KINGDOM OF CAMBODIA
MINISTRY OF PUBLIC WORKS AND TRANSPORT
PHNOM PENH AUTONOMOUS PORT

THE PREPARATORY SURVEY
ON
PHNOM PENH AUTONOMOUS PORT
NEW CONTAINER TERMINAL'S SPECIAL ECONOMIC ZONE AND ASSOCIATED FACILITIES CONSTRUCTION PROJECT
IN
KINGDOM OF CAMBODIA

FINAL REPORT

SEPTEMBER 2013

JAPAN INTERNATIONAL COOPERATION AGENCY

MITSUI & CO., LTD.
ORIENTAL CONSULTANTS CO., LTD.
IDES INC.

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Exchange Rates

This Report applied the following Exchange Rates:

1 USD = 91.14 JPY (Monthly average rate of The Bank of Tokyo Mitsubishi UFJ in January 2013)

1 USD = 4,002 Cambodian Riel (Average rate from 11 December 2012 to 10 January 2013)

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ABBREVIATIONS

A	AASHTO	American Association of State Highway and Transportation Officials
	ADB	Asian Development Bank
	AFTA	ASEAN Free Trade Area
	AIDS	Acquired Immune Deficiency Syndrome
	APD	Annual Power Demand
	ASEAN	Association of South - East Asian Nations
	ASTM	American Society for Testing and Materials
B	BDC	Business Development Center
	BOR	Berth Occupancy Ratio
	BOT	Build-Operate-Transfer
	BS	British Standards
	BTC	Belgian Technical Cooperation
C	CBT	Cross Border Transportation
	CBTA	Cross Border Transportation Agreement
	CCTV	Closed-circuit Television
	CDC	The Council for the Development of Cambodia
	CDL	Chart Datum Level
	CDRI	The Cambodia Development Resource Institute
	CEO	Chief Executive Officer
	CNTR	Container
	CY	Container Yard
D	DWT	Dead Weight Tonnage
E	E/N	Exchange of Notes
	EDC	Electricité du Cambodge
	EIA	Environmental Impact Assessment
	EIRR	Economic Internal Rate of Return
	ELC	Economic Land Concession
	EPZ	Export Processing Zone
	EU	European Union
F	FDI	Foreign Direct Investment
	FFM	Fact Finding Mission
	FIRR	Financial Internal Rate of Return
	FS (F/S)	Feasibility Study
G	GDP	Gross Domestic Product
	GNI	Gross National Income
	GOC	The Government of Cambodia

G	GOJ	The Government of Japan
	GRT	Gross Register Tonnage
	GSP	Generalized System of Preferences
	GVC	Global Value Chains
H	HCM	Ho Chi Minh
	HDPE	High Density Polyethylene
	HIV	Human Immunodeficiency Virus
	HMC	Harbor Mobile Crane
	HWL	High Water Level
I	ICD	Inland Container Depot
	IEC	International Electrotechnical Commission
	IEEE	Institute of Electrical and Electronics Engineers, Inc.
	IEIA	Initial Environmental Impact Assessment
	IMF	International Monetary Fund
	IPC	International Plumbing Code
J	JETRO	Japan External Trade Organization
	JICA	Japan International Cooperation Agency
	JIS	Japan Industrial Standard
	JPY	Japanese Yen
L	L/A	Loan Agreement
	LOA	Length Over All
	LO/LO	Lift-on\Lift-off
	LWL	Low Water Level
M	MAFF	Ministry of Agriculture, Forestry and Fisheries
	MEF	Ministry of Economy and Finance
	METI	Ministry of Economy, Trade and Industry
	MFN	Most Favored Nation
	MIME	Ministry of Industry, Mine and Energy
	MLMUPC	Ministry of Land Management, Urban Planning and Construction
	MOC	Ministry of Commerce
	MOE	Ministry of Environment
	MP (M/P)	Master Plan
	MPWT	Ministry of Public Works and Transport
	MRC	Mekong River Commission
	MSL	Mean Sea Level
N	NCT	New Container Terminal
	NCT-1	New Container Terminal-1 (existing)
	NCT-2	New Container Terminial-2 (future extension)
	NFPA	National Fire Protection Association
	NIS	National Institute of Statistics of Cambodia
	NSDP	National Strategic Development Policy
O	OD	Origin/Destination

