

CHAPTER 3

The Cambodia Development Triangle Area

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CHAPTER 3

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Sau Sisovanna

INTRODUCTION

The establishment of the Cambodia-Laos-Vietnam Development Triangle Area (CLV-DTA) was decided by the three governments in 2004. It is comprised of 10 provinces of which three (Ratanak Kiri, Stung Treng and Mondol Kiri) are in Cambodia, three (Attapeu, Sekong and Saravane) are in Lao PDR and four (Kon Tum, Dak Lak, Gia Lai and Dak Nong) are in Vietnam. Originally, the development triangle, initiated in 1999, was to focus on seven provinces: Ratanak Kiri and Stung Treng in Cambodia, Attapeu and Sekong in Lao PDR and Kon Tum, Dak Lak and Gia Lai in Vietnam. These provinces all have similar terrain, climate, and socio-economic background providing great potential for agriculture, forestry, mining, tourism, trade and related industries. The fourth summit meeting of the CLV Development Triangle was held in Vietnam in December 2006. The prime ministers of CLV countries reaffirmed initiatives and decisions approved at the previous meetings on building the Development Triangle in order to hasten economic growth, reduce poverty and promote cultural and social progress in the region on the basis of bringing into play the potential and advantages of each country, simultaneously contributing actively to peace, consolidation, stability, integration and development.

At a meeting of the Joint Coordination Committee of the three countries of CLV- DTA, held in Dak Lak on December 21-22 in 2009, the three countries agreed to add the provinces of Kratie (Cambodia), Champasack (Lao PDR) and Binh Phuoc (Vietnam) to the CLV-DTA. The Cambodian member provinces of the Cambodia-Laos-Vietnam Development Triangle (CDTA) include Kratie, Mondol Kiri, Ratanak Kiri and Stung Treng provinces, which are located in the border areas of the three countries and share many similarities in terms of nature, geography, economy, and social conditions. The development level of these provinces is generally lower than the national level. The Royal Government of Cambodia (RGC), like other regional governments, believes that a

development triangle may form as a result of full scale economic integration, which is a vehicle to attract foreign direct investment and promote economic growth for specific periods of time.

The benefits of economic cooperation from the establishment of triangle areas have been stressed to date. Anne Marie Humphries says that a growth triangle is primarily an economic concept, although it is underpinned by strong political motivations. These include the domestic imperative to spread the benefits of economic growth to less-developed areas of national economies and a desire to improve political and strategic relations with neighboring countries.¹ Bhoj Raj Khanal and Wilairat Tongsiri suggested that building a development triangle hastens economic growth, reduces poverty and promotes cultural and social progress in the region on the basis of bringing into play the potential and advantages of each country. Simultaneously, active contributions are made to peace, consolidation, stability, integration and development (Khanal and Tongsiri, 2007). The Ministry of Planning and Investment in Vietnam reaffirmed that development triangles are also significant in consolidating peace and security in the region and helping maintain internal security of the countries involved thanks to the economic benefits that they bring about. It has also been noted that an expanded economic exchange resulting from cross-border trade activities enhances mutual cultural understanding of the countries involved and, hence, the improvement of border security.² The World Technologies Evaluation Center (WTEC) confirmed that regional cooperation provides a competitive model to attract investment and technology (Boulton, 1997). Sonya Chum noted that the first motive of Vietnamese strategy is to form, at the earliest stage of economic development of the Least Developed Countries, a group in order to gain a stronger voice to raise increased economic assistance more effectively from external institutions at regional and international levels (Chum, 2010). Anne Marie Humphries has also provided a definition of a development triangle: it consists of geographically proximate areas of three or more countries where differences in factor endowments (such as the availability of land, labour, and capital) create economic complementarities which can be exploited to gain a competitive edge in promoting external trade and investment for the mutual benefit of participating countries. Discussion of

¹ www.dfat.au/growth_triangle.

² http://clv-triangle.vn/portal/page/portal/clv_en.

different endowments is controversial considering that the most of the provinces are similar, but this point is very important.

The purpose of this study on the CDTA is to make clear the existing industries, infrastructure development projects, tourism master plan, development assistance projects and others, such as the regional development plan and requests for development in these areas and put these sites on maps and seek development assistance.

This paper consists of an introduction, five sections and a conclusion. The first section examines the current situation of the CDTA. The second, third and fourth sections look at infrastructure and cross-border movements, industrial structure and development projects, respectively. The fifth section identifies the opportunities and challenges of the CDTA and the conclusion summarizes what has been discussed in this paper within a specific Cambodian context.

1. CURRENT SITUATION OF CDTA

1.1. The Provinces of the Cambodia Development Triangle-CLV

With the establishment of the CLV-DTA, Ratanak Kiri, Stung Treng and Mondol Kiri have become member provinces of the CLV-DTA. When the CLV-DTA was expanded in 2009, Kratie province was added.

1.1.1. Kratie Province

Kratie province is located in the northeast of Cambodia. From the capital city of Phnom Penh, Kratie can be accessed via national road (NR) No. 7 passing through Snuol (348 km), Dam Bae and Chhlong districts (250 km), and via water: the Mekong River (220 km). The Mekong River flows through the town of Kratie and four other districts for 140 km. The population of Kratie province is 319,217 with a land area of 11,094 km² which is divided into two specific regions:

- 1) The northeast of the province is a plateau area consisting mainly of thick forest, different varieties of grass and fertile red soil, which is favorable to livestock breeding and agro-industry plantation, such as rubber, pepper, and cashew nuts.

2) The southwest of the province is a typical wetland area consisting of highly fertile soil, especially along the Mekong River, and is more favorable to agricultural crops such as rice, corn, beans, etc. In addition, this area is home to a group of rare Irrawaddy dolphins and many fish species. The dolphins are the main tourist attraction of the province and the town.

Kratie is known for its attractive riverside scenery and its green villages and paddies. Kratie fisheries are part of the Upper Mekong River Zone, which is an important support for migratory species and subsistence fishing, but does not play a major role in commercial fishing. Forests in Kratie tend to be open and less dense than elsewhere in Cambodia; they generally consist of deciduous trees that lose their leaves during the dry season.

Most Kratie residents are subsistence farmers or fishermen. 78% of residents are employed in agriculture. Kratie is home to seven indigenous groups: Phnong, Kuoy, Mil, Khoh, Kraol, Stieng and Thamoun. Approximately 70% of the province's residents live along the Mekong River; the area beyond the river is sparsely populated. Approximately 7% of Kratie's population is indigenous; it is one of four provinces with a substantial indigenous population.

1.1.2. Mondol Kiri Province

Mondol Kiri is a hilly and sparsely populated province. It is located in the northeast part of Cambodia about 380 km from Phnom Penh city. The northern boundary is contiguous with Ratanak Kiri and Stung Treng provinces, while the southern boundary is shared with Binh Phuoc, Dak Nong and Dak Lak provinces of Vietnam (286 km in length). The western boundary is with Kratie province.

Mondol Kiri has an area of 14,628 km² with a total population of 61,107 inhabitants, of which 80% are ethnic indigenous minorities. There are five districts in Mondol Kiri: Koh Nhek, Keo Seyma, Senmonorom, O'Raing and Pich Chrada with 10 major indigenous minority groups: Phnong, Khroal, Ro Oung, Stieng, Chaaaray, Kuoy, Leave, Cham, Tom Puonn and Phnoon. Mondol Kiri province, at an average elevation of 800m above sea level, has different climates compared to the other parts of Cambodia. It may get warm during the day, but turn chilly at night.

Mondol Kiri province is enormously rich in various natural resources, such as majestic

mountains, rainforest, indigenous wildlife, pine tree plantation, impressive waterfalls, small rivers, waterfront parks, etc.

1.1.3. Ratanak Kiri

Ratanak Kiri province is located in the northeast of Cambodia, 588 km from Phnom Penh and can be reached via NR No. 6A, No. 7 and No. 78. Ratanak Kiri is adjacent to Kon Tum and Gia Lai provinces of Vietnam and Attapeu province of Laos, covering an area of around 10,782 km² with a population of 111,671 (2008). Two major rivers, Sesan and Sre-pok flow through the province. The province is subdivided into one city and eight districts. Indigenous minorities (Tompoon, Krueng, Chaaraay, Phnong, Kavet, Praov, Ka Chak, and Lun) form about 75% of the total provincial population. Most of the indigenous residents of Ratanak Kiri are subsistence farmers practicing slash-and-burn shifting cultivation. Many families are beginning to shift production to cash crops such as cashews, mangoes, and tobacco, a trend that has accelerated in recent years. Ratanak Kiri villagers have traditionally had little to do with the cash economy. Barter exchange remained widespread and indigenous villagers tended to visit markets only once per year until quite recently.

Larger-scale agriculture occurs on rubber, coffee, and cashew plantations. Other economic activities in the province include gem mining and commercial logging.

1.1.4. Stung Treng

Stung Treng is a mountainous province in the northeast of Cambodia with great potential for economic development. It is around 481 km from Phnom Penh via NR No. 7. The total area of Stung Treng is 11,092 km² with a total population of 111,671.

Stung Treng borders Champasack province of Lao PDR to the north, Preah Vihear province to the west, Kratie province to the south and Ratanak Kiri province to the east. Stung Treng's economy is based on agriculture, livestock farming and fishing. 85% of the population lives in rural areas and depends on agricultural farming for a living. There are approximately 14 major indigenous groups currently living in the province (around 7% of the total provincial population). Hill tribes are concentrated in the mountainous areas of northern Cambodia. As development proceeds in northeast Cambodia, reduced traditional access to land, forest and natural resources in their communes is increasingly affecting the ability of indigenous populations to secure their livelihoods and safeguard their identity and

culture.

1.2. Population, Area, Density, Literacy Rate and Poverty Incidence of the Provinces

These four provinces have a total area of 47,256 km² which represents 26.12% of Cambodia's area and a combined population of 642,461 which represents only 4.8% of total population. Kratie ranks 15th in terms of the country's population and has the highest population density of the four provinces, while Mondol Kiri, Stung Treng and Ratanak Kiri have as few as 4, 10 and 14 people per km², respectively. The average density of population of the provinces (14.25) is lower than the average density of the country (75). The majority of the population lives in rural areas, averaging 88.38%, while the national average is 80.49% (MOP, 2008). The poverty rate averages 46.11%, which is higher than the average country poverty rate (35%, Poverty Profile 2004). The poverty rate is among the highest in the mountainous provinces (46.11%, MOP and UNDP, 2004).

