

CHAPTER 1

Development of Five Triangle Areas in the Greater Mekong Subregion

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CHAPTER 1

DEVELOPMENT OF FIVE TRIANGLE AREAS IN THE GREATER MEKONG SUBREGION

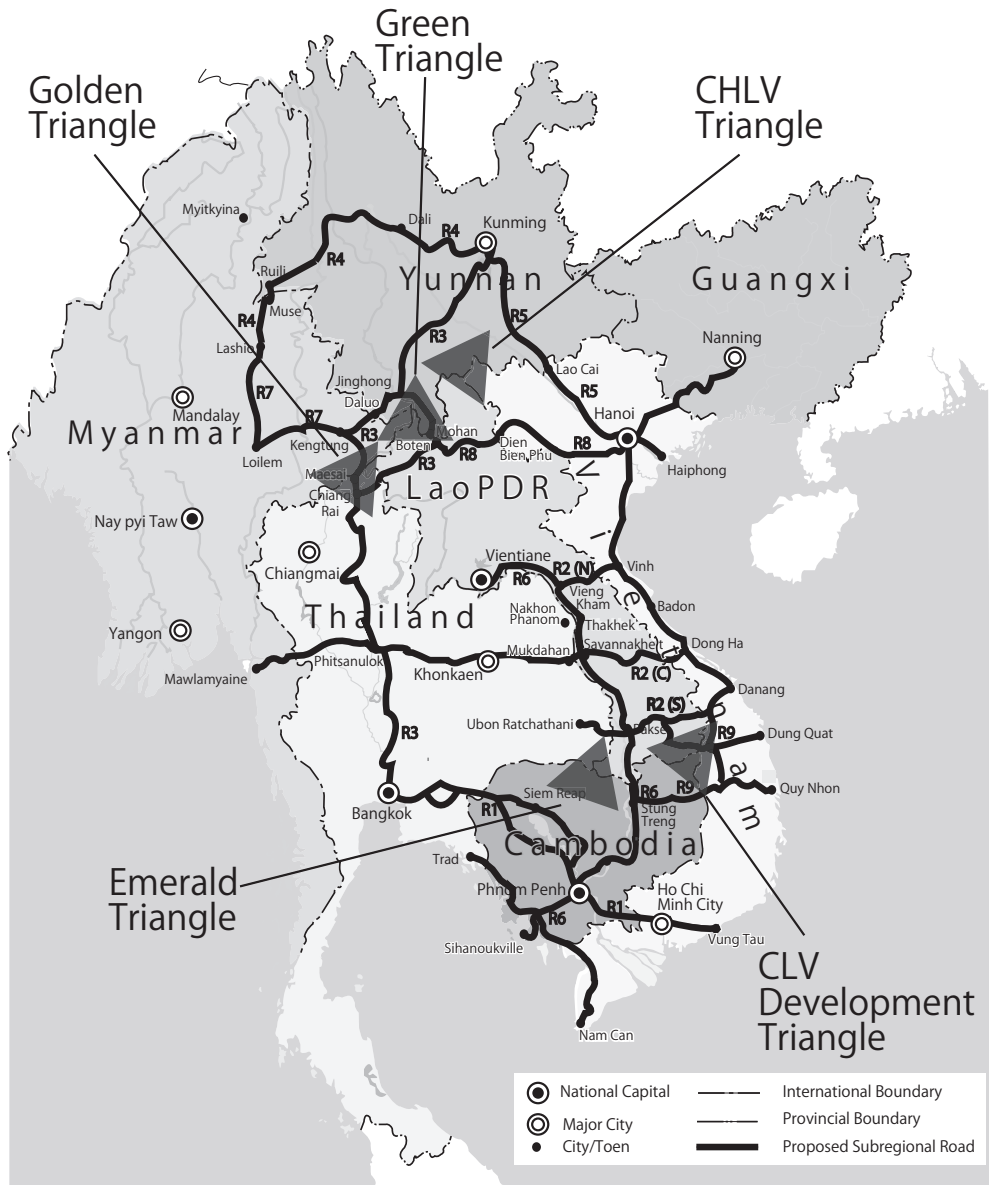
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INTRODUCTION

Hearing the expression, “triangle area,” not a few people imagine the Singapore-Johor-Riau (SIJORI) Growth Triangle. This triangle area had shown remarkable growth performances in the 1990s. The economic growth was created by the combination of headquarter and hub-port function, sophisticated manufacturing industries such as petroleum refineries and the precision industries of Singapore, the manufacturing industries of Johor with advantages in electronics and Batam Island with advantages in more labor-intensive industries. With the successful performance of the SIJORI Growth Triangle, sub-regional economic cooperation programs have been promoted with selected concepts with the Indonesia-Malaysia-Thailand (IMT) Triangle Area and Brunei-Indonesia-Malaysia-Philippines Economic Growth Area (BIMP-EAGA). The Greater Mekong Sub-region (GMS) economic cooperation program, which was started in 1992 on an initiative of the Asian Development Bank (ADB), is considered the same kind of economic cooperation program.

In the GMS, however, there are five triangle areas (Figure 1). Two are in the southern part of the GMS: one is the Cambodia-Laos-Vietnam Development Triangle Area (CLV-DTA) and the other is the Emerald Triangle, composed of Cambodia, Laos and Thailand. Regarding the triangle areas in the northern part, the Golden Triangle, composed of Laos, Myanmar and Thailand, is the most famous as a tourism site in Thailand. Formerly, it was notorious for its drug trafficking. Another triangle area upstream on the Mekong River is composed of China, Laos and Myanmar and it is called the “Green Triangle” in China (Kakizaki, p. 54). The combined area of the Golden Triangle and the Green Triangle

Figure 1: Five Triangle Areas in the GMS



Source: Created by the author.

is called as the “Golden Quadrangle Area” or the “Quadrangle Economic Zone”. While economic cooperation has been promoted, it has not been implemented while not a few projects under the name of the North-South Economic Corridor (NSEC) have been implemented. The triangle area of China, Laos and Vietnam has not come into focus as yet. In this chapter, this triangle area is called the “CHLV Triangle,” hereinafter.

Compared to a sub-regional economic cooperation program such as the SIJORI Growth Triangle and the BIMP-EAGA, which is bordered by the sea, the five triangle areas are on land or on a river. The CLV-DTA, the Emerald Triangle and the CHLV Triangle are located on land, and the Golden Triangle and the Green Triangle are on the Mekong River. In other words, they are located in mountainous areas and the access to ports and harbors is not good. Furthermore, not a few minority groups live around the triangle areas. The income-level of inhabitants around the triangle areas is lower and the land is not easy to develop.

The purpose of this chapter is to introduce each triangle area, to seek development opportunities in these areas and to consider challenges to development. The first section introduces the CLV-DTA and northern triangle areas (the Golden Triangle, the Green Triangle and the CHLV Triangle), while an explanation of the Emerald Triangle is in Chapter 2. The second section highlights development opportunities for these areas after presenting the economic indicators of related provinces. The third section examines the challenges, especially to governance, for their development. The conclusion summarizes the sections and offers a number of policy recommendations.

1. OVERVIEW OF THE TRIANGLE AREAS

1.1. Cambodia-Laos-Vietnam Development Triangle Area

1.1.1. History and Scheme of the Development Triangle Area

The Cambodia-Laos-Vietnam Development Triangle Area (CLV-DTA) is the most formally developed triangle area among the five. A ministerial-level meeting of the related countries is held at least once a year and a prime minister-level meeting is held once every two years. In addition, many development projects have been undertaken to date.

The origin of the CLV-DTA goes back to 1999, the year when Cambodia became the tenth member of the Association of Southeast Asian Nations (ASEAN). The three prime ministers of Cambodia, Laos and Vietnam held the first unofficial summit on October 20, 1999 (Table 1)¹ and agreed to build a “Development Triangle.” After the

¹ The three prime ministers were Mr. Hun Sen of Cambodia, Sisavath Keobounphanh of Laos and Mr. Phan Van Khai of Vietnam.

