

Thailand / Laos

Ex-Post Evaluation of Japanese ODA Loan Project
“Second Mekong International Bridge Construction Project”

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0. Summary

The relevance of the project is high due to the high consistency between the project objective and the GMS¹ regional development policy as well as the national development policy and needs of Thailand and Lao P.D.R. While the project outputs materialized as planned, and the project cost was within the plan, the efficiency of the project is fair because the project period exceeded. Although substantial increase of traffic volume was observed for cars, sluggish growth has seen for trucks in comparison with the expected traffic. On the other hand, the effectiveness of the project is fair since the project is deemed as to have yielded a number of positive effectiveness and impacts including increase of number of tourists and activation of tourism demand, facilitation of agricultural production, increase of industrial production, facilitation of river crossing of local residents, contribution to the regional economic development, etc. The sustainability of the project is high as no particular issue has observed for the operation and maintenance system, technology, and finance, and the state of operation and maintenance is maintained in good condition. In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Location



Second Mekong International Bridge (taken from Lao side)

¹ Greater Mekong Subregion

1.1 Background

The Mekong basin includes five countries and a region: Thailand, Lao P.D.R., Cambodia, Myanmar, Vietnam and Yunnan Province in China. Development of the Mekong basin has been actively promoted since the first half of the 1990s after the restoration of peace in Cambodia and in Indochina Peninsula, and with the transition to a market economy among socialist states in the post-Cold war era. Multilateral frameworks that have continued to actively promote the development include the GMS led by Asian Development Bank (ADB). GMS recognizes ten road development projects in transportation sector, and among them high priority was placed on the development of three routes: 1) the Thailand-Lao P.D.R.-Vietnam East-West Economic Corridor (EWEC), 2) the Phnom Penh-Ho Chi Minh-Vung Tau road, and 3) Kunming-Chiang Rai road. As part of 1) the EWEC, this project was to develop an international bridge over the Mekong River that serves as the border between Thailand and Laos in order to connect Northeastern Thailand and Central Vietnam via National Road No.9 in Lao P.D.R. The construction of the bridge was expected to activate inter-regional distribution in Northeastern Thailand, Central Laos and Central Vietnam, and to promote regional economic development of each country. Given that Laos and Northeastern Thailand are a landlocked country and region respectively, trade facilitation was expected to be realized utilizing the Central Vietnam's port facilities located at the east gateway of the EWEC.

1.2 Project Outline

The objective of this project is to connect the EWEC that runs through Vietnam, Laos, Thailand, and Myanmar by constructing a two-lane bridge with an overall length² of 2,050 meters over the Mekong River at the border of Laos and Thailand,³ thereby contributing to the promotion of bilateral trade between Laos and Thailand, as well as encouraging economic development along the area of the EWEC.

Loan Approved Amount/ Disbursed Amount	Thailand: 4,079 million yen, Laos: 4,011 million yen / Thailand: 2,736 million yen, Laos: 3,977 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	For both countries: September, 2001 / December, 2001
Terms and Conditions	For both countries:

² Total length of the main bridge (1,600m) and the approach bridges (Thai side: 250m and Lao side: 200m)

³ The official opening of the Second Mekong International Bridge was on December 20, 2006, and commenced its general use on January 9, 2007.

	<p>Interest Rate: 1.0%, Repayment Period: 30 years (Grace Period: 10 years)</p> <p>Conditions for Procurement: General untied</p> <p>Consultant</p> <p>Interest Rate: 0.75%, Repayment Period: 40 years (Grace Period: 10 years)</p> <p>Conditions for Procurement: General untied</p>
Borrower / Executing Agencies	<p>The Kingdom of Thailand / Ministry of Transport, Department of Highways</p> <p>The Lao People's Democratic Republic / Ministry of Public Works and Transport</p>
Final Disbursement Date	For both countries: April, 2009
Main Contractor (Over 1 billion yen)	<p>Thailand: Sumitomo Mitsui Construction Co., Ltd.(Japan) • Krung Thon Engineers Co., Ltd.(Thailand) • Vichitbhan Construction Co., Ltd.(Thailand) • Siam Syntech Construction Public Co., Ltd.(Thailand) (JV)</p> <p>Laos: Sumitomo Mitsui Construction Co., Ltd.(Japan) • Krung Thon Engineers Co., Ltd.(Thailand) • Vichitbhan Construction Co., Ltd.(Thailand) • Siam Syntech Construction Public Co., Ltd.(Thailand) (JV), Shimizu Corporation(Japan) • Italian-Thai Development Public Company Ltd.(Thailand) (JV)</p>
Main Consultant (Over 100 million yen)	<p>Thailand: Nippon Koei Co., Ltd. (Japan) • Oriental Consultants Co., Ltd. (Japan) • Communication Design and Research Institute(Laos) • Asian Engineering Consultants Co., Ltd.(Thailand) (JV)</p> <p>Laos: Nippon Koei Co., Ltd. (Japan) • Oriental Consultants Co., Ltd. (Japan) • Communication Design and Research Institute(Laos) • Asian Engineering Consultants Co., Ltd.(Thailand) (JV)</p>
Feasibility Studies, etc.	<ul style="list-style-type: none"> • Feasibility Study (ADB) in 1992 • Feasibility Study including East-West Economic Corridor (France) in Dec. 1996 • Special Assistance for Project Formation Study (OECD) in March 1998 • Special Assistance for Project Implementation Study (JBIC) in March 2004

Related Projects (if any)	<p>ODA Loan (JICA)</p> <ul style="list-style-type: none"> • Vietnam: Da Nang Port Improvement Project • Vietnam: Hai Van Tunnel Construction Project (I)~(III) • Vietnam: National Highway No.1 Bridge Rehabilitation Project (I)(II) <p>Grant Aid (JICA)</p> <ul style="list-style-type: none"> • The Project for Improvement of the National Road Route 9 <p>Technical Cooperation (JICA)</p> <ul style="list-style-type: none"> • Detailed Design Study <p>Assistance from the Asian Development Bank</p> <ul style="list-style-type: none"> • National Road Improvement Project (NR.9) in Vietnam • National Road Improvement Project (NR.9) in Laos <p>Assistance from the World Bank</p> <ul style="list-style-type: none"> • Highway Rehabilitation Project in Vietnam
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2. Outline of the Evaluation Study

2.1 External Evaluator

Masumi Shimamura, Mitsubishi UFJ Research and Consulting Co., Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: August, 2011 – June, 2012

Duration of the Field Study: October 16 – November 15, 2011, February 19 – March 3, 2012

2.3 Constraints during the Evaluation Study

None.

3. Results of the Evaluation (Overall Rating: B)⁴

3.1 Relevance (Rating: ③)⁵

3.1.1 Relevance with the Development Plan

3.1.1.1 Consistency with GMS Regional Development Policy

At the time of appraisal in 1998, development of the Mekong basin has been actively promoted, with a creation of multilateral frameworks led by ADB to facilitate the economic cooperation to the GMS. The ultimate goal was to promote sustainable economic growth and to improve the living standards of people in the region. The GMS

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ② Fair, ① Low

focuses on socio-economic regional cooperation in seven areas: transportation, energy, communication, environment, human development, trade and investment, and tourism. Among these, transportation was given the highest priority with road sector being the most important. Within the high priority road projects, this project which takes up the focal point of the development of the Thailand-Laos -Vietnam EWEC was expected to contribute towards higher efficiency in inter-regional logistics, to regional economic development and to reduce the living standard gap within in the region.

At the time of ex-post evaluation, development of the EWEC continues to be regarded as a high priority in the GMS regional development policy.⁶ The project is to connect the missing link (physical bottleneck) of the Corridor, and to contribute to the development of efficient logistics network in the GMS, which is consistent with the direction of the GMS regional cooperation. From the institutional perspective, the Cross-Border Transport Agreement (CBTA) regarding transport, custom, immigration and quarantine within GMS region has been prepared. Initially, the CBTA was signed as a tripartite agreement among Laos, Thailand and Vietnam in 1999, and later in 2001, 2002 and 2003, Cambodia, China, and Myanmar jointed respectively. In March, 2007, all Annexes have been signed by all six GMS countries.⁷

⁶ Under the GMS Economic Cooperation Program, the development of the nine economic corridors: the North South Corridor, the Northern Corridor, the Eastern Corridor, the East West Corridor, the Southern Corridor, the Southern Coastal Corridor, the Central Corridor, the Northeastern Corridor, and the Northwestern Corridor have been promoted, and in particular the priority for developing and enhancing the East West Corridor is regarded very high.

⁷ Although all the Annexes have been signed by all six GMS countries, ratification within each country is yet to be completed.



Source: ADB GMS Transport Sector Strategy, 2007

Figure 1: Nine Economic Corridors in GMS

3.1.1.2 Consistency with National Development Policy in Thailand

At the time of appraisal, the Thai government set forth its strategy to facilitate regional economic development and expansion of economic exchanges with neighboring countries through development and connection of national roads linking regions and cities. Under the 7th National Economic and Social Development Plan (1992-1996), the improvement of arterial highway network connecting North-South of the country via Capital Region was implemented to resolve shortage of road capacity. The improvement of the North-South and the East-West arterial highway network continued to take place in the subsequent Regional Road Improvement Project (II), taking into consideration of connectivity to the EWEC, under the following 8th National Economic and Social

Development Plan (1997-2001).

At the time of ex-post evaluation, the Thai government set forth in the 10th National Economic and Social Development Plan (2007-2010) the following missions: 1) human resource development, 2) regional and social based development, 3) enhancement of economic efficiency, 4) conservation of natural resources, and 5) development of national administration to achieve good governance. As one of the targets to realize mission 3), “improvement of the efficiency of logistics” was set out as one of objectives. In addition, the Thai government considers the direction of the country’s sustainable development taking into consideration the expansion of globalization, as becoming “entrance to GMS” and “Indochina hub for business and transportation”. The Second Mekong International Bridge (SMIB) project is fully in line with such direction of the country.

3.1.1.3 Consistency with National Development Policy in Laos

At the time of appraisal in 1998, the Laos government was aiming to get out of least developing country status by 2020. In order to achieve this goal, the highest priority was placed on the following eight areas.⁸ 1) expansion of food production, 2) production of commercial crops, 3) reconsideration of burn agriculture, 4) local development, 5) social infrastructure development, 6) facilitation of foreign economic relations and cooperation, 7) human resource development, and 8) service sector development. This project contributed to the development of the foreign economic relations of the country, and was clearly identified as a national flagship project in the Socio-Economic Development Plan (1996-2000) to realize these objectives.

At the time of ex-post evaluation, the Laos government also indicated in its eighth party meeting in 2006 its national goal to get out of least developing country status by 2020. As part of this, the government has been promoting economic development and foreign investment. In this regard, securing access to deep-sea ports (removing obstacles as a landlocked country) through expanding economic relationships with neighboring countries such as Thailand, Vietnam and China has become the country’s top priority – this is stipulated in the Seventh Socio-Economic Development Plan (2011-2015). The project continues to be regarded as a national flagship project to realize the national goal.

