CHAPTER 3

Economic Corridors and Industrial Estates, Ports, and Metropolitan and Alternative Roads in Cambodia

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CHAPTER 3

ECONOMIC CORRIDORS AND INDUSTRIAL ESTATES, PORTS, AND METROPOLITAN AND ALTERNATIVE ROADS IN CAMBODIA

Sau Sisovanna

INTRODUCTION

Since the General Election in 1993 with United Nations supervision, Cambodia has been on the right track for economic integration with the world and the region. Cambodia joined ASEAN in 1999 and the WTO in 2004 to liberalize international trade. Cambodia is also part of the Greater Mekong Subregion (GMS) economic cooperation program, under which economic corridors have been developed. The infrastructure for transport corridors, as a first stage of economic corridor development, has been built to shorten economic and trade distance in the GMS as a strategy of the Cambodian government for enhanced regional development to reduce poverty.

In the border areas, special economic zones (SEZs) have been developed rapidly along the Southern Economic Corridor, in particular in Bavet at the border with Vietnam, Poipet at the Thailand border and Koh Kong at the Thailand border. Metropolitan areas and port cities such as Phnom Penh and Sihanoukville have also attracted more attention from investors, mostly foreigners, since trade liberalization. The key driver for the SEZs is to make sure that development is not only concentrated

in Phnom Penh but moves to other parts of the country, so that the benefits in terms of increased employment and poverty reduction can be shared throughout. The road network, airway, maritime and inland waterway transport development plays a crucial role in linkage among industrial zones and ports. Traffic jams in Phnom Penh at peak hours as an obstacle of economic growth are more of a concern for policy makers seeking better countermeasures to develop a new city plan.

This paper consists of an introduction, five sections and a conclusion. Section one covers the history and current situations of Phnom Penh city and other provinces and cities. Section two examines the SEZs in several areas. Section three investigates ports, including river ports. Section four looks at the airports, including the Phnom Penh and Sihanoukville airports. Section five identifies the connectivity and linkage of Phnom Penh to ports and harbors, SEZs and neighboring countries, and draws up a map on traffic congestion and countermeasures to solve traffic bottlenecks and future demand. Section six describes Phnom Penh city transport and new city plans such as a ring road bypass, flyovers, and bridge construction. Section seven offers a conclusion.

1. HISTORY AND CURRENT SITUATION

1.1. Phnom Penh, the Capital City

Phnom Penh is the main city of the country, accounting for nearly a quarter the urban area. The agglomeration of Phnom Penh represents about 10 percent of the national population. Phnom Penh has been the capital of Cambodia since 1862 without interruption. Its functions as the political and economic capital enable Phnom Penh to have a GDP of approximately USD 1.4 billion (2003), 28 percent of the national GDP, along with a per

capita GDP of USD 1,140, three times the average of the country. Phnom Penh is richer than the rest of Cambodia.

In 2004, the average per capita income by province (including all industries) was USD 357 and the average income in 18 of the 24 provinces was below this. The provinces with a per capita GRDP higher than the national average are Phnom Penh (USD 1,117), Sihanoukville (USD 980), Koh Kong (USD 629), Pailin (USD 495) and Siem Reap (USD 385).

The municipal territory of 375 km^2 is particularly exiguous in comparison with that of other metropolises of the region, creating Phnom Penh as a city and stressing the distance of wealth with the rest of the territory.

The largest urban center in Cambodia is what might be called the Greater Phnom Penh metropolitan area or the Greater Capital area, which combines the capital city of Phnom Penh and its outskirts extending to Kandal province. The areas along National Road No. 2 towards Takeo and No. 3 towards Kampot are urbanized in a conjunctive manner.

Three arms extend outwards from the Greater Phnom Penh metropolitan area: one along NR4 westward towards Kampong Speu, another southwestward along NR1 and the Mekong River towards Svay Rieng and Bavet city at the border with Vietnam, and the third stretching northward along No. 6 and then No. 7 towards Kampong Cham. Smaller urban centers line both sides of Tonle Sap Lake along NR6 towards Siem Reap and along NR5 towards Battambang. The roads cross near the border with Thailand. Road network development in Cambodia started in the early 1900s, and most of the roads built basically for light vehicles were completed 50 to 60 years ago. The road network system has long contributed greatly to the transport sector in Cambodia and

has served as the country's lifeline to the outside world and its internal distribution system.

Growth of the urban population in the Greater Capital area will be driven by rapid urbanization in Kandal province, expanding the urban center outwards to suburban areas. The Greater Capital area houses most of the administrative functions of the nation, and thus accommodates the best human resources of Cambodia. Development of the nation often depends on the development of the capital city. Therefore, development of the regional economy in the Greater Capital area carries special meaning for Cambodia.

As the urbanized area of Phnom Penh is close to saturation, expansion of the city outwards is inevitable. The suburban areas around Phnom Penh have potential for industrial as well as residential development. Maintaining a well-balanced suburban area for both accommodating the growing population of the capital area and providing sites for new industrial facilities will be important for the region.

The mobility of the population is high in Cambodia. In the National Census of 1998, more than one-quarter of the population had changed the place of residence. Fifty-nine percent of the urban population and 26 percent of the rural population had migrated. According to the General Population Census of Cambodia 2008, the number of migrants (fewer than 5 years) from provinces moving into Phnom Penh reached 251,174, while 36,868 people moved out from Phnom Penh.

The "day population" of Phnom Penh exceeds 1,500,000 people. The setting up of activities extends beyond administrative limits, mainly to Takhmao and along National Road No. 4, home to about 50 factories along 20 kilometers.

The National Institute of Statistics estimates that the municipality of Phnom Penh will accommodate nearly 2,200,000 inhabitants by 2021 (GPCC1998). The Office of Urban Affairs' planned estimation is 2,250,000 inhabitants in the Phnom Penh conglomeration, including the urban districts agglomerated from Kandal. So, a third of the population of Kandal will be bound by employment to the agglomeration of Phnom Penh.

In that Phnom Penh is the capital of the Kingdom of Cambodia, the central functions of the State must be localized there, including most administrative, legislative, legal and executive offices of the country. In addition, the administrative offices and the urban services of the capital constitute a strong local institutional representation. The central functions involve more than 46,000 civil servants and a quarter of the municipality. This facilitates the development of broad economic activity from which the private sector profits and accommodates national and foreign delegations for international meetings.

The localization of central power and availability of a work force more qualified than elsewhere attracted the central offices of the major private companies in the country. This partially explains the preferential localization in Phnom Penh of nearly half of the country's industrial employment.

The service sector is particularly mobilized by the presence of the public and private decision-making functions, and as such represents the third employment sector in Cambodia. In fact, the service sector generates the strongest surplus.

Based on a 2006 survey, there were 9,267 establishments in the seven districts of Phnom Penh. These establishments include 4,221 in manufacturing; 2,833 in accommodation and food service; 1,463 in wholesale and the repair of vehicles and

motorcycles; 511 in other service activities; 176 in water supply, sewage and waste management; and 63 in electricity and gas. Approximately 309,000 workers were employed in the 9,267 establishments in the Phnom Penh capital (Cambodian Statistical Year Book 2008).

The function of a capital and the integration of Cambodia with ASEAN and the WTO leads to the important activity of business tourism. With more than 50 percent of the country's hotel rooms, 30 percent of the guest house rooms and 60 percent of the travel agencies, Phnom Penh has the most important tourist activity of Cambodia. Phnom Penh can be a gateway to developing cultural tourism at Angkor and leisure tourism at the seaside.

Phnom Penh has a number of comparative advantages, including the land tax, cost of labor and international access by its location on the Bangkok-Ho Chi Minh City axis.

The priority of the government, given the electricity production, rapid increase in subscribers of the telephone companies and fast improvement of road network quality, will be to appreciably reduce costs in the coming years so as to reinforce Phnom Penh's competitiveness. The still-fragile economic takeoff that we see today would be strengthened by better organization of urban space and optimization of existing transport infrastructure capacity.

The port of Phnom Penh is located at the confluence of the Mekong, Bassac and Tonle Sap rivers. In 1434, Phnom Penh Port succeeded Angkor Thom (after it was captured by Siam) as the Khmer Empire's capital, only later to be abandoned many times.

A major industry in Cambodia is wearing apparel and it is apparent that these manufacturing plants are concentrated in Phnom Penh and its outlying vicinities such as Kandal. This industry accounts for more than 60 percent of the production value of all manufacturing industries, many of which are factories that export mainly to the United States and the EU.

The government's decisions to direct productive activities to the secondary cities and develop national territory, especially Sihanoukville and the border zones, for export marketing will create better balance better. As such, the industrial production, even heavy industry, will have to be established outside Phnom Penh when it is intended for export. On the other hand, activities intended for the supply of consumer goods to the metropolitan population will find their place in the suburbs since they are not polluting or nuisances. The infrastructures of exchanges and storage have particular importance in this regard. New industrial zones are planned in Sihanoukville, Koh Kong and other border areas where industrial estates have already been established. However, few factories are currently operating in these areas, as they have been left behind by international competition. New promotional activities are planned to attract foreign direct investment (FDI), and it is suggested that significant effort is necessary to ensure the infrastructure (electricity, water, etc.) in the industrial estates compared to that in neighboring countries.

1.2. Preah Sihanouk Province

Sihanoukville, founded as a seaport a half century ago, was recently renamed Preah Sihanouk province. It is located 235 kilometers southwest of Phnom Penh in high land on the Gulf of Thailand, not too far from the plains area of Cambodia. It can be

reached by National Road No. 4. According to the 2008 census, the total population of Preah Sihanouk province is 221,396 people, including 110,777 males and 110,619 females. This represents 1.65 percent of Cambodia's population. Preah Sihanouk province consists of four districts: Krong Preah Sihanouk, Prey Nob, Stung Hav and Kampong Seila.

The Sihanoukville town area is spread thinly across a peninsula, surrounded on three sides by beaches. The downtown area is near the center of the peninsula a couple of kilometers from the beach.

Sihanoukville is one of the most famous provinces in terms of economic and commercial development in the Kingdom. The commercial success of the port in Sihanoukville led to a flurry of construction projects, including hotels, banks, shops, restaurants, a brewery, an oil depot, factories and SEZs. There is a chamber of commerce, and other business and administrative institutions.

As for financial institutions, there are several bank branches located at Sihanoukville, including those of Cambodian Public Bank Ltd., ACLEDA Bank Plc., Cambodian Commercial Bank Ltd., Singapore Banking Corporation Ltd., Cambodia Mekong Bank Public Limited and ANZ Royal Bank Cambodia Ltd. There are plenty of hotels, guest houses, telecommunication services, and transportation and other facilities where tourists and foreigners can stay and work.

Sihanoukville is the only international deep-sea port in Cambodia equipped with container-handling facilities. Most garment products are exported from this port, headed mainly to the United States and the EU via Singapore. Concurrently, most raw materials are imported from mainland China, Taiwan and other production centers through this port for delivery to garment factories in Phnom Penh and Kandal as well

as Sihanoukville. The present role of the area as a forerunner of development and a showcase of new systems and improvements is vital in Cambodia's pursuit of industrial development. Sihanoukville will have to be the focal point in the diversification of export commodities and development of new industries.

Sihanoukville will remain the boomtown of Cambodia throughout the planning period. The urban population in Sihanoukville is growing rapidly and at a rate much higher than the national average, with urban areas expanding near the port, into the hinterland plateau and out to the surrounding hills.

Sihanoukville is located on the coastal strip, and is the only urban core separated geo-economically from the axis of Tonle Sap-Phnom Penh by a mountainous region. Given the limited size of the Cambodian economy, the country's domestic market alone is not attractive enough for foreign direct investors. In order to attract such investors, it is important to create a gateway, through which potential investors would have good access to the Cambodian market together with those of neighboring countries. With improvement of international links, Cambodia will appear to be a more attractive platform for investment to reach Indochina, ASEAN and further to the world over time.

Sihanoukville is on the Coastal Route of the Southern Economic Corridor. On top of that, Sihanoukville will be one of the core cities to support the international corridor. There is the prospect of upgrading coastal road NR48 between National Road No. 4 and Koh Kong on the Thai border. The geo-economic position of the coastal area of Cambodia will be totally changed from an isolated strip of land to a crossroad of the Indochina peninsula. This will make Sihanoukville quite appealing to investors who appreciate good access to the entire region, the two largest cities of Bangkok and Ho

Chi Minh City, and the Eastern Seaboard either by sea or by land.

Sihanoukville also has a fishing harbor that is the largest in the country in terms of gross output. Industries for processing marine products such as mackerel and sardine are located in the area. It is expected that the industrial potential would be increased by improving fishery infrastructure, including the fishing port, cold storage and distribution systems. As a large-scale factory of beer and beverages is located in the area, similar factories have the possibility of locating in this area subject to growth of the domestic market. In addition, the area has the possibility of locating the manufacture of tapioca as well as palm oil for soap production. Although the municipality presumably has silica sand, its utilization for the glass industry is subject to further study considering the capital- and technology-intensive characteristics.

1.3. Bavet City

Bavet city is part of Svay Rieng province, located 165 kilometers southeast of Phnom Penh along the ASEAN Highway National Road No. 1. Bavet is comprised of five sangkats (communes), named Sangkat Bati, Sangkat Bavet, Sangkat Chrak Mtes, Sangkat Prasat and Sangkat Prey Angkunh. The total population of Bavet is 37,123 people, consisting of 18,288 males and 18,838 females.

Actually, its economical resource is its position on NH1 on the straight way between Ho Chi Minh City and Phnom Penh. Bavet city is a commercial, industrial and tourism development center of Svay Rieng province. There are factories, manufacturing, casinos, shops, restaurants, hotels and other businesses. Basic infrastructure conforms to the international standard.

There are also several financial institutions located at Bavet such as the

Cambodian Public Bank Ltd. (Malaysian), ANZ Royal Bank Cambodia Ltd. and ACLEDA Bank Plc.

Bavet is an international border gate with Moc Bai, Vietnam. Bavet is one of the SEZs of Cambodia, and textile and bicycle factories have been established. However, the most evident economic activity of Bavet at present is that of the nine casinos, attended by Vietnamese. Bavet became a municipality by sub-decree in December 2008. Electricity is currently imported from Vietnam and is cheaper compared to other part of the country. As the local economy advances, the population near the border will increase exponentially, providing an abundant source of low-cost labor. Bavet ensures convenient and low-cost access to land and sea transportation as well as raw materials and technical support from Vietnam. Moreover, containers passing through the borders are not subject to customs inspections.

1.4. Koh Kong Province

Koh Kong province is located 294 kilometers from Phnom Penh in the southwest of the country along the coastal region. It consists of seven districts, namely BotumSako, KiriSakor, Koh Kong, Krong Khemarak Phoumin, Mondol Seima, Srae Ambel and Tma Bang. Koh Kong city is connected to National Road No. 4 by National Road No. 48.

Koh Kong province has a handicapped location due to the long distance from the country's trunk road network. With a large part of its territory in the mountainous area, the population of Koh Konh province is small. According to the General Population Census 2008, its total population is 117,481 people, of which 59,327 are males and 58,154 are females. This represents only 0.88 percent of the country's population. The density is 12 people per km^2.