P	PAS	Sihanukville Autonomous Port
	PIANC	World Association of Waterborne Transport Infrastructure Permanent International Association of Navigation Congresses
	PMIS	Province-Municipal Investment Sub-Committee
	PNH	Phnom Penh
	PPAP	Phnom Penh Autonomous Port
	PPP	Public Private Partnership
	PPSEZ	Phnom Penh Special Economic Zone
	PSIF	Private Sector Investment Finance
Q	QGC	Quay Gantry Crane
	QIP	Qualified Investment Project
R	RAP	Resettlement Action Plan
	RTG	Rubber Tired Gantry Crane
S	SEZ	Special Economic Zone
	SHV	Sihanukville
	SPC	Special Purpose Company
	SPM	Suspended Particulate Matter
	STSC	Ship To Shore Crane
	SUV	Sport Utility Vehicle
T	TCC	Travelling Cargo Crane
	TEU	Twenty-Foot Equivalent Unit
	TGS	TEU Ground Slot
	TOS	Terminal Operation System
U	UNCTAD	United Nations Conference on Trade and Development
	UNTAC	United Nations Transitional Authority in Cambodia
	USD	United States Dollar
V	VAT	Value Added Tax
	VTMS	Vessel Traffic Management System
W	WEPA	Water Environment Partnership in Asia

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

1. OUT LINE OF THE SURVEY

The objective of the proposed Project is to introduce private investment for SEZ development and associated facilities for Phnom Penh Autonomous Port aiming at effective utilization of Japan's technology and know-how, promotion of a package concession contract including building, operation and maintenance, and to consequently contribute to the economic growth of Cambodia.

The objective of the Preparatory Survey is to formulate a Project implementation plan and to conduct a feasibility study for SEZ development and associated facilities for Japanese private firms for possible investment in the Project.

2. PRESENT SITUATION RELATED TO PHNOM PENH PORT NEW CONTAINER TERMINAL'S SPECIAL ECONOMIC ZONE AND ASSOCIATED FACILITIES

2.1. Related Previous Studies and Projects

There are many studies and projects that have been previously conducted relating to existing PNH Port and SEZ in Cambodia. In such studies and projects, referable previous studies and projects are summarized. In particular, the necessity of New Phnom Penh Port, the selection of the new port location, cargo demand and role allocation of Sihanukville Port, problems of existing SEZs and SEZ demand in Cambodia as mentioned in the reports including "The Master Plan for Waterborne Transport on the Mekong River System in Cambodia" (Belgian TC, 2007),, "The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port"(JICA,2012) and "The Data Collection Survey on Industrial Policy Formulation Assistance"(JICA,2012), are essential upon review and updating for establishment of a development plan for the new SEZ and PNH Port in this Survey.

2.2. Natural Conditions

(1) Topography

The survey area is located between the Mekong and the Bassac Rivers. National Road No. 1 splits the two areas where NCT is located along the Mekong River bank and the target SEZ area is located inside farmland. The area lays on the Mekong delta and is called the "flood plain" of the Mekong River because it tends to frequently have floods due to its topographic features.

(2) Land use

The target area for NCT (Terminals 2 and 3) has already been levelled. There are some residential areas between NCT the national load No.1, and downstream of the terminal 2. The target SEZ area is flooded during the rainy season due to the low ground level. Major land conditions are meadow, pond and scrub forest. In the dry season, the drying areas are used as farm land while some areas remain scrub and pond. There are no houses in this project site. The northern part of the target access road area, and its bent portion, is already used as the farm road which width is approximately 3.5m and there are some houses nearby the national road No.1. There is no existing road in the southern part. The major portions of the area are paddy fields and canals are running from west to east. Natural sanctuary is not located in or around the project site.

(3) Sedimentation of Waterway and Basin

In the Cambodian territory, there are several navigational "hot-spots" confirmed both up and down stream of Chaktomuk (the junction of Mekong, Bassac and Tonle Sap Rivers), where the depths are comparatively shallow and there is a curvaceous fairway alignment, there precautions are needed for ship manoeuvring. Along the waterways in the Vietnam territory are similar conditions as well. Some of those hot-spots are periodically dredged. The river configuration around the NCT area, however, secures 500 m width and 10 m water depth which is enough for a ship turning basin for safe manoeuvring in front of the quay. There are some portions which are subject to erosion, especially at the river bank and bed, so it is duly required to include erosion control measures in the new port structures.

(4) Meteorology

Cambodia is located in an area with a tropical monsoon climate, which broadly consists of two seasons: the rainy season (from May to October) and the dry season (from Nov to Apr). The monthly mean temperature ranges between 19.2 - 38.7°C, with the lowest in January and the highest in April. The monthly mean humidity ranges between 68.9-83.4%, with the lowest in January and the highest in September. The monthly rainfall ranges between 4.9-290.8mm, with the lowest in February and the highest in September. The monthly maximum wind speed ranges 9-16m/s, with the lowest during January – February and the highest in August. The wind direction at maximum wind speed is generally northerly during November – January and southerly during February –October.

