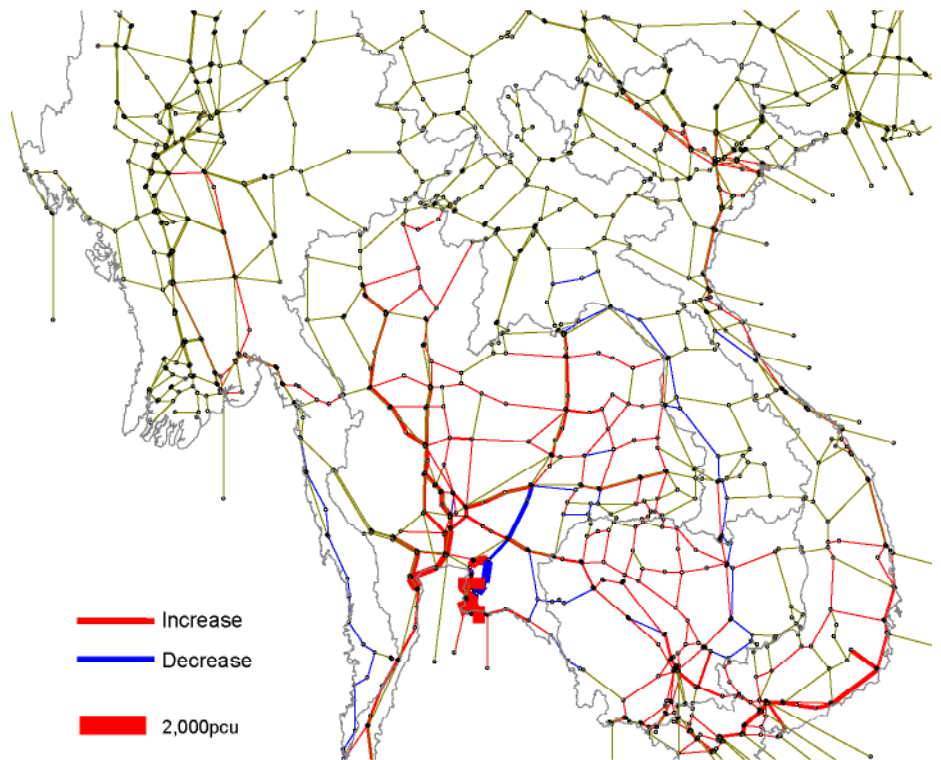


【Case-2】

This case assumed that CBTI development occurred between Bangkok and Ho Chi Minh through Cambodia. Traffic volume increased in Cambodia and in eastern Thailand, in addition to Bangkok region.

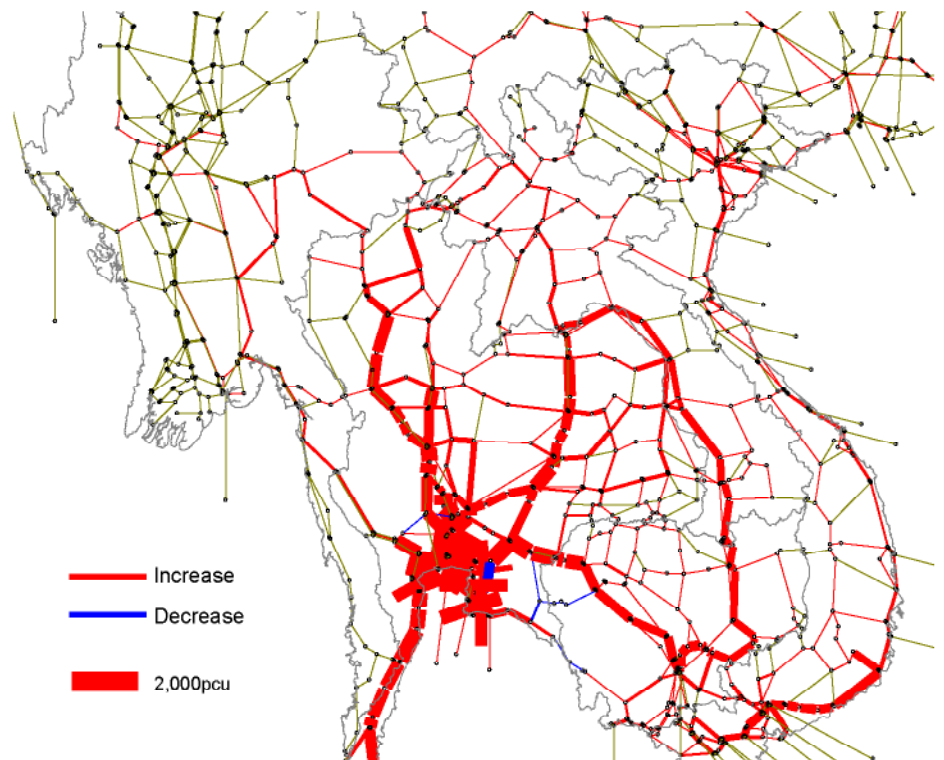
Figure 6.6.7 (2) Case-2: Changes in Traffic Flow (Induced Traffic)



【Case-3】

Under this case, it was assumed that the CBTI on the east-west (Bangkok- Hanoi and Bangkok- HCMC) and the north-south corridors improved. Traffic volumes in the outskirts of Bangkok remarkably increased, while significant increases could be seen as well in the north-south route between Vientiane and Phnom Penh and in the east-west route between Bangkok and Phnom Penh.