Koh Kong has 20 islands, and a 237-kilometer-long coastline with the Phnom Samkos Wildlife Sanctuary, Boutum Sakor National Park, and part of the Kirirom National Park. Koh Kong has not been developed for tourism purposes yet, apart from the casino resort located in the Thai border area. Mangrove forests and fishing villages in the wildlife sanctuary are suitable for eco-tourism. The Tuol Kokir and Ta Tai waterfalls are major nature tourism resources situated along NR48. The transportation system needs to improve in order to attract more tourists by connecting to major tourist destinations in Cambodia.

The advantage of the province is its proximity to neighboring Thailand. Industrial location in this province should take into account the local resource utilization and proximity to the border with Thailand. Available local resources include fishery products, fruit, salt pan and clay. If the existing fishing port could be improved, fishery-based industry might have good prospects.

Currently, Koh Kong imports 1,800 KVA of electricity from Thailand. Koh Kong has hydropower potential of 12 stations with a capacity of hundreds of MW. Five of these are under construction.

To date, several SEZs have been approved by the Royal Government of Cambodia, of which only the Neang Kok Koh Kong SEZ is operational near the border. If all of this materializes, labor intensive and export-oriented industry will be located together with the fishery-resources-based industry.

1.5. Poi Pet City

Poi Pet city is part of Banteay Mean Chey province. It is located about 400 kilometers northwest of the Phnom Penh capital along NR5 and the Southern Economic Corridor's Bangkok-Poi Pet-Phnom Penh-Bavet-Ho Chi Minh City, bordering Thailand.

It is a key crossing point between the two countries, and is also extremely popular as a gambling destination, as gambling is illegal in Thailand. There is a strip of casinos and hotels between the Cambodian and Thai passport control counters, enabling Thais to gamble in Cambodia without needing to go through Cambodian immigration. This casino strip is a "special zone" that prevents Cambodians from gambling. Poi Pet is adjacent to the town of Aranya Pratet on the Thai side of the border.

However, it has a large city population due to the border crossing and related industry. The total population is 107,989 people, including 53,666 males and 54,323 females. Poi Pet consists of two sangkats, namely Nimit and Poi Pet, which is an international border checkpoint and an SEZ. Poi Pet connects to Phnom Penh by the NR5-NR6 road network, and by a railway of 386 kilometers. Electricity is imported from Thailand. National Highway 5, which begins in Phnom Penh and ends at Poi Pet, bisects the city running east to west. Although there is only one official border crossing in the city, numerous smaller roads in the area also run to various locations on the border.

1.6. Employment

The agriculture sector is dominant in Cambodia, with a 74 percent share of national employment. The service sector's share is 18 percent. Phnom Penh dominates employment in the service sector, which accounts for 57 percent of total employment in

the city. Koh Kong and Sihanoukville have a similar employment structure, with services at 34 percent and 46 percent, respectively. In these coastal provinces, employment in agriculture is smaller than in other areas.

It is estimated that there will be 300,000 to 350,000 additional laborers every year. The industry and service sectors are presumed to accommodate the majority of the increase in the labor force. The future level of employment in Phnom Penh, Sihanoukville and Koh Kong has been estimated by assuming the areas' shares of the whole country. It is estimated that there will be 130,000 to 140,000 additional laborers every year (The Study on Regional Development of the Phnom Penh-Sihanoukville Growth Corridor in the Kingdom of Cambodia).

It is also assumed that 300,000 to 400,000 people will be commuters or seasonal laborers from the surrounding provinces to the capital area. About half of them are assumed to be from the neighboring provinces, and the rest from other provinces.

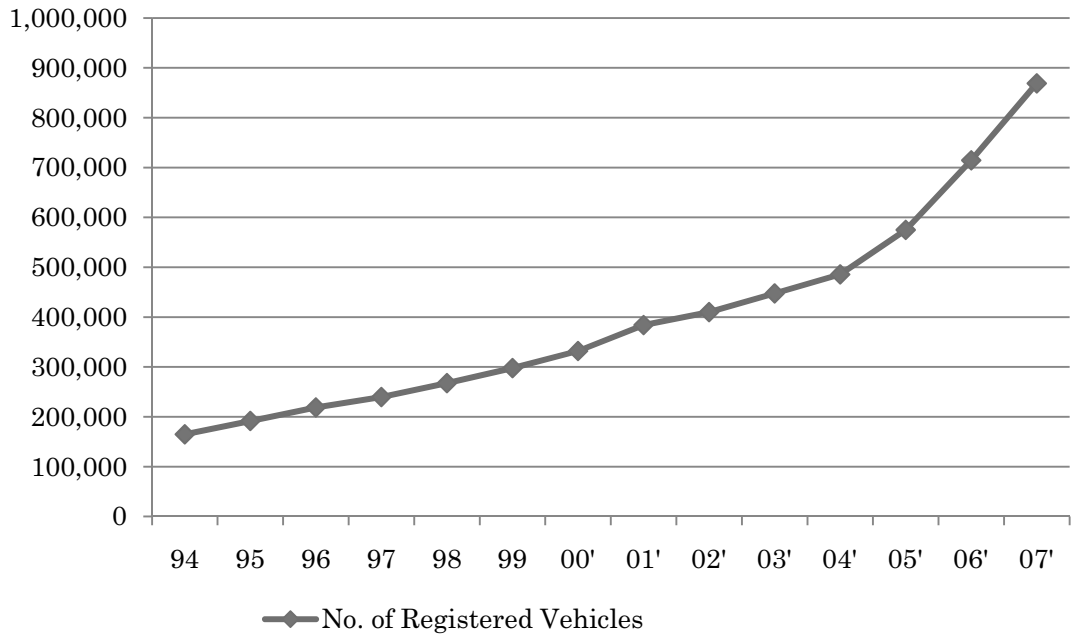
However, much more attention must be paid to strengthening labor productivity. For better-performing companies, improving labor productivity is an attractive priority. Two major strategies shall be followed, including improvement of pay practices to stimulate productivity and improvement of industrial relations to avoid strikes. Improving vocational training should be a priority, too, although achieving the full impact of this will take time, given the need to improve education overall.

1.7. Traffic Issue

The number of registered light vehicles was 24,073 in 2007. Compared to 2006, the number of registered light vehicles increased by 95.6 percent or 11,766 vehicles. Light vehicles are minibuses, pickups, tourism cars, state-owned cars and vehicles of

international organizations. There were 3,540 heavy vehicles registered in 2007. The registered heavy vehicles increased by 31.8 percent or 855 in number. A total of 599,848 motorbikes were registered in 2007. Motorcycles dramatically increased by 229 percent from 40,224 in 2006 to 129,915 in 2007. The total registered vehicles increased from 164,830 in 1994 to 868,832 in 2007 (Figure 1), of which about 75 percent are motorcycles.

Figure 1: Number of Registered Vehicles



Source: Drawn from data of Country Report on Road Safety in Cambodia and Report of MPWT.

With the growing number of motor vehicles, the number of road accidents is also increasing dramatically every year, despite the government's efforts in construction and rehabilitation of the road infrastructure to facilitate the rapid and smooth transportation of goods and people in boosting the national economy and reducing poverty. In the Kingdom of Cambodia, road accidents are being recognized as the second-biggest disaster after AIDS, causing a loss of life, public and private property and social harmony. The government's poverty-reducing policies are being affected and impeded by this "second disaster." The road accidents recorded since 1994 are presented as follows:

Table 1: Traffic Accidents in Cambodia

Year	No. regis.	Growth	No. accid	Dead	Hea. Inj	Light Inj	Fat/10000 veh	Fat/10000 pers.
1994	164,830		711	95	98	148	5.76	1.00
1995	191,682	26,852	719	91	144	218	4.75	0.94
1996	218,890	27,208	577	94	147	222	4.29	0.95
1997	239,770	20,880	429	83	134	201	3.46	0.83
1998	267,477	27,707	510	102	126	189	3.81	0.89
1999	297,667	30,190	556	196	309	465	6.58	1.67
2000	331,904	34,237	2,951	401	1,998	2,391	12.08	3.34
2001	383,990	52,086	2,699	459	1,771	2,413	11.95	3.73
2002	410,027	26,037	3,335	535	2,113	3,188	13.05	4.24
2003	447,428	37,401	3,760	824	2,714	3,616	18.42	6.37
2004	485,612	38,184	4,255	1,042	3,185	3,740	21.46	7.86
2005	574,858	89,246	3,957	904	3,185	3,833	15.73	6.65
2006	714,463	139,605	9,338	1,292	6	18,821	18.08	9.28
2007	868,852	154,389	9,449	1,545	9,794	7,861	17.78	10.82

Source: Compiled from Country Report on Road Safety in Cambodia and Report of MPWT.

According to the Ministry of Public Works and Transport (MPWT 2010), Cambodia currently has the highest ratio of road accidents to population density and traffic volume among all ASEAN nations. The Road Traffic Accident and Victim Information System report (Table 1) shows that four people die and more than 75 are injured daily on the roads (MPWT 2010).

Statistics indicate that 94 percent of road accidents are caused by users infringing on the traffic laws. Speeding, particularly on the national roads, drunk-driving and drivers' dangerous overestimation of their own abilities are the main causes of the accidents. Motorbike riders are particularly vulnerable in Cambodia and represent 72 percent of road traffic casualties. Most motorcycle casualties were not wearing helmets at the time of the accidents, reducing their chance of survival considerably.

2. INDUSTRIAL ESTATES, EPZS AND SEZS

2.1. Legal Framework for the SEZ Scheme

According to the Study on Economic Corridor Growth Phnom Penh-Sihanoukville 2004, the establishment of special promotion zones (SPZs) has long been an issue for Cambodia, in fact ever since the 1960s. The earlier concept is said to have aimed at designating the entire area of Sihanoukville as a special zone to attract FDI. This plan was not realized because the government was split into two groups: one pro, the other con. The group against the plan was afraid that the special zone in Sihanoukville might become an independent area or a separate nation, like what happened to Singapore. The SEZ scheme was finally introduced in Cambodia for the first time in December 2005. Sub-Decree No. 147 on the Organization and Functioning of the Council for

Development of Cambodia (CDC) was issued on 29 December 2005 to restructure the CDC. A new wing of the CDC called the Cambodian Special Economic Zone Board (CSEZB) was set up to manage the SEZ scheme. To govern the SEZ scheme, Sub-Decree No. 148 on the Establishment and Management of the Special Economic Zone (the SEZ Sub-Decree) was also issued on the same day (CDC 2009).

2.2. Basic Concept and Conditions for an SEZ

The SEZ Sub-Decree defines the basic concept and conditions for an SEZ as follows (Articles 2 and 3.1.3):

- "SEZ" refers to the special area for the development of economic sectors which brings together all industrial and related activities, and it may include general industrial zones and export processing zones (EPZs). Each SEZ shall have a production area and may have a free trade area, service area, residential area and tourist area.
- It must have a land area of more than 50 hectares with precise location and geographic boundaries.
- It must have a surrounding fence (for the EPZ, the free trade area and the premises of each investor in each zone).
- It must have a management office building and zone administration offices, and all the necessary infrastructure must be provided.
- It must have a water sewage network, wastewater treatment network, location for storage and management of solid waste, environment-protection measures and other related infrastructures as deemed necessary.

2.3. Procedures for Registration of an Investment Project in an SEZ

The investor who aims to start production or service activity in fields permitted by related laws and sub-decrees in any SEZ shall complete the formalities by preparing all required documents and submitting them to the SEZ's administration office for registration during working hours. The SEZ Administration has the duty to decide on the registration of the investment proposal based on the legal, administrative and technical aspects, and on the issuance of the Final Registration Certificate (FRC). This process has to be in compliance with the procedures of investment registration set forth in the law and sub-decree on the Implementation of the Law on Amendment to the Law on Investment of the Kingdom of Cambodia.

Any incentive provided to the zone investor shall be decided by the SEZ Administration through the one-stop-service mechanism located on the site and in accordance with the relevant laws and regulations.

On all other requests in the investment process of zone investors, the SEZ Administration shall play the role of facilitator to address issues with the relevant ministries/institutions of the Royal Government of Cambodia (Article 3.3, the SEZ Sub-Decree).

2.4. Incentives for an SEZ

2.4.1. Tax Incentives

The zone developer shall receive the following incentives for its investment activities:

a. Tax on Profits: Exemption of the tax on profits shall be provided for a maximum period of 9 (nine) years in compliance with Article 14.1 of the Law on the

Amendment to the Law on Investment of the Kingdom of Cambodia.

b. Import Duties and other Taxes: The import of equipment and construction materials to be used for infrastructure construction in the zone shall be allowed and exempted of import duties and other taxes.

The zone investor shall receive the fiscal incentives as provided in Article 14.9 of the Law on the Amendment to the Law on Investment of the Kingdom of Cambodia and other relevant regulations.

The zone investor is entitled to the incentive on value added tax at the rate of 0 percent, and shall record the amount of tax exemption for every import. The said record shall be disregarded if the production outputs are re-exported. In case the production outputs are sold to the domestic market, the zone investor shall refund the amount of value added tax as recorded in comparison with the quantity of exports.

2.4.2. Other Incentives

The zone developer shall receive custom duty exemption on the import of machinery, equipment for construction of the road connecting the town to the zone, and other public services infrastructure for the public interest and the interest of the zone. The zone developer may request, in the form of temporary admission, the import of means of transport and machinery used for the construction of infrastructure in accordance with the laws and regulations in force.

The zone developer, zone investor and foreign employees have the right to transfer all of their income derived from the investment and salary received in the zone to banks located in other countries after payment of tax.

Apart from the fiscal incentives, the zone developer and the zone investor are

entitled to obtain the investment guarantees as stated in Article 8, Article 9 and Article 10 of the Law on Investment in the Kingdom of Cambodia and in other relevant regulations. The zone developer may obtain a land concession from the State for the establishment of an SEZ in areas along the borders or in isolated regions in accordance with the Land Law, and may lease this land to the zone investors (CDC 2009).

There is no discriminatory treatment based on nationality and no fixing of prices.

2.5. Approved SEZs

The Cambodian government has so far officially approved 13 SEZs by the Sub-Decree and eight other SEZs have already received licenses from the CSEZB (Table 2). Among the approved SEZs, 20 are privately owned and operated and one is owned by a state company (CESZB 2010).