3.1.2 Relevance with the Development Needs

3.1.2.1 Consistency with Development Needs in Thailand

At the time of appraisal in 1998, the road sector was regarded as being highly important among Thailand’s five major transportation modes (road, railway, marine,

⁸ Laos government initiated economic reform in 1986 called “New Economic Mechanism” and has been promoting market economy and open economy since then.

inland waterway, and aviation), as it took up 89% (in 1998) of the country's freight transportation. At the time of appraisal, the Department of Highways (DOH) was planning to connect the Eastern Seaboard Area, with a view to realizing the SMIB project.

At the time of ex-post evaluation, the road sector continues to be the core transportation infrastructure within the country. The Master Plan on Inter-City Motorway Construction covering 1997-2016 emphasizes the substantial importance of road sector development. More than half (770km) of the entire distance of the EWEC (1,450km) from Myanmar (Mawlamying) to Vietnam (Da Nang) passes through Thailand, and the Thai government has been developing a four-lane road in order to facilitate the efficiency of logistics of the EWEC. This project contributes to the economic development of Thailand's Northeast region, one of poorest regions, and the government regards the SMIB as the important gateway for trade between Vietnam and China.

3.1.2.2 Consistency with Development Needs in Laos

At the time of appraisal in 1998, the Laos government placed high priority for investment in economic development areas, including transportation and agriculture sectors in the National Development Plan extending until 2003. Especially, investment to transportation sector accounted for about 35% of the total investment. The government placed road sector development as the highest importance in order to rectify disparities among regions, facilitate market economy, and promote logistics among Indochina regions from the perspective of GMS development after becoming ASEAN member. In this regard, the country received assistance from bilateral and multilateral organizations to develop and improve national roads that constitute arterial road network.

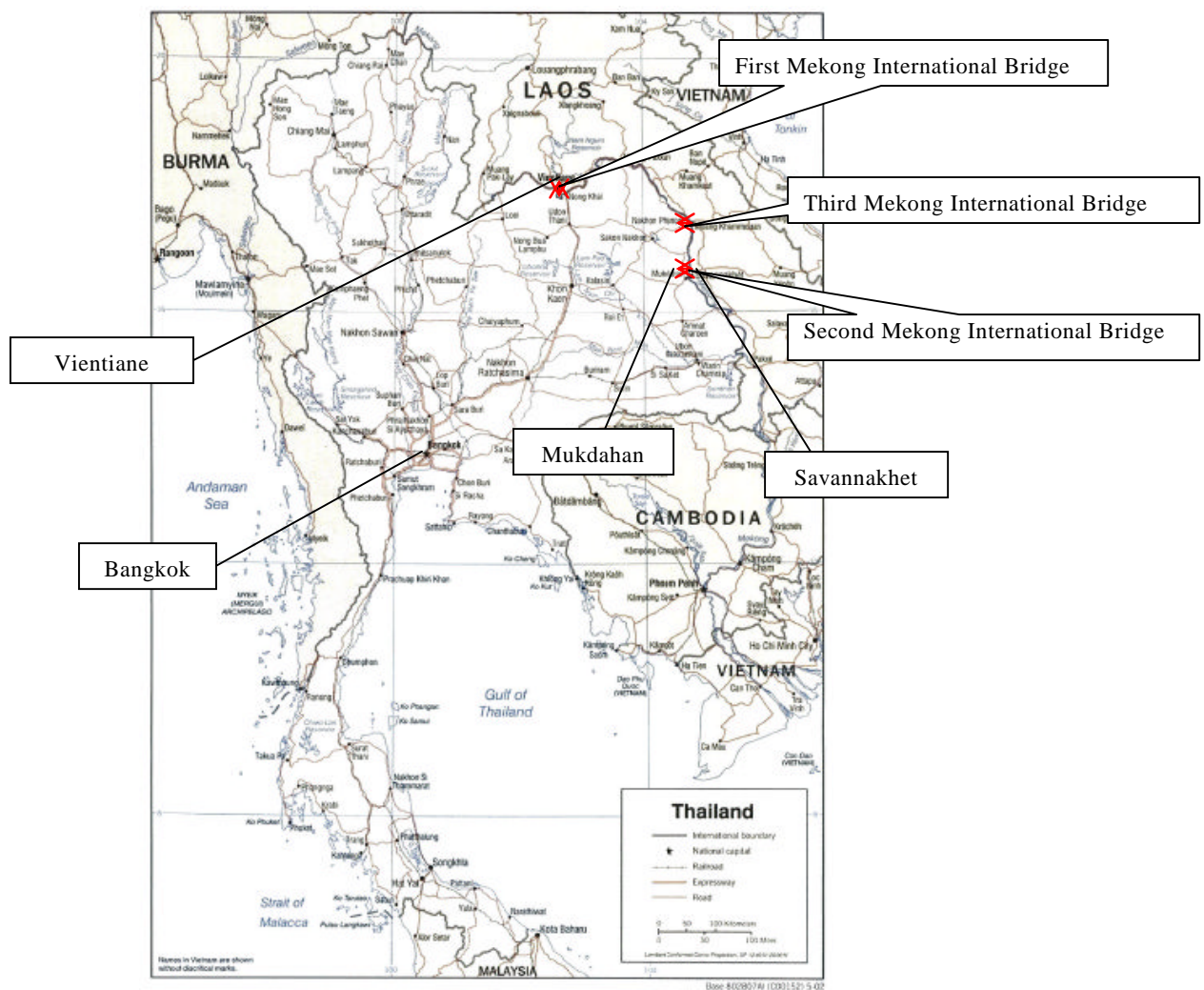
The direction of development is maintained at the time of ex-post evaluation. Laos is a landlocked country, places very importance to distribute goods and materials through road transportation, and road has become important means of transportation to secure access to sea ports. In particular, the National Road No.9,⁹ which constitutes a part of the EWEC, has been regarded as highly critical land transportation to strengthen economic relationships with Thailand and Vietnam, and has become important road for the economic development of Central Laos. The project is to connect a missing link in the EWEC/NR9, and is expected to be utilized to further promote trade and investment.

⁹ Development of National Road No.9 has been implemented through the assistance from Japan and Asian Development Bank. About two thirds of the sections of NR9 have been developed through Japan's grant aid. In addition, Hai Van Tunnel was completed in Vietnam in June 2005 through Japanese loan assistance. In this way, the development of the EWEC has been steadily promoted in each country.

3.1.3 Relevance with Japan's ODA Policy

At the time of appraisal in 1998, JICA had indicated a policy of proceeding economic cooperation in the East Asian Region to support ASEAN regional cooperation, the GMS Economic Cooperation Program, and has consistently expressed its support at international conferences, including ASEAN-Japan Summits. Especially in the implementation strategy of the overseas economic cooperation operation at the time, regional cooperation with regards to the development of the entire Mekong River basin was given greater importance, with the emphasis on the transportation and power sectors, as well as the agriculture sector as a measure for poverty reduction. With regards to the road sector in Thailand, JICA has implemented its strategy to support road improvements focusing on the EWEC and the North-South Corridor (which JICA has provided assistance to in the past) and their connecting roads. As regards the road sector in Laos, although no Japanese loan project has been provided in the past, JICA has indicated the transportation sector as one of the major sectors as a potential candidate for a Japanese yen loan project in its Country Assistance Strategy. Since the onset of the project, there has been no change in the assistance policies of the Government of Japan or JICA, which might affect the direction of the project. Thus, the consistency of the project with the Japanese assistance policies is still maintained.

This project has been highly relevant with the GMS Regional Development Policy, the country's development plans in both Thailand and Laos, the development needs in both Thailand and Laos, as well as Japan's ODA policy, therefore its relevance is high.



Source: University of Texas Austin Library, Map Collection
http://www.lib.utexas.edu/maps/middle_east_and_asia/thailand_pol_2002.jpg
 Figure 2: Map of Project Site

3.2 Effectiveness¹⁰ (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

As no operation and effectiveness indices were set at the time of appraisal, the estimation made in the Special Assistance for Project Implementation (SAPI) Study in 2004 was utilized as a reference.

3.2.1.1 Traffic Volume on the SMIB

Tables 1 and 2 below show the trend of the actual traffic volume of the SMIB (one-way traffic volume from Mukdahan, Thailand to Savannakhet, Laos, and one-way traffic volume from Savannakhet, Laos to Mukdahan, Thailand, respectively). Table 3 is the

¹⁰ Sub-rating for Effectiveness is to be put with consideration of Impact

both-way traffic volume in 2009, and Table 4 is the traffic estimation in 2009 under the SAPI study¹¹ as a reference.

Substantial increase of traffic volume was observed for cars and busses, however, sluggish growth has been recorded for trucks, which is dragging down the traffic volume of the whole SMIB. Concretely, the actual daily average traffic volume of trucks (both sides) in the third year after the opening of the bridge (in 2009) remains at 100. In fact, the initially assumed “24-hour operation of the SMIB” has not been realized with no good prospect of sufficient traffic volume.

Table 1: Traffic Volume from Thailand (Mukdahan) to Laos (Savannakhet)
(Upper figures: Vehicle/year, Lower figures: Vehicle/day)

FY in Thailand	Truck	Bus	Car	Others	Total
2007	12,517 53	8,205 35	19,061 81	5,374 23	45,157 193
2008	21,481 59	17,142 47	43,931 120	8,151 22	90,705 249
2009	27,502 75	32,015 88	64,031 175	8,674 24	132,209 362
2010	29,024 80	43,308 119	82,661 226	8,639 24	163,632 448
2011	29,274 80	54,871 150	97,331 267	7,785 21	189,207 518

Source: Mukdahan Regional Office, Thailand Department of Highways (DOH), Ministry of Transport

Note 1): The fiscal year (FY) in Thailand is from October of the previous year to September of the current year. FY2007 is from January 2007 when the bridge started its general operation until September of the same year. Vehicle per day was calculated given that there were 234days for FY2007.

Note 2): “Others” indicates vehicles not subject to paying toll fee. Breakdown of vehicle type is not available.

Note 3): There are years when sum of traffic volume of trucks, busses and cards do not coincide with the total number. (FY 2007, 2009 and 2011, respectively)

Note 4): The sum of lower figures for trucks, busses and cars do not necessarily coincide with the total number due to the rounding error.

Table 2: Traffic Volume from Laos (Savannakhet) to Thailand (Mukdahan)
(Upper figures: Vehicle/year, Lower figures: Vehicle/day)

Calendar Year	Truck	Bus	Car	Others	Total
2007	10,328 28	9,450 26	25,299 69	6,949 30	56,003 153
2008	10,805 30	10,091 28	40,195 110	8,920 24	70,011 192
2009	9,139 25	22,372 61	57,650 158	12,392 34	101,184 278
2010	7,393 20	22,773 62	63,539 174	13,532 37	107,241 294
2011	12,796 42	36,288 119	61,932 204	17,496 58	128,546 423

¹¹ Traffic estimation was conducted in the Special Assistance for Project Formation (SAPROF) Study in 1998, however, the estimation was pointed out to be excessive and data was reexamined in the SAPI Study to make downward adjustment.

Source: Bridge Management Committee (BMC), Savannakhet, Laos

Note 1): Year 2007 is from January 2007 when the bridge started its general operation until December of the same year. Vehicle per day was calculated given that there were 356 days for 2007.