Additionally, the literacy rate of the provinces averages 60.5% (2008), which is also lower than the country rate of 77.59% (Table 1). Therefore, it is clear that Kratie is better off than Stung Treng and Mondol Kiri, and Stung Treng and Mondol Kiri are better off than Ratanak Kiri.

1.3. Minorities

Cambodia is a multi-ethnic society with a large majority of ethnic Khmer. Other ethnic

Table 1: Population, Area, Density, Literacy Rate and Poverty Incidence by Province:

Items	Area (km ²)	Population	Population Density Per km ²	Percent of Total Population	Rank in 2008	Rural Population	Literacy Rate	Poverty Incidence
Kratie	11,094	319,217	29	2.38	15	88.73	73.74	46.11
Mondol Kiri	14,628	61,107	4	0.45	22	92.05	60.91	46.11
Ratanak Kiri	10,782	150,466	14	1.12	19	87.00	45.90	46.11
Stung Treng	11,092	111,671	10	0.83	20	85.75	61.45	46.11
Total/Average	47,256	642,461	14.25	4.8	-	88.38	60.50	46.11
National Average	-	-	75	4.8	-	80.49	77.59	35

Source: Compiled by the author in accordance with the General Population Census of Cambodia 2008(MOP, 2009).

groups include the Chinese, Vietnamese, Lao, Cham and indigenous minorities. The Khmer ethnic group is approximately 90% of the population of Cambodia, while indigenous groups constitute about 1%. Indigenous ethnic minorities in Cambodia are often called hill tribes or highlanders because most of these people live in the four northeastern provinces: Ratanak Kiri, Stung Treng, Mondol Kiri and Kratie.

The Cambodia Population Census in 2008 identified 33 ethnic indigenous minority groups in Cambodia based on their spoken language. The total number of indigenous people was about 159,009 or 1.18% of the total population (MOP, 2009).

In general, the ethnic Khmer group is a majority of the population in the capital of Cambodia and almost all provinces except for Mondol Kiri and Ratanak Kiri. In Mondol Kiri, ethnic Khmers (43.38%) are less than the Phnong minority (44.61%), while in Ratanak Kiri province, even though the ethnic majority is Khmer, the total number of ethnic indigenous minorities is greater than the Khmer: Tumpoon (20.52%), Chaaaray (13.78%), Krueng (13.1%), Lao (7.52%) and Praov (5.67%). Indigenous minority groups in Kratie and Stung Treng provinces represent around 7% of the provincial population in each province (Table 2). The high number of ethnic indigenous minorities in these two provinces, Ratanak Kiri and Mondol Kiri, suggests why they are more difficult to develop than Kratie and Stung Treng.

1.4. Social Development Status in CDTA Provinces

1.4.1. Educational Development Status in CDTA Provinces

The educational level is lower than the country level. The literacy rate average (60.5%) is lower than country rate (77.59%). The literacy rate of Kratie (73.74%) is the highest among CDTA provinces, while Ratanak Kiri (45.90%) is the lowest in CDTA as well as in the country. The average net attendance ratio for primary school (72.55%) is also lower than the country net attendance ratio (84.8%). In secondary schools of Ratanak Kiri, Stung Treng, Mondol Kiri and Kratie provinces, the net attendance ratio is 21.1%, 28.8%, 21.3% and 34.2%, respectively, and they are all lower than the net attendance ratio for secondary schools of the whole country 41.3% (Table 3). The illiteracy rate is very high, particularly

Table 2: Ethnic Minorities in Cambodia provinces DTA-CLV

		(%)			
No	Minorities	Kratie	Mondul Kiri	Ratanak Kiri	Stung Treng
1	Khmer	85.69	43.38	32.75	90.80
2	Cham	5.48	5.40	1.10	1.38
3	Lao		3.38	7.52	1.54
4	Chaaray			13.78	
5	Kaaveat				2.64
6	Kuoy	1.55			1.48
7	Krueng			13.1	
8	Phnong	2.90	44.61		
9	Proav			5.67	
10	Tumpoon			20.52	
11	Stieng	1.40			
12	Roong				
13	Kraol	1.08			

Source: The General Population Census of Cambodia 2008(MOP, 2009).

in Stung Treng, Ratanak Kiri and Mondol Kiri provinces. Human resources have been found to be greatly inadequate and poor, while the percentage of qualified workers is very low.

Educational infrastructure, such as school buildings and facilities, is insufficient and in poor condition. More than 50% of school buildings in the area are seen to lack floors, roofs, and walls. The shortage of school buildings is one of the major causes of the high drop-out rate as students are less motivated to go to schools which are far from home and where road access is difficult. The area also faces a shortage of teachers, while those now teaching have limited capacity and need to be trained. Parents have low education levels and poor general knowledge, especially among indigenous people. Lack of education is a significant constraint and poses a huge challenge for local authorities (Master Plan CLV-DTA 2010).

To date, education in CDTA provinces has been improved year-by-year along with an improvement in physical infrastructure and the establishment of a secure environment. Efforts by local authorities, the national government, development partners and civil society have been the crucial factors contributing to an improved educational sector in CDTA provinces.

However, there is still a shortage of vocational training schools in the provinces. A huge area for recent private investment in agro-industrial crops and plantation has been recently approved by national and local governments, highlighting the considerable need for skilled workers in CDTA provinces. The training courses provided by provincial departments in various skills, such as sewing, computer skills, driving and the English language are limited due to financial constraints. Vietnam has assisted in establishing vocational school systems in Ratanak Kiri and Mondol Kiri provinces (Master Plan CLV-DTA 2010).

1.4.2. Health Development Status in CDTA Provinces

Healthcare in CDTA provinces is very poor. The average life expectancy at birth in Ratanak Kiri and Mondol Kiri (males: 39.6 years, females: 43.12 years) is lower than Kratie and Stung Treng statistics which show male and female life expectancy at 59.48 years, 62.43 years, and 50.24 years, 53.84 years, respectively; the former two provinces are much lower than the country level of 60.5 years for males and 64.3 years for females. Infant mortality rates under one year in Ratanak Kiri, Stung Treng and Mondol Kiri are 151.5/1,000, 101.6/1,000 and 151.5/1,000, respectively. These figures are higher compared to the whole country rate (61/1,000), except Kratie province (58.9/1,000). The average maternal mortality rate in these provinces is also quite high; 960/100,000 die either during delivery or within 42 days after delivery compared to the country rate of 461/100,000 (Table 3). This figure is more than twice that of the country average rate. The poor health of CDTA provincial residents can be attributed to a variety of factors, including poverty, remoteness and isolation of villages, difficult transport conditions in the area, poor quality medical services, and language and cultural barriers, such as the existence of many backward practices and customs that prevent indigenous minority people from obtaining medical care. Medical equipment and supplies are minimal and most health facilities are staffed by nurses or midwives who are often poorly trained and lacking professional experience. Such a situation affects the quality of health checkups, disease prevention and recovery.

Table 3: Social Development Status in CDTA Provinces

Items	Ratanak Kiri	Stung Treng	Mondul Kiri	Kratie	Country
Education					
Literacy Rate	45.90	61.45	60.91	73.74	77.59
Net Attendance Ratio for Primary School	63.8	81.9	63.8	80.7	84.8
Net Attendance Ratio for Secondary School	21.1	28.8	21.3	34.2	41.3
Health					
Life Expectancy	M: 39.06; F:43.12	M:50.24; F:53.84	M:39.6; F:43.12	M:59.48; F:62.43	M:60.5; F:64.3
Infant Mortality Rate	151.5/1,000	101.6/1,000	151.5/1,000	58.9/1,000	82.0/1,000
Maternal mortality ratio	960 out of 100,000 die either during delivery or within 42 days after delivery				461/100,000

Source: Compiled by the author in accordance with the General Population Census of Cambodia 2008 (MOP, 2009) and the Demographic and Health Survey of Cambodia 2010(MOP, 2011).

Table 4: Logistic Routes in CDTA Provinces

Item	Ratanak Kiri	Stung Treng	Mondul Kiri	Kratie
Logistic Routes	NR No. 78, NR No. 7, NR No. 8A, NR No. 76	NR No. 7, NR No. 66, NR No. 78	NR No.7, PR No. 376, NR No. 75, NR No. 79	NR No. 7, NR No. 73, NR No. 74, NR No. 76

Source: Ministry of Public Works and Transport (MPWT).

2. INFRASTRUCTURE AND CROSS-BORDER MOVEMENT

2.1. Infrastructure Network in the Cambodian Provinces of CLV-DTA:

As shown in Table 4, the status of road network infrastructure development in the CDTA provinces is as follows:

NR No. 7 is a major route which connects the capital Phnom Penh, Kratie, and Stung

Treng to the Laotian border and NR No.13 of Laos. The section from Kratie provincial town via Stung Treng to the Lao border is about 196.8 km, while the part within Stung Treng is 82 km. At present, the width of the roadbed is 11m and that of the asphalted surface is 9 m. Construction of a large bridge crossing the Sekong River in Stung Treng town has been completed. Though the construction has been recently finished, some sections of the route require frequent rehabilitation due to flooding and/or overweight transport vehicles.

The NR No. 78 is a key route connecting Phnom Penh, Kratie, and Stung Treng via NR 7 to Ratanak Kiri province. This route starts from NR7 at O’Pong Morn via Banlung, Ratanak Kiri town to the O’Yadav (Cambodian)–Le Thanh (Vietnam) border crossing. Its total length is about 191 km. Section 1 from O’Pong Morn to Ban Lung is 121 km with two lanes of Double Bituminous Surface Treatment (DBST) and has recently been inaugurated by the Prime Minister. The civil engineering work was carried out by a Chinese company. Section 2, from Ban Lung to the Cambodian-Vietnamese border (about 70 km in length), was finished with AC pavement funded by a Vietnamese loan. This route is very important as it connects the Northern Sub-Corridor of the Southern Economic Corridor to the international border crossing at O’Yadav-Le Thanh and subsequently to the Vietnamese international ports of Quy Nhon and Danang.

Provincial road No. 3785 is the main route connecting Ratanak Kiri to the Lao border. This road starts from its intersection with NR No. 78 at Ban Lung and continues through Voeun Sai, following the direction of former NR No. 301. It approaches the Sekong River at Siem Pang, running alongside it to the Lao border and connecting with NR No. 1J of Laos. It is expected to be about 150 km in length. At the moment, it is 80 km of graveled and earthen road and the remaining 70 km are in a planning phase.

