CHAPTER 4: ISSUES IN THE PRESENT CONDITIONS OF THE COASTAL AREA

4.1 Socio Economic Condition

4.1.1 Population

In this section, population movement in the last decade is analyzed based on the available two census data, one is the 1998 census and the other is the 2008 census.

(1) National Prospect

In the census data published by NIS (National Institute of Statistics), Cambodia is divided into four main regions, which are i) Plain area, ii) Tonle Sap area, iii) Coastal area, and iv) Mountain area. For each regional demographic data in 1998 and 2008 is summarized in Table 4.1.1.

Table 4.1.1 Population Overview of 1998 and 2008

	1998 Census			2008 Census		
	Total	Urban	Rural	Total	Urban	Rural
Plain Area	5,898,307	1,257,760	4,640,547	6,547,953	1,621,696	4,926,257
Share of total (%)	51.6%	62.1%	49.3%	48.9%	62.0%	45.7%
Annual pop. growth rate(%)	--	--	--	1.1%	2.6%	0.6%
Tonle Sap Area	3,505,448	488,843	3,016,605	4,356,705	671,533	3,685,172
Share of total (%)	30.6%	24.1%	32.1%	32.5%	25.7%	34.2%
Annual pop. growth rate(%)	--	--	--	2.2%	3.2%	2.0%
Coastal Area	844,861	157,788	687,073	960,480	178,851	781,629
Share of total (%)	7.4%	7.8%	7.3%	7.2%	6.8%	7.2%
Annual pop. growth rate(%)	--	--	--	1.3%	1.3%	1.3%
Mountainous Area	1,189,042	121,342	1,067,700	1,530,544	142,346	1,389,198
Share of total (%)	10.4%	6.0%	11.3%	11.4%	5.4%	12.9%
Annual pop. growth rate(%)	--	--	--	2.6%	1.6%	2.7%
Total (Nation)	11,437,658	2,025,733	9,411,925	13,395,682	2,614,426	10,781,256
Share of total (%)	100%	100%	100%	100%	100%	100%
Annual pop. growth rate(%)	--	--	--	1.6%	2.6%	1.4%

Source: NIS

The average annual population growth rate of Cambodia between 1998 and 2008 was 1.6% during the past decade, which is slightly higher than that of Southeast Asia, 1.2%[1]. The census also reveals that

[1] NIS. 2009. *General Population Census of Cambodia 2008: National Report on Final Census Results.* The NIS report also

the Mountainous and Tonle Sap areas have experienced higher population growth than the national average, whereas the population growth rates of the Coastal and Plain areas have fallen below the average. The results have demonstrated that a certain population movement from the Coastal and Plain regions into the Mountainous and Tonle Sap areas has occurred. Regarding this issue, the final census results paper mentions that accelerated investment in infrastructure development/ rehabilitation projects, mining, large scale plantation projects, and clearance of land mines tend to absorb such a population influx in Mountainous area.

Another finding is that demographic changes differ between urban[2] and rural areas. The urban areas have grown its population for the last decade, whereas the rural areas have provided a fraction of its population to the urban economy. One of the major factors is that a large number of female population has come to work for garment factories located in and around Phnom Penh and other regional centers. In case of Mountainous area, construction projects regarding basic infrastructure development as well as clearance of land mines have induced a movement of daily workers in the rural areas. Therefore, the population growth rate of the rural area is higher than that of urban areas in Mountainous area.

The current population density of Cambodia is 75 persons/ km^2, which has been increased from 64 persons/ km^2 in 1998. This figure is still much lower than that of Southeast Asia[3], 126 persons/ km^2. The population density for each Plain and Tonle Sap area has ascended through the last decade, whereas the population density for each Coastal and Mountainous area has not experienced a large movement.

Table 4.1.2 Population Density: 1998 and 2008

Unit: person/ km^2

	1998	2008
Plain Area	235	261
Tonle Sap Area	52	64
Coastal Area	49	56
Mountainous Area	17	22
Total (Nation)	64	75

Source: NIS

(2) Coastal Area

The current demographic situation of the Study area, which is Coastal area, consisting of Kampot, Koh Kong, Kep, and Preah Sihanouk provinces, has been analyzed in this section.

First, the survey results from the population census 1998 and 2008 provisional data have been summarized in the following Table 4.1.3. Coastal area is inhabited by 960,480 people in 2008, of which about 81% are living in rural areas and 19% in urban. The largest urban population is found in Preah Sihanouk Province with 89,846 in 2008, followed by Kampot province at 48,274. These two cities account for 77% of the total urban population. The population growth rate between 1998 and 2008 was 1.3%. The annual population growth rate of Preah Sihanouk province is the highest among

mentions that the annual population growth rate during the last decade of the neighboring countries is as follows: 0.4% for Thailand; 1.3% for Vietnam; and 1.7% for Lao PDR.

2 In 2008 Census, NIS has employed a new definition for classifying commune into urban or rural. The new definitions of urban commune are i) population density is 200 persons or more/ km2; ii) total number of male farmers does not exceed 50% of the total employees; and iii) total population of commune shall exceed 2,000 persons.

3 NIS. 2008. *Provisional Population Totals.*

the four provinces at 2.6% overall (urban and rural). It is important to note that the urban population in Preah Sihanouk province experienced even higher annual growth rate of 3.0%.

Table 4.1.3 Population of the Coastal Area: 1998 and 2008

	1998 Census			2008 Census			Annual Growth Rate (98-08)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Kampot	528,405	45,240	483,165	585,850	48,274	537,576	1.0%	0.7%	1.1%
Koh Kong	117,141	41,808	75,333	117,481	36,053	81,428	0.6%	-1.5%	0.8%
Kep	28,660	4,017	24,643	35,753	4,678	31,075	2.2%	1.5%	2.3%
Preah Sihanouk	170,655	66,723	103,932	221,396	89,846	131,550	2.6%	3.0%	2.4%
Coastal Area	844,861	157,788	687,073	960,480	178,851	781,629	1.3%	1.3%	1.3%

Source: NIS

As mentioned in the foregoing section, Coastal area has rather been on the "providing side" for the population during the last decade. This demographic trend as providing the population has been salient in both Kampot and Koh Kohg provinces. On the other hand, Preah Sihanouk province has constantly brought in a large number of people, especially in its urban areas. As the growth pole of the region, the city is expected to maintain and expand the population due mainly to development of industry and tourism sector. Kep province has also experienced higher population growth than has done the nation as a whole or in Coastal area. As Kep province is small for its land area, urbanization is expected to expand even in the rural areas under the current classification, as RGC has designated the province as a base for tourism development.

Change in the population density during the last decade, shown in Table 4.1.4, reveals that Preah Sihanouk province has experienced a high population density. Kep province has also been in a growing trend. On the other hand, the population density of Koh Kong province has remained unchanged. Although the city was expected to undertake a large number of migrants from the surrounding provinces as a gateway city for border trading with Thailand, the actual circumstances showed a lesser trend.

Table 4.1.4 Population Density of the Coastal Area: 1998 and 2008

	Land Area (km2)	1998	2008
Kampot	4,873	108	120
Koh Kong	11,160	12	13
Kep	336	85	106
Preah Sihanouk	868	179	230
Coastal Area	17,237	49	56

Source: NIS

4.1.2 Macro Economy

(1) Background and Overview

From almost a ground-zero start, Cambodia's achievements on the economic front have been remarkable. For the 1998-2007 period, Cambodia has achieved an average growth rate of 9.5% per annum.[4] This rapid economic growth has mostly been driven by the private sector through rapid increases in exports and Foreign Direct Investment (FDI). Private-led growth has also largely contributed to a reduction in poverty from 47% of the total population in 1995 to 35% in 2006 thanks to increased employment opportunities.[5]

However, a number of challenges remain. First, amid the effects of the recent global economic crisis, private sector investments and overall economic activity in Cambodia have slowed considerably. Second, the national economy has been almost exclusively dependent on the garment, construction, tourism, and agriculture sectors with diversification of the economy not much in progress. Third, corruption and governance issues have been a continuing hindrance to healthy economic activities. Finally, poverty is still widespread in rural areas. In subsequent sections, Cambodia's macroeconomic situation will be discussed in detail, followed by a discussion of the development potential of Cambodia and its Coastal area under regional integration schemes.

(2) Recent Macroeconomic Trends

Cambodia's economy is considered one of the fastest-growing economies in the region, though the high growth momentum now faces increasing constraints amid the effects of the recent global economic crisis. Over the past decade, Cambodia's growth performance ranking has been placed highly among all the countries in the world.[6] From 1997 to 2007, the growth rate averaged 9.5% per annum,[7] underpinned by the growing garment, construction, and tourism sectors. In particular, during the period of 2004 to 2007, the real GDP growth reached double-digit rates of 10.3 %, 13.3%, 10.8%, and 10.2% consecutively (Figure 4.1.1). The GDP per capita has also increased much, although it still remains below that of neighboring countries (Figure 4.1.2). The exchange rate has been mostly stable at around CR 4,000 per USD. Inflation has been kept low at an average of below 3% between 2000 and 2006,[8] although in early 2008 it jumped to 25.7%, triggered by the global hike in oil and food prices (Figure 4.1.3). The recent increase in goods' prices is also attributable to the country's heavily dollarized economy (over 90% of total bank deposit are held in USD), and a depreciation of the CR and the USD vis-à-vis trading partner currencies which has caused a price increase in imported goods[9] in Cambodia. Financial intermediation has continued to expand, albeit small in absolute terms.[10] One outstanding issue in the financial sector is the considerably high interest rates for private lending against the relatively low deposit interest rates, which makes it difficult for potential borrowers to access necessary capital. In rural areas, Micro-Finance Institutions (MFIs) have been important intermediaries, providing small loans and credit to the agriculture households and SMEs.

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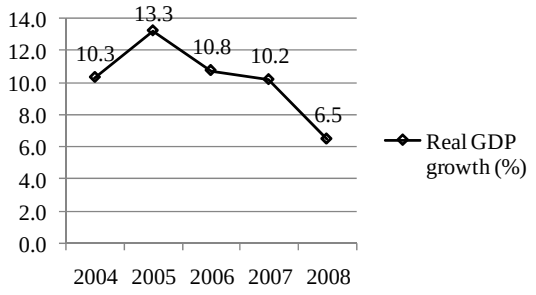
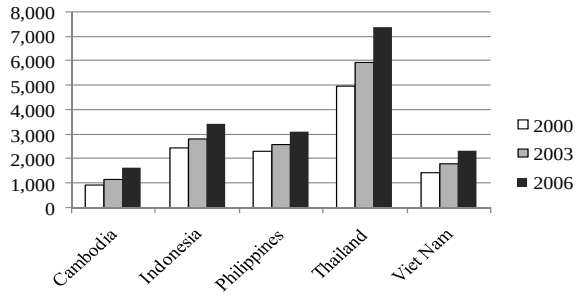
4 World Bank Group, A Better Investment Climate to Sustain Growth in Cambodia, 2009, April, p. vii.
5 World Bank, Cambodia: World Bank Poverty Assessment 2006.
6 World Bank, Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum (Draft), 2009, January, p.1.
7 World Bank Group, A Better Investment Climate to Sustain Growth in Cambodia, 2009, April, p. vii.
8 Sotharith, C., Challenges, Prospects and Strategies for CLMV Development: the Case of Cambodia
9 ADB, Asian Development Outlook 2009, p.227.
10 At the end of 2007, there are 17 commercial banks, of which 11 were either branches of foreign banks or majority foreign owned. There are also 7 specialized banks and 17 Micro-Finance Institutions (MFIs). World Bank, Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum (Draft), 2009, January, p.14.



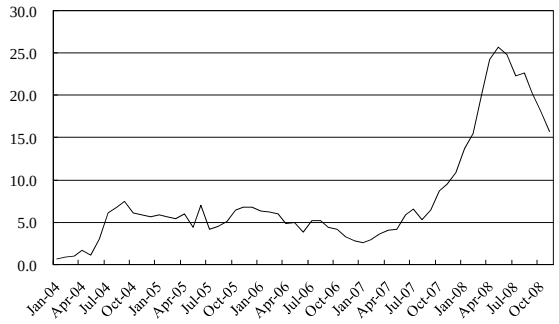
Source: Asia Development Outlook 2009[11]

Figure 4.1.1 Cambodia's Real GDP growth (%)



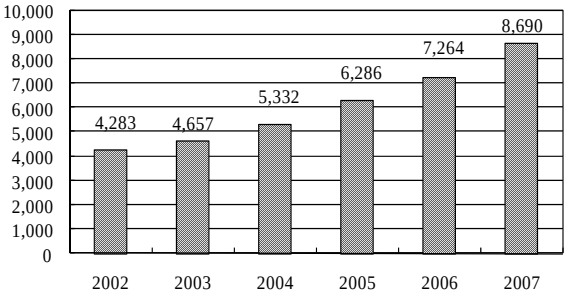
Source: ADB Key Indicators 2008[12]

Figure 4.1.2 GDP per capita at PPP[13] for ASEAN Countries (Current International dollars)



Source: IMF Country Report 2009[14]

Figure 4.1.3 Inflation (%)



Source: IMF Country Report 2009

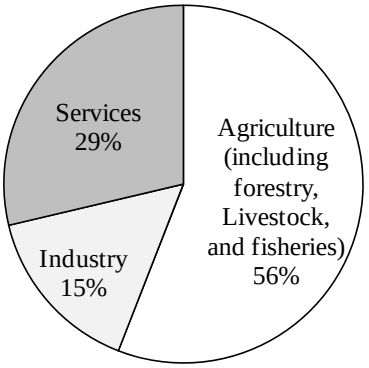
Figure 4.1.4 GDP in Constant Prices (in millions of USD)

The global economic crisis has begun to demonstrate its severe impact on the Cambodian economy with garment exports, the country's hallmark of development, having declined considerably as the US, the main garment importer, has been hit harshly by the crisis. The immediate result has been a rise in unemployment. There are reports of 50,000 laid-off workers out of a total of 352,000 as of March 2009[15] with additional job cuts of 40,000 thereafter,[16] totaling 90,000 job cuts solely in the garment sector. A large job cut is also anticipated in the construction sector. The growth in tourist arrivals has also slowed, and FDI and remittances are also on a downward slope. Due to these critical factors, the real GDP growth rate in 2008 is estimated to have receded to 6.5% (Figure 4.1.1). According to other sources, the growth rate in 2009 is estimated to further decelerate to the level of 2% or 2.5%.[17] In sum, Cambodia is facing various challenges in maintaining and accelerating its economic growth, though the achievements over the past decade and the potential for its continuous growth should be widely recognized.

[11] ADB, Asian Development Outlook 2009.
[12] ADB, Key Indicators for Asia and the Pacific 2008.
[13] Power Purchasing Parity (PPP) is the common currency and equalizes the purchasing power of different currencies. It eliminates the differences in price levels between countries in the process of conversion.
[14] IMF, IMF Country Report (No.09/48): Cambodia Statistical Appendix, 2009 February.
[15] Government-Development Partner Coordination Committee (GDCC), Development Partner's Background Paper on Mitigating the Adverse Impact of the Economic Crisis: for the 14th Meeting of GDCC, 2009 April.
[16] Cambodia Daily, Picture Grows Bleaker for the Garment Sector, 2009 May 28: volume 42, Issue 51.
[17] Economic Institute of Cambodia (EIC), Cambodia: Economic Watch. 2009 April,

(3) Employment

As of 2007, it is estimated that there is a total of 8.3 million people participating in the workforce out of Cambodia's total population of 14 million.[18] Figure 4.1.5 shows the percentage breakdown of the workforce by sector. There has been a large shift in the workforce from the agriculture to the services and industry sectors over the recent years. In 2002, the agriculture workforce accounted for 70% of the total workforce, which decreased to 56% in 2007. Within the same period, the services and industry sectors' workforces rose from 10% to 15%: and 20% to 29%, respectively. It should also be noted that in Cambodia 250,000 young people join the workforce every year.[19]

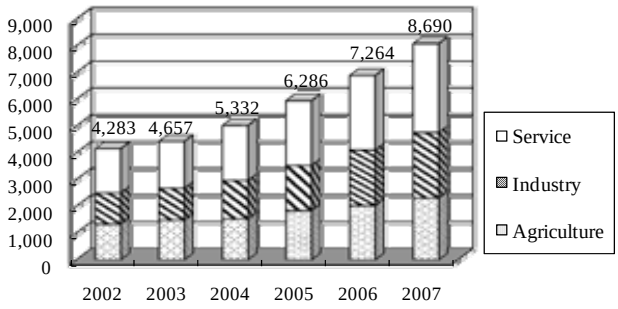


Source: IMF Country Report 2009

Figure 4.1.5 Employment by Sector (2007)

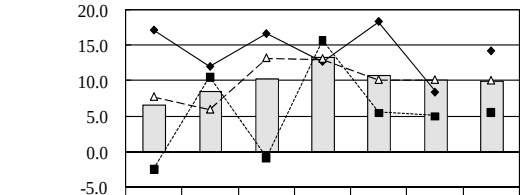
(4) The Structure of Cambodia's Economy

Cambodia's economy is mainly based on garment exports, services, and agriculture. The growth of GDP and the GDP growth rate of value added by industry are shown in Figure 4.1.6 and 4.1.7 respectively.



Source: IMF Country Report 2009

Figure 4.1.6 Growth of GDP by Industry (in millions of USD)



	2002	2003	2004	2005	2006	2007	Average
Total	6.6	8.5	10.3	13.3	10.8	10.2	10.0
Agriculture	-2.5	10.5	-0.9	15.7	5.5	5.0	5.6
Industry	17.1	12.0	16.6	12.7	18.3	8.4	14.2
Service	7.7	5.9	13.2	13.1	10.1	10.1	10.0

Note: Agriculture includes Forestry and Fisheries

Source: IMF Country Report 2009

Figure 4.1.7 GDP growth rate of value added by Industry

1) Agriculture (including Forestry, Livestock, and Fisheries)

Agriculture remains a very crucial part of Cambodian economy as 56% of the total population relies on this sector for their livelihood,[20] while it also contributes about one-third of GDP as of 2007.[21] The agriculture sector has been growing at an average rate of 5.6% since 2002

[18] IMF, IMF Country Report (No.09/48): Cambodia Statistical Appendix, 2009 February.

[19] World Bank, Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum (Draft), 2009, January, p.1.

[20] UNDP, Cambodia Country Competitiveness: Driving Economic Growth and Poverty Reduction (Discussion Paper No. 7). 2009, p.21.

[21] More precisely, the agriculture share of the GDP accounts for 28.7% as of 2007. ADB, Asian Development Outlook 2009, p.298.

(Figure 4.1.7), driven by favorable weather conditions and improvements in the irrigation system. The main drivers of this agricultural growth have been crops, particularly rice, while livestock and fisheries have contributed to a lesser extent. Having borders with Thailand and Vietnam, Cambodia's Coastal area has opportunities for agriculture and fishery development with cross-border trade that could be facilitated through the framework of sub-regional integration, namely the Greater Mekong Sub-region Program (see the subsequent section for regional integration schemes beneficial to the Coastal area).

2) Industry

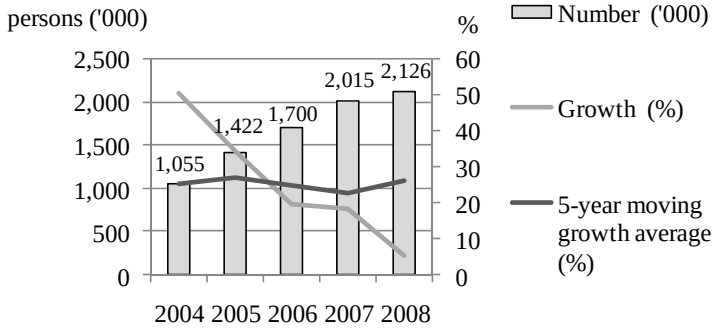
Industry is the fastest growing sector in Cambodia with an average growth rate of 14.2% (Figure 4.1.7) with its relative size nearly doubling from 17% to 30% of GDP between 1998 and 2007.[22] Growth in the sector has been driven by manufacturing (mainly garment and footwear) and construction. The 2007 share of the garment sector (including footwear) accounted for 16% in GDP. The garment sector has also become the country's leading export with export amounts reaching USD2.8 billion in 2007 (73% of the country's total exports).[23] The majority of the garments are exported under the Generalized System of Preferences (GSP)[24] and the Most Favored Nations (MFN)[25] statuses of the WTO regime to US and EU among other countries. Japan also provides a GSP scheme to Cambodia, but very few Cambodian exports have benefited from the Japanese GSP, mostly due to the strict Rules of Origin requirements.[26] In fact, the Rules of Origin imposed by developed nations under their GSPs are generally known to be restrictive, requiring an export country (i.e. Cambodia) to use locally originated raw materials for manufacturing, and, if not, to substantially transform imported raw materials into value added goods within the country to achieve eligibility for duty free or quota free access to markets in the developed nations. This has been a challenge for Cambodia's garment exporters to overcome considering that 52% of the export sales are made up of the imported fabrics.[27] Since the local market for fabrics is underdeveloped, Cambodia inevitably depends on imported fabrics mainly from China, Hong Kong, Taiwan, and Korea. Another challenge for the garment sector is a decrease in demand for garment products by major import countries such as the US and EU due to the effects of the economic crisis. The lifting of safeguard measures on Chinese exports as of 2009 by US and EU will also come as a challenge in the near future since this could erode Cambodia's competitive position in garment exports.[28]

[22] World Bank, Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum (Draft), 2009, January, p.7.
[23] IMF, IMF Country Report (No.09/48): Cambodia Statistical Appendix, 2009 February, p.17.
[24] The Generalized System of Preferences (GSP) enables exporters in developing countries such as Cambodia to benefit from preferential tariffs in the markets of industrialized countries such as the US, EU, and Japan. Its aim is to help those countries to generate additional export revenue and reduce poverty.
[25] Most-favored-nation (MFN) is a status awarded by one nation to another in international trade, under which the receiving nation will be granted all trade advantages — such as low tariffs — that any other WTO members also receives from the granting nation. Under this WTO agreement, countries cannot normally discriminate between their trading partners. It means that, if one country grants another country a special favor (such as a lower customs duty rate for one of their products), the country has to do the same for all other WTO members.
[26] World Bank, World Trade Indicators 2008: Cambodia Trade Brief. 2008 June.
[27] EIC, Export Diversification and Value Addition for Human Development, 2007 June, p.51.
[28] The lifting of the Safeguard measures on China could threaten Cambodia's competitive position since China can take advantage of its major economies of scale in production of garments and of its abundant local textile production without being restricted by the Safeguard measures. World Bank Group, A Better Investment Climate to Sustain Growth in Cambodia, 2009, April, p. 11.

Construction has also been a growing sub-sector of industry activities, contributing 7% of the 2007 GDP. However, this sector is also subject to decline due to overheating (including rising prices in materials and labor) and due to the slow growth in the related services sector, mainly that of real estate.[29] With regards to the Coastal area, particularly Preah Sihanouk and Kep Provinces, there are a number of construction activities for tourism related facilities, such as hotels. Most of these projects are supported by foreign investments.

3) Services

As seen in Figure 4.1.6, the services sector has comprised the largest share of the GDP at around 40%. Within the services sector; trade, transport and communication, real estate, hotels, and restaurants make up 8.9%, 6.9%, 6.3%, and 4.3% of GDP, respectively. Tourism can be said to be a major contributor to growth in this sector as a large part of the above-mentioned sub-sectors is dependent on the arrival of foreign tourists. With the recent launch of a commercial airline jointly ventured by Cambodia and Vietnam, the GDP share of transportation is expected to rise in the years to come along with the potential for an increase in foreign tourism. Figure 4.1.8 shows the increase in foreign visitors from 2004 to 2008, reaching a total of 2.1 million in 2008, of which the arrivals by land and boat from the neighboring countries (including Vietnam and Thailand) accounted for 718,000. It is important to mention this, because, with regards to the tourism in the Coastal area, most foreign tourists come to Cambodia as a side trip from Thailand and Vietnam. It should be noted, however, that tourist increases have now begun to slow down given again the effects of the economic crisis.



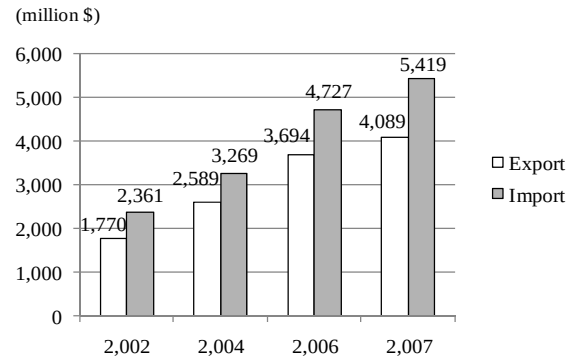
Source: Ministry of Tourism[30]

Figure 4.1.8 Tourist Arrivals

(5) External Trade

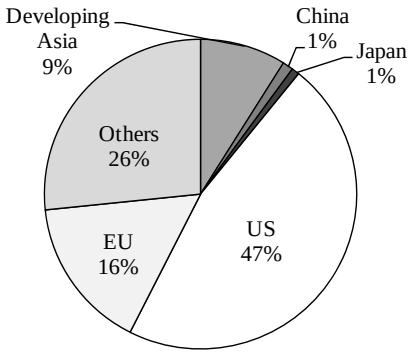
The volume of trade has been increasing over the past years. As shown in Figure 4.1.9, the trade volume (both imports and exports) has more than doubled from 2002 to 2007. The main driver of exports, as mentioned earlier, is garments and footwear, which make up 73% of total exports. The US and EU markets are the two main destinations for Cambodia's exports (Figure 4.1.10), mostly under the preferential treatment of the GSP and the MFN status. Rice ranks second in exports following garments though it remains extremely small relative to the garment exports[31].

[29] EIC, Export Diversification and Value Addition for Human Development, 2007 June, p.10.
[30] Ministry of Tourism, Tourism Statistical Report 2008.
[31] The actual volume of rice export is not known since a significant amount of rice is exported informally to neighboring



Source: IMF Country Report 2009

Figure 4.1.9 Export/Import of Cambodia (in millions of USD)



Source: Asian Development Outlook 2009

Figure 4.1.10 Direction of Cambodia's Export 2008

Although agriculture accounts for one-third of the Cambodia's GDP, exports in agricultural produce are extremely limited. In Cambodia, agricultural produce is mainly for domestic consumption. This current underperformance in agricultural exports is attributable to several factors including high production, processing, and transportation costs, widespread corruption, and a lack of quality and marketing techniques. Thus, limited exports are mostly due to the domestic supply-side factors, while Cambodia is still eligible for preferential treatments of its potential agriculture exports under the GSP schemes and MFN status.[32]

As for imports, the main products are cigarettes, petroleum products, construction materials, and fabrics for the production of garments. It should be highlighted, however, that, in general, a large portion of Cambodia's trade remains informal across the Vietnamese and Thai borders, in part due to disincentives such as red tape and corruptions at border crossings.[33]

(6) Fiscal Situation

In recent years, the Government of Cambodia has shown significant improvements in the collection of state revenue. Government revenue rose to CR 5,290 billion in 2008, an increase of 32% from the previous year. Nevertheless, state revenue remains weak compared to the overall level of economic activities, reaching only 13% of GDP in 2008. Trade taxes are the main source of revenue, as the revenue from the Custom's Department accounts for 51%. Domestic tax represents only 28%, though the share has been gradually increasing from 6% in 1994 to 28% in 2008 due to the strong performance of the domestic private sector. It should be noted, however, that the informal exports and imports with neighboring countries, including the smuggling of petroleum, have been a large leakage for state revenue.[34] As for offshore oil and gas deposits that have been found, the actual exploitation and revenue collection for royalties by the Government will not start in any given time frame as the amounts that are economically recoverable are still uncertain, to date. As for fiscal expenditure, this

countries.

[32] For example, under the EU GSP, the tariff rate for Cambodian mango is zero. Similarly, Cambodian cashew nuts are duty free in the US, EU, Japan, Canada, Australia, and China. IFC MPDF, A Summary of Cambodia's WTO Agreement, Business Issues Bulletin: Cambodia. Issue No.6.,p.6.

[33] World Bank, Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum (Draft), 2009, January, p.8.

[34] Economic Institute of Cambodia (EIC), Cambodia: Economic Watch. 2009 April, p.27-32.

stood at about CR 6,337 billion in 2008 with the overall budget deficit accounting for 2.1% of GDP in 2008. This deficit is mainly financed through foreign assistance.[35]

4.1.3 Employment

(1) General

According to 2008 census, the total population in the Study area was 960,480, of which 34.9% of the population (335,564) was under 15 years of age. Working age population (age between 15 and 64) was 586,154, or 61.0% of the population.

The economically active segment of the population (employed population + unemployed population) was 492,122. This accounted for 51.2% of the total population, or 84.0% of the working age population.

Population of the Study area has increased by 1.3% per annum during 1998 and 2008. During the same period, the number of labor force in the Study area increased more rapidly from 323,159 in 1998 to 475,432 in 2008 with an annual average increase rate of 4.4%. In the case of Preah Sihanouk Province, population and number of labor force has increase by 2.6% per annum and by 6.1% per annum, respectively. As a result, labor force in the province has sharply increased during the decade (see the table 4.1.5).

Table 4.1.5 Change in Number of Labor Force in the Study Area by Sex

	Koh Kong			Kampot			Kep			Preah Sihanouk			Total		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1998	31,169	11,535	43,727	99,969	119,764	219,711	5,737	6,068	11,805	33,038	23,308	56,346	167,320	155,070	323,927
2008	30,730	22,595	53,325	155,044	168,776	323,820	9,179	9,494	18,673	56,749	44,990	101,739	251,702	245,855	497,557

Source: CENSUS 1998 and 2008, NIS

Such a rapid increase in labor force was attributed to 4 main factors; namely 1) increase in the total population (from 844,861 to 960,480), 2) increase in the percentage of working age population to total population (from 53.1% to 61.0%), 3) increase in the labor force participation rate[36] (from 68.4% to 76.4%), and 4) a sharp drop in the unemployment rate (from 12.0% to 3.4%).

Figure 4.1.11 compares composition of employed population (=labor force), unemployed population, outside labor force, and outside working age in 1998 and that of 2008. As the figure indicates, crude unemployment rate[37] has significantly reduced during the past decade. On the other hand, labor force participation rate has rapidly increased. Such tendency is applicable not only the Study area but also whole Cambodia.

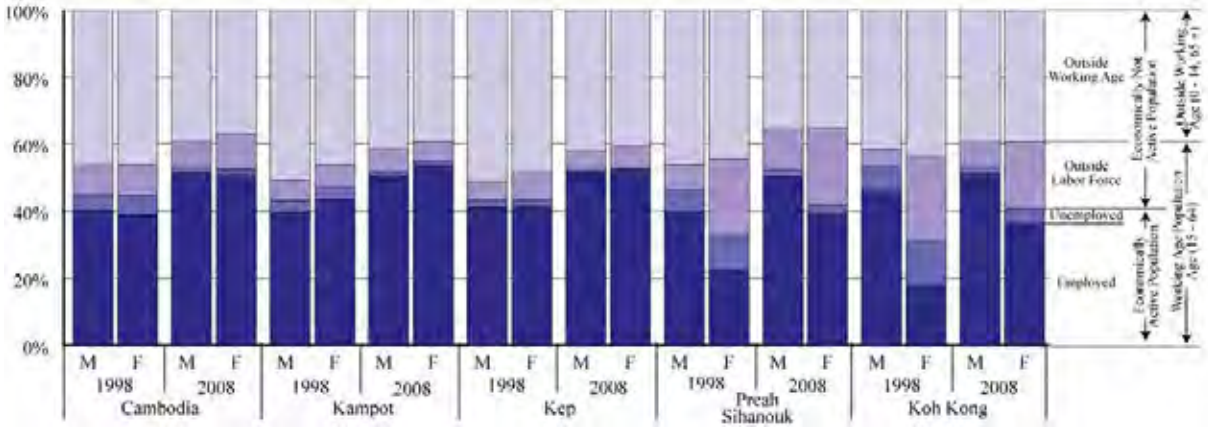
As the above table indicates, number of female labor force in Preah Sihanouk and Koh Kong Province has sharply increased. The female's labor force participation rates in both provinces were considerably lower than the other provinces in 1998. Such low female's participation rate has ameliorated during the past decade (Preah Sihanouk: from 38.5% in 1998 to 57.1% in 2008, Koh

[35] ADB, Asian Development Outlook 2009, p. 230.

[36] Labor force participation rate refer to the ratio of labor for aged more than 15 to the total population of the same age group.

[37] The percentage of unemployed population (population without employment, but are seeking employment or available for employment, for 6 months or more during the one year preceding the census date) to total population

Kong: from 30.5% in 1998 to 56.4% in 2008, detail will be mentioned in the subsequent section). Also the high female's crude unemployment rates in both provinces have decreased (Preah Sihanouk: from 10.5% in 1998 to 2.7% in 2008, Koh Kong: from 13.3% in 1998 to 4.5% in 2008). In the case of Preah Sihanouk Province, female's participation in economic activities were major contributor for labor supply increase.



Note: M= male, F= female
Source: 1998/ 2008 CENSUS, NIS

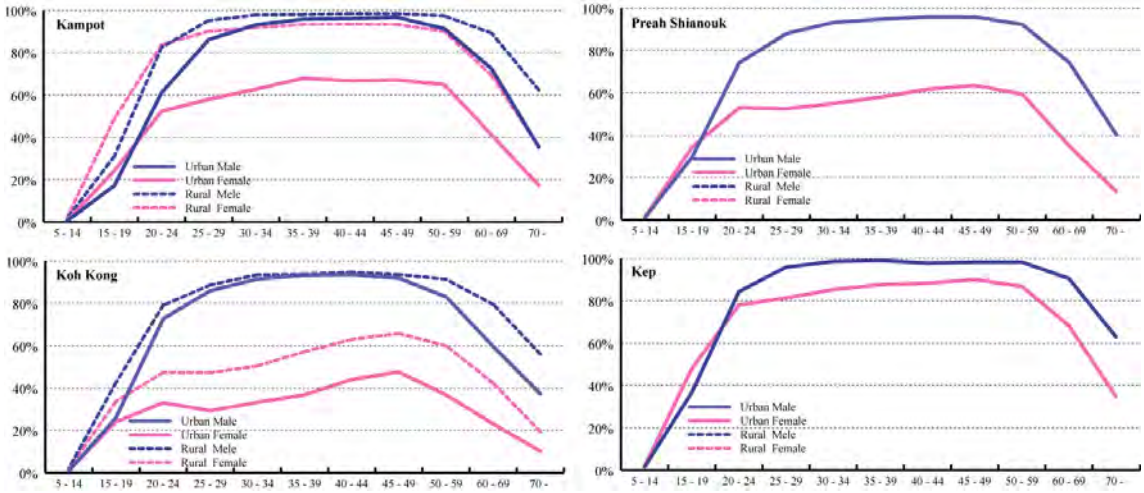
Figure 4.1.11 Crude Employment Rate and Un-employment Rate in 1998 and 2008

(2) Age-specific Labor Force Participation Rate

1) Age-specific Labor Force Participation Rate in 1998

According to the 1998 Census, the labor force participation rate in the Study area was 68.4%. While the rate was high in Kampot (75.4%) and Kep (76.5%), the rate of Preah Sihanouk (54.9%) and Koh Kong (55.8%) was relatively low. Figure 4.1.13 indicates age-specific labor participation rate[38] of the Study area by province, by male/ female, and by urban/rural, which was calculated based on 1998 census data. As shown in the figures, labor participation rates were significantly diverse among the provinces and between urban/rural.

[38] Age-specific labor force participation rate refer to the ratio of labor force given age group to the total population of the same age group.



Note: Whole area of Kep city and Sihanouk city were categorized as urban under 1998 census
Source: Calculated based on 1998 population census.

Figure 4.1.12 Age Specific Labor Force Participation Rate in the Study Area in 1998

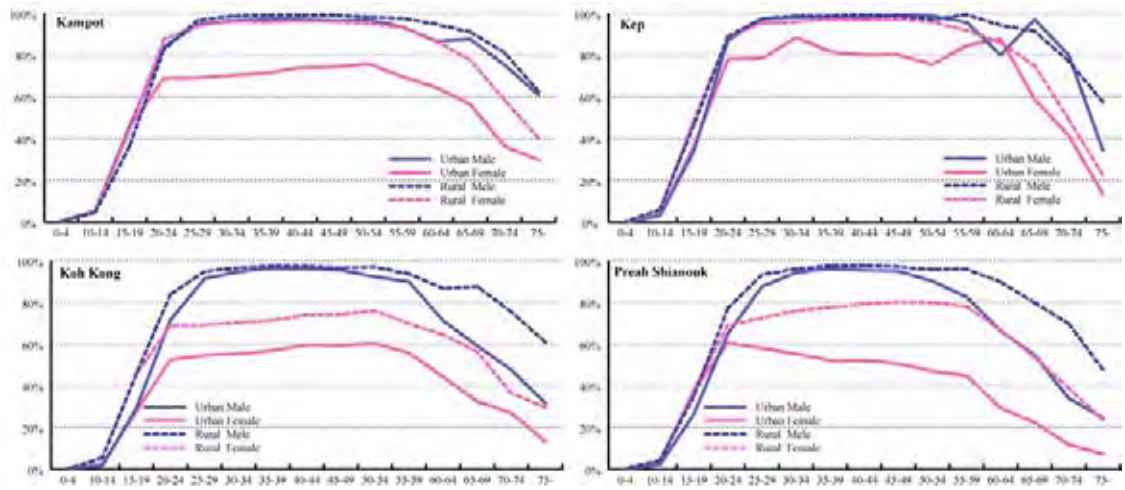
In Kep province and in rural area of Kampot province, labor force participation rates in age group 20 – 59 were uniformly high in both sexes. In these areas, most people earned their living from self-employed agricultural activities.