Table 1: The History on Summit of the CLV-DTA

| Date | Meeting | Venue | Major Agreements |
|--------------------|-----------------------------------|------------------|--|
| October 22, 1999 | 1 st Unofficial Summit | Vientiane | Agreement to Build CLV-DTA |
| January 26, 2002 | 2 nd Unofficial Summit | Ho Chi Minh City | |
| July 20-21, 2004 | 3 rd Unofficial Summit | Siem Reap | |
| November 28, 2004 | Vientiane Declaration | Vientiane | Establishment of CLV-DTA |
| December 4-5, 2006 | 4 th Official Summit | Dalat | Agreement to Establish JCC |
| November 26, 2008 | 5 th Official Summit | Vientiane | Consensus on Triangle Master Plan until 2020 |
| November 16, 2010 | 6 th Official Summit | Phnom Penh | Adoption of Revised Master Plan 2010-2020 |

Source: 1) IDE-JETRO (2000, 2001, 2003, 2005, 2007).

2) <http://clv.mfa.gov.kh/?page=detail&menu1=4&menu2=33&article=33&lg=en>.

meeting, Prime Minister Mr. Hun Sen proposed an idea to build a “Green Triangle (different from the one in the north)”, with cooperation in agro-forestry development and environmental conservation, when he visited Mr. Sisavath Keobounphanh, the prime minister of Lao PDR, on October 21, 1999.² After the third unofficial summit on July 20-21 at Siem Reap (IDE-JETRO, 2005, p. 237),³ the three ministers met at Vientiane before the ASEAN Summit there and declared the establishment of the CLV-DTA. The Development Triangle is composed of 10 provinces: Mondol Kiri, Ratanak Kiri and Stung Treng of Cambodia, Attapeu, Saravane and Sekong of Laos and Dak Lak, Dak Nong, Gia Lai and Kon Tum of Vietnam.

The three ministers identified the objectives of the CLV-DTA as:

- 1) Coordination for infrastructure development
- 2) Exploitation of agriculture, forestry and tourism potential
- 3) Building human resources for agriculture, tourism, related industries and small and handicraft industries
- 4) Facilitation of cross-border flows of goods, people and investment capital

² *Jiji Press* dated October 26, 1999.

³ The prime minister of Laos was Mr. Bounnyang Vorachith, while other prime ministers were the same as those at the first minister meeting.

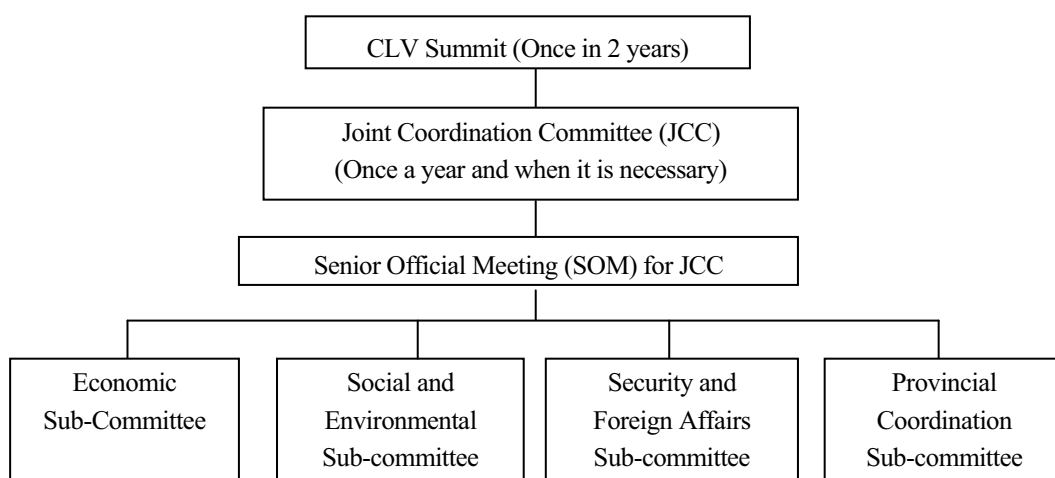
The seven cooperation areas were designated as:

- a) Investment promotion
- b) Trade facilitation
- c) Cooperation with enterprises
- d) Industrial master plan
- e) SME Development
- f) Human Resource Development
- g) Rural Development

At the Fourth Official CLV Summit at Dalat on December 4-5, 2006, the three prime ministers⁴ decided to establish the Joint Coordination Committee (JCC) for the CLV-DTA.

The JCC is composed of a coordination committee from each country. In the decision-making regime of the CLV-DTA (Figure 2), the JCC is located under the CLV Summit, which is held at least once every two years. Under the JCC, a Senior Officials Meeting (SOM) for the JCC was allocated, and four sub-committees were established under the SOM: 1) Economic Sub-committee, 2) Social and Environmental

Figure 2: Regime of CLV-DTA Cooperation Scheme



Source: <http://clv.mfa.gov.kh/?page=detail&menu1=4&menu2=33&article=33&lg=en>.

⁴ The prime minister of Vietnam had become Mr. Phan Van Khai, while other prime ministers were as same as at the meeting at Vientiane.

Sub-committee, 3) Security and Foreign Affairs Sub-committee and 4) Provincial Coordination Sub-committee. The levels of the heads of delegation were decided to be at minister level for the JCC, vice-minister level for the SOM and director-general level for the sub-committee.⁵ It was decided that the JCC meetings were to be held once a year and informal JCC meetings are held if they are needed.

1.1.2. Agendas for the CLV-DTA

The first JCC meeting was held at Pleiku on May 17-18, 2007 (Table 2).⁶ It is here we may see what kinds of issues have been discussed at the JCC and the CLV summits so far. At the fourth JCC meeting, the ministers agreed to add three more provinces: Kratie province in Cambodia, Champasack province of Laos and Binh Phuoc province of Vietnam. With the addition of the three provinces, the CLV-DTA had grown to 13 provinces, as shown in Figure 3.

Table 2: The History on the JCC of CLV-DTA

| Date | Meeting | Venue | Major Events |
|----------------------|---------------------|---------------|--|
| May 17-18, 2007 | 1 st JCC | Pleiku | Fundamental Rules on the JCC |
| February 19, 2008 | 2 nd JCC | Sihanoukville | |
| November 25, 2008 | 3 rd JCC | Vientiane | Adoption of Vientiane Declaration |
| December 21-22, 2009 | 4 th JCC | Dak Lak | Agreement to add 3 mote provinces |
| March 18, 2010 | 5 th JCC | Banlung | Submission of progress reports of all sub-committees |
| November 15, 2010 | 6 th JCC | Phnom Penh | Submission of revised Master plan until 2020 |
| November 9, 2011 | 7 th JCC | Attapeu | |
| December 7-8, 2012 | 8 th JCC | Kon Tum | The roles of national assemblies in CLV-DTA |

Note: The authors could not get any information regarding the third JCC meeting.

Source: http://clv-triangle.vn/portal/page/portal/clv_en and Survey by National Economic Research Institute (NERI), Lao PDR.

⁵ The level of heads of delegation for the SOM and sub-committees were decided at the fifth meeting of the JCC at Banlung, on March 18, 2010.

⁶ The meeting was co-chaired by Mr. Cham Prasidh, Minister of Commerce in Cambodia, Mr. Soulivong Daravong, Minister of Planning and Investment and Mr. Vo Hong Phuc, Minister of Planning and Investment.

Figure 3: Map of the Cambodia-Laos-Vietnam Development Triangle Area



Source: Created by the author.

A consensus on the Master Plan for 2010-2020 was agreed by the three prime ministers⁷ at the Fifth Official Summit at Vientiane on November 26, 2008. The Master Plan was revised at the sixth JCC meeting at Phnom Penh on November 15, 2010 and the

⁷ Mr. Nguyen Tan Dung replaced Mr. Phan Van Khai, who was present at the fourth official CLV Summit on December 4-5, 2006.

revision was adopted at the Sixth Official Summit at Phnom Penh on the next day, November 16, 2010.

Formulating special preferential incentives and policies was also on the agenda for the CLV-DTA. At the second JCC meeting at Sihanoukville on February 19, 2008, the ministers agreed to prepare for the formulation of special preferential incentives. At the fifth JCC meeting, the ministers tasked the Economic Sub-committee to produce a common list of products for special preferential treatment and recognized the importance of alignment and harmonization of trade and investment-related incentives. At the seventh JCC meeting at Attapeu, Lao PDR, on December 9, 2011, the ministers⁸ appreciated the progress of the amended MOU toward the formulation of special preferential policies.