NR No. 9³ is also a principal route connecting Stung Treng province with Preah Vihear provincial town and with provinces further on. A route going from Stung Treng provincial town crosses the Mekong River at the Mekong River Bridge in Stung Treng. The bridge was constructed by a Chinese company and will be completed by year 2014. The total length of NR No. 9 is 143.412 km. The civil engineering work was done by a Chinese company and will be completed by 2014. NR No. 64 is a major route connecting Preah

³ This road used to be called NR No. 64 and is also a part of the Northern Sub-corridor of the Southern Economic Corridor.

Vihear provincial town to Siem Reap (length 236.680 km, using the PPP Project BOT scheme).

NR No.73 is a short-cut to Kratie provincial town. The route starts from its intersection with NR No. 7 from Pratheat via Chhlong district with a total length of about 93 km. It is undergoing rehabilitation using DBST.

NR No. 74 is a major route for transport. It starts from its intersection with NR No.7 at Snoul and goes 18.95km to the Trapeang Srae/Hoa Lu Cambodia-Vietnam border crossing. It has been finished with DBST pavement.⁴

NR No. 76 serves as a main logistic route. It starts at Snoul, Kratie province, and continues to NR No. 78 at Ta Ang (Ratanak Kiri province), going through Mondol Kiri provincial town, Koh Nhek and Lum Phat district (Ratanak Kiri province). The total length is about 306 km. The section from Snoul to Mondol Kiri province is 127 km long. Its rehabilitation has been completed with DBST (purchased with a Chinese loan). The second section of 172 km from Sen Monorom (Mondol Kiri provincial town) connects to NR No. 78 and is under construction by a Chinese company. It will be completed in 2015.

The connection from Sen Monorom, Mondol Kiri provincial town to the Vietnamese border (Bu Po Rang) is provincial road No 3762, which has about 26.45 km of DBST surface treatment. The civil engineering work was finished by a Chinese company. Provincial road No. 3766 is another main logistic route in Kratie and Mondol Kiri provinces. It starts at an intersection with NR No. 7 and goes through Kratie province to a length of 47 km. It then passes through Mondol Kiri (111 km) and, still a graveled and earthen road, leads to the Chimeat (Cambodia)/Dak Rue bilateral Cambodia-Vietnam border crossing.

Provincial road No. 3764 is another main route from Mondol Kiri provincial town through Bou Sra to Nam Lea (Cambodia)/ Dak Po (Vietnam) bilateral border crossing. Its length is 40 km.

Provincial road No. 3760 is a 10 km route in Mondol Kiri province which connects Sre Ktum (Keo Seyma district) to the Lapakhe (Mondol Kiri)-Hoang Dieu (Binh Phuoc) bilateral border crossing. It has a lateritic surface pavement.

⁴ Based on an e-mail communication with an official of Ministry of Public Work and Transport, Cambodia in 2012.

However, a feasibility study for the remaining link from Bat Doeung, Kampong Speu to Trapeang Srae, Kratie (255km) or Loc Ninh (the railway connecting points between Cambodia and Vietnam), has already been completed. The Royal Government of Cambodia is seeking investment funds from its development partners and the private sector to construct this remaining link section.

Even with such achievements, the road network in CDTA provinces is still inadequate and poorly maintained, particularly feeder roads connecting to the main routes. Moreover, road networks recently constructed require rehabilitation sooner than planned due to natural disasters, unmet construction standards, or overweight transport vehicles.

2.2. Power Sector

The Royal Government of Cambodia will encourage the construction of low-cost electricity generating plants by using local energy sources such as hydropower, natural gas, and coal. Moreover, the government will encourage construction of electricity transmission lines covering all parts of the country to enable the supply of low-cost energy from all sources to meet the demand in cities, provinces, and urban and rural areas and will gradually integrate Cambodia's electric energy system into the networks of the GMS countries and ASEAN.

Presently, the number of villages with licensed electricity varies among the provinces. In Phnom Penh, 100% of villages have access to licensed electricity, while the provinces of Ratanak Kiri, Mondol Kiri, Stung Treng and Kratie have lower shares with 8%, 13%, 21% and 30%, respectively.

Electricity has an important role in promoting the living standards of people, but the current electricity supply is sufficient only for the provincial towns and central districts of the four CDTA provinces. Currently, electricity generation facilities in these provinces are being supplied by diesel power plants, mini-hydropower, micro-hydropower dams and electricity imported from Vietnam and from Lao PDR (Table 5). Since early 2010, Stung Treng has imported electricity from Lao PDR with a capacity of 3 MW through the sub-transmission line of 22KV. In Ratanak Kiri, there is a small scale hydropower dam in O'Chum with a capacity of 1 MW. The current electricity supply is also sourced from an electricity generator with a capacity of 1 MW. In addition, electricity is going to be

Table 5: Summary of Power Supply in Provinces under Study

Type of Generation Facilities	Kratie	Mondul Kiri	Ratanak Kiri	Stung Treng
Hydropower plants	2 sites: Sambo & Prek Chhlong (FS*)	2 micro-hydropower 01site: Srepok (FS*)	Mini hydro dam (O'Chum); 4 sites of hydropower FS*: Lower Sesan1, Lower Sesan 3, Sre Pok3 and Prek Laang.	3 sites of hydropower FS*: Sesan 2, Stung Treng project, and Sekong project.
Diesel power plants	Kratie City power Ltd	Electricite Du Cambodge (EDC)	SHC Cambodia International Pte Ltd;	EDC
Thermal power plants using coal				
Energy Imported	Imported from VN	Imported from VN	Imported from VN	Imported from Lao PDR

Note: *FS= Feasibility Study.

Source: Compiled by the author based on the report of the Ministry of Industries, Mines and Energy (MIME) for 2011 and the report of the Electricity Authority of Cambodia (EAC) for 2012.

imported from Vietnam through sub-transmission of 35KV to meet the provincial demand for power. In Mondol Kiri, two sources of electricity supply (supported by JICA), are a power generator with a capacity of 370 KW and two micro-hydropower plants in O'Romis and O'Mleng with a combined capacity of 360 KW. Additionally, electricity is imported from Vietnam with a capacity of 500 KW to supply the Keo Seyma district. In Kratie, electricity sourced from a generator with a capacity of 1.6 MW supplies power to provincial towns, while the electricity supply to Snuol district is imported with a capacity of 1 MW from Vietnam. There are many potential hydroelectric projects in these provinces. Certain ones have already completed feasibility studies and are under construction. Nowadays, there is insufficient electricity supply, but in the near future electricity will be adequately supplied by a number of hydroelectric dams (see Table 8).

2.3. Clean Water

In general, there is a shortage of good quality clean water to meet the demand of the

Cambodian people. In CDTA provinces, where there is also a problem with clean water supply, efforts have been made by provincial authorities, in cooperation with various multilateral and bilateral development partners, to overcome these deficiencies. In Ratanak Kiri, Japan has funded a water supply project to improve the capacity to supply clean water to Ratanak Kiri and Mondol Kiri towns, while ADB and USAID are working to promote a clean water supply to Kratie and Stung Treng provinces.

2.4. Irrigation System

Confusingly, there is different data from different sources. Data available from a Cambodia Socio-Economic Survey indicates that 25% of agricultural land was irrigated in 2007(MOP, 2008). The commune database, on other hand, reveals that only 21% of the total cultivated area in Cambodia was irrigated in 2008 (Ngo, 2011).

The CDTA provinces have huge water resources, but the irrigation systems are still underdeveloped. Normally in rainy season, paddy rice can be grown with supplementary water from rainfall. In the rainy season, the paddy rice can benefit from irrigation water for rice cultivation. The irrigation systems are necessary for storing water for farmers' paddy rice fields in both the dry and rainy seasons.

Actually, only Kratie province has an irrigation system that can supply water to two-thirds of paddy rice fields, while other provinces, Mondol Kiri and Ratanak Kiri in particular, where farmers are used to the old practice of growing rice once a year, have limited coverage capacity. The irrigation systems in these provinces need to be rehabilitated and become more widespread to encourage paddy rice growth and other agricultural plantation.

2.5. Post and Telecommunication

The post and telecommunication network has expanded quickly. The information and communications sector shows a high degree of openness as the Ministry of Posts and Telecommunications encourages the entry of mobile phone and internet service providers. Cambodia was the first country worldwide where the number of mobile phone users surpassed fixed landline users. More than 63% of the total population were using mobile phones in 2010, while there were only 173,675 internet subscribers (MOP, 2012b).

In CDTA provinces, the telecommunication sector has been improved recently. Mobile

phone operators have been increasing and reducing service charges, though internet service is still expensive. Kratie has seven mobile phone companies, one fixed-phone operator and three companies providing internet service; Mondol Kiri has three mobile phone companies and one internet company; Ratanak Kiri has five mobile phone operators, one fixed-phone, and two internet service providers, while Stung Treng has seven mobile phone operators, two fixed-phone operators and one internet service provider.

Though some progress has been made, high operation costs and low numbers of qualified information and communication workers remain problems to be overcome.

2.6. Cross-Border Movement

Currently, there are three cross-border international gates in CDTA provinces: Trapeang Srae, Trapeang Kreal and O'Yadav (Table 6). Mondol Kiri has 3-4 bilateral cross-border gates with neighboring Vietnamese provinces which have not yet been approved for upgrading to international cross-border gates.

Most exported goods include agricultural and raw agro-industrial products, manioc starch, wood, cotton, natural rubber and rubber-tree processing, while imported goods include mainly foodstuffs, fertilizers, construction materials, raw materials, oils, machinery, cement, plastics and rubber products, furniture and toys, vehicles and parts and other industrially processed products. At the Trapeang Kreal border crossing, goods imported

Table 6: Border Crossings in CDTA Provinces

Items		Ratanak Kiri (O'Yadav)	Stung Treng (Trapeang Kreal)	Mondul Kiri	Kratie (Trapeang Srea)
Imported products (t)		Machinery, Foodstuffs, Fertilizer, Rubber Nurseries, Furniture 1,011 ton/month	Coffee, Tea, Foodstuffs 3,201ton/ month	N/A	Foodstuffs 21,725 ton/month
Exported Products (t)		Agri. Products, Natural Rubber 9,510 ton/month	Rice, fish, piglets, 4118 ton/month	N/A	Agro-products
Vehicle movement	Entry	568/month	251	N/A	20-40/day
	Exit		328	N/A	20-40/day
People movement per year	Entry	22,118	25,450	N/A	53,810
	Exit	21,868	19,600	N/A	3,226

Source: Field survey of border crossings in 2011 and 2012.

included mainly coffee, tea and foodstuffs, while goods exported are rice, fish and piglets. At O'Yadav border crossing, goods imported include machinery, foodstuffs, fertilizer, rubber nurseries and furniture, while goods exported include natural rubber, cassava and other agricultural products. At Trapeang Srae border crossing, goods imported include foodstuffs, while exported goods include agricultural and agro-industrial products. Because agriculture and agro-industrial products are seasonally harvested, the movement of exported goods across the border is not always very active.