On the other hand, labor force participation rates in urban area are generally lower than that of rural area. Especially the rates of female in urban area are significantly lower than that of male. In the case of Koh Kong, similar tendency is observed even in rural area. One common factor observed in these areas is lower dependency on agriculture. These low labor participation rates in these areas suggested that job opportunities other than agriculture were not enough in these areas. Notably, females have less Job opportunities in urban area.

It is interesting to note that labor force participation rate of female in their 30s declines from neighboring age groups slightly in Koh Kong province and Sihanouk city. For women whose time is pressed by their own work, caring for children and parents are significant burden. On the other hand, women's labor participation rates in their 30s remains high in Kep and Kampot provinces. Women in these provinces keep working while raising children, because majority of them are engaged in self-employed in agriculture.

2) Age-specific Labor Force Participation Rate in 2008

During the past decade, the labor force participation rate in the Study area was increased from 68.4% in 1998 to 76.4% in 2008. As same as 1998, while the rate has remain high in Kampot (75.4% -> 81.5%) and Kep (from 76.5% to 82.9%), the rate of Preah Sihanouk (form 54.9% to 66.3%) and Koh Kong (from 55.8% to 68.7%) was still relatively low. The labor force participation rate of Koh Kong province has increased by 12.9% point. Particularly female's participation in rural area of Koh Kong province has sharply increased from 30.5% in 1998 to 56.4% in 2008. In crease in the household engaged in agriculture in rural area of Koh Kong province has considered to be contributed for such increase.



Source: Calculated based on 2008 population census.

Figure 4.1.13 Age Specific Labor Force Participation Rate in the Study Area in 2008

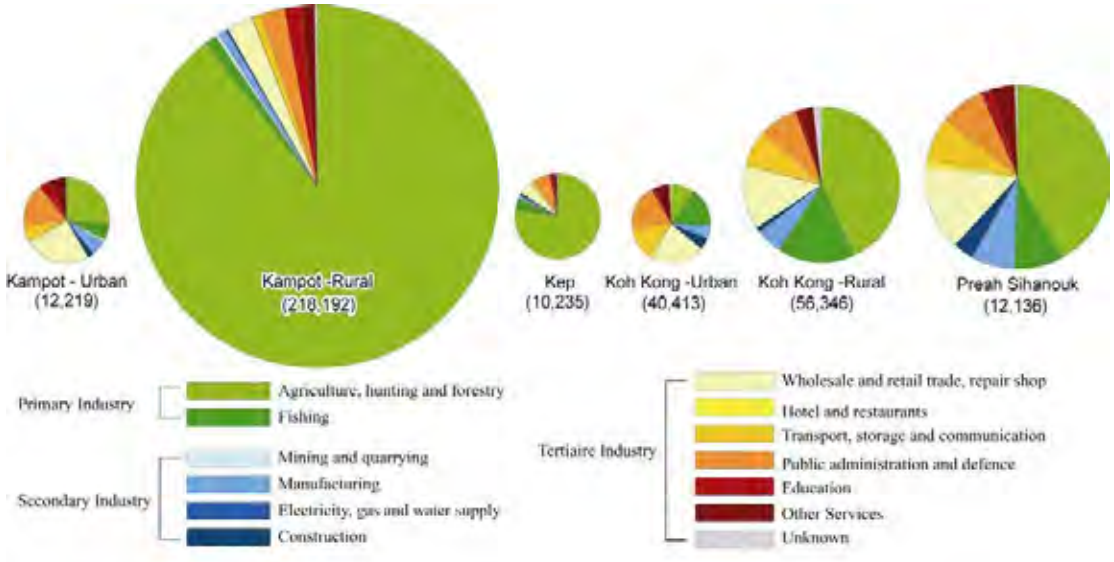
Female's labor force participation rate in urban area of Preah Sihanouk province was still significantly lower than the other areas. The rate was highest in age group of 20 – 24 (about 60%), then it was gradually reducing as the population grow order. Job opportunities for middle-aged female in urban area of Preah Sihanouk province seems less than the other areas.

(3) Labor Force by Type of Industry

1) 1998 Census

Figure 4.1.14 illustrates labor force of the provinces by industry and by urban/rural division in 1998. The size of the circle indicates relative size of labor force. Labor force in rural area of Kampot province was 218,192, which occupied 62.4% of total labor force in the Study area.

Similar to the whole country, the agriculture sector plays a vital roll in the Study area, which absorbed 71.5% of the labor force in the Study area. Particularly, in the case of rural area of Kampot province, where there are vast paddy fields in the level and fertile alluvial plain, 89.5% of labor force was engaged in agriculture. Also, 75% of labor force living in Kep province was engaged on agriculture.



Note: Whole area of Kep city and Sihanoukville city were categorized as urban under 1998 census
Source: 1998 Population Census, NIS

Figure 4.1.14 Labor Force of the Study area by Province, by Industry and by Urban/ Rural in 1998

Compared with other provinces, fishery plays an important roll in Koh Kong province and Preah Sihanouk province. In all 16.0% of Koh Kong and 8.7% of Preah Sihanouk labor force engaged in the fishery sector.

The tertiary industry absorbed about 40% to 60% of labor force in Preah Sihanouk and in urban area of Kampot and Koh Kong. On the other hand, secondary industry was still not developed well. The labor force engaged in secondary sector occupied less than 2% of total labor force in the Study area. Even Preah Sihanouk, where secondary industry was relatively developed, secondary sector's labor force accounted only 11.1% of the total labor force.

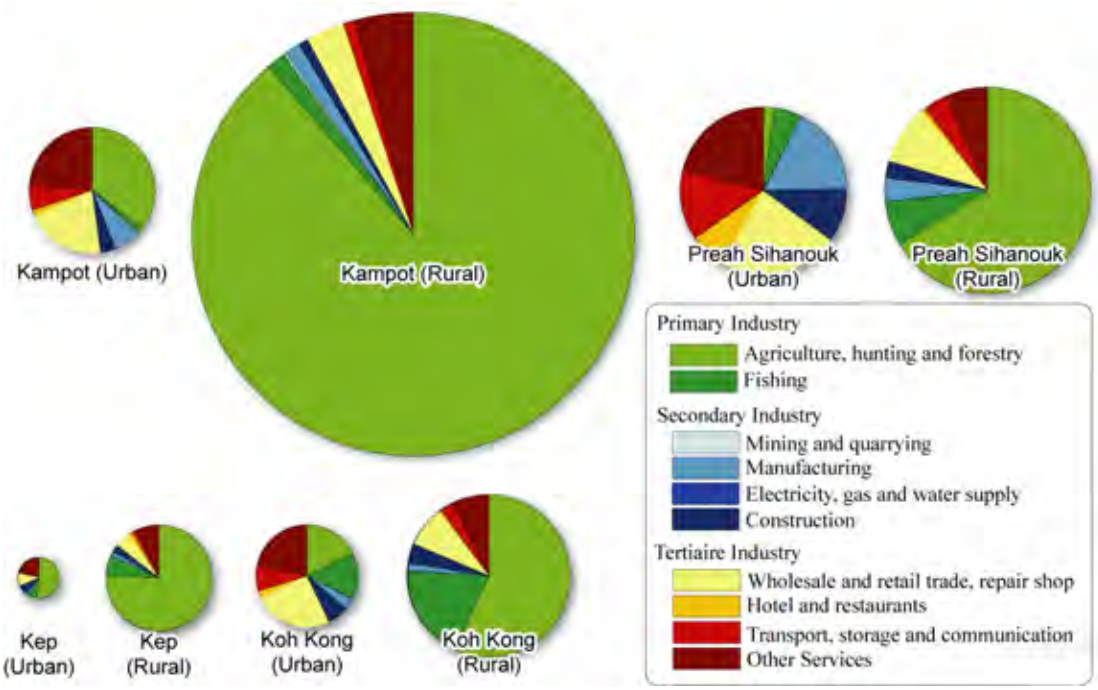
2) 2008 Census

The 2008 Census was published in August 2009. Figure 4.1.15 illustrates labor force of the provinces by industry and by urban/rural division in 2008.

The agriculture sector still plays an important roll in absorbing the labor force in rural area. The primary industry occupied 88.7% of total labor force in rural area of Kampot and 75.7% of rural area of Kep. In rural area of Koh Kong, fishery sector has increased its importance in labor force absorption, percentage distribution of fishery sector has grow from 16.0% in 1998 to 19.0% in 2008.

On the other hand, tertiary sector absorbed majority of labor force in urban area of Kampot (52.2%), Preah Sihanouk (64.9%) and Koh Kong (57.2%). In urban area of Preah Sihanouk, transport sector and tourism related sector (hotel and restaurant) are well developed, which was occupied 13.6% and 7.3% of total labor force, respectively.

Percentage distribution of secondary sector's labor force in the Study area has increased from 4.1% in 1998 to 5.8% in 2008. However, that is still lower than the national average of 8.6% in 2008. Manufacturing sector's contribution in labor market was relatively high in urban area of Preah Sihanouk (17.0%) and Kampot (6.8%).



Source: 2008 Population Census, NIS

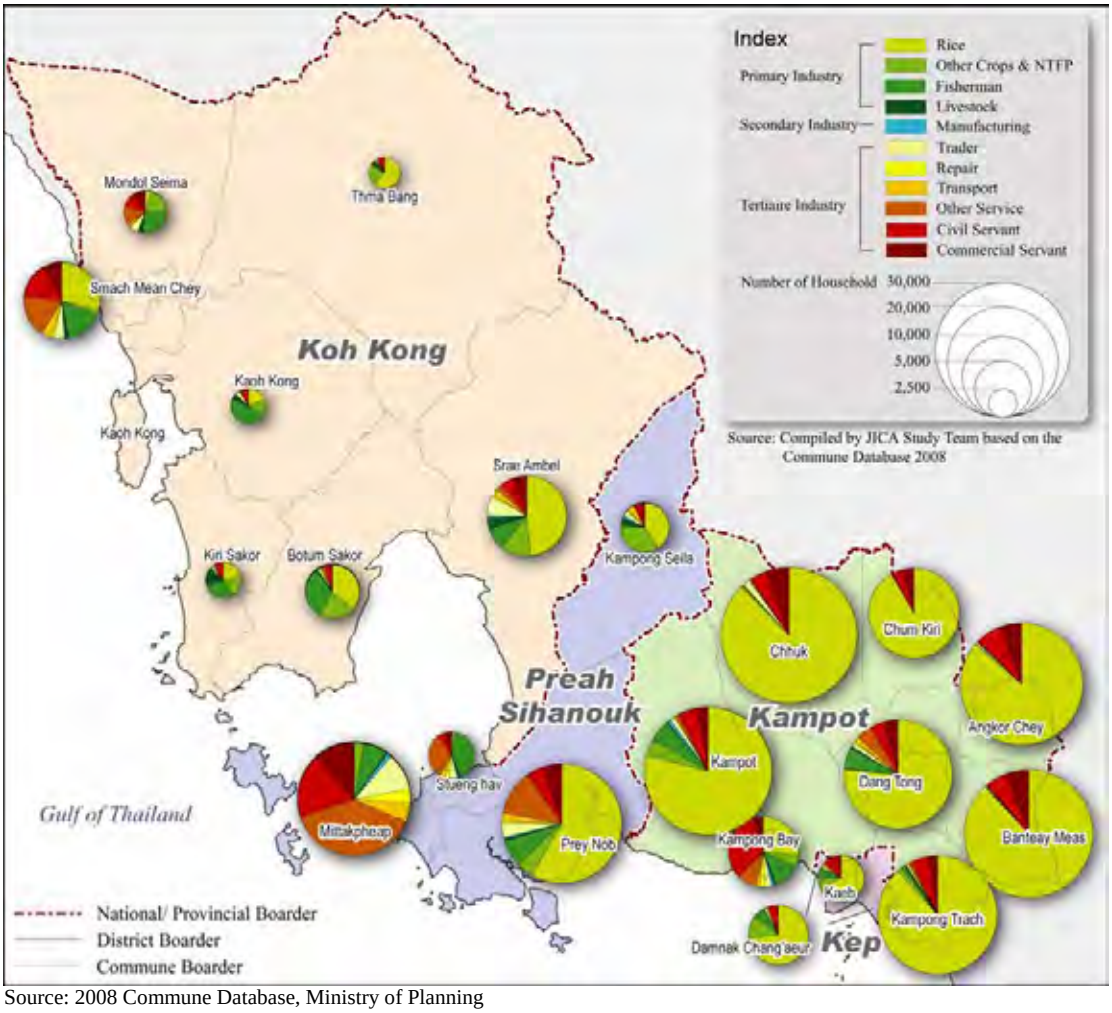
Figure 4.1.15 Labor Force of the Study area by Province, by Industry and by Urban/ Rural in 2008

3) Commune database 2008

Figure 4.1.16 illustrates distribution of primary occupation of household by type of industry[39] in each district of the Study area, which prepared based on commune database 2008. On the other hand, district level labor force data of 2008 Census has not compiled by NIS yet. Although the methodology of survey and definition of index are different between CENSUS and commune database, district level analysis using commune database is deemed useful to know percentage distribution of labor force by industry in more detail.

A high percentage of households in Kampot and Kep provinces depend upon cultivation of rice for their livelihood.

[39] The data indicates not number of labor force by industry but number of household by their primary occupation. Although, usually, several labor forces are in a household (e.g. head of household, his wife, his son, etc.), the data indicates only primary occupation of household. Thus, comparison with 1998 census data cannot be made.



Source: 2008 Commune Database, Ministry of Planning

Figure 4.1.16 Distribution of Primary Occupation of Household by Type of Industry in the Study Area

On the other hand, majority of households in Mittakpheap and Stung Hav districts in Preah Sihanouk province, Kampong Bay district in Kampot, and Smach Mean Chey district in Koh Kong province answer their primary occupation as tertiary industries. Particularly, nearly 90% of households in Mittakpheap district, Preah Sihanouk province, were earning their living from tertiary sector. In the case of Koh Kong province, since, flat land suitable for paddy fields is only available in eastern part of the province, the percentage of household engaged in agriculture occupied a small part.

4.1.4 Industry

(1) Agriculture

Agriculture is definitely important factor for Cambodian Economy, as Agriculture in Cambodia employs 4.75 million workers out of the total labor force of 8 million, which is equivalent for 56% of total labor force, currently. However, the sector's contribution to GDP is remained one third only. The main issue that the agricultural sector in Cambodia has faced is the low productivity of agricultural crops.

In this context, the Royal Government of Cambodia (RGC) especially focuses on the agricultural development, as it directly relates the poverty reduction. The country's upper level development policy, the Rectangular Strategy, NSDP, as well as the agricultural sector development policies have prioritized i) improvements in agricultural productivity (paddy yield per hectare) and ii) diversification of crops with the involvement of the private sector.

As this Study's aim is to prepare the integrated development strategy in regard with industrial promotion, the specific facet of agricultural development only in conjunction to the manufacturing and services industry is focused.

Below is the description on the production of major crops, followed by an overview of the status of agriculture development in the four provinces of the Study Area.

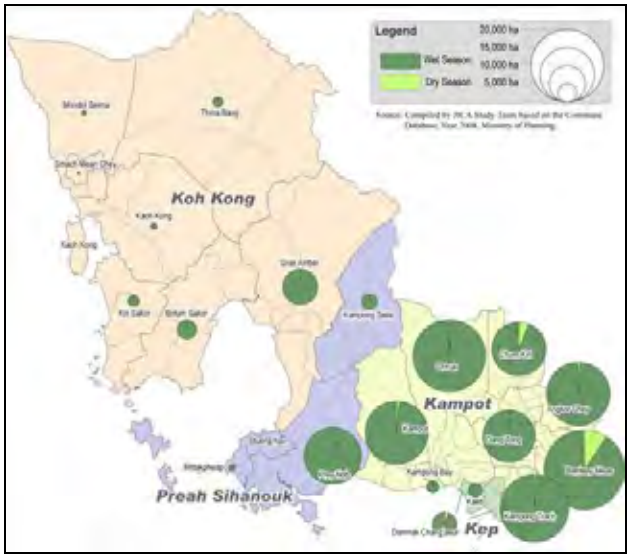
1) Rice/ paddy

Rice is the staple food of Cambodia. Rice provides about 70% of the population's energy intake needs[40]. As mentioned in "3.1.3 labor force", contribution of rice cultivation is significant contribution in absorbing labor force. Paddy field comprises 83% and 81% of total cultivated land in Cambodia (2007) and the Study area (2006 wet season), respectively. Percentages of paddy fields to total cultivated area in each province in 2006 wet season were 84.2% in Kampot, 60.3% in Koh Kong, 74.7% in Preah Sihanouk, and 73.3% in Kep. In 2007, the production volume of rice in the Study area accounted for 5.5% of the total production in the country.

Rice is extensively cultivated in almost every district of Kampot province. In 2007, Kampot Province solely produced 86.7% of rice in the Study area and 4.9% of rice in the country. Also Srae Ambel district in Koh Kong Province and Prey Nob district in Preah Sihanouk Province are the major production centers of rice (see Figure 4.1.17).

Due to lack of irrigation facilities, rice is cultivated only during wet season with the exception of some part in Kampot Province. Due to insufficient irrigation facilities, rice production has often been severely affected by drought (see Figure 4.1.18).

Production volume of rice in the Study area has been growing rapidly from 223 thousand ton in 1998 to 369 thousand tons in 2007 with an annual average growth rate of 5.8%. Self-sufficiency



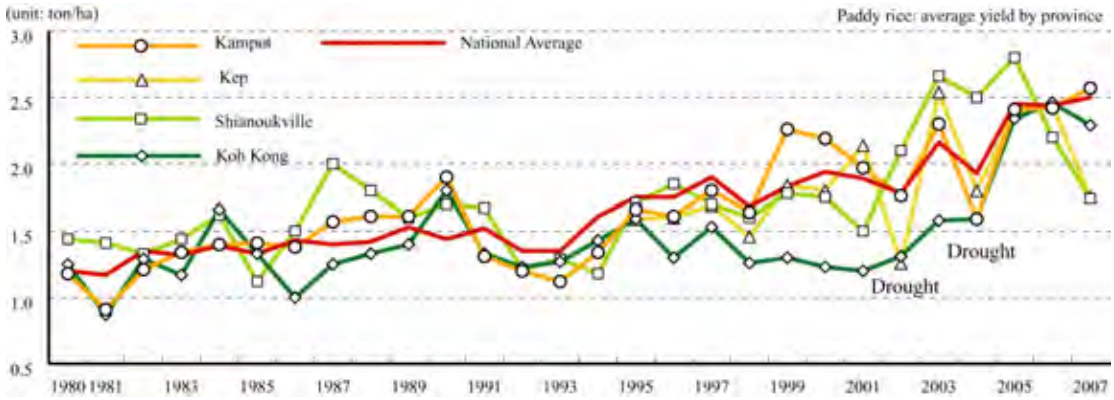
Source: Commune Database 2008, Ministry of Planning

Figure 4.1.17 Cultivated Area of Rice by Districts and by seasons in 2008

[40] Energy intake from Rice: 1,421 kcal/capita/day, Total food consumption: 2,074 kcal/capita/day, source: FAO statistical division year 2003 data

ratio of rice in the Study area in 2005 - 06 cropping season is estimated to be 127.6%[*41], implying that the supply of rice exceeds demand within the Study area.

As shown in the following figure, the unit yield of paddy in the Study area has also been on an upward trend, except for Koh Kong province (lower than the other provinces). The unit yield of paddy in the Study area (2.5 tons/ha on average) is generally equivalent to the national average, which, however, is considerably lower than that of surrounding countries (Viet Nam 4.98 ton/ha, Myanmar: 3.98 tons/ha, Laos: 3.47 tons/ha, and Thailand: 3.01 tons/ha)[42].



Source: MAFF

Figure 4.1.18 Unit Yield of Paddy in the Study Area and the National Average during 1980 - 2007

Although high-value varieties (mostly chemical-free organic) are grown, prices of Cambodian rice are in general low due to insufficiency in information and a lack of organized marketing channels. Moreover, most of the exported rice (estimated at 1.6 million tons[43] to Thailand and Vietnam in 2007) is in paddy form as the country has only a handful of large-scale mills that are able to process rice at a high quality level.

A combination of rice mill expansion and contract farming should be encouraged in order to increase the value of rice in the Study area. There is a renowned successful case of contract rice farming by Angkor Kasekam Roongroeung (AKR)[44] in which premium rice is being produced. Although AKR's rice has not been certified as "organic"[45], the taste has a good reputation in the international market and, the rice is thus exported to eight European countries and Hong Kong (50,000 to 75,000 tons annually). AKR has invested in a high-tech rice mill that has a processing capacity of up to 30 tons per hour. The company worked with farmers (45,000 at present) in four provinces (Kandal, Kampong Speu, Takeo, and Kampot) that were selected based on their ideal agronomic conditions for the cultivation of the *Neang Malis* organic rice. The company provides the farmers with seeds and instruct not to use manufactured fertilizer, lest the taste of the variety be ruined. The company also offers farmers technical assistance through its more than 100 field staff. It is reported that farmers in former

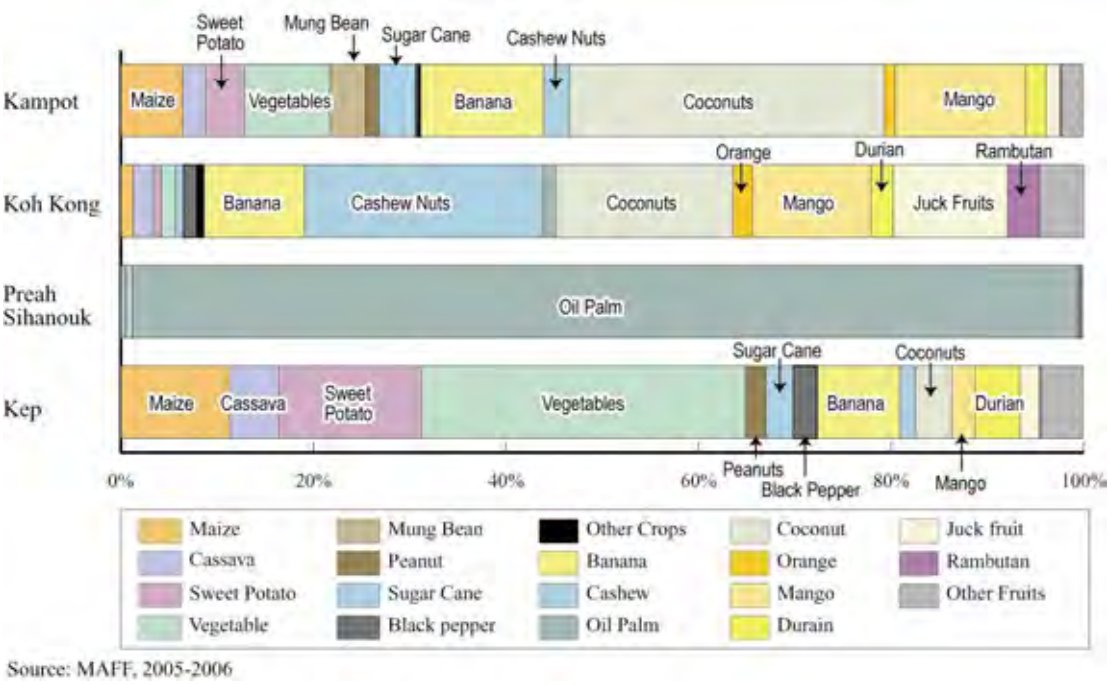
[41] According to MAFF statistics, in 2005 - 2006 cropping season, while production volume of rice in the study area was 194,347 (after milling), consumption within the study area was 152,336 ton.
[42] Source: FAO Statistical division 2007 data
[43] FAO
[44] This paragraph refers to UNDP (2009) "Cambodia Country Competitiveness" Discussion Paper No.7 and ADB Institute (2008) "Rice Contract Farming in Cambodia: Empowering Farmers to Move beyond the Contract toward Independence" ADBI discussion paper 109.
[45] Certification process of an organic product is lengthy and cumbersome. As a result, certified organic rice production in Camodia has reached only 881 tons (560ha)

forestlands and land close to mountains tend to respect the contract, while farmers who are located close to AKR (and therefore close to main roads), who have more market experience, tend to have higher levels of defaulting on their contracts.

2) Other crops

While paddy occupies a majority of the cultivated area as mentioned above, other crops are also grown in the Study area. While the cultivated area is considerably smaller than paddy, the value added of other crops (CR2,436.3 Trillion in 2007 at current price: whole country) was comparable with that of paddy (CR 2,999.6 Trillion).

Figure 4.1.19 illustrates the composition of cultivated area by crops (excluding paddy) in each province.



Source: MAFF, 2005-2006

Figure 4.1.19 Proportion of Cultivated Area by Crops (excl. Paddy) in 2006 Wes Season

In Kep, vegetable, maize, sweet potato and banana are widely cultivated. Cashew nuts, banana, jack fruits, and coconuts are popular cash crops in Koh Kong. In Kampot, coconuts, banana, mango, vegetable, maize, and sugar cane are widely cultivated. Oil palm plantations predominate in Preah Sihanouk, most of which are operated by Mong Reththy Group, one of the biggest homegrown conglomerates. In addition to palm oil plantation, several other large scale plantation developments are currently in progress in the Study area.

Profiles of the major crops cultivated in the Study area are described as follows:

Corn

Corn is widely cultivated to the soils in the high rainfall upland areas[46], which can be produced even in the relatively disadvantaged areas in Cambodia with smallholder farming

[46] Red maize is mostly grown as livestock feed, majority of which is exported to Thailand, while white is mainly grown for

systems. Total export in 2005/2006 was 220,000 tons, 80 % to 90 % of which is sent to Thailand, and the rest to Vietnam. Although Charoen Pokphand Group (C.P.) from Thailand has successfully introduced hybrid seeds to Cambodian corn growers, current farming practices are still outdated with the yield being below potential.

Demand for corn is increasing in the domestic, as well as international markets, particularly in PRC, due to the growing livestock and poultry sector. The only commercial feed mill in Cambodia, C.P. Cambodia from Thailand, plans to double their feed production from about 55,000 tons in 2005 to 80,000 -100,000 tons in 2006[47]. Corn cultivation is also active in Kampot province. According to MAFF's Economic Land Concession (ELC) database, both First Bio-Tech Agricultural Co., Ltd. and World Trister Entertainment Co., Ltd. obtained approval for investment of corn plantation and construction of a processing factory in Chhouk District in Kampot Province in 2005. Land areas of which concession was given to them are 10,000 ha (First Bio-tech) and 9,800 ha (World Trister).

The possibility of increasing corn production in Cambodia as wall as the Coastal area may be dependent on the price of alternative products; it is reported that increased cassava acreage is likely to replace a portion of the corn area, especially in the provinces along the Thai border[48].

Cassava

The demand for cassava roots is increasing remarkably worldwide due to its usage in fuel-ethanol and high prices, which lead to improvements in the livelihoods of many poor farmers in Asia. Its production in Cambodia is also increasing rapidly, from 200,000 tons in 2002 to 2.2 million tons in 2006[49]. It is estimated that 70 % to 80 % of the harvest is exported to neighboring countries (Thailand, Vietnam, etc.) without being processed.

Cambodia has advantages in the production of cassava. Cassava can grow even on steep slopes, and little input is required apart from land and labor. Its production does not require high land quality or cultivation, or the timing of the harvest, fitting in well with smallholder farming systems[50]. Small-scale starch production is also possible, increasing the value-added at the farmer level.

The first bio-ethanol plant in Cambodia was established in Kandal Province by a South Korean company, which processes up to 300 tons of cassava daily (equivalent to an output from 50,000 ha of land)[51]. In order for cassava processing plants to operate efficiently and benefit smallholder growers, a reliable supply chain to the plants will have to be established. Another obstacle in promoting cassava cultivation in the Study area is that although economic land concessions have been issued for vast areas (1,800 ha in Prey Nup district, Preah Sihanouk Province), actual development is stagnant due to a lack of capital and processing technologies[52].

domestic human consumption. Red and white maize account for 50% of the total production, respectively. (Stephanie Belfield and Christine Brown (2008) "Field crop manual: maize - a guide to upland production in Cambodia")

47 Sakchai Preechajarn (2006) "Grain Industry In Cambodia" USDA Global Agriculture Information Network

48 Sakchai Preechajarn (2006) "Grain Industry In Cambodia" USDA Global Agriculture Information Network

49 UNDP (2009) "Cambodia Country Competitiveness" Discussion Paper No.7

50 UNDP (2009) "Cambodia Country Competitiveness" Discussion Paper No.7

51 The company has planted cassava on 8,000 hectares in Kampong Speu, where it employs 10,000 people. (http://khmerization.blogspot.com/2008/07/cambodias-first-bio-ethanol-plant-to.html, retrieved on 20 July, 2009)

52 MAFF gave concession to Mong Reththy Investment Cassava Cambodia Co., Ltd. in March 2000. The company also plants to construct processing factory beside the cassava fields. However, according to the MAFF database, the development has been not proceeding well, and the company has not paid deposit to MAFF yet.

Sugar cane

Sugar cane plantations were rapidly developed in Koh Kong Province in recent years. According to MAFF's ELC database, Thai capital company, Koh Kong Sugar Company Ltd., obtained 9,700 ha of economic land concession in Srae Ambel Districit and Botom Sakor District in Koh Kong Province to cultivate sugar cane and to construct a sugar factory. Out of 9,700 ha, 2,600 ha has been cleared, and at least 720 ha was planted with sugar cane. The company plans to employ 30,000 labors in the future.

Koh Kong Plantation Company Co. Ltd. headed by Mr. Lee Yong Phat, one of the most influential persons in the Cambodian business community, obtained 70 years economic land concession in 2006. The company supplies capital and sugarcane cuttings, and transfer farming techniques to the farmers. A sugar factory was constructed in Srae Ambel District and seems already in operation.

Oil palm

Oil palm has been extensively planted in Preah Sihanouk since 1990s. The cultivation area of oil palm plantation in Preah Sihanouk in 2007 was 4,000 ha, which accounted for 97.9% of the total cultivation area of palm oil in the country. Since 1997, Mong Reththy Investment Cambodia Oil Palm Co., Ltd. (MRICOP) has been engaged in oil palm plantation and palm oil processing for domestic consumption and export to Malaysia, Indonesia, and other markets. According to MAFF's ELC database, MRICOP obtained 70 years concession on 11,000 ha of land in Preah Sihanouk Province for cultivating oil palm. The group already developed oil palm plantation predominantly in Stung Hav District in Preah Sihanouk and constructed a processing factory with the capacity of 5 - 10 tons/hour in 2002.

A 70years economic land concession for oil palm plantation was also given to Camland Co., Ltd. in 2004. The total area of concession is 16,400 ha in Kampong Bay District in Kampot Province. In addition, a Chinese funded company named the Green Rich Co., ltd. has obtained a 70 years concession of 60,200 ha of land in Koh Kong Province in 1998 for planting oil palm, fruits trees and acacia trees. However, their plan seems making little progress as of now.

There is a large demand for palm oil in the world market with the expectation that the demand for vegetable oil will increase due to the need for biodiesel. Oil palm plantation is labor intensive, and, thus, can provide ample employment opportunities. However, caution should be exerted as it is difficult in Cambodia to promote large scale plantations without affecting natural resources and people's traditional livelihoods. For example, out of 16,400 ha of land concession given to Camland Co., Ltd, 5,439 ha is located within the Bokor National Park, thus calling for serious attention.

Cashew nuts

Kampong Cham, Kampong Thom and Ratanakkiri Provinces are major producer areas of cashew nuts (mostly organic). Cashew nuts are also widely cultivated in Koh Kong Province, with the planted area of cashew nuts in the province accounting for about 25% of the total cultivated area in 2005-06 cropping season.

Less than 5% of the production is processed domestically, while 95 % is exported raw (mostly informally) to Vietnam where large state-owned plants with excess capacity are located and are paying high prices. The export of raw cashew nuts ranges from 30,000 to 50,000 tons

(USD 50 million) per year. Although the establishment of processing plants could have significant impacts on rural employment, the processing plants would not be able to compete with the over-capacity of Vietnamese state-owned companies. There is a report that farmers are shifting from cashew nuts to rubber or cassava due to the latter group's higher prices.

Fruits and vegetables

Nearly 20% of all agricultural households in Cambodia grow some fruits/vegetables[53] with production spread across the country. Kampot is famous for its fruits and vegetable production. In 2005 – 2006 cropping season, the province solely produced 36.9% of durian, 22.2% of mango, 20.8% of banana, 20.2%, 10.7% of *rambutan*, 10.0% of Guava, 25.7% of coconuts and 9.1% of vegetables in the country. Kampot is reputed for the production of the tastiest durians in the country. In the domestic market, Kampot durians are distinguished from others, fetching higher prices than others.

Fruits are extensively cultivated in Koh Kong as well. The province produced as much as 39.6% of *rambutan*, 17.3% of Jack Fruits, and 13.2% of Pineapple of the Study area. Most of fruits products in the Study area are consumed mainly in the domestic market due to a lack of adequate sales outlets for foreign trade as well as a reliable cold chain system.

Vegetable Field (Pumpkin) in Kaeb district, Kep

Rice Field in Srae Amber district, Koh Kong

On the other hand, a majority of vegetables consumed in the cities come from Vietnam[54] and Thailand due to the high domestic transport costs, lesser reliability in supply, and inconsistent quality of Cambodian vegetables. For example, according to retailers in the central market in Koh Kong, most of the vegetables sold in the market are imported from Thailand.

The organization of vegetable growers' groups along with the establishment of efficient marketing channels to convey information about the customers' needs to farmers would be the key for adding values to domestic products, replacing imported products, and, eventually, heading for export. Demand for exotic fruits and organic vegetables are growing in the world market. It has been observed in the field survey for the Study area that Cambodian agriculture products, which use only limited fertilizers and pesticide, obtain a premium over those imported from Thailand, reflecting customers' perceptions on food safety. It is also expected that increasing tourism in Preah Sihanouk Province and the Coastal area will expand

[53] UNDP (2007) Cambodia's 2007 Trade Integration Strategy
[54] UNDP (2009) "Cambodia Country Competitiveness, Driving Economic Growth and Poverty Reduction" Discussion Paper No.7

the opportunities for local fruits/vegetables growers to sell their products to hotels and restaurants, if they can successfully establish reliable farmer-customer relationships.

Black pepper

Southern part of Cambodia is famous for high quality pepper produce. During the French colonial era, more than one thousand ha of land grew spice there. However, under the Khmer Rouge regime in the late 1970s, the province's pepper plantations were uprooted to make way for rice. During the past decade several companies, including a Japanese company Kurata Pepper Co, Ltd., have been leading an effort to revive the pepper production. A total of 179 tons of black pepper, which accounted for 37.3% of the total production in the country, was produced in the Study area (14.2% in Kampot, 17.7% in Koh Kong, and 5.4% in Kep). Some of the products are exported to European countries, Japan, Vietnam and Thailand.

3) Status of the Agriculture Development in the Four Provinces

Preah Sihanouk Province

Agricultural activity within Preah Sihanouk Province remains largely detached from the regions markets and Ministry of Agriculture, Forestry and Fisheries (MAFF) involvement. Little agricultural activity is taking place in the center of the Province due largely to high land prices and the availability of alternative income sources in the area. All substantial agricultural activity appears to occur in former Kampong Sam within proximity to Kampot Province in order that such farmers may have access to the Kampot market and take advantage of spillover effects from Kampot agricultural activities. Kampot MAFFofficers were even witnessed to be engaging in Kampot MAFF program activities within former Kampong Sam itself. Former Kampong Sam farmers rely on the Kampot market for both inputs (agri-chemicals, seed, etc.) and to sell outputs from their labors.

Kep Province

Agricultural activity in Kep Province is particularly limited due to land and market limitations in the region as the total area of the province is only 336 square km with price competition by the tourism industry (hotels, resorts, etc.) for such land driving most farmers out of the land market. Kep Province relies almost entirely on the Kampot market for its produce and food needs with a limited amount of food goods arriving via Phnom Penh. Due to the above situation, no substantial, medium or large-scale agricultural activities appear to be occurring in the region.

Kampot Province

Kampot Province serves as the primary produce and meat source for the Coastal Area and much of the surrounding provinces with supply chains running as far as Koh Kong in the Northwest via road networks. CEDAC (Centre d'Etude et de Developpement Agricole Cambodgien), Asian Development Bank and GTZ[55] have been active in the region along with a variety other agricultural NGOs and the MAFF. "Village promotion agents", most of whom

[55] ADB's "Agriculture Sector Development Program", (ASDP, 2004 -2009), and GTZ's "Community-based Rural Development Project" (CBRDP, 2002-2008) have strengthened Kampot Province's extension system, through which a large number of farmers in the province have improved skills for farming, post-harvest, marketing etc.

have veterinary skills, are found throughout the province, functioning as a dissemination channel of the agriculture skills. The region is renowned for its rice, vegetables, fruit and livestock production with a well developed distribution market to Phnom Penh and Preah Sihanouk.

Koh Kong Province

Agricultural activity in Koh Kong Province remains extremely limited with those activities taking place at the subsistence level and as a secondary source of income. This situation is due largely to two primary factors: (1) the region has a high percentage of mountainous and heavily forested land, suboptimal for rice and vegetable farming; (2) by local accounts, most potential farming land in the region is owned by wealthy families and government officials as speculative real estate investments.

4) Other Critical Issues

Agricultural Organization and Cooperation

Despite the popularly disseminated belief that Cambodian farmers are largely evasive to group organization and cooperation, the field research in the Coastal area revealed a consistent tendency towards cooperation and information sharing within local community groups. Although official associations were not present, farmers cooperated with neighboring farmers in order to share information relating to farming and chemical techniques. Should a farmer observe neighbor attaining a better yield or attempting a new crop, the farmer would approach his neighbor and learn the new technique or crop method. Once the farmer had received such instruction from his neighbor, he/she would then be obligated to pass such information on to other neighbors who approached him for that information. Most donor agencies and MAFF have taken advantage of this information system by sponsoring pilot, one-farmer projects in Kampot regions to demonstrate a new technique or variety, which is then disseminated to surrounding farmers who approach the pilot farmer of their own volition when benefits are evident.