(5) Water Level Fluctuation

Water levels in Phnom Penh Port become lowest during April-May, the end of the dry season, and highest around October, the end of the rainy season. The water level difference reaches 7 to 9m.

(6) Soil

Geology of Kandal province is categorized into the young alluvium and soil of Kandal province is classified as blown alluvium and alluvial lithosol. According to the results of the soil borings carried out in this Survey, the NCT-2 area had silt clay from the existing ground to 10 m below with average N value 4, silt sand layer from 10 to 16 m with average N value 21, silt fine sand layer from 16 to 29 m with average N value 28, and dense silt fine sand from 29 to 35 m with average N value 35. Compared with existing subsoil in NCT-1, the soil layer composition of NCT-2 was similar. The access road and SEZ areas had a silt clay layer from the existing ground to 15 m below with N values 7-13, and fine sand layer from 15 to 33 m with N values 20-40.

(7) Historical Flood Records

The target survey areas are required to prepare precaution measures for flood every year, because the areas are topographically part of the flood plain of the Mekong River. On the other hand the areas utilize the water from the swollen River as irrigation. According to historical flood records along the Mekong River as kept by Mekong River Commission (MRC), Phnom Penh Chaktomuk and Neak Loeung stations adjacent to the target survey areas had floods in 1996, 2000 and 2011. Among those years, the flood in 2000 recorded 11.2 m and 8.12 m respectively in the said two stations and both the records seem to be historical maximums. Average daily discharges between September and October in 2000 were about 1.4 times the average daily discharges for the past 86 years (1924-2010), so it is clearly assumed that the flood in 2000 was historically the worst along the Mekong River.

2.3. Environmental and Social Conditions

(1) Baseline Information of Natural and Social Environment

As the baseline survey, a field survey was conducted for air quality, noise, water quality, sediment quality, soil, flora, birds, amphibians and reptiles, mammals and aquatic fauna. For the social

environment, information was collected by interview with the residents and village chiefs of the six villages in Banteay Daek commune apart from secondary data collection. The results were summarized in the EIA study report.

(2) Status of Land Acquisition

Status of land acquisition for this project was confirmed. Land acquisition for the SEZ and the access road has been progressed in the manner of a market transaction. As of March in 2013, transaction agreements for 47.5 ha out of 205 ha of the SEZ area has been completed between the mediator and the landowners. For the NCT development, 33 ha which covers terminal 1, 2 and 3 had already been acquired before construction of terminal 1.

2.4. Socio-Economic Trends

(1) National Trends

1) Socio-economic Indicators

The census of 2008 reported a population of 13.4 million and included breakdowns of the population by province, sex, age and other categories. Based on this census, the Cambodian National Institute of Statistics (NIS) estimated population from 2008 to 2030 estimating annual growth rates from 2008-2030. Cambodian population in 2012 is estimated at about 14.7 million by NIS. Phnom Penh city had a population of 1.33 million in 2008 and neighbouring Kandal province had 1.26 million. Metropolitan population is therefore deemed at about 2 million. Total land area of Cambodia is 181 thousand km^2, and more than 80% of the population inhabits rural areas (2008).

The Cambodian economy experienced stagnation in 2009 after the world recession in 2008 and GDP growth rate declined to 0.1% in 2009. However, the economy soon recovered from recession and GDP growth rate reached 6.1% in 2010 and 7.1% in 2011. GDP per capita has nearly trebled from USD319 in 2001 to USD909 in 2011. Particularly, GDP annual growth rates exceeded 10% during the four years from 2004 through 2007, which was one of the highest growth rates in the ASEAN region. After the world recession, GDP growth rates recovered to 6.1%-6.7%, and the growth rate of 6.5%-7.5% is expected after 2012. The IMF projection indicates that the Cambodian economy will enjoy high growth from 2015 for several years with a growth rate of about 7.5%. The Government expressed a goal that GDP shall increase two fold by 2020, for which it may need a growth rate of 7.5% following IMF's projection up to 2017.

2) Trade

The trade performance of Cambodia was active from 2002 to 2010 and the volume of both exports and imports has been increasing about 12% per year on average. Since the imports have also kept growing, the balance of trade has remained in the red, quickly widening its gap from 2002 to 2008 but the deficit has been shrinking for the last three years. In the process of increasing foreign investment for the manufacturing industry field, the import of capital machinery and equipment will usually increase at the initial stage of operation.

Exports have been increasing yearly since 2002 and the export amount has more than trebled from US$1.75billion in 2002 to US$5.35billion in 2011. The main export items are textiles/garments and shoes using the incentive of GSP to Cambodia, and the export value of the textiles/garments in 2010 reached about US$3.02 billion which occupied about 64.5% of the total export value and its destinations are mostly to the USA and EU countries (about US$1.82 billion to USA and about US$0.71 billion to EU countries.) In the top 10 export items in 2011, textiles/garments are main export items.