Cross-border trade facilitation is another important agenda item for the CLV-DTA. The need for simplification of procedures to facilitate the flow of goods and people in the CLV-DTA was emphasized at the second JCC meeting in 2008. At the fifth JCC meeting, the ministers agreed to task Economic Sub-committee to study the best practices of the Single Stop Inspection at the Dansavanh-Lao Bao border crossing between Laos and Vietnam. At the eighth JCC Meeting, it was decided to assign the relevant authorities to discuss the exchange possibility of transport rights between the three countries in order to facilitate the transit of goods and travelers across the CLV-DTA.

A review of the results indicated that more than 900 projects were listed as priority projects for the Master Plan. However, not a few provincial government officials said that the number of the priority projects was too many and, to date, few of them have been realized. Regarding the special preferential incentives and cross-border trade facilitation, concrete progress has not been reported. However, the addition of the three provinces in 2009 is considered a good result.

1.1.3. Japanese Support for the CLV-DTA

It is remarkable that the support of the Japanese government for the CLV-DTA began even before its establishment (Table 3). On November 27, 2004, one day before the Vientiane

⁸ The Ministers of Planning and Investment of Laos and Vietnam were changed to Somdy Douangdy and Bui Quang Vinh, respectively.

Table 3: The Meeting of CLV and Japan

| Date | Meeting | Venue | Major Events |
|-------------------|------------------------|--------------|--|
| November 27, 2004 | 1 st FMM | Vientiane | Request of CLV to Japan for supporting |
| November 30, 2004 | 1 st Summit | Vientiane | Support of 1.5 billion USD by Japan to CLV |
| December 10, 2005 | 2 nd FMM | Kuala Lumpur | Support of 40 million USD by Japan to CLMV |
| December 13, 2005 | 2 nd Summit | Kuala Lumpur | |
| January 12, 2007 | 3 rd FMM | Cebu | |
| August 2, 2007 | 4 th FMM | Manila | |
| November 20, 2007 | 3 rd Summit | Singapore | |
| July 22, 2008 | 5 th FMM | Singapore | Japan-Mekong and Japan-CLV |

Source: http://www.mofa.go.jp/mofaj/area/j_clv/index.html.

http://www.mofa.go.jp/mofaj/area/j_mekong_k/index.html.

Declaration, the first foreign ministers meeting between the CLV and Japan was held and the CLV foreign ministers⁹ asked Mr. Nobutaka Machimura, the foreign minister of Japan, to support the CLV-DTA because of its political and social importance rather than its economic significance. Mr. Machimura replied that Japan would consider what kinds of support were possible in accordance with the need to develop these poor areas. On November 30, 2004, three days after the foreign ministers meeting, the First CLV and Japan Summit was held at Vientiane. The Prime Minister of Japan, Mr. Junichiro Koizumi, expressed support for the expected amount of USD 1.5 billion for the development of the CLV countries, including the DTA, within the framework of Japan's Initiative for the Mekong Region Development. On December 13, 2005, Mr. Koizumi expressed the desire to implement 16 projects worth JPY 2 billion (about USD 18 million) for the CLV-DTA, mainly in the sector of basic human needs (BHN).¹⁰

Within the framework of Japan's Initiative for the Mekong Region Development, projects including support for education, irrigation and infrastructure development have been undertaken. Support for education included construction of elementary schools in Gia Lai and Dak Lak provinces in Vietnam, supporting primary education programs by

⁹ Mr. Cham Prasidh, Minister of Commerce, Cambodia, Mr. Somsavat Lengsavad, Minister of Foreign Affairs, Lao PDR and Mr. Le Van Bang, Minister of Foreign Affairs, Vietnam attended the meeting.

¹⁰ Press release of Ministry of Foreign Affairs, Japan on November 30, 2004..

community initiatives in Sekong and Attapeu provinces of Laos and providing equipment to vocational schools in Kon Tum province in Vietnam. Two projects indicated assistance to regional irrigation: the improvement of irrigation facilities in Ratanak Kiri province, Cambodia and the construction of an irrigation system in Kon Tum province in Vietnam. Support for infrastructure development was seen in a project to construct a bridge connecting two villages in Saravane province, a micro-hydropower plant project in Mondol Kiri province and a small-scale infrastructure development project in Dak Nong province.¹¹

Further assistance for the CLV-DTA was indicated by Japanese Vice Foreign Minister, Mr. Katsuhiko Asano, when he noted continuing financial support of USD 40 million to the CLMV countries. The financial support is part of the USD 52 million commitment to the Japan-ASEAN Integration Fund (JAIF). Out of USD 40 million to the CLMV countries, USD 20 million was allocated for the CLV-DTA, while another USD 20 million was allocated to support the East-West and Southern Economic Corridors.¹²

Under the JAIF scheme, projects including support for education, irrigation and infrastructure development have also been carried out. The education projects included the construction of elementary and junior high schools in Sekong, Attapeu and Saravane provinces, rehabilitating schools in Stung Treng, Ratanak Kiri and Mondol Kiri provinces and erecting facilities for teachers in Ratanak Kiri province. Support for irrigation projects was seen in Saravane province. Infrastructure projects included the construction of the Sekhaman bridge, which connects Attapeu in Laos and Ratanak Kiri in Cambodia, as well as local road projects in Stung Treng and Ratanak Kiri provinces, mini-hydro projects in Ratanak Kiri province and water supply projects in Sen Monorom and Banlung, the capital cities of Mondol Kiri and Ratanak Kiri provinces, respectively. In addition, construction projects included a hospital and local health-care centers in Saravane province and the construction of a service center for agricultural technology in Attapeu province. In Cambodia, feasibility studies for community-based poverty reduction by way of tourism

¹¹ Press release of Ministry of Foreign Affairs, Japan on December 13, 2005.

¹² Press release of Ministry of Foreign Affairs, Japan on January 12, 2007.

development, an environmental education network for the CLV-DTA and preserving valuable plant genetic material were proposed, but these projects were not realized.¹³

Started on July 22, 2008, the CLV and Japan cooperation framework continued to be a scheme of the Mekong-Japan Cooperation. Further support for the CLV-DTA was stressed in the sixty-three action plan items (JPY 500 billion) mentioned by Japanese Prime Minister, Mr. Yukio Hatoyama on November 7, 2009 and the 127 action plan items (JPY 600 billion) expressed by Mr. Tsuyoshi Yamaguchi, Deputy Foreign Minister of Japan on July 10, 2012.

1.2. Emerald Triangle

The Emerald Triangle, established in 2000 for the purposes of economic cooperation, includes Preah Vihear, Stung Treng and Siem Reap provinces of Cambodia, Champasack and Saravane provinces of Lao PDR and Ubon Ratchathani and Si Sa Ket provinces of Thailand. Details on the history and the triangle scheme will be discussed in Chapter 2. An overview of the Emerald Triangle is beyond the scope of this chapter.

1.3. Northern Triangles in the GMS

In the northern part of the GMS, the Golden Triangle is the most well-known. The combined area of the Golden Triangle and Green Triangle, Golden Quadrangle Area (or the Quadrangle Economic Zone) has been developed as a part of the North-South Economic Corridor (NSEC). As another triangle area, we expect the CHLV Triangle to be connected with the Golden Quadrangle. Thus, we call the combined three triangles shown in Figure 4 the “Northern Triangles.”

1.3.1. Golden Triangle as Opium Cultivation Fields

The triangle area composed of Laos, Myanmar and Thailand is called the Golden Triangle. It used to be notorious for drug trafficking. It is said that opium poppies have been grown in southeast Asia as a medicinal and cash crop for centuries and cultivation of the crop was

¹³ Projects listed are based on materials provided by the Embassy of Japan in Cambodia (to Ms. Naomi Hatsukano) and the Embassy of Japan in Lao PDR. No information about Vietnam was obtained.

Figure 4: Map of Northern Triangles



Source: Created by the author.

commercialized some 150 years ago. For the past 50 years, the buyers of opium have been mainly Chinese merchants connected with international groups operating from China and Thailand (UNODC, 2008, p. 49).¹⁴ The term Golden Triangle was popularized by western journalists during the early 1970s. It refers to the millions of dollars made from the sale of the drug by international traffickers, while the producers of the poppies suffer from poverty because of forest-clad mountains (Crooker, 1988, p. 241). The Golden Triangle, formed by Bokeo province in Laos, East Shan State of Myanmar and Chiang Rai province of Thailand, used to be the focus of drug-trafficking and opium cultivation.