Note 2): Year 2011 is from January 2011 until October of the same year. Vehicle per day was calculated given that there were 304 days for 2011.

Note 3): "Others" indicates vehicles not subject to paying toll fee. Breakdown of vehicle type is not available.

Note 4): There are years when sum of traffic volume of trucks, busses and cars do not coincide with the total number. (FY 2007, 2009, 201 and 2011, respectively)

Note 5): The sum of lower figures for trucks, busses and cars do not necessarily coincide with the total number due to the rounding error.

Table 3: Simple Addition of Traffic Volume for Both Sides in 2009

(Upper figures: Vehicle/year, Lower figures: Vehicle/day)

Truck	Bus	Car	Others	Total
36,641	54,387	121,681	21,066	233,393
100	149	333	58	639

Note 1): Although difference in calendar year (Laos) and FY (Thailand) exists, simple addition of traffic volume was made.

Note 2): "Others" indicates vehicles not subject to paying toll fee. Breakdown of vehicle type is not available.

Note 3): The sum of traffic volume of trucks, busses and cars do not coincide with the total number.

Table 4: Traffic Estimation in 2009 under the SAPI Study

(Traffic on both ways, Vehicle/day)

Truck	Bus	Car	Total
517	117	225	859

Note 1): It was assumed that the general opening of the bridge would take place in early 2007, and the ex-post evaluation to be conducted in 2009.

The main factors for the slower growth of traffic volume of trucks, and points of concern can be considered as follows.

- Issues related with physical infrastructure:

- 1) Deterioration of National Road No.9, the Laos section of the EWEC, has been increasing. As the road remains a two-lane road, it has become a traffic bottleneck for large size containers/trucks to pass through, which has been drawing up logistics costs. The improvement of NR 9 is planned to be implemented for some sections with critical damages through Japan's grant assistance soon.¹²
- 2) The road leading to Da Nang Port from the east gateway of the EWEC (between Quang Tri and Dong Ha) is two-lane and narrow. In addition, there are sections along National Road No.1 where private houses are located just on the side of the road, which poses traffic safety issues for large size containers/trucks. While travel convenience has drastically improved after the construction of the Hai Van Tunnel, there are still sections passing through mountainous areas, thus increasing travel time and cost. The Vietnamese government is planning to develop the North South Highway¹³ to cope with such issues.

¹² Exchange of Notes was concluded on August 2, 2011.

¹³ One of the highest priority sections of the Highway between Da Nang and Quang Ngai will be developed with Japanese yen loan support – loan agreement was signed on June, 2011.

- Issues related with institutional arrangements:

- 1) Issues related with the reciprocal exchange of traffic rights for commercial cross-border need to be improved. Bilateral agreements have been signed for registered vehicles for mutual entry of traffic between Thailand and Laos, and Laos and Vietnam, however, a bilateral agreement has yet to be signed between Thailand and Vietnam, and mutual entry has not been realized under the current situation. Containers need to either change the head of the vehicle or reload their cargo to another container, which has resulted in bottlenecks for cross-border transport.
- 2) Simplification of custom clearance procedures have not realized. The initially expected Single Stop Inspection (SSI) has not been realized at the Common Control Area (CCA),¹⁴ and vehicles passing through the bridge need to go through customs, quarantine and immigration procedures both at the exit point and entry point of each country.¹⁵
- 3) While custom procedures have improved at the Lao Bao border between Laos and Vietnam, customs declaration forms still differ between the two countries, thus resulting in the need to prepare two different forms. The fact that the forms cannot be filled in English has resulted in a bottleneck for custom clearance.

- Issues related with transportation cost:

While travel time between Bangkok and Hanoi takes about two weeks by maritime shipping, travel time is reduced to three to four days by land transportation via the SMIB. However, transportation costs by land is more than double¹⁶ compared to the costs of maritime shipping, therefore, sea transportation is still advantageous for bulk transport that does not require prompt distribution.

- Points of concern:

Possible diversion of traffic to the Third Mekong International Bridge (the Third Thai-Laos Friendship Bridge) connecting Nakhon Phanom in Thailand and Thakhek in Laos, which opened in November 2011, is pointed out. Since there is an alternative route to go to Vietnam utilizing the Third Mekong International Bridge and the National Road

¹⁴ CCA is a facility for both officers from Thailand and Laos to conduct operation at the same time on clearance of custom, quarantine and immigration. It will realize Single Stop Inspection (SSI) and expected to enhance efficiency of distribution through conducting inspection at the single check point (usually located at the entrance side of a country). In order to realize SSI, officers in both Thailand and Laos need to conduct inspection work for custom, quarantine and immigration jointly across borders. Revision of domestic law is necessary in Thailand in order for Thai officers to work across borders as well as to receive Lao officers in the country.

¹⁵ SSI has already been introduced at the Lao Bao border between Laos and Vietnam on the EWEC.

¹⁶ For a 40ft container, while it costs 4,200USD including customs duty by land transpiration, maritime shipping costs only 2,000USD. Source: JICA Study on Challenges of the GMS Countries utilizing Cross-Border Transport

(http://www.jica.go.jp/activities/issues/transport/pdf/cbti_03.pdf)

No.12 in Laos to travel from Thailand (Bangkok) to Hanoi (and further to China), it is necessary to take into consideration the effects of the new route when estimating future traffic of the SMIB.

Although the SAPI study has recognized the above institutional issues (issues related with the full implementation of CBTA), traffic estimation was made assuming major bottlenecks have been already resolved. Revisions of laws are necessary when gaps exist between CBTA and the domestic legal system, however, this will necessitate approval of the Parliament, which is beyond control of the government administration, thus causing difficulty to predict the prospect of approval. When taking into account the recent political turmoil in Thailand, the assumptions and conditions made in estimating traffic volume under the SAPI study can be perceived to be ambitious.



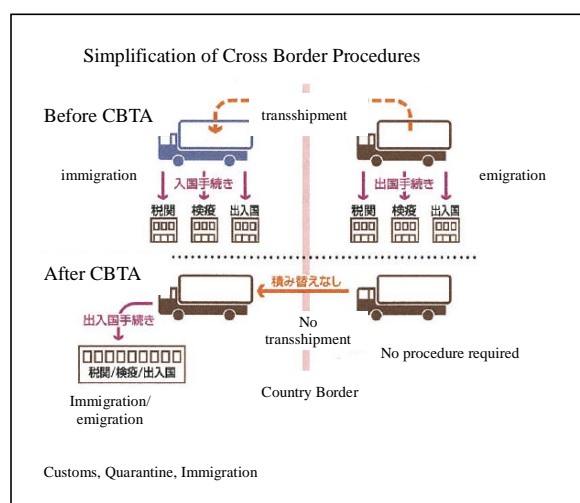
Figure 3: National Road No.9 (Laos)



Figure 4: Third Thai-Laos Friendship Bridge



Figure 5: Common Control Area in Laos



Source: Reference from JICA

Figure 6: Cross Border Procedures (comparison between the existing procedures with those after the introduction of CBTA)

3.2.1.2 Passenger Volume on the SMIB

The number of passengers crossing the border using the SMIB has sharply increased, and passenger volume in the fifth year after the opening of the bridge has increased almost threefold compared with that of the opening year. In addition, the passenger volume has considerably exceeded the target¹⁷ (2,501 average daily passengers in 2009, which is equivalent to 912,865 passengers for the year) in the SAPI study. This is consistent with the tourism demand data taken up later, and therefore, it can be confirmed that the SMIB has contributed greatly to the increase of passengers.

Table 5: Passenger Volume Using SMIB to Cross Border

Calendar Year	Arrival in Savannakhet	Departure from Savannakhet	Total Passengers
2007	325,296	293,851	619,147
2008	397,102	414,852	811,954
2009	827,274	766,479	1,593,753
2010	950,430	946,000	1,896,430
2011	939,654	971,647	1,911,301

Source: Bridge Management Committee (BMC), Savannakhet, Laos

Note 1): Actual figures from January until September for 2011.

Table 6: Passenger Volume between Mukdahan (Thailand) and Savannakhet (Laos)

FY in Thailand	Arrival in Mukdahan	Departure from Mukdahan	Total Passengers
2008	434,016	430,235	864,251
2009	652,388	610,196	1,262,584
2010	881,852	849,893	1,731,745
2011	1,130,964	1,099,094	2,230,058

Source: Mukdahan Immigration Office

Note 1): The FY in Thailand is from October of the previous year to September of the current year.

3.2.1.3 Operation Hours of the SMIB

The operation hours of the immigration office at the SMIB are from 6:00 to 22:00, and the expected 24-hour operation has not realized. According to the executing agencies both in Thailand and Laos, traffic demand especially during night-time is low, and traffic volume cannot be expected to realize 24-hour operation yet. In fact, there is no plan to carry out 24-hour operation in near future. This is consistent with the traffic analysis described above.

3.2.1.4 Operation of Ferry Boats After the Operation of the SMIB

Ferryboats for passengers and baggage are still under operation after the opening of the SMIB. Ferryboats connect the center of Mukdahan, Thailand and Savannakhet, Laos, with

¹⁷ The Study assumes the bridge opening to take place in early 2007 and ex-post evaluation to be conducted in 2009.

continued demand from local residents as convenient transportation.¹⁸ Scheduled ferryboats cross the river and come back seven times during their operating hours between 9:30 to 16:30. The cost of a one-way fare is 50Baht or 13,000Kip, which is equivalent to the toll fee for small cars/four-wheel drive cars to cross the SMIB.



Figure 7: Ferryboat

ตารางการเดินเรือโดยสารขาออก
ท่าเทียบเรือและท่าข้ามเทศบาลเมืองมุกดาหาร

วันปกติ (วันจันทร์-วันศุกร์)		วันเสาร์	
เที่ยวที่	เวลา	เที่ยวที่	เวลา
1	9.30 น.	1	9.30 น.
2	10.30 น.	2	10.30 น.
3	11.10 น.	3	11. 0 น.
4	13.30 น.	4	13.30 น.
5	14.30 น.	5	14.30 น.
6	15.30 น.	6	15.30 น.
7	16.30 น.		

วันอาทิตย์

เที่ยวที่	เวลา
1	9.30 น.
2	10.30 น.
3	11. 0 น.
4	13.30 น.
5	14.30 น.
6	15.30 น.

เรือสินค้า

เที่ยวที่	เวลา
1	9.30 น.
2	10.30 น.
3	11. 0 น.
4	13.30 น.
5	14.30 น.
6	15.30 น.

หมายเหตุ

1. ผู้โดยสารเต็มตามจำนวนที่นั่งจะพิจารณาปล่อยเรือก่อนเวลา
2. ถ้าผู้โดยสารไม่เต็มตามจำนวนที่นั่งเรือจะออกตามเวลา
3. ถ้าผู้โดยสารจำนวนมากมอบอำนาจให้ผู้จัดการท่าเทียบเรือเป็นผู้ตัดสินใจ

Figure 8: Time Table of Ferryboats

3.2.1.5 Average Required Time for Trucks, Busses and Cars to go through CIQ (Custom, Immigration and Quarantine) on the SMIB

According to the survey conducted by the Mukdahan Custom House,¹⁹ the average required times to pass through the CIQ at the border facilities are: 184 minutes for trucks and 8-11 minutes for busses (it takes about five minutes to cross the bridge). Target times under the SAPI study in 2009 were: 90 minutes for trucks and 15-25 minutes for cars in case SSI is realized, and 180 minutes for trucks and 20-30 minutes for cars in case SSI is not realized. Although SSI is not realized, cars and trucks have reduced the time by more than half. The time taken for trucks is about the same as the target time under the SAPI study.