The ability and propensity towards cooperation in the agricultural sector are further evident in the success and number of group-based loans provided to farming families. Thaneakea Phum (Cambodia) Ltd. (TPC), a micro-finance institution providing loans to farmers in Kampot, reported that the vast majority of its loans provided to farmers in the region were in the form of group loan products, and not their individual loan products, with the average group size being between 3-5 families.

Agricultural Chemical Use in the Study Area

Agricultural chemical (agri-chemical) use appears to be high in the region, consistent with recent literature on the issue. It is observed that even poor farmers purchase as much chemicals as financially possible, which contradicts the general belief that poor farmers usually do not use agri-chemicals because of their high prices. It could at least be said that poor farmers' responses toward agri-chemicals are not uniform. Most of the farmers whom the study team interviewed have the belief that benefit is directly proportional to the amount of chemical used, which means that if a small amount of chemicals used provides a set benefit to crop yield, then doubling the amount would double the benefit.

Although most farmers are able to read Khmer or have an individual in the family who reads for them, it is unusual for farmers to have read any instructions relating to the proper use of

the agri-chemicals they commonly use. Moreover, it is also uncommon for a farmer to have sought such information from the supplier of the chemicals. This appears to be largely the result of the fact that the vast majority of agri-chemicals supplied are imported from China, Vietnam, or Thailand with labels for the products written in one of those three languages and/or English. As neither the farmers nor suppliers have the ability to read any of these languages, methods of use are often derived from speculation, visual comparison of other past used chemicals in order to mimic their use, and/or experimentation. The vast majority of farmers interviewed by the Study Team indicated that, should they be provided with information on the recommended/actual use of their agri-chemicals, they would actively change their current practices in light of such information.

Organic Activities and Demand

A significant demand for organic produce is observed in both the high and middle-income markets of the Study area and, with some limitations on price ranges, in the low-income market to a limited degree. It should be noted that this "organic" demand does not refer so much to the technical definition of organic as completely natural, chemical-free farming as to reduced chemical use in farming. However, should the produce be authentically organic or reduced chemical, many consumers are consistently willing to pay a premium for such produce if their organic or reduce chemical status can be verified or guaranteed.

CEDAC (Centre d'Etude et de Developpement Agricole Cambodgien) appears to be actively pursuing the possibility of organic farming in Kampot Province with organic pilot projects initiated through a few select farmers in the region and in cooperation with MAFF. Farmers participating in the project agree to grow crops using natural manure and fertilizers based on techniques taught by CEDAC experts in the field in addition to using greenhouses constructed of fine nets for some crops. One problem that was observed in this program was that some farmers are apparently using chemical fertilizers in violation of the CEDAC guidelines. Despite this fact, the farmers encountered no problems with selling the produce due to demand from local markets, regional markets, and even the Vietnamese market, all of which were willing to pay premiums for the produce. It should also be noted that there is an observation that a high yield is not necessarily achievable from organic farming when the soil is not fertile.

Grazing Cattle, Kaeb district in Kep

(2) Livestock

Apart from growing rice and crops, Cambodian farmers raise livestock, such as cattle, buffalo, pigs, and poultry, which play a major role in Cambodia's rural farming system. Farmers use cattle and buffalo in the rice field to plough, carry goods and perform other tasks. In addition, most farmers raise a small number of chickens and pigs in order to earn some supplementary income.

Livestock production in Cambodia accounted for 4.4% of GDP (at current prices) in 2007, being the second most important source of protein intake after fish.

Raising cattle, pigs, ruminants and poultry holds high promise for growth. At present livestock production is conducted solely in the form of small-scale family farming; no large-scale cattle and buffalo production is found in the Study area.

Table 4.1.6 compares average livestock ownership in the Study area and the national average. Livestock ownership in Kampot and Kep is considerably higher than the national average.

Table 4.1.6 Average Livestock Ownership in the Study Area (head/household)

	National Average	Kampot	Koh Kong	Preah Sihanouk	Kep
Poultry	5.59	**8.52**	2.28	3.48	**9.94**
Pig	0.84	**1.12**	0.47	0.34	**1.77**
Cattle	1.19	**1.76**	0.33	0.16	**2.08**
Water Buffalo	0.27	0.10	**0.32**	0.13	0.07

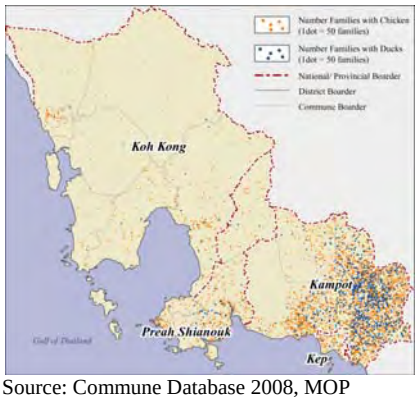
Source: JICA Study Team (province-wise livestock inventory in 2007, MAFF ÷ No. of household in 2008, CENSUS 2008)

Figures 4.1.20 - 22 illustrate the distribution of livestock in the Study area (dots indicate the density of livestock or families with livestock in each commune, therefore, each dot does not necessarily indicate the exact location of livestock and families).

As shown in the figures, livestock or families with livestock are found predominantly in the eastern part of Kampot province, particularly Dang Tong, Angkor Chey, and Kampong Trach districts. Duck and chicken are also well braised in Mittakpheap district, Preah Sihanouk province.

Source: Commune Database 2008, MOP

Figure 4.1.20 Distribution of Cattle and Buffalo



Source: Commune Database 2008, MOP

Figure 4.1.21 Distribution of Duck and Chicken

Source: Commune Database 2008, MOP

Figure 4.1.22 Distribution of Pig

(3) Fishery

Cambodia has abundant marine and freshwater fish resources (a variety of over 500 freshwater and 476 marine fish species). Fish are considered as major means of food next to rice. Approximately 4 million people (29% of population) are dependent on direct or indirect income from fish resources.[56] The fishery sector accounts for more than 11% of GDP, with the official export value being USD 105 million (2.6% of the total export) in 2007.[57]

[56] Ministry of Commerce (2006) Cambodia National Export Strategy 2007-2010 (Interview with Mr. Nao Thuok, Director General of the Dept of Fisheries at MAFF)
[57] IMF (2009) Country Report No. 09/48 Statistical Appendix

Freshwater fisheries in Cambodia are well-known for their high productivity due to the presence of large flood plains around the Mekong River. Marine fishery production is small compared to the inland fishery, because the country's coastal line, 436 km, is rather short compared to the country size. While the fish catch of the inland fishery was 305,000 tons in 2006, that of marine fishery was 33,900 tons in the same year.

However, demand for marine products has been increasing rapidly with an annual growth rate of 10% to 15% from 2003 onwards[58]. The rapid increase in the demand is attributed to the increase in the income level along with the favorable economic development in the country, as well as the increase in the hotels and restaurants in Phnom Penh, Siem Reap and other major cities. Improvement in the transport infrastructure connecting the coastal area with the inland area, particularly National Road No. 3, No. 4, and recently improved No. 48, has also contributed to the increase in the demand.

1) Marine fishery

The classification of marine fishing activities comprises two main groups: coastal and offshore fisheries. The coastal fishery is characterized by small family-scale fishing, which is mostly operating along the coast within a depth of 20 m. Boats used are either without engines or with small engines. The offshore fishery is characterized by large-scale fishing, operating at a range from a 20 m depth to the limit of the EEZ (Economic Exclusive Zone), with boats carrying bigger use engines.

Most of marine fishing activities in the Study area are conducted at the coast, because most fishermen's fishing boats are not suitable for offshore fishing. Offshore fishery is practiced in several fishing villages in Preah Sihanouk and one fishing village in Koh Kong.

Source: MAFF, 2007

Figure 4.1.23 Change in the Fish Catch from Marine Fishery in Cambodia from 1980 to 2007

As shown in the above figure, fish catch from marine fishery is generally on an upward trend. In 2007, marine fish landed in Koh Kong was 35,600 tons (56.1% of the total fish catch from marine fishery in the country), followed by Preah Sihanouk (22,000 tons or 34.6%), Kampot (5,550 tons or 8.7%), and Kep (350 tons or 0.6%).

Since Koh Kong's transport infrastructure and port facilities as well as processing facilities were considerably limited in the past, much of the catch was re-loaded offshore onto to Thai

[58] "Investment climate of Cambodia", May 2007, Organization for Small &Medium Enterprises and Regional Innovation, JBIC

vessels to be landed in Thailand. However, due to the recent improvement in transport infrastructure (particularly National Road No. 48), marine products caught in off shore areas of Koh Kong Province are currently also landed in Koh Kong and transported to Phnom Penh.

As mentioned above, statistics indicate an upward trend of fish catch. However, there is concern about depletion of marine resources along the Costal area because of intensive trawl fishing in the area. Actually, local fishermen in Koh Kong are experiencing a decrease in the fish catch. According to the investigation of marine fishery resources executed by the former Soviet Union during 1992- 1993, the maximum sustainable yield in Cambodia was between 50,000and 60,000 tons/year. Marine fish catch in 2007 of 65,300 tons already exceeded this level .

Fishing Village in Preah Sihanouk

2) Aquaculture

The aquaculture sector is still of minor significance to the fishery production in Cambodia. In the Study area, while fish catch from marine fishery was 65,300 tons in 2007, the production volume of aquaculture was 520 tons in 2006 (see the table below).

Marine aquaculture is a relatively new development in Cambodia. It started in the early 1990s with the setting up of several shrimp and fish farms. Success of shrimp culture and marine fish cage culture in Thailand has led to the introduction of marine aquaculture in the Study area. Shrimp culture was first started in Koh Kong Province and later expanded to Preah Sihanouk and Kampot Provinces. However due to a lack of technique and spread of diseases, a lot of farmers already abandoned shrimp culture.

Cage Aquaculture in Koh Kong

Table 4.1.7 Production Volume of Aquaculture in the Study Area in 2006

	Inland fish	Shrimp	Crab	Snail	Kreng	Marine fish	Total
Kampot	50	10	-	-	-	-	60
Koh Kong	30	-	20	50	50	50	200
Preah Sihanouk	70	10	15	-	-	70	165
Kep Town	95	-	-	-	-	-	95
Total	245	20	35	50	50	120	520

Source: MAFF 2006

Marine finfish culture followed shrimp culture, especially in Koh Kong and Preah Sihanouk Provinces. The number of families engaged in marine aquaculture is gradually increasing,

but the industry has not yet been well developed, mainly due to a lack of technology, investment and hatcheries.

Cultured species are varied among the provinces. Perna viridis (*midori-gai*), grouper (*hata*), snapper (*fue-dai*), centropomidae (*akame*), swimming crab (*gazami*), and mud club (*doro-gani*) are raised in Koh Kong. Tiger shrimp (*kuruma-ebi*), centropomidae (*aka-me*), giant tiger prawn (*Ushi-ebi*), grouper (*hata*), mantis shrimp (*syako*), and lobster (*ise-ebi*) are popular cultured spices in Preah Sihanouk. Seaweed and swimming crab (*gazami*) are popular in Kamport. Seaweed aquaculture has also been practiced in Kampot, which was first introduced by a Malaysian company (Star Private Enterprise Ltd.). The production volume of seaweed in Kampot increased from 408 tons in 2000 to 5,610 tons in 2006.

In addition, crocodiles farming and seaweed farming are practiced in the Study area. Crocodile farming can be found mainly in Thama Bang district, Koh Kong (27 families are engaged in crocodile farming). The production volume of crocodile farming was 2,018 heads in 2006.

3) Status of the Development of the Fishery Sector in the Four Provinces.

Preah Sihanouk Province

The Preah Sihanouk fishing industry is the most advanced in the Coastal Area with well developed capital investment in both open sea fishing and aquaculture. For open sea fishing, the vast majority of excursions are done by deep-sea boats capable of 1 week at sea, when provisioned, and utilizing well developed nets and bait fishing methods. The number of fishermen in the region has been increasing over the past 5 years. Aquaculture in the region has similarly been expanding with both off-shore and inland enterprises

Kep and Kampot Provinces

Despite its proximity to the sea, the fishing industry in Kep and Kampot remains largely underdeveloped with fishing enterprises being largely comprised of families, often former farmers, using low cost boats which are unable to enter deep or rough waters. Fishing techniques remain largely rudimentary suitable only for crab and shallow water fishing using nets and traps. Acquired seafood is usually sold within the local market in Kampot with a limited amount sold at the Kep Crab Market. A limited number of deep sea boats are observed in the area but nowhere near the scale of either Preah Sihanouk Province or Koh Kong. Seafood caught in the region is sold within Kampot, Cambodian, and Thai markets.

Kampot is currently undergoing extensive development and expansion in the area of freshwater aquaculture with the spread of small scale aquaculture technologies and the creation freshwater fish ponds in the region through the JICA Freshwater Aquaculture Improvement and Extension Project. As a result, fresh water fish production in the region has increased significantly while providing income alternatives to impoverished farmers in the region.

Koh Kong Province

In terms of capital and organization, the sea fishing industry in Koh Kong Province is fairly developed with boats capable of extended deep-sea trips and a competitive network of seafood distributors and purchasers located within the fishing villages. However, the industry is largely centered on the Thai market with minimal residual seafood being sold in the Koh Kong market.

Although the seafood shipped to Phnom Penh is increasing due to the significant improvement of the road and bridge conditions, many fishermen still prefer the Thai market due to its consistent pricing and seemingly insatiable demand for seafood products. Still, according to governmental statistics from the Department of Fishery, approximately 30% of seafood is domestically consumed with 85% of that domestic amount being sent to Phnom Penh.

(4) Secondary (Manufacturing) Industry

1) Labor-intensive industries (garments, footwear, etc.)

Cambodia has a large pool of unskilled, cost-effective labor, through the use of which the garment and footwear industries have achieved rapid growth since 1997. At their peak, more than 300 garment factories were operating in Cambodia, employing 340,000 workers[59]. The garment and footwear industries account for 70 % of the manufacturing sector's value added and 76 % of (official) exports for the country (IMF, 2007). According to a survey by the Economic Institute of Cambodia, over 300,000 indirect jobs were created by the garment industry (agriculture, transportation, etc.). Even after the termination of preferential treatment under the Agreement on Textiles and Clothing (ATC), garment exports from Cambodia remained strong.

These industries are enjoying the benefit of duty-free imports of raw materials and machinery by acquiring a "Qualified Investment Project" (QIP) status, and have maintained a positive market image in the area of labor utilization in compliance with International Labor Organization (ILO) standards. On the other hand, garment factories in Cambodia only perform cut, make, and trim (CMT), with competitiveness being solely dependent on unskilled manual labor. Most materials (yarn and fabrics, accessories, etc.) are imported from China, Hong Kong, and Taiwan[60], and, thus, backward linkages with local industries have been highly limited. Furthermore, a significant portion of the trade surplus generated by the garment industry (more than USD 300 million out of USD 800 million in 2005) is sent to investor countries in the form of benefits and income repatriation[61].

Due to the worldwide economic crisis since 2008, 70,000 workers in the garment sector have been laid off and another 100,000 jobs will remain under threat over the next two years.[62] It is also reported that 50 to 60 factories among the 320 existing GMAC member factories have been closed. The safeguard measures for garments, which were imposed on China by the US and EU, which had indirectly given Cambodia an opportunity to maintain its market share after ATC, have been lifted, and now the industry has to face even more intense competition. Moreover, with the income levels in Cambodia's rural areas increasing, mobilizing cheap labor has become more difficult.

Cambodian manufacturers in light industries, including garment and footwear, have to overcome the following disadvantages:

- A shortage of skilled middle management / skilled workers, resulting in a strong dependency on expatriate supervisors;
- High levels of official and unofficial transaction costs in import / export processes;

[59] Reuters, 22 March, 2009. The figures may vary depending on the sources.
[60] Raw Materials average 52% of total sale. (EIC HDIA Garment Factory Survey, May 2006)
[61] EIC (2007) Export Diversification and Value Addition for Human Development
[62] Reuters, 22 March, 2009

- High transportation costs;
- Higher electricity costs than neighboring countries; and
- Low labor productivity (the productivity in the garment sector is among the lowest of the competing countries[63]).

The establishment of factories at Sihanoukville Port SEZ (Sihanoukville Port SEZ has a policy to promote non-traditional industries) could lead to an overcoming of some of the above disadvantages, such as high transport costs and unofficial payments which are generated between the locations of the factory and the shipping port.

2) Other secondary (manufacturing) industries

According to 2008 census, the number of labor engaged in the secondary industry in the Study area was only about 28,067, which constitutes only 5.8% of the total working population in the Study area. The manufacturing industry seems still of minor significance to the economy in the Study area even now. The manufacturing sector absorbed 15,356 labor force in 2008, of which Preah Sihanouk absorbed 9,091 labor force, or 59.5% of total manufacturing labor force. The manufacture of wearing apparel absorbed 6,861 labor force or 44.8% of total manufacturing labor force. Food processing industries (2,563 labor force, 16.8%), manufacture of furniture (938 labor force, 6.1%), manufacture of leather and related products (803 labor force, 5.3%), manufacture of non-metallic mineral products (704 labor force, 4.6%), manufacture of fabricated metal products, except machinery (599 labor force, 3.9%), and manufacture of wood and of products of wood and cork (582 labor force, 3.8%) were absorbing relatively large number of labor force in the Coastal area.

Dredging of Silica Sand in Koh Kong

Shrimp Freezing Factory in Preah Sihanouk

There are no comprehensive statistics that provide an overview of manufacturing industries in the Study area (the result of the Establishment listing survey, currently executed by National Institute of Statistics with technical assistance from JICA, will be expected to provide a general picture). The table below summarizes the secondary industry found in the Study area.

[63] Ministry of Commerce (2006) Cambodia National Export Strategy 2007-2010

Table 4.1.8 Major Manufacturing Industry Found in the Study Area

Type of industries	Location
Agro-industry	
Cassava Products, such as tapioca	Preah Sihanouk, Kampot
Corn Powder	Pailen district in Kep
Potato powder	Kampot district in Kampot and Sala Krao district in Kep
Animal feed	Steung Hav district in Sihanouk
Sugar Factory	Kampot, Koh Kong
Rice Milling	Whole study area, mainly in Kampot
Extracting Vegetable Oil	Prey Nob district, Sihanouk, and
Fishery Processing	
Frozen Shrimp	Steung Hav district in Sihanouk (Sun Wah Fisheries Co. Ltd.)
Fish Sauce	Koh Kong, Preah Sihanouk
Crab meet collection	Koh Kong, Kaeb district in Kep
Dried shrimp	Koh Kong
Food, Drink	
Beer, Beverage	Preah Sihanouk
Drinking water	Kampot and Kompong Trach district, Kampot, Mittapheap district in Sihanouk, and Salakrao district in Kep
Other Manufacturing	
Car Assembly Plant	Koh Kong (under construction)
Motor Bike Assembly Plant	Preah Sihanouk (under construction)
Garment Industry	Preah Sihanouk , Kompong Trach district, Kampot
Handy Craft	Whole study area
Brick	Kampot district in Kampot
Other Industries	
Cement Mixing	Mittapheap district in Sihanouk
Cement Factory	Kampot (Siam Cement)
Dredging of Silica Sand	Mondol Seima district, Koh Kong
Ice Plant	Kampot and Kampong Trach district in Kampot, Mittapheap district in Preah Sihanouk, and Koh Kong district in Koh Kong
Salt Making (Salt pan)	Coastal Area of Kampot

Source: JICA Study Team

(5) Tourism Industry

Tourism industry is one of the promising industries in the Study area. The tourism sector is the second largest foreign currency earner for Cambodia after garments, with a total earning reaching USD 1.1 billion, generating 13% of GDP.[64] During the past decade, the number of foreign visitors in Cambodia has jumped sevenfold (from 0.29 million in 1998 to 2.01 million in 2007). Most visitors arrived through the Siem Reap International Airport (761,251) and through Phnom Penh International Airport (535,262) with the remainder through land boarder check points or through sea ports. Most tourists visit Siem Reap to see the historical heritage of Angkor temples, and the capital city of Phnom Penh. Preah Sihanouk and other provinces in the Coastal area are often cited as the third destination in Cambodia.

While development of tourism creates ample employment opportunities, an impact of an increase in tourist arrivals on the Cambodian economy is limited. This is due to the fact that many of high-end

[64] IMF (2009) Country Report No. 09/48 Statistical Appendix

hotels and restaurants tend to use materials imported from foreign countries, since the domestic materials tend to lack of reliability in supply and quality consistency. As discussed in the section of "Fruits and vegetables", the organization of growers' groups and establishment of efficient marketing channels should be promoted so that more of the money tourists spend in Cambodia would remain and circulate within the country.

1) Initiatives in promoting tourism

Cambodian government has taken various actions to promote tourism industries in the country including the Study area. Among others, the Cambodian Government's initiatives in the improvement of transportation infrastructure, facilitation of movement of tourists, and promotion of touristic attractions through media are expected to boost the development of the tourism sector in the Study area.

Improvement in transport infrastructure

Improvement in transport infrastructure is expected to boost tourism in the Study area. Tourism in Preah Sihanouk will be activated by the reopening of the Sihanoukville Airport, which had been suspended after a fatal crash in June 2007. The airport is expected to lure visitors from Cambodia's other destinations, such as Siem Reap and Phnom Penh, to the beaches in Preah Sihanouk. In July 2009, a Cambodian national airline, Cambodia Angkor Air (CAA), a joint venture between Vietnam and Cambodia, was established. It is announced that CAA's first services route will be opened between Phnom Penh and Bangkok and Ho Chi Minh and the company is also said to have a plan to start an operation between Preah Sihanouk and Siem Reap soon. In the future, the airport may also facilitate direct flights from neighboring countries.

In addition, there is a plan to develop a tourist port in the Coastal area of Kep Province to boost tourism. The port is expected to attract more visitors to costal provinces, including eco-tourism destinations in Kep and Kampot, from Phu Quoc Island in Viet Nam, a recently established popular destination for tourists in the region[65].

Also, National Road No. 48 running from the Thai boarder in Koh Kong to Preah Sihanouk Province along the coastal line that has recently been improved, will lure tourists from Thai, Phnom Penh and Preah Sihanouk to Koh Kong.

Facilitation of movement of tourists

Cambodia, Vietnam and Thailand have recently signed a visa exemption agreement of passport holders of their citizens. In addition, in 2007, Cambodia signed an agreement with Thailand and Vietnam under which foreign tourists will be able to visit both countries on a single visa. This agreement will contribute to the tourism development in the Study area.

Promotion of Touristic Attractions through Media

By utilizing a part of the entrance ticket sale revenues from Siem Reap, the Ministry of Tourism (MOT) has created several promotion videos that present Cambodia's major attractions including Siem Reap, Phnom Penh and Preah Sihanouk. MOT has also contracted with BBC to publicize these attractions over the air. The Department of Tourism in each of the

[65] The tourism development master plan of Pho Quoc envisions the total number of visitors to Phu Quoc Island will reach about 1-1.2 million by 2015 and 2-3 million by 2020.

four provinces has published a leaflet to introduce their major touristic spots, although these leaflets are only distributed within respective provinces. Apart from the beaches of Preah Sihanouk, few initiatives to promote attractions for foreign tourists have so far been taken. Information about these attractions is only known through individual websites or booklets prepared by private companies which earn commissions through advertisements or hotel reservations.

2) Major tourist attractions and the status of tourism development in the Study Area

Although the Study area has abundant tourism resources, most of them are not yet well developed. Major tourist attractions in the Study area are summarized as follows:

Preah Sihanouk Province

Preah Sihanouk Province is one of the three major tourist locations in Cambodia following Siem Reap and Phnom Penh in terms of tourist flow as well as sector development. The last 5 years in the region have witnessed great expansion of the tourist sector. Most large hotels and guesthouses in the region have been expanded and construction of new hotels and facilities continuing. In the long run the region may be approaching saturation due to the level of new hotel construction. The majority of tourists in the region are foreign though the amount of domestic tourists is sizable. The majority of foreign tourists arrive from either Koh Kong or Phnom Penh in transit from Thailand to Vietnam or visa versa. No active hotel or tourism association is found in the region.

Sunset at Victory Beach

There area three major beaches in the town; i) Ochheuteal Beach, the most popular beach in the city, ii) Independence Beach, and iii) Victory Beach which features plenty of budget accommodation. Various opportunities for marine sport such as scuba diving and snorkeling are available in the beaches. There are a number of restaurants serving fresh seafood in the town.

Koh Pos (Snake island) is also an attractive tourist destination, which is located 800 m away from the Victory Beach. In 2007, the Cambodian government granted a Russian company (Koh Pos Investment Co. Ltd.) with a concession to develop the island into a tourist resort with an initial investment of up to USD 300 million. The concession agreement allows the company to develop and manage the island for 99 years. The company is currently constructing a bridge linking the beach with the island.

Kep Province

Kep had been the only seaside recreation area before Sihanoukville was established. The tourism industry in Kep Province has been expanding significantly over the last 3 years with a clear increase in the number of hotels and guesthouses opening or under construction. The recently opened border crossing with Vietnam has the potential to greatly increase the flow of tourists through the region, however misinformation and uncertainty regarding the status of the crossing seem to be limiting the use of the border.

Attempts have been made by local hotel owners to create an association, but such efforts have failed largely due to mistrust and the fact that the effort was headed by an individual hotel.

Bungalows, guesthouses and hotels are available on the hillside and along the beaches. While the area is still not too touristy, Kep has good potential for providing a place for relaxation and fresh seafood, as well as opportunities for walks, bicycling, sitting and sleeping on the beach, and a stopover on the way to or from Vietnam

Resort Villa in Kep

Kampot Province

For the most part, Kampot tourism remains very limited with most tourists passing through the region in order to access Phnom Penh, Preah Sihanouk, and Kep. Hotel guests are comprised mostly of public sector and NGO personnel involved in activities in the region.

The main tourist attractions in Kampot are the Bokor Mountain, the Kampot Zoo and waterfalls, boat rides on the river, and historical buildings in the city constructed during French colonial ear.

Bokor Mountain is a popular tourist destination in Kampot. After the long and rough drive up to the top, visitors can enjoy the views of the Gulf of Thailand, Southern Cambodia and Vietnam. The temperature at the top is much lower than at the base of the mountain. On the top of mountain, there is an abandoned complex of buildings built around 80 years ago. A casino, church, and buildings made for summer palace of the former King are scattered around.

Abandoned Casino on the Top of Bokor Mountain

Cambodian business conglomerate Sokimex recently announced their plans to develop the Bokor Mountain. The plan includes road rehabilitation and expansion to the top of mountain, construction of a new international standard hotel and casino, and construction of condominiums, villas, residential housing, recreational parks, restaurants and a golf course.

Koh Kong Province

Similar to Kep, Koh Kong has a developing tourist industry although not expanding at the same scale as that of Kep. Most tourist traffic in the region currently involves tourists coming from or going to Thailand through the Koh Kong border crossing. Four large hotels exist in the area while other accommodation facilities are mostly of guesthouses. Several undeveloped beaches are located near the Thai boarder. Attractions in the region are largely underdeveloped with limited advertising, coordination, and access. No initiatives in creating any type of hotel or tourism associations have been attempted. Koh Kong has a five star casino resort (Koh

Kong Casino), a five star hotel (Koh Kong Resort), a zoo and a leisure park (Koh Kong Safari World) constructed near the Thai boarder by Lee Yong Phat group, which actively advertises at a multimedia, high technology level. However, advertising is aimed solely at the Thai market for guests to come across the border for gambling and not to continue on into Cambodia. The hotel reports that 90% of its customers return to Thailand after their stay.

Stung Atay, River in Koh Kong

Koh Kong province has a potential to be a major eco-tourism destination in the country. The Cardamon Mountain park area, and rivers, islands, jungle, and mangrove forests are uninhabited and richly endowed with unspoilt nature. According to the Ministry of Tourism, Korean, Thai, and European companies are showing interest to develop eco-tourism sites in Koh Kong.

3) Other Critical Issues

Advertising and Sector Coordination

Most hotels participate in some type of advertising either through guidebooks, newspapers, or websites. However, these media sources are very much limited to advertising the hotel's facilities and often give little information concerning the surrounding region. The exception to this occurrence is the advertising approaches of the four and five star resorts within Preah Sihanouk Province, which promote regional attractions in the course of advertising their own hotels. Only these facilities participated in any type of packaged tours with the routes coming out of Phnom Penh and returning the same way after the stay.

Though some efforts have been made towards cooperating in advertising in the Kep region through the Kep Revival Guidebook, a guidebook for the region produced by one hotel owner at his own expense and compensated for by advertising paid for by other hotel owners, overall there is little communication between hotels in the regions thus leaving regional promotion for tourism purposes to the Ministry of Tourism and its websites.

Training and Human Resource Development

Adequately trained staff appears to be a limiting factor in the development of the tourist sectors in Koh Kong and Kep. Hotel managers and tourism representatives reported a need for hospitality staff and guide training in both regions in order to meet the growing demands of the tourist industries. Generally, trained staff is difficult to attract as most of such labor comes out of Phnom Penh, Preah Sihanouk, and Siem Reap, and generally remain within one of those three regions due to wage rates and the quality of life in those areas.

4.1.5 Private Sector Investment

(1) Country-wise Private Sector Investment in Cambodia and Its Issues

1) Current situation of private investment in Cambodia

"Mid-term Review 2008 on National Strategic Development Plan (NSDP) 2006-2010" projects the investment trend of Cambodia during 2006-2010 as shown in Table 4.1.9. Among the projected total private investment of USD 9,146.7 million in five years, the foreign financed private investment is projected to occupy 39.0% (USD 3,567.7 million). Although its ratio is gradually decreasing, the foreign financed private investments still keep significant roles in developing the Cambodian economy.

Table 4.1.9 Projected Investment in Cambodia

Million USD

	2006	2007	2008	2009	2010	Total
Public Investment	**417.3**	**520.9**	**639.4**	**681.2**	**674.0**	**2,932.8**
- Domestic financed	59.3	64.9	155.5	177.5	197.7	654.9
- Foreign Financed	358.0	456.0	483.9	503.7	476.3	2,277.9
Private Investment (a)	**1,227.4**	**1,759.7**	**1,822.7**	**2,028.5**	**2,308.4**	**9,146.7**
- Domestic financed	752.4	892.7	1,140.7	1,310.5	1,482.7	5,579.0
- Foreign Financed (b)	475.0	867.0	682.0	718.0	825.7	3,567.7
- (b)/(a): %	(38.7)	(49.3)	(37.4)	(35.4)	(35.8)	(39.0)
Total Investment	**1,644.7**	**2,280.6**	**2,462.1**	**2,709.7**	**2,982.4**	**12,079.5**
- Total Domestic financed	811.7	957.6	1,296.2	1,488.0	1,680.4	6,233.9
- Total Foreign Financed	833.0	1,323.0	1,165.9	1,221.7	1,302.0	5,845.6

Source: MEF
Note: Estimated figures for 2008 and projected figures for 2009 and 2010

2) FDIs in private investment in Cambodia

The investment amounts approved as Investment Projects or QIPs by CDC/CIB[66] between 1994 and 2008 are shown in Table 4.1.10. The FDI occupied the higher share in the early days but gradually decreased its share in the following years. Although the FDI's approved figures increased sharply in 2008, the FDI portion is accounted only to 44.5% of the total approved amounts, if the gigantic area development project of the Union Development Group of China, amounting to USD 3,805million, is excluded. In total, 63% of the approved investment so far came from the foreign sources.

[66] The figures do not include the followings investment projects.
- The QIPs that the CSEZB approved after the issuance of the SEZ Sub-Decree of December 29, 2005, which include the SEZ development projects
- The QIPs that the Investment of the Provinces-Municipalities (PMIS) approved
- Non-QIPs that have been registered with MOC

Table 4.1.10 Investment Fixed Assets by Source of Investment: 1994-2008

Million USD

	Foreign (a)	Cambodia (b)	Total (c)	(a)/(c) %
1994 – 2003	5,149	2,255	7,404	70
2004	155	76	231	67
2005	684	366	1,050	65
2006	1,822	1,646	3,468	53
2007	1,344	1,323	2,667	50
2008	6,958	3,932	10,891	64
Total	16,112	9,598	25,711	63

Source: CDC

3) Implementation ratio of approved investments in Cambodia

According to the Project Monitoring Department of the CIB, there were 1,537 approved Investment Projects and QIPs between 1994 and 2008. Among them, 1,139 projects are counted as "Former Active" or "Active" at the end of 2008. The total fixed assets of those projects amounts to USD 18,406 million. From these figures, 74% of the approved projects are thought to have been implemented by the number of project or 71.6% by the approved fixed asset amount (USD 18,406 million out of the total approved investment of USD 25,711 million).

The "Active Project" is accounted to be 935 projects at the end of 2008, of which approved fixed asset is USD 17,476.4 million. In other words, 60.8% of the approved projects are still in operation in Cambodia by the number of projects or 68.0% by the approved fixed asset amount.

4) Issues in private sector investments in Cambodia

Basing on such past trend and current situation of private sector investment and FDI in Cambodia, the followings can be pointed out as vital issues.

i) The first issue is that private sector investment in Cambodia heavily dependents on the tourism sector and construction subsector (totally USD 16,046 million). Tourism and construction account for 62% of the total investment amounts approved in last 15 years, whereas merely USD 4,287 million investments were approved in the manufacturing sector and USD 1,184 million in agriculture sector. At the same time, industrial subsector investment still depends heavily on FDIs in "textile, apparel and footwear". As seen in the Review, the RGC's long-time target of industry diversification will be yet achieved in foreseeable time.

ii) The second issue is that, although RGC has been employing its utmost effort to promote FDIs after the 1994 LOI was promulgated, FDIs seem to be staggering in recent years, at least in terms of its percentage to the total private investment. Although FDI in the agricultural field is increasing in recent years, it still remains in moderate size. The investment into construction sector, which has been a major field that absorbed large amount of FDIs, now seems to shrink, due to the reverse effect of financial crisis starting in the summer of 2008 and the collapse of real estate market in Seoul happened in the same year. FDI in the diversified industrial sectors, nevertheless, has yet been successfully promoted in Cambodia.

iii) The third issue is that large scale investment tends to rely on FDIs and the Cambodian enterprisers still lack in enough capital to cover such larger scale projects only by themselves.

iv) The fourth issue is that, "Active Projects" ratio may quickly decrease in near future because the recently approved projects include the large-scale projects in the field of area-wise development or tourism sector. There may be higher risks anticipated for successful results in these fields due to the ecological impact involved in the large scale development and the opposition of residents for eviction. The overall approved projects' survival ratio of 60% at the end of 2008 may stand at well below 60% level today, because approximately 50 garment factories are said to have been closed in last one year.

(2) Private Sector Investment in Coastal Area and Its Issues

1) Current situation of private investments in coastal area

According to the CDC data, 117 projects have so far been approved as the Investment Projects or QIPs in last 15 years in four coastal provinces, namely Preah Sihanouk, Koh Kong, Kampot and Kep.

The approved fixed assets of the 117 projects amounted to USD 10,701 million, which accounts for 41.6 % share of the total amounts of approved projects in Cambodia. On the contrary, the 117 projects accounts for only 7.6% of the total number of the approved projects in Cambodia in the same period. It implies that many of the approved investment projects in the coastal area are rather large in investment scale compared with the average scale of approved investments in other areas. In this connection, the feasibilities of the approved investment projects in coastal area may have considerable effects on the Cambodian economy and social development.

As for the investment sectors in coastal area, the investment amount of approved "Active" projects in the field of tourism and area development accounts to USD 8,333.2 million at the end of 2008 and it occupies 83.2% of the total investment amount of approved "Active" projects in coastal area. As the number of projects in the same fields accounts to only 20, the average investment amount per project would be USD 416.7 million.

On the other hand, the investment amount of approved "Active" projects in manufacturing projects account to USD 741.2 million for 29 projects in total coastal area and the average investment amount would be USD 25.6 million. Thus, current private sector investment in coastal area is characterized with heavy dependency on the fields of tourism and area development. On the contrary, the investment in manufacturing sector is still slow and its scale is also rather small. Export-oriented industries have yet located in the area either, with few exceptions.

The other vital characteristics of the investment in coastal area are that the resource based investment has been active. In Preah Sihanouk Province, USD 629.9 million has been invested in the oil terminal, refinery and exploration. In Koh Kong Province, USD 14.7 million was invested in mining and USD 207.9 million is planning to be invested in alcohol manufacturing based on sugar cane.

2) Implementation ratio of approved investments in coastal area

Out of the 117 projects, 11 projects are judged as "Former Active", of which approved fixed assets are USD 66 million, at the end of 2008; and 72 projects as "Active" of which approved fixed assets are USD 10,011 million.

According to these figures, the implementation ratio of the approved project ("Former Active" plus "Active" projects) is 70.9% by the number of projects and 94% by the fixed asset amount. The number of "Active" projects is 72 and the survival ratio is 61.5% by number of projects or 93.6% by the fixed asset amounts. These figures are almost equal in terms of the number of projects and extremely higher in terms of the investment assets, comparing with the national average.

Most of the "Non-Active" or "Former Active" projects are of small scale and approved in early days. Many of them have not been implemented or already ceased their operations.

Table 4.1.11 Approved Investment Amounts and Projects in Coastal Areas

Million USD

	a. Non-active	b. Former Active	c. Active	d. Total	Implementation Ratio (b)+(c)/(d) (%)	Survival Ratio (c)/(d) (%)
Preah Sihanouk	382 (23)	20 (9)	3,637 (45)	4,039 (77)	90.5 (70.1)	90.0 (58.4)
Koh Kong	29 (3)	6 (1)	4,965 (18)	5,000 (22)	99.4 (86.4)	99.3 (81.8)
Kampot	209 (6)	0	1,410 (9)	1,619 (15)	87.1 (60.0)	87.1 (60.0)
Kep	4 (2)	40 (1)	0	44 (3)	90.9 (33.3)	0.0 (0.0)
a) Total Coastal Area	**623 (34)**	**66 (11)**	**10,012 (72)**	**10,701 (117)**	**94.2 (70.9)**	**93.6 (61.5)**
b) Total Cambodia	**7,305 (398)**	**930 (204)**	**17,476 (935)**	**25,711 (1,537)**	**71.6 (74.1)**	**68.0 (60.8)**
(e)/(f) (%)	**8.5 (8.5)**	**7.1 (5.4)**	**57.3 (7.7)**	**41.6 (7.6)**		

Note: Number in bracket is the number of projects.
Source: CDC

3) Current situation of investment in the SEZs of coastal area

As of October 2009, there are 21 CSEZB-approved SEZs in Cambodia. Among them, 11 SEZs are located in coastal area; 6 in Preah Sihanouk Province, 4 in Koh Kong Province and 1 in Kampot Province.