It should be noted that the trade volume of CDTA provinces with their trading partners is not balanced. Kratie, Ratanak Kiri and Mondol Kiri exports to Vietnam four times, eight times, and nine times, respectively, the USD value of their imports from Vietnam, while Stung Treng imports from Lao PDR more than seven times the USD value of its exports to that country. Although Cambodian provinces export much more than they import from Vietnam, the gain from trade tilts towards the latter. Since CDTA provinces export raw agro-industrial products to Vietnam, Cambodia stands to lose much, such as value-added through processing, local employment opportunities, and price bargaining power when markets in other countries set prices of products in Cambodia. To benefit from equitable trade, Cambodia should promote agro-processing products for export because in the near future the country will have a significant capacity to produce agro-industrial products that would create local employment opportunities. The trade of Stung Treng with Lao PDR is more balanced in terms of value-added although its trade deficit is huge (Master Plan for CLV-DTA).

Currently, there are vehicles and people included in cross-border movement: citizens living along the borders, and/or in communes and/or in nearby districts/provinces as well as foreigners cross these border gates for various purposes including visiting friends or relatives, tourism, medical treatment, trading, businesses and purchasing goods.

Table 6 shows that the number of people entering Cambodia at all border crossings of CDTA provinces was greater than number of people leaving Cambodia including those using the Trapeang Kreal border crossing.

The border crossings open from 6:00 am or 7:00 am until 5:00 pm or 6:00 pm, according to the specific agreement with their counterparts. Necessary documents include an ID card, a permit issued by commune chiefs and/or districts, a border pass

(laissez-passer), and/or a passport for different people, times, areas of residence, nature of visit and destination.

A market located near the border crossing of O'Yadav district, Ratanak Kiri province, was constructed with Vietnamese assistance and readied for operation at the end of 2006. As of September 2011, when our research team visited, this market had not yet been opened.

It is noteworthy that, currently, the cross-border trade movement of CDTA provinces is still not at its fullest capacity of operation.

To promote more active cross-border trade movement in these provinces, the following measures should be taken into account:

- Promote more economic growth, produce more agricultural, agro-industrial, and/or agro-industrial processing products for greater export activities to Vietnam or to Lao PDR;
- Establish sufficient storage and warehouse facilities, information technology equipment and communication facilities;
- Set up an insurance trade system to convince traders of both sides when trading their goods;
- Facilitate road transport by implementing a cross-border transport agreement (CBTA) and modernizing border checkpoint management;
- Simplify and streamline customs procedures, including single-window administration, risk management, etc.

3. INDUSTRIAL STRUCTURES

3.1. Status of Agriculture Sector in Cambodian Provinces CLV-DTA

Cambodia is an agrarian society, with 80% of the population living in rural areas, largely dependent on agriculture, forestry and fisheries as sources of income.

3.1.1. Rice Crop

Rice crop production dominates the agricultural sector. Its share of total agricultural GDP is 54%, followed by fisheries (25%), livestock and poultry (15%) and forestry and logging

(6%) (MAFF, 2012).

Although Cambodia is regarded as an agrarian society, only 16% of the country's territory is agricultural land which largely consists of rice cropping areas (84%). The rest is shared equally between subsidiary and industrial crop production (MAFF agricultural statistics and National Accounts 2000-2006). Cambodia started to produce a paddy rice surplus in 1995 and production has continued to improve since then, although some years have been disrupted by floods or droughts.

In the CDTA, the share of agriculture was 54% in 2008, while the share of industries was 22% and services 24% (Ministry of Planning and Investment of Vietnam).

The labour force engaged in agriculture in these four provinces averaged 81.28% higher than the country rate. The total area cultivated as rice crop is 121,061ha, including Ratanak Kiri (27,695ha), Stung Treng (25,897ha), Mondol Kiri (22,031ha) and Kratie (45,438ha). In 2011, the level of paddy rice output reached 342,011 tons, including Ratanak Kiri at 72,028 tons, Stung Treng at 75,490 tons, Mondol Kiri at 57,721 tons and Kratie at 136,772 tons. Productivity averaged 2.60t, 2.92t, 2.62t, 3.01t per hectare, respectively. Paddy production has accumulated a surplus of about 135,513 tons in 2012. The increased paddy rice production as well as average yield was explained partly by the expansion of cultivation areas, by good rainfall and also by improved seeds, farming techniques and irrigation (Table 7).

3.1.2. Subsidiary and Industrial Crops

In CDTA provinces, there are major subsidiary crops, including maize, sweet potatoes, mung beans, soybeans, peanuts and vegetables that supplement both food needs and monetary income. Additionally, CDTA also produces industrial crops such as rubber, cassava, sugarcane, and sesame.

Recently, agro-industrial plantation, including cassava, sugarcane and rubber, has been expanded dramatically in CDTA provinces. The total cultivated area for agro-industrial plantation has more than half of the total agricultural area, while paddy rice occupied less than half (Table 8). Among the major industrial crops, cassava and rubber are highlighted in the following paragraph.

Cassava production has risen dramatically from just 200,000 tons in 2002 to 2.2 million tons in 2006 largely in response to a booming international market. Cassava's

Table 7: Paddy Rice Cultivated Area and Production Development

Provinces		2007	2008	2009	2010	2011
Kratie	Area (ha)	42,300	43,800	45,300	44,300	45,438
	Output (ton)	121,000	112,100	112,400	130,700	136,772
	Average yield (ton)	2.9	2.6	2.6	3.0	3.01
Mondul Kiri	Area (ha)	17,100	16,500	17,400	17,400	22,031
	Output (ton)	32,700	29,900	33,200	37,100	57,721
	Average yield (ton)	1.9	1.8	2.1	2.1	2.62
Ratanak Kiri	Area (ha)	27,100	24,900	25,700	2,300	27,695
	Output (ton)	46,500	45,300	46,800	65,900	72,028
	Average yield (ton)	1.7	1.9	2.0	2.5	2.60
Stung Treng	Area (ha)	23,000	23,000	23,600	25,800	25,897
	Output (ton)	63,200	57,600	61,300	62,600	75,490
	Average yield (ton)	2.8	2.5	2.8	2.4	2.92
CountryTotal	Area (ha)	2,567,000	2,613,400	2,674,600	2,777,300	2,968,529
	Output (ton)	6,727,100	7,175,500	7,585,900	8,249,500	8,779,365
	Average yield (ton)	2.5	2.6	2.8	2.9	2.97

Source: Cambodian Statistical Yearbook 2011(MOP, 2012) & Annual Report of MAFF for 2011-2012(MAFF, 2012).

Table 8: Agriculture Status of CDTA Provinces

Item		Ratanak Kiri	Stung Treng	Mondul Kiri	Kratie	Total
Labor force (%)		85.00	79.80	77.99	82.33	81.28
Rice	Area (ha)	27,695	25,897	22,031	45,438	121,061
	Product (ton)	72,028	75,490	57,721	136,772	342,011
Corn	Area (ha)	333	515	717	1,641	3,206
	Product (ton)	753	370	4,661	4,068	9,852
Cassava	Area (ha)	18,590	6,153	5,966	32,003	62,712
	Product (ton)	353,220	110,754	160,261	800,075	1,124,310
Soy Bean	Area (ha)	1,042	1,015	1,771	243	4,071
	Product (ton)	886	609	2,479	167	4,141
Sesame	Area (ha)	384	218	22	1,773	2,397
	Product (ton)	275	131	18	1,773	2,197
Rubber	Agro-industrial (ha)	2,617	n/a	n/a	4,365	6,982
Plantation	Econ. Concession	5,696	8,146	8,461	6,461	28,764
	Household (ha)	25,276	1,307	6,780	6,150	40,113
Fisheries (ton)		650	4,000	300	5,000	12,150
Live stock (Number)	Poultry	112,592	116,876	49,830	2,144,225	2,423,523
	Buffaloes	18,687	35,995	20,898	4,160	79,740
	Pig Inventory	33,113	39,081	19,904	197,101	289,199
	Cattle	31,243	25,498	27,611	370,131	454,483

Source: Annual Report of MAFF for 2011-2012(MAFF, 2012).

advantage is that it is not very demanding in terms of land quality, cultivation or the timing of the harvest. It fits in well with small-holder farming systems. Similar to surplus paddy rice, 70-80% of cassava is exported to neighboring countries that have large factories set up to meet domestic and international demand. A key issue in the value chain is getting a reliable supply of cassava to keep the processing plants working at capacity. This is particularly true for the nine main domestic factories, four of which were set up in 2008 or expected to come online in 2009 (UNDP, 2009a).

Rubber has considerable potential in the degraded forest lands of Cambodia where soils and climate are suitable for rubber and where there are good returns from land and labor. It is also well adapted to provide tree cover, yielding environmental benefits. Rubber plantation is subdivided into agro-industrial use, economic land concession and household rubber plantation. The majority of existing agro-industrial rubber plantations in CDTA provinces is in Kratie (4,365 ha) and Ratanak Kiri (2,617 ha) provinces. Household rubber plantation has recently increased sharply in Ratanak Kiri (25,276 ha), Mondol Kiri (6,780 ha), Kratie (6,150 ha) and Stung Treng (1,307 ha). Economic land concession rubber plantation in CDTA provinces has also increased, though it is mostly concentrated in Mondol Kiri (8,461ha), Stung Treng (8,146 ha), Kratie province (6,461 ha) and Ratanak Kiri (5,696 ha) (MAFF Annual Report: 2012).

The demand for rubber comes from China, where almost all of Cambodia's rubber is sold. However, this rubber is sold at discounts of 10% or more from international prices due to a lack of knowledge about, and certification of, Cambodian rubber (UNDP, 2009a).

3.1.3. Fisheries

The fishery sector accounts for approximately 7% of the country's GDP and 25% of agricultural GDP. As well as generating employment and income, fish is the source of 80% of locally consumed animal protein. Reliance on the fishery sector for providing livelihoods to Cambodians is extremely high. In aggregate, the fishery sector generates part-time and occasional employment for nearly 50% of the population, most living in rural areas. Cambodia's inland fisheries are some of the most productive in the world and are home to hundreds of different species of fish. Beyond traditional varieties, there are several species of high-value fish in the Lower Mekong Basin.