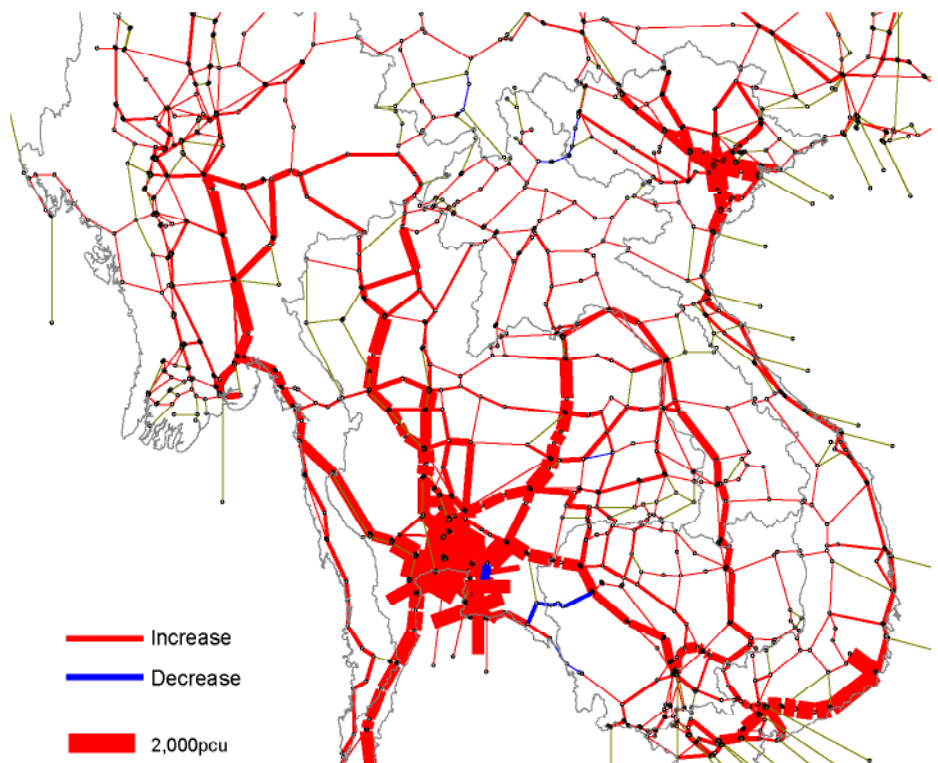
Figure 6.6.7 (3) Case-3: Changes in Traffic Flow (Induced Traffic)



[Case-4]

Under this case, border-crossing procedures at all cross-border points in the GMS were assumed to have been abolished and traffic could pass freely. As a result, traffic volumes increased in the outskirts of Bangkok, Hanoi, and Ho Chi Minh, as well as in the Vientiane-Phnom Penh, Bangkok-Phnom Penh, Bangkok-Yangon routes, among others.

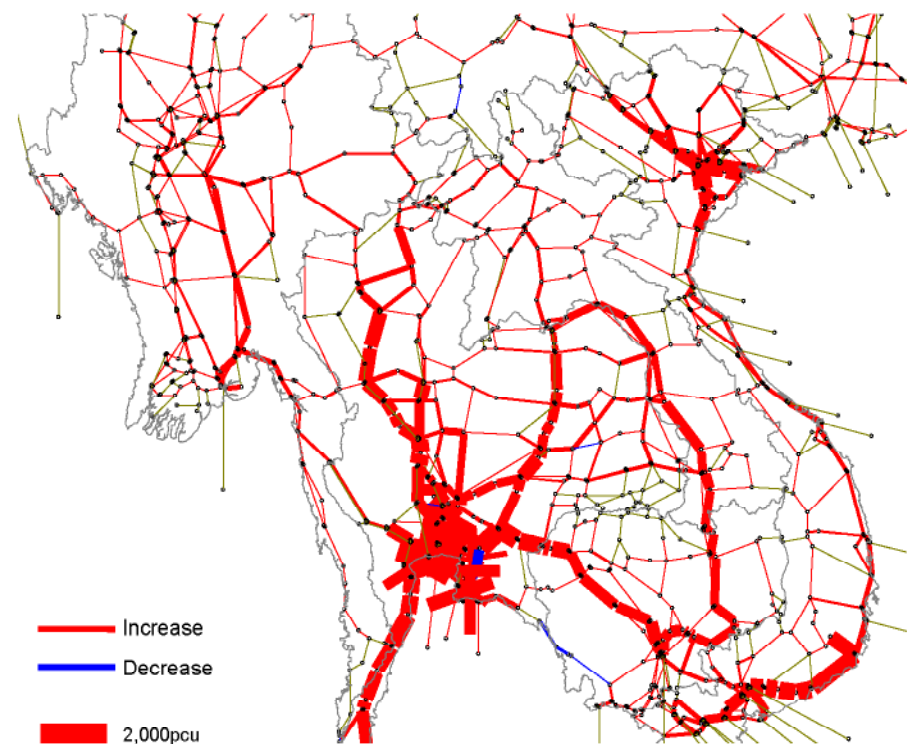
Figure 6.6.7 (4) Case-4: Changes in Traffic Flow (Induced Traffic)