3.2.1.6 Vehicle Charge Passing through the SMIB

The vehicle charge structure passing the SMIB (one way) is shown in the table below. The fee level for each vehicle classification is standardized based on the Memorandum of

¹⁸ Because the entrance of the SMIB is located 7.5km north of the center of Mukdahan and 5km north of the center of Savannakhet, respectively, cars are necessary in order to move from the bridge to the center of the cities. Demand for ferryboats still exist for residence without cars.

¹⁹ The survey was conducted between January 15-20 and 23-25 in 2012 during the opening hours of the bridge (6:00-22:00).

Understanding concluded between the two countries. Motorbikes and pedestrians are not allowed to cross the bridge.

Table 7: Vehicle Charge Passing through the SMIB (one way)

	Vehicle Classification	Vehicle Charge
1	Small car (max. 7 seats)	50Baht or 13,000Kip
2	Transport car with 4 wheel	50Baht or 13,000Kip
3	Small passenger bus (7 to 12 seats)	100Baht or 27,000Kip
4	Middle passenger bus (13 to 24 seats)	150Baht or 40,000Kip
5	Large passenger bus (over 24 seats)	200Baht or 54,000Kip
6	Transport truck with 6 wheels	250Baht or 67,000Kip
7	Transport truck with 10 wheels	350Baht or 94,000Kip
8	Transport truck with over 10 wheels	500Baht or 135,000Kip

Source: Bridge Management Committee (BMC), Savannakhet, Laos

The trend for toll revenues is shown in the table below. As total traffic volume includes vehicles not subject to paying a toll fee, the toll revenues and traffic volume data do not correspond one-on-one. However, steady growth of the overall toll revenues can be seen – the toll revenues have increased around three times after three years of opening of the bridge (actual figure in 2010) compared with that of the opening year.

Table 8: Vehicle Charge Revenue from Thailand (Mukdahan) to Laos (Savannakhet)

FY in Thailand	Vehicle Charge Revenue (Baht)	Total Traffic Volume
2007	7,374,350	45,157
2008	13,777,650	90,705
2009	19,507,100	132,209
2010	22,289,350	163,632
2011	25,467,300	189,207

Source: Mukdahan Regional Office, Thailand Department of Highways (DOH), Ministry of Transport

Note 1): The FY in Thailand is from October of the previous year to September of the current year.

Note 2): FY2007 is from January 2007 when the bridge started its general operation until September of the same year.

Table 9: Vehicle Charge Revenue from Laos (Savannakhet) to Thailand (Mukdahan)

Calendar Year	Vehicle Charge Revenue (Kip)	Total Traffic Volume
2007	1,827,469,000 Kip + 1,175,800 Baht	56,003
2008	2,094,075,000	70,011
2009	2,648,954,000	101,184
2010	2,565,236,000	107,241
2011	3,869,371,000	128,546

Source: Bridge Management Committee (BMC), Savannakhet, Laos

Note 1): Vehicle charge revenue in 2007 consists of both currencies in kip and baht.

3.2.2 Qualitative Effects

The interview survey was conducted to the concerned parties²⁰ in the vicinity of the project site regarding 1) facilitation of border trade, 2) activation of tourism demand, 3) changes in socio-economic situation, and 4) improvement of living environment and living standard. Their responses on direct and indirect effects of the SMIB are summarized below.

Table 10: Interview Results with Relevant Parties in the Project Area

(Interviewees are indicated in parentheses)

1) Facilitation of Border Trade
<ul style="list-style-type: none"> • Part of the refined sugar has been exported to Laos using the SMIB. Prior to the opening of the bridge, ferry was used for transportation and it took two days to deliver sugar to clients. However, after the project, it takes only a day to deliver, and a 20% cost reduction is realized. (Sugar factory in Mukdahan) • After the opening of the SMIB, the secondhand car market has expanded in Savannakhet. Prior to the bridge, ferry was used to import used cars via Mukdahan (seaway from Korea to Laem Chabang Port, Thailand, then land transport to Mukdahan and to Savannakhet using ferry), but transport capacity was limited (only four vehicles per ferry) and time management was difficult since ferry transportation was subject to weather conditions. The SMIB resolved these constraints and expansion of business activities is expected. (Used car dealership in Savannakhet) • Coffee products are sold in a newly established branch shop (tax-free shop) in the SMIB compartment. (Coffee manufacturing company in Pakse, Laos)
2) Activation of Tourism Demand
<ul style="list-style-type: none"> • After the opening of the SMIB, Mukdahan and Savannakhet have become famous for tourism. Package tours have been organized by travel agencies and a number of tourists are increasing after the bridge opening. (Tourist agent in Mukdahan) • Number of visitors to the Inghang Temple, a cultural property in Savannakhet, has increased annually since the opening of the SMIB. Therefore, the temple has started to collect admission fees, with the revenue being utilized for the maintenance of the temple. (Residents)
3) Changes in Socio-Economic Situation
<ul style="list-style-type: none"> • Land prices have increased as economic development takes place. Some land owners have sold their land to start up new businesses. (Construction company in Mukdahan) • After the opening of the SMIB, many people (mostly members of package tours) from Thailand come to Laos to visit the Casino (24-hour open Savan Vegas), which was opened in November 2008 in Savannakhet. Most of the visitors are from North East Thailand, and the casino workers are from Laos. Since the main purpose of these visitors is to gamble, most of them do not visit sightseeing places in Savannakhet and other places in Laos. (Tourist agent in Savannakhet) • Education opportunities have increased since the opening of the SMIB for residents in Savannakhet. Students in Savannakhet attend the Ubon Ratchathani University Second Campus and vocational schools in Mukdahan. Students in Laos return to their hometown during weekends and holidays. (Residents)

²⁰ The interviewees were private companies in Mukdahan, Thailand (sugar factory, tourist agent, building constructor), private company in Savannakhet, Laos (used car dealership), private companies in Pakse, Laos (coffee manufacturing company, plywood manufacturing company), tourist information center in Savannakhet, Mukdahan Chamber of Commerce, local NGO in Mukdahan, and local residents.

<ul style="list-style-type: none"> • Accessing hospitals has become much easier after the opening of the SMIB for residents in Savannakhet. In case of an emergency, an ambulance can cross the river to Mukdahan even after 22:00. Before the SMIB, patients had to wait until the next morning to cross the river by ferry. (Residents)
4) Improvement of Living Environment and Living Standard
<ul style="list-style-type: none"> • New business activities and job opportunities have been created for both Thai and Laotian people after the opening of the SMIB. (Mukdahan Chamber of Commerce) <ul style="list-style-type: none"> ➢ Two para rubber processing factories will be established in Mukdahan soon. The factory is going to be the biggest para rubber factory in North Eastern Thailand. ➢ A flouring mill is going to be established in Mukdahan. • Mukdahan has become a starting point for Laotian migrant workers. They are seeking job opportunities in Thailand starting from Mukdahan. (Local NGO in Mukdahan)

As shown in the interview results, the activation of trade, facilitation of tourism, stimulation of the economy, improvement of social benefits, increase in job opportunities have occurred since the opening of the SMIB. Both private companies in Mukdahan and Savannakhet that were interviewed expressed their satisfaction with the reduction of transport time and transport costs, and benefits from the increase of transport volumes of their manufactured goods and parts. Responses from tourist agents are consistent with the data in “3.3.1.4 Impact on Tourism Demand” below, and it can be said that the project has contributed to the facilitation of tourism. Regarding social dimension, local residents in Savannakhet, Laos, in particular, have more opportunities to receive social services in education and healthcare through easier access to Mukdahan, Thailand deployed with more fulfilling services, human resources and facilities. On the other hand, coupled with the issues in wage disparities, some interviewees indicated that migrant workers from Laos to Thailand are increasing. Although increase of employment opportunities is realized, demand for Laotian workers is increasing in heavy labor such as labor in para rubber and sugar plantations. In Mukdahan, with the prospect of becoming the center of the Indochina region within the education and health sectors, taking advantage of regional social and economic activation is indicated and the revision of city plans are underway. It can be said that the project is creating different effects within economic and social aspects of both countries with different national strengths.

3.3 Impact

3.3.1 Intended Impacts

3.3.1.1 Impact on Trade Facilitation between Thailand and Laos / Increase in Border Trade utilizing Seaport in Vietnam

According to the executing agency in Thailand, border trade between Mukdahan and Savannakhet before the opening of the SMIB (prior to 2005) was between 4,000 and 5,000 million baht each year, of which 80 to 90 percent accounted for exports from Thailand to Laos. After the operation of the bridge in FY2008, the trade amount has risen

sharply to 24,037 million baht, and the proportion of exports from Laos to Thailand has also been increasing. Although figures in FY2009 decreased due to the effects of the global economic crisis as a possible factor, trade value in 2010 and afterwards have steadily increased (Table 11).

Table 11: Trend of Cross-Border Trade (Thailand) (Unit: mil. Baht)

FY in Thailand	Export to Laos	Export from Laos	Total
Value of cross-border trade between Thailand and Laos at the Mukdahan Custom House			
2005	5,372.2	954.9	6,337.7
2006	6,418.6	6,531.4	12,950.0
2007	6,346.5	12,654.4	19,000.9
Trade value utilizing the SMIB			
2008	10,297.97	13,738.68	24,036.65
2009	7,874.86	9,424.02	17,298.88
2010	20,270.99	12,777.34	33,048.33
2011	38,996.36	23,695.83	62,692.19

Source: Bank of Thailand (2005-2007) and Mukdahan Custom House (2008-2011)

Note 1): The FY in Thailand is from October of the previous year to September of the current year.

Note 2): Total amount does not coincide for FY2005.

As indicated in the table below, exports and imports from/to third country to/from Thailand via Laos accounted for around 10 percent of total trade value between Laos (Savannakhet) and Thailand (Mukdahan) from 2008 to 2010, and it can be considered that bilateral trade between Thailand and Laos has been facilitated (Laos is not a mere passing point).

Table 12: Cross-Border Trade Using the SMIB (Laos) (Unit: mil. USD)

FY in Laos	Export to Thailand (from Laos to Thailand)*	Import from Thailand (from Thailand to Laos)	Export and import through Laos border to Thailand and other countries		
			From third country to Thailand via Lao border	From Thailand to third country via Lao border	Total
2007	93.4	106.2	0.69	3.97	4.66
2008	232.4	208.4	19.10	7.16	26.26
2009	156.5	261.9	19.93	23.14	43.07
2010	311.5	198.9	33.03	7.66	40.70
2011	485.5	207.7	104.34	N.A.	N.A.

Source: Department of Industry and Commerce, Savannakhet, Laos

Note 1): The FY in Laos is from October of the previous year to September of the current year.

Note 2): Total figures do not coincide due to the rounding error.