Imports have also been increasing and the import value in 2011 increased three times to US$69.9biliion from US$23.1 billion in 2002, but the ratio of increase has a trend of decreasing. The main import items are textiles (22.6 % for total import value) and oil (30.2% for total import value) and these items occupied over half of the total import amount.

3) Industry

Most of the local factory size is small or micro and the shoe industry and garment industry has become a mainstay of export-oriented industries in Cambodia. The summary of the status and trends for the industries are as follows:

- Garment Industry: The garment industry has accounted for more than half of the total export value by the general preferential tariff and most-favoured treatment given from the West in 1996 and has become the driving force of important economic growth for Cambodia. In the future the percentage of the total export value of the garment industry will decrease because new foreign investment is expected to begin export-oriented manufacturing in other fields.
- Shoe Industry: The total value of exports is not large in amount with about $170million, but the export will expand to other countries other than Japan or EU.
- Automotive Metal Processing, Electrical Electronics, Communications Equipment Industry: Hyundai Motor of South Korea already started the assembly of cars and Ford is also planning to construct an assembly factory. Suzuki and Honda of Japan have already begun assembling motorbikes and Yamaha has also acquired the land for a factory. The exports to Thailand, Laos and Vietnam as well as the domestic market are expected to increase.
- Agro-Processing Industry: It is expected to have increased every year from 2006, but it will still continue to increase including expansion of export by processing local agricultural products in this field.
- Agriculture・Fisheries・Forestry: The percentage of nominal GDP of primary industries reached 33.9% in 2010, production volume in the future would be increased by the foreign investment in the agro-processing sector and the planting business.
- Tourism Service Industry: The World Heritage Site of Angkor Wat has made a great contribution to the acquisition of foreign currency from more than 4 million tourists a year. The number of hotels also has doubled from 247 in 2001 to 440 in 2010 to accommodate these tourists. The income from the tourism-related services has increased and tourists will increase more, which will enhance the hotel industry.
- Real Estate Business: The construction of office buildings, general apartments, apartments with services, commercial buildings and housing is also becoming more active in the capital of Phnom Penh, but on the other hand it becomes a problem that the cost of land has become expensive very rapidly.

The following industries are expected as the new promising industries for the investment from the foreign countries in the near future.

- Auto Parts Industry: Yazaki, one of the world's largest automotive wiring harness manufacturers, decided to open a new factory and various parts companies such as automotive electric wire, plastic parts, metal parts and other parts companies are expected to establish new factories.
- Steel Processing Industry: Metal Processing Industry: The steel construction materials, steel furniture, storage tanks and non-ferrous metal processing manufacturers are also expected to start business.
- Plastic Processing Industry: The processing industries in broad fields such as furniture, home use products, package materials, automotive parts and electrical and electronic components will be established to serve the domestic and foreign markets.
- Assembly Industry for Electrical, Electronic and Communication Equipment: The foreign investment to the assembly industry will increase the same as in other ASEAN countries. Minebia, the world's largest Japanese motor manufacturer, is one of the examples.

- Wood Paper Industry: New industries such as wooden chips, packing materials, plywood and furniture using the rich timber resources are expected to begin operation. Oji Paper Company of Japan already opened a factory in the Sihanukville Port SEZ and another paper company is also planning to construct a factory.
- Agro-Processing Industry: The investment from overseas will increase in the field of the agro-processing industry by establishing a cold supply chain. There are a variety of processed agricultural goods, processed meat products and processed fish products including dried fruit and fruit juice in this field.

4) Investment

There is a tendency for the Foreign Direct Investment (FDI) into Cambodia to increase continuously not only in terms of its amount but also its GDP ratio. The investment of Japanese firms became active in 2012, and is characterized by the fact that the ratio of the investment into SEZs is comparatively high. In order to attract further foreign direct investments into Cambodia in the future, Cambodia's investment environment must be improved more.

5) Labour Force and Manpower Supply

In Cambodia, the ratio of young among the total population is very high. The capital city Phnom Penh and its neighbouring areas of Kandal Province and Takeo Province have high population densities, with a population of approximately 3,400,000 (over 25% of the total population of Cambodia). The relevant area and the provinces where major SEZs are located, have high establishment density also. It is predicted that the number of persons engaged in the primary industry will remain at the same level and the increase of labour force will be absorbed by the new demand of the secondary and tertiary industries in the future.

Human resources are mainly recruited from universities, technical schools, vocational training centres, technical training centres, etc. However, each of the existing foreign invested enterprises has experienced considerable difficulties in finding human resources at the setup stage. As for a company which was invested almost one year ago and is establishing its operation system currently, their concern on securing human resources is shifted from how to recruit human resources to how to reduce the resignation of employees. And as a serious problem in the human resource development for industry in Cambodia, the necessity to rectify the lack of basic scholastic ability is pointed out.