[Case-5]

Under this case, it was assumed that CBTAs were implemented at 16 cross-border points, thereby reducing the institutional impedance to a mere 30 minutes. The pattern of changes in traffic flow would be similar to Case-4, although the increases would be moderate.

Figure 6.6.7 (5) Case-5: Changes in Traffic Flow (Induced Traffic)



2) **Increase in Traffic Demand and Regional Development Impact driven by Foreign Direct Investment (FDI) integrated with CBTI/CBTA Development**

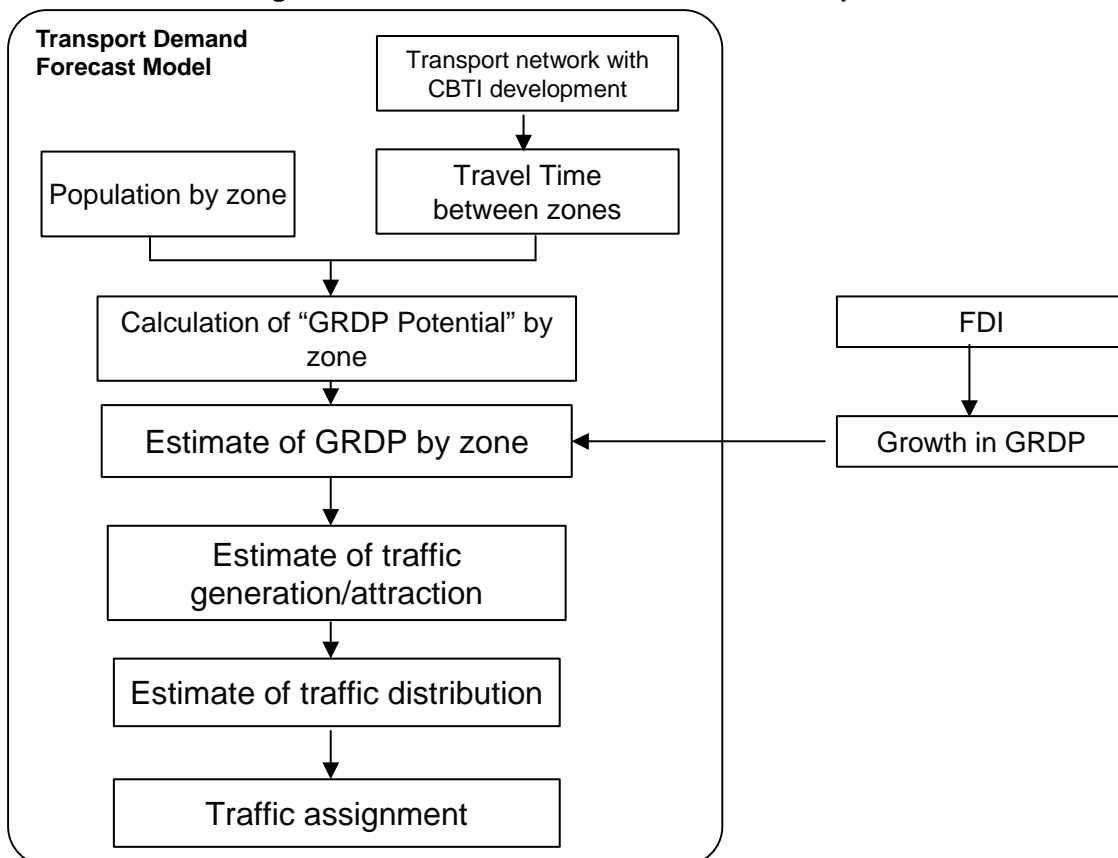
(1) **Estimate of FDI Impact and Scenario of Trial Calculation**

Estimation Process of FDI Impact

Trial calculation was conducted to estimate the impact of FDI in selected areas.

When FDI increases, the GRDP grows through interindustrial relationships. This increased GRDP is the input to the process of transport demand estimation explained in the previous section. The data used here is identical to that of transport demand estimate, and the process is almost the same. The process is shown in Figure 6.6.8.

Figure 6.6.8 Estimation Process of FDI Impact



FDI Impact Estimates

(a) Effect Estimated by Industrial Input-Output Table

Since the industrial input-output (IO) tables of Cambodia and Lao PDR have not been worked out, that of Thailand made in 2000 was used instead. The target industry of FDI was selected from past trends.