Table 9: Fishery Development in CDTA Provinces (by ton)

CDTA Provinces	2009	2010	2011
Kratie	2,500	5,950	5,000
Mondul Kiri	200	250	300
Ratanak Kiri	400	400	650
Stung Treng	2,500	4,500	4,000

Source: Compiled by the author in accordance with MAFF(2012).

Kratie and Stung Treng have great potential for inland fishery production due to their proximity to major rivers such as the Mekong, Srepok, Sesan and Sekong. Ratanak Kiri and Mondol Kiri, however, have much less access to main rivers (Table 9). At present, Cambodia has established 469 community fisheries (MAFF, 2012), of which 120 are in CDTA. Of the existing 120 community fisheries, five are found in Ratanak Kiri and only two in Mondol Kiri. Aquaculture should, therefore, be promoted to increase fish production in Ratanak Kiri and Mondol Kiri to improve food security and nutrition (Master Plan for CLV-DTA 2010).

3.1.4. Livestock

The main value-added in livestock is within the poultry industry, although there are over four million heads of beef cattle and buffalo throughout Cambodia, including draft animals. The livestock sector plays a main role in the rural farming system of Cambodia, not only for nutritional purposes, but also for generating supplementary income. Livestock production is characterized largely by family-based and traditional farming, and accounted for 4.5% of GDP during the period 2004-2008. Cattle and buffaloes in CDTA are raised for meat production rather than as draft animals (Table 10).

3.1.5. Forestry

Forest cover in Cambodia is comparatively high for the region, but deforestation is widespread with an estimated reduction in forest cover from 75% in the 1970s to between 50%-60% today. Much of the remaining forest is degraded, though no comprehensive

Table 10: Livestock Development in CDTA Provinces in Thousand Heads

Provinces		2008	2009	2010
Kratie	Cattle	104.2	109.2	104.6
	Buffaloes	45.6	49.6	33.5
	Pigs	64.1	63.1	33.6
	Poultry	387.1	417.1	266.2
Mondul Kiri	Cattle	14.4	14.9	13.8
	Buffaloes	12.4	13.0	11.3
	Pigs	7.3	7.7	19.0
	Poultry	42.4	45.0	49.2
Ratanak Kiri	Cattle	27.6	28.1	30.0
	Buffaloes	17.8	17.9	18.4
	Pigs	32.0	31.8	31.8
	Poultry	104.8	104.9	104.4
Stung Treng	Cattle	21.8	23.6	26.0
	Buffaloes	31.7	32.8	35.4
	Pigs	26.0	30.0	38.0
	Poultry	87.7	99.5	104.8

Source: Cambodian Statistical Yearbook 2011(MOP, 2012).

analysis of forest status and degree of degradation has been conducted. RGC has committed to a Millennium Development Goal of 60% forest cover by 2015. The forest areas are dominated by moist lowland evergreens, semi-evergreen and deciduous forests. Forests contribute significantly to socio-economic development, food security and production systems. A large number of Cambodians living in rural areas depends on forest resources for food, household energy, and income. Non-timber forest products (NTFPs) such as resin, rattan, edible fruits and vegetables, bush meat, and medicinal plants also diversify income streams and livelihoods. These NTFPs are used directly by local populations or are collected and sold in mainly unprocessed form to Cambodian city markets, Thailand and Vietnam. If not carefully managed, these economic and social activities are lost when the forest is converted, economic land concessions are awarded, or when forest dwellers lose access to the forest (USAID, 2009).

About 26% of community forest land is in CDTA where there are good quality forests. Large areas of forest land have been provided to forest concession companies to extract timber on a commercial scale and to economic land concession companies to clear degraded forests for large-scale agro-industrial crop plantation. A community forestry

program aims to balance the economics surrounding forest resources to protect people's livelihoods.

3.2. Industrial Development Status in CDTA Provinces

As a result of the economic census, it is known that there are 505,134 establishments in Cambodia, 36% of which are new establishments which started business between January 1 2009 and March 1 2011 (MOP, 2012a). A large number of new establishments appeared in January 2009 or later, suggesting that the Cambodian economy is rapidly growing and that the recent economic policies implemented by the RGC are successful (MOP, 2009). This large number of new establishments showed higher shares in the northeast provinces where Ratanak Kiri has the highest in Cambodia (about 31%), followed by Stung Treng about 27% and Mondol Kiri at about 26%. The industrial sector's labour force in CDTA provinces is very low compared to the 8.5% country rate, as shown in Table 11: Ratanak Kiri (2.61), Stung Treng (3.49), Mondol Kiri (4.49) and Kratie (3.65). However, small industries and handicraft manufacturing vary from province to province. Currently, there are major industries, such as a granite processing plant, sugar and ethanol processing plants, and gold mining in Kratie province; an ice plant, a bottled drinking water plant and a chili sauce plant in Ratanak Kiri province and rice milling, a brick kiln, a bottled water factory, an ice manufacturer and metal processing companies in Stung Treng.

3.2.1. Mining

Cambodia's mineral industry is still largely undeveloped and most mining companies are small-scale quarries that produce such construction materials as limestone, sand and gravel, and other construction aggregates. There are also a large number of artisanal miners, running very small operations mining for gold and other minerals. To date, there has been no industrial scale extraction of precious minerals, although in recent years there have been a large number of exploration licenses granted to both local and international companies. The Ministry of Industry, Mines and Energy (MIME) has stated that copper, gold, iron ore, zinc, lead, bauxite, limestone, tin, sapphires, rubies and kaolin are among the most prevalent resources in Cambodia (the latter four resources are not produced in the CDTA: Table 12). Currently, there are companies from several countries exploring for minerals in

Table 11: Industry Development Status of CDTA Provinces

Items	Ratanak Kiri	Stung Treng	Mondul Kiri	Kratie
Labor force	2.61	3.49	4.49	3.65
Manufacturing	169 small industries and handicrafts	158 small industries and handicrafts	193 small industries and handicrafts	881 small industries and handicrafts
Establishments	5,480, including 4,896 individual proprietors, 241 sole proprietors, 1 general partnership, 1 limited partnership, 77 private limited companies and 1 public limited company (1.1% of total distribution and 17 th in the country)	4,665, including 4,243 individual proprietors, 69 sole proprietors, 1 general partnership, 99 private limited companies and 1 public limited company (0.9% of total distribution and 20 th in the country)	2,222, including 1,983 individual proprietors, 25 sole proprietors, 57 private limited companies and 7 public limited companies (0.4% of total distribution and 23 rd in the country)	11,046, including 10,260 individual proprietors, 182 sole proprietors, 5 general partnerships, 2 limited partnerships, 104 private limited companies and 9 public limited companies (2.2% of total distribution and 15 th in the country)
Mining	Copper, gold, zircon, gems, cooper-lead-zinc, basalt Gold and iron mine exploration Currently, 12 companies have obtained licenses to conduct feasibility studies	Iron ore, manganese, gold, dolomite, limestone, amethyst, marbles, coal An Mady Group Co. Ltd is exploring coal mines in Siem Pang and Sesan districts. The Stung Treng Mineral Joint Venture Co. is exploring for iron ore in Stung Treng	Copper-lead-zinc, gold, bauxite To date, 19 companies have received licenses to explore for mines in Mondul Kiri province in a total area of 5,864.95 km ²	Molybdenum, copper, silica, tin, jasper, granite, gold Gold mining by Xing Yuan Kang Yeak Co. at Kbal Damrei commune, Sambo district

Source: Compiled by the author in accordance with a report of MIME for 2012 and a Report on the Economic Census of Cambodia 2011(MOP, 2012a).

Table 12: Mining Resources in CDTA Provinces

Provinces	Mining resources
Kratie	1) lead 2) copper 3) zinc 4) granite 5) gold 6) precious stones
Stung Treng	1) clay 2) iron ore 3) marble 4) coal 5) precious stones 6) dolomite
Mondul Kiri	1) lead 2) copper 3) zinc 4) granite 5) gold 6) aluminum 7) bauxite
Ratanak Kiri	1) lead 2) copper 3) zinc 4) gold 5) lead 6) precious stones 7) copper 8) zinc 9) gold

Source: ADB (2010).

Cambodia, including Australia, Korea, China and Vietnam. Some foreign enterprises are working in partnership with local companies. However, as Cambodian law allows for wholly foreign-owned mining companies to receive licenses, some non-Cambodian companies are working alone.

The exploration of Cambodia's mineral resources has increased during the past several years as a result of the efforts of the government to increase foreign investment in the country by heavily promoting its underexplored mineral resources. The process of setting up a working mine includes a number stages, from initial reconnaissance and prospecting, to exploration, feasibility study, and finally exploitation. The various stages can be lengthy and very expensive and from the initial reconnaissance to actually extracting minerals a large mine can sometimes take years to become fully operational.

As of 2010, the Ministry of Industry, Mines and Energy has granted 77 mineral exploration licenses to local and foreign companies. The major mineral companies currently exploring for mineral resources in CDTA provinces are as follows:

- 1) Oxian (Cambodia) Limited or OZ Mineral explored for metallic minerals in Mondol Kiri.
- 2) Liberty Mining International Limited, MAXUM METAL Co. Ltd and Transol cooperated to explore for iron ore in Ratanak Kiri, Preah Vihear and Mondol Kiri.
- 3) Southern Gold Limited explored for gold and iron ore mines in Mondol Kiri, Kratie and Ratanak Kiri.
- 4) ALUMINA Co. Ltd (Cambodia-Vietnam) explored for bauxite in Mondol Kiri.
- 5) Indochina Resources explored for gold, copper and iron ore. It has mines in Ratanak Kiri.
- 6) Summer Gold Investment explored for iron ore and gold in Ratanak Kiri and Mondol Kiri.
- 7) Hoang Anh Ratanak Kiri Co. Ltd (branch company of Hoang Anh Gia Lai Joint Stock Vietnamese Company) assessed the exploration of iron ore in O'Yadav, Ratanak Kiri province.
- 8) An Mady Group Co. Ltd explored for coal in Siem Pang, Stung Treng.
- 9) Xing Yuan Kanng Yeak Co. Ltd explored for gold in Kratie.

- 10) The Stung Treng Mineral Joint Venture Company (a joint venture between VINACOMIN of Vietnam, Try Pheap Mining Co. Ltd of Cambodia and MOM Good Luck Mining Co. Ltd) explored for iron ore in Stung Treng.
- 11) Sun Hill Minerals Co. Ltd explored for iron ore in Mondol Kiri.
- 12) Cambodian LEL Mine Resources Development Co. Ltd explored for iron ore in Ratanak Kiri.
- 13) An Mady Group Co. Ltd explored for coal in Kratie.