(2) Regional Trends

The trend of industry in each main province is summarized as follows:

- **Northern region**: anticipates more development of tourist and service industries originating from Angkor Wat and its surroundings
- **Capital region**: has more manufacturing industry backed up by FDI due to its geographical location advantageous for close coordination and arrangement with central ministries, banks and financial sectors and logistics hub base such as PNH Port, and ease of securing enough manpower resources
- **Western region**: expects development of agricultural and fish products processing industries with existing rice polishing, logistics, and tourist industries operated around Battambang and Koh Kong Provinces located on the Gulf of Thailand and along the border between Cambodia and Thailand.
- **Eastern region**: potentially enhances agricultural, fish and wood processing industries aside from existing agriculture, cement, animal feed, and shoe manufacturing industries mainly based at Kampot and/or Kandal Provinces including foreign trade with Vietnam
- **Southern region**: possibly takes oil refining, agricultural and fish products processing industries to be materialized by FDI in addition to existing apparel, motorbike manufacturing, shoes, and beverage industries mostly integrated around Sihanukville SEZ

2.5. Related Laws and Regulations

The current legal framework has provided an organized foundation for FDI, and is at the stage to ensure their appropriate implementation. This Project is planned as an Infrastructure Project to be implemented by a Public and Private Partnership. In consideration of the objective of the Law on Concessions, the Project shall be implemented in accordance with the Law on Concessions and its related regulations. Though the Sub-Decree prescribed in the Law on Concessions was drafted in 2004 and provisionally titled the "Sub-Decree on Implementation of the Law on Concessions", it has been under discussion for several years and is not yet promulgated.

An Environmental Impact Assessment (EIA) study report was prepared for the project of the SEZ, the access road and the NCT. The Environmental management and monitoring plan during construction phase proposes for PPAP to supervise the contractor who implements the activities. For the operation phase, it is proposed that a Special Purpose Company (SPC), which will be established for the SEZ, will handle the management and the monitoring for the SEZ and the access road as the responsible and implementation agency, while PPAP will be in charge of NCT. The legal procedure for the EIA to obtain approval by the Government of Cambodia is expected to be initiated by PPAP soon after this survey. As land acquisition is needed for the SEZ and the access road development, an abbreviated Resettlement Action Plan (RAP) was prepared in accordance with JICA's Guidelines for Environmental and Social Consideration.

2.6. Current PPP in Cambodia

In order to implement business and operation, one of the prioritized policies in the National Development Plan is to increase private sector foreign investment by improvement of the environment for private sector involvement under the slogan of environmental improvement of policy implementation and collaborative development. At present, the related agency has to apply for the PPP scheme to its supervising authority and the Council for the Development of Cambodia (CDC) for approval.

In the Port and Harbour sector, the authorities have recognized the importance of privatization for the port operation in order to strengthen the competitiveness in the future. However, the authorities take a careful position regarding the port privatization due to the port operation providing major national revenue. On the other hand, MEF actively encourages induction of private investment and the power and water supply businesses are particularly experienced in applying such investment methods under the Law on Concessions.

2.7. International and Regional Cargo Transportation

(1) International Maritime Transportation around Cambodia

At the present, container service is only operated at Sihanukville Port and Phnom Penh Port in Cambodia. International liner services are calling at Sihanoukville Port, but services are limited to ASEAN and East Asian ports. Directly linked ports are Singapore, Tanjung Pelapas, Hong Kong, Ho Chi Minh, Cai Mep, Laem Chabang, Songkhla, Kuantang, Kobe, Osaka, Tokyo, Yokohama, Shanghai, Busan, Ningbo, and Yangtian. Singapore Port plays the role of a hub port which connects Sihanoukville Port to major trunk services to Europe and North America. Phnom Penh Port is a river port and container service is limited to Ho Chi Minh and Cai Mep. Vessels deployed are barge type container vessels with a capacity of 120 TEUs or less. All containers are transshipped at HCM or Cai Mep Port and carried to their final destinations. Shipping companies serving at Phnom Penh Port are Sovereign, GEMADEPT, and New Port Cypress (Ben Line Agencies) and GEMADEPT has the largest share at 66.7% followed by Sovereign at 22.1% and New Port Cypress at 11.3%.

(2) Demarcation between Mekong River Transport and Land Transport

In addition to the maritime transportation through Sihanoukville Port, transship transportation via Phnom Penh Port and HCM/Cai Mep Port is emerging after the opening of Cai Mep Thi Vai Port

in South Vietnam in 2009. Land transportation is also emerging due to the development of the "South Corridor" from Ho Chi Min to Bangkok. The gates of the South Corridor are Bavet on the Vietnam border and Poipet on the Thai Border.