Despite the early approval of setting-up of SEZs by the CSEZB and the SEZ developer's obligation stipulated in the SEZ Sub-Decree for implementing more than 30% of the total investment of SEZ construction within 365 days after approval, the development work of the SEZs has been rather slow in the area, and one can observe some development in progress only in Sihanoukville SEZ 2, Stung Hav SEZ, Neang Kok Koh Kong SEZ, Oknha Mong SEZ and Kampot SEZ. S.N.C SEZ and Suoy Chheng SEZ have been judged as "Non Active" projects by the Project Monitoring Department of the CIB. The construction of Sihanoukville Port SEZ has just begun in October 2009 and will take 2 years to complete the whole construction work.

Kampot SEZ plans to develop the international port beside the SEZ site and total development cost of entire Kampot SEZ is estimated to be USD 80 million. Such estimated cost for constructing a deep seawater port as planned may not be sufficient. With regard to the Stung Hao SEZ, Atwood Investment Group is planning to construct the International Port besides the

SEZ over a 585 hectares land, which was granted as concession by the RGC. However, due to the constraint of budget, they are still looking for the foreign project partner.

The SEZs in the area succeeded to attract only five investors so far. As shown in Table 4.1.12 below, two garment factories, one motor bicycle assembly factory and one plastics product manufacturing factory in Sihanouk SEZ 2 and Camco Motor (for assembling Hundai automobile) in Neang Kok Koh Kong SEZ have been started the factory buildings. The owner of Kampot SEZ is reported to say that he concluded lease agreement with five investors this year, which have not been confirmed by the CSEZB. The Sihanoukville Port SEZ expects the grand opening at around the middle of 2011 and will start marketing activities in early 2010 aiming to attract mainly Japanese investors in non-traditional industries.

Table 4.1.12 SEZ in Coastal Area (as of October 2009)

1. Neang Kok Koh Kong SEZ	
1) Location	Neang Kok Village, Pakkhlong Commune, Mundul Seyma Destrict, Koh Kong Province
2) Land area	335.43 Ha
3) Project Implementation	Infrastructure Development: Fencing
4) Zone Investor	1. Camko Motor Company Ltd. (Vehicle Assembly of Hundai cars and Spare part)
2. Suoy Chheng SEZ (Non Active)	
1) Location	Neang Kok Village, Pakkhlong Commune, Mundul Seyma Destrict, Koh Kong Province
2) Land Area	100Ha
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
3. S.N.C SEZ (Non Active)	
1) Location	Sangkat Bet Trang, Khan Prey Nob , Sihanoukville
2) Land area	150 Ha
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
4. Stung Hav SEZ	
1) Location	Sangkat O Tres, Stung Hav District, Sihanoukville
2) Land area	192 Ha.
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
5- Kampot SEZ	
1) Location	Koh Toch commune, Kampot district, Kampot Province
2) Land area	145 Ha.
3) Project Implementation	Infrastructure Development: Landfill and building Kampot seaport.
4) Zone Investor	None
6- Sihanoukville SEZ 1	
1) Location	Stung Hav District, Sihanoukville City
2) Land area	178 Ha
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
7- Oknha Mong SEZ	
1) Location	Srea Ambel District, Koh Kong Province
2) Land area	100 Ha
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
8- Sihanoukville SEZ 2	
1) Location	Pou Thoung Village, Betrang Commune and Smach deang Village, Ream Commune, Prey Nop District, Sihanouk Ville
2) Land area	1688 Ha

3) Project Implementation	Infrastructure Developing
4) Zone Investor	1. Nang Guo Garment Co.,Ltd (Garment Manufacturing Factory) 2. Hong Dou International Garment Co.,Ltd (Garment) 3. Qianlima Vehicle Co.,Ltd (Motor Bicycle Assembly) 4. Taihua Plastic Products Co., Ltd (Plastic Production)
9- Sihanoukville Port SEZ	
1) Location	Tomnop Rolok Area, Sangkat Lek1 and Lek3, Khan Meattapheap, Sihanoukville
2) Land area	67.5 Ha.
3) Project Implementation	Infrastructure Developing: Landfill
4) Zone Investor	None
10- Kirisakor Koh Kong SEZ	
1) Location	Khum Prek Kasach, Srock Kirisakor, Koh Kong
2) Land area	1750 Ha.
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None
11- Kampong Saom SEZ	
1) Location	Village 4, Sangkat Ortres, Khan Stung Hav, Sihanoukville City
2) Land area	255 Ha.
3) Project Implementation	Infrastructure Developing
4) Zone Investor	None

Source: Project Implementation Sheets prepared by the CSEB

4) Issues in private sector investments in coastal area

The recently approved investment projects tend to be large in the scale and most of the projects have just begun implementing. Due to the following reasons, it is still uncertain whether the project shall remain to be in "Active" status or not.

- Most of such large-scale investments belong to the fields of tourism or area development. Although they require large amount of capital and long time-span for completing the projects, the capital sources are uncertain or unknown in many projects. Concession rights for the most of the places suitable for tourism industries have already been given to the private sectors, both foreign and domestic. Since the financial bases of such concessionaires are uncertain, it is still unknown if the investment projects will be materialized as planned.

- The projects in tourism or area development tend to be easily halted by the objection and protest from local residents for eviction. In fact, there have already been two inter-ministerial committees formed to deal with solve such problems in Koh Kong and Preah Sihanouk Provinces.

While the investments of USD 8,333.2 million (average investment amount of USD 416.7 million per project) have been approved for the tourism and area development projects, the investments in the manufacturing fields have been limited in the number and volume (total USD 741.2 million for 29 projects, average investment amount of USD 25.6 million). Cambodia now faces the fast population growth of younger generation and RGC is expected to create and provide job opportunities for them. It may be desperately in need of more stable investment such as one in manufacturing fields.

Although there are several port development projects, the business plans of all the projects seem to be insufficient and it is doubtful if such projects will be able to be completed in full. The proposals for development will have to be evaluated technically and economically by RGC before granting permits.

The SEZs in the area have so far failed to attract export-oriented industries and to bring in enough economic effect as expected. The reasons for this seem to be in vulnerability of legal framework, and lack of attraction in fiscal preferential treatment and institutional setting.

Although the SEZ Sub-Decree places on the SEZ developers the obligation of implementing more than 30% of the total investment capital for SEZ development within 365 days after the approval date, most of the SEZs in the area do not observe such obligation and the CSEZB has never cancelled the licenses of such developers because of this reason. It is not clearly stipulated in the SEZ Sub-Decree if 30% of the total investment capital includes the cost of land and the CSEZB has never clarified this point. Such vulnerability in the SEZ Sub-decree causes the delay in developing the infrastructure of the SEZs and, as a consequence, they failed to attract the investors in the SEZs.

The RGC has introduced additional or temporary incentives to the investors to locate in the SEZs but such provisions of incentives have been made on an *ad hoc* base and, to be exact, is against the stipulations of 2003 LOI.

The General Department of Customs and Excise (GDCE) of MEF introduced the concept of "different customs territory" for the purpose of providing the simplified and transparent customs procedures to the investors locating in the SEZs. Upon defining the SEZ as "different customs territory", the GDCE explained that such concept shall be introduced and applied only for the stated purpose and would not affect other procedures implemented by other ministries or governmental organizations. According to the definition in Revised Kyoto Convention, the ultimate form of "different customs territory" is the "Free Zone" and the RGC already admitted in principle the establishment of Free Zone in Cambodia in Law on Customs. Once the concept of Free Zone is adopted, the investors locating in the SEZ shall be free to import and export into/from the SEZ without the consideration of import duties or other taxes. Therefore, it will not be necessary for investors to obtain duty-free import licenses from the CDC. They pay import duties or VAT only when they ship their products to the domestic market. Adoption of the concept of "Free Zone" shall give broader free hand to the investors in their operation and, for sure, add much more attraction to the Cambodian SEZ scheme. For implementing such scheme, the measures to prevent the leakage of commodities from the SEZ site to local market have to be strengthened and, therefore, the proper fencing layout and sufficient gate control procedures have to be guided to be introduced.

(3) Private Sector Investment in Each Province and Its Issues

1) Private Sector Investment in Preah Sihanouk Province and issues

The total number of approved projects in Preah Sihanouk Province is 77 and their fixed assets are USD 4,038 million. Out of them, only 45 projects are deemed to be "Active" at the end of 2008 and their fixed assets are USD 3,636.7 million. The details of such "Active" projects are shown in tables below.

As seen below, the private sector investments rather concentrate on the tourism sector and the investment scale is also large in most of projects. Taking the long and tiring access from Phnom Penh to the area into consideration, it is quite doubtful if all the gigantic tourism development projects will be materialized in fruitful ways.

The industries are also slow to be developed as well. The SEZ scheme was expected to help boosting the promotion of export-oriented industries but, due to the insufficiency in the scheme and slow development of the zones, it has not produced any meaningful result.

i) Tourism sector

Island resort development started when one Russian company obtained a license for Snake Island development. In 2006, three other licenses were issued for other island development and 5 additional licenses have been obtained by 3 Cambodian companies, one Australian and one Malaysian company.

Two Ream development projects are being undertaken by a French-Cambodian joint venture and a Cambodian company separately, whereas a beach and hotel development project is in progress by the investment of a Cambodian-Japanese joint venture.

Table 4.1.13 Active Approved Projects in Tourism in Preah Sihanouk Province

Thousand USD

	2004	2006	2007	2008	Total
Island Resort	1,955 (1)	371,687 (3)	286,195 (5)	40,900 (2)	707,737 (11)
Ream Development			115,669 (1)	1,844,546 (1)	1,960,215 (2)
Beach Development			109,998 (2)		109,998 (2)
Golf Course			57,275 (1)		57,275 (1)
Total	1,955 (1)	371,687 (3)	569,137 (9)	1,885,446 (3)	2,835,225 (16)

Source: JICA Study Team
Note: Number in bracket is the number of projects.

ii) Industrial sector

Except oil related-industries, the foodstuff and textile & garment are major approved projects in industry sector by accounting 38.3% and 31.8% of the total approved fixed assets (except oil-related projects) respectively. The foodstuff projects are of cigarette and agri-agro factory for alcohol, beverage bottling and packaging. 3 projects for seafood/ cold storage account for 7.6%. The new plant of Nautisco Seafood Manufacturing Limited is now almost completed in Stung Hao and will start operation soon. Ambulance assembly of USD 2,270 thousand in 2007 and stationary manufacturing of USD 7,000 thousand in 2008 are also new to Cambodian industry.

Table 4.1.14 Active Approved Industrial Projects in Preah Sihanouk Province

Thousand USD

	1995-1999	2000-2002	2003-2005	2006-2008	Total
Garments	7,526 (3)	1,427 (2)	1,891 (2)	4,266 (1)	19,452 (8)
Textile	8,892 (1)	18,302 (2)	-	-	22,851 (3)
Footwear	5,115 (1)	-	-	-	5,115 (1)
Seafood/ Cold storage	2,464 (1)	-	4,000 (1)	3,658 (1)	10,122 (3)
Oil Terminal/ Refinery	24,000 (1)	-	200,918 (1)	5,025 (1)	229,943 (3)
Oil Exploration	-	-	-	400,000 (1)	400,000 (1)
Foodstuff	376 (1)	-	-	50,513 (2)	50,889 (3)
Electric Appliance	-	-	15,305 (1)	-	15,305 (1)
Other Manufacturing	-	-	-	9,270 (2)	9,270 (2)
	48,373 (8)	19,728 (4)	222,114 (5)	472,732 (8)	762,947 (25)

Source: JICA Study Team
Note: Number in bracket is the number of projects.

iii) Agricultural sector

Palm Oil Plantation, worth USD 2.4 million, was approved in 1995 and the animal breeding project, worth USD 5.2 million, in 2001. Both projects were implemented by Cambodian companies and are still active.

iv) The projects approved by the PMIS

The following projects have been registered as the QIPs by Preah Sihanouk PMIS.

Table 4.1.15 QIPs approved by the PMIS in Preah Sihanouk Province

Company Name	Type of Business	Local / Foreign / JV
Eurogage Garment Limited	Garment	100% Foreign (Germany)
Sary Paper Co Ltd	Tissue Paper Manufacturer & Supplier	Manager is Khmer woman whose husband is American
Kampong Sam Textiles	Textile	Foreign with local representatives
Givalen	Steel & Construction	100% Foreign

Source: Ms. YIENG ENG, Chhong of the Department of Commerce of Preah Sihanouk Provincial Government. She is also the member of Preah Sihanouk PMIS.

2) Private sector investment in Koh Kong Province and issues

Investment in Koh Kong had been slow until recent year. Two fruit plantation projects approved in 1997 were not implemented or ceased its operation. Wood-processing project, worth USD 14.1 million and approved in 1999, was not implemented either. There are 18 approved projects which are active at the end of 2008 of which details are shown in Table below.

The one of major characteristics of the active investment projects in Koh Kong is their scale in investment amount. The area development project of Union Investment Group of China projects the total investment of USD 38,005 million and the power plant project of Koh Kong Sugar Industry expects the investment of fixed assets of USD 207.9 million. Sugar cane and sugar factory project of Kohn Kong Plantation Company estimates the fixed asset investment of USD 21.4 million and the explosives manufacturing project of Jengshin International of China may require the fixed asset of USD 9.4 million.

By considering the investment scale and the investment fields, there may be higher risk for completing the projects as planned.

Table 4.1.16 Active Approved Projects in Koh Kong Province

Thousand USD

	1995-1999	2000-2002	2003-2005	2006-2008	Total
Infrastructure	146,798 (1)	31,613 (2)	12,195 (2)	7,027 (2)	197,633 (7)
Agriculture			2,942 (1)	27,142 (2)	30,084 (3)
Industry			2,955 (1)	221,618 (3)	224,573 (3)
Mining			14,700 (1)		14,700 (1)
Area Development				3,805,000 (1)	3,805,000 (1)
Tourism				692,950 (2)	692,950 (2)
Total	146,798 (1)	31,613 (2)	32,792 (5)	4,753,737 (10)	4,964,940 (18)

Source: JICA Study Team

Note: Number in bracket is the number of projects.

3) Private sector investment in Kampot Province and issues

In industrial sector of Kampot, three cement projects of two Cambodian companies and one Cambodian-Thai joint venture company were approved as the QIPs and all of them were "Active" at the end of 2008. The biggest investment project in Kampot is "Preah Monivong Park Development (Bokor)" project, approved in July 2008 and now being undertaken by Sokha Hotel. There are two power supply projects, worth USD 24.1 million, and one port development project in Kampot SEZ. According to the recent newspaper report, the port development project may cost USD 18 million to deepen the port depth to 19 meters. The port is said to be open in the middle of 2011.

The issue to be pointed out first here is that the success of the planned big projects has not been guaranteed. One of the reasons for it is the soundness of financial plan has not been confirmed. The other vital issue is that any meaningful industry has been established, except cement manufacturing plants. For the time being, whether the development of non-traditional or export-oriented industries will succeed or not will depend on how well and fast the Kamopot SEZ will be developed.

Table 4.1.17 Active Approved Projects in Kampot Province

Thousand USD

	1995-1999	2000-2002	2003-2005	2006-2008	Total
Industry	53,680 (1)		191,248 (2)	138,652 (2)	383,580 (5)
SEZ (Port)			8,914 (1)		8,914 (1)
Infrastructure				24,208 (2)	24,208 (2)
Tourism				1,000,000 (1)	1,000,000 (1)
Total	53,680 (1)		200,162 (3)	1,162,860 (5)	1,416,702 (9)

Source: JICA Study Team
Note: Industry is mainly cement plants.

4) Private sector investment in Kep Province and issues

Currently there is no active approved project in Kep Province. The development project of hotel and tourism center at Bokor was approved and implemented by one company but the implementation was suspended and the project became inactive finally.

Under "Decision #37 (RGC) on Creation of Commission for Study and Evaluation of Economic Sector of the Keb Municipal Development Project" of July 18, 2007, "Commission to Study and Evaluate Economic Sector of Kep" was formed but so far there was no definite development plan formed.

4.1.6 Cambodia's Competitiveness and Potentials for Regional Integration

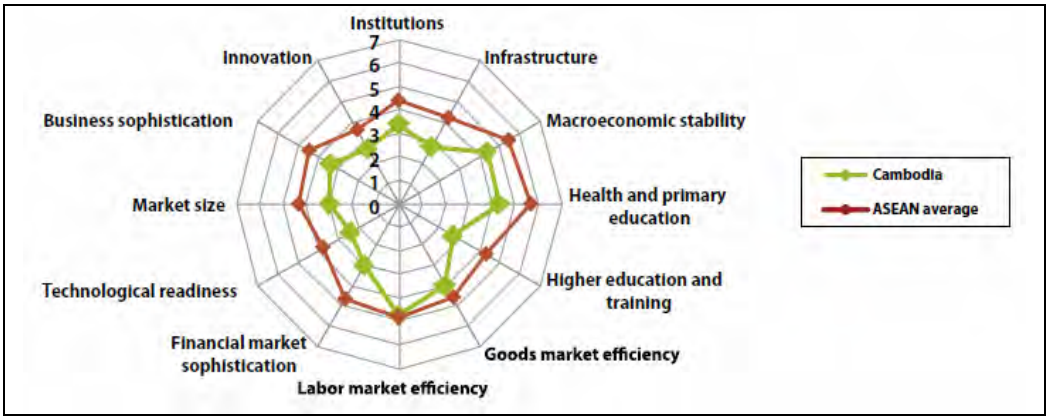
(1) Competitiveness of Cambodia

Although Cambodia's achievements in economic growth have been remarkable, Cambodia is still considered a Least Developed Country (LDC). According to the 2008-2009 Growth Competitiveness Index (GCI), developed by World Economic Forum (WEF) for the purpose of a cross-country competitiveness comparison, Cambodia is placed at 109 out of a total of 134 countries. Table 4.1.18 and Figure 4.1.24 provide a comparison of rankings on the main and sub GCI indicators of the ASEAN countries, and the Cambodia's competitiveness on a scale of 0 to 7 relative to the ASEAN average respectively.

Table 4.1.18 WEF Competitive Indicators, country ranking in ASEAN

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
GCI 2008-2009	39	109	55	21	71	5	34	70
Institutions	41	103	68	30	105	1	57	71
Infrastructure	39	97	86	23	92	4	29	93
Macroeconomic stability	2	105	72	38	53	21	41	70
Health and primary education	47	111	87	23	90	16	58	84
Higher education and training	69	127	71	35	60	8	51	98
Goods market efficiency	91	88	37	23	81	1	46	70
Labour market efficiency	16	33	43	19	101	2	13	47
Financial market sophistication	75	130	57	16	78	2	49	80
Technological readiness	54	123	88	34	70	7	66	79
Market size	116	95	17	28	34	41	21	40
Business sophistication	89	110	39	22	57	14	46	84
Innovation	91	112	47	22	76	11	54	57

Source: WEF Global Competitiveness Report 2008-2009
Note: Data for Lao PDR and Myanmar are not available. A total of 134 countries have been included.



Source: WEF Global Competitiveness Report 2008-2009

Figure 4.1.24 WEF Competitive Scores, ASEAN average and Cambodia

The performance of Cambodia is evidently still behind that of other ASEAN countries. Based on the 2008-2009 GCI results, Table 4.1.19 summarizes the negative and positive notes on Cambodia's competitiveness relative to that of other ASEAN nations. One implication from the GCI results is that in order for Cambodia to follow the development path of other ASEAN nations and accelerate its

economic growth, challenges and issues related to basic requirements including institutions, infrastructure, and education need to be overcome.

Table 4.1.19 Summary of Cambodia's Competitiveness

Summary of Cambodia's Competitiveness
Negative (-): Cambodia, along with the Philippines, possesses very weak institutions including issues with corruption, intellectual property protection, and property rights. Cambodia's quality and quantity of road infrastructure are behind those of other ASEAN countries. Cambodia is very weak in health, primary education and higher education, and technological readiness. Business and financial market sophistication and innovation are still weak in Cambodia.
Positive (+): Cambodia has done relatively well with macroeconomic stability. Cambodia received high scores for labor and good market efficiency.

Source: JICA Study Team based on the UNDP's Cambodia Country Competitiveness Report[67]

(2) Potentials for Regional Integration in the Development of Cambodia

With Cambodia's accession to ASEAN in 1999 and the WTO in 2004, Cambodia has been integrated into the regional and the world trading system within which the competitiveness of Cambodia is to be tested. By making use of this integration, Cambodia is expected to accelerate its economic growth. Cambodia is also a part of the GMS Program[68] under which economic growth and economic cooperation among the six countries[69] constituting the Mekong River watershed is being promoted. However, Cambodia has yet to achieve much in terms of its interregional trade under the framework of ASEAN and/or GMS. The following outlines some of the actions that Cambodia can initiate in order to take advantage of these regional integration mechanisms in its economic development. As will be seen, Cambodia's advantages largely lie in working with its ASEAN neighbors, particularly for its garment sector.

1) Formalizing trade:

Smuggling across the Vietnamese and Thai borders needs to be transitioned into formal trade under the ASEAN or WTO regimes in order for Cambodia to realize its full potential as a trading nation within the region. For example, with the informal exports from Cambodia to the neighboring countries, of which the majority are raw agricultural products, Cambodian farmers or traders often suffer from low bargaining power with prices due to a lack of market information and, as such, prices are often determined by traders from neighboring countries.[70] The formalization of cross-border trade could help reduce such unfair trade situations and increase the farmers' and traders' awareness of the market, which would in turn benefit Cambodia as a whole through an increase in export values as well as an increase in government customs revenues.

67 UNDP Cambodia, Cambodia country Competitiveness: Driving Economic Growth and Poverty Reduction, 2009 January, p.12-13.

68 The GMS was originally established in 1992 with the assistance of the Asian Development Bank (ADB) with the main goal to promote economic cooperation and integration among six GMS countries, including Cambodia, China, Lao PDR, Myanmar, Thailand, and Vietnam.

69 The six GMS countries include Cambodia, China, Lao PDR, Myanmar, Thailand, and Vietnam.

70 EIC, Economic Review Volume 3 No.2, 2006 April-June.

2) Using tariff concessions under ASEAN:

Cambodia, as an LDC, has been granted tariff concessions under several preferential treatment schemes, including the ASEAN Integration System of Preferences (AISP), with more developed ASEAN member countries. However, these preferential treatments have not yet been taken advantage of by Cambodia in order to increase its export within the region.[71] One reason is a lack of awareness of the preferential tariffs in the private sector due to insufficient export promotion efforts by the Government.[72] Another reason is that preferential treatments are not given to all requested products by importing countries and some approved rates are equal to Most Favored Nation (MFN) rates, leaving the Cambodian exporters indifferent between using the MFN status or AISP. Since the application of preferential treatments is beyond the control of individual companies, the Governments of Cambodia is expected to aggressively negotiate on behalf of its private sector with other governments in order to win such preferential treatments.

3) Utilizing the Free Trade Agreements (FTA) through the ASEAN framework to diversify markets[73]:

Taking advantage of the FTA within the ASEAN framework could increase Cambodia's light industry exporters' accessibility to their potential markets outside of ASEAN. Utilizing the member status of the ASEAN-FTA, Cambodia could import materials for garment production from some ASEAN countries like Thailand, Indonesia, and Vietnam, which would in turn make Cambodian garment products more easily comply with the rules of origin requirements under various GSPs. For example, the ASEAN accumulation method of origin under the EU GSP allows Cambodia to import raw materials for the production of garments from the designated ASEAN countries and to export the valued added products to the EU market under the preferential treatment, as long as Cambodia fulfills the required level of value addition within its territory. To recall, currently Cambodia is not able to fully take advantage of the EU GSP as it is largely dependent on the import of fabrics from non-ASEAN nations and therefore cannot meet the requirements of the EU rules of origin. Thus, trade with ASEAN countries could be helpful in allowing Cambodia to realize greater duty-free access to the EU market. Cambodia would also be able to take advantage of opportunities to diversify its markets for garments into countries that have already established an FTA with ASEAN, including Australia/New Zealand, Korea, and Japan. (See below "4" for Japanese case).

4) Utilizing the Agreement on Comprehensive Economic Partnership among Japan and Member States of the ASEAN (AJCEP):

AJCEP was signed in April 2008 by 11 countries in ASEAN and Japan. Under this economic partnership agreement (EPA), 11 countries including Cambodia are to be granted preferential treatment in their exports to Japan. A majority of the exports from Japan to ASEAN would be treated as duty-free. Although AJCEP has not come into effect for Cambodia, this could potentially be utilized in the future to increase trade with Japan, namely, connecting Cambodian industries to the Japanese market. During the implementation of AJCEP, Japanese GSP also remains valid, thus allowing Cambodia to choose the better preferential treatment between the AJCEP and GSP.

71 Ibid.

72 Ibid.

73 EIC, Export Diversification and Value Addition for Human Development, 2007 June, p.98.

(3) Potentials for Development of Coastal Area

As for the development of Cambodia's Coastal area, the above-mentioned regional integration frameworks, including ASEAN and GMS, remain relevant and could be utilized. Particularly, the GMS framework is relevant to the development of Coastal area under the scope of the Southern Economic Corridor (SEC), which aims to facilitate the transnational movement of goods, services, capital, people, and information within the region covered in Figure 4.1.25.[74] Among the three economic corridors[75] of the GMS, all of which aim to intertwine all of the GMS countries physically, spatially, and economically, SEC is the only corridor that geographically covers Cambodia connecting it to Vietnam and Thailand, and, to a limited extent, southern Lao PDR. Coastal area of Cambodia is covered under the coastal sub-corridor[76] of this SEC, which lies between the Thai and Vietnamese borders along the coastline.

The coastal sub-corridor is considered geographically important for both cross-border and oversea trade due to its borders with neighboring countries and its proximity to the deep sea Sihanoukville port. In addition, a number of potential industrial zones and SEZ based in Preah Sihanouk and Koh Kong are located along the coastal sub-corridor where industrial linkages could be established domestically and internationally.[77] Furthermore, the coastal sub-corridor has an important feature in its connection to Thailand's industrial complex - Eastern Seaboard and some industrial zones in Vietnam.[78]

These critical factors imply that the cross-border facilitation and the sub-regional integration through this sub-corridor can provide an opportunity for Cambodia's Coastal area to host an inflow of industries from neighboring countries including supporting industries of the Eastern Seaboard of Thailand. The relocation of industries from Thailand and Vietnam to Coastal area of Cambodia can also be facilitated through effectively promoting preferential treatments under various GSP schemes that Cambodia currently enjoys. It should be noted, however, that the development of the GMS program in Cambodia is still in its infancy and that there remain a number of challenges to overcome including Cambodia's weak institutions and infrastructure (quantity and quality of roads), as already identified in the prior section "Competitiveness of Cambodia". Moreover, industries in Coastal area along the corridor need to be promoted in harmony with the environment as this area is rich with vast natural resources.

[74] The South Economic Corridor encompasses the total length of about 3,500km connecting Cambodia, Thailand, and Vietnam.
[75] Three economic corridors include: North-South Economic Corridor (NSEC), East-West Economic Corridor (EWEC), and Southern Economic Corridor (SEC). Among these corridors, only SEC concerns Cambodia.
[76] The Southern Economic Corridor consists of: northern, central, and coastal sub-corridors, and an inter-corridor link.
[77] EIC, Economic Review, Volume 4, No.1: GMS Program and Its Economic Corridors, 2007 January-March, p.5.
[78] Ibid.

Source: ADB GMS Website[79]

Figure 4.1.25 GMS Southern Economic Corridor

Apart from the industry sector, tourism and agriculture sectors could also be major contributors to Coastal area's economic development. Tourists to Coastal area have been increasing, particularly from neighboring countries such as Vietnam and Thailand, thanks partly to road construction of the coastal sub-corridor completed in May 2008, which links Thailand's Eastern Seaboard provinces and Trat with Koh Kong and Preah Sihanouk in Cambodia, and onward to Nam Can in Vietnam. The GMS strategic framework also articulates tourism as one of its flagship programs, and under its Tourism Sector Strategy, Coastal area covering Cambodia, Thailand, and Vietnam is listed as one of the 13 GMS Priority Tourism Zones.[80] The strategy also lists 29 tourism related projects to be implemented, among which is a project to develop an integrated tourism development plan for Coastal area.[81] This project, known as the "Tourism and Infrastructure Feasibility Study and Development along Coastal Route of the Southern Economic Corridor", is aimed at increasing sub-regional tourism flows from which the relatively poorer coastal provinces in Cambodia will also be able to benefit. However, it should be noted that some challenges need to be overcome in order to achieve this aim, including the creation of local market -tourism linkages (see "3.1.4 Industry" for detail), so that not only the foreign investors in tourism, but also the local population, benefit from such development.

Last but not the least, possessing borders with Thailand and Vietnam and having access to agriculture and fishery resources, the Cambodia's Coastal area has opportunities with the development of its cross-border trade with agriculture, fisheries, and their value-added processed foods, which can be actively facilitated through the GMS Framework. The GMS Strategic Framework for Action on Trade

[79] Retrieved from http://www.adb.org/GMS/Economic-Corridors/map-sec.pdf, 2009 July.
[80] ADB, The Great Mekong Subregion Tourism Sector Strategy, 2005, p.26
[81] ADB, GMS Country Brochure: Cambodia in the Greater Mekong Subregion, 2007 July, retrieved from www.adb.org/GMS/Publications/Cambodia-in-the-GMS.pdf; ADB, The Great Mekong Subregion Tourism Sector Strategy, 2005, p.64.

Facilitation and Investment sets priorities for: (i) customs procedures; (ii) inspection and quarantine measures; (iii) trade logistics; and (iv) the mobility of business people in the GMS. Such measures aimed at smoothing procedures at the GMS borders will help formalize existing cross-border trade for agriculture and fisheries products, which will in turn lead to an increase in government revenues and an enhancement of food safety.

4.1.7 Overview of the OVOP movement

The concept of One Village, One Product has been introduced into Cambodia following successful implementation of the One Village, One Product movement in the 1980s in Oita prefecture, Japan. Consequently the OVOP National Committee was established in Cambodia in June 2006. This movement provides a comprehensive network linking production to the market, helps maintain regional identity, and encourages new initiatives for product diversification. The OVOP National Committee is headed by;

- Chairman: Samdech Prime Minister Hun Sen
- Vice Chairman: H. E. Deputy Prime Minister Sok An
- Secretary General: H.E. Son Koun Thor

The OVOP National Committee has a permanent Secretariat in the Office of the Council of Ministers, which supports the daily OVOP activities and implements the strategies of the OVOP National Committee. The important mission if OVOP is to utilize the OVOP mechanism in expanding the production and in processing local products to meet the demands of domestic and international markets and to serve the tourism sector and to stimulate rural economic growth.

"Samdech Hun Sen OVOP Foundation" was created to mobilize funds for the OVOP from local and international donors, and this foundation is maintained with the Rural Development Bank of Cambodia (RDB). The RDB's main objective is to provide micro-financing and credit and training services in support of agricultural development and economic activities in rural areas with the mission of poverty reduction. At the same time the OVOP Secretariat is working with RDB and the Chamber of Professional and Micro-Enterprises of Cambodia (CPMEC) which was created as a private sector entity under the Royal Decree dated December 28, 2005. The RDB provides limited soft loan to communities and associations for business development services, while the CPMEC assist with most training courses and activities conducted by the OVOP and help the latter to disseminate information and look for business partners abroad for Cambodian handicraft artisans and micro-enterprises. To improve the product quantity and quality and marketing access, the OVOP has closely cooperated with the Ministry of Industry, Mines and Energy, Ministry of Commerce, Ministry of Economy & Finance, Ministry of Agriculture, Forestry & Fisheries, Ministry of Tourism, and Ministry of Culture & Fine Arts. The OVOP movement is in line with the National Rectangular Strategy for Growth, Employment, Equity and Efficiency (July 2004).

Having seen the important role of OVOP movement in relation to poor communities, the 3rd mandate government (2003-2008) has inserted the movement in its rectangular strategy to help alleviate poverty in rural area. The OVOP Secretariat has performed well over the past years in collecting information about most of the important Cambodian products, disseminating marketing information, conducting training courses, and facilitating rural credit bank loan to a number of communities and associations. The 4th mandate government (2008 – 2013) has immediately kept the movement rolling in its second phase rectangular strategy for the sake of strong participation within talented poor communities in the rural areas.

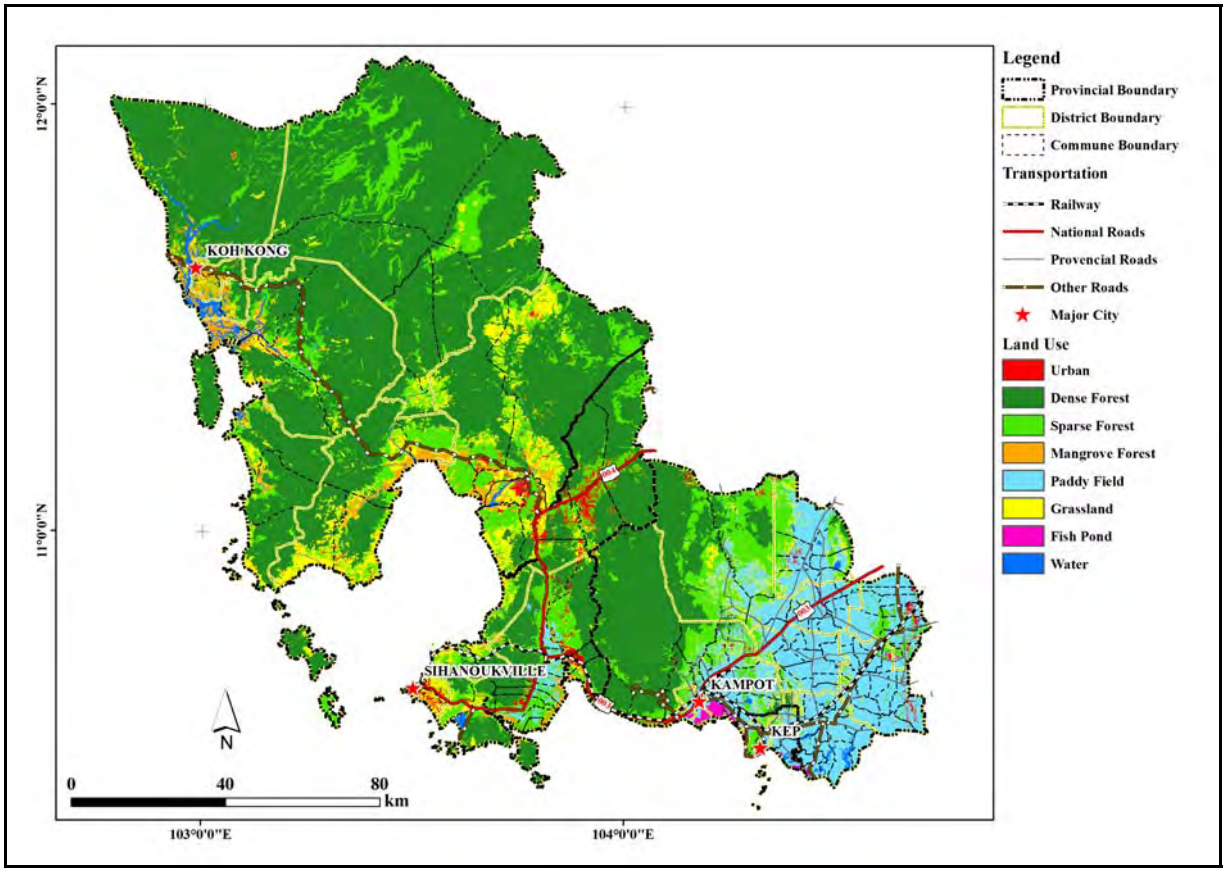
It is more than two years since RGC started to implement the OVOP movement, and it has been expanded to broader fields such as handicrafts, agricultural products, and tourism services. Some products reached the export level with business and trade contracts with China and Korea. The OVOP Action Plan for 2009 was prepared by the OVOP Secretariat, and implemented with support in part from the German Government (gtz) and ASEAN Productivity Organization (APO). The gtz supports the OVOP movement in the form of "One Workshop, One Product (OWOP)" under which a workshop is held once every rwo months from mid 2009 to the end of 2010, and training was carried out with emphasis on value chains, i.e. producers, buyers, consumers, financers, and development partners into one place. On the other hand the OVOP Action Plan for 2009 faces the lack of enough budget, and the access to finance of the OVOP production groups such as micro-enterprises has become critical. The OVOP Secretariat encourages the OVOP movement under private sector initiatives, and expects more competition and diversification in the products and services among the OVOP production groups. It is observed that a new approach would be necessary to develop strategic linkages comprehensively among producer's associations, government (both RGC and local), universities, financial institutions, NGOs and other key stake holders in the private sector.

4.2 Urban Planning

4.2.1 Land Use

(1) Data source and land use classification

To analyze the existing land use condition of the Study area, the land use analysis was conducted. The analysis utilized ASTER VNIR satellite imagery with 15 m spatial resolution, covering the period from 2002 to 2009. The land use map was classified into eight categories: urban, dense forest, sparse forest, mangrove forest, paddy field, grassland, fish pond, and water, as shown in Figure 4.2.1. The detailed description of each class is illustrated in Table 4.2.1.