About a third of 20 licensed companies are expected to begin mineral extraction in 2015 following exploration in the northeast provinces of Ratanak Kiri, Mondol Kiri and Kratie (MIME, 2012). Small and traditional mineral extraction in gold and gemstones as well as non-metals like sand and stone used as construction material has taken place among Cambodian people for many years. However, civic groups caution that weaknesses in the laws, management and transparency could dampen any gains mining might bring (www.voacambodia.com 2010-03-18-voa).

3.3. Tourism

Tourism involves industrial, commercial and service activities in a system of direct and indirect stakeholders. Tourism has become an economic priority and impetus for social development for several countries in the region. The growth of tourism encourages and increases employment opportunities and income for people to reduce poverty. The tourism sector has been an important and very dynamic engine of growth and generation of foreign exchange revenues since the cessation of conflict. The increase in tourist arrivals has soared from a very low number in the mid-1990s to about 2.1 million in 2008 (UNDP, 2009a).

As the domestic economy rapidly develops, there has also been an increase in domestic tourism. As a result of both domestic and international tourism, tourism receipts are making a significant contribution to the national economy.

The role of tourism as a pioneer sector, better able than other sectors to cope with the challenges posed by economies in transition, has been demonstrated in Cambodia.

The tourism sector has developed quite rapidly due to the abundance of ancient Khmer temples, such as Angkor Wat. Additionally, eco-tourism involving natural sites and

protected areas provides the best route to diversify tourism in the Kingdom. Eco-tourism has demonstrated potential in Cambodia, particularly in terms of extending tourist flows into the northeast of the country.

The CDTA provinces are rich in culture and natural landscape that is a part of the great potential for eco-tourism and cultural tourism (Table 13). Lately, the tourism sector in these provinces has expanded quickly and contributed to the improvement of people’s lives and livelihoods. So far, most of the tourists that have visited this area are local, though the number of international tourists has recently increased. Infrastructure improvement (particularly the road network) has facilitated tourist access to these provinces.

Table 13: Tourist Attractions in CDTA Provinces (Continues)

➤ Historical/cultural area (Kratie)

Name	Appeal points
1. Vihear Sarsar Mouy Rouy	Vihear Sarsar Mouy Rouy is a pagoda well-known for its history and as a place of pilgrimage for residents of Kratie. Vihear Sarsar Mouy Rouy, meaning 'Temple with 100 columns', was first built in the 16 th century by King Chann Reachea. The pagoda included 100 wooden columns to commemorate the memory of his daughter Vorakpheap.
2. Phnom Preah	Phnom Preah is a historical and cultural site, 1 km west of Chhlong Market. It has a small hermitage and a big Buddha statue that people from different places visit. It is said that the big Buddha statue was made of Tatrao wood floating along the Mekong river from Laos that got stuck at the port of a pagoda now known as Seila Noti Chhlong. Laymen and laywomen at the pagoda took the statue and kept it at the pagoda for worship. Later, the statue told the residents in their dreams that moving the statue to a hill behind that village would bring good health and prosperity.
3. Phnom Sopor Kaley	Phnom Sopor Kaley is a historical and cultural tourist spot located at Chambok commune, Prek Prasob district along the north side of the Mekong River, 45 km to the southwest of the provincial town. Phnom Sambok is a hill covered by various kinds of trees labeled with scientific names. At the top of the hill, tourists can visit a small temple, and cottages that serve as residencies for Buddhist monks, clergymen, and nuns.

➤ **Eco-tourism area (Kratie)**

Name	Appeal points
1. Kampi Dolphin Site	Kampi is the best place in Cambodia to see the rare Mekong River dolphins. The Kampi dolphin pool is the most inhabited dolphin pool in the Mekong River with about 20 dolphins. The Kampi dolphin site was established in 1999 to welcome international and local tourists and for scientific researchers to study the Mekong River dolphins.
2. Koh Pdao	At Koh Pdao, an island in the Mekong, visitors will find the Koh Pdao dolphin pool, one of the few places where the rare Irrawaddy river dolphin can be observed. During the community development tour, visitors travel up the Mekong River from Kratie to Koh Pdao island and observe the lives of Cambodians on koh Pdao. Home stays can be arranged.
3. Irrawaddy dolphins	Fifteen to twenty of the fresh water dolphins make their home on a beautiful stretch of the Mekong River near a small set of rapids.
4. Dolphin habitat	Kratie is a spectacular wildlife and a nature reserve. The dolphin habitat in Kratie is a favorite haven for nature lovers.

3.3.1. Kratie province

Kratie is endowed with several historical as well as cultural and natural attraction sites. It features the biggest river of the country, the mighty Mekong with its small rapids and critically endangered and extremely rare Irrawaddy dolphins. There are numerous sites to visit in Kratie, such as Phnom Sambok, (a small temple located on a hill north of town), Vihear Sarsar Mouy Rouy, meaning 'Temple with 100 columns' (a pagoda well-known for its history and as a place of pilgrimage for residents of Kratie), Phnom Preah, (a historical and cultural site) and others.

As of 2010, the province offered seven hotels with 269 rooms, and 22 guesthouses with 245 rooms.

3.3.2. Mondol Kiri Province

Mondol Kiri is the most sparsely populated province in Cambodia despite being the largest in area. It is enormously rich in various natural resources to be explored, such as majestic mountains, cool weather, rainforest, indigenous wildlife, pine tree plantation, impressive

➤ Ecotourism area (Mondul Kiri)

Name	Appeal points
1. Bou Sra Waterfall	The Bou Sra waterfall is located in Pich Chrada district, about 43 km northeast of Mondul Kiri provincial town. It can be accessed by a red soil road. The waterfall is one of the most interesting places for tourists.
2. Chrey Thom Waterfall	The Chrey Thom waterfall is located at Sen Monorom district, 43 km from the provincial town. During the dry season, the waterfall has a height of 15m and a two-meter width. During the rainy season, the waterfall has an 11m height and an eight-meter width.
3. Chrey Yos Waterfall	Chrey Yos waterfall is located in Laoka village, Sokhdom commune and Pouloung village, Romnea commune, Sokhdom commune, Sen Monorom district, about 6km from the provincial town.
4. LA Ang Khin Waterfall	LA Ang Khin waterfall is located in Pou Yam village in Sen Monorom commune, O' Raing district, 26 km from the provincial town.
5. Lak Pok Bras Waterfall	Lak Pok Bras waterfall is located in Romnea commune, Sen Monorom district, 13km from the provincial town. It can be reached by footpath.
6. Mondul Kiri Protected Forest	Mondul Kiri Protected Forest was established in 2005 (the Eastern Plain Landscape Project) and is located in northeastern Cambodia. It covers two protected areas: Mondul Kiri Protected Forest (MPF) and Phnom Prich Wildlife Sanctuary (PPWS). Both protected areas are part of the world's 200 most biologically important eco-regions. Spread over an area of almost 800,000ha, the EPL contains one of the largest continuous stretches of dry and semi-evergreen forest in southeast Asia.

waterfalls, small rivers, waterfront parks, etc. It is now the intended eco-tourism destination for adventurous travelers who enjoy traveling, discovering wildlife in remote areas of the province, trekking up hills or mountains, riding elephants, visiting waterfalls, and learning about the daily life of the indigenous minorities. Mondol Kiri also offers a handful of unforgettable cultural attractions. Many visitors enjoy a stop at the Phnong indigenous minority villages where they can observe the rich culture belonging to local hill tribes. There are even opportunities to experience cultural community life on the edges of the forest through “home stay” arrangements in the corridor zone of Phnom Prich Wildlife

➤ Historical/cultural area (Ratanak Kiri)

Name	Appeal points
1. Phnom Essey Patumak Resort	Essey Patumak temple is a sacred place located on the peak of Phnom Svay mountain about 2 km west of Ban Lung, the provincial capital of Ratanak Kiri. Today, this sacred place invites prayers for good fortune from tourists and offers the best sunrise views over the town. There is another magnificent view of the local landscape over the hilly plateau and of the mountain jutting into the sky.

Sanctuary and the Mondol Kiri Protected Forest.

The province offers two hotels with 87 rooms and 18 guest houses with 258 rooms.

3.3.3. *Ratanak Kiri Province*

Ratanak Kiri is the mountainous northeastern frontier province of Cambodia. It extends from the mountains of the Annamits range in the north across a plateau between the Sesan and Srepok rivers. Famed for its stunning natural beauty and ethnic diversity, Ratanak Kiri is full of natural and cultural treasures just waiting to be discovered. Ratanak Kiri boasts some of the most striking landscapes the region has to offer and is home to several settlements of hill tribes. Among the many picturesque natural sites are the crystal clear Yeak Laom volcanic lake, incredible waterfalls, gem mines, and a dense rainforest teeming with exotic flora and fauna. In contrast to modern day opulence, this province remains largely untouched as the majority of the population in Ratanak Kiri is made up of ethnic minority groups living harmoniously with nature.

As of 2010, the province offered six hotels with 251 rooms, and 22 guesthouses with 316 rooms.

➤ Eco-tourism area (Ratanak Kiri)

Name	Appeal points
1. Yeak Loam Lake Attraction	Yeak Loam lake is remarkable in that it is located on a plateau top. This lake, 800 meters in diameter, and 48 to 50 meters deep, fills the crater of a centuries-old, inactive volcano. It is the latest tourist magnet to enthrall visitors while touring in Ratanak Kiri province. The water of the lake is always translucent, cool and ideal for swimming; the surrounding lush forest is filled with harmonious birdsong.