¹⁴ The UNODC (2008) explains this fact as it concerns Myanmar.

Efforts to reduce opium cultivation have been made by the governments in the area. In Thailand, a grower or smuggler of opium or its derivatives may receive a prison term of six months to ten years under an anti-opium law passed in 1959 (Crooker, 1988, p. 243). In 1969, King Bhumibol Adulyadej introduced a crop replacement project after the construction of his new Phubing Palace in Chiang Mai adjacent to an opium poppy-growing village on Doi Pui Mountain. The Thai government established the Office of Narcotics Control Board (ONCB) in 1976. Since then, the ONCB began conducting surveys of poppy cultivation and, with the assistance of the United States and the United Nations, convinced growers to reduce production rather than eradicate opium poppy fields (UNODC, 2008, p. 93). As a result, the total opium production in Thailand decreased from 145 tons in 1967 to 33 tons in 1985. In 2002, Thailand was declared opium-free. The estimated opium production, after accounting for eradication as of 2008, was 56.35 kg. Out of the total area in 2008, the cultivation in Chiang Mai was 213.45 ha, while Tak was 30.82 ha, Mae Hon Son was 17.97 ha and Chiang Rai was 8.87 ha (UNODC, 2008, p.95).

In Laos, the government and the UNODC developed the strategic program, “Balanced approach to opium elimination in the Lao PDR” in 1999. In November, 2000, concrete measures against opium poppy cultivation and opium abuse were stipulated as Prime Minister Order No. 14. In 2001, the seventh congress of the Lao People’s Revolutionary Party called for opium production and use to be eliminated by 2005 and linked to poverty reduction. In October 2001, a national campaign was launched to encourage communities to give up opium production. As a result, Lao PDR was declared opium-free in February, 2006. The estimated opium cultivation area in 2008 was 1,560 ha. According to the survey, opium poppy cultivation was confirmed in six provinces, Phongsaly, Huaphanh, Luangnamtha, Xiengkhuang, Oudomxay and Luangprabang (UNODC, 2008, pp. 19-20).

Myanmar had been the world’s largest producer of illicit opium until Afghanistan took that dubious title in 1991 and pushed Myanmar into second place (UNODC, 2008, p.49). In Myanmar, militarized minority groups have fought with the central government of Burmese people. The Mong Tai Army (MTA) and the United Wa State Army continued to resist central government authority by earning money from drug trafficking (Oo, 2010, p. 3-3). However, the surrender of Mr. Khun Sa, the leader of the MTA, to the State Law and

Order Restoration Council (SLORC) in 1996 resulted in the negotiation of a series of truce agreements between the SLORC and militarized minority groups. In 1999, the Government of Myanmar decided to engage in a fifteen-year plan to eliminate the illicit crop by the year 2014 and a ban on opium cultivation was declared in June, 2005. Consequently, the production and cultivation area of opium has shown a significant downward trend. As of 2008, the opium cultivation areas of East Shan, North Shan, South Shan, Kachin State and Kayah State are 9,500 ha, 800 ha, 15,000 ha, 1,400 ha and 1,800 ha, respectively (UNODC, 2008, p.49-51).

Consequently, opium poppy cultivation has decreased in Laos, Myanmar and Thailand. Thailand and Laos were declared opium-free, while the declaration of opium-free was promoted at the district and township levels in Myanmar. Even in Thailand, however, opium cultivation has not been totally eradicated, though the cultivation area is negligible. Some people in the Golden Triangle, especially in the mountainous areas, are faced with food insecurity; potentially, they can be dependent on opium cultivation in order to buy rice as the price of the poppies increases (UNODC, 2008, p.62). On the other hand, the Golden Triangle, where the three country borders meet and the Sai River flows into Mekong River, has become a tourist destination in Thailand. On the Laotian side, casinos and other tourist facilities have recently been developed (see Chapter 5).

1.3.2. Golden Quadrangle Area

The triangle of China, Laos and Myanmar is called the Green Triangle in China. Guanglei Port, the major port along the Mekong River in China, is located near the triangle. As indicated in the Introduction, the Golden Triangle and the Green Triangle can be combined into an area that has been called the “Golden Quadrangle Area (GQA)” or the “Quadrangle Economic Zone (QEZ).”

Since the Prime Minister of Thailand, Mr. Chatichai Chunchavan advocated the conversion of Indochina from a battlefield to a market in 1988, Thailand has worked positively to promote development cooperation with neighboring countries. In 1990, the Chiang Rai Chamber of Commerce revealed the concept of the QEZ or the GQA (unified as GQA, hereinafter), composed of China, Laos, Myanmar and Thailand. In April, 1993, Dr. Supachai Panitchpakdi, Vice Minister of Thailand announced the concept of the GQA and

the First Ministerial Meeting on the GQA was held in May, 1993 (Tsuneishi, 2008). The provinces and districts included were Simao City (currently called “Puer city”) and the Xishuangbanna Dai Autonomous prefecture of Yunnan province, the six northern provinces of Laos (Bokeo, Luangnamtha, Phongsaly, Oudomxay, Luangprabang and Huaphanh), Kengtung and Tachilek of East Shan State in Myanmar and Chiang Rai and Chiang Mai provinces of Thailand (Lu and Zhang, 2011, p. 206). Further meetings, however, were suspended because of the economic crisis in 1997. In 2000, the chambers of commerce of 10 provinces of Northern Thailand were enrolled and a “Joint Economic Quadrangle Committee (JEQC)” was established for the coordination of the four countries. Subsequently, activities stagnated again, though the cooperation was restarted in 2010.

The area of GQR became more developed under the scheme of the GMS economic cooperation program. The Bangkok-Kunming section of the NSEC is separated at Chiang Rai into the Laos Route (R3A) and the Myanmar route (R3B). The routes rejoin at Xiaomengyang in Xishuangbanna. Regarding the Laos route, Chiang Rai and Chiang Khong, an international border crossing with Laos, are connected by a two-lane road in Thailand. The Lao section connects Huoixai, the other side of Chiang Khong and Boten. Laos was reluctant to construct the road because the construction was costly and the benefits to Laos were few. In 2002, it was decided to construct the road section with joint loans from China, the ADB and Thailand. The road was completed in early 2008. Regarding the fourth Mekong Bridge between Chiang Khong and Huoixai, China and Thailand agreed to share the construction cost at the 14th GMS Ministerial Meeting in 2007. It will be completed in June, 2013. The 157 km section between Mohan and Xiaomengyang is a two-lane upgraded highway. Regarding the Myanmar route, the section in Thailand between Chiang Rai and Mae Sai, the international border crossing with Myanmar, is a part of National Road (NR) 1. Regarding the Myanmar section between Tachileik (across from Mae Sai) and Mengla, the 163km section between Tachileik and Kengtung was financed by the Myanmar government and the Shan state government; the 93km section between Mengla and Kengtung was constructed by a private company (Hong Pang Co.). The 358km section between Daluo border crossing to Xiaomengyang in China is a two-lane road in good condition. However, Mengla-Daluo border is not an international

border crossing because Mongla belongs to the Fourth Special Region where a militarized minority group is in control.

In addition to the Laos and Myanmar Routes, an inland waterway connects Puer City (Simao) of China and Chiang Saen port in Chiang Rai province in Thailand based on Lancang-Mekong River Commercial Navigation Agreement signed on April 20, 2000 (Tsuneishi 2007, p.44). Not a few Chinese ships transport fruit and oil between Guanlei and Chiang Saen. Since the affair in which 13 Chinese sailors were killed on October 5, 2011, the number of Chinese ships decreased and shipping was taken over by smaller Laotian vessels. Laotian vessels also carry passengers between Huoixai and Luangprabang for tourism purposes.

1.3.3. CHLV Triangle and Connectivity with Golden Quadrangle Area

The CHLV Triangle, which includes Puer City in Yunnan, China, Phongsaly province in Laos and Dien Bien province in Vietnam, is not well-known to date. The three provinces, however, have already considered development of local tourism sites.¹⁵ An access road from China has been built. Thus, the development of better access roads from the Lao and Vietnamese sides is expected.