Direct land transportation to Cambodia from Vietnam and Thailand is increasing due to a bilateral agreement on through land transport. The quota, the sum of the through traffic of buses and trucks, is agreed between neighbouring counties, it was 300 units between Cambodia and Vietnam as of 2012, and each country can allocate its quota to transport companies by its own decision. The competent authority of each country is allowed to issue the certificate of through traffic up to the quota and submit the list of certified buses and trucks to the other party.

The quota of through traffic between Cambodia and Thailand was 40 as of 2012. Both Vietnam and Thailand tend to allocate their quota to buses due to demand for tourism, but Cambodia mainly allocates its quota to trucks.

Trunk liner services to North America started calling at the port in 2009 and container cargo to North America is gradually shifting from Sihanoukville Port to Cai Mep Port. However, Sihanoukville Port has an advantage in providing services via Singapore, which is the biggest hub port in ASEAN and provides frequent services to North America and enough space for every user. In this sense, Phnom Penh Port and Sihanoukville port share the export transportation to North America and co-exist together in the export container transport market.

In the import container transport market, Sihanoukville port is preferred over Phnom Penh Port due to origins of import cargoes and contents of import cargoes. Therefore, a cargo shift from Sihanoukville Port to Phnom Penh Port hasn't progressed much in terms of container import.

Road distance from Phnom Penh to Ho Chi Minh is about 240 km, and to Cai Mep is about 330 km. The Mekong river route has a distance of 380 km from Phnom Penh to Ho Chi Minh, takes 36 hours, and the distance to Cai Mep Port is about 355 km. Distances from Phnom Penh to Cai Mep Port by land and river differ by only 20 km, but the travel time may differ by a factor of three.

Following the increase of quota of through transportation between Vietnam and Cambodia, the number of trucks through the Bavet border crossing is rapidly increasing. In particular, the number of import containers through Bavet has increased by 3.4 times from 2009 to 2011. The number of container trucks which transported import containers to the Bavet area was 4,773 in 2011, and those which passed through the gate with an import container to Phnom Penh area was 15,243 in 2011. Non-container trucks which passed through the gate were 4,135 in 2011, all of which were destined for the SEZ or industrial areas near the Bavet border crossing. Factories in the area within 20 km of the Bavet gate are allowed to receive trucks directly from Vietnam, which are excluded from the quota of the through transportation agreement. A licensed truck for direct transportation sometimes transfers a container to another truck due to operational reasons. Therefore, the number of trucks which transported containers directly from HCM to PP is not available.

Compared with import container trucks, the number of export container trucks is considerably smaller due to the fact that trucks carrying empty containers or no cargo are not counted in the statistics. The number of trucks with a laden export container was 4,250, in which trucks from Phnom Penh area were only 951 in 2011. A trucking company employee explained that nearly 95% of container trucks from Phnom Penh to HCM/Cai Mep carry empty containers.

Supposing that Neak Loeung Bridge will be completed by 2015 and the ferry service will become unnecessary for truck transportation, cross border road transportation will have a much bigger share in container transportation between HCM/Cai Mep and Phnom Penh. However, this will not be applied to export containers as shippers prefer to use river barges rather than trucks. Fare of the import trucks is higher than the fare of export trucks in the case of land transportation, while the fare of export barge transport is higher than the fare of import barge in the case of river transport.

In this connection, import of containers through the Bavet border gate will be encouraged and the share of cross border land transport will increase further. However, exporters of containers will

prefer to use barge transport due to the fact that export containers are shipped and carried in a large lot to meet the cut off time of a mother ship at HCM Port or Cai Mep Port. The share of cross border land transport may remain at the same level or increase gradually. Barge transport will play a major role in exporting containers via HCM/Cai Mep Port.

2.8. Present Status and Development Trends of SEZs in Cambodia

The Cambodian government has so far officially approved the development of 23 SEZs by issuing conditional development certificates. Among them, fourteen SEZs have been authorized for establishment by the issuance of Sub-Decrees, and currently ten SEZs are in operation receiving investors. It should be noted that in particular FDIs have been gathered into SEZs located in the following four districts in Cambodia.

