which enable their resources to be allocated in the most efficient way in order to optimal the net return to society as a whole. In many developing countries, especially in Great Mekong Subregion (GMS) countries, however, are following the trend of inefficient transportation by becoming (i) increasingly incompetent transportation investment management; (ii) lacking of appropriate methodology to estimate economic effects of transportation infrastructural investment; and (iii) inadequate data base documentation.

Transport sector has contributed positively to the economic growth of the country over past decade and also plays an important role in poverty reduction of Vietnam. Together with the development of other sectors, transportation made significant process and basically met the demand for goods and passenger transport in the country and part of export and import transport.

In Vietnam as well as in many countries transportation is an intermediate input, which helps to increase the productivity, economic growth, solve social problems such as poverty elimination and narrowing the gap between regions in order to achieve sustainable development. Transportation plays an important role in economic development through increasing productivity, providing necessity, and improving living standards. In point of view among the enterprises, transport system is very essential in their business activities. If the transportation system condition is good, they can have lower business costs, and allows access to production resources like capital, labour, materials and consuming market. Thus, the investors always consider about transportation as one of the most important factors when they choosing an investment location.

2 Overview Transport Sector

Transportation plays an extremely important role in the socio-economic development of country's economy and Vietnam in particular is not an exception. Transportation infrastructure sector has been accorded the highest priority in the

Vietnam's national development plan. The government's objective is to develop a modern transport system, which provides high quality, efficient and affordable transport services in a safe and environmentally sound manner according to MOT 2004 [1].

During 1999 and 2004, the demand for freight transport increased about 11 percent per annum in term of ton-km while the demand for passenger transport growth 9.4 percent per annum. Comparing the freight transport mode among sub-sectors, road is dominant mode which accounts for nearly 70 percent of tons moved but coastal shipping accounts for 72 percent of ton-km due to its dominant in long-distance transportation mode and remaining 28 percent was shared with railways, aviation and other modes, see Table 1.

Table 1: Volume of domestic freight and passenger transport, 1999-2004

Mode	1999				2004				Annual
	1000 tons	%	Mil-ton km	%	1000 tons	%	Mil-ton km	%	
Freight transport									
Railway	5,146.0	2.7	1,445.5	3.6	8,829.4	3.1	2,790.8	4.1	14.1
Roads	132,137.3	69.4	7,159.8	17.8	192,562.5	67.6	10,305.5	15.3	7.6
Maritime	39,887.2	21.0	3,967.8	9.8	59,071.4	20.7	5,591.8	8.3	7.1
Inland-water	13,006.1	6.8	27,619.0	68.5	24,363.6	8.6	48,335.9	71.9	11.8
Aviation	42.5	0.02	105.5	0.3	102.5	0.0	237.9	0.4	17.7
Total	190,219.1	100.0	40,297.6	100.0	284,929.4	100.0	67,261.9	100.0	10.8
Passenger	mil.pass	%	mil.pass-km	%	mil.pass	%	mil.pass-km	%	
Railway	9.3	1.3	2,722.0	8.8	12.8	1.1	4,378.0	9.0	10.0
Roads	588.4	81.0	22,053.3	71.3	999.7	84.4	31,730.7	65.4	7.5
Inland-water	125.7	17.3	2,109.7	6.8	166.2	14.0	3,440.0	7.1	10.3
Aviation	2.7	0.4	4,042.0	13.1	5.6	0.5	8,948.0	18.5	17.2
Total	726.1	100.0	30,927.0	100.0	1,184.3	100.0	48,496.7	100.0	9.4

Note: Author calculated from GSO [2]

The positive impact of transport sector on economic development and poverty reduction has been widely realized by the Vietnamese government and the other enterprises. Transportation meets the demand for commodities and intermediate

goods delivery to the firms and provides goods to the markets for consumption purposes. Passenger flows transportation meets the demand for travel of people and contributes significantly to their accessibility to workplaces and tourism service development. Transportation plays an important role in trade promotion for the country when commercial production is rapidly raised with huge volume of trade flows.