In addition, there was another road development project which connects Meiktila, Myanmar and Hanoi by way of Laos and the Myanmar border supported by Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS). Regarding this project, the governments of Lao PDR and Myanmar already signed an agreement to construct a bridge over the Mekong River between Xiengkong river port and Kainglap in early 2012.¹⁶ Thus, better access from northwestern Vietnam to the quadrangle area by way of Dien Bien, Vietnam, Phongsaly and Oudomxay, Laos is expected. The completion of the Fourth Mekong Friendship Bridge between Thailand and Laos is scheduled for June, 2013. It will improve access between the CHLV Triangle and the Golden Quadrangle Area.

¹⁵ Interview with government officials of Phongsaly province on September 21, 2012.

¹⁶ *The Nation*, on January 15, 2013.

2. SEEKING DEVELOPMENT STRATEGIES FOR TRIANGLE AREAS

So far, an overview of the five triangle areas has been provided by combining the Golden Triangle, the Green Triangle and the CHLV Triangle. This section discusses fundamental economic indicators of provinces or districts which make up the respective triangle areas. Based on the indicators, we evaluate whether the border development model can be applied for the areas. Following that, we examine the potential industries.

2.1. Economic Indicators of Related Provinces/Districts in Triangle Areas

Table 4, Table 5 and Table 6 show the population density, its rank, gross provincial

Table 4: Economic Indicators of the CLV-DTA

| Province | Population Density (persons/km ²) | Rank | GPP/Capita (USD) | Rank |
|------------------|--|-------|---------------------|-------|
| Stung Treng (C) | 10.1 | 23/24 | NA | NA |
| Ratanak Kiri (C) | 13.9 | 20/24 | NA | NA |
| Mondol Kiri (C) | 4.3 | 24/24 | NA | NA |
| Kratie (C) | 28.8 | 19/24 | NA | NA |
| Saravane (L) | 35.1 | 4/17 | 805.0 | NA |
| Sekong (L) | 13.1 | 15/17 | 460.0 | NA |
| Attapeu (L) | 12.6 | 16/17 | 881.0 | NA |
| Champasack (L) | 42.9 | 2/17 | 1,262.0 | NA |
| Kon Tum (V) | 46.8 | 61/63 | 610.5 | 46/63 |
| Gia Lai (V) | 85.1 | 55/63 | 662.1 | 42/63 |
| Dak Lak (V) | 135.0 | 45/63 | 688.6 | 38/63 |
| Dak Nong (V) | 79.2 | 56/63 | 669.9 | 40/63 |
| Binh Phuoc (V) | 131.7 | 48/63 | 983.8 | 11/63 |

Notes: 1) Data of Cambodia, Laos and Vietnam are as of 2008, 2011 and 2010, respectively.

2) A character parenthesized after the name of provinces is the initial of the country.

3) Provinces upper than the dotted line are original members and lower than are new members which were added in 2009.

Source: National Institute of Statistics (2012), National Statistical Center (2012), Data of Provinces in Laos and General Statistics Office (2012) for Cambodia, Laos, Laos and Vietnam, respectively.

Table 5: Economic Indicators of the Provinces of the Emerald Triangle

| Province | Population Density (persons/km ²) | Rank | GPP/Capita (USD) | Rank |
|-----------------------|--|-------|---------------------|-------|
| Stung Treng (C) | 10.1 | 23/24 | NA | NA |
| Preah Vihear (C) | 12.4 | 20/24 | NA | NA |
| Oddor Meanchey (C) | 30.2 | 24/24 | NA | NA |
| Siem Reap (C) | 87.0 | | NA | NA |
| Saravane (L) | 30.2 | 4/17 | 805.0 | NA |
| Champasack (L) | 42.9 | 2/17 | 1,262.0 | NA |
| Ubon Ratchathani (T) | 114.3 | 44/76 | 1,333.4 | 63/76 |
| Si Sa Ket (T) | 163.3 | 19/76 | 1,048.8 | 75/76 |
| Surin (T) | 169.5 | 18/76 | 1,158.5 | 72/76 |
| Buri Ram (T) | 149.6 | 26/76 | 1,220.4 | 67/76 |
| Nakhon Ratchasima (T) | 125.3 | 35/76 | 2,297.1 | 42/76 |
| Chaiyaphum (T) | 88.0 | 52/76 | 1,175.7 | 70/76 |

Notes: 1) Data of Cambodia, Laos and Thailand are as of 2008, 2011 and 2010, respectively.
 2) A character parenthesized after the name of provinces is the initial of the country.
 3) Provinces upper than the dotted line are member provinces and lower than are new neighboring related provinces.

Source: National Institute of Statistics (2012), National Statistical Center (2012), Data of Provinces in Laos and National Statistics Office (2012) for Cambodia, Laos, Laos and Thailand, respectively.

products (GPP) or gross regional products (GRP) and its rank of each related province, state and city (these are referred to as “province,” hereinafter) of the CLV-DTA, the Emerald Triangle and the Northern Triangles. We can see several common characteristics of triangle areas.

First, the population density of provinces in Laos and Cambodia is relatively small. For example, the population density of Champasack province is the second-highest in Laos, as shown in Table 4. However, it is lower than that of Kon Tum province, which is the third-lowest in Vietnam. The population density of Siem Reap is just lower than the middle position in Cambodia, but it is lower than that of Chaiyaphum in Thailand, which is the 52nd highest out of 76 provinces (Table 5).

Second, many provinces which show bottom levels of population density are in the

Table 6: Economic Indicators of Provinces/Districts of the Northern Triangle

| | Population Density (persons/km ²) | Rank | GPP/Capita (USD) | Rank |
|--------------------|--|-------|---------------------|-------|
| Yunnan (Ch) | | | 2,321.3 | 30/31 |
| Luang Namtha (L) | 18.0 | 13/17 | 815.0 | NA |
| Bokeo (L) | 27.4 | 5/17 | 998.1 | NA |
| Luang Prabang (L) | 27.0 | 6/17 | NA | NA |
| Oudomxay (L) | 20.0 | 10/17 | 808.0 | NA |
| Phongsaly (L) | 10.9 | 17/17 | 624.0 | NA |
| Houaphanh (L) | 19.7 | 11/17 | NA | NA |
| (Eastern) Shan (M) | 238.4 | 11/14 | 233.2 | 2/17 |
| Chiang Rai (T) | 103.7 | 47/76 | 1,771.7 | 51/76 |
| Chiang Mai (T) | 82.1 | 54/76 | 2,838.4 | 32/76 |
| Son La (V) | 79.0 | 57/63 | 517.1 | 58/63 |
| Lai Chau (V) | 43.1 | 62/63 | 365.6 | 63/63 |
| Dien Vien (V) | 53.6 | 60/63 | 393.9 | 61/63 |

Notes: 1) Data of China, Laos, Myanmar, Thailand and Vietnam are as of 2010, 2011, 2008, 2010 and 2010, respectively.
2) A character parenthesized after the name of provinces is the initial of the country.
3) Provinces upper than the dotted lines are member provinces and lower than are new neighboring related provinces.

Source: National Bureau of Statistics of China (2012), National Statistical Center (2012), Data of Provinces in Laos, Central Statistical Organization (2012), National Statistics Office (2012) and General Statistics Office (2012) for China, Laos, Laos, Myanmar, Thailand and Vietnam respectively.

triangle areas. For example, the population densities of Mondol Kiri and Stung Treng provinces of the CLV-DTA and Preah Vihear province of the Emerald Triangle are the lowest, second-lowest and fifth-lowest in Cambodia. The population densities of Phongsaly of the CHLV Triangle, Attapeu and Sekong of the CLV-DTA are the lowest, the second-lowest and the third-lowest, respectively. The population densities of Lai Chau and Dien Bien of the CHLV Triangle and Kon Tum provinces of the CLV-DTA are the second, the fourth and third-lowest in Vietnam. On the other hand, the provinces of Thailand do not show the lowest values. Conversely, several provinces have population density that is higher than the median (Champasack, Bokeo, Luangprabang and Saravane in Laos, Shan state in Myanmar, Surin, Si Sa Ket, Buri Ram and Nakhon Ratchasima provinces in

Thailand), while there are no provinces in which the population density is higher than the median in Vietnam. It should be remembered, however, that the population density of Saravane is not very high compared with provinces of Thailand, Vietnam and Myanmar.