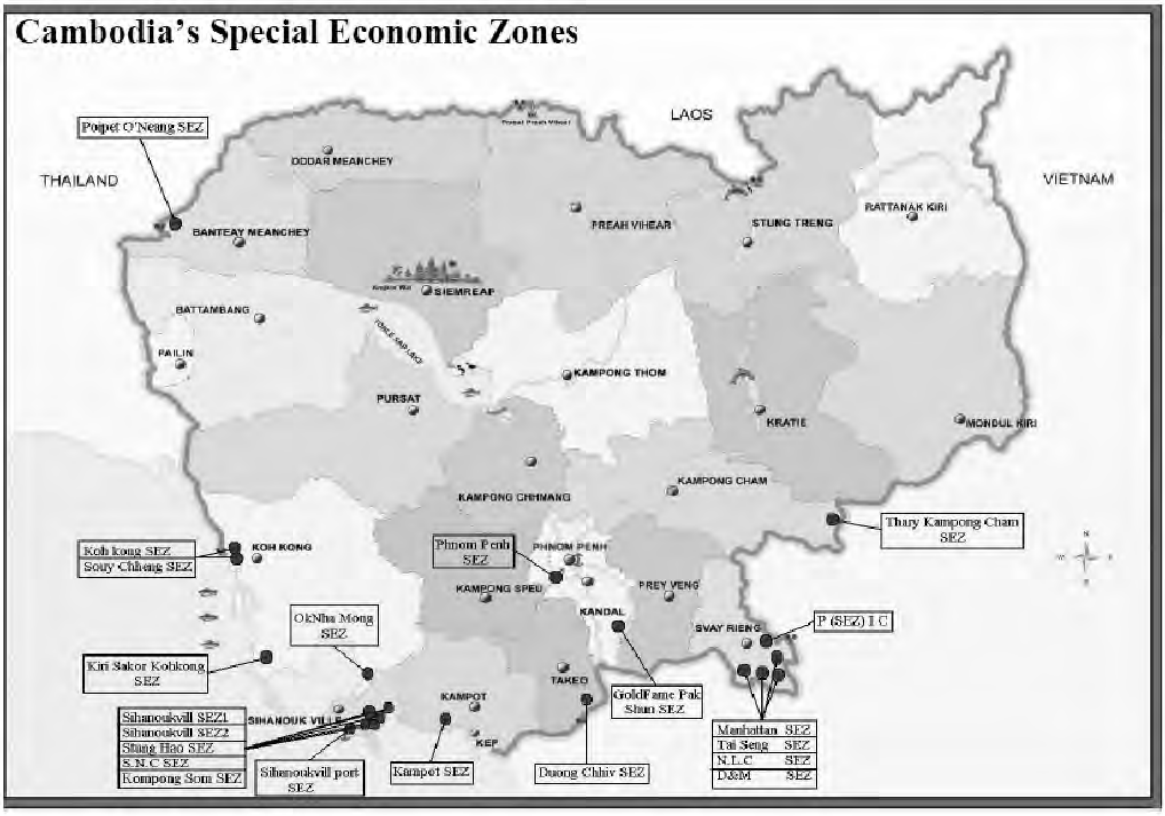
All 21 SEZs approved by the Royal Government and by the CSEZB are located as indicated in the map in Figure 2.

Table 2: List of SEZs Approved by Sub-Decree

No.	Name of SEZ	Land Area	Location	Status
1.	Stung Hao SEZ (Sihanouk Ville)	192ha	Sihanoukville	Constructing
2.	Phnom Penh SEZ	350ha	Phnom Penh	20 firms
3.	Doung Chhiv Phnom Den SEZ	79ha	Phnom Den	Constructing
4.	Kampot SEZ	99.6ha	Kampot	Constructing
5.	Poi Pet O' Neang SEZ	467ha	Poi Pet	Constructing
6.	Manhattan SEZ	157ha	Bavet	8 firms
7.	Sihanouk ville SEZ 1	178ha	Sihanoukville	Constructing
8.	Tai seng Bavet SEZ	99ha	Bavet	3 firms
9.	Goldfame Pak Shun SEZ	80ha	Kandal	In operation
10.	Sihanouk ville SEZ 2	1,113.96ha	Sihanoukville	10 firms
11.	Thary Kampong Cham SEZ	142.14ha	Kampong Cham	1Japanese firm
12.	Neang Kok Koh Kong SEZ	335.43ha	Koh Kong	1 firms
13.	Sihanoukville Port SEZ	70ha	Sihanoukville	Constructing

Source: The Council for the Development of Cambodia (CDC).

Figure 2: Cambodia's Special Economic Zones



Source: The Cambodian Special Economic Zone Board (CSEZB).

Six of the 21 SEZs are examined by a survey team. The construction of infrastructure at these SEZs varies from site to site depending on the zone developers, as summarized in Table 3.

Table 3: Development Period of Major SEZ

Description	PPSEZ	MSEZ	Tai Seng SEZ	SSEZ II	SHV Port SEZ	NKKSEZ
Development Period 1:						
Area	141ha	60ha	55ha	528ha	70ha	350ha
Started	4/06	2006	3/04	2007	5/10	2002
Completed	1/07	-	12/05	-	12/11	-
Development Period 2:						
Area	162ha	100ha	88ha	-	160ha	-
Started	12/10	-	1/09	-	-	-
Completed	-	-	-	-	-	-
Development Period 3:						
Area	57ha	-	-	-	1,000ha	-
Started	-	-	-	-	-	-
Completed	-	-	-	-	-	-
Occupancy Ratio	75.83%	5.3%	2.5%	1%	0	10%
Zone Investors	20 firms	8 firms	3 firms	10 firms	0	1 firm
Total Area	360ha	160ha	143ha	1,130ha	1,230ha	350ha

Source: Center for Social Development (CSD).

It is also worth noting that investors of the Phnom Penh SEZ have remarkably increased. In particular, for the first time Japanese firms are investing there in products for domestic consumption in Cambodia and for export, as this SEZ has the advantages of abundant human resources and proximity to the Phnom Penh metropolitan area, Phnom Penh International Airport, Phnom Penh International River Port and Sihanoukville International Seaport. The first development period has achieved 75.83 percent of its plan, with the second development period starting from December 2010.

SSEZ II is developed as a joint-venture company with Chinese from Wuxi. Covering the largest area of all SEZs in Cambodia, it is currently invested in by 10 firms, including nine from China and one from Ireland. SSEZ II is currently in its first development period, which covers half of the total area. SSEZ II is expected to attract

more investors from abroad using its advantages of proximity to Sihanoukville International Seaport and Sihanoukville International Airport, and the open policy of the Investment Law of the Kingdom of Cambodia.

MSEZ is strategically located 65 kilometers from Ho Chi Minh International Airport and 80 kilometers from Saigon Harbor. This location choice ensures convenient and low-cost access to land and sea transportation, and raw materials and technical support from Vietnam. Moreover, containers passing through the borders are not subject to customs inspections.

The location of the MSEZ therefore allows tenant companies to respond efficiently to client needs. The electricity supply is the cheapest among all SEZs in Cambodia. MSEZ has not yet started its second development period. The number of zone investors has not increased from the previous year's study, and some firms left but were replaced by new ones.

The land prices and utilities costs of these SEZs are different, as summarized in Table 4.

The price of real estate at SEZs is high, even though some are located in remote and less-developed areas. Originally cheap, the areas have undergone speculation by brokers who purchased early on and resold at high prices to the zone developers.

A UNDP 2009 study suggests that trade preferences which might have attracted industry in the past have eroded over time. The government needs to recognize this and offer public goods that contribute to development, rather than negative incentives (tax incentives account for only a few percentage points of the GDP).

Table 4: Land Prices and Utilities Cost of Major SEZs

Description	PPSEZ	MSEZ	Tai Seng SEZ	SSEZ II	SHV Port SEZ	NKKSEZ
Land Prices (US$):	50/m^2	-	-	-	55-65/m^2	-
- **Land Ownership**	50/m^2 (99ys)	-	12,000/year	22-27/m^2 for	-	30/ m^2/year
- **Land Use**	Leasing 5 years	over 2ha:	Leasing for	50ys	-	21/m^2/year
- **Ready built factory**	2.5/m^2/year	22-30/ m^2/y;	70-90	-Opt 1:		
		Less 2ha:	years:1.30/m^2	0.8/m^2/m^{th}		
		22-30/		-Opt 2:		
		m^2+10%		2.5/m^2/the plant		
				can be used for		
				free for 30 years		
				after successive		
				payment for 8		
				years.		
Utilities Cost (US$):						
- **Electricity**	0.19/kwh	0.1265/kwh	0.1265/kwh	0.15/kwh	0.0025-0.0	0.20/kwh
- **Water**	0.30/m^3	0.15/m^3	Free (water	0.25/ m^3	0275/KVA/	-0.42/ m^3
- **Waste Water**	0.26/m^3/month	0.25/m^3	pumped)		m^{th}	-0.12/ m^3
Major Markets:	Dom., Japan,	USA, EU	USA, EU,	USA, EU	-	Dom.
	China,		Japan			

Source: Center for Social Development (CSD).

3. PORTS IN CAMBODIA

The two main international ports in Cambodia are Sihanoukville on the Gulf of Thailand and Phnom Penh on the Mekong River (Figure 3).

Figure 3: Ports in Cambodia

Source: Author and editor.

3.1. Sihanoukville Autonomous Port

Sihanoukville, also known as Kampong Som, is a province in southern Cambodia on the Gulf of Thailand. This port city is a growing urban center located 185 kilometers southwest of Phnom Penh. Construction on the port began in June 1955 as the only deep-water port in Cambodia. The port is 18 kilometers from Kang Keng Airport and 4 kilometers from downtown Sihanoukville.

3.1.1. History

During the period of the French Protectorate and earlier, Cambodia did not have a deep-water port to facilitate international trade. The small port on the river at Phnom Penh was only able to handle ships of up to 3,000 tons in the dry season and 4,000 tons in the wet season. Kampot was Cambodia's only ocean port and deep-water access was impossible due to the need to navigate the Tuk Chhou River to access the port. The French colonial administration preferred to use Saigon for international trade and thus Cambodia's access to the ocean was via the Mekong and necessitated passage through Vietnamese territory. Independence from France for both Vietnam and Cambodia in 1953 highlighted the need for Cambodia to have its own deep-water port.

A number of sites were initially considered for the new facility, including Kampot, the small outpost at Ream and Sre Ambel. However, the deep waters off a rocky promontory near Koh Pos in Kampong Som Bay were finally chosen as the site for Cambodia's first ocean port.

Construction began in 1955 with USD 12 million in funding from the French government and was completed in late 1959. The port was inaugurated in April 1960 by Louis Jacquinot, the French minister of state.

The port has continued to expand with the addition of several more berths, a container terminal, a tanker terminal and an industrial effluent treatment plant.

Old Wharf: This was constructed in 1956 and it started operation in 1960.This wharf is 290 meters long and 28 meters wide, with the alongside depths of the outer berth and the inner berth at 9 meters draft and 8 meters draft, respectively. It can accommodate four vessels for cargo handling operations. This wharf possesses two warehouses, each being 6,000m^2 and capable of storing 14,000 tons of cargo. At

present, this wharf is being used for accommodating general cargo and passenger vessels.

New Quay: This was constructed in 1966 and it started operations in 1969. The quay is 350 meters long with a 10.5-meter draft and can accommodate three vessels. This quay possesses three warehouses with the total area at 24,000m^2 which is capable of storing 56,000 tons of cargo. At present, the quay is being used for accommodating cargo vessels.

Container Terminal: The Royal Government of Cambodia, in cooperation with the Government of Japan, began construction of the 400-meter-long new container terminal in 2002 and completed it in 2007. This terminal, designed with a 11.5-meter depth and linked with a 6.4-hectare container yard area, is primarily involved in container cargo handling operations.

3.1.2. Port Management

Sihanoukville Autonomous Port, or *Port Autonome de Sihanoukville* (PAS), is a government agency and state corporation of Cambodia that operates as the country's sole deep-water port. It employs over 1,000 people. Its board of directors is appointed by a variety of government ministries.

Sihanoukville Autonomous Port is a service and trade center which has been playing a significant role in the development of the region and the national economy. It cooperates with all local departments, especially the Port Community. The Port Community is composed of a governmental component, local authority, competent authority and private business entity. It boosts confidence in day-to-day operations since the respective departments' efforts to improve productivity have greatly

contributed to the better of services.

3.1.3. Main Services and Facilities

Sihanoukville Autonomous Port, the international gateway vitally serving the economic development of the Kingdom of Cambodia, is located in the southwestern part of the country at the Bay of Kampong Som and connected to the capital Phnom Penh by National Roads No. 4 and No. 3, and by rail and air transport.

- Navigational Aids and Pilotage

A - Vessel management:

Pilotage is compulsory for all commercial vessels coming into and going out of Sihanoukville Autonomous Port's water area. The installation of navigational buoys and the maintenance of vessel channels is one of Sihanoukville Autonomous Port's invigorated duties. Furthermore, modern vessel traffic management systems have been installed, with the main aims of improving safety and promoting vessel management quality.

B - Vessel activities:

In order to provide the basics of business operation and services in terms of loading and offloading containers, there are five shipping lines (RCL, MCC, APL, ITL and Cots) that have entered into contracts with Sihanoukville Autonomous Port, with the following programs and maritime routes (Table 5).

Table 5: Shipping Companies Contracted with PAS and the Routes

	Shipping Line	No. of Calls	Maritime Route
1	Maersk Line (MCC)	2 calls/wk (8 calls /m)	SHV–LCB-SGN- HKG-CNYAT –KSG –MANILA – TPP -SIN SHV – SGL –TPP –SIN.
		1 Call/wk (4 calls/m)	SHV – LCB- SGN-HKG- KSG- CNSGH- -JPOSA-JPTYO-JPYOK-JPNGO-CNYAT.
2	RCL(FSA)	3 calls (12 calls/m)	SIN – SHV –SGL – SIN HKG – SHV – SGL – HKG SIN –KTN – SHV –SGL
3	APL	1 Call/wk(4calls/m)	SIN – SGL-SHV - SIN
4	ITL	1 Call(4calls/m)	SIN – SHV - SIN
5	COTS	2 Calls/ m	BKK – SHV - BKK

Notes: SHV (Sihanoukville), LCB (Laemchabang), HKG (Hong Kong), CNYAT(Yantai), KSG (Kaohsiung or Gaoxiong), TPP (Tanjung Pelepas), SIN (Singapore), SGL (Songkhla), CNSGH (Shanghai), JPOSA (Osaka), JPTYO (Tokyo), JPYOK (Yokohama), JPNGO (Nagoya), KTN (Kuantan), BKK (Bangkok or Klongtoey).

Source: Sihanoukville Autonomous Port.

C - Information for vessel berthing:

Sihanoukville Autonomous Port is situated at the center of the ASEAN member countries and has never been affected by natural disasters such as typhoons, earthquakes and tsunamis.

In order to be convenient for navigational and pilotage duties, Sihanoukville Autonomous Port has allocated two channels that accommodate international vessels:

- Southern channel for vessels not exceeding an 8.50-meter draft.
- Northern channel for vessels not exceeding an 8.10-meter draft.

Weather conditions:

A southwest monsoon blows from June to October and a northeast monsoon

blows from November to February. The average deviation of high tide and low tide is 1.2 meters.

D - Water depth of ship's berth:

- ✧ Old Jetty 9.0 meters
- ✧ New Quay 9.0 meters
- ✧ Container Terminal 10.0 meters
- ✧ Oil Terminal 9.2 meters (Sokimex)
- ✧ Stone Wharf 4.2 meters depth (oil port)

- Cargo Offloading, Loading and Transport

In 2009, Sihanoukville Autonomous Port opened a new chapter, that is to say, the cargo handling operation and transport within its domain started being performed in accordance with the recognized standard among global port operations throughout the world. This change came with the installation of a new container terminal possessing modern container-handling facilities and an automated system.