Table 2: Transport Sector Expenditure in Vietnam 1999-2002 unit in billionVND

	1999	2000	2001	2002	annual growth %
Total transportation Expenditure	10,616.0	11,375.0	14,985.0	18,721.0	20.8
- Total Exp. by Central Gov.	5,901.0	6,391.0	6,582.0	8,305.0	12.1
- Total Exp. by Local Gov.	4,715.0	4,984.0	8,403.0	10,416.0	30.2
Transport Exp. as % of GDP	2.7	2.6	3.1	3.5	NA
Transport Exp. as % of total Transport Exp.	12.5	11.0	12.5	13.8	NA
Local Exp. as % of total Transport Exp.	44.4	43.8	56.1	55.6	NA
Total Recurrent Exp.	723.0	1,319.0	1,404.0	1,331.0	22.6
- Total Central Recurrent Exp.	331.0	729.0	799.0	580.0	20.6
- Total Local Recurrent Exp.	392.0	527.0	605.0	751.0	24.2
Recurrent Exp. as % of total Exp.	6.8	11.6	9.4	7.1	NA

Source: Ministry of Finance

According to the Ministry of Finance (MOF), total nominal public expenditure in transport increased at almost 21 percent per annum between 1999 and 2002 reached 3.5 percent of GDP in 2002 versus an average of 2 percent in the late 1990s. Tab.2 shows the proportion of the state budget directly allocated to the local government which has increased significantly from 44 percent in 1999 to 56 percent in 2002. However, the recurrent expenditure while having a large increase in 2000 has dropped back close to its 1999 level. See details in Table 2 above.

2.1 Recent Achievements of Transport Sector

Since the comprehensive innovation policy "Renovation" was enacted, together with the development of other sectors, transport sector shown significant process and basically met the demand for commodities and passenger movement and trades. Viet Nam's economic growth rate increased every year in nearly a decade in 2000s, rising from 6.79 percent to 8.48 percent annually, kept the high growth rate even in the global economic downturn started from 2008, the GDP still at 6.23 percent. The Table 3 below present the growth rates by sector from 2000 to 2008.

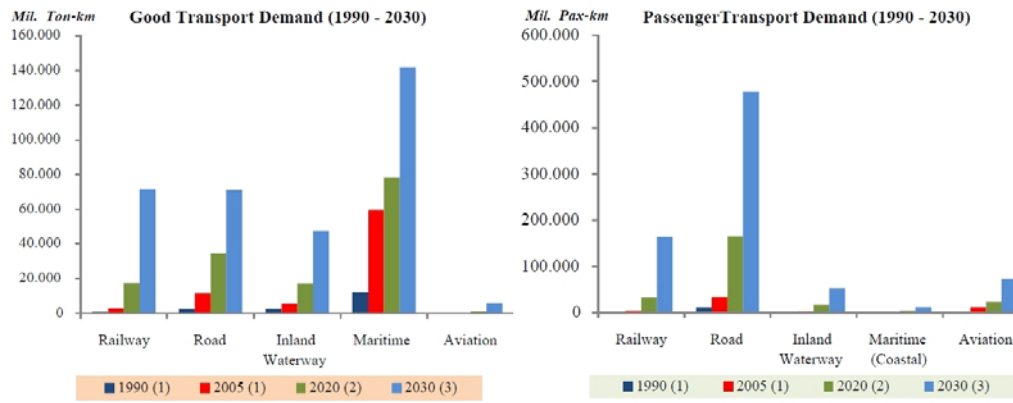
Table 3: GDP growth by sectors in Vietnam 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agricultural	10.1	10.4	9.48	10.5	10.2	10.7	10.4	10.6	6.33
Industry	4.63	2.98	4.17	3.62	4.36	4.02	3.69	3.4	3.79
Service	5.32	6.1	6.54	6.45	7.26	8.48	8.29	8.68	7.2
Total	6.97	6.89	7.08	7.34	7.79	8.44	8.23	8.48	6.23

Note: Author calculated from GSO data 2009 [2]

A long with the economic growth as noted above, transport demand in Vietnam is growing intensively. The average growth rate of good transport demand is about 7.3% per year between 1990 and 2030, according to the Transport Development Strategy of Vietnam up to 2020, the Ministry of Transport [3]. At the same period of time the demand for passenger transport is growing even faster by 12% per year. The rapidly increasing of transport demand leads to a good opportunity for development of transport service industries and also big challenges for capacity of both infrastructure and services. Figure 1 representing the growing of the transport demand in both freight transport volume and passenger flows in Vietnam and also the trend for the next 20 years until 2030.