The investment effect in Thailand in 2000 was estimated by industry using the industrial IO table (see Table 6.6.4). The figures in that table reflect the sum of the effects on all industries when one unit of investment is made on a selected industry. For instance, a million-dollar investment in crops created a GDP growth estimated at 1.726 million dollars (1.726-fold increase from a million dollar) in the whole region.

Table 6.6.4 Investment Effect by Industry

Industry	Investment Effect Rate
Crops	1.726
Livestock and poultry; fishery	1.463
Forestry and logging	1.827
Mining and quarrying	1.638
Food, beverage and tobacco	1.225
Textiles, garments & leather products	1.200
Wood & paper products; printing/publishing	1.196
Chemical products; petroleum	0.918
Nonmetallic mineral products	1.214
Metal products, machinery, equipment., spare parts	0.701
Other manufactured goods	1.017
Electricity and water supply	1.432
Construction	1.061
Transportation	1.072
Post and telecommunication	1.830
Wholesale and retail trade	1.895
Banking, insurance, business services	1.760
Real estate & residential ownership	1.947
Public administration	1.502
Personal, social & community services	1.553

Source: Estimate by AREES, *Industrial IO Table of Thailand, 2000*

(b) Investment Effect of Bio-Fuel Plant

In recent years bio-fuel plant projects have drawn attention in the Greater Mekong Subregion including Cambodia and Lao PDR. Its investment effect was estimated as shown in Table 6.6.5. The result shows that the US\$ 23.7 million investment brought about an economic effect of US\$ 71.6 million dollars, comprising processed fuel, fertilizer as by-product, decrease of oil import, and so on.

Table 6.6.5 Investment Effects of Bio-Fuel Plants

Investment amount (US\$ mil.)				Economic effect (US\$ mil.)			
Total	Factory	Agri'l Land	Others	Fuel	Forex Saving	By-product	Total
23.7	15	8.7	0	19.8	19.8	32	71.6

Source: Estimated by the Study Team based on interviews with experts and field surveys.

Investment Amount

It was assumed that a total of US\$24 million was invested in bio-fuel projects, as mentioned above. As for other selected industries, the investment amount was assumed to be half of the actual amount of FDIs in 2002, or some US\$ 118.6 million in Cambodia and US\$ 66.2 million in Lao PDR r (tables 6.6.6 and 6.6.7, respectively).

Table 6.6.6 Total Investment in Cambodia, 2002

Industry	Investment Amount (million US\$)
Primary Industry	40
Energy	4
Textile	17
Plastic	1
Apparel	14
Wood Processing	1
Other Secondary Industry	15
Infrastructure	18
Telecom	64
Other Services	16
Tourism	47
Total	237

Source: Economic Growth Strategy of
 Mekong Basin Countries

Table 6.6.7 Total Investment in Lao PDR, 2002

Industry	Investment Amount (million US\$)
Agriculture	6.40
Sewing	4.70
Craft	64.39
Wood Processing	5.47
Mining	0.75
Trading	10.07
Hotel/Restaurant	2.05
Consulting	0.72
Service	11.13
Electric Power	1,295.00
Construction	13.70
IT	12.94
Total	1,427.32
Sub-Total (Excluding Electric Power)	132.32

Source: Economic Growth Strategy of
 Mekong Basin Countries

Scenarios of Estimate

The trial calculation of the effect of investments was carried out for five FDI scenarios combined with the 5 CBTI/CBTA development cases examined earlier (see Table 6.6.8). It was assumed that the impact of FDI would be limited to within the province (zone).