2. Ka Chanh Waterfall	Ka Chanh waterfall is surrounded by forest, creeks and rubber plantations. The waterfall is best viewed from below when visitors descend into the gorge via 72 wooden steps or taking the swing bridge extending in front of the waterfall. The site is surrounded by huge trees.
3. Katieng Waterfall	The cascade is surrounded by trees that provide shade to the visitor. The falls are best viewed from below by descending into the gorge via wooden steps. At the base of the falls are naturally scattered large boulders where trekkers can relax and take in the spectacle. Located at the upper waterfall pool, there are elephants for scenic tours of the surrounding forest.
4. Cha Ong Waterfall	Cha Ong waterfall is 25m high and surrounded by various vines and climbing plants. The scene is very picturesque: the water spray generated by the water cascading off the vegetation creates its own rainbows in the sunlight.
5. O' Sinclair Waterfall	O'Sinclair waterfall is covered by the emerald forest; the surrounding mountains present a natural harmony of wildlife and birdsong. This water has kept its secrets well hidden in the jungle until only recently. Road conditions have improved sufficiently to enable the adventurous to experience this wonder natural waterfall during the dry season.
6. Veal Rom Plang Eco-tourism Site	Veal Ram Plang is an attractive eco-tourism site. It is part of the traditional territory of the legendary hill tribe communities living there. On these grassy fields, there are wild plants which flower during the rainy season (from May till January).
7. Lum Kut Lake	Lum Kut is a natural volcanic lake in the shape of a human heart. The size of this lake is 23ha and it is 60 meters deep. It's similar to Yeak Loam lake. Surrounded by stones, this unique volcano lake offers many species of fish and birds.
8. Tat Tay	Tat Tay water rapids are a seasonal attraction from February to April. During this period, the water runs over large and small stones in its bed. It is a good place for swimming and fishing.
9. Virachey National Park	The Virachey park is the largest national park in Cambodia and, together with adjacent protected areas in Laos and Vietnam, collectively forms one of the largest protected areas in Asia and has been part of the Heritage of ASEAN since 2003. At Virachey, visitors will find many animal species including elephants, tigers and gaur. In addition, the national park is home to 1,500 indigenous families.
10. Lumphat Wildlife Sanctuary	Lumphat Wildlife Sanctuary is part of the Ratanak Kiri wildlife sanctuary and has become one of Cambodia's natural wonders. Located in the northwestern part of Ratanak Kiri and Mondul Kiri provinces, it has an area of 2,225 km ² . The area attracts tourists due to its forest scenery and tranquil surroundings. It's also a haven for a wide range of wildlife, including some endangered species. According to a survey by WWF in 2001, the forest has roughly a dozen large wild animal species. There are around a hundred bird species here, including waterfowl.

➤ Newly found area potential for tourists (Ratanak Kiri)

Name	Appeal points
1. The Gibbon Protection Area, Y Touk Village	The gibbon protection area is located in Y Touk Village, Veurn Sai district. It is home to a number of gibbons, the world's most endangered primates. Tourists can also enjoy sightseeing in the protected area with many kinds of big trees, wildlife, and the adjacent natural waterfall.

➤ Historical/cultural area (Stung Treng)

Name	Appeal points
Preah Theat Temple	Located on a hill about 3 km away from the outskirts of Stung Treng town, the Preah Theat temple is one of the most sacred places of worship for residents and visitors alike. As such, it is an important historical site in the province. This temple was built in the 6-7th centuries during the reign of King Jayavarman I.
Preah Ko Temple	Located in Thala Borivath commune, about 2 km from the outskirts of Stung Treng town. Preah Ko temple is an important historical site in Stung Treng province. It was built between the 7th-8th centuries and dedicated to Brahmanism.
Cultural and historical site of the Kavet ethnic minority	Located in Siempang district and next to Virakchey national park

➤ Eco-tourism area

Name	Appeal points
O'Russey Kandal	Located about 27 kilometers from the provincial town and next to Kratie province on national road 7. It is a community based eco-tourism site with a total area of 95 ha. It has a beautiful river to picnic beside, picturesque waterfalls and pools to cool off in and a majestic forest to wonder through.
Sopheakmit Waterfall	One of the biggest waterfalls in Asia with 5.8m height and 6.1km length located along the mighty Mekong River. This waterfall is situated in Thalabarivat district, 60km from the provincial town.
Chheteal and Phnom Bang Kouy fresh water dolphins	Endowed with natural beauty, such as rain forest, submerged forest, mountains and fresh water dolphins. This dolphin area is situated in Preah Rumkel commune, Thalabarivat district next to Preah Vihear province and the Lao border.
Virakchey National Park	One of the biggest national parks in Cambodia, it is situated in Stung Treng and Ratanak Kiri provinces in the triangle area bordering Cambodia, Laos and Vietnam.

Source: Compiled by the author in accordance with the Council for Development of Cambodia (CDC)-Provincial study report.

3.3.4. Stung Treng Province

Stung Treng is a beautiful province located on a high sandy bank overlooking the Mekong River where it joins the Sekong River. There are several nice places to visit when in Stung Treng. The amazing Sopkeakmith waterfall never ceases to mesmerize visitors and the stretch of the mighty Mekong at the province is also a popular place for observing the very

rare Irrawaddy dolphins. The Thala Barivat is a historical site where the Preah Ko, a 7th century brick temple of king Jayavarman I is located. This is one of the earliest temples built during the Angkor era. In the vicinity are a few other ancient temples: the Prambuon Lveng temples, the Srei temple and the Angkor Kmao temple. The Hang Kho Ba Pagoda, a 300-year old temple is also worth a visit.

As of 2010, the province offered five hotels with 145 rooms and 13 guesthouses with 247 rooms.

There is significant tourist potential to be developed in these CDTA provinces. Cambodia's ability to maintain its spectacular growth in international and national arrival numbers and tourism receipts will have an impact on disadvantaged communities. Recent detailed empirical work suggests that few of the benefits of tourism growth are being captured by the poor in Cambodia, perhaps as little as 7% of tourist spending. This suggests that linkages between tourism and local communities are weak (UNDP, 2009b). In an international context, the business environment for tourism enterprises in Cambodia is poor. Particularly problematic is the condition of tourism and information communication technology infrastructure. Additionally, Cambodia is becoming less competitive in price terms by relatively high energy, fuel and flight costs. The quality of human resources in the sector is also low. Only a small proportion of tourist spending reaches the poorer section of the population.

According to a study of the UNDP, to improve tourism sector development some measures should be taken: strengthen hospitality for the labor force in local provinces, ensure that the lower costs of electricity generated in Thailand and Vietnam are passed on to consumers, encourage the development of tourism in CDTA province destinations while protecting the land rights of the poor, enhance the availability of local culture goods and services through targeted support to the supply chain and improve the water supply and sanitation infrastructure at tourism destinations (UNDP, 2009b).

4. DEVELOPMENT PROJECTS

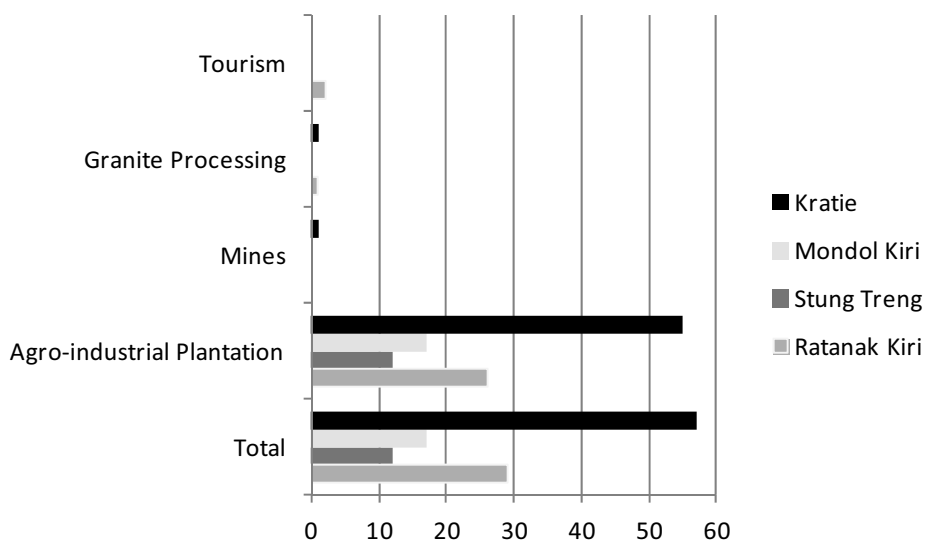
4.1. Private Investment

Private investment has expanded recently, although from a small base. The trade

consequences of this investment are likely to intensify in the near term as they encourage closer regional economic integration. The establishment of the CLV-DTA is likely to support intra-regional investment. As a matter of fact, since the establishment of CLV-DTA, there has been an increasing number of Vietnamese investments in Cambodia, especially in CDTA provinces.

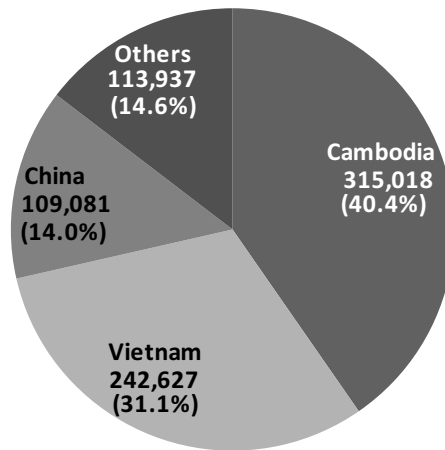
With respect to the Council for the Development of Cambodia (CDC), from 2009 to June 2012, the implementation of foreign direct investment has reached 115 private investment projects in CDTA provinces, including Kratie (57), Mondol Kiri (17), Ratanak Kiri (29) and Stung Treng (12 projects: Figure 1). Among them, 95% (110) invested in agro-industrial plantation, which includes the highest proportion of rubber plantation, followed by cassava, sugarcane, acacia, teak, jatropha etc. In addition, there were investments in tourism, mining exploration, gold and granite processing in Ratanak Kiri and Kratie. The total private investment area for agro-industrial plantation is about 780,663ha, of which about 40% (315,018ha) was invested by Cambodians, 31% (242,627ha) by Vietnamese, 14% (109,081ha) by Chinese, and the remainder about 15% (113,937ha) invested by others, such as Indians, Malaysians, Koreans, Americans etc.,

Figure 1: Private Investment in CDTA Provinces as of June 2012



Source: Data base of Cambodian Investment Board (CIB); and CDC-Provincial Information Report.

Figure 2: Private Investment Agro-Industrial Area (ha) by Country in Provinces of CLV-DTA as of June 2012



Source: Data base of Cambodian Investment Board (CIB); and CDC-Provincial Information Report.

(Figure 2). There was a significant amount of FDI in the agricultural sector, while the industrial sector and tourism garnered a considerably lower figure in the same period. This is in line with the argument that CDTA provinces have a huge potential to develop the agro-industrial sector. In Ratanak Kiri province, along with the above number of private investments and in response to current tourism development in CDTA provinces, there are two projects in the tourism sector. The first, by a Cambodian investor, focused on hotel construction, cultural development and resorts with registered investment capital of USD 50,726,600, while the second focused on entertainment clubs. It should be noted that in general, the approved direct investment capital is higher than actual direct investment capital. Besides Cambodian investors, Vietnamese and Chinese have been the main investors in CDTA provinces.