* Major trade items from Laos to Thailand utilizing the SMIB are: 1. mineral substance (91%), 2. industrial products (3.8%), 3. lumber and wooden materials (0.8%). (Figures in parentheses are the actual percentages in FY 2011.)

3.3.1.2 Impact on Agricultural Production

While there have been a few fluctuations, the growth rate of agricultural production in

Mukdahan has exceeded that of the entire Northeastern provinces and the whole country, and production has been steadily increasing. There is no particular change worth noting after the opening of the bridge (from 2007 and afterward).

Table 13: Agricultural Production in Thailand (Unit: mil. Baht)

Province	2003	2004	2005	2006	2007	2008	2009	2010*
Mukdahan	2,071	2,117	2,089	2,525	2,987	3,203	3,792	4,526
Growth Rate %	19.8	2.2	-1.3	20.8	18.3	7.2	18.4	19.4
Entire Northeastern Provinces	129,680	134,803	143,469	157,518	184,283	191,580	226,609	229,615
Growth Rate %	21.7	4.0	6.4	9.8	17.0	4.0	18.3	1.3
Entire Eastern Provinces	58,035	59,623	70,294	73,062	84,895	97,105	93,166	95,574
Growth Rate %	13.1	2.7	17.9	3.9	16.2	14.4	-4.1	2.6
Whole Country	615,854	668,808	728,093	846,742	911,372	105,6838	105,2564	116,4642
Growth Rate %	19.8	8.6	8.9	16.3	7.6	16.0	-0.4	10.6

Source: National Economic Social Development Board (NESDB) 2011

Note 1): Tentative figures in 2010

When looking at the harvested areas and production outputs of rice culture, the major agricultural crop in Laos, steady growth has seen for irrigated rice for both figures. Production outputs of irrigated rice in Savannakhet take up one-quarter to one-third of the total production in the whole country. Statistically significant change cannot be seen for season rice, irrigated rice and upland rice respectively since the opening of the bridge (after 2007).

Table 14: Rice Culture in Savannakhet and the Whole Country in Laos

	2005	2006	2007	2008	2009	2010
Season Rice						
Savannakhet	128,075	150,540	135,449	161,354	160,030	153,078
Whole Country	424,600	498,065	466,875	563,125	565,550	570,130
	569,750	618,820	604,147	619,950	656,471	627,865
	2,082,100	2,161,400	2,193,400	2,321,110	2,468,750	2,331,330
Irrigated Rice						
Savannakhet	15,245	19,500	21,100	25,999	28,256	29,085
Whole Country	66,500	85,200	97,520	118,035	136,000	126,120
	61,030	68,500	71,400	94,072	94,309	108,410
	271,100	310,000	329,200	439,200	452,050	512,430
Upland Rice						
Savannakhet	2,050	1,570	1,050	570	735	935
Whole Country	3,600	2,370	1,575	855	1,110	1,600
	105,240	108,225	105,696	111,523	122,116	118,839
	214,800	192,300	187,450	209,600	224,000	226,880

Source: Laos Statistical Year Book

Note 1): Upper figures are harvested areas (ha) and lower figures are production outputs (ton)

3.3.1.3 Impact on Investment

Investment capital and permitted numbers of manufacturing establishments in Mukdahan Province has significantly increased in 2006 and 2007, around the opening of the SMIB. Since there are a number of factors other than the expansion of the

transportation network and enhancement of efficiency of logistics, the increase does not solely depend on the impact of the project. However, the project located at the physical bottleneck of logistics is deemed to contribute to increase of business activities and expansion of business opportunities in Mukdahan.

Table 15: Principal Data of Manufacturing Establishments in Mukdahan Province in Thailand

Item	2003	2004	2005	2006	2007	2008	2009	2010*
Capital (mil. Baht)	48	76	90	401	869	22	47	368
Permitted Number	26	41	14	18	22	8	11	15
Employees	103	124	343	127	417	43	77	182

Source: National Economic Social Development Board (NESDB) 2011

Note 1): Tentative figures in 2010

By the same token, since there are a number of factors behind the growth of domestic investment and FDI of Savannakhet Province, the increase does not solely depend on the impact of the project. However, the project is deemed to contribute to the attraction of enterprises and expansion of investment through improvement of business and investment climate of the Province.²¹

Table 16: Domestic Investment and Foreign Direct Investment (FDI) to Savannakhet (Unit: mil. Kip)

Item		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Domestic Investment	Total Investment	49,240.7	85,855.2	74,446.1	64,066.6	70,204.8	122,071.9
	Registered Capital	49,240.7	85,855.2	69,710.1	55,416.6	70,204.8	119,647.9
FDI	Total Investment	419.7	85.7	113.4	53.5	300.3	158.3
	Registered Capital	149.4	30.5	40.2	29.9	95.9	67.4

Source: Department of Investment and Planning, Savannakhet, Laos

Note 1): The FY in Laos is from October of the previous year to September of the current year.

3.3.1.4 Impact on Tourism Demand

The growth rates of the tourism industry in Mukdahan have exceeded those of the entire Northeastern provinces and the rest of Thailand every year except in 2004. In particular, the years 2009 and 2010 have recorded substantial growth rates of 32.4% and 8.4% respectively. While it is difficult to indicate quantitatively the extent to which the SMIB has contributed to the increase of tourism industry production from the statistical data, the passenger volume of the SMIB, as mentioned above, shows the facilitation of people's movements back and forth since the opening of the bridge and hence, the project is deemed to have made a substantial contribution.

²¹ Although Savan Seno Special Economic Zone situated adjacent to the SMIB, along the National Road No.9 is the first SEZ in Laos, lack of infrastructure development (water supply system) remains an issue – many empty land was observed and the number of enterprises under operation were limited at the time of site survey.

Table 17: Tourism Industry Production in Thailand (Unit: million Baht)

	2003	2004	2005	2006	2007	2008	2009	2010*
Mukdahan	45	48	61	69	75	79	104	113
Growth Rate %	10.6	6.7	27.7	12.6	8.3	5.1	32.4	8.4
Entire Northeastern Provinces	12,080	13,267	14,685	16,450	17,751	18,641	20,636	21,557
Growth Rate %	2.6	9.8	10.7	12.0	7.9	5.0	10.7	4.5
Whole Country	299,567	334,22	346,865	386,063	416,764	437,705	438,514	471,867
Growth Rate %	-3.2	11.6	3.8	11.3	8.0	5.0	0.2	7.6

Source: National Economic Social Development Board (NESDB) 2011

Note 1): Tentative figures in 2010

The number of tourists in Savannakhet has increased 2.2 times between 2006 and 2007 since the bridge started operating, and a significant increase has been taking place since then. In addition, the ratios of tourists to Savannakhet utilizing the SMIB have been increasing year after year – the table shows 75 percent of tourists in 2010 and 91 percent of tourists in 2011 have visited Savannakhet, thus utilizing the SMIB. Along with the increase of tourists to Savannakhet, the amount of accommodation (hotels and guest houses), restaurants and travel companies has been increasing. The Department of Tourism in Savannakhet has been aggressively developing tourist attractions (natural, cultural and historical attractions), and a further increase of tourists is expected in the future.

Table 18: Number of Tourists Visiting Savannakhet (Unit: person)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total number of tourists in Savannakhet	64,050	118,821	192,560	192,385	430,604	474,826	791,924	918,683	895,765
Of which number of tourists using SMIB	-	-	-	-	239,667	251,606	553,803	688,416	819,313

Source: Department of Tourism, Savannakhet, Laos

Note 1): Actual figures from January until September for 2011.

Table 19: Growth of Tourism Industry in Savannakhet

	2005	2006	2007	2008	2009	2010	2011
Hotel	8	10	13	15	17	20	21
Guest House	40	58	66	85	98	107	121
Restaurant	60	82	95	105	151	185	225
Travel Company	2	3	6	9	11	12	13
Tourist Attractions	55	64	89	105	110	112	119

Source: Department of Tourism, Savannakhet, Laos

Note 1): Actual figures from January until September for 2011.

3.3.1.5 Facilitation of River Crossing of Local Residents

The following responses were highlighted from the survey interviews with local residents and NGOs.

- Residents in Laos have entered Thailand (Mukdahan) as migrant workers seeking new employment opportunities.

- Access to education and health services has been facilitated in Mukdahan for local residents in Laos.
- Acceleration of local residents crossing the river for the purpose of tourism and shopping has taken place.
- The number of Thai tourists going to the casino (Savan Vegas) has been increasing (several thousands of Thai have been entering Laos every day), etc.

As mentioned above, the project has contributed to the acceleration of local residents crossing the river, and is considered to have brought about changes in livelihood for both Thai and Laotian citizens. While the external, macro-level effects such as the economic development of Laos and the development of globalization are likely to exist behind, the hurdle of crossing the river such as becoming possible to cross the river regardless of the weather conditions and becoming possible to cross the river until 22:00 at night seems to have decreased by the utilization of the bridge.

3.3.1.6 Impact on Local Economy and Regional Development

In periods prior to the project between 2003 and 2006, the GPP growth rates in Mukdahan Province under ran the growth rates in the entire Northeastern provinces as well as the whole country. However, after 2007 when the bridge started operation, the growth rates exceeded those in the entire Northeastern provinces and the whole country (Table 20). With regards industrial production in Mukdahan Province, its growth rates have exceeded those in the entire Northeastern provinces and the whole country after 2007 (Table 21). Since there are a number of factors behind the growth of GPP and industrial production of Mukdahan Province, the increase does not solely depend on the impact of the project. However, according to the executing agency in Thailand, the implementation and completion of the project was the most important occasion in Mukdahan Province during the data period, and showed its recognition that assuming were it not for the project, the economic performance in Mukdahan Province would have indicated the similar trend as those before the project implementation.

Table 20: Gross Provincial Product (GPP) in Mukdahan Province in Comparison with the Whole Country
(Unit: million Baht)

	2003	2004	2005	2006	2007	2008	2009	2010
Mukdahan	9,161	9,818	10,163	11,571	12,863	13,875	15,155	16,999
Growth Rate %	5.9	7.2	3.5	13.9	11.2	7.9	9.2	12.2
Nakhon Panom	16,614	18,414	18,203	20,270	21,840	24,073	26,895	29,065
Growth Rate %	4.1	10.8	-1.1	11.4	7.7	10.2	11.7	8.1
Khon Kaen	83,286	91,549	97,098	117,225	126,850	139,706	143,184	155,469
Growth Rate %	12.1	9.9	6.1	20.7	8.2	10.1	2.5	8.6
Entire Northeastern Provinces	633,687	682,192	715,520	809,402	904,604	973,293	1,039,736	1,123,153
Growth Rate %	10.0	7.7	4.9	13.1	11.8	7.6	6.8	8.0
Whole Country	5,917,369	6,489,476	7,092,893	7,850,193	8,529,836	9,075,493	9,050,715	10,104,822
Growth Rate %	8.6	9.7	9.3	10.7	8.7	6.4	-0.3	11.6

Source: National Economic Social Development Board (NESDB) 2011
 Note 1): GPPS are in Current Price
 Note 2): Tentative figures in 2010

Table 21: Industrial Production in Mukdahan Province in Comparison with the Whole Country

(Unit: mil. Baht)

	2003	2004	2005	2006	2007	2008	2009	2010*
Mukdahan	1,092	1,091	976	1,149	1,311	1,489	1,592	1,870
Growth Rate %	15.8	-0.0	-10.6	17.7	14.1	13.5	6.9	17.5
Nakhon Panom	1,180	468	374	409	638	635	688	702
Growth Rate %	20.1	-60.4	-20.0	9.4	55.9	-0.5	8.5	2.0
Khon Kaen	24,747	28,534	31,255	43,363	45,416	52,372	52,336	60,038
Growth Rate %	21.3	15.3	9.5	38.7	4.7	15.3	-0.1	14.7
Entire Northeastern Provinces	99,653	108,331	99,805	124,752	141,283	156,251	161,128	173,169
Growth Rate %	21.8	8.7	-7.9	25.0	13.3	10.6	3.1	7.5
Whole Country	2,061,572	2,235,573	2,461,294	2,748,211	3,034,106	3,169,629	3,084,057	3,487,313
Growth Rate %	12.3	8.4	10.1	11.7	10.4	4.5	-2.7	13.1

Source: National Economic Social Development Board (NESDB) 2011
 Note 1): Industrial productions are in Current Price
 Note 2): Tentative figures in 2010

The Laos government has a plan to develop Savannakhet, a second biggest city next to the capital Vientiane, as a base of industrial development. The GPP growth rates in Savannakhet Province continue to exceed ten percent since the year before the opening of the bridge, and the figures have been increasing annually.