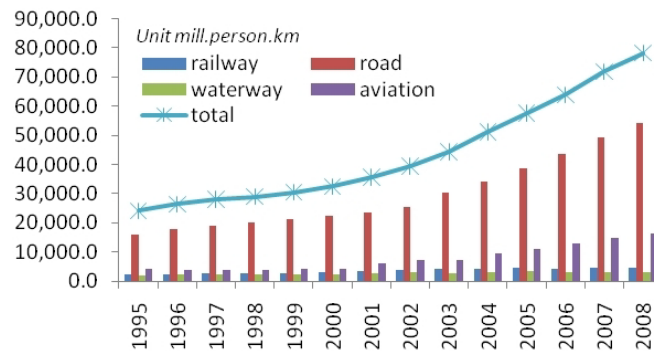
Population growth has been another key driver of increased transport demand in last decade. The sustain growth of population growth, accompanied by a considerable increase in the urbanization process, people are moving from rural areas to urban. During the period 2000-2008, total population growth in Viet Nam averaged 1.31 percent annually.



Source: MOT 2007 [3]

Figure 1: The increasing of transport demand

Figure 2 shows the rapidly increasing of passenger traffic in Vietnam in over last decade. The volume of passenger traffic increased nearly four times within the period of time from 1995 to 2008 in which passenger volume travel by road has the most growth rate.



Note: Author calculated from GSO data 2009 [2]

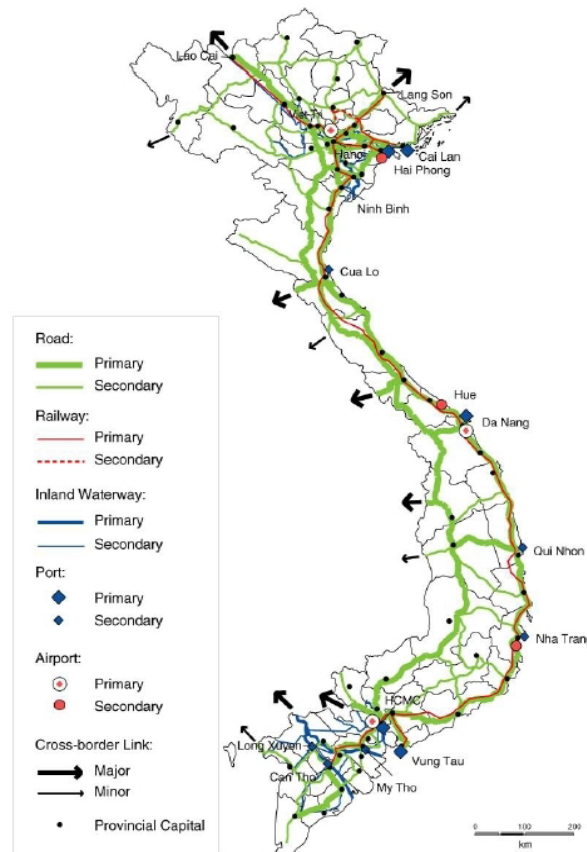
Figure 2: Volume of passengers' traffic in Vietnam, 1995-2008

2.2 Projection of Transport Investment Status

As presented in MOT 2007 [3], road infrastructure has been intensively focused during the last decade. The government invested on transportation as road-based development through the spending of central government on road counted about 90% of total transport expenditure. And the most of transportation

infrastructure had been done by state-owned enterprises and because of inefficient management structure, mechanism as well as corruption which led to facing with serious problem of efficiency and debt. The expenditure process has been done through a closed and non-transparent system between government agencies and their son's contractors.