Third, the same trends are shown regarding the GPP per capita. In other words, these areas are poor. GPP per capita of Lai Chau and Dien Bien provinces is the lowest and third-lowest in Vietnam and all the related provinces of the CLV-DTA and the CHLV Triangle are lower than the median in Vietnam except Binh Phuoc province. Furthermore, the GPP per capita of these provinces is lower than those of provinces in Laos, while the value of Sekong province in Laos shows the lowest one. GPP per capita of Si Sa Ket and Surin provinces is the second and fifth-lowest in Thailand and all the provinces of Thailand in the Emerald Triangle and the Golden Triangle are lower than the median in Thailand except Chiang Mai Province. GPP per capita of Yunnan province is also the third-lowest in China, while it shows the second-highest value of the three tables. In Laos, the GPP per capita in the fiscal year of 2006/07 of Houaphanh, Sekong and Attapeu is the lowest, the second-lowest and the third-lowest in Laos, while the rank as of the fiscal year 2010/11 is not available in Laos. On the other hand, GPP per capita of Champasack, Saravane and Luangprabang is the second, fifth and seventh-highest, respectively, from the same data set.

2.2. Possibility of Applying Border Area Development Model

According to Kudo and Ishida (2010), some border areas have attracted investment from manufacturing industries in the GMS. In the case of a border area between a lower-income country and a middle-income country, the border area can enjoy the advantages of a lower-income country, such as cheaper wages and privileges from the generalized systems of preferences (GSP) and those of the middle-income countries, such as more abundant electricity and better port infrastructure at the same time. For example, Bavet, a Cambodian border city with Vietnam in the Southern Economic Corridor, has received investments from a number of foreign companies. The distance to Ho Chi Minh City is about 80 km while that to Phnom Penh is about 180 km. Thus the companies in Bavet can export their products by way of the port in Ho Chi Minh City and utilize the more reliable and lower price of electricity imported from Vietnam as well as benefit from the lower wages and GSP of Cambodia. The same kind of prosperity is shown at the Mae Sot border crossing (in

Thailand) with Myanmar and Lao Bao–Dansavanh border between Vietnam and Laos in the EWEC.

Can this kind of border area development model apply to the borders in the triangle areas? Between Thailand and Cambodia, Thailand and Laos, Thailand and Myanmar and China and Laos, we can see differences in income. At the border areas formed between these pairs of countries, border economic activities can succeed. As a matter of fact, at the Chom–“Chong Sa Ngam” and O’ Smach-Chong Chom border crossing between Cambodia and Thailand, people are engaged in commercial activities in border markets and Thai people enjoy gambling at casinos on the Cambodian side. At the Vangtao-Chong Mek border crossing between Laos and Thailand, vegetables and fruits are exported from Laos to Thailand and many Thai tourists enjoy the waterfalls and Wat Phu temple in Laos after crossing the border. Many trucks cross the border at the Boten-Mohan border crossing between Laos and China.

However, as the population densities of Cambodia and Laos are low, it is not certain whether even higher prosperity can be achieved or not. It is not easy to develop the economies of border areas, such as those between Vietnam and Cambodia, Vietnam and Laos and Cambodia and Laos, because the income levels of Vietnam are sometimes lower than those of Cambodia and Laos (Tables 4 and Table 6). At the Phukeua-Bo Y border crossing, the Panghok (Sobhun)-Tay Trang border crossing and the O’Yadav-Le Thanh border crossing between Laos and Vietnam, we can see border trade, but the economic activities in the border areas do not prosper. The exception is the border crossing at Trapeang Srae and Hoa Lu between Cambodia and Vietnam where border economic zones attract investment to the Vietnamese side because the GPP per capita in Binh Phuoc in Vietnam is higher.

Summarizing this sub-section, the border areas between Cambodia and Vietnam and between Laos and Vietnam, included in the CLV-DTA and CHLV triangle, are not easy to develop. The borders between Cambodia and Thailand, between Laos and Thailand and between Laos and China have brighter prospects. However, the effects are not so apparent because the population density on the Cambodian and Laotian sides is not very high.

2.3. Potential Industries for Development Triangles

In order to reduce poverty and develop the economies of the triangle areas, increasing export products and attracting foreign direct investment (FDI) are important. In order to attract FDI, it is necessary to make clear the potential industries.

According to the classical industrial location theory by Alfred Weber, there are three factors: 1) transportation cost, 2) labor cost and 3) profits from agglomeration. Industries are categorized into two types: material-oriented industries and market-oriented industries. Material-oriented industries are those where the materials are heavier than the final products. For these industries, it is cost-effective to manufacture near the origin of the materials and ship them after decreasing the weight. The coal and cement industries are examples of material-oriented industries. Market-oriented industries are those whose final products are heavier than the materials they are made of. For such industries, it is cost-effective to manufacture near the consuming location. The beer industry is an example of these industries: materials like hops and malt are lighter than beer (Sugiura, 2003, pp. 33-35).

The triangle areas in the GMS are never close to the sea as all triangle areas are located inland. Thus, material-oriented industries, instead of market-oriented industries, are suitable. Regarding the economic factors, labor costs are lower, but agglomeration cannot be expected. On the other hand, transportation costs can lead to variable profits. In order to attract investment, good roads to markets, in other words, to cities and to ports, are necessary. Considering the triangle areas, cross-border trade facilitation is a key to exporting, i.e., it is necessary for trucks and buses to cross multiple borders freely. For example, businessmen in Binh Phuoc province in Vietnam may express a desire that trucks and buses would be able to travel from Ubon Ratchathani in Thailand to the province by way of Laos and Cambodia. A businessman in Stung Treng in Cambodia would calculate that import costs become cheaper if trucks transport goods from Ubon Ratchathani. Currently, most Thai products are imported through the Poipet border. Thus, better road infrastructure and transit schemes allow more profitable locations of material-oriented industries.

Then, what kinds of industries can be expected? Considering the products we saw and the information we heard in the interviews with provincial government officials on the

field trip, the following products are included: 1) food crops, 2) industrial crops, 3) livestock and fishery products, 4) mining resources and 5) electricity. Regarding 1) food crops, cassava, maize, sugarcane, coffee beans, cashew nuts, pepper, soy beans, peanuts and vegetables are available even in mountainous areas, though some crops need appropriate climatic conditions. Additionally, rice is available in flat areas. Concerning 2) industrial crops, rubber, eucalyptus, logs, mulberries and bamboo are available. As for 3) livestock and fishery products, poultry, cows, buffaloes, pigs, goats, horses and river fish are available. Regarding 4) mining products, we heard that cement, iron ingots, limestone, bauxite, gold, copper, coal, marble, granite and nickel are produced, explored or excavated (Ishida 2012, p. 23). Regarding 5) electricity, hydropower generation has been planned and developed. The products listed here are primary products, but they can be processed near their origins. In particular, cassava, sugarcane, rubber and cement can be manufactured without long-distance transportation, while mining products need to be purified near the origin of extraction.

In addition to material-oriented industries, there is much potential for tourism. Dalat and Sapa in Vietnam have been developed as resorts and have attracted a large number of tourists who want to escape the heat. In the CLV-DTA, some areas in Kon Tum, Gia Lai, Dak Lak, Dak Nong, Sekong, Saravane, Attapeu and Mondol Kiri can be developed as the same kind of resort area. Son La, Lai Chau, Dien Bien and Phongsaly have similar potential. A number of minority groups live in these areas and presentations of their daily lives can attract tourists. Natural tourism resources like waterfalls and lakes also attract tourists. In addition to these, historical heritage sites have potential. In the Emerald Triangle and the neighboring provinces, there are a number of ruins of Khmer culture and some, like Wat Phu, Preah Vihear and Phnom Rung, are very famous. Some provinces like Ratanak Kiri province in Cambodia, Champasack and Luangnamtha provinces in Laos and Chiang Rai and Chiang Mai provinces in Thailand have shown how successful these sites can be.