Source: JICA Study Team

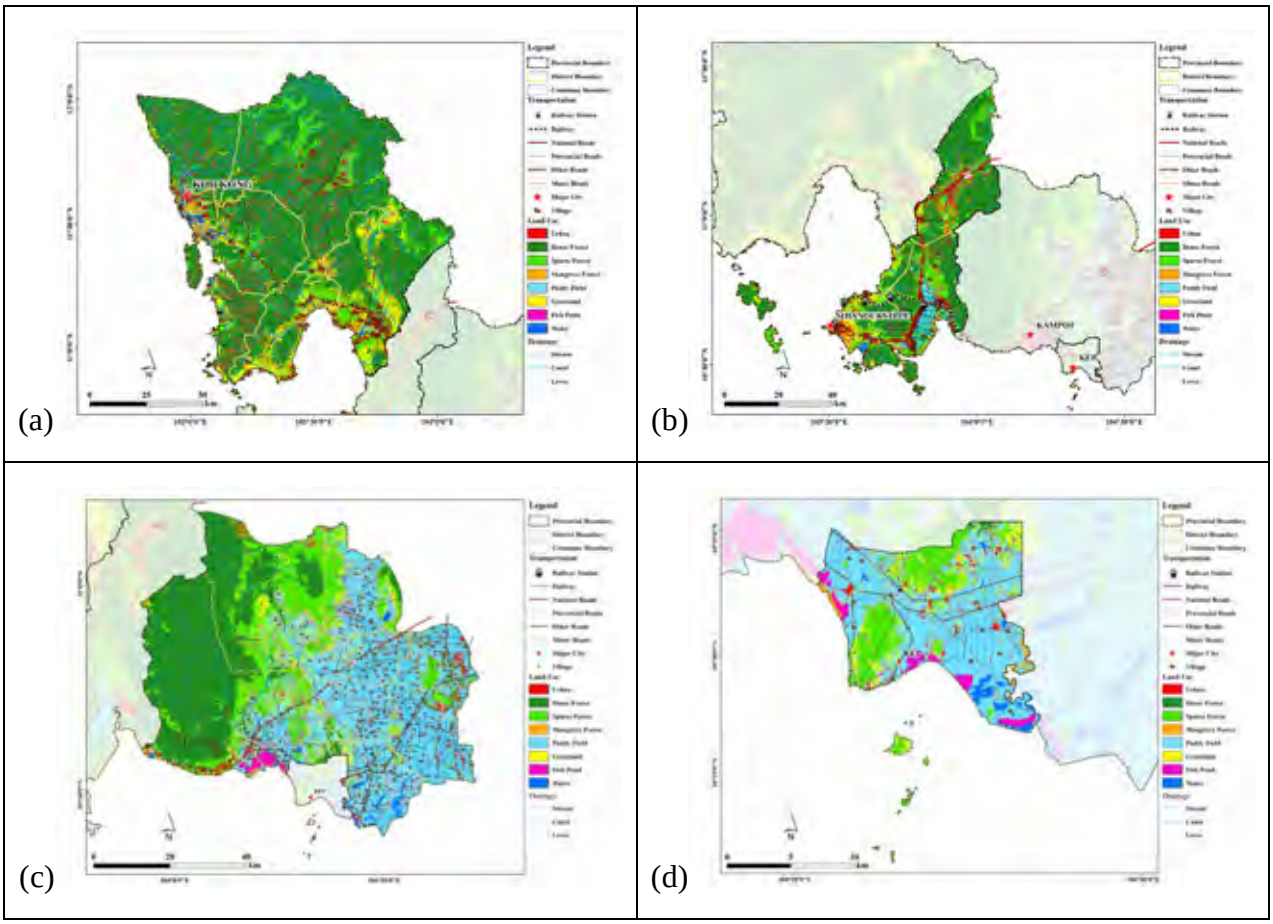
Figure 4.2.1 The Land Use Map of the Study Area

Table 4.2.1 The description of each land use category

Land use Class	Description
Urban	A construction material, e.g. asphalt and concrete, typical commercial and industrial buildings, dams, dikes, residential development (including single/multiple houses), transportation facilities, e.g. highways and local roads
Dense forest	Evergreen broad leafed forest
Sparse forest	Bamboo and secondary forests, deciduous forest, and dry deciduous (open) forest.
Mangrove forest	Mangrove forest, and Degraded mangrove forest
Paddy field	A flooded parcel of arable land used for growing rice and other semi-aquatic crops.
Grassland	A natural plant cover which is potentiality useful as grazing. Grasslands are not usually seeded, fertilized, drained, irrigated, or cultivated.
Fish Pond	Shrimp/Fish farming and Salt pan
Water	All areas of open water, including streams and lakes

Source: JICA Study Team

To assess the land use of each province, the GIS layer of provincial boundary was obtained from MLMUPC. Figure 4.2.2 shows the detailed land uses of the four provinces within the Study area and Table 4.2.2 provides the land area in (ha) of each land use class in each province.



Source: JICA Study Team

Figure 4.2.2 The land use map of (a) Koh Kong Province, (b) Preah Sihanouk Province, (c) Kampot Province, and (d) Kep Province

Table 4.2.2 The land area in (ha) of each land use category in each province

Land Use Class	Koh Kong		Preah Sihanouk		Kampot		Kep	
	Area (ha)	Area (%)	Area (ha)	Area (%)	Area (ha)	Area (%)	Area (ha)	Area (%)
Urban	10,916	1	15,176	6	10,380	2	712	4
Dense Forest	788,740	72	136,133	52	138,843	30	113	1
Sparse Forest	167,223	15	67,697	26	89,175	19	3,155	18
Mangrove Forest	33,386	3	7,372	3	759	0	252	1
Paddy Field	0	0	7,802	3	194,661	41	10,607	60
Grassland	78,943	7	22,569	9	27,334	6	1,520	9
Fish Pond	0	0	11	0	2,707	1	627	4
Water	21,110	2	3,941	2	5,551	1	592	3
Total	**1,100,318**	**100**	**260,701**	**100**	**469,411**	**100**	**17,576**	**100**

Source: JICA Study Team

(2) Analysis of present land use

1) Preah Sihanouk Province

Preah Sihanouk Province is considered a highly urbanized area within the Study area. The urban area covers about 15,000 ha or 6% of the total area of Preah Sihanouk Province, and it is the highest value in all other provinces in this study. Most of the villages are located along the National Routes numbers 3 and 4. Some lands located near these roads are used as paddy fields which cover about 7,800 ha or 3% of the provincial land area. However, the total forest cover in the province is still high and represents 81% of the provincial land area.

2) Kampot Province

Kampot is the second largest Province within the study area, and covers about 469,400 ha. The province is hosting most of the agricultural lands especially paddy fields. The paddy fields represent 194,660 ha or 41% of the total area of Kampot province, there are many villages located in the heart of the paddy fields. The urban area covers only 2% of the provincial land area. The only main road that passes through Kampot City is National Route number 3. Other minor roads are distributed within the whole province. The total forest cover in the province represents 49%; however, mangrove forests are not available within Kampot Province. Some lands used as fish ponds exist along the coastal line of the province and represent only 1% of the provincial land area.

3) Koh Kong Province

Koh Kong Province covers 1,100,318 ha, and it is the largest province within the Study area. About 90% of Koh Kong province is covered by forest land use, of which dense forest is a dominant forest cover. On the other hand, the urban land use represents only 1% of the total area of Koh Kong Province. Most of the villages are located along the National Route number 48, and adjacent to the boundary of Preah Sihanouk Province. Grasslands are distributed in different locations within the province and cover about 79,000 ha or 7% of the Provincial land area.

4) Kep Province

Kep is the smallest Province within the study area, which covers about 17,580 ha. The majority of the lands within the province are used as paddy fields, which represent about

10,600 ha or 60% of the total area of Kep province. The urban area represents 4% of the provincial land area. The total forest cover in the province is about 20%, of which sparse forest is the main forest cover. The fish ponds along the coast cover about 630 ha or 4% of the provincial land area.

4.2.2 Living Environment

(1) Overview

The issue of the urban poor is a persistent problem in the towns and cities in the coastal provinces. The problem of the urban poor comprises bad living environment, including low quality building materials, unstable building structure such as tilting pillars, congested living quarters with plural families per housing unit, unsanitary conditions around houses without toilets and lack of garbage collection, low income, unemployment, deteriorated infrastructure such as muddy path and deteriorated pathways over the water.

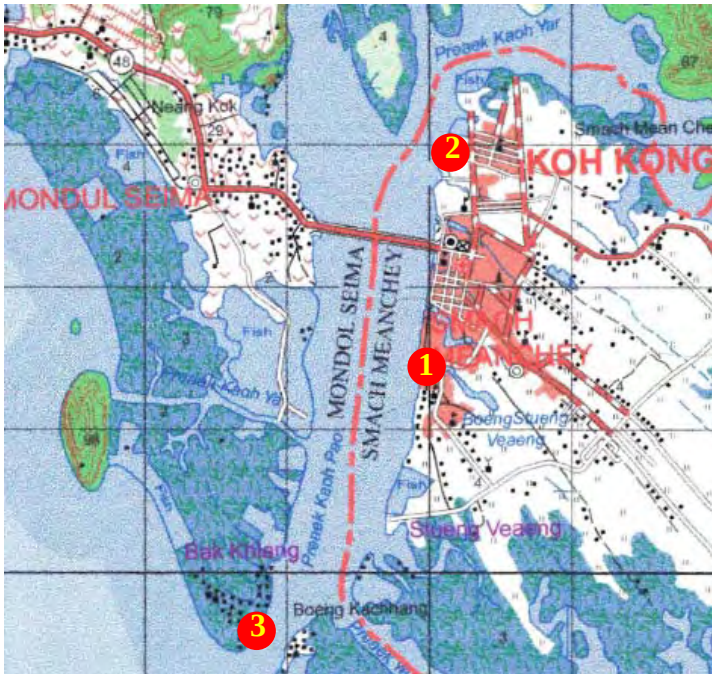
It often happens that some or all of the urban poor area needs to be resettled due to a development project of a public purpose, such as road, port development and others. In such case, some urban poor areas have higher possibility to be resettled in future. Where there is no such plan, some areas have low possibility to be resettled, but the government may have a development plan in future. The urban area's resettlement needs have to be assessed in light of the relevant development projects in preparation. Plus, urban poor areas tend to expand and be newly formed little by little. This subsection outlines the living environment in urban areas of the target provinces of the Study, and discusses the issues and problems to improve the living environment.

(2) Living Environment in Urban Poor Areas

All the coastal provinces, Koh Kong, Preah Sihanouk, Kampot, and Kep, have areas inhabited by the poor within the urban areas. Most of the poor areas tend to be located on the river banks, along the coast, and along railroad tracks. Inland urban poor settlement areas are also found in Preah Sihanouk and Kep. This section provides an overview of the living environment of the urban areas in each target province.

1) Koh Kong Province

There are three urban poor areas in Koh Kong Province, two of which are in the City of Chemmarak Phummen and one in Koh Kong district. They are located along the Prek Kaoh Pao river, which flows from north to south and divides the area into the City of Chemmarak Phummen located on the east bank of the river and Koh Kong district located on the west bank. Most of the poor residents of the area came from other provinces such as Kampot, Takeo, Prey Veng, and Svay Rieng, seeking better lives. Most of their livelihood is in fishing. Living environment of the poor area in Koh Kong district is a little better than that of any other poor areas in the City of Chemmarak Phummen. Some wooden paths on the water have been replaced with concrete slabs with a help of the commune fund in Koh Kong district. The distance to the commune market is about 500 m for the most remote part of the poor area, so the access to the market is considered to be fairly good. The infrastructure in the urban poor areas in the City of Chemmarak Phummen is generally less developed.



Source: JICA Study Team

Figure 4.2.3 Distribution of Urban Poor Areas in Koh Kong Province

Table 4.2.3 Profile of Each Urban Poor Area

No.	1	2	3
Village and Commune	Village 4 , Sangkat Doug Tung	Phum No.1, Sangkat Smach Meanchy	Pak Chlorng Commune
Number of Household	100 HH	100 HH	150 HH
Jobs	fishing	fishing	fishing
Year of Living	20 years	20 years	20 years
Origin	Other provinces	other provinces	other provinces
Access	market:1 km school: 1 km health center: 1 km	market: 4km school: 2km health center: 4km	market: 0.5 km school: 0.5 km health center: 0.5 km
Infrastructure	water: dig well electricity: supplied toilet: no	water: dig well electricity: supplied toilet: no	water: supplied electricity: supplied toilet: no
NGO support	No	No	No
CBO	No	No	No
Issue	land title	Road (small path)	land title
Possibility of Resettlement	Low	Medium	Low
Remarks	Majority of the residents are Muslim.	The government used to have park development plan.	Concrete path on the water is improved through commune fund

Source: JICA Study Team

2) Preah Sihanouk Province

Urban poor areas in Preah Sihanouk province are scattered in two districts and one city. Among them, number of urban poor area in the City of Preah Sihanouk is the largest and the city has five urban poor areas. The outline of urban poor areas in the province is addressed here, and the details are mentioned in Chapter 2.2.5 of Book II.

City of Preah Sihanouk

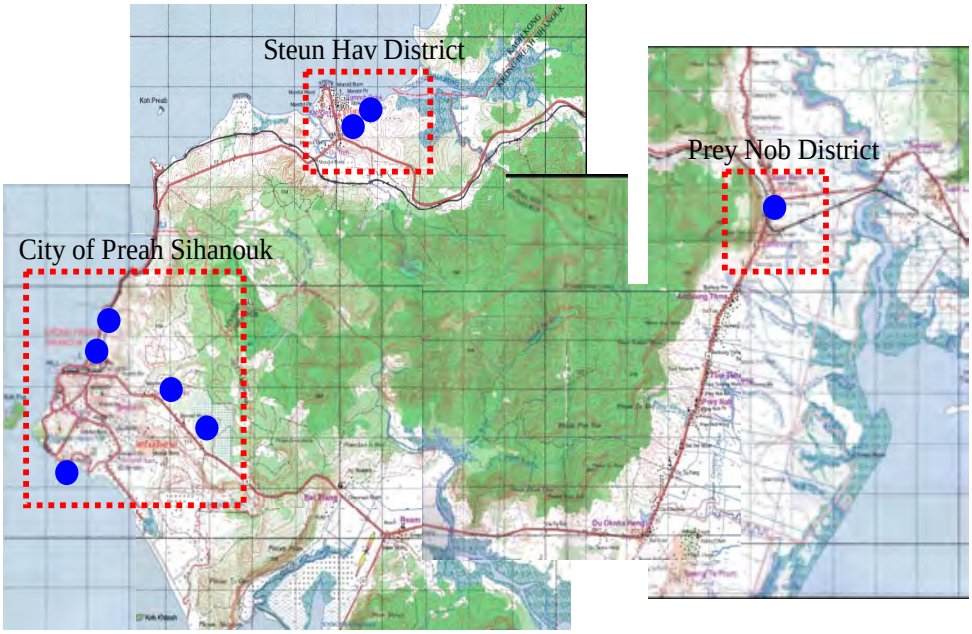
There are five urban poor areas in the city of Preah Sihanouk. Of the five in the city, three areas are located along the coastal line, and two areas are located inland. The inland areas have been formed less than five years ago and are relatively new compared with the one along Coastal area. Unless the government takes any controls, such inland poor areas may increase in near future as the economy grows and the population of the city increases accordingly. The urban poor areas along the coastal line will be affected by port expansion in future.

Steung Hav District

There are two urban poor areas in Steung Hav district. Most of the residents in these areas used to live in the port area of Sihanouk. The government resettled them to Steung Hav district about 30 years ago. Village No.3 of Tumnob Rolok Commune is located somewhat inland, and Village No.1 of the commune is located along Coastal area. Sea water in the urban poor area of Village No. 1 is very much polluted because of no toilet and uncontrolled littering.

Prey Nob District

There is only one urban poor area in Prey Nob District. The area is located near the market and along the railroad track. The government does not have any development plan in the area at this stage, but set back of some houses will be necessary for securing ROW when rehabilitation of the railroad is realized.



Source: JICA Study Team

Figure 4.2.4 Profile of Each Urban Poor Area in City of Sihanouk

Table 4.2.4 Profile of Each Urban Poor Area in City of Sihanouk

District	City of Preah Sihanouk	Steung Hav	Prey Nob
Communes	Sangkat Muoy Sangkat Bai		
Number of Urban Poor Area	5	2	1
Number of Household	990 HH	370 HH	100 HH
Jobs	fishing, construction, motor taxi driver, etc.	fishing	Vender, farmer
Year of Living	2-25 years	30 years	30 years
Origin	city of Preah Sihanouk and other provinces	city of Preah Sihanouk and other provinces	other provinces
Access	market: 0.5-4.0km school: 0.5-2.0km health center: 0.5-3.5 km	market: 0.2-1.0km school: 0.2-1.0 km health center: 1.0 km	market: 0.5km school: 0.5km health center: 0.5 km
Infrastructure	water: supplied electricity: supplied toilet: no	water: supplied electricity: supplied toilet: no	water: supplied electricity: supplied toilet: no
NGO support	RHAC (health care) Malob Tapang (child care)	three NGOs	RHAC (health care for poor)
CBO	one for fisheries	one for fisheries	one for water resources management
Issue	- land title - unemployment - micro-finance - toilet	- land title - micro-finance - low catch of fish	food
Possibility of Resettlement	Low-High	Low	Low

Source: JICA Study Team

3) Kampot Province

The location of urban poor area in Kampot is along the Kampot River. The government has a development plan for a park in the area which may involve some resettlement and compensation in the course of development. The residents in this area are concerned about the future life and hope that they can obtain sufficient compensation to continue living, if the government decides on the resettlement.

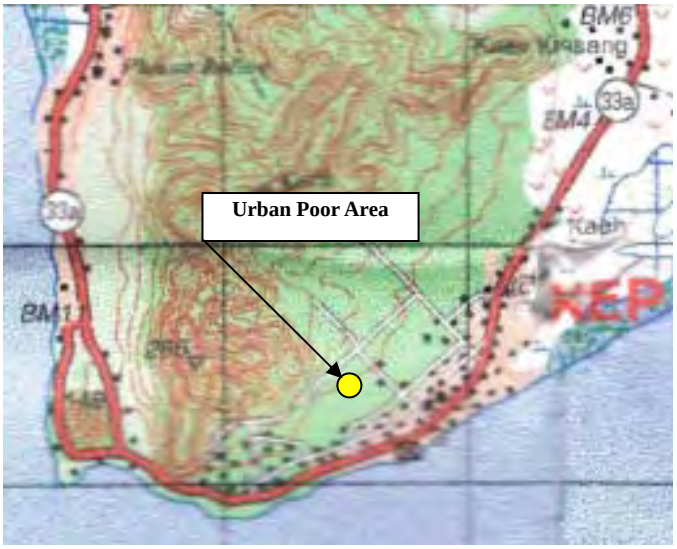
Source: JICA Study Team

Village and Commune	Andong Khmer Sagkat
Number of Household	50HH
Jobs	Construction worker
Year of Living	20 years
Origin	Other districts of Kampot
Access	market: 1km school: 1km health center: 0.7 km
Infrastructure	water: supplied electricity: supplied toilet: no
NGO support	No
CBO	No
Issue	Resettlement
Possibility of Resettlement	High
Remarks	The government has park development plan in the area.

Figure 4.2.5 Distribution and Profile of Urban Poor Area in Kampot

4) Kep Province

An urban poor area exists in Kep, and it is located behind the compound of Provincial Department of Land Management, Urban Planning, and Construction. The residents in the area were resettled from a seaside village. The government constructed a park on the village, so the government requested the residents to move to the current location in 2006. Now the government is planning to construct a road in the urban poor area. The residents thus have possibility to be resettled again.



Village and Commune	Phum Kep, Sangkat Kep
Number of Household	40HH
Jobs	construction, crapping
Year of Living	3 years
Origin	Kep
Access	Market: 0.5km school: 3km health center: 1 km
Infrastructure	Water: 3 open wells electricity: supplied toilet: no
NGO support	CIH for health
CBO	No
Issue	Resettlement
Possibility of Resettlement	High
Remarks	The residents have experience of resettlement once 3 years ago.

Source: JICA Study Team

Figure 4.2.6 Distribution and Profile of Urban Poor Area in Kep

(3) Features of Urban Poor Areas in Coastal Cities

Most of the urban poor areas in the coastal cities have the following features in common, including both the positive and negative aspects. Good aspects should be enhanced and bad aspects should be eradicated in the course of improvement in living environment.

1) Positive aspects

- Due to compulsory education more than 80% of the children in urban poor areas go to primary school.
- Water and electricity are supplied in some urban poor areas. The charges for water and electricity in each poor area vary.
- Access to market, school, health center from most of the urban poor areas is fairly good. Majority of the urban poor areas have access to these services within one kilometer.
- NGO supports in childcare and health care are carried out in some urban poor areas. NGOs active in Coastal area are tend to focuses on the childcare and health care.

2) Negative aspects

- Most of the urban poor areas are located on banks of the rivers and the sea coast. Most of the residences do not have toilets, and excreta are discharged directly to open water body such as the river and sea. They also often throw trashes in the water areas. It leads to water pollution and unsanitary conditions of the areas.
- Most of the residents are willing to continue living in the same area. The residents are anxious about resettlement where the government has resettlement plans. They are afraid of possible changes in daily life and loss of income opportunities.
- The types of jobs in urban poor areas are not diversified. Fishing is a major job of the residents at Coastal area. Many of the residents in inland urban poor areas are engaged in construction works.
- NGO support in strengthening community organization and microfinance was not observed. Community based organizations have not been established in most of the urban poor areas. Access to a soft-loan is limited and the residents generally rely on moneylenders for immediate financial needs..

(4) Issues and Problems

In regard to the urban poor in Coastal area, it is important to address the following issues including prevention of expanding poor areas, on-site improvement, and mutual understanding for resettlement and compensation in the development strategy of Coastal area as well as the City of Preah Sihanouk. The situation of living environment differs with one to another. Prevention of expanding poor areas is one of a serious hindrance factor for the sound urban growth of the parent city. On-site improvement is basically gradual improvement in the living environment, which is effective in areas where the possibility of future resettlement by the government is low. Mutual understanding between the government and the communities is the key to lead to a successful environmental improvement as well as in case of resettlement and compensation.

The issues hampering to solve these problems are mentioned hereunder.

1) Issue: prevention of growing poor area

Inadequate rural development

The origin of the residents of urban poor areas is not nearby cities. Most of them came from other provinces, because of low productivity of agriculture in those provinces. It is important to promote rural development such as increasing productivity and improving access to market, school, and health center in other provinces. It will be one of the solutions to prevent population influx from rural areas.

Lack of land use control by local administration

Often the local government does not control newly arising poor areas being settled by outsiders, especially in the City of Preah Sihanouk. That land use plan for the city has not been authorized yet may be one of the reasons for the lack of land use control. Village offices, which are the bottom level of governmental bodies, cannot control arising new poor areas without legal evidences.

2) On-site improvement

Lack of community activities

The poor areas hardly have community based organizations. A few areas have a community based organization, but it is for specific purposes such as fisheries, and water resources management. There are no community based organizations to tackle a variety of problems in the communities collectively. As such, any community activities committed with community initiatives have seldom been observed in the urban poor areas of Coastal area.

Lack of channel to local governments and NGOs in community

Local governments have few plans to improve the urban poor areas. The support from NGOs is limited to health and education sectors. Most of the communities do not have channels to seek support from others.

Lack of public awareness for better living environment

The poor communities have little awareness for cleaning the communities, so both liquid and solid waste are often scattered in the community. Moreover, it leads to unsanitary conditions and illness of residents such as diarrhea.

3) Mutual understanding in case of resettlement

Inadequate accountability

The resettlement plan is often not well known among the residents, especially the administrative services to be provided in the planned site is sometimes not clear. It will lead to a misunderstanding by the residents and tend to make the residents more nervous.

Low community participation

Where there is a need of resettlement, the government may formulate resettlement plans without community participation in the process of planning. It leads to mismatch to the needs of community and may fail to provide a living environment that the residents will accept.

Lack of objective criteria for compensation

The government does not have a national resettlement policy and nor a law on expropriation in Cambodia. Non-formalized procedures have been used in the resettlement process and there are variations in each resettlement carried out, even when the resettlement is caused by the projects that the same donor funded.

(5) Lessons Learnt from Other Programs/Projects

Urban poor areas exist in many cities of the world. Abundant experiences to improve urban poor areas are accumulated in Thailand and in the Philippines. At first, when there was need for resettlement, the Thai and Philippine governments attempted to evict residents and clear the urban poor area entirely. However, such an attempt was in vain at the end, because the residents returned and settled again. Now the community developments in urban poor areas of Thailand and the Philippines shift to focus on the on-site improvement. There are also similar experiences of community development in urban poor areas in Phnom Penh. The experience in Phnom Penh will

also provide a good hint for living environment improvement in the Study, because Coastal area has the same social and economical background with Phnom Penh.

1) Thailand

There are more than 2,000 urban poor areas in Thailand, and about 1,800 urban poor areas are located in Bangkok, the capital of Thailand. Now Community Organization Development Institute (CODI), a government organization under Ministry of Social Development and Human Security, works on community development in both urban and rural poor areas. CODI was established in the year of 2000 by integrating the Urban Community Development Office (UCDO) under the National Housing Authority and the Office of the Rural Development Fund. CODI is a governmental organization, but it has the board of directors. The member of the board consists of not only government officials but also community leaders and NGO representatives.

CODI supports community activities including housing construction, land acquisition, land lease acquisition, through a micro-credit scheme. The saving groups and community organizations, registered as community network organizations to CODI, are eligible for the support by CODI. CODI also provides information and know-how on community development and encourages communities to participate vocational trainings.

CODI had mainly engaged in Baan Mankong Program to improve slum communities and develop housing in 200 cities in the country with a subsidy of around $240 million from the government budget, from January 2003 to March 2008.

The successful experience of CODI was due mainly to intimate the collaboration among the government, NGOs, and residents. It also succeeds in enhancing and promoting self-help efforts by communities.

2) The Philippines

The living environment improvement in urban poor areas in the Philippines has been carried out through Community Mortgage Program (CMP), which was started in 1989. The government provides loans for land acquisition, water and drainage improvement, housing construction, etc. The annual interest rate is 6% which is lower than the market rate of interest in the Philippines. The local government, National Housing Authority, and NGO support establishing community based organizations and assist application for the loans.

At first, the government loans had been designed not for individual but for community based organizations only for land acquisition and living environment improvement including water supply and drainage. For the first two years, land titles were given to community based organizations, and they took full responsibility for the repayment of the loans.

Land titles were given to individuals and the loan for housing construction became available after two-year repayment. Individuals resumed responsibility for the repayment. The actual repayment rate of CMP was about 80%. The community based organizations were involved in all stages of the program from the planning to monitoring and evaluation.

CMP is a good example of micro-finance scheme for the urban poor. The government lender can judge repayment ability of the community and the residents for two years. CMP also has worked as a tool to strengthen the capacity of community based organization.

3) Cambodia (Phnom Penh)

About 570 urban poor areas exist in Phnom Penh as of 2003. In early 1990s the Municipality of Phnom Penh evicted the residents of urban poor areas, but the residents soon returned and settled again near the original settlement area.

In 1994, Solidarity for Urban Poor Federation (SUPF) was established to support community development with community residents. Asia Coalition of Housing Rights (ACHR), an international NGO, supported to establish SUPF. SUPF plays a vital role to construct community networks consisting of a number of community based organizations.

Urban Poor Development Fund (UPDF) was established in 1998 with the collaborate efforts of Municipality of Phnom Penh, SUPF, and ACHR. UPDF creates a revolving fund to provide an affordable credit for housing and settlement improvement to the poor communities. At the same time it develops an institutional mechanism to promote change in the development process of the city.

After that, mainly the on-site improvements in urban poor areas have been executed rather than resettlement. However, after 2005, about 1,500 households in Dey Krahom Community near the city center of Phnom Penh have been resettled to Dangkao district. A private developer prepared the resettlement area at the district, which is about 20 km away from the city center of Phnom Penh. Some resettled residents still has not received the compensation and land. The resettlement area is far from the city center of Phnom Penh, so some residents are forced to commute and shoulder high transportation cost.

UPDF implements activities to expand UPDF experience of Phnom Penh to other cities in Cambodia including Coastal cities. Within 2009, both UPDF and National Committee for Population and Development under Council Minister will sign minutes of understanding for the expansion of supporting activities to urban poor areas in other cities. It is expected that the collaboration between local governments and UPDF is strengthened little by little after signing MOU.

Under the UPDF scheme, establishing of community based organization and saving groups are the first step to assist the activities such as providing soft loan and upgrading of infrastructure and housings. In the process of establishing community based organization and saving groups, CDF (Community Development Found) members, who are volunteer having experiences of the similar activities in Phnom Penh, play an important role to assist the urban poor areas in other provinces.

Some lessons are extracted from the experiences from other programs/projects. The followings are worth addressing for improvement of living environment in urban poor areas of Coastal area

- Establishment of community organization is critical to get support from the government and NGOs to improve the living environment in urban poor areas.
- The collaborative efforts among the government, NGOs, and the community based organization have worked successfully in improving the living environment of urban poor areas.
- Introducing a micro-credit scheme to the urban poor made a change to the way to improve the living environment with the commitment by the community based organization.
- Resettled residents have possibility to return to the original settlement areas, if the resettlement site is far from the original settlement area.

- The life of the poor gets worse after resettlement, if mutual understanding between residents and developers is not formed regarding resettlement plan and compensation.
- Ten-year UPDF's experiences show that establishment of community based organization is fundamental to improve living environment of urban poor areas.

4.2.3 Major Development Projects Overview

Overview of investment projects in Coastal area are summarized in Section 4.1.5 from financial point of view. In this section, these are summarized in spatial and urban planning point of view.

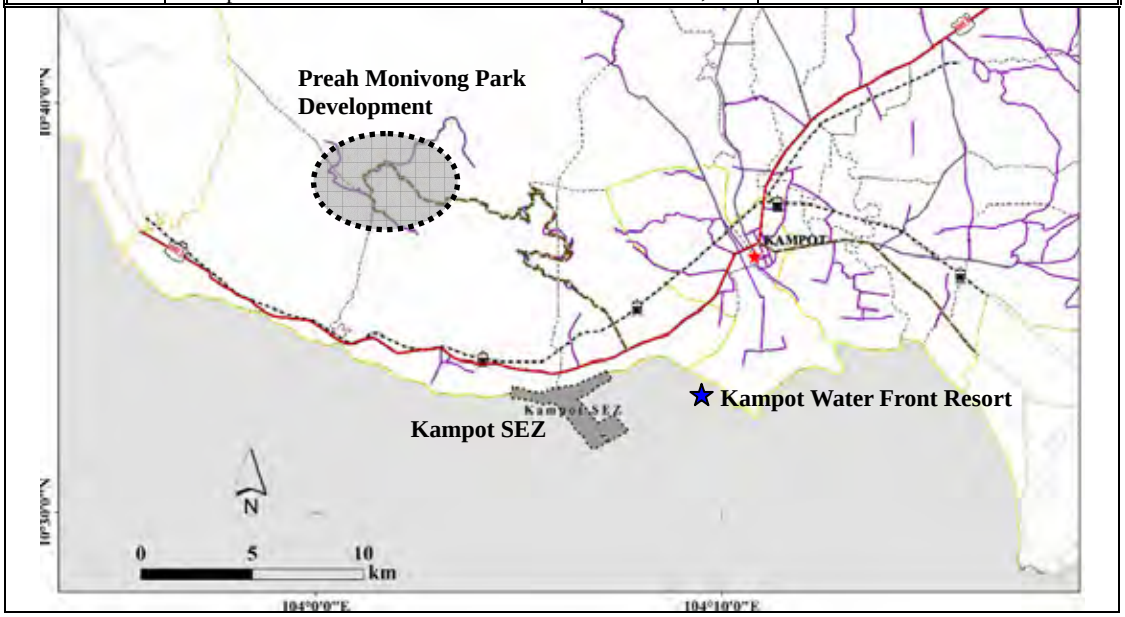
The total land size of SEZ concession projects in Coastal area listed in section 4.1.5 is 4,894.74ha. A gigantic investment project of 36,000ha has already been approved in the natural park in Koh Kong Province. Although there is an uncertainty for inducing enterprises, some of the land has been developed already. Therefore, the sediment discharge by the land reclamation has contaminated the coastal environment.

(1) Kampot Province

In Kampot, one SEZ project is approved which planned 19m depth container terminal port. The biggest investment project in this province is "Preah Monivong Park Development (Bokor)" which located on the top of Bokor Mountain National Park.

Table 4.2.5 Some of Investment Projects in Kampot Province

Type	Project name	Land area (ha)	Investor
SEZ	Kampot SEZ	92.7	Kampot SEZ
QIP	Preah Monivong Park Development (Bokor)	N.A.	Sokha Hotel
	Kampot Water Front Resort	1,000	MARIO Shonan Marine Co. Ltd



Source: JICA Study Team

Figure 4.2.7 Location of Investment Projects

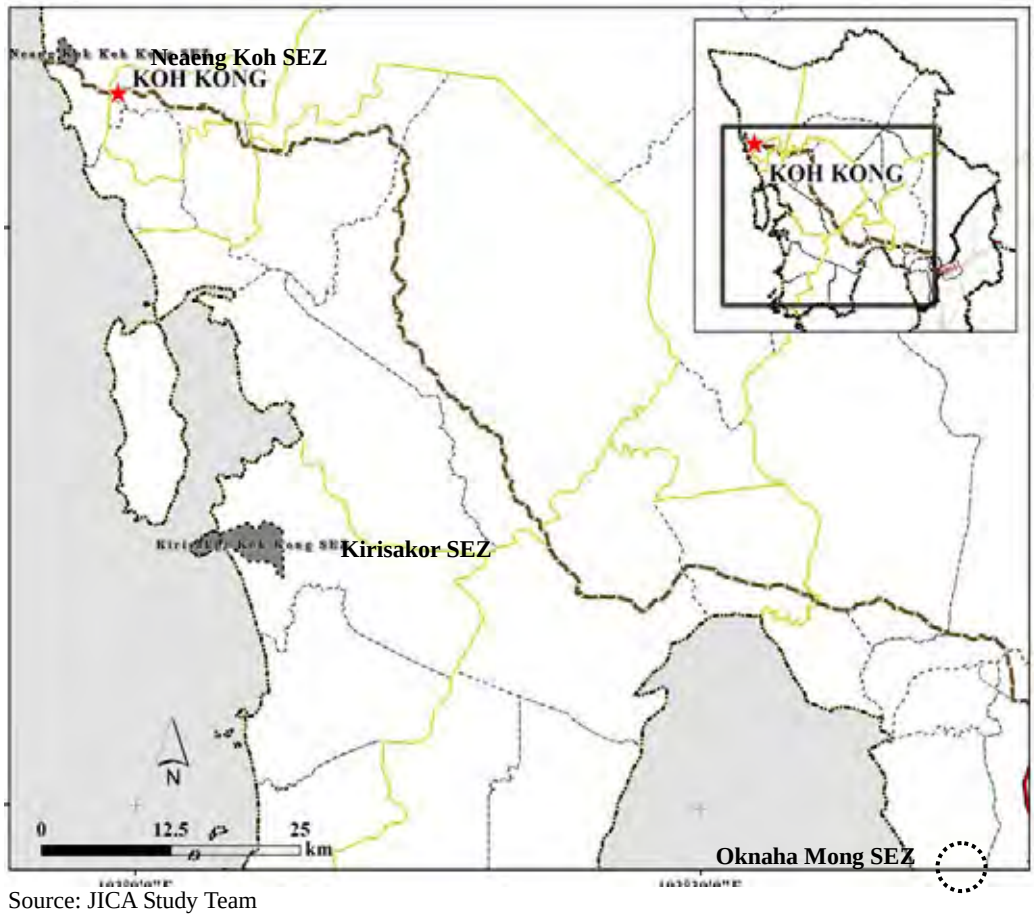
(2) Koh Kong Province

In Koh Kong Province, significant size of qualified investment project (QIP) "Kirisakor Seaside Tourism Holiday Zone Project" obtained a license for investment with total area of the project is 360km^2. This project is planned in Botum Sakor National Park which to be conserved.

There are four (4) SEZ projects with total area of 2,766ha.