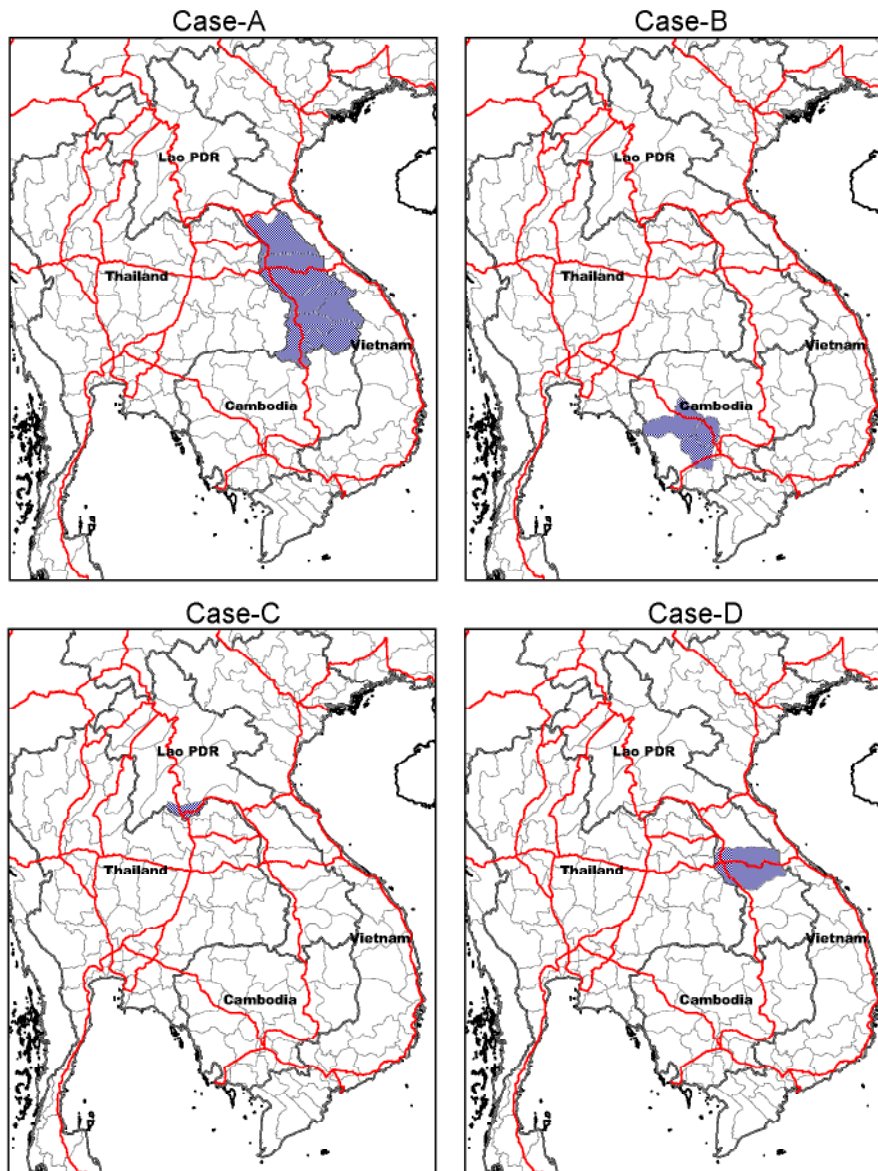
Table 6.6.8 Investment Scenarios and CBTA/CBTI Development Cases

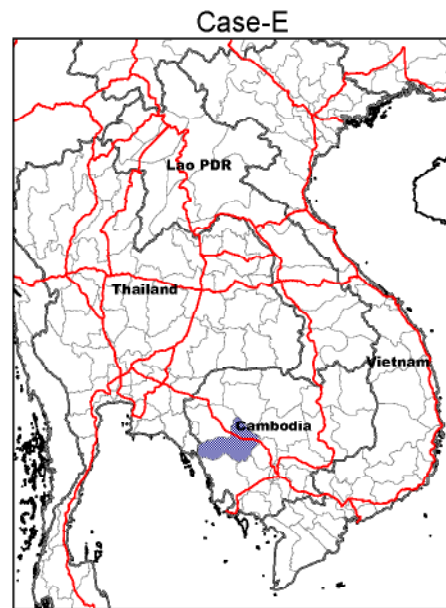
Investment Scenario					CBTI/CBTA Development				
Country	Area	Industry	Investment (US\$ mil)	Effect of investment (US\$ mil)	Case-1 (Bkk-Han)	Case-2 (Bkk-Han)	Case-3 (East-West South-North)	Case-4 CBP-free ¹⁾	Case-5 With CBTA ²⁾
Lao PDR	East-West Corridor	Mining	33.1	54.3	Case-1A	Case-2A	Case-3A	Case-4A	Case-5A
	Southern Area	Tourism	33.1	51.3					
Cambodia	South Corridor	Food processing	59.3	72.3	Case-1B	Case-2B	Case-3B	Case-4B	Case-5A
		Agri.	59.3	102.6					
Lao PDR	Vientiane Province	Bio-fuel	23.7	71.6	Case-1C	Case-2C	Case-3C	Case-4C	Case-5C
Lao PDR	Savannakhet Province	Bio-fuel	23.7	71.6	Case-1D	Case-2D	Case-3D	Case-4D	Case-5D
Cambodia	South Corridor	Bio-fuel	23.7	71.6	Case-1E	Case-2E	Case-3E	Case-4E	Case-5E

1) Cross-border traffic is unencumbered with the abolition of border-crossing procedures.

2) 16 cross-border points designated in CBTA are passable within 30 minutes.

Figure 6.6.9 Selected Investment Area by Case





(2) Results of Trial Calculation

Changes in GRDP

GDP growth rates for each investment scenario (case) as compared with the present situation are summarized in Table 6.6.9. It was assumed that the impact of investment is limited only to within the province. Therefore additional GDP growth is seen only in the areas where the investments were made when compared to the cases with only CBTI/CBTA improvement, as presented in the previous section.

The results show that when the FDI is integrated with CBTI development in one area, that area's GDP growth becomes significant. For example, Case-1A (east-west corridor improvement plus investments in Lao PDR) and Case-3A (east-west and north-south corridor improvement plus investments in Lao PDR) resulted in a large GDP growth for Lao PDR.

When Case-3A up to Case-3E were compared with Case-3 (case wherein infrastructure development on the east-west and north-south corridors was assumed), the GDP further grew due to investments, as shown in Table 6.6.10. When the investment amount is larger or the investments are poured in higher GRDP areas, GRDP growth becomes higher.