The rapidly growing of transport demand put Vietnam under high pressure on transportation infrastructure investment. According to statistic from GSO the percentage of paved national road has been increased from 60% in 1995 to about 92.5% in 2006 and the country has achieved increasing of road network about 151.632 km in which 42.5% have asphaltic or concrete pavement, GSO [2]. In railway, port, and waterway have been obtained remarkable achievement to meet the transport demand. However, it is lacking of high-speed road and high-speed railway transport routes. Figure 3 represented the strategic transport networks in Vietnam.



Source: MOT 2007 [3]

Figure 3: The strategic transport networks in Vietnam

Ministry of Transportation and Communication has submitted the Vietnam Transport Development Plan up to 2020 to the Prime Minister on December 2002 estimated the average investment demand between 2002 and 2020 at \$US 7 billion per year, with almost 60 percent of that budget allocated for rail way and urban transportation. It is 6 times over the transport expenditures in 2002 and would account for about 14 percent of GDP of the year 2005. The total expenditure estimated by the MOT is five times higher than the investment requirements proposed by the VITRANSS3 and includes additional expenditure for urban transport, local transport, expressways and railways. According to the VITRANSS, the total budget investment up to 2010 is estimated about \$US 11.5 billion which excludes the investment for expressways, ports and urban transport.

2.3 Efficiency of Transportation Investment in Vietnam

In this part we summarize the methodologies which have been using to estimate the affect of transportation infrastructure investment in Vietnam. Even though, transportation plays an essential role in socio-economic and security of the country. In context of economic integration since Vietnam become official members of WTO, the country has to comprehensively improve its transportation system, in which the transportation network for socio-economic development and for commodity transport and public transport should be the core, however, there are few research pay concentration on this field.

Mitsui [4] and Tho *et al.*, [5] have made a analysis on impact assessment of large scale transport infrastructure in Northern Vietnam, particularly focus on the Highway No. 5, in which the changing of the economic, living standard within the Red Delta Regions after the transportation infrastructure investment was implemented. The author found that the transport infrastructure projects in the Northern Vietnam made a great contribution to poverty reduction widely seen in the areas along the highway. The projects shed light on a wide range of roles of infrastructure as a prerequisite for economic growth and a direct contributor to poverty reduction, through multiple channels such as those identified in the projects. The analysis of this case has brought us to the important lesson that it is necessary to combine large-scale infrastructure projects with institutional support backed by the government's clear commitment in order to scale up the effect of poverty reduction.

The enlargement of the highway no.5 in particular the former is beginning to exert both direct and indirect large impact upon the agricultural and rural economic development of the part of, not whole of Red River Delta region that is second to the southern Mekong River Delta as a grain store region but also for neighboring regions located along the highway, the rapid progress in the structural change of specific sectors and expansion of a new economic activity are conspicuous.

There are some previous studies have focused on specific transportation projects, those models have adopted a broader methodological framework to understand the linkages between public investment, growth and poverty reduction, such as on the MyThuan Bridge in the Mekong river delta region AusAIDS [6], the sectoral reviews as the case of the transport sector in study of Vu and Aldas [7]. Fan *et al.*, [8] conducted study in which affects of infrastructure investment on road, electricity, telephone, agricultural RD and irrigation with respect to agricultural growth and poverty reduction. In 2004, study of Rama *et al.*, [9] assessed the poverty impacts of public investment employing three aspects: (i) a macroeconomic perspective, investment rate, and elasticity of poverty reduction to economic growth; (ii) provincial perspectives; and (iii) individual project approach.

Those studies above are comprehensive on illustrating a wide range of analytical approaches for assessing impacts of public investment on poverty. However, there have no one consider about spillover effects of the infrastructure investment.