Table 22: Gross Provincial Product (GPP) in Savannakhet Province (Unit: billion Kip)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Savannakhet	3,508.6	3,859.4	4,258.9	4,706.1	5,211.9	5,785.3
Growth Rate %	9.4	10.00	10.35	10.50	10.75	11.00

Source: Department of Investment and Planning, Savannakhet, Laos
 Note 1): GPP based on year 2000 price
 Note 2): The FY in Laos is from October of the previous year to September of the current year.

As mentioned above, the project is deemed as to have yielded a number of positive impacts after the opening of the SMIB, including the generation of new economic activities, changes in land use, an increase in employment opportunities, increase in household income, etc. Therefore it can be assumed that the project has made certain contribution to the regional economic development.

BOX: Broad-Based Impacts

As one of impacts of the SMIB Construction Project, the analysis on broad-based impacts of large-scale infrastructure, the EWEC, where the project is located in, was conducted from following three aspects. In addition, the complementary institutional aspects which may affect the broad-based impacts of the project were also analyzed.

1. The outcome on trade facilitation: Currently, the project is deemed to have limited impact on trade in the Central Vietnam area. On the other hand, land transportation services between Bangkok and Hanoi utilizing the EWEC have initiated around 2008, and more than ten private companies are said to have entered into the business. Further business development is expected since competition on service and cost seems to have taken place.
2. The outcome on economic spillover effect: From the view point of industrial development and private sector investment, concrete impact cannot be confirmed in the industrial zones in the Central Vietnam area and the Savan Seno Special Economic Zone in Laos. Background factors seem to have relation with the slower growth of traffic volume of containers/trucks as well as an external factor related with fund shortage to develop the Savan Seno Special Economic Zone. From the view point of agricultural productivity, distinct project contribution to food-related business in Pakse, a city in southern Laos, could not be observed. Future traffic volume increase can be expected along with the changes in land use in Mukdahan and Savannakhet. From the view point of employment creation, household income and unemployment rate, the project is deemed to have contributed to diversify income earning opportunity and to activate regional economy in Savannakhet. The project is also regarded to have contributed to the increase of average household income in Northeastern provinces in Thailand and to bringing down unemployment rate in Mukdahan.
3. The outcome on social effect: The project is deemed to have greatly contributed to Laotian's access to social services in Savannakhet, especially the access to healthcare centers and education institutions. The project seems to have also contributed to the reduction of population in poverty in Mukdahan Province.

The interview survey results have indicated that motorbike spare parts manufactured in Thailand have began to be transported to Hanoi, Vietnam via the SMIB for assembly in Hanoi, after the opening of the SMIB. New business seems to have emerged through exploring new distribution routes from Thailand to Vietnam utilizing the EWEC after the opening of the SMIB. However, it is too early to mention the economic role-sharing among Mekong countries or economic-sharing among regions within a specific country since it is still about five years after the completion of the EWEC (except for a section in Myanmar), and the changes observed are not as salient as expected.

In order to further increase the utility value of the SMIB and the EWEC, and to activate logistics and enhance efficiency, it is indispensable to 1) shorten the lead time, 2) reduce transportation cost, and 3) improve distribution environment in order to secure quality of logistics. In addition to improving physical infrastructures, it is urgently necessary to develop relevant laws and institutions related with simplifying prior import-export procedures, realizing Single-Stop, Single-Inspection on cross-border procedures, facilitating reciprocal exchange of traffic rights for commercial cross-border for carriers and vehicles (resolving issues on reloading containers and one-sided

transportation). It is critical to overcome these issues under the cooperation of each Mekong country by utilizing the momentum toward the establishment of an ASEAN Community in 2015.

3.3.2 Other Impacts

3.3.2.1 Impacts on the Natural Environment

The effects on the natural environment have not been observed during the construction and after the project completion, as a result of survey interviews from residents and local NGOs in Mukdahan. According to the executing agencies in both countries, no negative issue was observed during the project implementation. It was pointed out that proper monitoring was conducted according to the environmental management plan from the bidding stage, and guidance was provided to the contractors to give necessary environmental consideration during the implementation of the project. Since environmental indicators were not measured, and analysis according to the environmental criteria did not take place, abovementioned responses are not backed by data, however, it seems fair to consider no particular issues have occurred in the project area.

3.3.2.2 Land Acquisition and Resettlement

According to the executing agencies in both countries, no particular problem has been observed for land acquisition process – appropriate due process took place including public hearings and consultations with residents, based on the regulations of each country. The executing agencies gave consideration to minimize the effects on local residents and as a result, land acquisition, which was assumed to take place for twelve households on Lao side at the time of appraisal, did not take place. Since the acquired land was all rice growing area and relocation of local residents did not take place, no particular measure was conducted for livelihood restoration. That is – only a part of the land was affected for each resident and thus this was mitigated through financial compensation. The results of the interviews with the local residents indicate that sufficient explanation was provided through the implementation of public hearings and setting up information sign boards regarding the project. Prior explanation on compensation was also provided, and no particular problem was pointed out including its payment.

3.3.2.3 Impact on HIV/AIDS Infections (Thailand)

HIV/AIDS prevention activities (dissemination of appropriate knowledge about prevention and countermeasures) were included in the project component. This component was not included in the initial plan but since the project involves hiring large number of migrant workers and the project is conducive to the movement of people between areas of different HIV/AIDS infection rate, countermeasures were introduced

amid concerns about the HIV infection risk. With close coordination among the executing agencies from both countries, contractors, NGOs and the Regional Health Department, prevention activities were conducted regularly and monthly monitoring took place.

According to the table below, the number of people with HIV/AIDS (three year average) decreased by half after the opening of the SMIB, and same trend can be observed for other Northeastern provinces. It is difficult to make a judgment with limited information on the causal relationship between the HIV/AIDS prevention activities and the decrease in the number of infections, however, it can be assumed that certain contribution was made to the decreasing number.

Table 23: Number of People with HIV/AIDS per 1,000 population in Northeastern Thailand (three year average) (Unit: person)

Provinces	2004-2006	2007-2009	% Change
Mukdahan	30.3	16.1	-47
Adjacent provinces with major highway connectivity			
Amnat Charoen	50.2	22.0	-56
Kalasin	25.8	11.0	-57
Neighboring provinces with international cross-border points			
Loei	29.7	23.3	-21
Nong Khai	9.7	3.3	-66
Nakhon Panom	16.2	5.5	-66
Ubon Ratchathani	26.0	9.9	-62
Surin	23.9	3.3	-86
Si Sa Ket	29.8	25.1	-16
Other Northeastern provinces			
Nong Bua Lum Phu	28.0	14.2	-49
Udonthani	33.9	22.7	-33
Sakon Nakorn	11.6	3.6	-69
Roi Et	23.1	8.5	-63
Mahasarakham	16.3	11.1	-32
Khon Kaen	19.4	5.7	-70
Yasothon	26.9	10.5	-61
Nakorn Ratchasima	18.8	5.0	-74
Chaiyaphum	22.9	7.6	-67
Buriram	24.4	10.3	-58
Entire Northeastern provinces	23.3	10.5	-55

Source: Thailand Department of Disease Control, Ministry of Public Health (obtained via DOH, Ministry of Transport)

This project has somewhat achieved its objectives, therefore its effectiveness and impact is fair.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

Comparison of planned and actual project outputs is summarized in the table below.

Table 24: Comparison of Planned and Actual Outputs

Planned Outputs (At Appraisal)	Actual Outputs (At Ex-Post Evaluation)	Comparison
① Civil Works 1) Main bridge: Entire length of 1,600m, width of 12m, two-lane road (double lane) 2) Approach bridge: Thai side: 250m Lao side: 200m Width of 12m, two-lane road (double lane) 3) Connecting road: Thai side: about 1.7km Lao side: about 2.0km 4) Border facilities: Both in Thai side and Lao side 5) Change-over facilities: Thai side only	① Civil Works 1) Main bridge: Entire length of 1,600m, width of 12m, two-lane road (double lane) 2) Approach bridge: Thai side: 250m Lao side: 200m Width of 12m, two-lane road (double lane) 3) Connecting road: Thai side: about 1.7km Lao side: about 2.0km 4) Border facilities: Both in Thai side and Lao side 5) Change-over facilities: Thai side only 6) Construction of Common Control Area (CCA) in Lao side 7) Provincial road improvement (about 27km) and bank protection in Lao side	① Civil Works 1) Main bridge: As planned 2) Approach bridge: As planned 3) Connecting road: As planned 4) Border facilities: Modification of the characteristic of the inspection roof from the simple space design structures to Thai architecture 5) Change-over facilities: As planned 6) CCA on Lao side: Additional scope 7) Provincial road improvement (about 27km) and bank protection in Lao side: Additional scope
② Consulting Services - Foreign Consultants: 136M/M - Local Consultants: 975.5M/M Total: 1,111.5M/M	② Consulting Services - Foreign Consultants: 142.5M/M - Local Consultants: 1,171M/M Total: 1,313.5M/M	② Consulting Services - Foreign Consultants: Increased by 6.5 M/M - Local Consultants: Increased by 195.5M/M Total: Increased by 202M/M

Regarding civil works, modification of design of border facilities (on the Thai side), construction of the CCA (on the Lao side), and the improvement of provincial roads and bank protection work (on the Lao side) were implemented as part of an additional scope.

As regards border facilities, based on the request from the Thai government, modification of the characteristics of the inspection roof took place in order to bring in traditional Thai architecture. The CCA was constructed on the Lao side utilizing the residual funds of the ODA loan for the purpose of realizing the Single Stop Inspection (SSI) for custom, quarantine and immigration at the SMIB and improving the efficiency of logistics. According to the executing agency in Laos, the Lao government requested the construction of the CCA as an additional scope taking into account the lessons learned

from the previous experience of the First Thai-Laos Friendship Bridge (connecting Vientiane in Laos and Nong Khai in Thailand) which opened in 1994. The CCA was not installed in the First Bridge then. However, as mentioned above, SSI is not yet realized at the CCA as the development of domestic legal system in Thai side is necessary for this to occur. Based on the request from the Laos government, in order to boost the use of the SMIB, improvements of provincial roads and bank protection were realized utilizing the residual funds of the ODA loan. The additional outputs are appropriate as the roads would contribute to expedite the access to the SMIB.