- Phnom Penh SEZ located in the suburb of the capital city Phnom Penh
- Sihanoukville Port SEZ and Sihanoukville SEZ located in the southern harbour city of Sihanoukville
- Manhattan SEZ and Tai Seng Bavet SEZ located in the area near the Vietnam border
- Koh Kong SEZ located in the coastal area near the Thai border

2.9. Present Status and Development Trends of Ports and Inland Waterways in Cambodia

(1) Related Ports

Phnom Penh Port: has a 300 m long quay and is -6.2 m deep for container and general cargo terminals. The water elevations in the rainy and dry seasons are respectively +9.81 m and +0.74 m and the quay has a limit for accommodation of calling vessels because of such difference of seasonal water elevation, waterway conditions and air clearance up to Phnom Penh Port. The hinterland of the quay has about 1.4 ha yard area, PPAP port administration building, entrance gate (2 lanes), warehouses (2 buildings), X-ray inspection facility etc. The inland container depot (ICD) secured by PPAP has about 4.5 ha yard area especially used for storage of empty containers. Cargo loading/unloading activities at the quay are carried out by 3 crawler cranes and 2 ship gear barge cranes and cargo handling activities in the terminals are conducted by certain numbers of top-lifters, reach stackers and tractor-trailers. According to 2011 port statistics in Phnom Penh Port, total container throughput was 81,631 TEUs/year (import 32 %, export 44 % and empty 25 %). The latest statistics report that the total container throughput reached 95,333 TEUs in 2012 according to PPAP. Based on an initial assessment of port facilities of PNH Port, the Port has the following three problems: 1) Berth number is adequate but yard area is apparently lacking for handling the current container throughput, and more congestion and serious accidents in the terminals may occur if the current operation continues, 2) Berth and yard expansions are quite difficult due to limited space in the port area, and 3) Additional handling equipment is to be carefully injected with consideration of setting future planned container throughput that should fit the capacities of the port facilities, reforming efficiency in actual operation, and rearrangement of the yard. At present, PPAP seems not to have a clear master plan for Phnom Penh Port in black and white. However, according to the results of reports from PPAP, PPAP plans to operate heavy container cargo handling in Phnom Penh Port on a limited basis, to rearrange yard utilization and to efficiently maximize existing port facilities. Currently, a Korean private company proposed rice/cassava export as a new use in the existing port facilities where most of the cargo operation has been transferred to NCT. Also, PPAP plans to further expand 5 ha more in ICD which will total 9.5 ha.

The New Phnom Penh Port (NCT: New Container Terminal): provides a full-scaled container terminal with 120,000 TEUs annual throughput planned, 300 m long quay, and -10 m deep. Main cargo handling equipment is to be 3 Quayside Gantry Cranes (QGC, TCC type), and 4 Rubber Tired Gantry Cranes (RTG, 6 over 1). NCT operation mostly shifted from Phnom Penh Port starting from January 2013. Due to seasonal fluctuation of the water levels, the depths in front of the quay and in the basin are variable but secure more than 10 m, which is enough to accommodate larger vessels.

In view of the depth naturally secured, 10,000 DWT class vessels can be accommodated at NCT. The hinterland of the quay provides space for a 4 ha container yard, PPAP administration building, entrance gate (4 lanes), emergency generator and machine houses, X-ray inspection facilities, empty container stacking yard and reserved area. PPAP secures reserved areas, one up and one downstream of NCT, each of about 10 ha. The terminal operation of NCT has been executed by PPAP based on the study results of and technical advice given by MRC (Mekong River Commission). New organization is managed by the CEO of PPAP as the top of the organization and the deputy director generals, the operation consists of five operation teams including Terminal planning, Operation Shift, Gate Control, Invoicing and Maintenance and Repair. NCT already launched a new Terminal Operating System (TOS) with the features of the port network, which is significantly important to organize the structure in compliance with the required job process, and that is essential to perform safe cargo operation and achieve the efficiency of business operation. However, it is not efficiently utilized at this moment, because the system has been just introduced for the actual terminal operation. At present, NCT has been constructed and its necessary cargo handling equipment is under procurement, so it seems that there is no new development in NCT. Only minor developments are planned such as pavement of reserved area and construction of an X-ray inspection building. According to PPAP, there is no clear picture for the reserved areas up and down stream of NCT, 3 ha of the 10 ha at the up steam area was already committed to utilize as a bulk terminal area to be jointly operated by PPAP and a local private company.