- Container Terminal and Storage Services

Sihanoukville Autonomous Port has taken certain steps in developing from offering conventional container-handling services to a modern container terminal of an international standard. A complete range of services are being offered to customers by the Container Terminal Operation Department. The key milestones in the operational management system and logistic chains were based on the 8R concept: right thing, right quantity, right quality, right time, right method, right place, right impression and right

price.

Meanwhile, Sihanoukville Autonomous Port has installed the Automatic System-Container Terminal Management System to manage containerized cargo from the time that container ships come into the berths until all containers have been delivered to local cargo owners and returned empty or as laden containers for export to foreign countries. The management of these container activities is strictly observed and conducted with flexible rules in order to promote service quality beyond customers' expectations.

Sihanoukville Autonomous Port needs to invest in the Container Terminal in accordance with the international standard so as to constantly support business partners and customers through less-time-consuming operations and cost efficiency to compete in the international marketplace. In addition, businesspeople will obtain a five-day free storage period for all import and export containers.

The construction of a new container terminal consisting of a 400-meter-long berth with a draft of 11.5 meters and a 6.4-hectare container yard was completed in March 2007, with installation of the following modern container-handling facilities:

- Shore cranes 7 units (20- 40t)
- Mobile harbor cranes 2 units (64t)
- Tractors of general cargo 8 units (3-10t)
- Forklifts 8 units (3-25t)
- Trailers 17 units (20- 40t)

Several warehouses are available, providing a total storage area of approximately 6,000 square meters. The two wharfs have a total of five warehouses, one of which is being let out to an oil exploration company. The warehouses have been under-utilized

in recent years because of their poor condition, particularly their leaky roofs. Warehouses 1, 2 and 4 are now being repaired. They have a combined capacity of about 36,000cu.m. Warehouse 3 was repaired earlier with domestic funds. Container storage and handling is also available. The container yard is 50,000 square meters in area. Regular and direct shipping links with Singapore and Bangkok are in place, with Cambodian-flag shipping (Camtran Ship) being the dominant carrier. In 1993, 15,000 TEUs passed through Sihanoukville Autonomous Port. An estimated 80 percent of the containers originated in or were destined for Singapore. Behind the warehouses fronting the new wharf, there are railway platforms and tracks as well as a container parking area of some 17,600 square meters.

These are physical infrastructures that Sihanoukville Autonomous Port recently developed to go along with other facilities which were previously developed. The container yard is capable of storing 7,900 TEUs, while the container terminal capacity is 350,000 TEUs per year.

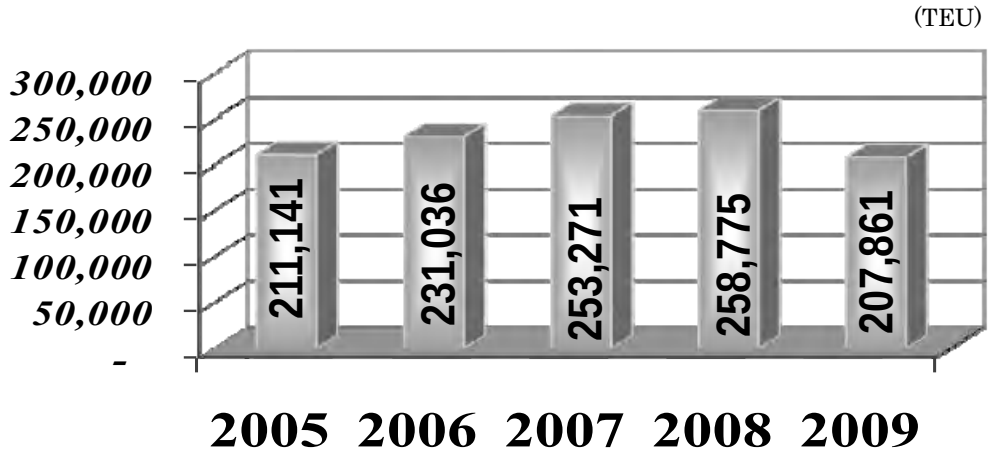
The capacity of the port in its present condition is estimated at 950,000 tonnes per year, excluding POL which has separate facilities. This is about twice its present traffic. The port can accommodate ships of 10,000 to 15,000 tonnes dead weight.

The main access to the port is via a 3 kilometers fairway channel, marked by buoys and leading lights for daylight navigation only. Due to rocky outcrops in the channel, the entrance to the port is restricted to vessels with a draft of less than 8.5 meters. In practice, boats of up to about 10,000 dwt can use the port. The port is located 540 nautical miles (1,000 kilometers) from Singapore.

3.1.4. Freight and Transport

As shown in Figure 4, in 2007 some 876 vessels anchored at Sihanoukville Autonomous Port, representing 1.8 million tonnes of throughput cargo (1.4 million tonnes of imported cargo and 0.4 million tonnes of exported cargo) and 253,271 containers of throughput (126,538 imported TEUs and 126,733 exported TEUs). Compared to 2006, the number of vessels decreased by 3.9 percent from 912 to 876, but the quantity of throughput cargo increased by 14.6 percent from 1.5 million tonnes to 1.8 million tonnes. The number of containers increased by 10.0 percent from 230,000 TEUs to 253,271 TEUs. In 2008, the total quantity of cargo in transit was 2,057,967 tonnes and 258,000 TEUs, compared to cargo of 1,818,877 tonnes and 253,271 TEUs in 2007. In 2009, the total quantity of cargo was 207,861 TEUs, down from 2008.

Figure 4: Statistics of Container Throughputs of Sihanoukville Autonomous Port



Source: Sihanoukville Autonomous Port.

The cost of transportation through Sihanoukville Autonomous Port is rising and efforts are under way to try to reduce this to facilitate importers and exporters.

3.2. Ports of Phnom Penh

The present inland waterway network in Cambodia consists of the Mekong River, Bassac River and Tonle Sap River. The total length of this waterway network is 1,750 kilometers in the rainy season. However, in dry season the water level is lower and only 580 kilometers can be navigated. The biggest river port in Cambodia is Phnom Penh Port. Located 330 kilometers from the mouth of the Mekong River, Phnom Penh Port is the port that handles international container transport and oil transport from Ho Chi Minh City, Vietnam. In recent years, the volume of containers handled by the port has shown dramatic growth.

The following seven ports, including Phnom Penh's, are the major river ports in Cambodia.

1. Phom Penh Port
2. Kampong Cham Port (on the mainstream of the Mekong River, approximately 100 kilometers upstream from Phnom Penh Port)
3. Kratie Port (on the mainstream of the Mekong River, approximately 115 kilometers upstream from Kampong Cham Port)
4. Stung Treng Port (on the mainstream of the Mekong River, approximately 150 kilometers upstream from Kratie Port)
5. Neak Loeung Port (on the mainstream of the Mekong River, approximately 60 kilometers downstream from Phnom Penh Port)
6. Kampong Chhnang Port (on the Tonle Sap River, approximately 90 kilometers

upstream from Phnom Penh Port)

7. Chong Khneas (Siem Reap) Port (on the Tonle Sap River, approximately 190 kilometers upstream from Kampong Chhnang Port)

Of the rivers mentioned above, container transport is only conducted between Phnom Penh and Kampong Cham. This container transport of Kampong Cham is exclusively for rubber plant, as general cargo is not handled.

In the dry season, vessels are not navigated on the upper section of the Mekong River (upstream from Kampong Cham) or on the Tonle Sap River due to the lower water levels. Although it has been said for some time that the inland waterway in Cambodia has high potential for development, it is observed that development has not proceeded in line with expectations. This is because the difference in water level between the rainy season and dry season is more than 10 meters, making it difficult to secure appropriate water level and to construct facilities.

Even though it is 290 kilometers from the ocean, Phnom Penh Port is a major Mekong River Valley port through its link to the South China Sea on the Hau Giang channel of the Mekong River delta.

3.2.1. History

Phnom Penh Port was established by the French in 1905, constructed as a floating terminal by using pontoons of 40m x 10m each.

In 1929, one more pontoon of the same length was established. The terminal allows 60-meter-length vessels to berth. It has bridges connecting the riverbank to the pontoons, enabling the pontoons to float according to the river's depth seasonally.

In 1952, a concrete pier was built near Chroy Changva Bridge, which continued to

grow through 1960 until it was 185 meters long with alongside depth of 12 meters.

Phnom Penh Port's terminal was closed from 1975 to 1979 by the Khmer Rouge regime. Until the liberation of Phnom Penh from the Khmer Rouge in 1979, the port remained almost completely deserted.

In 1980, the two floating terminals and the concrete pier were restored.

In 1995, the floating terminals were equipped with an electricity system, a clean water system and 16 conveyors. The terminal was put in operation on 22 July 1996.

In 2001, the floating terminals were transformed into a passenger terminal for tourists from various provinces such as Siem Reap, Kampong Cham, Kratie and Prey Veng, and for international vessels from Vietnam.

Regarding the Container Terminal, in 1952 it was built with a concrete berth of 84mx12m, which allowed two or three vessels to berth simultaneously. However, nowadays this terminal is no longer in use. In 1995, with grant aid from Japan under the rehabilitation and development program of Phnom Penh Port, a new terminal was constructed with dimensions of 300m x 20m, enabling three or four vessels to berth at once.

3.2.2. Port Management

The Phnom Penh Autonomous Port (PPAP) is the authority for Phnom Penh Port. The PPAP is controlled by two ministries: the Ministry of Public Works and Transport and the Ministry of Economics and Finance. It is directed by representatives of the two ministries, and one for the Phnom Penh municipality and one for port employees. Under the supervision of the two ministries, the PPAP manages and operates the port and its facilities.

3.2.3. Main Services and Facilities

Phnom Penh Port works with many Mekong River provinces to operate the port business and distribute goods throughout Cambodia. It has one local terminal connected to domestic ports along the main rivers. To keep navigation open year-round, Phnom Penh Port maintains the access channels. The main terminal is used to both distribute imports and collect goods (primarily agricultural products) for export.

Phnom Penh Port provides experienced operators to handle cargo and has assigned management teams to improve productivity and manage the installation and use of new equipment.

Its quay is equipped with two floating and two mobile cranes with the capacity to handle 100 tons. Phnom Penh Port plans to add a fixed crane to increase capacity. The port offers ample storage and warehousing facilities and professional staff who manage those. Two new warehouses are being constructed near the port terminal to increase cargo handling and storage capacity.

Phnom Penh depends on access via the Mekong River through the delta area of Vietnam. Phnom Penh Port is Cambodia's traditional river port, accessible to vessels from the South China Sea through Vietnam. The port is located in the city on the Tonle Sap River some 2 kilometers from its junction with the Mekong River. It is 348 kilometers from the mouth of the Mekong River, of which about 100 kilometers is in Cambodia and the rest in Vietnam. The distance from Singapore is about 1,450 kilometers. Vessels of up to 2,000 dwt can use the route without difficulty, and 5,000 dwt boats can pass the entrance to the Mekong River (the main bottleneck) on favorable tides. Regular dredging is necessary at three points in Cambodia for the 5,000 dwt vessels to reach Phnom Penh. By 2015, expansion of navigation capacity by

dredging will be facilitated for 12,000 dwt vessels to reach Phnom Penh Port (PPAP 2010).

The main cargo port consists of two sites, generally called Port No. 1 and Port No. 2.

The main port, Port No. 1, consists of a 184-meter-long pier built in reinforced concrete, plus three pontoons for seagoing vessels. There are two berths, known as Berths 4 and 5, which can accommodate ships up to 2,000 dwt and 4,000 dwt, respectively. Some 540 meters of domestic pontoon capacity is available for riverine ships and barges of up to 100 meters or 1,800-2,000 tonnes. The pontoons are served by lighters and junks. There are other berths available for small craft. There are 12 depots of 2,700 square meters and 5,910 tonnes of storage capacity within some 180 meters of the berths, plus open storage of some 4,300 square meters. Another warehouse complex at Kilometer 6 (Phnom Penh) has 15 sheds with a total capacity of 70,000 tonnes and eight sheds of nearly 4,000 tonnes. Although actual crane capacity is not clear, there are 12 cranes: two 25-tonne units, four 16-tonne cranes and six 6.5-tonne units.

Port No. 2, about 1 kilometer south of the main area, consists of two 45mx10m steel pontoons. Due to the long and narrow bridges and the seasonal variation in water level, these two berths cannot be reached by equipment and are limited to bag or other light traffic. The capacity of the main port (No. 1) has been estimated at 150,000 tonnes per year, a figure already exceeded. This port is now to be rebuilt with the aid of a Japanese grant. The improvements are expected to increase capacity to 566,000 tonnes per year. As an interim measure, Port No. 2 will be rehabilitated under a World Bank credit. When the improvements to Port No. 1 are completed, Port No. 2 could

perhaps revert to domestic use (up to 1991, Port No. 2 was for domestic use only).

- Vessel Activities

In order to offer the basics of business operation and services in terms of loading and offloading containers, there are several shipping lines that have entered into contracts with the PPAP as follows:

a. Sovereign Base Logistics Company (3 vessels, 100 TEUs)
   (2-3 calls per week)
   (2 floating cranes and some trucks)
b. Gemadept Company
   (10 vessels, 40 TEUs)
   (2-5 calls per week)
c. Hai Minh Company
   (3 vessels)
   (1-2 calls per week)
d. New feeder shipping line: New Port Cypress
e. Other shipping lines: MOL, Hyundai, Hanjin, Maersk

- MRC Navigation Program

The MRC Navigation Program was established to promote freedom of navigation, coordination, cooperation, safe waterborne transport and sustainable international trade opportunities for Mekong River Commission member countries. The commission shall solve existing cross-border issues and anticipate future problems such as trans-boundary pollution.

Figure 5 shows the results of the MRC's comparative study on the routes (PPAP 2010).

A comparison of the route from Phnom Penh through Ho Chi Minh City to the hub port of Hong Kong or Singapore and then to the destination of the United States with the route from Phnom Penh through Cai Mep to the U.S. destination shows that the latter reduces cost by at least USD 200 and is at least two days shorter in time.

Figure 5: Compared Costs and Time between Sihanoukville and Phnom Penh

Cai Mep route reduces cost by at least USD 200 and has at least two days shorter lead time

Cai Mep route saves USD 100 and three days

Source: Made by author and editor.

In another comparison, the route from Phnom Penh through Cai Mep to the U.S. destination saves USD 100 and three days compared with the route from Phnom Penh to Sihanoukville and through the hub port of Singapore to the United States.

- Port Facilities

The PPAP has installed modern handling facilities as shown in Table 6 (PPAP).

- New Container Terminal

To increase access to the world, expand port capacity, minimize environmental impact, allow all-the-time truck transport that reduces traffic congestion and take advantage of Vietnam's Cai Mep Port development, the PPAP has constructed a new container terminal (NCT). It sits on 20 hectares about 25 kilometers downstream of the Mekong River.

The NCT consists of a 20m x 300m berth with a capacity of three barges at one time. The terminal's initial capacity is 120,000 TEUs, with a total capacity of 300,000 TEUs. For the infrastructure construction, the PPAP obtained a Chinese soft loan totaling USD 28.2 million and offered the contract to Shanghai Construction (Group) General Company for a 30-month construction period where the NCT could be operational by 2012.