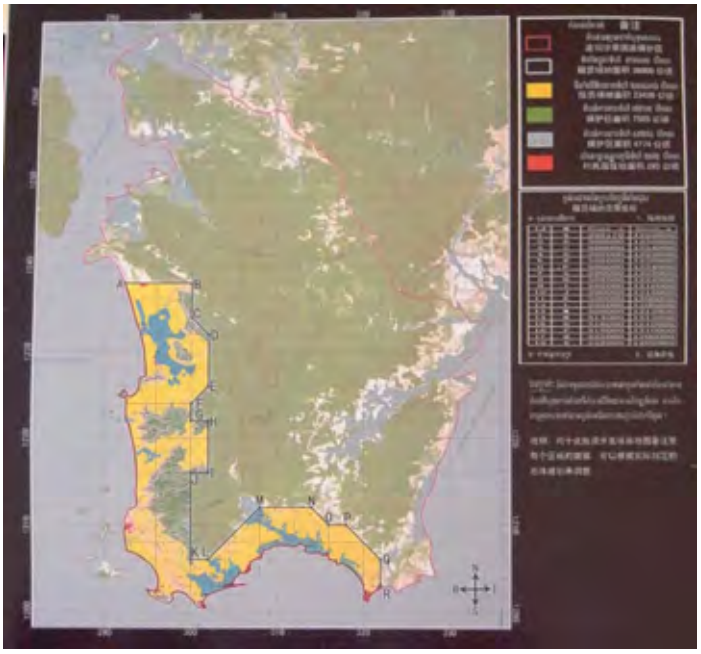
Table 4.2.6 Some of Investment Projects in Koh Kong Province

Type	Project name	Land area (ha)	Investor
SEZ	Neang Kok Koh Kong SEZ	335.43	Koh Kong SEZ Co.,Ltd
	Suoy Chheng SEZ	100	Suoy Chheng Investment Co., Ltd.
	Oknaha Mong SEZ	100	Oknha Mong Port Co.,Ltd
	Kirisakor SEZ	2,200.65	Koh Kong SEZ Co.,Ltd
QIP	Kirisakor Seaside Tourism Holiday Zone	36,000	Union Development Group



Source: JICA Study Team

Figure 4.2.8 Location of Investment Projects



Source: JICA Study Team

Figure 4.2.9 Location of QIP invested by Chinese Company

(3) Preah Sihanouk Province

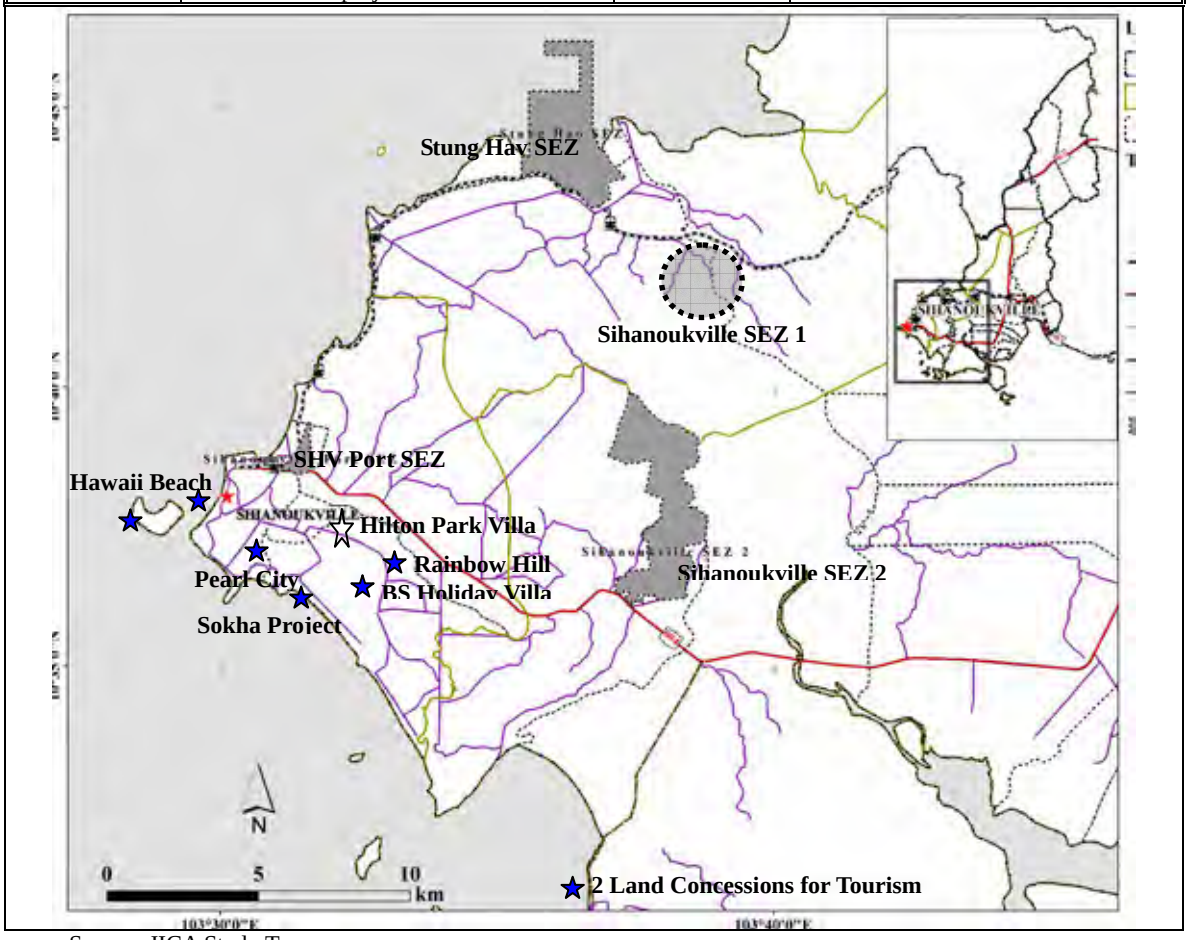
In Preah Sihanouk Province, seven SEZ projects with total area of 2,065.96ha were approved. Sihanoukville SEZ 2 and Stung Hav SEZ have already started construction work on the site.

The Pearl City project with more than 60 ha (exact area is not known at this moment) is a major development in Sihanouk city center, which is located at the west end of Sangkat Buon Commune (north of Sokha Beach Resort & Hotel). There are other on-going residential complex and/or residential compound development project in Mittakpheap district, such as Hawaii Beach Development, BS Holiday Villa & Condominium, Hilton Park Villa and so forth.

Island resort development projects have significant impact to natural environment in this Province. A Russian company's project started construction of a connection bridge to Snake Island. This changes the natural landscape of Hawaii Beach. Some image sketch of other island resort development show fatal damage of natural environment and landscape of island.

Table 4.2.7 Investment Projects in Sihanouk Province

Type	Project name	Land area (ha)	Investor
SEZ	Sihanoukville SEZ 1	178	Cambodia International Investment Development Group Co., Ltd.
	S.N.C SEZ	150	SNC Lavilin (Cambodia) Holding
	Stung Hav SEZ	192	Attwood Investment Group
	Sihanoukville SEZ 2	1,113.96	Sihanoukville Special Economic Zone Co.,Ltd
	Sihanoukville Port SEZ	70	Sihanoukville Port Authority
	Kampong Saom SEZ (Stung Hav)	255	Cambodia Catering & Supply Co.,Ltd
	Pacific SEZ	107	Pacific (SEZ) Investment Co.,Ltd
QIP	Hawaii Beach Development	N.A.	EMARIO Shonan Marine Co. Ltd
	Hawaii Beach Sihanoukville	N.A.	Koh Pous (Cambodia) Investment Group
	Pearl City	N.A.	Thai Boon Roong Co.,Ltd (under control of Oknha Khov Samath)
	BS Holiday Villa & Condominium	N.A. (300 Units)	BS Group Cambodia
	Hilton Park Villa	14 (372 Units)	Hilton Park Villa
	Sokha Project (former Ariston project)	N.A.	Sokha Group
	Rainbow Hills project	15	EMARIO Shonan Marine Co. Ltd



Source: JICA Study Team

4.3 Infrastructure

4.3.1 Overview

The issues in the infrastructure are able to be summarized as follows.

- Road

Deficiency of an alternative route in road network and cross border facility with enough function, and

Lack of the road management and maintenance system.

- Railway

No provision of the ICD in Phnom Penh city, the railway freight terminal in Sihanoukville Port, a signaling system, level crossing, and deteriorated rails.

- Port

Poor connectivity between port and transport infrastructure as a logistics.

- Water Supply

Poor water supply network and old facilities not satisfying the demand.

- Sewerage/Drainage

Small scale of sewerage and drainage system.

- Solid Waste Management

Lack of sanitary landfill site and composing plant including operational equipments.

The detail of issues is described in sub-clause of sub-sector.

4.3.2 Road and Railway

(1) Road Network

The road network must function as a lifeline to connect with neighboring countries and greatly contribute to the transport sector in Cambodia. However, the road network has deteriorated due to exposure to severe natural condition, destruction by civil war and lack of maintenance. Besides, there are a few issues for establishing an efficient road network in the Study area, 1) Delay of road rehabilitation, 2) Increase of traffic accidents, 3) Road situation mixed between heavy vehicles and light vehicles, 4) Lack of periodical road maintenance, and 5) Cross border barrier. The issues are described in detail as follows.

1) Delay of road rehabilitation

Investments to the national road development in Cambodia have amounted to more than USD 700 million covering more than 2,200 km from mid-1990s to the present. Donors or funding

agencies which contributed to improvement of road network in Cambodia include United States, Japan, China, Korea, Thailand, Vietnam, Australia, Asian Development Bank (ADB) and World Bank (WB). A few rehabilitation projects have been implemented and planned to stimulate industry and tourism in the Coastal area. But the progress of the rehabilitation projects has been delayed comparing with the schedule. Especially, the rehabilitation of a part of NR3, NR31 and NR33 has been delayed and the road surface has been deteriorated. At last, they have been commenced from this year and will be completed in 2011. The rehabilitation projects have been implemented and planned in the Study area as follows.

Table 4.3.1 Rehabilitation Projects for the Southern Coastal Corridor

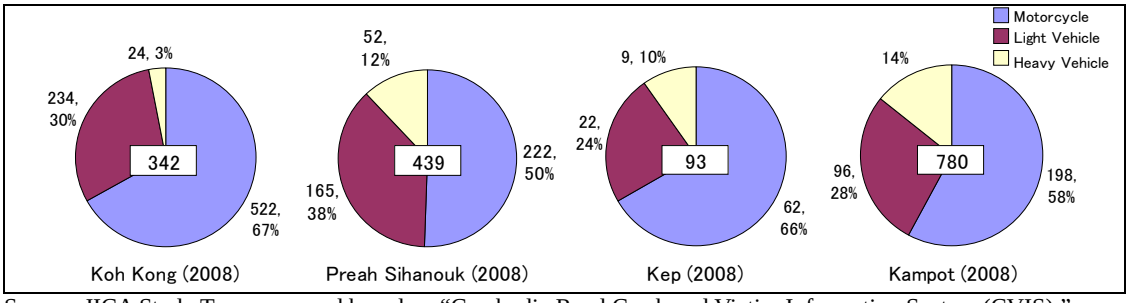
No.	Route Description	Cost (USD million)	Financial Source	Status
1	NR. 48 (Koh Kong – NR. 4) : 151.3 km	21.69	Thailand Loan	Completed (in 2008)
2	NR. 48 (4 major bridges), Total Length of Bridges: 1,560 m	8.24	Thailand Grant	Completed (in 2008)
3	NR. 3 (Veal Rinh – Trapeang Ropov) : 32.5 km	6.50	World Bank	Completed (in 2004)
4	NR. 3 (Trapang Ropov – Kampot) : 33.0 km	21.30	Korean Loan	Completed (in 2007)
5	NR. 3 (Kampot – Chaom Chau) : 137.5 km	41.88	Korean Loan	Planned to complete in 2011
6	NR. 31 (Thnol Bek Kus－Kompong Trach), NR. 33 (Kompong Trach－Kampot) and Kampot City Detour (Kanthor－Ton Hon) : 97.0 km	30	Korean Loan	Planned to complete in 2012
7	NR. 33 (Kompong Trach – Lok : 16.0 km and Cross Border Facilities (Koh Kong (Cham Yeam) and Lok (Prek Chak)	18.7	Asian Development Bank	Planned to complete in 2012

Source: JICA Study Team, Kingdom of Cambodia Ministry of Public Works and Transport and Overview on Transport Infrastructure Sectors in the Kingdom of Cambodia

The site survey conducted on 2009 revealed that NR48 which had been improved by the support of Thailand on 2007 has been deteriorated and stable traveling is impossible especially in rainy season, even though the routine and periodical maintenance are currently in progress.

2) Increase of traffic accidents

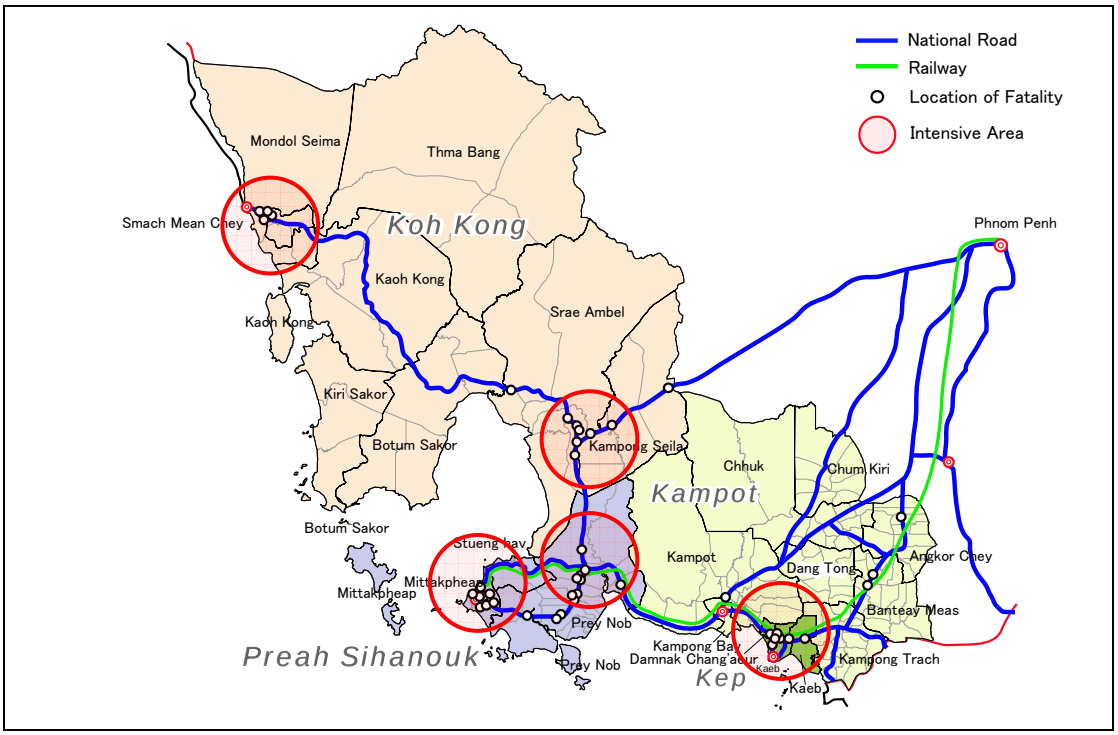
Traffic accidents are a major cause of death, injury and disability in Cambodia. The number of traffic accidents has increased by 150% over the last 5 years. Similarly, the population and the number of registered motorized vehicles have increased respectively by 6% and by 132%. That is traffic accidents increased more proportionally than population and the number of vehicles. In the study area, 61% of all traffic accidents resulted in slight injuries in 2008, followed by serious injuries which respectively accounted for 30% and fatalities at 10% on average. The severity of traffic accidents occurred in the study area is as follows.



Source: JICA Study Team prepared based on "Cambodia Road Crash and Victim Information System (CVIS):".

Figure 4.3.1 Severity of Traffic Accidents in the Study Area

Causes of traffic accidents were occurred by human error which accounted for 98% of the causes. More than 50% of fatalities were due to speeding, followed by alcohol abuse at 18%. About 35% of fatalities were due to a collision between motorcycle and 4-wheele vehicle and other 19% in motorcycle-motorcycle collision. The location where fatalities were resulted from traffic accidents in the study area is shown below.



Source: JICA Study Team prepared based on "Cambodia Road Crash and Victim Information System (CVIS):".

Figure 4.3.2 Fatalities of Traffic Accidents in the Study Area (2008)

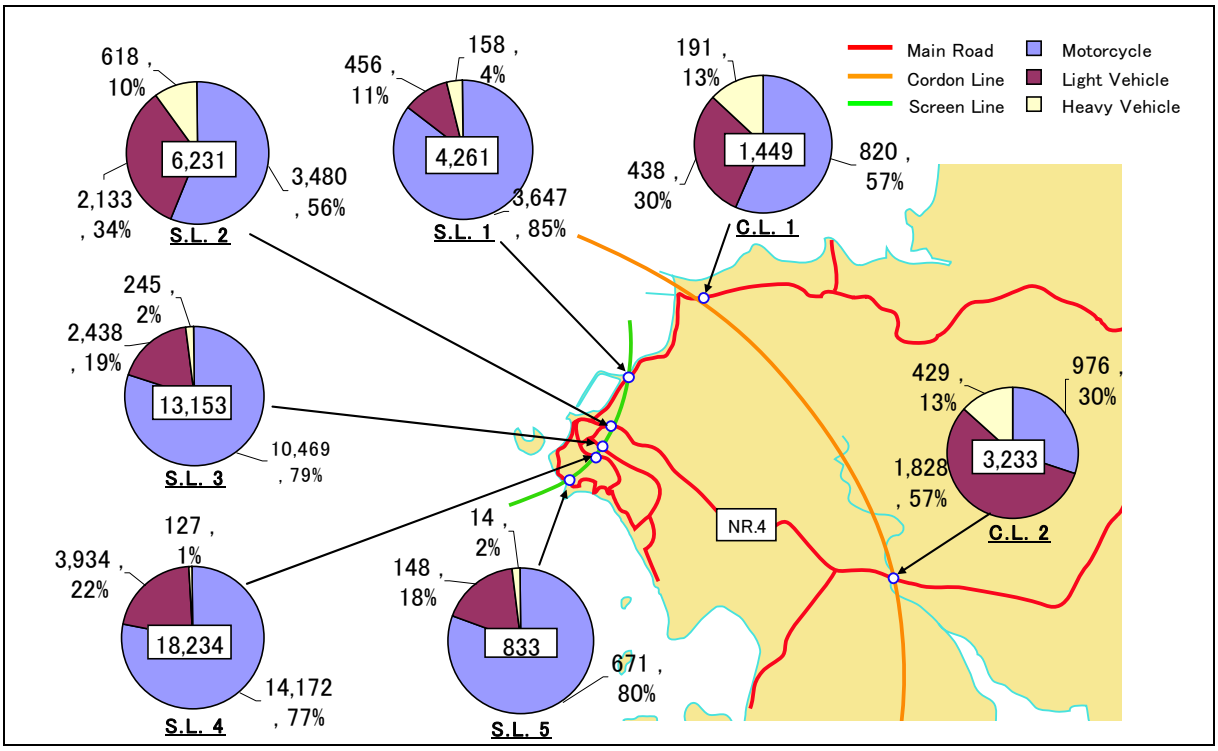
3) Road situation mixed between heavy vehicles and light vehicles

As mentioned above, about 35% of fatalities were due to collision between motorcycle and 4-wheele vehicle. To confirm traffic characteristics, a simple traffic survey were implemented in June 2009. The survey consisted of cordon line survey and screen line survey. A cordon line is determined to grasp a inflow of vehicle from outside of a target area and a screen line is set up for confirming traffic volume in the target area. The detail and the result of the survey are shown below.

Table 4.3.2 Location of Cordon Line Survey and Screen Line Survey

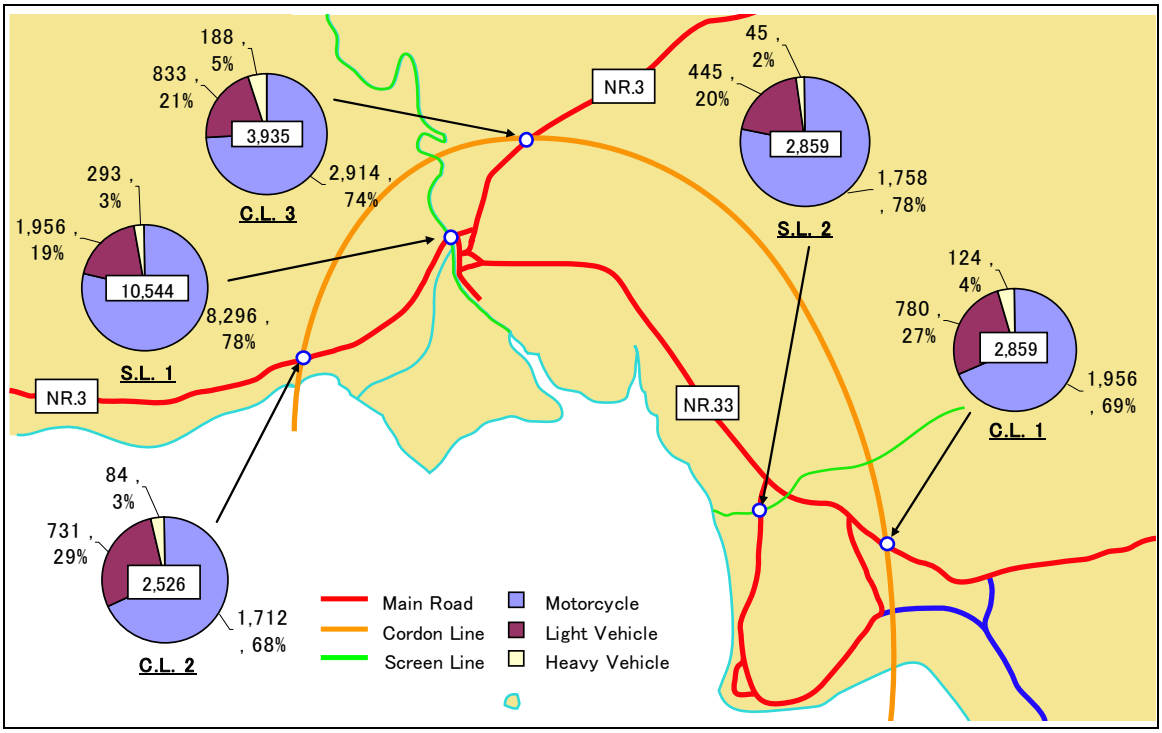
Preah Sihanouk Area						
No.	Survey	Survey Point	Road	Village	Commune	District
1	Cordon Line	C.L. 1	Hun Sen Street	Buon	O trest	Stueng Hav
2	Cordon Line	C.L. 2	Teuk Sap	Teuk Sap	Ream	Preynub
3	Screen Line	S.L. 1	Tumnumprolork	Tumnuprolork	Sangkat 1	Mittapeap
4	Screen Line	S.L. 2	Numduol 3	Munduol 3	Sangkat 3	Mittapeap
5	Screen Line	S.L. 3	Phum 2	Phum 2	Sangkat 3	Mittapeap
6	Screen Line	S.L. 4	Phum 3	Phum 3	Sangkat 3	Mittapeap
7	Screen Line	S.L. 5	Kom Penh	Kom Penh	Sangkat 3	Mittapeap
Kampot & Kep Area						
No.	Survey	Survey Point	Road	Village	Commune	District
1	Cordon Line	C.L. 1	NR.3	Boeung Taroung	Preykhmum	Kampot
2	Cordon Line	C.L. 2	NR.3	O kruos	Boeung Touk	Toeuk Chhou
3	Cordon Line	C.L. 3	NR.33	Keo Krasaing	Kep	Kep
4	Screen Line	S.L. 1	NR.3	Thvy Khang Choeung	Andoung Khm	Kampong Bay
5	Screen Line	S.L. 2	NR.33	Kampong Trach	Prey Thom	Kep

Source: JICA Study Team



Source: JICA Study Team

Figure 4.3.3 Result of Simple Traffic Survey (in Preah Sihanouk Area)



Source: JICA Study Team

Figure 4.3.4 Result of Simple Traffic Survey (in Kampot & Kep Area)

4) Lack of a periodical road maintenance

There are a few participants in road maintenance in Cambodia, MPWT, MRD, City/Provincial Governor and MOWRAM as mentioned below.

Table 4.3.3 Road Authorities other than MPWT

Road Authority	Role of Road Authority
Ministry of Rural Development (MRD)	MRD is responsible for the development and implementation of rural roads.
City Governor	City governor manages and maintains roads within an area that has been proclaimed as a city.
Provincial Governor	Provincial governor manages and maintains roads within towns in the province.
Ministry of Water Resources and Meteorology (MORAM)	MOWRAM manages and maintains roads that form part of a dike.

Source: The Study on the Road Network Development in the Kingdom of Cambodia

The MPWT and MRD are main ministries which are responsible for road maintenance in addition to road development. The road maintenance activities are substantially conducted by DPWT, PRRO and City/Provincial engineering. The MPWT and MRD support planning, administration and procurement related to road maintenance. But the road maintenance activities have not been conducted sufficiently due to inadequate budget, technical staff and machinery.

Financial framework for road maintenance work has been established with the introduction of Added Tax (Road User Special Tax) in 2002. The Added Tax was notified to pay 2 cent/litter

on gasoline and 4 cent /litter on diesel. The amount of the tax in 2004 was estimated to be USD 21.1 million which is enough to implement the road maintenance activities.

However, the activities have not been conducted due to defaults in terms of levying, operation, application and disbursement methods as follows.

i) Lack of smooth cash flow originated in disconcerted communication among MEF, MPWT, MRD and authorities in charge,

ii) Imperfect application and usage of the resource due to incapability of road budgeting in the executing agencies of road maintenance,

iii) Transfer of the resource to other purposes that are deemed more urgent/important in the Government of Cambodia, and

iv) Great amount of leakage in tax revenue due to prevailing smuggling of petrol products.

5) Cross Border Barrier

In cross border transport/logistics, there are institutional cross border barriers such as the absence of transit arrangement and the lack of mutual admittance of vehicles observed in Cambodia.

Though the government of Cambodia has signed the GMS CBTA which is comprehensive multilateral instrument covering all relevant aspects of cross border transport facilitation, e.g. transport, customs, immigration and quarantine, in March 2007, cross border facilities in the study area have not improved as shown below.

Cross Border Facility
(Gate: Koh Kong)

Cross Border Facility
(Parking Space: Koh Kong)

Cross Border Facility
(Building: Koh Kong)

Cross Border Facility
(Gate: Kampot)

Cross Border Facility
(Buffer Zone: Kampot)

Cross Border Facility
(Building: Kampot)

Source: JICA Study Team

Figure 4.3.5 Cross Border Facility at Koh Kong and Kampot

The CBTA includes (i) a single-stop/single-window inspection, (ii) cross border movement of persons, (iii) transit traffic regimes including exemptions from physical customs inspection, bond deposit, escort, and phytosanitary and veterinary inspections, (iv) requirements that road vehicles will have to meet to be eligible for cross-border traffic, (v) exchange of commercial traffic rights, and (vi) infrastructure, including road and bridge design standards, road signs and signals.

Though it is expected to ratify the CBTA and implement the activities, cross border barriers can be observed in Cambodia as follows.

i) Getting an import and export license in advance at the customs central office in Phnom Penh is required, since international transit arrangement is not provided.

ii) Transshipment to Cambodian trucks at the border is required.

iii) Cash transaction is required.

iv) Unclear institutional arrangement on import and export formalities has created a discrepancy between customs and business such as forwarders and transporters paying unofficial charges at mobile checkpoints along the route.

v) Although the introduction of the UN layout of using both English and Cambodian language is required, customs documents are not uniform.

vi) A guarantee system for international cargo is not prepared.

vii) Third-party insurance for international transport is not available.

(2) Railway

The railway in Cambodia consists of the Northern Line and the Southern Line. The Northern Line was constructed in the 1920s and extends for 388 km from Phnom Penh to Poipet which is on the border with Thailand. The Southern Line with the total length of 264 km was built in the late 1960s and links Phnom Penh with Sihanoukeville.

However, the railway system was destroyed during civil war and deteriorated. Though the rehabilitation project of the railway has been started, there are a few issues for establishing an efficient road network in the Study area, 1) Delay of railway rehabilitation, 2) Lack of safety and reliance, and 3) Development of ICD and railway freight terminal. The issues are described in detail as follows.

1) Delay of railway rehabilitation

The rehabilitation project of the railway in Cambodia has been studied by technical assistance of ADB in 2006 and implemented according to the loan agreement between the Kingdom of Cambodia and ADB on March 2007. The scope of works comprise of the following items.

i) **Rehabilitation of the Northern Line (340 km):** It includes a) repairing of embankments, ballasting and installation of missing fittings; b) rehabilitating or reconstructing structures including bridges, culverts, buildings and drains; c) tamping track to restore an operational speed of 50 km/h; d) rehabilitating an existing rail link to the Phnom Penh port on the Mekong River and e) undertaking supplemental works at level crossing.

ii) **Rehabilitation of the Southern Line (254 km):** It includes a) repairing of embankments, replacing worn out and unserviceable sleepers, fittings and ballasting; b) rehabilitating or reconstructing structures including bridges, culverts, buildings and drains; c) constructing new passing loop; d) tamping track to restore an operational speed of 50 km/h; e) rehabilitating the rail link to the Sihanoukville Port and extending container port; and supplemental works at level crossings. The first section rail link from Phnom Penh to a cement factory in Kampot is scheduled to operate in the late of the year 2010.

iii) **Rehabilitation of the Destroyed Rail Link (48 km):** It includes a) reestablishing the railway connection across the border with repairing of embankments, preparing track bed and ballasting, rehabilitating or reconstructing the structures with bridges, culverts, buildings and drains, and laying track; b) constructing supplemental facilities at level crossings; and c) building passing loops and a station at Poipet with facilities for border crossing.

iv) **Mitigation of the Adverse Impact of Restructuring:** Restructuring will affect the current railway employees who are about 1,100 people. The impact will be mitigated through a) providing compensation for future income loss for redundant railway employees; b) providing compensation for lost pension rights for railway employees; and c) counseling and retraining railway employees.

However, the progress of the rehabilitation project has been unfavorable due to land concession in the construction site and not selecting a concessionaire to operate the railway line. At the present, Toll company which originates from Australia acquired concession to operate railway system. In addition, the problem of the land concession was solved and the transfer of the land to Toll has been scheduled.

Though the problems of the rehabilitation project were cleared, it took much time to do it comparing the initial schedule that the project will be completed in 2010. The project including the additional work which is development of depot and workshop will be completed in 2013 according to the latest schedule.

2) Lack of safety and reliance

There has not been reliability about railway in Cambodia because derailment happened frequently and did not transport commodities on time. In addition, the lack of railway maintenance and the improvement of road paralleled with railway resulted in reducing the amount of commodities transported by railway. Comparing the volume of commodities transported by railway from 2002 to 2005, the decline of the freight was revealed as follows.

Table 4.3.4 Decline of Freight from 2002 to 2005

No	Commodity	Decline on Southern Line (ton)	Decline on Northern Line (ton)	Total Decline (ton)
1	Cement	72,060	71,136	143,196
2	Diesel	10,935	14,235	25,170
3	Rice	11,033	42,384	53,417
4	Sugar	-	23,128	23,128
5	Service	14,655	12,681	27,336
6	Miscellaneous	-	12,845	12,845
7	Other	-	240	240

Source: Business Case Analysis of the Railway Operating Company, Ministry of Public Work and Transport and Canarail Consultant

Moreover, a lack of a part of rail and a deteriorated rail are considered as the cause of the derailment. As mentioned above, though the rehabilitation project of the railway does not include the exchange of the deteriorated rail. A signaling system and level crossing also are not included in the rehabilitation project of the railway. Without the provision of the related facilities (ICD and railway freight terminal), safety facilities (signaling system and level crossing) and the exchange of the deteriorated rail, it is impossible to operate the railway with safety and reliance.

3) Development of ICD and railway freight terminal

The rehabilitation project of the railway in Cambodia supported by ADB originally doesn't include a development of an ICD and a railway freight terminal. However, the development of facilities is indispensable for efficient transport of container from Sihanoukville Port to Phnom Penh.

At the present, the development of Depot is planned as supplementary project funded by ADB. The Depot will be constructed at Samrong area which is located around the bifurcation of the southern line and the northern line in Phnom Penh.

The project includes two contracts, one for the earthworks and the other for the buildings, equipment and services, track work, and road works. In addition, the rail for Samrong facility will be provided and sections of rail on the northern line will be replaced.

Though Toll company, which is concessionaire to manage railway system, will use the Samrong facility as an ICD, the detail plan to develop and manage the ICD has not been determined.

On the other hand, a railway freight terminal is expected to develop in Sihanoukville Port. While track work for the railway freight terminal is included in the rehabilitation project of railway, earth work and asphalt pavement are not planned.

Considering that Toll company operates railway, loading and unloading containers in the railway freight terminal also will be managed by Toll company.

However, there is no plan to develop the railway freight terminal without track work.

4.3.3 Port and Logistics

(1) Present Situation of Port Sector in Cambodia

The commercial ports in Cambodia are located along the coastal line of the Gulf of Thailand (435 km long) or on the rivers. The commercial ports could be categorized into four types by management body, namely 1) Autonomous, 2) Province, 3) District and 4) Private as shown in Table 4.3.5. Among the ports in the Table, the ports in the Study area are shown in Figure 4.3.6.

Table 4.3.5 Commercial Ports in Cambodia

Type (Management Body)	Name of Port	Location
Autonomous	Sihanoukville Port	Offshore
	Phnom Penh Port	Mekong River
Provincial	Kompong Cham Port	Mekong River
	Kratie Port	Mekong River
	Stung Treng Port	Mekong River
	Kampong Chhnang Port	Tonle Sap River
	Chong Kneas Port	Tonle Sap River
	Battambang Port	Sangke River
	Neak Loeang Terminal	Mekong River
District		Mekong River (32 ports)
		Tonle Sap River (10 ports)
Private	Kampot Port	Canal
	Stueng Hav Port (Concession)	Offshore
	Tomnop Rolok Port	Offshore
	Sre Ambel Port	Canal
	Oknha Mong Port	Offshore
	Oil Terminals	Offshore

Source: JICA Study Team revised based on the Study on the Master Plan for Maritime and Port Sectors in Cambodia (2007)

Source: SAPROF for Sihanoukville Port Urgent Development for Oil Supply Base & Multipurpose Terminal (2009)

Figure 4.3.6 Commercial Port Location in the Study Area

(2) Main Commercial Ports in the Study Area (Existing/Planned)

1) Sihanoukville Port (Existing/Expansion-Planned)

Sihanoukville Port is located at the southeast entrance of Kompong Som Bay and serves as the only international deep seaport in Cambodia, and Port Authority of Sihanoukville (PAS) manages and operates the port. The present berth facilities are mentioned below.

- Old Jetty (Water depth -9.0 m & -7.0 m): A 290 meter long jetty at the western end of the port was constructed in the 1960's together with other facilities such as breakwaters and navigation channel. The facility has been deteriorated over the years, and needs to be rebuilt.
- Working crafts basin (Tug Boat Basin): An inner basin behind the Old Jetty, which accommodates tug boats, pilot boats, patrol boats, line handling boats, etc.
- New Quay (Water depth -9.0 m): A 350m long multipurpose quay, which accommodates barges and container ships.
- New Container Terminal (Water depth -10.0 m): A 400 m long wharf was built during the period from 2002 through 2008, and two gantry cranes and five transfer cranes were installed in January 2009. JICA provided ODA loans for these facilities and equipment.

Development plan such as oil supply base, new multipurpose terminal and long-term development plan are mentioned in Book II.

2) Oil Terminals (Existing)

Three Oil Terminals are located in Stueng Hav district of Preah Sihanouk Province, and are operated by the private firms, namely "CALTEX", "SOKIMEX" and "TELA". PAS imposed a port charge on theses firms and publicized the handling statistics. As to SOKIMEX, its jetty was first constructed as a state managed port, but in 1996, it was 100% privatized. SOKIMEX itself has its share of 81% and MARUBENI (Japan) 19%. Annual import volume is nowadays around 100,000 tons

3) Tomnop Rolok Port (Existing)

Tomnop Rolok Port is located in Tomnop Rolok Village inside Sihanoukville Port. Construction started in 1989 by the central government (Department of Public Works and Transport: DPWT and the Preah Sihanouk province). The port has a wooden berth of 700m^2, one warehouse (161 m^2) and one crane (25 tons). The current water depth is from 4 to 6 m. During low tides, the depth ranges from 2.8 to 3.9 m, and in the high tides from 5 to 6 m.

It had been state-owned under the DPWT until 1995. From January 01, 1996, DPWT went forward with privatizing operations according to the joint Decisions from Ministry of Public Works and Transport (MPWT) and Ministry of Economy and Finance through a bidding process. As a result, Tomnop Rolok Port is now operated by a private company.

Cargoes consist of conventional commodities such as construction materials (steel bar, cement, etc.) and consumer goods. The cargo throughput has decreased since Oknha Mong Port

started to operate, and monthly cargo throughput in 2008 was approximately 600 - 800 tons. They are all imported from Thailand by wooden boats and barges.

4) Stueng Hav Port (Existing/Planned)

Stueng Hav Port currently has a function of a fishing port. Construction of an fishery port near the Stueng Hav SEZ project site today started during the Pol Pot Regime with the cooperation of China. There are about 1,600 fishery boats using the port now.

Attwood Investment Group (AIG), which has a concession to build and operate Phnom Penh SEZ in the capital area, also possesses concession for the Stueng Hav SEZ as shown in Figure 4.3.7. According to their pamphlet, Stueng Hav SEZ will consist of a port activity zone, a residential zone, a commercial zone and so on. The zone is located about 30 km from the National Road No.4 leading to Preah Sihanouk. A new road which connects Stueng Hav with National Road 4 was opened in April 2007.

According to their plan, development of a port with a maximum depth of 12m will be built. The land area for the port and industries will be about 520 ha, which will be obtained by land reclamation, while the basin will be 400 ha, protected by breakwaters of more than 7.6 km in length. Reclamation work is in the progress, and reclamation material is procured from a hill in the project site. AIG intends to control the construction schedule in consideration of the economic condition.

Source: Brochure of Stueng Hav SEZ

Figure 4.3.7 Layout of Stueng Hav SEZ and Port

5) Oknha Mong Port (Existing/Expansion-Planned)

Oknha Mong Pot was the first Private seaport in Cambodia with investment from Mong Reththy Group Co. Ltd. It is located in Keo Phos Village, Chroy Svay Commune, Sre Ambel District, Koh Kong Province and is 75.57 km from Preah Sihanouk. It has an important role as a logistic centor to suport Oknha Mong SEZ

The port construction started on January 1, 2003, and operations commenced on August 1, 2004. Port has a land area of 64 ha while the total terminal area is about 26 ha. Total berth length is 1,111m with a width of 200 m and a water depth of 5.5 m. The port has 6 warehouses (1 unit of 1,200 m^2, 3 units of 5,600 m^2, and 2 units of 7,000 m^2) and open storage areas of 3 ha. It has 5 cranes (2 of 25-ton capacity), 5 forklifts and 15 trucks (for operating at the port area) and 2 dredging barges.