GRDP growth by province is shown for Case-3A up to Case-3E, as shown in Figure 6.6.10. For these cases, investments in different areas were assumed in addition to CBTI/CBTA development assumed in Case-3. The growth occurred in invested provinces.

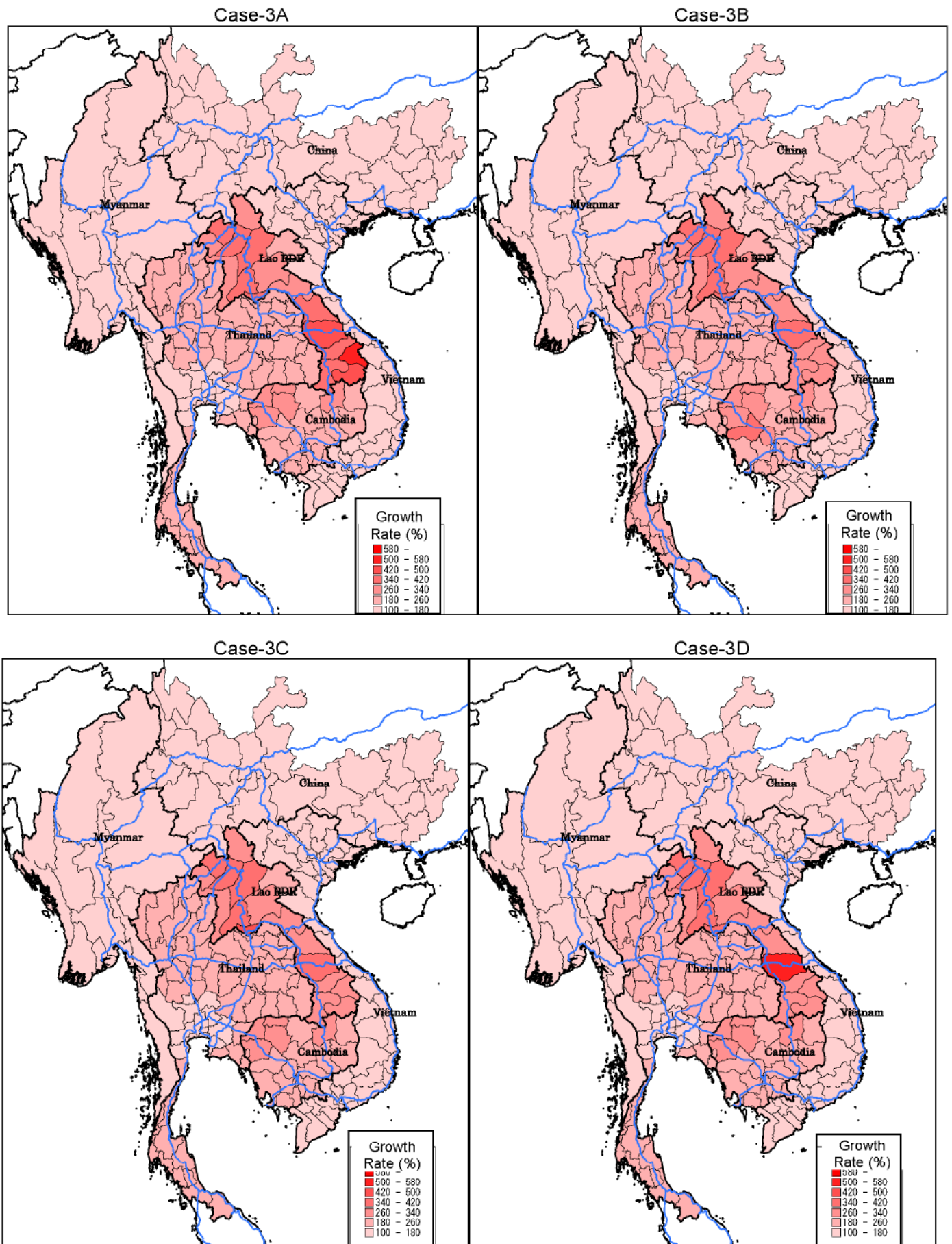
Table 6.6.9 Projected GDPs by Case and by Country (%)