3 Transportation Policies in Vietnam

The 2004 Transport Sector Development Strategy (TSDS) to 2020 supports Vietnam's various economic development plans, notably, the ten year (2001-2010) Socio Economic Development Strategy and the Comprehensive Poverty Reduction and Growth Strategy [10]. The first one identifies the upgrading of Highway No.1 is the first priorities and strongly endorses the development of public transport services and long term regional transport planning, and also cites the rising rate of traffic accidents as a concern, as well as emphasis and priorities differ within Vietnam's 8 regions. The main elements of TSDS are: A balanced approach to transport development capitalizing on the country's geographical shape; Prioritization of maintenance and upgrading of existing assets; Prioritization of rural transport infrastructure especially in mountainous and remote regions; Prioritization of new investments in the north-south backbone, important economic zones, large urban areas and key links to neighboring countries; Prioritization mass transit systems in the urban sector; Increasing the local content in ship and automobile construction and repair; Increasing the share of domestic enterprises in the international transportation of Vietnamese goods.

TSDS highlights several policies to govern implementation, include (i) targeting domestic and foreign sources of finance, both private and public, and charging users for the construction and maintenance of infrastructure when possible; (ii) encouraging private sector participation by speeding up the equitization of state-owned enterprises and separating state management from operations and business; (iii) ensuring transport safety and environmental protection in transport related activities, utilizing new technologies and processes in transport-related construction and operations.

There has very important aspect of infrastructure transportation construction; the structure of many types of infrastructure might imply that there are benefits to individual beyond the region or locality where the infrastructure is located. On the other hand, better infrastructure in one region could assist firms in neighbouring regions with drawing away the most productive resources, which could be detrimental to firms in the locality with enhanced infrastructure. In order to have effectiveness of evaluation, a type of CGE models should appropriate be applied to estimate the effects of highway infrastructure investment projects on the economics of the region.

4 A Multi-Regional CGE Model

We develop a multi-regional, multi-sector CGE model. The model descriptions particular emphasis on the theoretical structure and the equations linkages used in the CGE framework. The multi-regional CGE model for single country's economy developed which is used to study the regional economic effects of transportation infrastructure investment. The model presents a country's economy with number of sectors, the country divided into various regions. Transportation infrastructure investment makes changes to productivity of the firm's commodity. Applying the CGE model, we explore the impacts of reducing transport costs from transportation infrastructure investment among regions, estimating the effects on the change of commodity flow volume and welfare effect due to both commodity freight transport and passenger flows [11].

4.1 Simulation using GTAP standard model

In this paper, we made a simulation using Global Trade Analysis Project (GTAP) [12] model. It was conducted to estimate the economic effects of international transportation improvement on Great Mekong Subregion (GMS). The data used for the simulation derived from GTAP Data base version 7 [13]. The simulation analyses the impact of international transportation infrastructure projects on Great Mekong Subregion (GMS) countries including Vietnam, Lao PDR, Cambodia, Thailand and Myanmar. Currently, multiple international transportation infrastructure projects are in progress in the GMS, including cross-border land transportation development, port development. These projects are expected to contribute to the economic development of Vietnam and other GMS members.

The changes in economic activities in each country are estimated by inputting the expected reduction in transportation time and cost into the GTAP model. The GTAP model draws on a set of economic accounts for each country/region, with detailed inter-industry links. Using a global CGE model such as GTAP enables

interactions between regions and sectors to be captured within a fully consistent framework. The model we used for this study is comparative, static, and assumes perfectly competitive markets with constant returns to scale, as in the standard version of the GTAP model.

4.2 Regions and sectors classification

The database covers a publicly available global database, which contains complete bilateral trade information, transportation, and protection linkages among 113 regions for all 57 commodities in a single year. For analytical simplicity and for the purpose of our analysis, the 113 original regions are aggregated into 6 regions while the 57 original commodities are aggregated into 26 commodities. See more details in Table 4 and Table 5 below. The standard GTAP model is used for the scenario analysis with the GTAP database version 7.