Most of the transport is carried out by wooden boats with the capacity of 300 tons, which carry cargoes from Thailand. About 35 to 50 boats call this port. Most vessels are of small size and carry fruits from Thailand (Klong Srun Port). Cement is carried by convoys consisting of 1 tugboat and 4 barges (each with about 1,000 ton capacity). Every month an average of 16 to 20 barges carry cement directly from Bangkok, Thailand. The monthly import volume is approximately 20,000 tons. Other ships carry sugar, fruits and general cargoes depending on the season; monthly volume ranges from 8,000 to 10,000 tons. A very small amount of steel (30 to 100 tons) for construction works is shipped by light carriers.

Mong Reththy Group plans to extend the berth offshore, in which container cargo to/from Planned SEZ is to be handled. (Figure 4.3.8)

Source: Brochure of Mong Reththy Group Co., Ltd.

Figure 4.3.8 Layout of Stueng Hav SEZ and Port

6) Kampot Port (Existing)

Kampot Port is located along a canal in Kampot Province, 12 km from the open sea. It was constructed in 1922. The port area covers 288 m^2. The water depth in the canal was originally 5.5 m, but presently the depth ranges from 1.5m to 3.5m. The port used to be state-owned, but a bidding for private management was launched by the Provincial DPWT in 1995 and was privatized; however, it is still under the technical inspection of the provincial DPWT of Kampot Province.

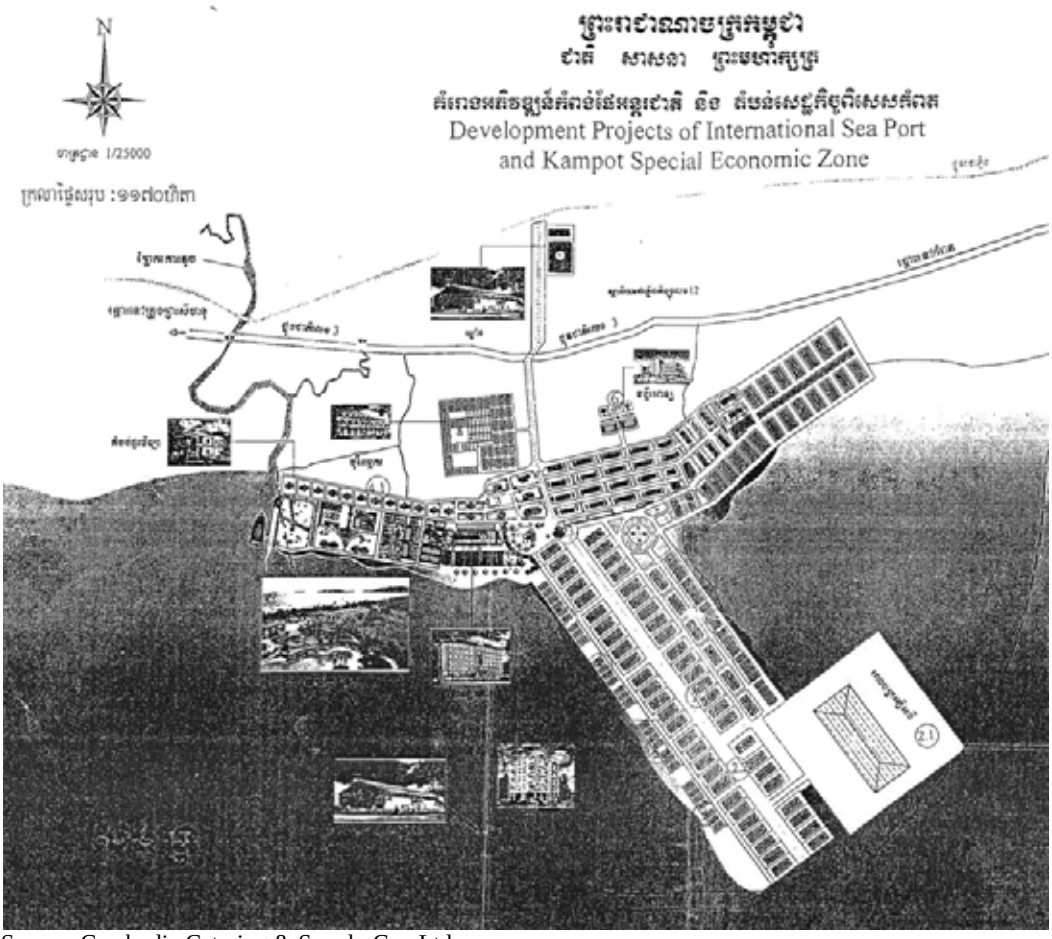
The cargoes that are transported through Kampot Port are sugar, bricks, fibro, steel bars, noodles, soft drinks and fruits etc. They are mainly imported from Thailand while a small portion comes also from Vietnam. Sugar imported from Thailand is transshipped at Kampot Port and exported to Vietnam through national road No.3/22/2. The quantity of cargoes imported from Thailand is about 20,000 tons per year.

Wooden boats or barges of 500 to 1,000 tons berth at the port. All the large ships/ vessels or heavy barges belong to the Thais, and wooden boats (which belong to the Cambodians) of 50 tons transfer the cargoes from the big heavy ship in the open sea. Most of the wooden boats are rented by the cargo owners or consignees, though a few belong to the cargo owners or consignees.

A new berth next to the existing berth is under construction and reclamation work was completed as of May 2009.

7) Kampot SEZ Port (Planned)

Kampot SEZ is located in Koh Toch Commune in Kampot Province, close to the railway track (Phnom Penh - Preah Sihanouk), The Port which functions as logistic center for SEZ is under construction, and is scheduled to open in the middle of 2011. According to their planning, the construction cost is estimated as USD 80 million for the entire SEZ project, and USD 18 million for the port. The depth of the berth is redesigned to 19 m from the original 9 m, however its necessity and practicability of such deep berth dimension is indefinite. The layout of SEZ and port is shown in Figure 4.3.9.



Source: Cambodia Catering & Supply Co., Ltd.

Figure 4.3.9 Layout of Kampot SEZ and Port

8) Sre Ambel Port (Existing)

Sre Ambel Port is located in Rondaochhor Village, Sre Ambel District, Koh Kong Province, and the name of the port has been changed to Kompong Phe Thmei Sre Ambel. Construction started in 2001, and now the port has a total land area of 10 ha. The port is located 15 km from the main street to Koh Kong City Center, and it lies along the channel (canal) about 12 km from the open sea. Total berth length is 500 m with a width of 30 m and a water depth of 5 m. Without dredging, only boats of a maximum of 180 tons can navigate the channel, but there is plan to secure a depth of 6 m by dredging which will allow the channel to accommodate ships loading from 2,000 to 3,000 tons. The berthing channel can accommodate 5 to 6 ships simultaneously.

The port has 2 excavators, 5 cranes, 4 lorries, 1 bulldozer, 1 truck, 2 elevators, 2 dredging barges, 1 transiting ship, 2 power plants, 3 warehouses (the one is existing 3,163 m^2 and 2 more are under construction), a transit shed of 48 m^2 and an open storage area of 3 ha.

Most imported goods are conventional cargoes such as food, zinc, fibro, cement, and construction materials. Most of the cargoes come from Thailand though some part originates in Singapore. Cement is carried by one tugboat with 4 barges. The annual import volume through Sre Ambel Port ranges from 4,000 to 5,000 tons. Most of the steel vessels with

barges that carry heavy cargoes like cement and construction materials are Thai vessels, while wooden boats carrying light cargoes are Cambodian.

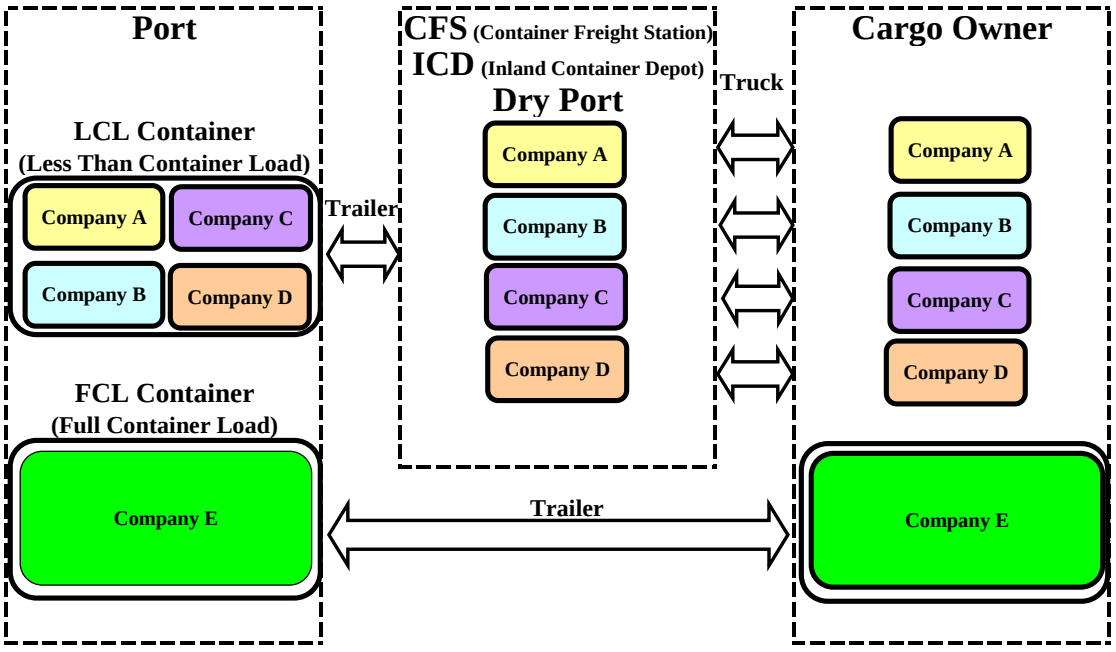
9) Kirisakor Koh Kong SEZ Port (Planned)

Kirisakor Koh Kong SEZ is located in Preksach Commune, Kirisakor District, Koh Kong Province and is about 260 km from Phnom Penh. L.Y.P. Group COMPANY LIMITED, which already possessed license for Koh Kong SEZ, Koh Kong Province, invested and promoted the project. Moreover a coal-fired power generation plant (3,600 MW) and an oil storage for offshore oil field is planned. According to their plan, a port with a depth of 20 m is planned.

(3) Dry Ports in Cambodia

There are eight Dry Ports in and around Phnom Penh as listed below. Among these, "CAMBODIA-CWT DRY PORT" is the only one managed and operated by the public sector, and all others are by private. In Cambodia, it is deemed that a dry port should have custom clearance facility on site, so a dry port has almost the same role and facility as an Inland Container Depot (ICD) or Container Freight Station (CFS). In general, FCL (Full Container Load) container is directly transported from a sea/river port to the cargo owner as shown Figure 4.3.10. On the other hand, LCL (Less than Container Load) container is once transported from the sea/river port to a dry port, and at a dry port, the contents of LCL container is transshipped and lastly transported to the cargo owner. As to the cargo throughput, FCL container is more than LCL Container.

- So Gnoun Transport and Dry Port
- Teng Lay Transport and Dry Port
- Tec Srun Transport and Dry Port
- KPM
- CAMBODIA-CWT Dry Port
- OLAIR
- Bok Seng Dry Port
- Sokan Transport and Dry Port



Source: JICA Study Team

Figure 4.3.10 Present Transportation Route in the Study Area

(4) Fishing Ports

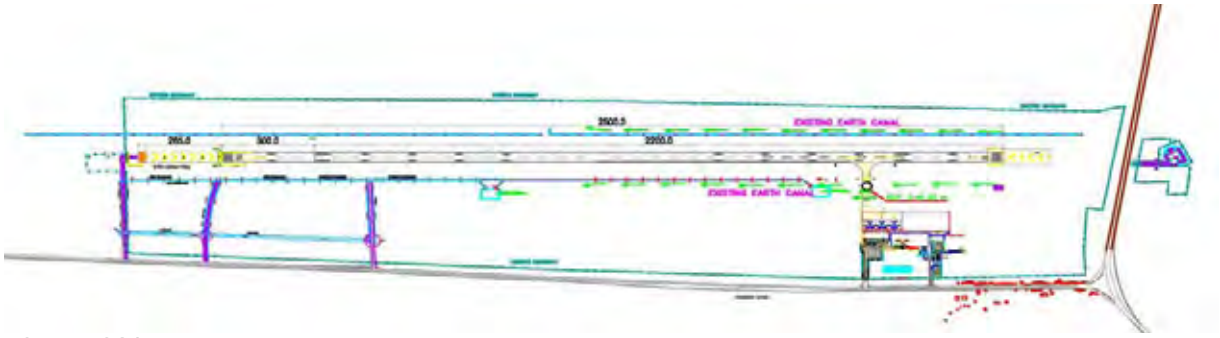
The Study area, consisting of Koh Kong, Preah Sihanouk, Kampot and Kep Provinces, is located along the Gulf of Thailand, and has a 435 km long coastal line. Long-shore fisheries are prevailing in all provinces. In Cambodia, all the fishing ports are constructed and managed by the private sector, and none by the public. Small wooden jetties for unloading fish are located mostly in calm sea area along the coastal line, and there are no large-scale fishing ports with a breakwater. For more effective and safe fishing operations, public involvement in fishery port development may be contemplated.

(5) Sihanoukville Airport

There are three main airports in Cambodia, i.e., Phnom Penh Airport, Siem Reap Airport and Sihanoukville Airport. All of them are managed by a Build-Operate-Transfer (BOT) concession scheme, and the concessionaire is SCA, which is under the French Group Vinci and Malaysian-Cambodian Muhibban Masteron Company. As to Sihanoukville Airport, the concession was given to SCA in June 2006, covering the 34 years period (up to 2040).

The present facilities are mentioned below and the layout is shown in Figure 4.3.11. SCA has a new runway construction plan (4,000 m) in parallel with the existing one, and intends to use existing one as a taxiway.

-Total area:	682 ha
-Runway length:	2,500 m
-Runway width:	40 m
-Perpendicular taxiway:	1
-Number of stands:	5



Source: SCA

Figure 4.3.11 Layout of Sihanoukville Airport

The airport was reopened in 2007 after the concession agreement. Domestic airliner PMT had operated regular flights between Preah Sihanouk and Siem Reap around three times a week until an accident occurred in June 2007. Recently, “Cambodia Angkor Air”, the Cambodia national flag carrier, was established, and the airline is said to be owned by the Cambodian government (51%) and Vietnam Airlines Corporation (49%). It commenced operations on 28 July, 2009. Present destinations are four airports, namely Phnom Penh, Siem Reap, Preah Sihanouk and Tan Son Nhat (Ho Chi Minh), and the regular flight, Phnom Penh - Siem Reap, Phnom Penh - Ho Chi Minh has already been operated. Regular flight, Preah Sihanouk - Siem Rea will be operated in near future. SCA is

said to be aiming at establishing new route which connects between Preah Sihanouk and Asian region such as China, Korea, India and Japan, especially China.

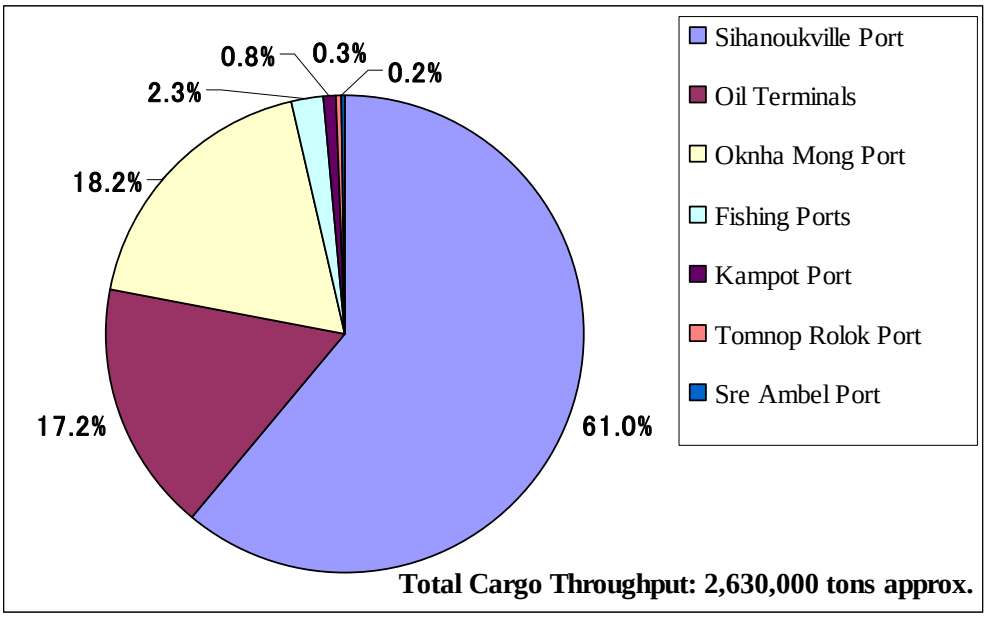
(6) Logistics

1) Present Cargo Throughput Situation of the Ports in the Study Area

There are six commercial ports in the Study area as mentioned above; namely Sihanoukville Port, Oil Terminal, Oknha Mong Port, Kampot Port, Tomnop Rolok Port and Sre Ambel Port. PAS manages and announces the cargo statistics including Oil Terminal, and the total cargo throughput was 2,057,967 tons in 2008. On the other hand, other commercial ports do not publicize cargo statistics as private port has no obligation to do so. Therefore, based on the related studies, available information and the interviews with the port personnel, the present cargo throughputs of these commercial ports and fishing ports are roughly estimated below:

-Oknha Mong Port:	480,000 tons
-Offshore Fishing Ports:	60,000 tons
-Kampot Port:	20,000 tons
-Tomnop Rolok Port:	9,000 tons
-Sre Ambel Port:	5,000 tons

Figure 4.3.12 summarizes above mentioned cargo throughput and indicates the portion of each port. Majority of cargos are handled at Sihanoukville Port, Oil Terminals and Oknha Mong Port at present. In consideration of the cargo throughput trends and facility expansion plans being implemented at these ports, the portion of these ports is deemed to increase in the future from the present level.



Source: JICA Study Team summarized based on related information

Figure 4.3.12 Cargo Throughput Portion of the Ports in the Study Area in 2008

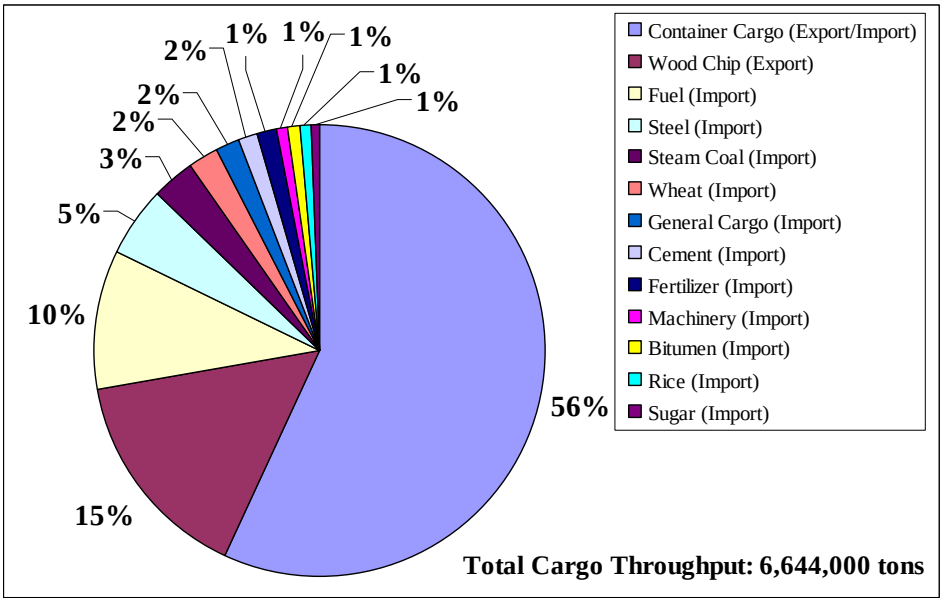
2) Demand Forecast of Main Ports in the Study Area in 2020

The commodity-wise demand forecast in 2020 of main ports in the Study area, namely Sihanoukville Port, Oil Terminals and Oknha Mong Port are summarized in Table 4.3.6, and commodity-wise portion is summarized in Figure 4.3.13. The forecast was based on the previous studies, including the Study on the Master Plan for Maritime and Port Sectors (2007) and SAPROF for Sihanoukville Port Urgent Development for Oil Supply Base & Multipurpose Terminal (2009), the interview with personnel concerned and current economic situation. The total throughput in 2020 will be 6,644,000 tons

Table 4.3.6 Demand Forecast of Main Ports in the Study Area in 2020

Commodity	Port	Export/Import	Estimated Volume (ton)
Container Cargo	Sihanoukville	Export, Import	3,792,000
General Cargo	Sihanoukville	Import	60,000
	Oknha Mong		59,000
Machinery	Sihanoukville	Import	57,000
Sugar	Sihanoukville	Import	9,000
	Oknha Mong		36,000
Steel	Sihanoukville	Import	142,000
	Oknha Mong	Import	175,000
Steam Coal	Sihanoukville	Import	200,000
Wheat	Sihanoukville	Import	148,000
Cement	Sihanoukville	Import	100,000
Rice	Oknha Mong	Import	50,000
Fertilizer	Oknha Mong	Import	81,000
Bitumen	Oknha Mong	Import	55,000
Fuel	Oil Terminals	Import	680,000
Wood Chip	Sihanoukville	Export	1,000,000

Source: JICA Study Team made based on the previous studies

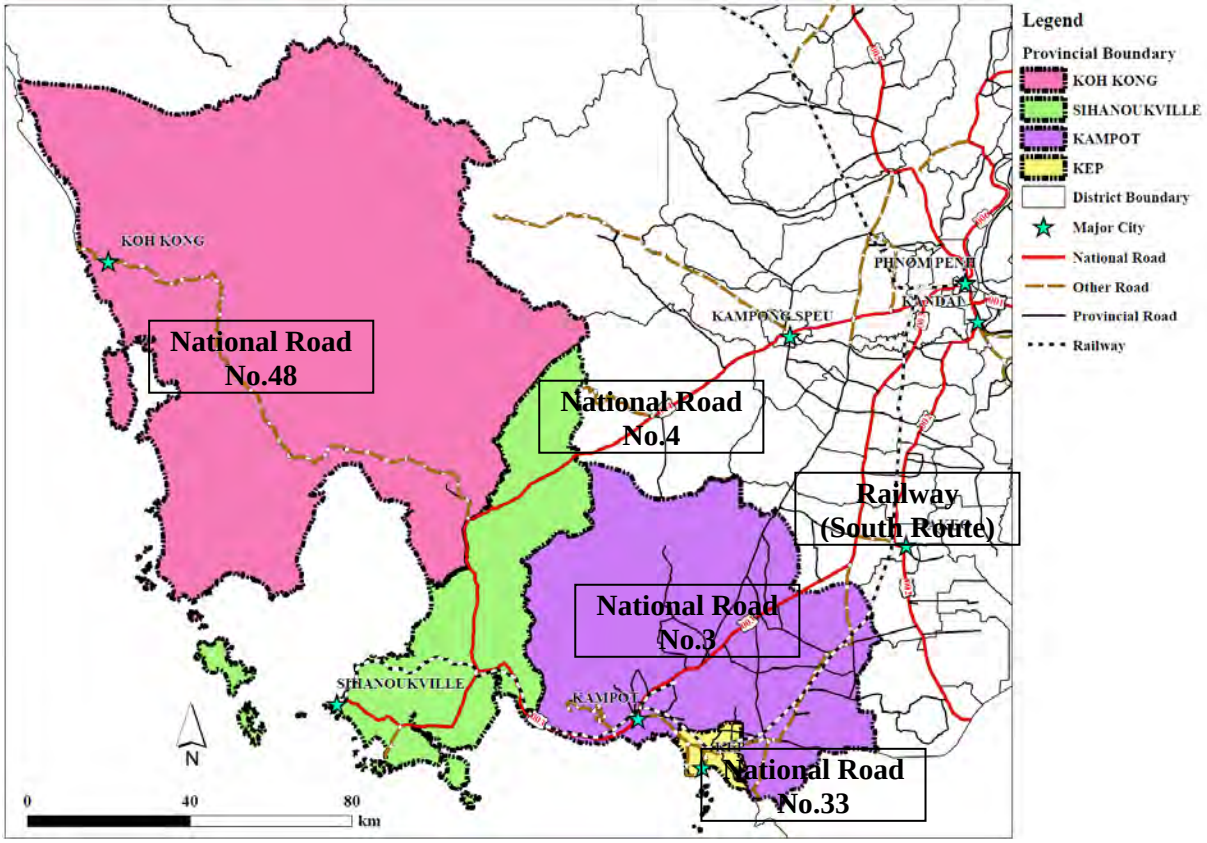


Source: JICA Study Team made based on the previous studies

Figure 4.3.13 Commodity-Wise Portion of Main Ports in the Study Area in 2020

3) Cargo Transportation Flow and Mode in the Study Area

At present, most of the above mentioned sea-born cargoes are transported through National Road No.4, and steam coal is transported to the cement factory located in Kampot through National Road No.3 and Railway. National Road No.48 and No.33 have functioned as a border trade route to Thailand and Vietnam respectively. Figure 4.3.14 indicates the current transportation routes.

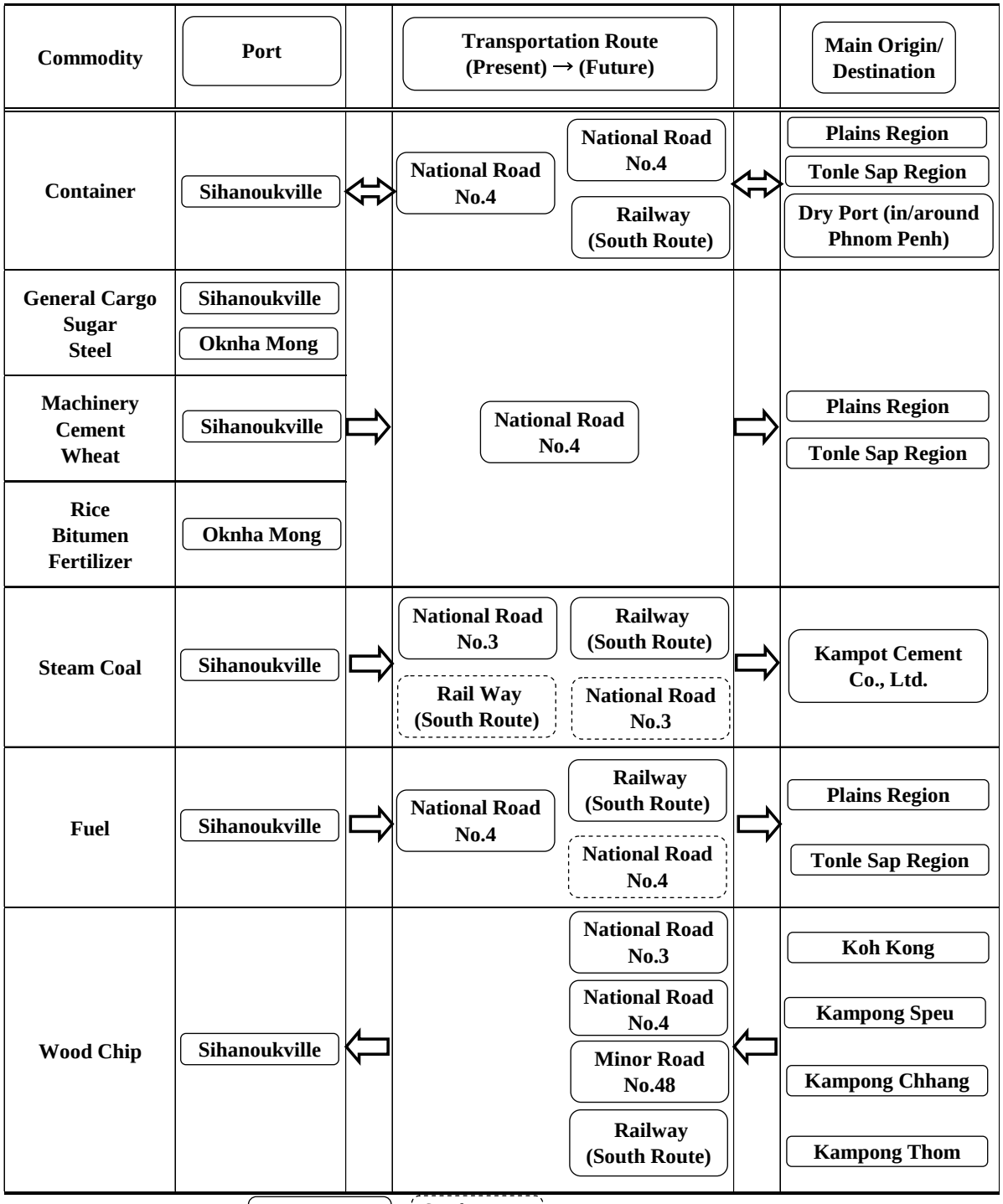


Source: JICA Study Team

Figure 4.3.14 Present Transportation Route in the Study Area

Future commodity-wise transportation routes and main origin and destination are summarized in Figure 4.3.15. As to railway transportation, only the steam coal is transported from Sihanoukville Port to Kampot cement factory at present. Railway rehabilitation project is now executed under a Public Private Partnership scheme. Fundamental infrastructure such as railway track, maintenance yard and factory for locomotive are to be rehabilitated by RGC using the ADB loan, and Toll Group, who is the selected concessionaire, has signed an agreement with the Cambodia government to operate the nation's railway system under the 30-year concession in June 2009.

Toll Group plans to transport fuel from Oil Terminals as one of their main business, and furthermore, Toll Group plans to construct a container transshipping station in front of Sihanoukville Port and a Dry Port (ICD) in Phnom Penh, aiming at enhancing the container cargo transportation by rail. In general, railway transportation will also be sufficient for transporting the bulk cargoes such as coal and wood chip. One of investors, who are interesting in wood chip producing business, plans to transport wood chip from plantation to the port by railway.



Source: JICA Study Team

Figure 4.3.15 Future Commodity-Wise Transportation Mode and Origin/Destination

4.3.4 Water Supply and Wastewater Disposal

(1) Access to safe water and sanitation facilities

Coastal area has an abundance of water during the wet season, but during the long dry season, evaporation far exceeds rainfall, and rivers drop to low levels. Water is in short supply in many places, even for domestic use, and there is growing competition for water. During the dry season, moreover, water quality is increasingly degraded, which creates more competition for water of appropriate quality for drinking and livestock maintenance.

Table 4.3.7 Access to Safe Drinking Water in the Coastal Provinces (% households)

	National Average	Coastal Zone	Province			
			Kampot	Kep	Koh Kong	Preah Sihanouk
1998 (1)						
Urban	60.3		82.0	12.4	55.7	27.8
Rural	23.7		9.0	0.0	30.9	0.0
Total	29.0		13.6	12.4	36.4	27.8
2003 (2)			46.1	43.7	43.7	59.4
2005 (2)		51	45.7	52.1	61.8	62.5

Source: (1) NIS Population Census, (2) Seila Program Commune Database, as published in the MOE State of the Coastal Environment Report 2007

Approximately 51% of households in the coastal provinces have access to safe water. Safe drinking water sources include piped water supply, public standpipe, protected dug well, tube wells and water bought from vendors. Water from safe sources still has to be boiled to prevent water borne diseases. Water from rivers, ponds, springs, unprotected wells and rainwater are classified as unsafe because they are more susceptible to contamination from surface sources.

In many rural villages water supply is dependent on streams, open ponds and shallow wells, which constitute a health hazard. About 60% of the rural population relies on groundwater, with hand dug and open wells widespread, and drilled wells with hand pumps becoming more common. The remaining sources of water are rainwater harvesting (26% in the rainy season falling to 1% in the dry season) and surface water (16% in the rainy season and 26% in the dry season).

Table 4.3.8 Distribution of Population by Source of Drinking Water (% of population)

Source of water	National Average	Province			
Urban		Kampot	Kep	Koh Kong	Preah Sihanouk
Population	-	33,126	28,660	29,329	155,690
Access to safe water	60.3	82.0	12.4	55.7	27.8
Piped water	25.0	21.2	2.5	6.2	8.1
Tube well	13.8	0.4	9.7	1.2	3.2
Bought	21.5	60.4	0.2	48.3	16.5
Unsafe	39.7	18.0	87.6	44.3	72.2
Dug well	22.4	9.0	52.5	39.8	65.8
Spring, river, stream	15.1	9.0	34.6	4.1	5.1
Other	2.2	-	0.5	0.4	1.3

Rural					
Population		495,279	-	102,777	-
Access to safe water	23.7	9.0	-	30.9	-
Piped water	2.5	1.0	-	0.8	-
Tube well	15.1	5.4	-	1.3	-
Bought	6.1	2.6	-	28.8	-
Unsafe	76.3	91.0	-	69.1	-
Dug well	43.4	45.1	-	62.0	-
Spring, river, stream	30.4	45.6	-	6.5	-
Other	2.5	0.3	-	0.6	-

Source: NIS Census 1998, final results. Results for 2008 census are not yet available.

The incidence of water-related disease is high, with serious consequences for employment, school attendance, and expenditure on treatment of illness. A significant contributor is that domestic water supply and sanitation is at a low level

Table 4.3.9 Incidence of Water borne Disease

Province/ Region	Access to piped water distribution (% of population)	Infant mortality rate (per 1000 births)	Diarrhea incidence (% of population)	Poverty ratio (% of population)
Kampot/Kep	15.3	28	3.2	30
Preah Sihanouk/ Koh Kong	5.3	48	10.7	23.2
Tonle Sap	3.6	49	3.9	42.7
Plains	3.8	38	3.5	32.5
Plateau/Mountain	6.3	40	4.0	46.1
Phnom Penh	83.7	16	2.2	4.5

Source: Access to piped water from NIS Inter-census survey 2004. Other statistics from World Bank

Infectious waterborne diseases are still endemic throughout the region, mainly because people also use their drinking water source for washing and bathing. Latrine use in most rural areas is uncommon, the major obstacles being their high cost (USD 50 for the most common pour-flush latrine) and the lack of information and awareness on water use and hygiene. Only 16% of households in the coastal provinces have access to toilet facilities.

Table 4.3.10 Access to Improved Sanitation in the Coastal Provinces (% households)

Source of data	National Average	Coastal zone	Province			
			Kampot	Kep	Koh Kong	Preah Sihanouk
1998 (1)						
Urban	49.0		46.9	3.3	30.0	25.2
Rural	8.6		5.6		10.4	
Total	14.5		8.2	3.3	14.8	25.2
2003 (2)			7.9	4.9	20.4	30.4
2005 (2)		16	9.8	12.0	23.4	36.7
2008 (1)						

Source: (1) NIS Population Census, (2) Seila Program Commune Database, as published in the MOE State of the Coastal Environment Report 2007

There is significant variation in access to water and sanitation in the coastal provinces with the highest levels of access usually found in urban areas. In some remote communes and districts where water shortage is pronounced access to safe water is less than 5% and sanitation facilities are virtually non-existing.

Table 4.3.11 Comparison of Water and Sanitation at the District Level

Province/District	Access to safe water (1)	Access to sanitation (1)	Province/District	Access to safe water (1)	Access to sanitation (1)
Coastal Zone	51.2	16.6			
Kampot Province	45.7	9.8	**Koh Kong Province**	61.8	23.4
Angkor Chey	44.5	8.7	Botum Sakor	94.9	4.6
Banteay Meas	39.8	6.4	Kiri Sakor	92.8	2.3
Chhuk	42.9	5.6	Koh Kong	41.8	4.2
Chum Kiri	43.7	1.4	Smach Mean Chey **U**	69.3	52.0
Dang Tong	58.8	2.8	Mondol Seima	49.3	45.7
Kampong Trach	38.3	8.4	Srae Ambel	39.2	22.3
Kampot	39.7	10.1	Thma Bang	18.5	0.8
Kampong Bay **U**	90.5	62.0	Kampong Seila	88.4	11.2
Kep	52.1	12.0	**Preah Sihanouk**	62.5	36.7
Damnak Chang'aeur	43.2	8.8	Mittakpheap **U**	37.7	67.0
Keab **U**	68.7	17.9	Prey Nob	80.2	12.0
			Stueng Hav	91.0	21.5

U=urban: districts with Provincial headquarter towns are treated as urban
Source: Seila Program Commune Database, as published in the MOE State of the Coastal Environment Report 2007

(2) Urban water supply

Table 4.3.12 provides a summary of water supply systems found in the provincial capitals of Coastal area.

Table 4.3.12 Water Supply Systems in the Coastal Provinces

Urban area	Operator	No. of connections	Pop. served	Connection ratio	Non-revenue water	Domestic tariff (riel/m3)	Water source
Preah Sihanouk	MIME-DIME	3,350	23450	35%	15%	Block rates <7m3 1,500 <15m3 1,800 >15m3 2,000	surface + deep wells
Preah Sihanouk	Ancor Bros.	Bulk treated water				1,000	surface
Kampot	MIME-DIME	3,404	18,382	38.1%	30%	1,400	surface
Koh Kong	L.Y.P. Group	1,080	6286	18.7%	n.a.	1,800	surface
Kep	Western Coastal Development	n.a.	n.a.	n.a.	-.	n.a.	surface

1) Preah Sihanouk

Preah Sihanouk has a public water supply system operated by DIME. It obtains its water supply from a small urban lake (Boeng Prek Tuk), 3 wells north east of the central market and a treated water pipeline from the Kbal Chay treatment plant.

The city's water treatment plant, built in the 1950s, was last refurbished in 2003 under the World Bank's Urban Water Supply Project. The treatment plant is located at the highest point in Preah Sihanouk next to the Wat Leu temple at an average ground level of 122m above sea level.

The treatment plant is a conventional filtration plant with a design capacity of 7,600 m3/day.

Boeng Prek Tup has a low dry season yield of 3,500 m3/day making it impossible to use the full production capacity of the treatment plant.

Three wells were constructed in 2004 as a temporary measure to boost supply during the dry season. The wells are no longer used by the water supply authority because treated water is now available from Kbal Chay at a lower cost.