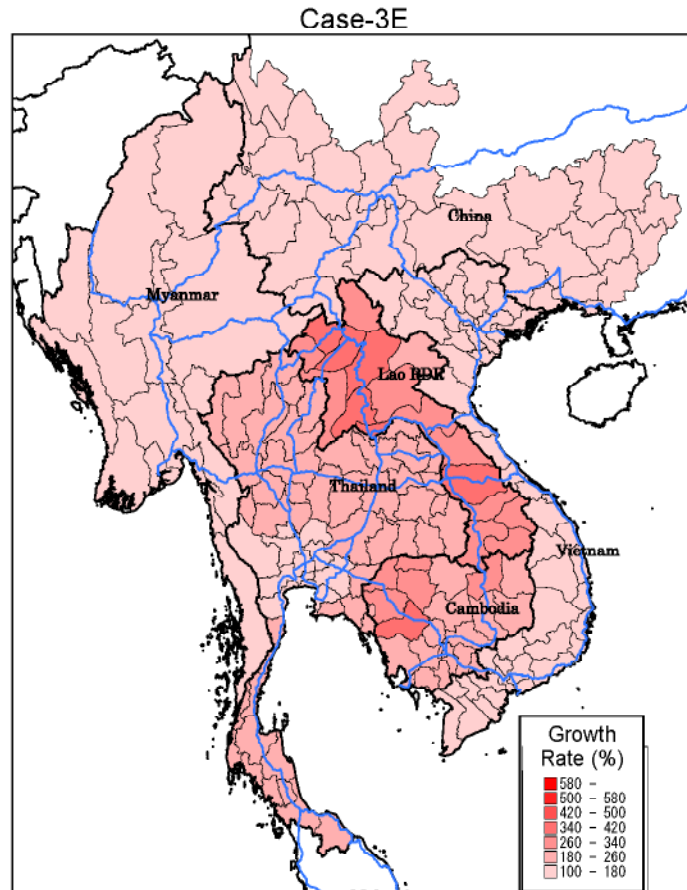
	Case-1A	Case-2A	Case-3A	Case-4A	Case-5A
Cambodia	102.4	155.7	226.5	249.9	237.1
Laos	169.6	107.9	356.4	394.3	356.8
Myanmar	102.8	102.8	104.5	211.0	191.5
Thailand	123.5	119.1	181.6	197.7	189.4
Vietnam	108.1	110.2	137.7	210.9	204.1
China	100.2	100.1	101.7	104.5	104.1
	Case-1B	Case-2B	Case-3B	Case-4B	Case-5B
Cambodia	106.0	161.3	234.6	258.6	245.4
Laos	155.8	100.6	334.3	366.8	331.4
Myanmar	102.8	102.8	104.5	211.0	191.5
Thailand	123.5	119.1	181.6	197.7	189.4
Vietnam	108.1	110.2	137.7	210.9	204.1
China	100.2	100.1	101.7	104.5	104.1
	Case-1C	Case-2C	Case-3C	Case-4C	Case-5C
Cambodia	102.4	155.7	226.5	249.9	237.1
Laos	162.7	105.6	352.4	385.9	348.3
Myanmar	102.8	102.8	104.5	211.0	191.5
Thailand	123.5	119.1	181.6	197.7	189.4
Vietnam	108.1	110.2	137.7	210.9	204.1
China	100.2	100.1	101.7	104.5	104.1
	Case-1D	Case-2D	Case-3D	Case-4D	Case-5D
Cambodia	102.4	155.7	226.5	249.9	237.1
Laos	168.2	105.5	352.9	388.4	351.3
Myanmar	102.8	102.8	104.5	211.0	191.5
Thailand	123.5	119.1	181.6	197.7	189.4
Vietnam	108.1	110.2	137.7	210.9	204.1
China	100.2	100.1	101.7	104.5	104.1
	Case-1E	Case-2E	Case-3E	Case-4E	Case-5E
Cambodia	103.7	157.9	229.8	253.4	240.8
Laos	155.8	100.6	334.3	366.8	331.4
Myanmar	102.8	102.8	104.5	211.0	191.5
Thailand	123.5	119.1	181.6	197.7	189.4
Vietnam	108.1	110.2	137.7	210.9	204.1
China	100.2	100.1	101.7	104.5	104.1

Table 6.6.10 Comparison of GDPs under Case-3 (CBTI Improvement Only)

Case	Country	Investment Area	Growth from Case-3 (%)
Case-3A	Lao PDR	East-West Corridor	22.1
		Southern Area	
Case-3B	Cambodia	South Corridor	8.1
Case-3C	Lao PDR	Vientiane Province	18.1
Case-3D	Lao PDR	Savannakhet Province	18.6
Case-3E	Cambodia	South Corridor	3.3

Figure 6.6.10 Projected GRDPs under Case-3A





Changes in Trip Generation/Attraction

Along with investment, trip generation/attraction will increase as well. Growth rates of trip generation/attraction by country and by case are shown in Table 6.6.11.

If the investment is done along with CBTI improvements, the growth rate of trip generation/attraction is higher, similar to that of the GRDP,

In a comparison of Case-3A up to Case-3E with Case-3 (CBTI development of east-west and north-south corridors), trip generation/attraction further grew due to investments, as shown in Table 6.6.12. When investment amount is large or done in areas with larger trip generation/attraction, its growth tends to be higher like in the case of the GRDP.

Three bio-fuel projects with the same investment amount were compared under Case-C, Case-D, and Case-E. Results show relatively larger passenger traffic, when investment is made in Vientiane, and relatively large freight traffic, when investment is made in the strategic border crossing point of Savannakhet.