Finally, the triangle, itself, can be a good tourist site. The Golden Triangle in Chiang Rai province has attracted a lot of tourists. The Golden Triangle SEZ on the Lao side has been developed and now includes a casino. Regarding triangles on the river, like the Golden Triangle and the Green Triangle, each port in the three countries can be connected by ships. In the land-locked triangle areas, like the CLV-DTA and CHLV-DTA, a

monument where the three countries' have a border crossing has been built and there is a plan to develop a new tourist site in the CHLV Triangle. For the development of such areas, the cooperation of immigration departments of the three countries is necessary.

In order to develop tourism, better access roads to tourist sites are needed. However, destroying attractive scenery should be avoided. In addition, good accommodation facilities need to be developed. Cooperation in order to realize tourism cross-border facilitation is also necessary.

3. REQUIREMENTS FOR GOOD GOVERNANCE

Potential industries are enumerated in the second section. However, prioritizing only the profits of businessmen may easily produce negative effects.

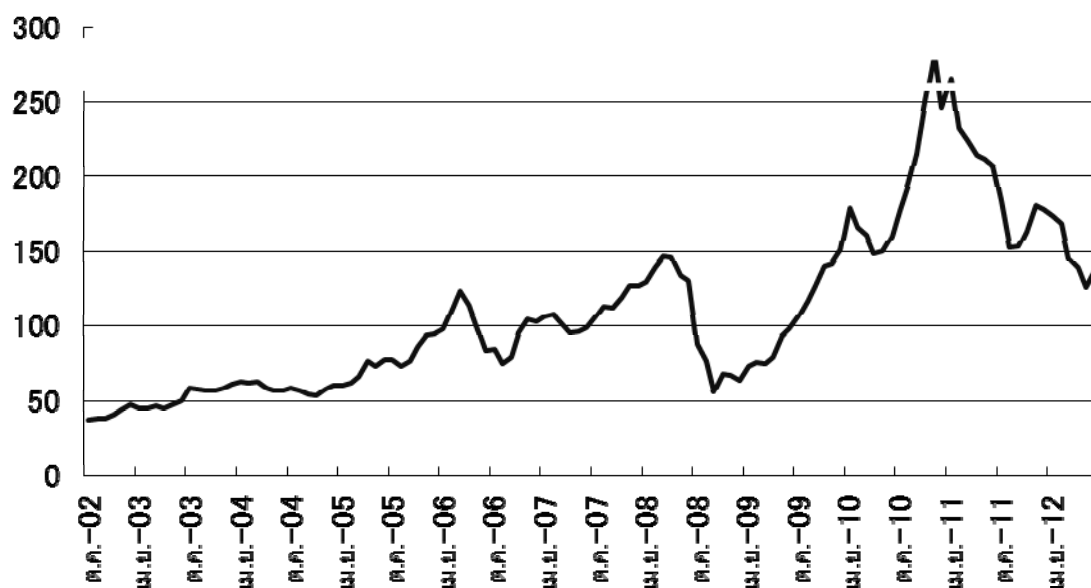
3.1. Risk of Using Unsafe Chemicals in Agriculture

There is a risk that farmers of food and industrial crops, without sufficient knowledge of international safety standards, may use pesticides, herbicides and fertilizers which contain unsafe chemicals. As a matter of fact, a survey conducted by a team led by Dr. Lynn Thiesmeyer reported that such dangerous chemicals are used in the Golden Quadrangle area (Thiesmeyer, 2010, p. 21). Using these unsafe chemicals can affect the health of farmers and soil quality. Educating farmers with appropriate information on pesticides, herbicides and fertilizers and controlling such materials at borders is needed.

3.2. Challenges in Increasing Demand for Natural Rubber

Among the food and industrial crops, it is remarkable that the area for planting natural rubber has been increasing. Figure 5 shows the natural rubber price during a ten-year period. The price peaked on February 11, 2011 and has subsequently presented a downward trend. Thus, there is the potential producer risk of international market price fluctuation because it takes seven or eight years from planting to harvesting. The planting area for rubber plantation will continue to increase because the international market price is expected to show an upward trend considering the increasing demand for automobile tires in China, in

Figure 5: Trend of Natural Rubber Price



Source: <http://www.indexmundi.com/commodities/?commodity=rubber&months=120>.

ASEAN and in India. In natural rubber processing, latex waste is harmful and has to be disposed of appropriately. Outflows of latex waste from a collection pond should be avoided. In addition, air pollution caused by the smoking process should be managed appropriately. Concerning the natural rubber industries in Laos and Cambodia, the labor force required for tapping may be considerably smaller in the future when all the rubber trees are ready for tapping. This may be a problem for provinces in the triangle areas in Cambodia and Laos according to Table 4, Table 5 and Table 6.

Natural rubber planting can be divided into two types: land concession and contract farming. In the case of land concession, the development can be abused to cut down trees. Cutting down trees is usually prohibited, but it is allowed in the case of development, including rubber plantation. As a matter of fact, the Prime Minister of Lao PDR, Mr. Bouasone Bouphouanh, temporally stopped providing land concessions larger than 100 ha at the First Meeting on Land Use on May 7-8, 2007. This prohibition was triggered by a coconut palm concession, but the real purpose was to cut down trees after a natural forest

area was regarded as wild forest. In addition, there were disagreements between investors and local land users who were also residents, but were not land owners (Hyakumura, 2008, pp. 246-248). There were also disagreements between investors and farmers involved in contract farming concerning profit allocation in the northern part of Laos.

Regarding these issues, the government of Lao PDR decided in 2012 that the country will not consider any investment proposals for land concessions in rubber, eucalyptus and mining until December 31, 2015.

3.3. Challenges in Developing Mining Metals

In accordance with our field survey, we have heard that all the triangle areas have development potential in mining industries. However, caution should be exercised when mining metals. In the metal purifying process, a lot of waste is produced as a by-product. The waste includes highly acidic heavy metal which is dangerous to the health and the environment. After raining, some portion of the waste may be absorbed by the soil and flow into rivers. Therefore, appropriate countermeasures are required. Such a situation affects the people who live around the mines and may kill fish in a nearby river. Research has shown that metals like arsenic, cadmium, zinc, lead, mercury, cyan, selenium, fluorine, boron and hexavalent chrome are dangerous.¹⁷

Investment in sectors which can adversely affect people's health and the environment is on the negative list. If the investment threatens a negative impact on people's health or the environment, it should be prohibited. If the government approves the investment, the government should request that the company prepare the appropriate equipment or facilities in order to avoid such risks. And if the impact cannot be assessed, the government should not approve the investment.

Japan Oil, Gas and Metal Corporation (JOGMEC) conducted seminars on mine pollution control and published a manual on related technologies and institutions translated into the Khmer, Lao, Burmese and Vietnamese languages.¹⁸

¹⁷ http://www.jogmec.go.jp/news/bid/news/docs/2010/at1_110307_03.pdf.

¹⁸ http://www.jogmec.go.jp/jogmec_activities/mp_control_metal/support02/index.html.

3.4. Challenges for Hydropower Generation

3.4.1. Good Governance for Hydropower Generation

Many advantages are derived from developing hydropower plants. First, hydropower plants create and supply electricity. Second, developing countries can earn revenue if the electricity is exported to other countries. Third, they do not emit CO². Fourth, to a certain extent, they can help with flooding and droughts. However, it should be remembered that unexpected quantities of rainfall in a short period of time have worsened flood situations in the past. Much depends on the scale of the hydropower dam. Fifth, increasing the water surface expands opportunities for fish farming (see Chapter 7).

However, development of hydropower plants can also bring about negative effects. First, it forces residents who live in the submerged area to resettle to other places and compensation for them is needed. Second, hydropower plants can destroy portions of an ecosystem, including the migration routes of fish. Third, the development of hydropower plants has caused landslides and even local earthquakes. Fourth, trees are cut for plant construction and forested areas can be lost.