Table 4: Regions classification

Regions	Code	Original regions from GTAP Data Base
1	Vietnam	Vietnam
2	Cambodia	Cambodia
3	Lao PDR	Lao's People Democratic Republic
4	Myanmar	Myanmar
5	Thailand	Thailand
6	ROW	Rest of the world

The model is the global computable general equilibrium models, with which the changes in economic activities caused by transportation projects are estimated. It covers multiple sectors in multiple regions, with the assumptions of perfect competition and constant returns to scale.

Table 5: Sectors classification

Sectors	Code	Original sectors from GTAP Data Base version 7
1	Paddy	Paddy rice, Wheat
2	Other_crop	Vegetables, fruit, nuts, Oil seeds, Sugar cane, Sugar beet, Plant-based fibers, Crops nec, Vegetable oils and fats
3	Livesto_pltr	Cereal grains nec, cattle, sheep, goats, horses, animal products nec, meat: cattle, sheep, goats, horses
4	Forestry	Forestry
5	Fish farming	Fishing
6	Oil_gas	Oil, gas, gas manufacture, distribution
7	Mining	Coal, minerals nec, mineral products nec
8	Process_rice	Processed rice
9	Othe_agrprc	Raw milk, Meat products nec, Dairy products, Sugar, Foods products nec
10	Textiles	Wool, Silk-worm cocoons, Textiles, Wearing apparel, Leather products
11	Paper	Paper products, Publishing
12	Wood	Wood products
13	Rubber	Chemical, rubber, plastic prods
14	Non_metalmin	Petroleum, Coal products
15	Trans_equpm	Transport equipment nec, Transport nec
16	Metal_prod	Ferrous metals, Metals nec, Metal products
17	Othe_manuf	Beverages and tobacco products, Motor vehicles and parts, Machinery and equipment nec, Manufactures nec
18	Elect_water	Electronic equipment, Electricity, Water
19	Construction	Construction
20	Transport	Sea transport, Air transport
21	Communication	Communication
22	Trade	Trade
23	Finan_ser	Financial services nec, insurance
24	Public_admin	PubAdmin, defense. Health, education
25	Hotel_res	Dwellings
26	Other_service	Business services nec, recreation and other services

4.3 Scenarios and results

4.3.1 GDP changes

Results of Scenario Analysis present the changes in real GDP in the GMS countries in the three scenarios with the real GDPs in the baseline scenario. The conditions applied to the transportation in the three scenarios are assumed as the transportation technology coefficient in the GMS is uniformly increased by 20 percent, 30 percent and 50 percent, respectively. Reductions in Transportation Cost are reflected by changing a technology-related coefficient in the GTAP model. The results from simulation as represented as follows.

Table 6: Real GDP changes in GMS countries in the three scenarios

Scenarios	GDP	Vietnam	Cambodia	Laos PDR	Myanmar	Thailand
Base case	Mil. \$US	43,026	4,884	2,452	7,733	161,698
1	change	1.89%	1.43%	0.63%	0.30%	1.51%
2	change	2.83%	2.14%	0.95%	0.46%	2.26%
3	change	4.72%	3.57%	1.58%	0.76%	3.77%

Note: Base case, author calculated from GTAP Data Base [13]

First, GMS members enjoy GDP growth in all scenarios. This means that the international transportation infrastructure development projects in the GMS impart benefit to many countries in the GMS. Second, the estimated results show that the GDP growth rate is higher in Vietnam, Cambodia and Thailand than the GDP growth rate in other two countries. This is mainly because the three countries depend on the other GMS members for their trade more than the others do. This probably indicates that the transportation projects in the GMS contribute to the improvement of the national economy, particularly countries that much involve in the Asian Highway network and have strong trade-relation with neighbour regions.

Third, the GDP growth rate in Vietnam is positive in all three scenarios and gained highest rate compares with other members, especially it reaches at 4.72% in third scenario. This means that the transportation improvement in neighbour countries and region and development of ports in Vietnam contributes highest to the GDP growth. Finally, Lao PDR and Myanmar have relatively smaller GDP growth rates than other countries. Lao PDR gains 0.63 percent growth in Scenario 1, 0.95 percent in Scenario 2, and 1.58 percent in Scenario 3. Myanmar enjoys only 0.03 percent growth in Scenario 1, 0.46 percent in Scenario 2, and 0.76

percent in Scenario 3. The low growth rate is due to both countries Lao PDR's and Myanmar's trading less with other GMS members than the others do.