The distribution system was extended in 2003 but a large amount (aprox. 8 km) of ductile iron piping is old and diameters too small to meet future demands. A summary of the key operational issues I provided in Table 4.3.13

Table 4.3.13 Preah Sihanouk Water Supply Operational and Technical Issues

Water source	▪ The primary source of water for the public water supply treatment plant is a small shallow lake, Boeng Prek Tup. It is in an unprotected drainage catchment that is quickly becoming urbanized. Pollution from urban runoff and uncontrolled discharge of wastewater is a serious threat to water quality. Lake levels drop significantly during the dry season. Raw water abstraction is limited to 3500 m3/day. ▪ In 2008 Anco. Co., a private concession, constructed an impounding reservoir on the Prek Tuek river just upstream of the Kbal Chay waterfall to provide a water supply source for Preah Sihanouk. Storage is reported to provide a total net storage volume of 9,375,000 m^3 (JETRO-Pacific Consultants 2008). A water balance model for the reservoir indicates a potential maximum dry season yield of 66,800 m^3/day and a wet season yield of up to 535,000 m^3/day. There is no analysis to indicate the expected reliability of this yield. ▪ Production from groundwater wells is expensive and more costly than buying bulk water from Kbal Chhay
Treatment	▪ Public surface water treatment plant capacity cannot be fully utilized during the dry season ▪ The public utility has no control on quality of treated water produced at Kbal Chhay ▪ The public utility cannot control the quantity of water that it receives from Kbal Chhay (sometimes too much, sometimes too little) ▪ Production rates are being constantly adjusted to match demand because there is insufficient storage capacity in the system.
Distribution	▪ Only a small percentage of the total population is connected. ▪ Pressures in parts of the distribution system are too high because the service reservoir is located at the treatment plant on the highest point overlooking the city. There are no pressure regulating devices and this contributes to main breaks and leakage. ▪ A large part of the distribution system is old and susceptible to breaks and leaks caused by high pressures. ▪ Water quality is affected by old pipes. Residual chlorine levels at customer taps are almost undetectable because of the high chlorine demand in the old pipes. ▪ The public treatment plant and supply from Kbal Chhay cannot meet peaks in demand because there is a lack of storage capacity. Service reservoirs are required at key locations in the system

2) Kampot

Kampot has a public water supply utility operated by the local DIME. Kampot obtains its water supply from Tek Chhou River which originates in the Kamchay Mountains

The city's water treatment plant, built in the 1950s, was last refurbished in 2003-04 under the ADB Towns Improvement Project. The treatment plant is located near the old bridge on the west bank of the river.The treatment plant is a conventional filtration plant with a design capacity of 5,750 m3/day.

The distribution system includes approximately 14.5 km of asbestos cement pipe that should be replaced because it is the source of unacceptably high leakage and a potential health hazard.

A summary of the key operational issues is provided in Table 4.3.14

Table 4.3.14 Kampot Water Supply Operational and Technical Issues

Source	▪ Water is pumped from the Tekchou river which originates in the Kamchhay Mountains. A hydro-power scheme is currently under construction upstream affecting water quality at the raw water intake. ▪ The long-term impact of the dam on the quantity of water available during the dry season has not been made clear. ▪ Flow in the river is low during the dry season and the river intake is susceptible to salt water intrusion.
Treatment	▪ Treatment plant is running at 75% design capacity under a suppressed water demand. Replacement and expansion of the distribution network combined with population growth will result in a water demand that will surpass existing capacity by 2015.
Distribution	▪ The distribution system is old and leakage is high. ▪ Water quality is affected by old pipes. Residual chlorine levels at customer taps are very low because chlorine demand in the old pipes is high. ▪ Flow metering is inaccurate or non-existent therefore it is not possible to quantify leakage. ▪ The water supply authority doesn't have the materials or the capacity to repair and replace pipelines. ▪ Expansion of the system will exceed capacity of distribution pumps therefore service reservoirs will be required to offset peaks in demand.

3) Koh Kong Province

The urban areas of Koh Kong are served by a privately owned water supply system that was recently developed by L.Y.P. group to support the Koh Kong SEZ. The system provides water to 750 connections in Smach Mean Chey district and 229 connections in Pak Khlorng district as well as a few connections in Dorng Tung.

Water for the system is obtained from a large man-made reservoir which collects local surface runoff and rainwater. The source of water is unprotected and there are no details about water quality or reliability of the water resources. Water is treated at a modern rapid sand filtration plant and chlorinated with sodium hypochlorite. A 200 mm diameter transmission main roughly 8 km in length delivers treated water across the bridge by gravity to the city. Pressures in the distribution system are reportedly low during daytime hours. Low pressure could be attributed to a combination of factors but most likely because there is insufficient storage at the treatment plant to meet peak demands. The main transmission pipeline may also be too small for the long distance and small difference in elevation between treatment plant and distribution system.

In the long-term the public water supply authority should look for an alternate source of water which could include groundwater to improve supply security. Additional elevated storage should be provided closer to the distribution system to improve service pressures and smooth out peaks in demand.

4) Kep Province

There is at present no water supply system in Kep. People here rely mostly on groundwater extraction from individually owned wells. Western Coastal Development has been awarded a concession to develop a water supply scheme for the town. A reservoir (10,000,000 m3) is being constructed in the nearby mountains to provide an abundant source of freshwater for the city. The scheme includes a rapid sand filtration plant and distribution facilities and should be operational by 2011.

5) Key issues

Public water supply utilities in the Cities of Preah Sihanouk and Kampot are unable to fully recover their operating costs. The main reason for this financial problem is that the number of customers is proportionally too low to make full cost recovery viable. This problem will persist until the networks can be expanded enough to increase the customer base.

Meanwhile both public utilities are struggling with a lack of materials and equipment to make repairs and detect leakage. Some of the distribution piping is old and should be replaced to reduce leakage or increased in size to accommodate larger flows in the future.

Private sector utilities in Preah Sihanouk and Koh Kong are totally unregulated. There are no standards to control the design of water supply systems or the quality of construction. There are also no standards to govern performance in terms of water quality or guarantee of supply. In general there is no incentive for the private sector to spend the money on quality infrastructure since there are no standards. This leaves water consumers at the mercy of an operator whose only motivation is profit.

(3) Urban wastewater collection and treatment

Urban wastewater treatment is absent in all urban centers except for part of Preah Sihanouk. Wastewater is discharged to open storm water drains, sometimes to septic tanks or pits, polluting freshwater sources and rivers that eventually discharge to the coastal marine environment. The uncontrolled discharge of wastewater has a negative impact on beaches, tourism development, and fishing industry.

Recent water quality surveys (DANIDA Coastal Zone Project 2005) indicate that the water quality in the rivers flowing into the coastal waters as well as the coastal waters themselves still have an acceptable water quality, but there is clear evidence that human activity is having an impact. Surveys included the following water quality parameters: dissolved oxygen, BOD, nitrogen (TKN), phosphate suspended solids among others. The surveys did not include fecal coliform bacteria (originating from animal and human feces) which is a standard indicator used to evaluate the risk of pathogenic water borne disease. The parameter was omitted because laboratory facilities were not available at the time to analyze this parameter.

Water quality surveys found that the most heavily polluted rivers are located in the more densely populated Southeast coast (Sinahoukville, Kampot and Kep) and are also impacting the near-shore waters. Significant sources of pollution include wastewater, agricultural fertilizers and livestock.

1) Preah Sihanouk

The wastewater collection system in Preah Sihanouk covers only the densely populated commercial downtown core of the city. The Cambrew beer and beverage factory has its own treatment plant and is currently not connected to the collection system.

The City's collection system drains by gravity to a sewage lagoon located southwest of the city in a marshy low lying area behind Ochheuteal beach. Provision has been made for future expansion of the system to nearby catchment areas but large parts of the city have not been included in the future development plan.

It is estimated that only 1,500 connections have been made to the sewer system representing a very small portion of the total urban population living within the collection area. The Victory Hill area is totally un-serviced and several drains can be observed discharging wastewater along Victory beach and Hawaii beach.

A large drain running from the City's center is discharging wastewater to a pond behind the Sokha Beach Resort that drains out to the sea just west of the beach.

Water quality along the beaches is not monitored but judging by the size and close proximity of the drains the levels of fecal coliform bacteria are likely to exceed standards for safe swimming in some areas and could become a health hazard to tourists.

Considering that Preah Sihanouk is seeking to become an international beach resort, contamination of water environment along the beaches by unconnected wastewater sources will critically affect the tourism value of Sihanoukville, if the present situation is properly addressed.

Table 4.3.15 Preah Sihanouk Wastewater System Operational and Technical Issues

Collection system	▪ People have been slow to connect to the sewerage system. It seems to be on a voluntary basis. ▪ There is no by-law to make connection mandatory for all households in the sewerage collection area. ▪ Flows are much less than anticipated leading to inadequate velocities for self cleaning of sewers
Treatment plant	▪ Process parameters are not monitored. No data to show influent or effluent water quality. Operators do not know if the treatment plant meets effluent discharge criteria. ▪ Provision for flow monitoring is there but equipment has not been installed
Water environment	▪ Water quality in natural drains and along the beaches is not monitored therefore it is impossible to identify pollution levels or to assess the positive or negative impacts of the sewerage scheme.

2) Kampot

Consultation with Kampot City officials indicates that constructing a wastewater treatment facility to protect the water quality is one of their most urgent priorities. The DOE in Kampot has identified a potential site (5 ha) for the construction of a treatment plant just to the east of the city north of highway 33.

In general water quality downstream of Kampot remains relatively good despite receiving a large pollutant load from the city and other sources of pollution upstream. Water samples taken just downstream of the city indicate no water quality problems (SOCER 2005).

3) Kep

City officials have identified wastewater treatment as a priority for protecting crab fishing and preserving beaches which are considered a significant tourism asset. Kep's topography and layout along a very narrow and long beach front will make centralized collection and treatment by gravity impossible i.e. pumping will be required at several points. During site visits city officials indicated a number of small parcels of land which are either government owned or could be easily acquired because they are uninhabited. A larger plot of land located further to the east of the future expansion areas was identified during site visits as a potential site for a larger treatment plant. Preference is given to the implementation of smaller decentralized treatment schemes with interceptor sewers along the coastline to divert flow from drains.

Urban wastewater pollution does not seem to be having an adverse effect on the marine environment for now. Water samples taken 500 m from the Kep municipal beach indicate no water quality problems other than turbidity caused by phytoplankton (SOCER 2005).

The urban population is relatively small and the absence of a municipal piped water supply system limits the amount of wastewater produced. This balance will soon change with the arrival of a new water supply system. Improvements in water supply services are expected to generate urban growth and support the development of hotels and tourism industry. Wastewater treatment will quickly become an issue especially for preservation of water quality along the beach.

As Kep is a historical tourism resort in the coastal area of Cambodia, wastewater disposal method needs to be addressed in a further study.

4) Koh Kong

Wastewater is discharged to open drains that outlet to the estuary. Drainage is good and there are no flooding problems reported. Water samples taken in the estuary river Prek Kaoh Pao just downstream of bridge indicate slightly elevated phosphate levels but this is reported only as a minor problem (SOCER 2005). Samples taken at three different coastal locations around Koh Kong also found elevated levels of phosphate and at one location high levels of nitrogen indicating potential problems with nutrient loadings. The source of elevated nutrient loads is probably domestic wastewater since there is no intensive agriculture in the tributary basin that includes the western part of the Cardamon Mountains.

5) Key issues

Water quality monitoring carried out to date has focused on identifying the existing state of the environment in a very wide coastal area. Monitoring is not targeted enough to identify specific point sources of pollution along beaches for example or to rank priorities for pollution control interventions such as wastewater treatment.

Water quality along the beaches be monitored regularly for fecal coliform. At the moment there is no data to establish if the discharge of wastewater is having an impact in terms of

health risks to swimmers and fisheries. Water quality data is necessary to establish trends and support decision making for the implementation of future sewerage projects.

Only on sewerage scheme (Preah Sihanouk) has been implemented so far. To date, connection to the sewer system has been voluntary and the number of connections remains low. Connection to the system must be mandatory to achieve the benefits of the project and generate sufficient revenue to make operations sustainable. Design of future sewerage projects should include household connections.

4.3.5 Solid Waste

(1) Background Information on Solid Waste Management in Cambodia

1) Legislation related to SWM in Cambodia

The core legislation of SWM is Sub-Decree on Solid Waste Management, which was established in 1999 as one of four sub-decrees based on the Low on Environmental Protection and Natural Resources Management. The other three sub-decrees are Sub-Decree on Water Pollution Control, Sub-Decree on EIA Process and Sub-Decree on Air Pollution and Noise Disturbance Control. Details of the Sub-Decree on Solid Waste Management are stipulated by declarations issued as directives or joint prakas, etc. Especially Joint Prakas of MoE (Ministry of Environment) and MoI (Ministry of Interior) on Solid Waste Management in All Provinces and Cities (2003) stipulates responsibilities of local authorities in terms of solid waste exception for hazardous waste. Summary of only some of significant legislation related to SWM is shown in the following table.

Table 4.3.16 Summary of Main Legislation related to SWM

Level of Legislation	Name of Legislation	Date of Adoption/ Approval	Summary of Contents
Law	Low on Environmental Protection and Natural Resources Management	December 24, 1996 (adopted by the National Assembly)	It mainly stipulates: - National environmental plan and regional environmental plan - Environmental impact plan - Natural resource management - Environmental protection - Monitoring, record-keeping and inspections - Public participation and access to information - Environment endowment fund - Penalties
Sub-Decree (No. 36)	Sub-Decree on Solid Waste Management	April 27, 1999 (approved by the Council Ministers)	Based on the Article 13 in Chapter 5 of the Low on Environmental Protection and Natural Resources Management, the Sub-Decree was established. The sub-Decree stipulates definition of solid waste, household waste management, hazardous waste management, monitoring and inspection of hazardous waste and penalty, etc. An annex of type of hazardous waste is attached. It also stipulates responsibilities or competence of authorities.
Declaration (No. 80)	Joint Prakas of MoE and MoI on Solid Waste Management in All Provinces and Cities	February 25, 2003 (signed and stamped by Co-Minister of Ministry of Interior and Ministry of	The Joint Prakas basically stipulates responsibilities of local authorities in terms of solid waste exception for hazardous waste. Local authorities include Environmental Department of Capital City and Provinces, Environmental Agency

Level of Legislation	Name of Legislation	Date of Adoption/ Approval	Summary of Contents
		Environment)	of Khan and District, and Council of Commune and Songkat. It also mentions responsibilities of Technical General Department of Ministry of Environment and citizenship.

Source: JICA Study Team

2) Definition of Solid Waste in Cambodia

The types of solid waste are defined depending on not types of waste generators but whether it contains toxin or hazardous substance or not. In accordance with Article 3 in Chapter 1 of the Sub-Decree on Solid Waste Management, the definition of the solid waste is as follows:

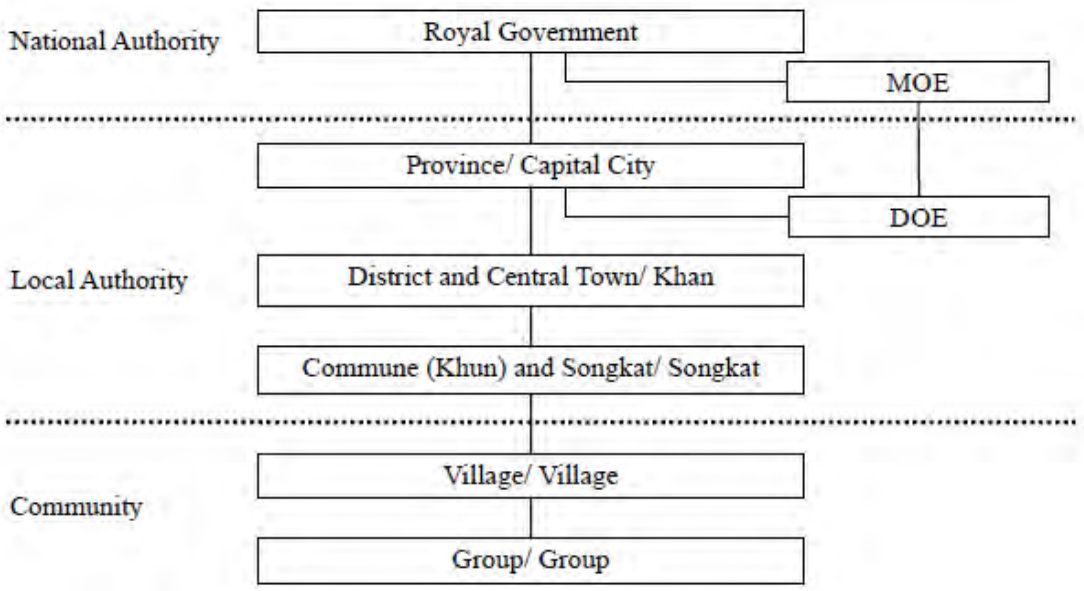
Table 4.3.17 Definition of Solid Waste

Category of Waste		Definition
Solid Waste		Hard objects, hard substances, products or refuse that are useless, disposed of, are intended to be disposed of, or required to be disposed of
	Non-Hazardous Waste (Household Waste)	A part of the solid waste that does not contain toxin or hazardous substance, and is discarded from dwelling, public buildings, factory, market, hotel, business building, restaurant, transport facilities and recreation sites, etc: solid waste other than wastes listed in the annex of the sub-decree
	Hazardous Waste	Radioactivity substances, explosive substances, toxic substances, inflammable substances, pathogenic substances, irritating substances, corrosive substances, oxidizing substances or other chemical substances that may cause the danger to human (health) and animal or damage plants, public property and the environment, and may be generated from dwelling houses, industries, agricultural activities, business and service activities and mining, etc: 33 types of hazardous waste are listed in the annex of the sub-decree.

Source: JICA Study Team (based on the Sub-Decree on Solid Waste Management)
Note: In terms of Non-Hazardous Waste, the word defined in Khmer in the Article 3 of the sub-decree actually means Household Waste and, is also translated as Household Waste in English according to unofficial translation prepared by MoE, however, it is desirable to substantially regard it as not Household Waste but Non-Hazardous Waste in consideration of the definition and meaning of the solid waste shown in the Article 3 because the waste generators shown in the Article 3 include not only household but also other waste generators as factory and business building, etc. Accordingly the expression of Non-Hazardous Waste is tentatively used in the above table.

3) Structure of Administration of SWM in Cambodia

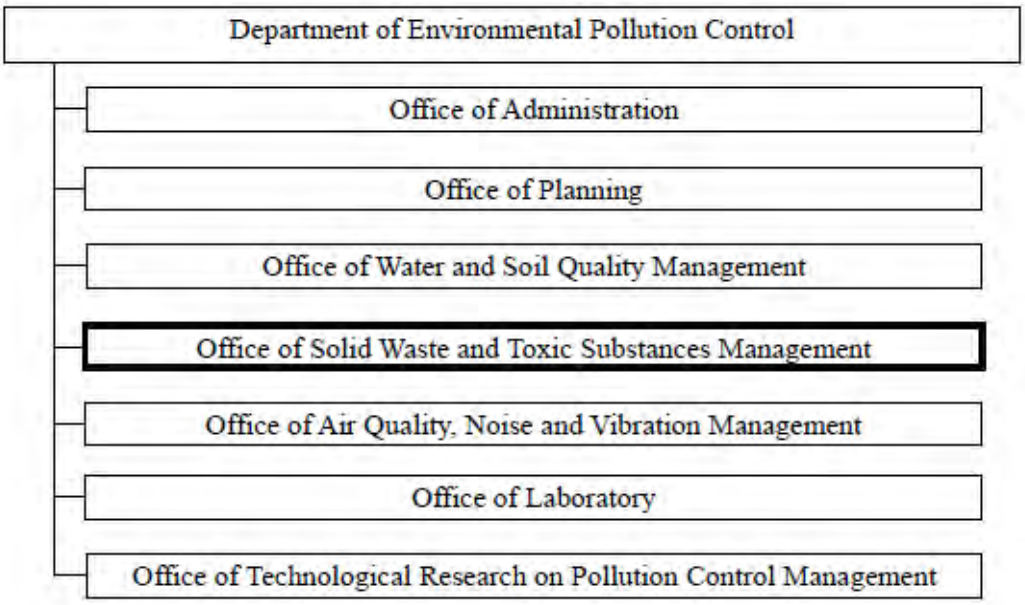
MoE and DoE (Department of Environment) is responsible official for SWM at national level and local level respectively. DoE shall implement activities of SWM under direction from MoE and from local government of provinces or capital city. Activities of SWM at district or commune level are implemented under the directions or instructions of provinces or capital city.



Source: JICA Study Team
Note1: Expressions in the left side of "/" in each box show administrative structure of province, and them in the right side of "/" in each box show administrative structure of city.
Note2: City in Cambodia is only Phnom Penh City at present.

Figure 4.3.16 Structure of Administration of SWM in Cambodia

In the MoE, Office of Solid Waste and Toxic Substances Management under Department of Environmental Pollution Control is responsible for Solid Waste Management. The office is shown in the following figure showing the organization of Department of Environmental Pollution Control.



Source: MoE

Figure 4.3.17 Structure of Department of Environmental Pollution Control of MoE

4) Roles of MoE and Local Authorities on SWM

In accordance with the Sub-Decree on Solid Waste Management:

SWM of Non-Hazardous Waste (Household Waste) is under administration by Province or Capital City, however, MoE is responsible for establishment of guidelines and monitoring, etc. regarding Non-Hazardous Waste.

SWM of Hazardous Waste is under administration by MoE, however, local authorities has also competence in terms of hazardous waste from waste generators other than factories and manufacturing.

Roles of authorities by type of waste are shown in the following table.

Table 4.3.18 Roles of Authorities by Type of Waste

Type of Wastes		Roles of Authorities	
		Local Authorities	MoE
Non-Hazardous Waste (Household Waste)		Establishment of waste management plan Responsible for Collection, transport, storage, recycling, minimizing and dumping of waste	Establishment of guidelines Monitoring Approval for domestic investment Approval for exportation of waste to abroad
Hazardous Waste	From dwelling houses, markets, clinics, hospitals, hotel, restaurants and public building	Competence for collection, transport, storage, disposal of waste	Establishment of guidelines Issuance of Prakas on the standard of quantity of toxin or hazardous substances Receiving reports from owner of the hazardous waste and owner or responsible person of storage place or landfill of the hazardous waste Approval for transportation or construction of storage place or landfill of hazardous waste from factories and manufacturing site Monitoring and inspection
	From factories and manufacturing site	-	

Source: JICA Study Team (based on the Sub-Decree on Solid Waste Management)

In addition to responsibilities of authorities, responsibilities of owner of hazardous waste and owner or responsible person of storage place or landfill of the hazardous waste are also stipulated by the Sub-Decree on Solid Waste Management.

In the Joint Prakas of MoE and MoI on Solid Waste Management in All Provinces and Cities, responsibility for Commune Council to educate citizenship and disseminate information to citizenship on how to storage and disposal of solid waste, and responsibility for citizenship to participate in keeping the hygiene and maintaining public waste bins are stipulated.

5) Key Plans related to SWM in Cambodia

Key plans to consider SWM in Cambodia and Coastal area are shown in the following table. Especially the National 3R Strategy in Cambodia shows current and future direction of SWM in Cambodia even though it is yet to be authorized.

Table 4.3.19 Key Plans related to SWM

Coverage of Plan	Name of Plan	Period of Implementation/ Target Year	Summary of Contents	Remarks
Nation wide	MoE Strategic Plan (2004-2008): December 31, 2003	2004-2008 2009-2013 (updating)	Based on the confirmation of roles of the MoE and evaluation on their activities and performances, mission and strategic goals (2004-2008) are set, and action plans for five years are shown by each department of the ministry. Strategic Plan is updated for 2009 to 2013, and it focuses on improvement of conditions of landfill, improvement of management of health care waste, revision of the Sub-Decree on Solid Waste Management and establishment of new legislation for hazardous waste (especially chemical waste), etc.	Updating Strategic Plan (2009-2013) is drafted.
Nation wide	National 3R Strategy in Cambodia (Final Report, December 2008) (prepared by Cambodia Environmental Association (CEA), Supported by UNEP RRC.AP/ IGES)	2015, 2020 (Target Year)	Numerical target of waste reduction is set for 2015 and 2020. To realize them, strategies, roles of stakeholders are formulated. In addition, action plan and recommendation of pilot projects are shown in the paper.	It is drafted plan and, will be authorized.
Coastal area	Costal Environmental Management Action Plan 2007-2011 (endorsed by National Coastal Steering Committee on July 9, 2007)	2007-2011	Based on the analysis of potential coastal economic development impacts and assessments, etc., action plans on environmental management are shown by each prioritized factor. SWM is one of prioritized factors, and strengthening waste management systems, strengthening primary education programs and establishing related facilities, etc. are proposed in the plan.	-

Source: JICA Study Team

6) Special Circumstances of SWM in Cambodia

There is the Law on Concessions, which is established in 2007 with the purpose to promote and facilitate the implementation of privately financed in the Kingdom of Cambodia in order to ensure the public interest and fulfillment of the national economic and social objectives. In accordance with the Law on Concessions, waste management and treatment is stipulated as one of sectors that concession contracts maybe be entered into. Some of provinces, including the capital city in Cambodia apply concession contracts to SWM under the Law on Concessions.

Based on the above-mentioned background information on SWM in Cambodia, present conditions and key issues of SWM in the Coastal area are discussed below.

(2) Present Conditions of Solid Waste Management (SWM) in the Coastal Area

1) Composition and Amount of Waste

In Coastal area, waste is mainly generated in households and in businesses such as retail stores and food shops. More than half of discharged waste is thought to be organic waste. At present industrial waste is clarified in only Preah Sihanouk Province. Amount of municipal waste and industrial waste could increase rapidly in accordance with economic development in the future.

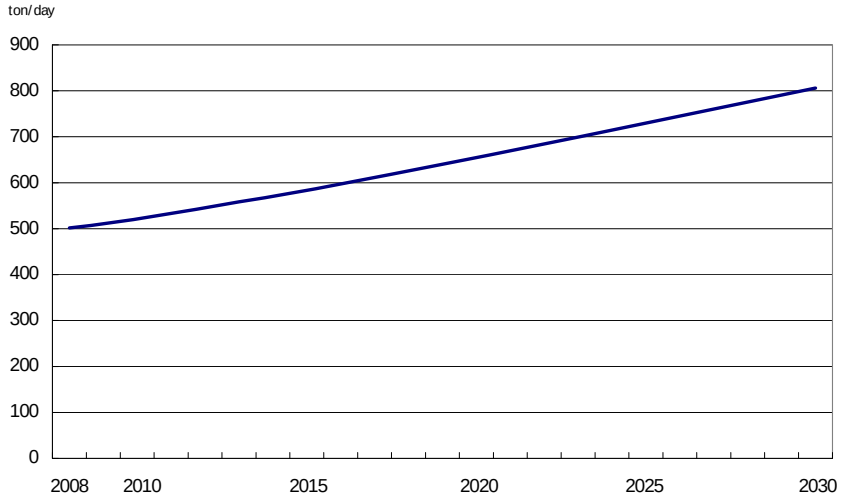
The following table shows the current amount of waste based on the data obtained through the interview with the provinces. 78 ton/ day of waste is collected in Coastal area in 2008.

Table 4.3.20 Amount of Waste reported by each Province (2008/ 2009)

	Koh Kong	Kep	Kampot	Sihanouk
Amount of waste (collected)	5 tons/ day (2008)	5 tons/ day (2008)	23 tons/ day (2008)	45 tons/ day (2008) 60 tons/ day (2009)

Note: Amount of waste in Sihanouk includes industrial waste. Ratio of industrial waste is thought to be 30% of total by the garbage collection service company.
Source: JICA Study Team (based on the interviews with each province)

Estimated future amount of waste is shown in the following figure. Estimated amount of generated waste is approximately 500 ton/ day in 2008. It means that less than 16% of total generated waste is collected in Coastal area.



Source: JICA Study Team
Note 1: Municipal waste is waste from household and commercial sector. It does not include industrial waste.
Note 2: Generated waste of household is estimated on condition that unit generation is 0.5 kg per capita per day.
Note 3: Generated waste of commercial sector is estimated based on the estimated number of tourism and unit generation.

Figure 4.3.18 Present and Future Estimated Amount of Generated Municipal Waste

2) Discharge and Collection of Waste

Residents and businesses discharge waste into containers placed in front of their houses/ buildings. There is a case that the provincial offices place collection containers along main

streets or in public palaces. In Coastal area, all of the provinces have concluded a contract with private companies or individuals for the garbage collection service. Especially Preah Sihanouk province and Kampot province have introduced concession contracts on the garbage collection service. The contractors in Coastal area collect waste from containers, load it to dumping car or compress car and transport it to dumping sites. The provinces entitle the private sector to do business on garbage collection service in their areas through the contract.

In principle, the contractors are supposed to collect waste every day, but actually they collect waste only two or three days per week.

3) Disposal of waste

The contractors of garbage collection are to dump waste at dumping sites designated by the provinces. Basically each province has an authorized dumping site, including dumping site which was closed. However, there are also some unauthorized dumping sites in Coastal area.

The transported waste is just dumped in the authorized dumping site without soil coverer nor treatment of leachette. Sometimes rainwater is seen to stagnate around dumped waste at the sites. The condition of dumping sites is generally unsanitary in Coastal area.

Access roads from main roads to dumping sites are seldom paved. Waste pickers live in and around some dumping sites and collect recyclables from dumped waste. In a dumping site, waste pickers burn tires to pick out metal.

Three provinces respectively use a temporal dumping site which belongs either to the province or a private firm. Only Preah Sihanouk province does not use a temporal dumping site, but they strive to find a new landfill site. Two provinces, Kampot and Sihanouk respectively have a proposed site for the new dumping site, preparing the location map.

4) Recycling

Recycling in Coastal area is done by private sector without any involvement by the public sector. Basically, waste pickers or junk buyers collect recyclables at source, and collection workers pick up recyclables from discharged waste at the time of collection, and waste pickers pick up recyclables from dumped waste at dumping sites. These collected recyclables are sold to junk shops that sell them to dealers mostly in Vietnam. However, in Kep there are almost no waste pickers, recyclables are then sold to dealers in Vietnam through collection workers.

Composting activities are not seen in Coastal area.

5) User Charge

Waste generators are charged garbage collection service fee in urban areas where garbage collection service is provided in all the four provinces. Contractors of garbage collection service collect the fees directly from waste generators; residents and businesses. The fees are decided according to the agreement between the contractor and province. The fees are different according to the type of waste generators. Basically, businesses pay the fee more than residents. In case of households, the fee is 4,000 riel to 8,000 riel/ household/ month.

There are free riders who do not pay the fee. The collection ratio of the fee is 40 % according to information from the contractor in Koh Kong.

The following table shows profile of SWM of target provinces in Coastal area.

Table 4.3.21 Profile and Current Status of Solid Waste Management by Target Provinces

		Koh Kong	Kep	Kampot	Sihanouk
Amount of waste (2008/ 2009)		5 tons/ day (2008) ($7m^3$* 2 dump cars + $2.5m^3$* 1 dump car* 0.3 ton/ m^3)	5 tons/ day (2008) (from households and tourism)	23 tons/ day (2008)	45 tons/ day (2008) 60 tons/ day (2009)
Collection system					
	Coverage areas of collection service	N/A	N/A	70% of urban area	(Collection service is provided a district.)
	Subject to provide collection service	Private companies	Private companies	Private companies	Private companies
	Contract documents	N/A	N/A	Existing	Existing
	Contract term	N/A	N/A	2007 – 2019	2001 – 2015
	Number of garbage collection vehicles	Three dump trucks (Capacity of two trucks is $7m^3$, one is $2.5m^3$.)	N/A	Two compactors (The contractor owns an additional vehicle.)	Four compactors Two trucks
Disposal					
	Current status of dumping site	Using a temporal site	Using a temporal site	Using a temporal site in case of urban area Using six sites in case of rural areas	Using one dumping site
	Area of current/ temporal dumping sites	23 ha (remaining 3 ha)	N/A ha	N/A ha (Previous one: 20 ha)	8 ha
	Owners of the current/ temporal dumping sites	Private	Province	Province	Province
	Existence of waste pickers	Existing	No	Little (at previous dumping site)	Existing (20-30 families)
	Proposed site for new dumping site	Finding	Found a area	Found a area	Found a area
	Area of the proposed site	-	5 ha	19.4 ha	65.45 ha
	Owner of the proposed site	-	N/A	Province (A portion of it belongs to a private firm.)	Province
Recycling					
	Existence of waste pickers and junk shops	Existing	No waste pickers	Existing (Two Junk shops)	Existing (10 Junk shops)
	Recycling routes	Waste pickers/ collection workers -> Junk shops -> Dealers of Vietnam	Collection workers -> Dealers of Vietnam	Waste pickers/ collection workers -> Junk shops -> Dealers of Vietnam or Phnom Penh	Waste pickers/ collection workers -> Junk shops -> Dealers of Vietnam, Thailand or Phnom Penh
Collection and disposal fee					
	User charge	5,000 to 10,000 riel/ household or business (Generally, businesses pay higher rate than households)	8,000 riel/ household/ month, 10,000 riel/ business or market/ month	Around 4,000 riel / household/ month The limited price of households and businesses are designated in a burden book.	3,900 to 5,850 riel/ household/ month The limited price of households and businesses are designated in a burden book.
	Collection rate	Around 30% in urban area	Around 90% in urban area	Around 40% in urban area	Around 60% in urban area
	Payment from the province	Nothing	Nothing	2 million riel per month to the contractor regarding collection service for public road and roads along garden and river.	Nothing

Source: JICA Study Team (based on the interviews with each province)

(3) Key Issues to Establish the Future Solid Waste Management in the Coastal Area

1) Establishing Sanitary Landfill and Recovery of Closed Dumping Site

The four provinces in Coastal area make efforts to secure new dumping sites because their present dumping sites are already or nearly full. Kampot province use temporal areas and would continue to do so until establishment of new dumping sites.

All dumping sites are not sanitary, because soil cover is not conducted and, there is no leachette system. In addition, Kampot province decided to discontinue the previous dumping site, but the recovery of the land has not been done properly. Under the current conditions, serious negative environmental impact of unsanitary damping may arise, if the amount of waste increases over the time. This would also damage the image of Coastal area for tourism the provinces hope to develop.

A sanitary landfill site with a leachette system and appropriate operation, and recovery of closed dumping site are needed in consideration of the future regional development of Coastal area.

In addition, a province considers preparing sanitary landfills for all its districts, including those that have not had it, based on a provincial policy of one sanitary landfill for one district. In the process of the development of costal areas, it would be, however, necessary for provinces to consider a joint solid waste management system under which districts commonly use a sanitary landfill in consideration of efficiency of solid waste management.

2) Readdressing Collection System with Proper Administrative Control

The all four provinces make a contract with private companies or individuals for the collection of waste. The contractors charge waste generators a fee for the garbage collection service. However, there are free riders who do not pay the fee such as discharging waste into containers of neighbors, etc. Consequently the revenue from the fee is too low for the contractor to earn a profit in the garbage collection service.

In the four provinces, the contractors often do not collect waste from the designated areas, or do not collect waste regularly. One of the reasons may be that administration control by the province is insufficient for the private sector to provide an appropriate collection service. The administration control for waste generators who do not pay the fee is also insufficient. It is natural that the private sector does not provide their service in order to make a profit in case there are free riders. In addition, it might be difficult for waste generators to pay full cost charge for solid waste management service in consideration of their payability.

The current collection system should be readdressed to build appropriate and fair collection system affordable to the subscribers and secure sanitation in costal areas.

3) Developing Capacity of Local Authorities on Solid Waste Management

Essentially, the provinces seem not to have sufficient knowledge and technology on establishment, operation and maintenance of waste management system. The private sector involved in waste collection does not seem to have sufficient knowledge and information, either, to manage garbage collection activities. Despite the fact that the national government

has a guideline on solid waste management, it has not been authorized and disseminated to local authorities.

Capacity development at local level is needed in order to solve the issues of solid waste management in Coastal area. The public sector should commence from gathering and sharing the knowledge on how to estimate cost about garbage collection under the privatized collection system.

4) Support by National Government in the Solid Waste Management in the Coastal Areas

The capacity development at local level is needed, as discussed above, but it will be difficult for the provinces alone to solve the issues. Support from the central government in this matter will be essential in the following two view points.

First, the technical assistance on collection and disposal of waste is imperative. Second, financial support for the local authorities will be important, because some of the province do not afford to improve solid waste management to ensure the sanitation in Coastal area.

Introducing a subsidy policy at the national level could be considered as one of the countermeasures to realize financial support to the local authorities and disseminate the national level policy on solid waste management, including guidelines and other related information.

5) Reconsidering the Financial Flow of Solid Waste Management

It is very important to reconsider the financial flow to motivate related bodies such as provinces and districts, to work for appropriate solid waste management in consideration of development and growth in Coastal area in the future. How to handle the financial flow of solid waste management is a key issue. In addition, financial flow is linked with the following factors of Public-Private Partnerships (PPP); who is owner of the facilities concerned, who is financer of the facilities concerned, who manages garbage collection service fee, and who is operator, etc. Accordingly, to reconsider the financial flow of SWM, it is necessary to consider restructuring project procurement of SWM from the view point of improvement of PPP.

6) Implementing Comprehensive Solid Waste Management under the Concept of 3R

Provinces should promote new solid waste management system in a comprehensive manner, in order to solve the issues. A new sanitary landfill site, once established for use, must be used as long as possible in consideration of saving costs and difficulties to find a new site for landfill. Reduction of disposal waste is thus needed, and introduction of waste reduction activities could influence the collection system, and involvement of waste generators in waste reduction is necessary. The provinces have to consider not only disposal of waste but also waste reduction activities, collection system and involvement of waste generators, including environmental educations.

The national 3R (Reduce, Reuse, Recycle) strategy was drafted, and will be authorized as previously described. The comprehensive solid waste management under the concept of the 3R in Coastal area would thus comply with the national policy.