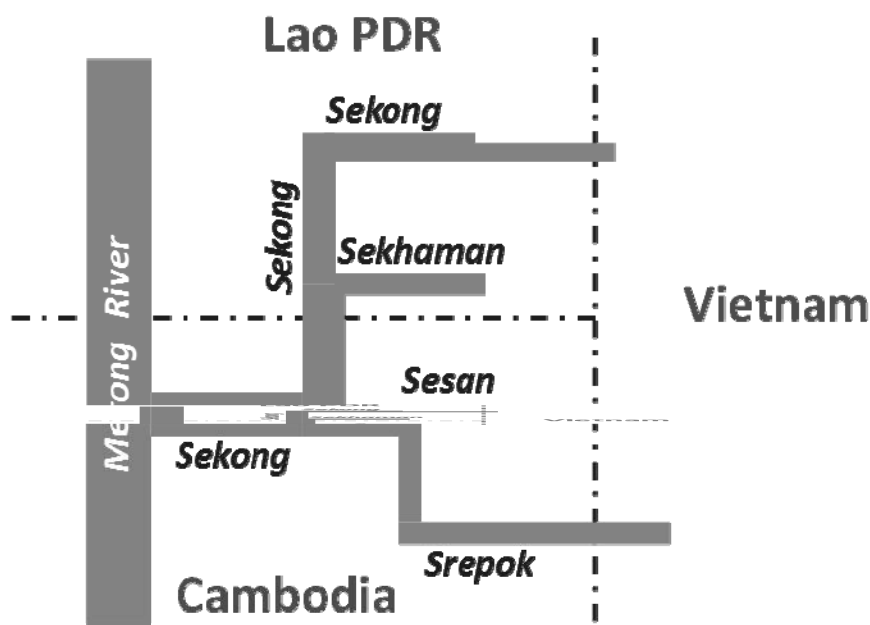
Therefore, careful governance to reduce the negative effects is needed. Regarding the resettlement of residents in the submerged areas, it should be confirmed whether the resettled people can earn a living or not after the resettlement. An assessment to prevent landslides and earthquakes is needed before construction and additional countermeasures should be taken, if necessary. Regarding the loss of forest, the damaged area should be kept to a minimum.

3.4.2. Challenges for the Sekong System

It is well-known that the Mekong River is an international waterway which flows near or through six countries. It is not well-known, however, that the Sekong River system is composed of tributaries whose origins are in Vietnam and Laos. The Sekong River flows into the Mekong River at Stung Treng in Cambodia (Figure 6). Furthermore, hydropower plants have been constructed, are under construction or planned in each country.

In the future, coordination among Cambodia, Laos and Vietnam will be needed. First, coordination in order to prevent flood disasters and drought is necessary. Second,

Figure 6: Sekong System in CLV-DTA



Source: Drawn by the author.

careful water-quality monitoring regimes undertaken by each of the three countries is required. Third, coordination between existing users and new users is needed to avoid serious conflict, particularly if the new users develop projects upstream and existing users operate downstream. Fourth, coordination between small users and large users is also necessary.

In order to coordinate among the governments and users, the CLV-DTA scheme or Mekong River Commission (MRC) can be an appropriate scheme for coordination. It should be reviewed with an aim to establish a sub-working group for water coordination under the scheme of the CLV-DTA. In Laos, the Ministry of Natural Resources and Environment (MONRE) has been preparing for revised water laws with the assistance of the International Finance Corporation (IFC). The need for coordination expressed in the previous paragraph is based on a draft of an issues paper on the revision of law on water and water resources (MONRE 2012, pp. 1-20). Such rules on water and water resources among the three countries are needed.

CONCLUSION

There are five triangle areas in the GMS and member provinces of each triangle have continued the dialogue to develop economic cooperation. Among them, the scheme of the CLV-DTA is the only official one. On the other hand, the Golden Quadrangle Area, composed of the Golden Triangle and the Green Triangle, has been developed as a part of the NSEC under GMS economic cooperation. The CHLV triangle is not well-known; thus, it is expected to be connected with the Golden Quadrangle Area.

Most of the provinces included in the five triangle areas are poor and their population densities are low. As a strategy for reducing poverty, the development of material-oriented industries like food crops, industrial crops, mining, hydropower plants and tourism have potential. For the development of material-oriented industries and the tourism sector, good road infrastructure to major markets and to ports and cross-border trade and tourism facilitation are necessary. However, for the use of chemicals for food and industrial crops, natural rubber planting, mining metals and hydropower development, good governance is needed.

REFERENCES

- Crooker (1988) "Forces of Change in the Thailand Opium Zone," the Geographical Review, Number 3, Volume 78, pp. 241-253.
- Central Statistical Organization (2012) *Statistical Yearbook 2010*, Nay Pyi Taw.
- General Statistics Office (2012) *Statistical Yearbook 2011*, Hanoi.
- Hyakumura, Kimihiko (2008) "Changes in Forest Caused by Planting Business (in Japanese, Syokurin Jigyō ni yoru Shinrin no Henyo)," in *Area Study in Agricultural and Forest Area in Laos* (in Japanese, *Raosu Nosanson Chiiki Kenkyū*) edited by Yokoyama, Satoshi and Yukino Ochiai, Tokyo: Mekong, pp. 233-265.

- Institute of Development Economies, Japan External Trade Organization (IDE-JETRO, various years) *Current Affairs in Asia* (in Japanese, *Ajia Doko Nenpo*), Chiba: Institute of Developing Economies.
- Ishida, Masami and Ikumo Isono (2012) “Old, New and Potential Economic Corridors in the Mekong Region,” in *Emerging Economic Corridors in the Mekong Region* edited by Ishida, Masami, Bangkok: Bangkok Research Center, IDE-JETRO.
- Kakizaki, Ichiro (2011) *Let Us Learn the Southeast Asia: Introduction to the Greater Mekong Subregion*, Tokyo: Chikuma Shobo.
- Kudo, Toshihiro and Masami Ishida (2010) “Progress in Cross-border Movement and Border Economic Zones (in Japanese, Ekkyo Ido no Shinten to Kokkyo Keizaiken,” in *Watching Border Economies in the Mekong Region* (in Japanese, *Mekon Chiiki Kokkyo Keizai wo Miru*), Chiba: Institute of Developing Economies, pp. 3-28.
- Lu, Xing and Jiao Zhang (2011) “The Status of Lao’s Participation in Regional and Sub-regional Economic Cooperation (in Chinese, Laoguo Canyu Quyu he Ciquyu Jingqi Hezuo Xiankuang),” *Study on GMS 2011* (in Chinese, *GMS Yanqiu 2011*) edited by Lu, Guangsheng, Xing Lu and Tao Li, Kunming: Yunnan University Press, pp. 196-208.
- Ministry of Natural Resources and Environment (MONRE), Department of Water Resources (2012) The Revision of the Law on Water and Water Resources, Draft Issues paper, Vientiane: MONRE.
- National Bureau of Statistics of China (2012) *China Statistical Yearbook 2011 Statistics Bureau*.
- National Institute of Statistics (2012), *Kingdom of Cambodia Statistical Yearbook 2011*, Phnom Penh.
- National Statistical Center (2012) *Lao PDR Statistical Yearbook 2011*, Vientiane.
- National Statistical Office (2012) *Statistical Year Book Thailand 2011*, Bangkok.
- Oo Zaw (2010) “Minority Issues in Myanmar: conflicts, ceasefire and peace reconstruction (in Japanese, Myanma no Shosu Minzoku Mondai: Funso, Teisen Heiwa Saiken,” in *The Prospects of Myanmar Military Government* (in Japanese, *Myanma Gunji Seiken no Yukue*), edited by Kudo, Toshihiro, Chiba: Institute of Developing Economies.

- Sugiura, Noriyuki (2003) *Economics of Cities* (in Japanese, *Toshi Keizairon*), Tokyo: Iwanami Textbooks.
- Thiesmeyer, Lynn (2010) *Informal and Illegal Movement in the Upper Greater Mekong Subregion: Cost and Benefits of Informal Networks for Goods and People*, Bangkok: IRASEC.
- Tsuneishi Takao (2007) “New Developments of Economic Cooperation for the Neighboring Countries and Domestic Regional Development in Thailand (in Japanese, *Tai no Kinrin Shokoku heno Keizai Kyoryoku to Kokunai Chiiki Kaihatsu no Shintenkai*,” in *Greater Mekong Subregion Economic Cooperation: Realizing Three Economic Corridors* (in Japanese, *Dai Mekonken Keizai Kyoryoku: Jitsugensuru Mittsuno Keizai Kairo*,” edited by Ishida, Masami and Toshihiro Kudo, Chiba: Institute of Developing Economies, pp.34-61.
- ____ (2008) “Development of Economic Border Zones in Thailand; Expansion of Border Trade and the Formation of Economic Border Zones,” IDE Discussion Paper No. 153. Chiba: Institute of Developing Economies.