4.3.2 International trade changes

Table 7 shows the changes in international trades between the GMS members and the rest of the world in Scenarios 1, 2, and 3.

Table 7: Changes in interregional trade between GMS member and ROW in the three scenarios (percentage)

Scenario 1	Vietnam	Cambodia	Laos PDR	Myanmar	Thailand	ROW
Vietnam	-	4.25	0.24	-2.11	0.75	1.84
Cambodia	3.93	-	-1.05	-0.14	9.07	0.95
Lao PDR	-0.84	0.06	-	-1.28	5.18	0.02
Myanmar	0.65	5.82	-0.88	-	-2.54	2.68
Thailand	2.70	1.68	2.84	1.52	-	1.23
ROW	2.75	2.25	0.65	2.12	1.74	1.34
Scenario 2	Vietnam	Cambodia	Laos PDR	Myanmar	Thailand	ROW
Vietnam	-	6.37	0.36	-3.17	1.13	2.76
Cambodia	5.90	-	-1.57	-0.20	13.60	1.42
Lao PDR	-1.26	0.13	-	-1.92	7.77	0.03
Myanmar	0.98	8.84	-0.88	-	-3.82	4.02
Thailand	4.05	2.53	4.26	2.28	-	1.85
ROW	4.12	3.37	0.98	3.18	2.60	2.00
Scenario 3	Vietnam	Cambodia	Laos PDR	Myanmar	Thailand	ROW
Vietnam	-	10.62	0.60	-5.28	1.88	4.60
Cambodia	9.84	-	-2.63	-0.34	22.67	2.37
Lao PDR	-2.11	0.19	-	-3.21	12.94	0.55
Myanmar	1.63	14.56	-1.75	-	-6.36	6.70
Thailand	6.75	4.21	7.10	3.80	-	3.08
ROW	6.87	5.62	1.64	5.30	4.34	3.34

First, Table 7 shows that in all three scenarios, the trades from one country to neighbor countries increase by a high percentage, for example, the trade from

Vietnam to Cambodia; Cambodia to Thailand and Lao PDR to Thailand. This reflects the improvement of cross-border transportation caused by the time reduction inland transportation service.

Second, it shows that in Cambodia and Thailand, more consumption goods are imported from GMS, mainly because the transportation projects improve accessibility from the international market to this both countries. The goods from Cambodia are exported not out of the GMS but to the GMS members, probably because the sharp economic growth in neighbor countries including Thailand and Vietnam attracts the goods exported from Cambodia.

Finally, Table 7 shows that the trades between the GMS and the ROW increase. However, the more consumption goods are imported from ROW to GMS than exported to ROW.

5 Conclusions

The paper provides background on current status and trends of transportation infrastructure investment in Vietnam as well as the transport policy in the future. The paper summarizes the results of the effectiveness from transport investment projects over the country in recent years. Also describes the current status of Vietnam's transport policies implementation as well as methodologies for measuring the effects of the transportation infrastructure investments on the country's economy. A multi-regional CGE model for Vietnam's economy deals with the effects of infrastructure transportation investment in commodities transportation cost of interregional trade and households' welfare effects due to the time and cost saving in passenger transport.

The simulation of the multi-regional CGE model analysed the effects of the international transportation projects on the GMS countries' economy. The results show that they will surely accelerate the development of Vietnam and the other GMS members by enhancing economic integration among them. The results indicate that the economic growth in Vietnam is particularly significant. More imports become available in Vietnam because the market price of imports decreases, both from other GMS members and from the rest of the world. This enhances production and consumption in the country. Further study which extended from this paper will be introduced a comprehensive multi-regional CGE model with explicitly consideration to transport sector and Input-Output Table data of GMS region countries.

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