4.2. Official Development Assistance (ODA)

Since the 1993 general election with the support of the United Nations Transitional Authority in Cambodia (UNTAC), Cambodia has achieved a remarkable transformation from a war-ravaged to a post-conflict society. However, it is still heavily dependent on

foreign aid in the form of official development assistance (ODA), which comprises both grants and loans.

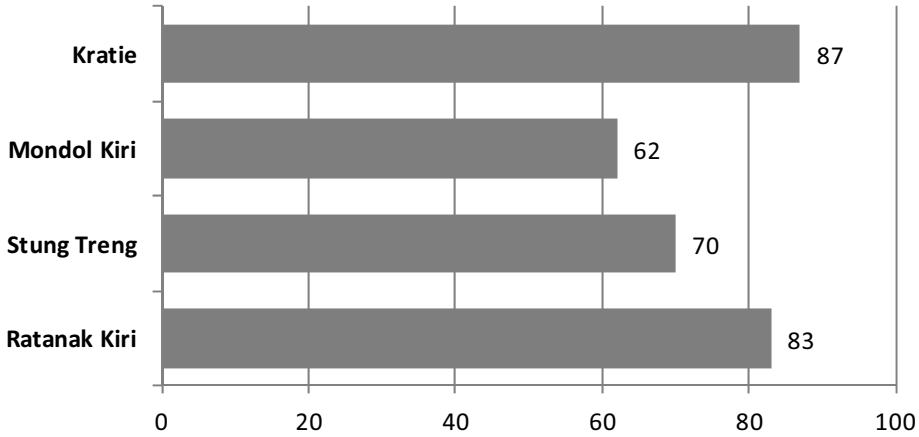
According to the Council for Development of Cambodia, loans normally account for 20-30% of total disbursements, while the remainder comes in the form of grants (CDC-CRDB, 2011). The ODA finances physical infrastructure projects, supports human resource development through improved health and education and upgrades technology.

Development assistance in the agricultural sector in Cambodia began in 1998 with initial investment in the rice sector. Since that time, there have been numerous donor and NGO projects primarily directed towards poverty alleviation, building infrastructure, and developing local markets. According to the Council for the Development of Cambodia, there are approximately 159 agricultural-related programs currently underway. Many projects address constraints in irrigation systems, infrastructure and management, food security and nutrition, and fisheries development. Investments in on-going development activities currently total over USD 463 million with the largest amount coming from multi-lateral institutions like the Asian Development Bank (ADB) and International Fund for Agricultural Development (IFAD), and bilateral support from historically prominent donors such as Australia, Denmark, France, Japan, and the United Kingdom (USAID, 2009).

In CDTA provinces there were a total of 302 ODA projects: Kratie (87), Mondol Kiri (62), Ratanak Kiri (83) and Stung Treng (70). Among these projects, 148 are on-going, while 154 have been completed (Figure 3). The ODA projects in CDTA provinces are comprised of 102 in the social sector, 96 in the economic sector, 18 in infrastructure and 86 in services and cross-sectorial programmes (Figure 4). The main sources of ODA in CDTA provinces came from different development partners, including the United Nations and multilateral communities such as the ADB, the World Bank, and the International Labour Organization (ILO). European Union development partners include the UK, France, Sweden, Denmark, Spain, Finland and Belgium. Bilateral development partners include Japan, the United States, China, Australia, Korea, Switzerland and New Zealand (Figure 5).

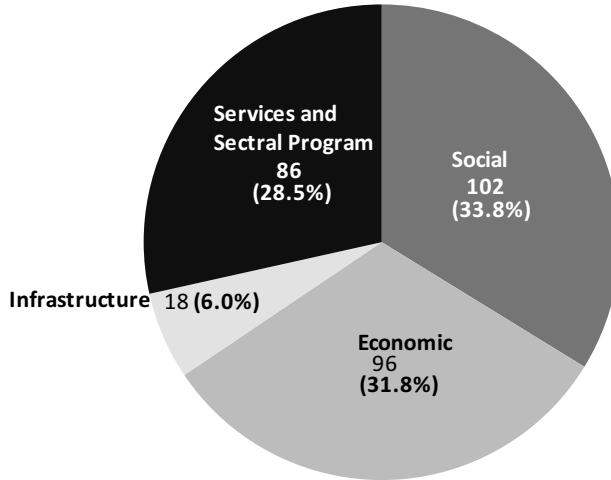
With respect to the list of priority projects proposed by Cambodia in the Master Plan for CLV-DTA, there are a total of 575 projects: 152, 122, 152, 149 proposed by Kratie, Mondol Kiri, Ratanak Kiri and Stung Treng, respectively. Infrastructure requirements in

Figure 3: Number of ODA Projects Which Support/Supported CDTA Provinces



Source: Data base of Cambodian Rehabilitation Development Board (CRDB).

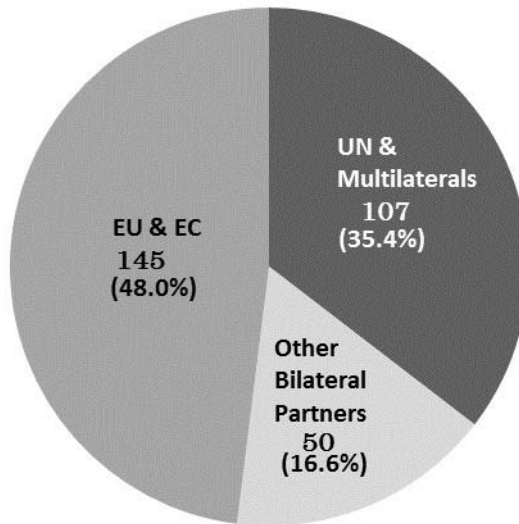
Figure 4: Official Development Assistance Projects by Major Sectors



Source: Compiled by the author from the data base of the Cambodian Rehabilitation Development Board (CRDB).

CDTA provinces will impose substantial demands on national budgets, complicating the existing distribution of central government spending. The need for infrastructure finance will place considerable pressure on development partners, such as the United Nations and multilateral organizations, including the World Bank, the Asian Development Bank, the

Figure 5: ODA Projects for DTA Provinces by Donors



Source: Compiled by the author from the Data base of the Cambodian Rehabilitation Development Board (CRDB).

European Union, and bilateral partners, such as the USA, Japan, Australia, China, etc. The estimated cost of the above projects is so high that the future successful implementation of the CDTA development plan could be not realized without ODA participation.

According to the UNDP study, any reduction of ODA, which has contributed about 40% to the national budget, could have serious consequences concerning the country's development, especially in the social sectors, economic sectors and infrastructure (UNDP, 2009a).

5. OPPORTUNITIES & CHALLENGES FOR CDTA DEVELOPMENT

The comparative advantages among CDTA provinces also suggest certain opportunities for promotion of CDTA development. The CDTA provinces have a large land area with fertile soil and a suitable climate for development of agro-industrial crops and a processing agro-industry. There is an abundance of forest areas, large national

protected areas, forest protected zones, waterfalls and biodiversity which provide a great potential for eco-tourism development. Another opportunity lies in the large number of various untapped mineral resources (gold, iron ore, coal, gems, bauxite, copper, etc). These areas are watered by many rivers, which create the potential of hydropower station construction. Additionally, there is an enormous number of cultural and historic sites and various ethnic cultures that provide huge potential for tourism development. Currently, there are cross-border movements of trade, vehicles and people with accompanying opportunities to facilitate cross-border investment and trade by simplifying and streamlining regulations and procedures dealing with neighboring countries/partners. There are good opportunities to attract private investment, including foreign direct investment and domestic investment, as well as official development assistance, advanced technology transfers and markets. Of course, peace and political stability will be strengthened in the CLV-DTA.

Along with the above advantages and opportunities, there are also several challenges facing the development of CDTA provinces: the shortage and degraded status of physical infrastructure and facilities (including the road network), poor storage and warehousing facilities, outdated information technology equipment and communication facilities, a lack of clean water and an unreliable electricity supply. The irrigation system is also insufficient to support paddy rice crops and other agro-industrial crops and plantation.

In addition, there is much concern about human resource development in the CDTA provinces. The low level of education and skills is impeding the pursuit of these complementarities. Workers in these provinces have low-level skills and general knowledge and are unable to apply advanced technology and management practices to raise productivity. Moreover, many provincial workers simply cannot meet the future widespread needs of new agro-industrial investment projects.

In addition, these CDTA provinces have high levels of poverty, low population density spread over widely dispersed residential areas and are remote from major economic and population centers. In addition, education achieves only low levels of quality and, thus, there is a low literacy rate. The people's health status is also poor, including life expectancy at birth, infant mortality and maternal mortality.

Although the development of CDTA provinces is expected to bring benefits to the provincial people in terms of increased investment, trade and greater income-generating

opportunities, there are also undesired consequences for the people of CDTA provinces: displacement of local communities, spread of communicable diseases, human trafficking and illegal trade, and increased land prices. There will also be an environmental impact, such as deforestation for rapid exploitation of natural resources in the provinces and environmental degradation from pollution and waste disposal issues, etc.

The critical challenge is to achieve balanced development of all CDTA provinces and the DTA member countries.

CONCLUSION

Cambodian development of triangle areas with Lao PDR and Vietnam and whole-hearted cooperation among the three governments will realize the rich resource endowment available to create an environment suitable for economic activities. Development will also provide a significant geographic advantage and attract investors while contributing to the promotion of growth and employment that will help to alleviate poverty.

The government has strong political and economic motivation to promote the development of these CDTA provinces. To realize the benefits, long-term commitments by government, private investors, the United Nations and multilateral and bilateral lending agencies will be needed. To match efforts to boost the performance of CDTA provinces, Cambodia needs to further promote a reduction in trade barriers, streamlining investment regulations, improvements in tourism development, elimination of inefficiencies in physical infrastructure (in particular, the road transport network), the irrigation system, energy, telecommunications, better storage facilities, an improvement in education, vocational skills training and the social welfare of its people. Moreover, Cambodia needs to encourage more economic growth, produce more agro-industrial processing products to export instead of raw products, facilitate road transport by implementation of cross-border transport agreements (CBTA), simplify and streamline customs procedures (including single-window administration) and risk management. Nevertheless, more information on a development triangle is needed to increase awareness of possible business opportunities. Furthermore, enhancing private and public-private sector participation will also be needed to mobilize more financial resources to support development projects for the CDTA

provinces.

Finally, a special effort should be made to ensure that the poor and remote provinces in the border areas of CDTA share in the benefits of DTA.

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