Table 6: Equipments Provided at Sihanoukville Autonomous Port

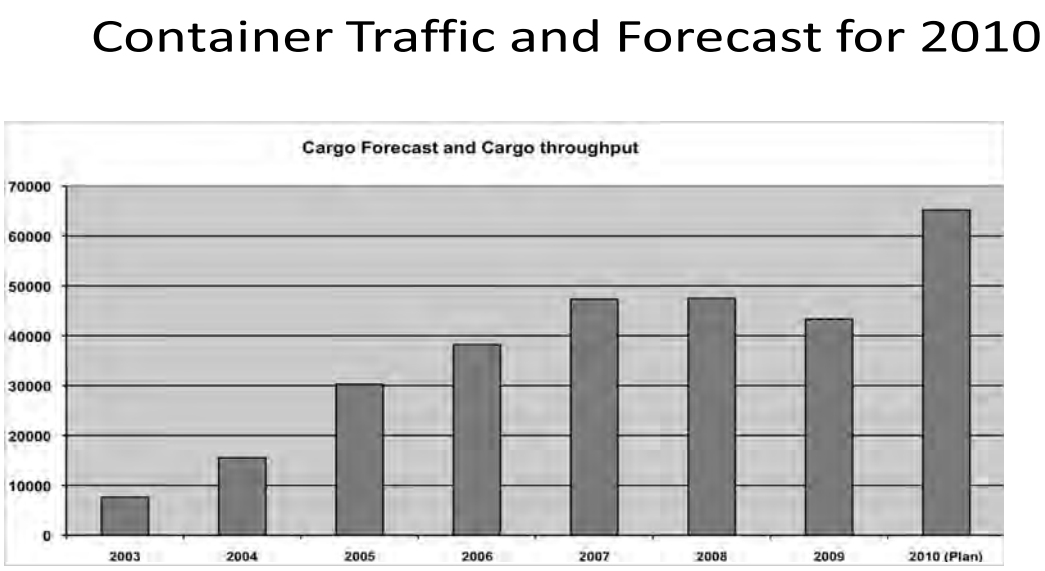
No.	Type	Quantity	Description
1.	Truck	8	24t
2.	Trailers	6	40 “and 45t”
3.	Forklift	11	4t to 25t
4.	Buldozer	1	
5.	Excavator	1	
6.	Roller	1	
7.	Dredger2	2	
8.	Empty Stacker	1	
9.	Container Stacker	2	
10.	Cranes	5	3 Crawlers, 2 Floating
11.	Speed Boat	2	
12.	Tug Boat	5	
13.	Ferry	2	

Source: Phnom Penh Autonomous Port (PPAP).

3.2.4. Freight and Transport

A total of 1,543 vessels called at Phnom Penh Port in 2008, compared to 1,398 in 2007. The total quantity of cargo in transit through the port in 2008 was 1,240,339 tonnes, up 12 percent from 1,106,701 tonnes in 2007. The number of containers transiting the port in 2008 was 47,507 TEUs (Figure 6), a slight increase compared to 47,504 TEUs in 2007. The number of passenger vessels in 2008 was 1,878, showing a decrease of 3 percent from 1,931 in 2007. The total quantity of cargo arriving at Phnom Penh Port increased by 15.7 percent between 2006 and 2007. In 2007, imported cargo reached 83,620 tonnes, an increase of 15.0 percent, and domestic cargo was at 213 tonnes, down 91.9 percent compared to 2006. Some 704,501 tonnes of imported fuel and 47,504 TEUs arrived at the port in 2007, increases of 9.0 percent and 24.2 percent, respectively.

Figure 6: Trends of Cargo Throughput of Phnom Penh Port



Source: PPAP.

Shipments through Cambodia's Phnom Penh Autonomous Port for the first five months of 2010 increased 40.3 percent over the same period a year earlier, driven by the ongoing recovery of key sectors such as garments and agriculture.

Some 20,997 TEUs were transported through the capital's port in the five months through May, compared to 14,964 TEUs a year earlier.

A month-to-month increase was also recorded, with 4,783 TEUs shipped in May, compared to 4,207 in April.

The PPAP expects that shipping through Phnom Penh Port will increase month by month, year by year, due to the cost and time of transportation via the Mekong River through Cai Mep Port of Vietnam being lower compared to the port of Sihanoukville. In the meantime, the PPAP's expansion of the NCT with total capacity of 300,000

TEUs downstream of the Mekong River could be operational by 2012 to ensure increased export promotion of SEZ products to foreign markets.

4. AIRPORTS

4.1. Overview

Formal regulation of civil aviation in Cambodia goes back to when Cambodia became a signatory nation of the International Convention on Civil Aviation in 1953, with French regulations adopted on a temporary basis in 1954 until national regulation could be developed and applied. Responsibility for regulation of civil aviation became a function of the Ministry of Public Works and Communications. Regulatory responsibility for civil aviation has been maintained by the Government of Cambodia ever since, with a brief interruption in the mid-to-late 1970s during the period of internal civil disruption.

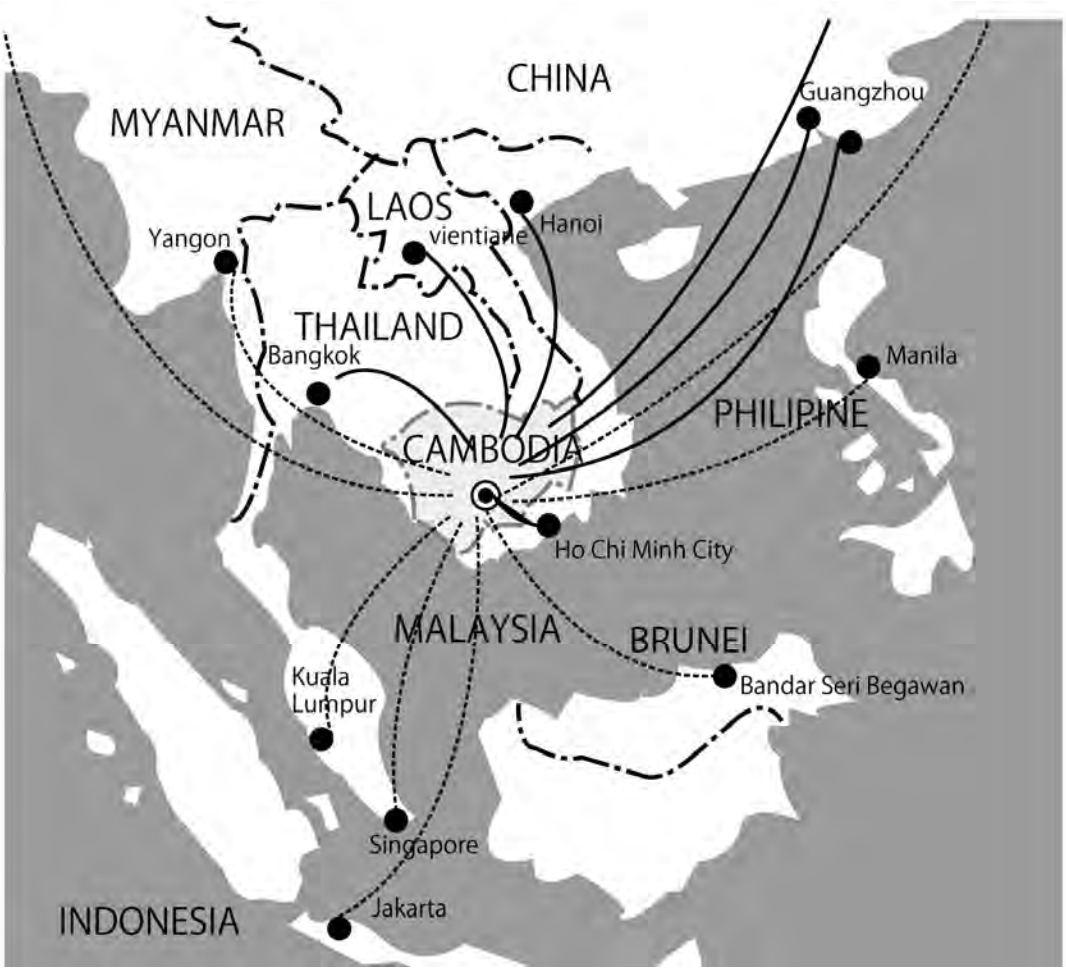
In the more than 50 years that have passed since then, the responsibility for regulation of civil aviation has gone to different ministries of the Government of Cambodia, finally evolving into the present regulatory agency, the State Secretariat for Civil Aviation, which reports directly to the Council of Ministers.

Development of the civil aviation activities and infrastructure, such as the nation's airports and air traffic management system, has moved forward, particularly in the past 15 years. Several important and significant changes have occurred during this period. The primary international airport of Cambodia, Phnom Penh International Airport, was upgraded and its operation and further upgrading were placed under a long-term build-operate-transfer (BOT) concession with private sector investors. These were the Société Concessionaire de l'Aeroport (SCA) of France at 70 percent and the

Malaysian-Cambodian Consortium at 30 percent. The same process occurred with Siem Reap International Airport, the gateway to the nation's primary tourist attraction of Angkor Wat, for which a concession was also granted to SCA by the Royal Government of Cambodia for the operation and upgrading of that airport. Private sector interests also acquired exclusive rights to upgrade and operate two domestic airports at Kampong Chhnang and Sihanoukville, with these concessions being related to the specific commercial intentions of the investors.

In late 2000, the Cambodia's government also granted a concession to SAMART Corporation to operate and upgrade the country's air traffic control and air navigation system under a long-term concession. Currently, the airline network at Phnom Penh International Airport has been developed as shown in Figure 7.

Figure 7: Airline Network of Cambodia



Source: Author and Editor depicted from the Council for Development of Cambodia (CDC).

4.2. History

The history of civil aviation development in Cambodia over the past 50 years may be summarized by the critical events listed below (Source: State Secretariat of Civil of Aviation).

1954 The decision is made to use the French Civil Aviation Code in Cambodia

temporarily.

1955	The Civil Aviation Bureau is created under the Ministry of Public Works and Telecommunication on 24 January (KRET No. 62).
1956	Cambodia signs the International Convention on Civil Aviation (Chicago Convention) and formally becomes a member of the international civil aviation community (16 January).
1956	The national airline, Royal Air Cambodge (RAC), is created in partnership with Air France. The Cambodian government held 60 percent of the shares and Air France 40 percent.
1963	The Airport Command (Administration) and the Airport Operation and Management are formed under the Department of Civil Aviation (DCA) on 13 March.
1975-1979	Civil aviation operations are interrupted during the Pol Pot regime.
1981-1990	The DCA resumes operations under the Ministry of Defense.
1982	Kampuchea Airlines (KAL) is formed.
1990-1992	The DCA operates under the name of the General Direction of Civil Aviation (GDCA).
1992	Control of the GDCA passes from the Ministry of Defense to the Council of Ministers.
1993	GDCA changes its name to the Civil Aviation Authority of the Kingdom of Cambodia (CAAKC).
1994	The government upgrades Phnom Penh's airport.
1995	The RAC is re-established out of a "reformation" of KAL on 2 January.
1995	Phnom Penh's airport commences improvements and upgrades by private

	airport developer SCA under a long-term BOT concession (1995-2004).
1996	The CAAKC again changes its name to the present one by the Royal Decree SHRDC 0196, upon the formation of the SSCA on 24 January.
1999	The government announces its open-skies policy.
2000-2002	Siem Reap Airport is improved and upgraded under Asian Development Development (ADB) financing and opened as an international gateway. The airport was then transferred to the SCA under the terms and conditions of the existing concession in 2002 for operation, further upgrading and development.
2001	National flag carrier RAC's operations are suspended.
2004	The Area of Responsibility (AOR) was transferred and integrated from Bangkok AOR to Phnom Penh FIR and the SSCA resumed responsibility over this airspace management as granted to Cambodian Air Traffic Services under a concession.

4.3. Phnom Penh International Airport

Phnom Penh's airport, formerly named Pochentong International Airport, is located about 10 kilometers from the capital's center.

On 6 July 1995, the Royal Government of Cambodia signed a concession agreement with the SCA to operate Phnom Penh's Pochentong International Airport. In return for a 20-year concession, the SCA (70 percent owned by France's Group GTM and 30 percent by Muhibbah Masterron of Malaysia) committed to a USD 110 million improvement program. The program includes the construction of a new runway, terminal, cargo buildings, hangars, Cat III-level instrument landing system (ILS) and

associated approach lighting.

The Berger Group was selected by the government to provide independent engineering services during the concession, to audit the design, and to advise on the practicality and cost of the concession's proposed improvements. The Berger team also supervised the initial works to accommodate wide-body aircraft such as 747s, including asphalt concrete runway overlays; installation of the new ILS, metrological equipment, runway lighting, and generator and power systems; and construction of a new fire station, taxiway and turn-pad extensions.

Following successful completion of the initial works, the Berger team provided design review and independent engineering services for the construction of a new 18,000-square-meter terminal building to accommodate growing tourist traffic. The USD 22 million terminal building includes three mobile aerobridges and over 700 auto parking spaces.

The airport also has a Dairy Queen inside. This is one of the first international franchises to have opened in Cambodia.

4.3.1. Facilities

Phnom Penh International Airport consists of facilities summarized as shown in Table 7 and Table 8.

Table 7: Facilities of Phnom International Airport

Facility		Dimension, m		Surface	Strength
Runway		3000*45 (widening in 2004)		Asphalt	PCN 80/F/B/X/U
RWY shoulder		7.5 each side		Asphalt	N/A
RWY strips		3120 x 300		Grass	N/A
RWY End Safety Area	05			Grass	N/A
	23	150 x 90		Grass	N/A
Taxiway	A	210 x30		Concrete	>PCN 56/R/D/X/U
	B	210 x30		Concrete	>PCN 56/R/D/X/U
TWY shoulder	A	5m each side		Asphalt	N/A
	B	5m each side		Asphalt	N/A
Apron	Main	470x130	8 stands	Concrete	>PCN 56/R/D/X/U
	East	189x103	6 stands	Asphalt	100 tonnes

Source: State Secretariat of Civil Aviation.

Table 8: Building and Landside Facilities of Phnom Penh International Airport

Facility		Area (m^2)	Floor, Level	Structure	Remarks
Passenger	Int'l	17,300	2	RC/Steel frame	4aerobridges, in 2003
Terminal	Dom Arr.	1 ,560	1	RC/Steel frame	Built in 2004
VIP Terminal	New	1, 400	1	RC	Built in 2002
Operation Building		950	5	RC	SSCA/CATS
Control Tower		25	25m height	RC/Steel frame	CATS
Cargo terminal		5,400	1	RC/Steel frame	SCA/CAMS
Fire Fighting Station		1,220	1	RC/Steel frame	SCA/CAMS
Maintenance Workshop		600	1	Steel frame	SCA/CAMS
Administration Building		1,728	1	Steel frame	SCA/CAMS
Power & Generating Building		290+260	1	RC/RC Steel frame	SCA/CAMS
Terminal Area,					
Public Car Park		13, 000		Asphalt	350 lots
VIP		6,000		Asphalt	170 lots (Over lay in 2007
Airport fence		9,550+ 2,480m		RC Break Net	Boundary/Airside
Fence of Terminal Area		440m		Steel bar/Steel net	Airside/Landside

Source: State Secretariat of Civil of Aviation.