Table 6.6.11 Changes in Trip Generation/Attraction by Country and by Case

	Passenger Traffic (%)					Freight Traffic (%)				
	Case-1A	Case-2A	Case-3A	Case-4A	Case-5A	Case-1A	Case-2A	Case-3A	Case-4A	Case-5A
Cambodia	102.0	160.9	238.0	266.0	249.7	101.5	139.9	185.6	198.3	192.1
Laos	197.9	117.4	412.6	473.0	425.6	158.9	106.6	294.9	328.2	297.6
Myanmar	102.7	102.7	104.2	209.0	190.3	102.8	102.8	104.5	211.5	191.8
Thailand	113.3	110.7	146.1	155.4	150.5	112.7	110.9	144.6	153.1	148.7
Vietnam	104.5	106.2	122.4	164.4	160.1	104.6	105.4	120.8	176.1	170.0
China	100.1	100.1	100.9	102.2	102.0	100.2	100.1	101.5	104.3	103.8
	Case-1B	Case-2B	Case-3B	Case-4B	Case-5B	Case-1B	Case-2B	Case-3B	Case-4B	Case-5B
Cambodia	104.3	164.4	243.0	271.4	254.9	103.2	142.5	189.4	202.4	196.0
Laos	168.4	100.6	365.1	414.7	370.4	146.9	100.5	275.9	304.9	276.1
Myanmar	102.7	102.7	104.2	209.0	190.3	102.8	102.8	104.5	211.5	191.8
Thailand	113.3	110.7	146.1	155.4	150.5	112.7	110.9	144.6	153.1	148.7
Vietnam	104.5	106.2	122.4	164.4	160.1	104.6	105.4	120.8	176.1	170.0
China	100.1	100.1	100.9	102.2	102.0	100.2	100.1	101.5	104.3	103.8
	Case-1C	Case-2C	Case-3C	Case-4C	Case-5C	Case-1C	Case-2C	Case-3C	Case-4C	Case-5C
Cambodia	102.0	160.9	238.0	266.0	249.7	101.5	139.9	185.6	198.3	192.1
Laos	174.3	104.8	380.6	431.0	384.9	152.0	104.1	289.5	319.1	288.7
Myanmar	102.7	102.7	104.2	209.0	190.3	102.8	102.8	104.5	211.5	191.8
Thailand	113.3	110.7	146.1	155.4	150.5	112.7	110.9	144.6	153.1	148.7
Vietnam	104.5	106.2	122.4	164.4	160.1	104.6	105.4	120.8	176.1	170.0
China	100.1	100.1	100.9	102.2	102.0	100.2	100.1	101.5	104.3	103.8
	Case-1D	Case-2D	Case-3D	Case-4D	Case-5D	Case-1D	Case-2D	Case-3D	Case-4D	Case-5D
Cambodia	102.0	160.9	238.0	266.0	249.7	101.5	139.9	185.6	198.3	192.1
Laos	177.0	104.0	377.9	429.5	384.1	162.0	106.4	298.6	331.1	300.3
Myanmar	102.7	102.7	104.2	209.0	190.3	102.8	102.8	104.5	211.5	191.8
Thailand	113.3	110.7	146.1	155.4	150.5	112.7	110.9	144.6	153.1	148.7
Vietnam	104.5	106.2	122.4	164.4	160.1	104.6	105.4	120.8	176.1	170.0
China	100.1	100.1	100.9	102.2	102.0	100.2	100.1	101.5	104.3	103.8
	Case-1E	Case-2E	Case-3E	Case-4E	Case-5E	Case-1E	Case-2E	Case-3E	Case-4E	Case-5E
Cambodia	102.8	162.0	239.7	267.9	251.7	102.0	140.7	186.8	199.6	193.4
Laos	168.4	100.6	365.1	414.7	370.4	146.9	100.5	275.9	304.9	276.1
Myanmar	102.7	102.7	104.2	209.0	190.3	102.8	102.8	104.5	211.5	191.8
Thailand	113.3	110.7	146.1	155.4	150.5	112.7	110.9	144.6	153.1	148.7
Vietnam	104.5	106.2	122.4	164.4	160.1	104.6	105.4	120.8	176.1	170.0
China	100.1	100.1	100.9	102.2	102.0	100.2	100.1	101.5	104.3	103.8

Table 6.6.12 Comparison of Trip Generation/Attraction under Case-3 (CBTI Improvement Only)

Case	Country	Region	Passenger (%)	Freight (%)
Case-3A	Lao PDR	East-West Corridor	47.5	19.0
		Southern Area		
Case-3B	Cambodia	South Corridor	5.0	3.8
Case-3C	Lao PDR	Vientiane Prov.	15.5	13.6
Case-3D	Lao PDR	Savannakhet Prov.	12.8	22.7
Case-3E	Cambodia	South Corridor	1.7	1.2

The growth in trip generation/attraction by province is shown for Case-3A up to Case-3E in Figure 6.6.11. These cases assumed that investment was made in different areas, in addition to CBTI/CBTA improvement on the east-west and north-south corridor. The growth is high naturally in provinces that received investments. The growth of freight traffic is comparatively lower than that of passenger traffic.