Because of the design change and additional project outputs, work volumes of 6.5M/M for foreign consultants and 195.5M/M for local consultants were added. It is considered that the provincial road improvement and bank protection in Lao side are appropriate as they are in line with the road development plan, recognized priorities, and are consistent with the objectives of this project. With regards to the CCA, the initial objective of SSI is not realized as mentioned above.²² The CCA in Thai side has been constructed in 2010 with Thai government's own fund, however, it has not been utilized under the existing circumstances.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The actual project cost was 6,962 million yen²³ (of which the Japanese ODA loan was 6,713 million yen) against the planned cost of 10,136 million yen (of which the Japanese ODA loan was 8,090 million yen), which is equal to 69 percent of the planned cost and 83 percent of planned loan amount. The breakdown of project costs for Thailand and Laos are as follows.

- The project cost for Thailand: The actual project cost was 2,825 million yen²⁴ (of which the Japanese ODA loan was 2,736 million yen) against the planned cost of 5,145 million yen (of which the Japanese ODA loan was 4,079 million yen).
- The project cost for Laos: The actual project cost was 4,137 million yen²⁵ (of which the Japanese ODA loan was 3,977 million yen) against the planned cost of 4,991 million yen (of which the Japanese ODA loan was 4,011 million yen).

²² Usual inspection works for custom, quarantine and immigration are conducted in the CCA in Lao side.

²³ It should be noted that general administration cost and tax invested from Thai government and tax invested from Lao government are not included in this figure since there is no reliable evidence to confirm the actual project cost spent. However, because major portion of the project cost turn out to be evident, project cost comparison was made based on total cost with this explanatory note.

²⁴ Administration cost and tax are not included in this figure.

²⁵ Tax is not included in this figure.

Despite the increase in the outputs and the delay in the schedule, the amount of project cost was less than planned mainly because of 1) the cost reduction effects from a competitive bidding process which resulted in the lowering of actual construction costs (for both Thailand and Laos), and 2) the realization of cost savings as a result of a re-examination and revision of construction cost estimations in order to ensure the efficiency of the construction work, which led to decreases in the opening bid prices (Thailand). There was a low cost competition among the contractors who foresaw the order entry, as well as a decreased construction unit price due to lower prices for construction materials and wages since the currency crisis in Asia in 1997.

According to the executing agencies in Thailand and Laos, the bidding process for both construction work and consulting services were implemented under close coordination and cooperation between both organizations, and no particular issue was observed.²⁶

3.4.2.2 Project Period

The overall project period was longer than planned. It was originally planned for 55 months as opposed to 61 months (Thailand) and 74 months (Laos) including the extended loan period (one time for both countries) in reality, representing an expansion to 110.9 percent (Thailand) and 134.5 percent (Laos) of the initial plan.²⁷ However, the delay was relevant considering that this project included the modification of the characteristic of the inspection roof (Thailand) and additional outputs (provincial road improvement and bank protection in Lao side). The table below shows a comparison of planned and actual project period.²⁸

²⁶ The bidding was jointly conducted for construction work, and contracts were concluded respectively in each country, dividing the work into half. The same method was introduced for consulting services as well.

²⁷ An accident occurred in July 2005 during construction. (Construction workers fell victim to the accident in the course of installing concrete bridge beams No.10 and 11.) In resuming the construction work, construction method was modified and safety measures were reexamined. The delay of work was mostly recovered as a result of cooperation from concerned parties including contractors.

²⁸ Although the final disbursement date is April 2009 for both Thailand and Laos, definition of project completion is different between the two countries. According to the executing agency in Thailand, all the construction work was completed in December 2006 and the SMIB was officially opened on December 20, 2006, and the general service started on January 9, 2007. Thus, it can be considered relevant to regard official opening of the bridge as the project completion date. In case of Laos, since the executing agency showed its recognition that the additional scope should be an integral part of the project and maintained its position to consider January 2008 as the project completion date, this opinion was respected.

Table 25: Comparison of Planned and Actual Project Period

Item	Planned Period (At Appraisal)	Actual Period in Thailand (At Ex-Post Evaluation)	Actual Period in Laos (At Ex-Post Evaluation)
Signing of Loan Agreement	Dec. 2001	Dec. 2001	Dec. 2001
Selection of Consultants	Dec. 2001 - Apr. 2002	Dec. 2001 - Jun. 2002	Jan. 2002 - Jun. 2002
Selection of Contractors	May 2002 - Jun. 2003	Mar. 2003 - Dec. 2003	Jun. 2002 - Mar. 2004
Civil Works	Jul. 2003 - Jun. 2006	Dec. 2003 - Dec. 2006	Dec. 2003 - Jan. 2008
Consulting Services	May 2002 - Jun. 2006	Jul. 2002 - Dec. 2006	Jul. 2002 - Jan. 2008
Overall Implementation Period	Dec. 2001 - Jun. 2006 (55 months in total)	Dec. 2001 - Dec. 2006* (61 months in total: 110.9% of the plan)	Dec. 2001 - Jan. 2008* (74 months in total: 134.5% of the plan)

Note): Definition of project completion differs between the two countries. While the official opening of the bridge (December 20, 2006) is regarded as project completion in Thailand, completion of all the construction work including the additional scope (CCA construction, provincial road improvement and bank protection) is considered as completion, that is on January 2008.

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

Financial Internal Rate of Return (FIRR)

FIRR figures were recalculated with several conditions described in the table below as the base scenario. With the toll revenues as the parameter, two cases were assumed: a slightly more optimistic case than the base scenario (Scenario 1) and a pessimistic case (Scenario 2) to conduct sensitivity analysis of the recalculated FIRR. Table below shows the recalculation results.

Table 26: Recalculation of FIRR

Timing	Preconditions and Assumptions for Recalculation (Project Life: 30 years after the completion of the Project, 2007-2031)	FIRR
At the time of Appraisal	FIRR was not calculated at that time.	N.A.
At the time of Ex-Post Evaluation	Base Scenario Costs: Project cost, operation & maintenance cost Revenue: Toll revenue (assuming 5% increase every five years after the opening of the SMIB)	0.66%
	Scenario-1 (optimistic than base scenario) Costs: Project cost, operation & maintenance cost Revenue: Toll revenue (assuming 10% increase every five years after the opening of the SMIB)	1.41%
	Scenario-2 (pessimistic than base scenario) Costs: Project cost, operation & maintenance cost Revenue: Toll Revenue (assuming no increase after the opening of the SMIB)	Minus 0.13%

The recalculation resulted in positive figures by a narrow margin except for Scenario 2 (no increase of toll rate). The sensitivity analysis results were minus 1.41% in Scenario 1

(more optimistic than the base scenario) and minus 0.13% in Scenario 2 (more pessimistic than base scenario).

Economic Internal Rate of Return (EIRR)

Table below shows the recalculation result of EIRR. The figure is slightly bigger than that of the low growth scenario calculated in the SAPROF Study. This is mainly because the project cost savings were realized, and (even though traffic volume for trucks continued to lag) traffic volume as a whole slightly exceeded those of the low growth scenario.

Table 27: Recalculation of EIRR

Timing	Preconditions and Assumptions for Recalculation (Project Life: 30 years after the completion of the Project, 2007-2031)	EIRR
At the time of SAPROF Study	Economic Costs: Project cost, operation & maintenance cost Economic Benefits: Operation and maintenance cost savings, travel time savings, benefits from the regional economic development, and cost savings from abolishing ferry operation	10.0%* 3.0%**
At the time of Ex-Post Evaluation	Economic Costs: Project cost, operation & maintenance cost Economic Benefits: Operation and maintenance cost savings, travel time savings, benefits from the regional economic development, and cost savings from reducing ferry operation	5.38%

* Note): High growth scenario – a case where facilitation and liberalization of trade and investment in Mekong area is realized

** Note): Low growth scenario – a case where economic exchange does not proceed, and reliance on domestic demand and domestic investment takes place

Although the project cost was within the plan, the project period was (slightly) exceeded, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Structural Aspects of Operation and Maintenance

The responsibility for the operation and maintenance of the bridge is physically divided into half – the mandate of Thailand is from the center of the bridge to the Mukdahan side, and the mandate of Laos is from the center of the bridge to the Savannakhet side. As an overall operation and maintenance framework, the Thai-Laos Joint Commission for the SMIB was established in December 2006, at the time of the official opening of the bridge, to be jointly responsible for bridge management and maintenance, following the signing of a Joint Agreement on the administration of the Second Thai-Laos Friendship Bridge (Mukdahan - Savannakhet) to deal with issues related to legal cooperation, management, and maintenance of the bridge. Joint meetings for operation and maintenance are

conducted basically every three months²⁹ (if issues arise, anytime as needed).

In Thailand, Thai Commission on Management and Maintenance was established in November, 2006 under the Ministry of Transport. The Commission is chaired by the Director General of the Department of Highway (DOH) with the Director of Bridge Construction Bureau working as a member of the Commission and the secretariat. The Commission consists of representatives from several government agencies including Ministry of Foreign Affairs, Ministry of Interior, Office of Mukdahan Governor, Custom Department, Land Transport Department, and Immigration Bureau. The major responsibilities include coordination and monitoring with Laos side on the procedures related with operation and maintenance of the bridge, reviewing regulations concerning management, operation and maintenance of the bridge, and examining and approving the bridge plan for repair and maintenance works, and setting up toll rates.

Under the Commission, the Bridge Management Unit and the Managerial Committee were established (March, 2008). Major duties of the Bridge Management Unit include collaboration with other government agencies, supervision of contractors, preparation of annual budget plans for maintenance and repair works, and preparation and submission of annual work plans to the Thai Commission. The key responsibilities of the Managerial Committee include providing management guidance of the bridge checkpoint, monitoring and evaluation of the operation, and providing advice and recommendations regarding procedures and regulations for the management, operation and maintenance of the bridge. The actual operation and maintenance work of the bridge and road, and toll collection work are managed directly by the operation section established under the Bridge Management Unit. Toll collection is manually conducted at the toll plaza established on the approach road of the Mukdahan side.

In Laos, the Administration Commission of SMIB was established in August 2006. The Commission is chaired by the Director General of the Department of Roads, Ministry of Public Works and Transport (MPWT), and consists of several parties such as Ministry of Foreign Affairs, Ministry of Justice, Department of Public Works and Transport of Savannakhet, and Department of Finance. The major responsibilities correspond to those of the Thai Commission on Management and Maintenance.