4.3.2. Air Freight and Passenger Transport

Since 2000, the number of passengers has significantly increased. In 2007, there were 34,538 international flights that arrived at and departed from Cambodian airports, carrying 2.9 million passengers, 41.2 million kilograms of baggage, 26.0 million kilograms of cargo and 0.6 million kilograms of mail. On average there were 86 passengers per flight. The total number of domestic flights was 6,410, carrying 187,066 passengers, 2.1 million kilograms of baggage and 39,860 kilograms of cargo.

International flights (arriving and departing) increased by 12.3 percent or 3,792 flights from 2006 to 2007. Domestic flights also increased by 30.8 percent or 1,508 flights.

Compared to 2006, the number of passengers carried by international flights increased by 17.3 percent or 27,588 passengers.

Factors behind passenger growth include the increased political stability and public safety, the open-skies policy, granting of visas upon arrival and e-visas, low-cost air carriers, infrastructure improvements, enhanced tourism services, publishing of tourism information at international borders, human resources training, and new laws and regulations. Negative factors included SARS and the World Trade Center terrorism attack in the United States. The number of international and domestic flights, and the number of passengers and baggage from 2004 to 2007 are shown in Table 9 and Table 10, respectively.

Table 9: The numbers of International flights and passengers, baggage, cargo and mail carried, 2004-2007

Year/ month	Flight	Passenger			Baggage		
		Total	Departure	Arrival	Total	Departure	Arrival
2004	12,132	1,442,188	720,367	721,821	11,686,312	10,553,019	1,133,293
2005	13,203	1,769,327	885,155	884,172	26,710,455	13,282,665	13,427,790
2006	30,746	2,340,235	1,162,606	1,177,629	31,638,444	15,994,770	15,643,674
2007	34,538	2,979,116	1,494,844	1,484,272	41,158,466	20,803,355	20,355,111

Year/ month	Cargo (Kg)			Mail (Kg)		
	Total	Departure	Arrival	Total	Departure	Arrival
2004	17,789,802	11,192,218	6,597,584	282,171	138,604	143,567
2005	16,907,910	10,647,895	6,260,015	529,385	387,634	141,751
2006	22,676,493	14,020,836	8,655,657	473,980	348,899	125,081
2007	26,032	15,553,153	10,479,385	566,266	272,826	293,440

Source: State Secretariat of Civil Aviation.

Table 10: The number of Domestic Flights and Passengers, Baggage, Cargo And Mail Carried, 2004-2007

Year/ month	Flight			Passenger			Baggage		
	Dep.	Arr.	Total	Dep.	Arr.	Total	Dep	Arr.	Total
2004	2,782	3,087	5,869	92,227	99,357	191,584	788,310	793,194	1,581,504
2005	2,396	2,904	5,300	75,187	83,197	158,384	656,411	823,060	1,479,471
2006	,2196	2,706	4,902	7,163	7,576	159,478	85,709	82,988	168,697
2007	3,028	3,382	6,410	93,744	93,322	187,066	1,032,572	1,037,342	2,069,914

Source: State Secretariat of Civil Aviation.

4.4. Sihanoukville International Airport

Sihanoukville International Airport (IATA: KOS, ICAO: VDSV), located 18 kilometers east of Sihanoukville, is Cambodia's third international airport. It is also known as Kang Keng Airport. The IATA code KOS dates from Sihanoukville's

former name, Kompong Som. The airfield was originally constructed in the 1960s with assistance from the Soviet Union. After a long period of dormancy during and after the Khmer Rouge era, the airport formally reopened on 15 January 2007. The airport's runway is being extended to 2,200 meters, which will allow it to accommodate jets such as the Boeing 737. As such, Sihanoukville International Airport currently has no traffic. The airport was transferred as well to the SCA in March 2006. In addition, Cambodia Angkor Air, a national airline of Cambodia, was officially launched in July 2009 and intends to provide regular flight services between Phnom Penh, Siem Reap and Preah Sihanouk.

4.4.1. Facilities

Sihanoukville International Airport consists of facilities summarized in Table 11 and Table 12.

Table 11: Airport Facilities of Sihanoukville Airport

Facility		Dimension (m)	Surface	Strength
Runway		2,200 x 34	Asphalt	PCN=50t
RWY shoulder			Grass	N/A
RWY strips		2,320 x 300	Grass	N/A
RWY End Safety Area	03	150 x 60	Grass	N/A
	21	200 x 60	Grass	N/A
Turning Pad		THR 03:at 1795m only	Asphalt	PCN=50t
Taxiway		179 x18	Asphalt	PCN=50t
TWY shoulder		3m both sides	Asphalt	N/A
Apron		275 x 80 5 stands	Asphalt	PCN=50t

Source: State Secretariat of Civil Aviation.

Table 12: Building and Landside Facilities:

Facility	Area(m^2)	Floor, Level	Structure	Remarks
Passenger Terminal	1,600	1	RC/Steel frame	Ext in 2006, Dom/Int'l
Operation and Office Building		Upper floor		In Passenger Terminal
Control Tower	36	16m height	RC/Steel frame	
Fire Fighting Station	400	1	Steel frame Shade	Temporary
Maintenance Workshop				In Planning
Staff Accommodation				In Planning
Terminal Area, Car Park	2,000			50 lots
Airport fence	5,233m		Asphalt	
Fence of Terminal Area	280m		RC Break/Barbed Wire Steel net	

Source: State Secretariat of Civil Aviation.

4.4.2. Charter Flights

The airport is open to charter flights now. There is also a popular heliport.

Possibly there will be international flights from Malaysia and Korea in the near future.

Sihanoukville's airport has undergone major renovations to turn it into the main airport for Cambodia. Runway extensions, terminal renovation, and support services have gone up around the airport.

5. CONNECTIVITY AND LINKAGE AMONG INDUSTRIAL ESTATES, PORTS AND HARBORS

5.1. Connecting the Dots on the Map

Phnom Penh and its surrounding urban areas, including Kandal and sub-centers in Kampong Speu and Takeo, accommodate various urban functions. They hold nearly 85

percent of the manufacturing employment in Cambodia. Phnom Penh also has an international link to Ho Chi Minh City and to the Tonle Sap lake and river system.

There is also an international link along the coast from Cham Yeam bordering with Thailand through Koh Kong by NR48 to Sihanoukville, or to Phnom Penh and Vietnam by NR48, NR4, NR3 and NR33. At present, the economic activities along NR3 are more closely linked with Vietnam. Sihanoukville's port is also connected to the Thai and Vietnamese borders within three hours by national roads.

The connectivity of Phnom Penh with SEZs, industrial estates, ports and harbors, and border areas is supported by road, air, rail and waterway transport modes.

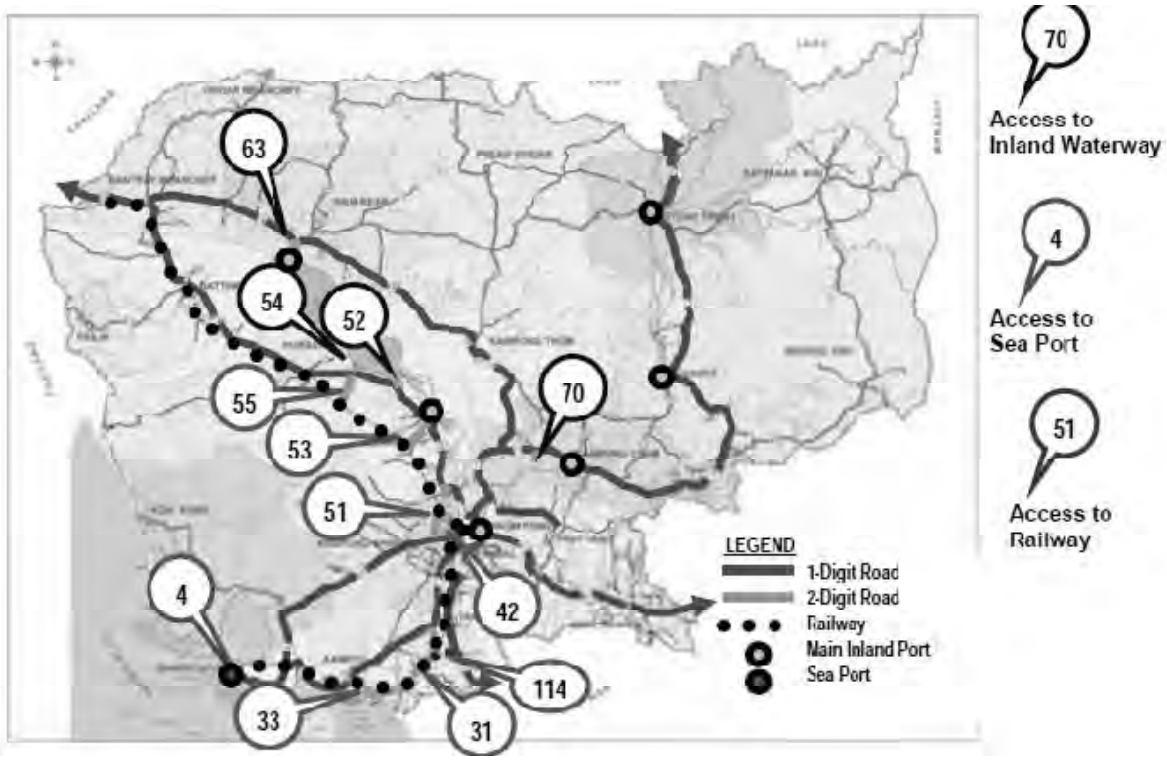
Linkage by air transportation is important in Cambodia. Since the late 1990s, new airports have been developed to accommodate the growing international passenger demand in Cambodia.

Sihanoukville International Seaport is linked by National Highway No. 4 (226 kilometers to Phnom Penh as the main link between Phnom Penh and the coast) and the "new" railway line completed in 1969, which takes a more southerly route via Kampot. Aid from the United States is earmarked for a project to resurface the entire length of NH4, as well as to rebuild several bridges between Phnom Penh and Sihanoukville. National Road No. 48 is a new coastal road which connects Sihanoukville and the Eastern Seaboard in Thailand. It will enhance the industrial linkage between Thailand and Cambodia.

5.1.1. Access Roads Supporting the Connectivity of Phnom Penh with Rail and Waterways

Railways and waterways and the access roads to them are shown in Figure 8 and Tables 13-14, respectively.

Figure 8: Access Roads supporting Connectivity of Phnom Penh to the Railway and Waterways



Note: The present numbering system for the existing Cambodia Road Network covers 1-Digit to 3-Digit number roads (see annex).

Source: MPWT.

Table 13: List of Access Roads to the Railway and Waterways:

Railway and Waterway	Access Road No.
Linkage to Railway Facility	NR.31,NR33, NR42, NR.51, NR.53, NR.55, PR.114
Linkage to Inland Waterway Facility	NR.52, NR.54, NR.63, NR.70
Linkage to Seaport Facility	NH.4, NH.3, NR.2. NR.48,

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

Table 14: List of Supporting Roads for connectivity of Phnom Penh to Manufacturing Development &SEZs

Manufacturing Area	Supporting Road No
Sihanoukville- PP Growth Corridor	NH.4, NR.48, NR.51, PR.104, PR.127, PR. 128
Special Economic Zones	NH.1, NH.4, NR.2,NH.3, NR5,NR6, NR7, NR.48

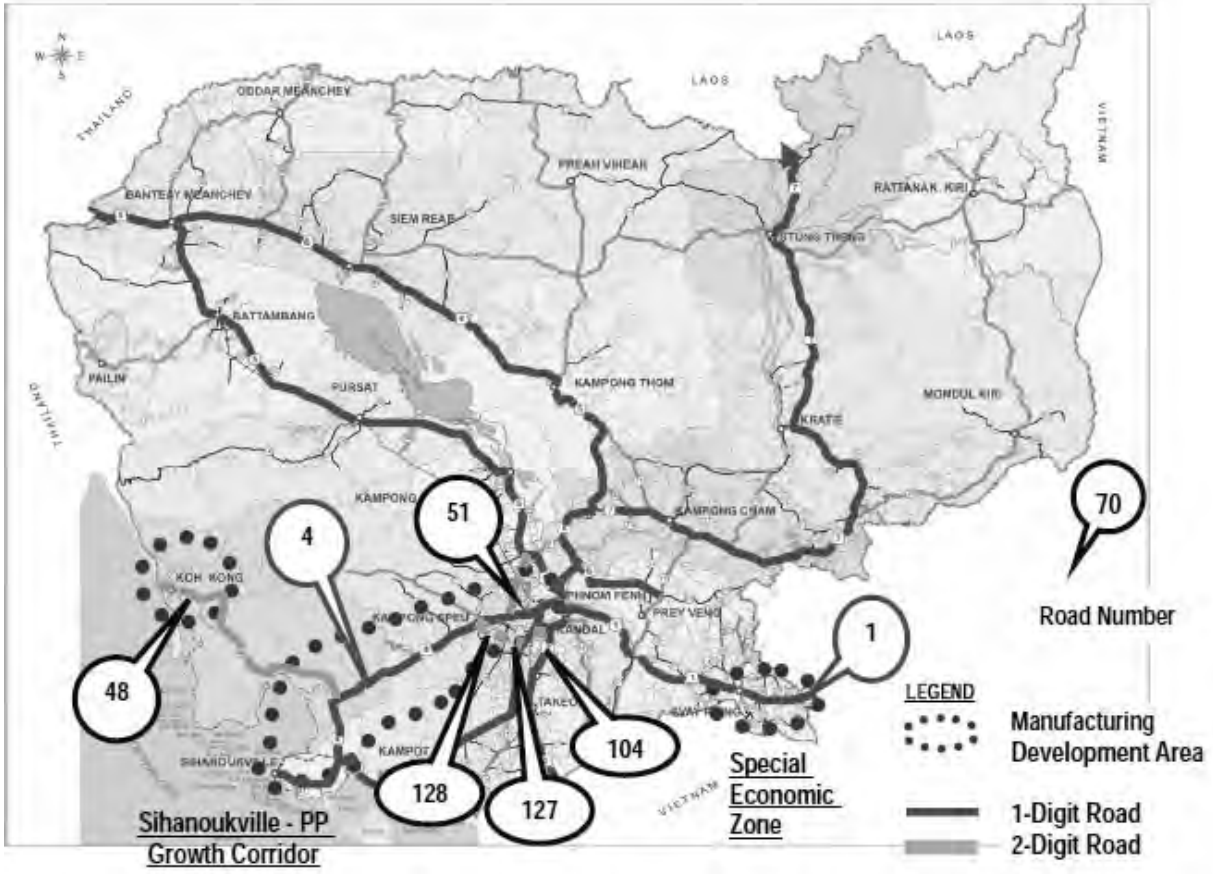
Source: MPWT.

The rail distance to Phnom Penh is 263 kilometers. The railway is in poor condition and handled only 15 percent of the port traffic in 1993. At present, a rehabilitation project funded by the ADB is going on. Railway utilization will provide a significant benefit for investors in Sihanoukville in the future.

5.1.2. Connectivity of Phnom Penh to Manufacturing and SEZ Areas

The roads supporting the connectivity of Phnom Penh to the manufacturing and SEZ areas (as shown in Figure 9) shall be improved to enable the establishment of efficient distribution and supply systems for manufacturing raw materials, equipment and products.

Figure 9: Map of Linking Roads for Manufacturing Development and SEZ Areas:



Source: MPWT.

5.1.3. Connectivity of Phnom Penh by International Highways (GMS and Asian Highway)

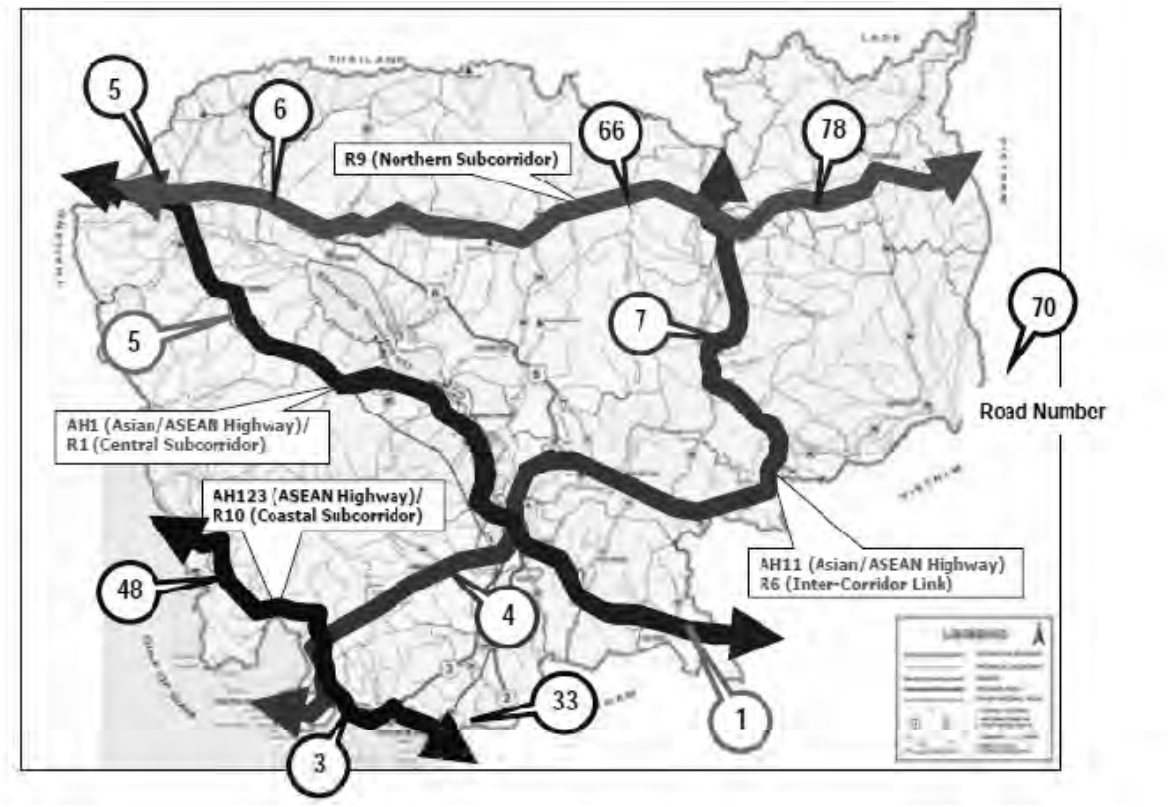
There are four transport corridors within Cambodia to facilitate connectivity of Phnom Penh to neighboring countries, including Thailand, Laos and Vietnam. These promote and develop international road transport, strengthen relations, and promote international trade and tourism. Three of the corridors overlap with the Asian and ASEAN Highway road network as presented in Table 15 and Figure 10.

Table 15: The connectivity of Phnom Penh to neighboring country by International Highway Routes in Cambodia

Route	GMS Rd. No.	Asian Hwy No.	ASEAN Hwy No	Cambodian NR No
Poipet-Sisophon-Phnom Penh-Bavet	R1	AH1	AH1	NR1,NR5
Sihanoukville-Phnom Penh-Kamong Cham-Stung Treng-Trapengkreal	R6	AH11	AH11	NR4, NR6, NR7
Cham Yeam-Koh Kong- Phum Daung Bridge-Sre Ambel- Chamkar Luong	NR10	-	AH123	NR48,NR3, NR33
Siem Reap- PreahVihear- Stung Treng-Rattanakiri- O Yadav Border	R9	-	-	NR66,NR78

Source: MPWT.

Figure 10: Map of International Highway Routes



Source: MPWT.

5.1.4. Connectivity to the Borders of Neighboring Countries

Connectivity to the international borders with Thailand, Vietnam and Laos and at the international port is also very important for supporting the functionality of the international corridor and the local economy.

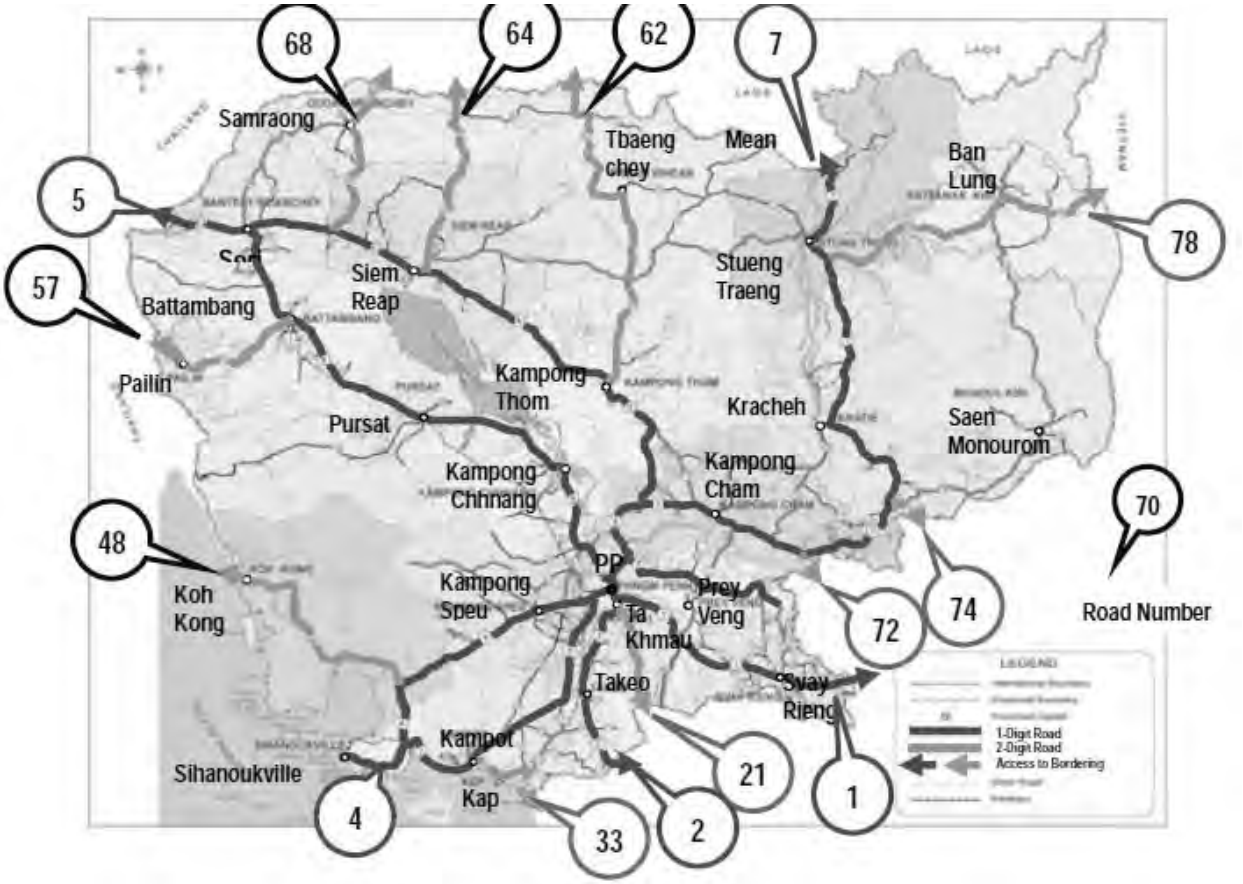
There are 14 access roads to the international border, consisting of 1-digit and 2-digit national roads as shown in Table 16 and Figure 11. These roads shall be improved to an all-season passable condition.

Table 16: List of Connectivity of Phnom Penh to the Borders

International Border	Access Road No.
To Thailand	NR.5,48, NR.57, NR.62, NR. 64, NR. 68
To Vietnam	NR.1,8, 21, NR.33, NR.72, NR.74, NR.78
To Laos	NR.7

Source: MPWT.

Figure 11: Map on Connectivity of Phnom Penh to the Border (Source: MPWT)

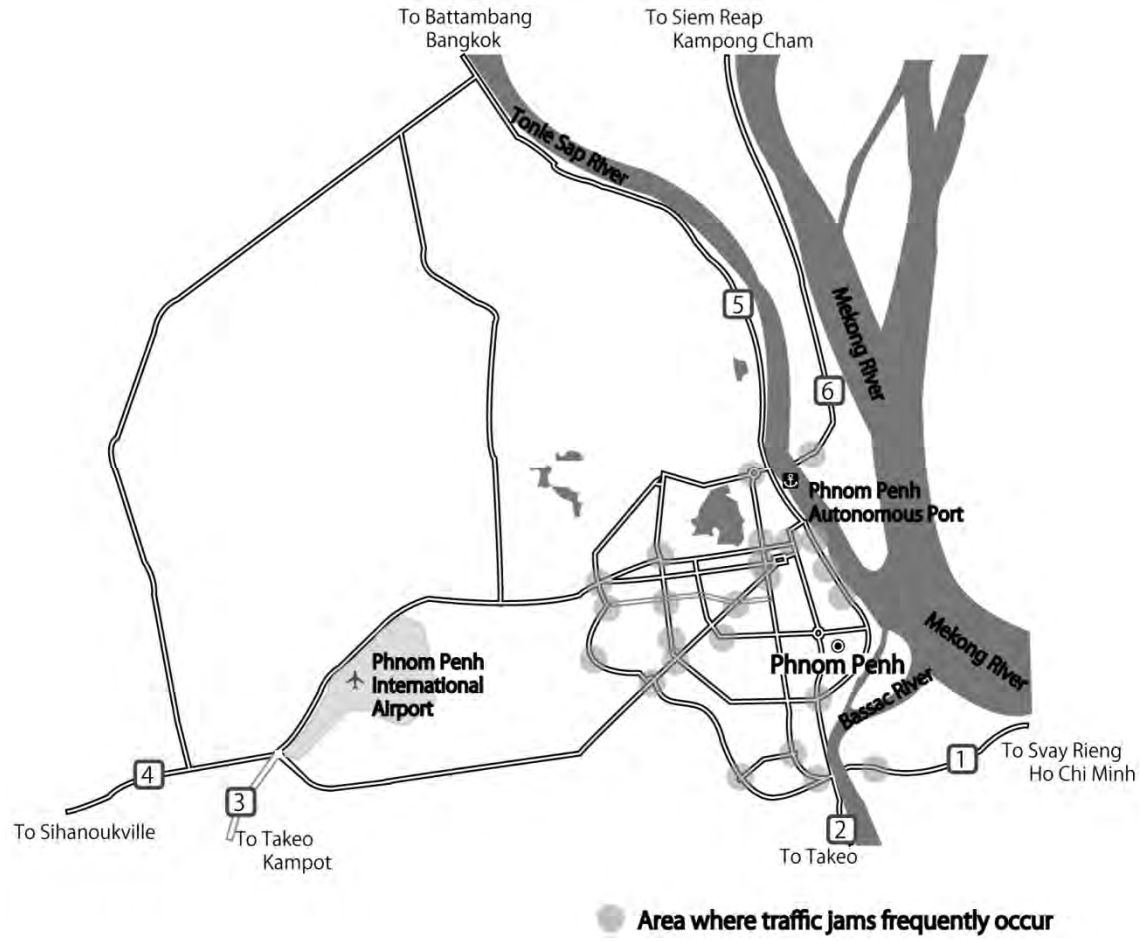


Source: MPWT.

5.2. Specifying the Sections Where Traffic Jams Occur Frequently

In Phnom Penh, traffic jams occur frequently at certain areas during the peak hours of 7:00-8:00 a.m. and 4:30-6:30 p.m. from Monday to Friday and in heavy rains. Congestion can be even worse on days of big celebrations such as the Water Festival. These areas are observed as follows and are shown in Figure 12.

Figure 12: Areas frequently Occurs Traffic Jams in Phnom Penh



Source: Drawn by Author and Editor.

The intersections with the worst reputations for congestion are:

a. Pet Lork Sang at Russian Blvd with Blvd 271/Road 598.

b. Former Municipality Traffic Police Office intersection at Russian Blvd with Preah Monivong Blvd/Road Kramoun Sar.

c. Deum Kor Market intersection at Mao Tse Tung Blvd.

d. Tep Phan traffic light intersection at Mao Tse Tung Blvd with Road Tep Phan.

e. Sunthor Mok intersection at Mao Tse Tung Blvd with Kampuchea Krom Blvd.

f. Tuol Kork intersection at Russian Blvd with Mao Tse Tung Blvd/Kim Il Sung Blvd.

g. InterContinental Hotel intersection at Mao Tse Tung Blvd with Preah Monireth Blvd.

h. Stung Mean Chey bridge intersection at Road 271 with Preah Monireth Blvd.

i. Chateau D'Eau intersection at Preah Monireth Blvd with Preah Sihanouk Blvd/Nehru Blvd.

j. Pet Chen intersection at Preah Monivong Blvd with Preah Sihanouk Blvd.

k. Pailin Hotel intersection at Preah Monivong Blvd with Charles De Gaulle Blvd.

l. Preah Ang Duong Hospital intersection at Preah Norodom Blvd with Kramoun Sar Blvd.

m. Preah Sisowat quay intersection at Preah Sisowat quay with Roads 154, 148, 144, 136 and 130.

n. Japanese Bridge (Chrouy Changva) intersection at both sides of the bridge with Preah Monivong Blvd, Roads 273, 93, 72 and 47 and NR6A.

Reasons for traffic jams in Phnom Penh include:

1) More vehicles on the streets: The number of motor vehicles is increasing every year, despite the government's efforts on road infrastructure construction and rehabilitation to facilitate the rapid and smooth transportation of goods and people in boosting the national economy and reducing poverty. Lately, traffic congestion is growing especially in Phnom Penh.

2) Condition of the streets: The condition of the roads varies from good to very poor. Most of the streets are small and insufficient in width. There is also a large number of

motorbikes riding Phnom Penh's streets, and the shoulders are not paved to function as motorbike lanes.