The operation and maintenance work of the bridge and road, and toll collection work are managed by the Bridge Management Unit established under the Bridge Management Committee. The Committee is under the control of Department of Public Works and Transport of Savannakhet established in December, 2006. In fact, the actual operation,

²⁹ According to the execution agency in Thailand, the first meeting after the opening of the bridge was conducted on February 26, 2007. The latest meeting as of the ex-post evaluation was September, 2011.

maintenance work and toll collection work are outsourced to the private sector, and the Bridge Management Unit is in charge of their supervision. According to the execution agency in Laos, the main reasons for outsourcing the work are 1) due to staff shortage of the Bridge Management Unit, 2) to secure transparency of work and 3) to enhance the efficiency of work.

The system for operation and maintenance is well established for both countries and periodic coordination takes place between them. Responsibility of work is clearly set for each country and thus, no particular problem is identified on the organizational setting for operation and maintenance.

3.5.2 Technical Aspects of Operation and Maintenance

Up to the point of ex-post evaluation, the operation and maintenance work are mostly relatively simple routine maintenance for both countries, including toll collection, cleaning, parking management, repair of electric system, etc. In Thailand, these works are directly managed, whereas in Laos, they are outsourced to the private sector.

There are 18 operation and maintenance staff members in Thai side, and they have not received training related with the bridge. However, all of them have five to 10 years' work experience and have no problem in their technical capacity. As regards toll collection, manuals are in place and training has been given to the staff by the private company that developed the system.

There are four operation and maintenance staffs in Lao side, and their main role is to supervise the work that has been outsourced to private companies. So far, one operation and maintenance staff has participated in the training program provided by the MPWT. No particular issues were observed regarding technical aspects of operation and maintenance thus far.

As future points of concern, it is important to be prepared for expected large-scale repair works. It is recommended that in planning and preparation for bidding for such works, outside resources including special consultants be utilized to sort out envisioned technical problems as well as to strengthen technical capacity of operation and maintenance staffs under close coordination and cooperation between both countries.

3.5.3 Financial Aspects of Operation and Maintenance

As shown in the tables below, annual operation and maintenance expenditures of the SMIB have increased sharply both for Thailand and Laos. (The spending in FY2011 was 1.7 times as much as that in FY2009 for Thailand, and 1.9 times as much as that in FY2009 for Laos.) Major items of spending are 1) labor costs, 2) various expenses including fuel costs, and (iii) outsourcing costs for Lao side. However, a simple

comparison of operation and maintenance cost between the two countries is not relevant since specific items included in the cost are different.

In Thailand, the primary source of the annual budget for the operation and maintenance of the SMIB is toll revenues collected when vehicles cross the bridge from Mukdahan (Thai side) to Savannakhet (Lao side). Basically, all the revenues from the toll collection are sent to deposit in the bridge account at the Mukdahan Provincial Office of the Controller General. The annual operation and maintenance budget is subject to approval by the Thai Commission on Management and Maintenance of the SMIB placed under the Ministry of Transport, and all the transactions made through the Mukdahan Highway District Office. So far, the full amount of requested budget has been approved, and the toll revenue far outpaced the actual operation and maintenance cost as shown in the table below under the item “Allocation”. The residual amounts are kept in the bridge account mentioned above. Therefore it is concluded that there is no problem observed in the financial status for operation and maintenance for the project in Thai side.

Table 28: O&M budget for the SMIB in Thailand (Unit: Baht)

FY in Thailand	Allocation	Actual Amount Spent
2009	12,355,000	7,169,548
2010	12,880,000	9,359,285
2011	25,000,000	11,908,220
2012	13,542,000	N.A.

Source: Mukdahan Regional Office, Thailand Department of Highways (DOH), Ministry of Transport

In Laos, all the revenues from toll collection from vehicles crossing the bridge from Savannakhet (Lao side) to Mukdahan (Thai side) are sent into the Road Maintenance Fund (RMF), then necessary operation and maintenance budget for the SMIB are allocated from the RMF. Since the RMF is also utilized for operation and maintenance for other national roads in Laos, the entire amount of toll revenues are not allocated to the operation and maintenance for the SMIB. So far, the operation and maintenance budget for the SMIB is fully secured from the RMF because new investment for large repairs has not taken place. However, according to the execution agency in Laos, the actual allocation for operation and maintenance cost for national roads remains around 30 percent of the budget request on average, it is understandable that the toll revenues of the SMIB have become an important financial source for the operation and maintenance of other national roads in Laos. Therefore, securing a sufficient budget from the RMF for expected large-scale repair works in the future is critical, and must be achieved through taking measures to prioritize allocation to the SMIB.

Table 29: O&M budget for the SMIB in Laos (Unit: Kip)

FY in Laos	Budget Request	Allocation
2009	99,984,900	99,984,900
2010	137,135,000	137,135,000
2011	194,217,000	194,217,000
2012	234,744,700	N.A.

Source: Bridge Management Committee (BMC), Savannakhet, Laos

Note1): The FY in Laos is from October of the previous year to September of the current year.



Figure 9: Toll Plaza

3.5.4 Current Status of Operation and Maintenance

Generally speaking, there seems to be no problem with the operation and maintenance status, therefore, they can be judged as extremely good. There is no particular problem with the use and operation and maintenance of the facilities (bridge, border facilities, approach road, provincial road, etc.) that were constructed in the project. As for maintenance of the main body of the bridge, the pavement was in good condition when observed in the site survey.

With regards to safety control measures, it is prohibited to walk on and drop off from vehicles on the bridge as well as to cross the bridge using a motorbike, and these regulations have been enforced appropriately. In addition, the 200 meter zones both upstream and downstream of the bridge girder are set as restricted areas including fishing boats, and proper management has been taking place.

No major problems have been observed in the operation and maintenance system, technology and finance, therefore sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The relevance of the project is high due to the high consistency between the project objective and the GMS regional development policy as well as the national development policy and needs of Thailand and Laos. While the project outputs materialized as planned, and the project cost was within the plan, the efficiency of the project is fair because the project period was exceeded. Although a substantial increase of traffic volume was observed for cars, sluggish growth was seen for trucks in comparison with the expected traffic. On the other hand, the effectiveness of the project is fair since the project is deemed to have yielded a number of positive effects and impacts including an increase of number of tourists and activation of tourism demand, facilitation of agricultural production, increase of industrial production, facilitation of river crossing of local residents, and contribution to the regional economic development, etc. The sustainability of the project is high as no particular issue was observed for the operation and maintenance system, technology, and finance, and the state of operation and maintenance is maintained in good condition. In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

With regard to operation and maintenance, the majority of work consists of daily routine maintenance up to now, and training has not been conducted with technical staff in a comprehensive manner. However, in preparation for expected large-scale repair works in future for planning and bidding, it is recommended that outside resources including special consultants be utilized to sort out envisioned technical problems as well as to strengthen technical capacity of operation and maintenance staffs. In addition, securing sufficient budget from the RMF is highly critical for Lao side to undertake the expected large-scale repair works in the future.

Giving careful consideration to institutional arrangements related with planning and development of cross-border transport for relevant countries is also critical. In this case, several bottlenecks were pointed out in Thailand, Laos and Vietnam related with mutual entry of traffic and reciprocal exchange of traffic rights for commercial cross-border trade, and issues related with custom transit to realize smoother logistics. In addition, it became clear that the CCA, constructed as an additional output to realize SSI, has not been utilized for its original purpose due to institutional barriers. Although the CBTA has been

signed by all member countries, and institutional development is underway for each country to establish an ASEAN Community in 2015, the development of domestic laws to comply with such international commitment is urgently necessary for each country. Therefore, it is essential to overcome such institutional issues in order to realize expected project effectiveness.

4.3 Lessons Learned

When estimating traffic volumes during project preparation and implementation stage, it is important to calculate more realistic figures based on the situation and future prospects for physical infrastructure and institutional matters. In this case, the traffic estimation made in the SAPROF Study has been downwardly revised in the SAPI Study, as the figures were too ambitious. Even so, traffic volume of trucks did not reach the expected volume due to the bottlenecks related with infrastructure development and institutional arrangements. Moreover, there exist limitations that cannot be resolved by one single country, especially for infrastructure projects that stride across countries. Therefore, it is important to carefully consider and make analysis when calculating baseline figures with due consideration of various situations.

When developing a missing link (=SMIB) as an integral part of a regional road network, paying due attention to integrated and consistent development with other road network/transport network becomes highly critical. This project consists of a critical part of the EWEC, as one of the most important road networks in Mekong Region. Therefore, in order to facilitate further volume of trucks which holds the key to the entire traffic volume of the SMIB and efficiency of logistics of the entire road network, improvement of the National Road No.9 (Laos) and National Road No.1 (Vietnam) is vital. Therefore, broad-based, comprehensive perspectives beyond national borders are important. In this regard, project preparation with thorough analysis and consideration not only for the road network that directly connects the SMIB, but also for other road and traffic networks, is critical.

[END]

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	<p>Civil Works</p> <p>1) Main bridge: Entire length of 1,600m, width of 12m, two-lane road (double lane)</p> <p>2) Approach bridge: Thai side: 250m Lao side: 200m Width of 12m, two-lane road (double lane)</p> <p>3) Connecting road: Thai side: about 1.7km Lao side: about 2.0km</p> <p>4) Border facilities: Both in Thai side and Lao side</p> <p>5) Change-over facilities: Thai side only</p> <p>Consulting Services</p> <ul style="list-style-type: none"> - Bidding support - Construction supervision - Vocational training, - Environmental and social monitoring <p>- Foreign Consultants: 136M/M - Local Consultants: 975.5M/M Total: 1,111.5M/M</p>	<p>Civil Works</p> <p>1) Main bridge: As planned</p> <p>2) Approach bridge: As planned</p> <p>3) Connecting road: As planned</p> <p>4) Border facilities: Modification of the characteristic of the inspection roof from the simple space design structures to Thai architecture</p> <p>5) Change-over facilities: As planned</p> <p>6) Common Control Area on Lao side: Additional scope</p> <p>7) Provincial road improvement (about 27km) and bank protection in Lao side: Additional scope</p> <p>Consulting Services As planned</p> <p>- Foreign Consultants: 142.5M/M - Local Consultants: 1,171M/M Total: 1,313.5M/M</p>
2. Project Period	Dec. 2001 – Jun. 2006 (55 months)	<p style="text-align: center;">Thailand</p> <p>Dec. 2001 – Dec. 2006 (61 months)</p> <p style="text-align: center;">Laos</p> <p>Dec. 2001 – Jan. 2008 (74 months)</p>
3. Project Cost	<p>Amount paid in Foreign currency: 5,739 million yen</p> <p>Amount paid in Local currency: 4,397 million yen (827 million baht, 353 billion kip)</p> <p>Total Japanese ODA loan portion: 10,136 million yen</p> <p>Exchange rate: 8,090 million yen</p> <p>1 baht = 3.13 yen 1 kip = 0.0512 yen (As of Jun. 1998)</p>	<p>Amount paid in Foreign currency: 6,713 million yen</p> <p>Amount paid in Local currency: 249 million yen * (30 million baht, 15.5 billion kip)*</p> <p>Total Japanese ODA loan portion: 6,962 million yen *</p> <p>Exchange rate: 6,713 million yen</p> <p>1 baht = 2.92 yen (Average between Jan. 2002 and Dec. 2007)</p> <p>1 kip = 0.0103 yen (Average between Jan. 2005 and Dec. 2005)</p> <p>* Excluding administration cost and tax for Thailand and tax for Laos.</p>