3) Irresponsible maintenance: Road maintenance frequently takes place during rush hour. Moreover, while maintenance can be a key factor in prolonging the life of a road, insufficient maintenance has caused the deterioration of most roads, rendering them impassable during the rainy season.
4) Irresponsible drivers: Some motorbike or car drivers use the wrong side of the road even if they can see the street partition clearly. There are also people will turn regardless of traffic. Sometime people park their cars in positions that create traffic jams behind them and do not seem to care.
5) Market areas: Traffic slows down in district centers, especially at the market areas. Market stalls and parked vehicles occupy most of the shoulder in market areas, narrowing the effective road width and causing through traffic to slow and build up there.
6) Rule of law: There are some people would cross the streets at red traffic lights. Policemen are mostly powerless to enforce the law. Police can stop an old or poor man who rides a motorbike but could not stop a rich gentlemen who drives a luxury car.

5.3. Considerable Countermeasures

The types of the proposed improvement measures are based on the existing road conditions and the need to maintain the required service level of each road category. In order to ease road network problems such as insufficient capacity, traffic congestion and accidents, the following will have to be provided:

- Tighten enforcement of the Road Traffic Law and improve road safety.
- Put in place additional measures for the management of traffic in order to minimize congestion.
- Construct new bypass roads in congested areas.
- Construct new roads at identified missing links to complete road connection.
- Construct new bridges or flyover roads where required to complete the road network passing through obstructions or bodies of water.
- Widen roads through construction of additional traffic lanes to increase road capacity.
- Widen bridge carriageways to satisfy design cross-sectional requirements or provide an additional lane for narrow bridges with one lane.
- Conduct road maintenance works to ensure the service quality of roads.

According to the Phnom Penh municipality's website on traffic improvement news, studies on flyovers and overpasses are being conducted at the following intersections;

- Russian Blvd and Street No. 271 (stoplight at Pet Lork Sang).
- Russian Blvd and Mao Tse Tung Blvd (stoplight at Tuol Kok)
- Intersection at Camko City
- Russian Blvd and Monivong Blvd (PKC stoplight)
- East end of Preah Monivong Bridge (Chbar Ampov Market)
- Russian Blvd and Hanoi Street (Psar Dei Houy stoplight)

6. CITY TRANSPORTATION

Phnom Penh, unlike other capital cities around the world, does not have regular means and lines of public transportation yet. Buses are operated between cities. The inland waterway is in a position of supplementary transport to the road facility. The location of the port downtown is a comparative advantage against the roads. The creation of a new railway station in the convergence of networks existing in the western entry of the city is foreseen. The preservation of the railway station in the city center, besides its function as a terminus for travelers, allows the carriage of goods to supply businesses in the city center. The terminal points of exchanges and their modes of management for heavy transport by road, the complementary boats on the Mekong and Tonle Sap rivers, and the railroad from Sihanoukville constitute the principal stakes for the external exchanges of Phnom Penh. The creation of a logistic platform is necessary for the flow of essential goods to provision the city and support industrial export production. Reinforcement of public transport may be necessary in the future.

6.1. Existing Infrastructure and Plans as Measures to Dissolve Bottlenecks

6.1.1. Existing Road Conditions

Road network development in Cambodia started in the early 1900s, with most of the roads built basically for light vehicles and completed 50 to 60 years ago. For years, the road network system has contributed greatly to the transport sector in Cambodia. It has provided the country a lifeline to the outside world as well as serving as an internal distribution system. However, due to years of destruction, exposure to natural calamities and lack of maintenance, the road network has suffered and fallen into a state of

deterioration. The flood of 2000 brought serious damage to the road network, with more than 2,600 kilometers of roadway and 3,000 meters of bridge structure damaged.

Efforts to rehabilitate and upgrade the road network started in the 1990s with various international donors contributing to development by the year 2004.

The road network system in Cambodia has sufficient coverage in terms of road density and function. However, the road conditions are still very poor. As shown in the following table, there are still unpaved sections and temporary bridges on 1-digit roads. Moreover, the pavement rate of 2-digit roads is only 20 percent. It can be said that Cambodian roads are of an extremely low standard as far as the pavement situation and bridge quality in comparison with neighboring ASEAN countries. Improvement of the road pavement structure is necessary to provide a more efficient road network at least until 3-digit roads.

About 110 waterway locations on 2-digit and provincial roads do not have bridge crossings. It is obvious that more major bridge crossings will have to be provided to improve the present road network.

Road section conditions in some areas are in such a poor state that development objectives will have to require new roads.

Embankment slope protection against the effects of floods must be considered.

Markets will have to be moved away from the major routes to improve traffic flow and safety.

It is recommended to construct bypass roads in congested traffic areas, including in Phnom Penh, Battambang and Siem Reap.

It is recognized that the problem of increasing traffic congestion downtown, where car parks doubled in 10 years, obliges the setting up of a system of public transport.

Use of the existing railroads is envisaged to help intra-urban shuttles circulate. This system will create at skeleton for the west and the north of the city. It should be completed by a system of public bus lanes to Takhmao in the south and inside the central districts.

6.1.2. Reinforcement of the Road Network around Phnom Penh City by an Outer Ring Road

Various measures for traffic improvement in the Phnom Penh metropolitan area have been taken. Nevertheless, traffic conditions have been deteriorating due to the rapid increase of vehicles, including motorcycles. It is necessary to take urgent action against the further increase of traffic in the Phnom Penh metropolitan area. Much attention should be paid to the improvement of traffic congestion in the city.

Traffic congestion during the morning and evening peak periods is already observed on many road sections in Phnom Penh. Regulatory measures have been introduced to reduce the number of heavy vehicles in Phnom Penh, traffic management is being put in place and traffic laws have been strengthened.

However, an outer ring road around Phnom Penh is proposed for reinforcement of the road network.

- Alternative Road Routes (see Figure 13)

Although the proposed area includes both sides of the Mekong River, alternative routes of the outer ring road may be discussed. The outer ring road may serve as a bypass route on the north, west and south of Phnom Penh.

Based on policy makers' decisions, the main proposed routes are as follows:

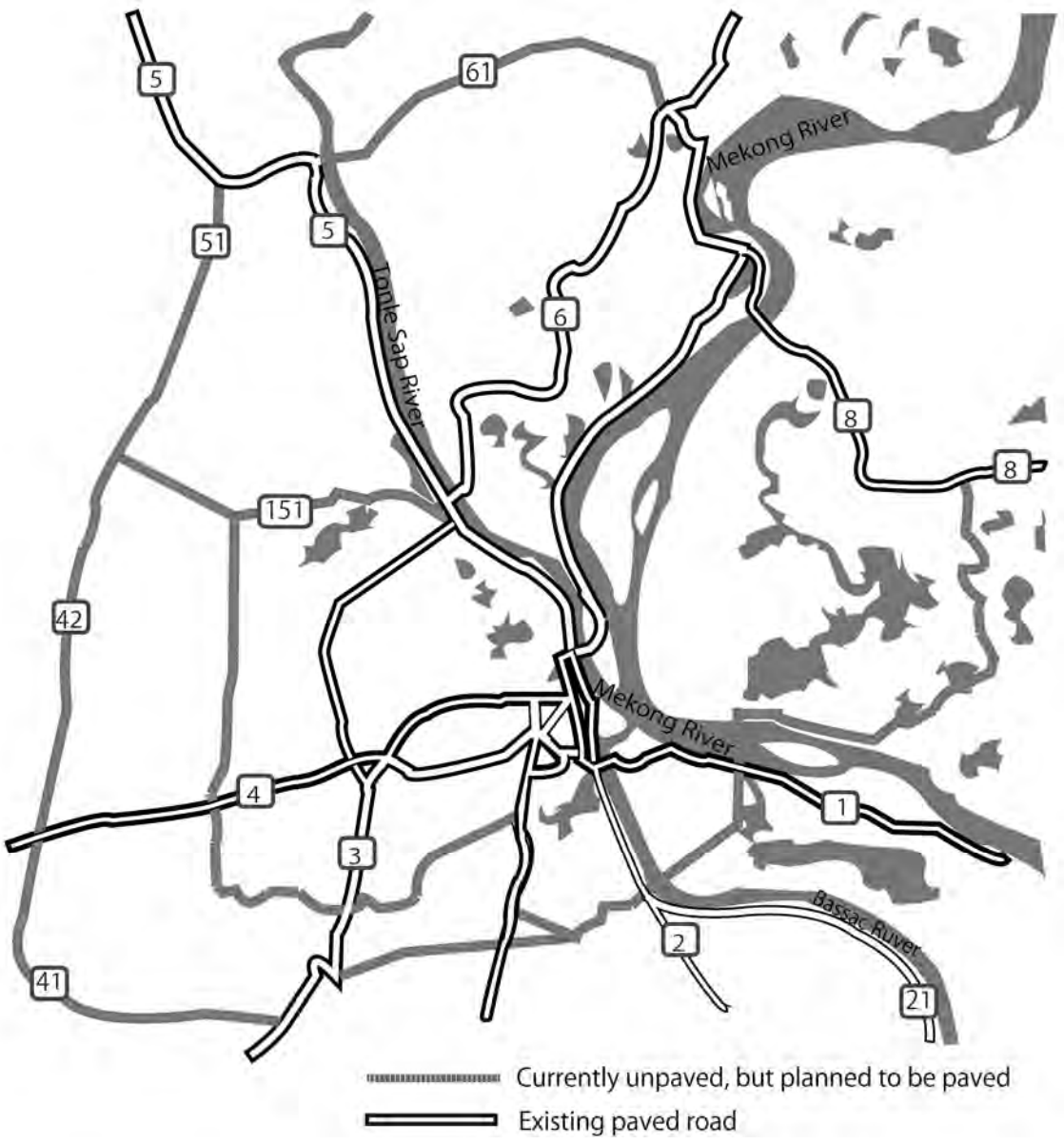
- First alternative route: Kob Srob Dyke Road
- Second alternative route: NR42
- Third alternative route: NR51

All alternative routes include the section of existing road without improvement (in bad conditions), the section of existing road with improvement (in good conditions) and the section of new road construction. In addition, the New Ta Khmao Bridge is needed as a common section of the alternative routes for crossing the Bassac River to connect NR1 to NR2.

The year 2020 is targeted for construction completion. Here are the assumptions:

- 20-50 kilometers in total length of the route
- 7-14 meters pavement width, with 1-2 meters for each shoulder
- 2 or 4 lanes.

Figure 13: Map on location of proposed Outer Ring Road of Phnom Penh Metropolitan



Source: Drawn by author and editor in accordance with a map of MPWT.

6.2. Existing and Expected Effects of Infrastructure Development

Phnom Penh has reached a level of equipment higher than in the 1970s. Efforts must be continued to give the capital services on an international level. The main part of the infrastructure will have to be carried out in suburbs whose population is already more substantial than the four central districts. Growth of the population from now to 2020 will be about 100,000 inhabitants in the four central districts against 600,000 in the four peripheral districts.

The Phnom Penh Outer Ring Road Project will help disperse the traffic that concentrates in the central area of the city as a bypass of the capital. The road will also protect Phnom Penh from floods in the rainy season and ensure water for irrigation in suburban agriculture areas. The project will encourage development of urban areas for industry, commerce, agriculture and residential use. The ring road will be a part of the Asian Highway as well as a bypass route.

However, the road network plan depends on the progress of industrial estate development. It is noteworthy that this development has critical pre-conditions, i.e. the provision of a water supply system and electricity, and further promotional activities are indispensable for attracting FDI. Moreover, the road development level shall be reviewed at the time of actual implementation by a realistic approach in consideration of traffic volume and financial constraints.

CONCLUSION AND POLICY RECOMMENDATIONS

Cambodia has come a long way in rehabilitation and promoting economic growth over the past decade. It is worthwhile to determine the economic rationale for the location of

SEZs and their specification in term of activities. It is reasonable for lightweight products such as electronic manufacturing to be near the airport due to the high value to weight ratio. Factories that assemble goods that need shipping should be close to the Sihanoukville and Phnom Penh ports, and firms that need cheap electricity should be located near the borders.

However, trade references that might have attracted industry in the past are typically eroded over time, and the government needs to recognize this and should offer public goods such as good quality and appropriate skills and infrastructure (electricity supply, road quality, and water and sewage systems) which contribute to development, rather than negative incentives.

Due to concerted government efforts, much progress has been made in the area of trade facilitation, although achievements should be expanded to benefit all traders. Further progress is therefore required to extend the roll out of the ASYCYDA computerized export control system, create a new single window and extend the risk management approach.

Although the country has abundant labor, the distribution of the labor force by province is still much of a concern for future development. The Sihanoukville and Koh Kong SEZs, with the high standard of living in these highland and coastal provinces, attract new laborers from plains areas of the country. For better performing companies, improving labor productivity is a reasonable priority. Two major strategies are improving pay practices to stimulate productivity and improving vocational training. Improving industrial relations to avoid strikes will be a priority, too.

Expansion of the capacity of the Sihanoukville and Phnom Penh ports is the major trend to ensure increasing exports of SEZ products to foreign markets. The reduction

of transportation cost and time needs to be considered.

Notwithstanding the progress of road network construction made so far, roads and bridges are deteriorating faster than the current capacity to rehabilitate, improve and carry out regular maintenance of these facilities in a timely manner. National roads are being damaged by overloaded vehicles. The road condition is so weak that the cross-border movement of goods with heavy trucks could affect implementation of cross-border transport agreements with neighboring countries. Moreover, traffic congestion in the cities, traffic management and the organizing of public transportation in the urban areas have become major challenges to be dealt with.

It is essential to heed lessons learned from previous weaknesses in order to overcome more obstacles on the path to sustainable development.

Therefore, it is recommended to:

1. scale up SEZ implementation and make SEZs more effective;
2. further facilitate trade in rolling out the ASYCUDA to other General Department of Customs and Excise posts, preparing and adopting a national action plan, and designing and introducing a flat fee for services;
3. strengthen and improve the environmental and urban transportation management;
4. foster the planning of urban and public transportation in major urban centers;
5. foster the efficient, effective and safe use of public and urban transportation infrastructure and services managed and owned by the private sector; and
6. put in place additional measures for the management of traffic in order to minimize the extent of traffic congestion;
7. enforce the traffic law and improve road safety.

ANNEX: ROAD NUMBER SYSTEM OF CAMBODIA

Road Classification	Description	No. Digits	Policy
1-Digit National Roads	*Links Phnom Penh City to Provincial Town	1-Digit	*Road number has been decided from 1 to 8
2-Digit National Roads	*Existing road branches off from 1-Digit National Roads		*Roads starting from right hand side of Primary National Roads are even number- first digit indicates Primary National Number; second digit indicates number order (e.g. 50, 52) *Roads starting from left hand side of Primary National Roads are odd number – first digit indicates Primary National number, second digit indicates number order (e.g. 51, 53)
	*New road branches off from 1-Digit National Roads	2-Digit with alphabet	*For new roads between two existing roads, an additional alphabet letter shall be added to the previous road number (e.g. 57A)
Provincial Roads	*Branches off from 1-Digit National Road	3-Digit	*First digit indicates Region number; second digit indicates Primary National road number; third digit follows right or left number order (e.g. 264)
	*Branches off from 2-Digit National Road	4-Digit	*First digit indicates Region number; second and third digit indicates Secondary National road number; last digit follows right or left number order (e.g.2648)
	*Branches off from Provincial Road	4 to 5 Digit	*First digit indicates Region number; second to fourth digits indicates Provincial shortcut name; last digit is the number order (e.g. 2KT1)

Source: MPWT.

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