Sihanoukville Port: is a full-scaled gateway sea port in Cambodia, comprised of an old jetty as a backup quay for general cargo and passenger boat terminal (Phase I: berth length 288 m, quay depth -7.5 m), general cargo terminal (Phase II: berth length 290 m, quay depth -7.0 m, yard area 2 ha), and container terminal (Phase III: berth length 750 m, quay depth -8.5 m, yard area 14 ha). In this port, there are wave protective facilities such as breakwaters, fairways and navigational aids, port security system, Vessel Traffic Service (VTS), and Terminal Operating System (TOS). In 2011, Sihanoukville Port recorded 2.4 million tonnes in annual cargo handling including liquid cargoes such as fuels, and container throughput in the same year became 240,000 TEUs, approximately 10 % annual growth. The Port equips 2 QGC (container crane), 7 RTG, 9 reach stackers (8 for laden containers and 1 for empty containers), and 33 tractor trailers. Also, there are two 60 ton capacity Harbour Mobile Cranes (HMC) in the Port, which are generally used in unloading/loading operations for general cargo vessels without ship gear cranes or smaller container vessels that have called at the general cargo berth without QGCs. This Port has also an SEZ of 50 ha adjacent to the Port area. This SEZ already started its operation in 2012. It has some tenants already and continues promotion by extoling the advantages of enhancement of regional employment and convenience of logistics services linked to port activities. With increasing cargo volumes handled, Sihanoukville Port has an on-going project to construct a multi-purpose terminal for dry bulk cargo and an oil rig exploration base between the old jetty and the general cargo terminal (Phase V: berth length 330/200 m, quay depth -13.5/-7.5 m, yard area 2.4/0.4 ha) by Japanese Yean Loan. Also, JICA executed "The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port" in 2012 in order to establish a strategic plan for competitiveness and to update the master plan of the Port.

(2) Inland Waterways

Cambodia has totally 1,800 km of waterways available and about 600 km of the waterways, equivalent to 30 % of the total length, are navigable year-round. Inland waterways from Phnom Penh cross the Vietnam border, pass through a branching point called Km199, and stretch along two routes such as the Mekong mainstream route toward Cua Tie Estuary and the Bassac River route via Vam Nao Pass toward Dinh An Estuary. In the case of the Mekong mainstream route, the total length of the waterway from Phnom Penh to Cua Tie Estuary is about 350 km. In the case of the Bassac River route, the total length of the waterway from Phnom Penh to Dinh An Estuary is approximate 350 km as well. Barge feeder transport that is currently operated in connection between Phnom Penh and Cai Mep-Thi Vi Port and/or Saigon Port travels more than 30-50 km from Cua Tie Estuary and the total transport length between Phnom Penh and Vietnamese hub ports is 380-400 km. According to MRC, 4,000-5,000 DWT class vessels can be accommodated up to NCT depending on seasonal water level

fluctuation and vessel dimensions. In the Vietnam territory, 5,000 DWT class vessels are substantially able to pass throughout the year from downstream of Vam Nao Pass and Km 199 point to both the Estuaries. Based on the results of information from the PPAP harbourmaster about the Cambodian territory and collected information about Vietnam territory, some bottlenecks and constraints are confirmed upon inland navigation along the Mekong Basin at least four points in Cambodian territory such as Koh Keo Channel, Prek Dach Channel, Koh Ream Rang Channel, Downstream at the end of Peam Island Channel where widening and deepening is required (may also require realignment and removal of sunken vessels), and at least one point between Tan Chau and Xyugen in the Vietnam territory where new pylons are needed in order to reinstall the high voltage line across the waterway to accommodate 4,000-5,000 DWT class vessels year-around on the waterways. For connective access of the National Road No.1, the Neak Loeung Bridge is now under construction funded by Japan Grant Aid. When bridge construction is completed, the air clearance from HWL will be 37.5 m, therefore, 4,000-5,000 DWT or bigger class vessels can be accommodated along the waterway. PPAP now plans to dredge Prek Dach Channel, which is a bottleneck for accommodation of larger sized vessels.

3. IMPLEMENTATION PROGRAMME OF PNH PORT NCT's SEZ DEVELOPMENT AND ASSOCIATED PORT FACILITIES EXPANSION

3.1. Economic Development Scenario

IMF has estimated Cambodian economic growth from 2011 through 2017. Growth rates of 6.5%-7.7% are predicted during the period up to 2017. The Cambodian government released a goal to make its GDP double by 2020, which needs an annual growth of 7.5% following IMF's projection period. Taking into account these predictions, this report assumed that GDP growth of Cambodia up to 2017 will follow the projection of IMF. In the ordinary growth case, GDP growth rate after 2017 is assumed to be 7.5% which is the government goal up to 2020, and 6.5% from 2021-2025 followed by 6.0% from 2026-2030. Growth rates after 2021 are assumed to decrease to the middle of CDRI projections of 5%-7% in 2030. In the case of low growth, it is assumed that GDP growth up to 2017 will follow the projection of IMF, and it will decrease by 0.5% from the government projection up to 2020.

Future population of Cambodia is estimated by the National Institute of Statistics and this report assumed that Cambodian population will increase as predicted by NIS. NIS forecast that Cambodia will have a population of 16.5 million in 2020 and 18.4 million in 2030, and the annual growth rate will decrease to 0.9% in 2030.

3.2. Implementation Programme of PNH Port NCT's SEZ Development

(1) Future Development Framework of PNH Port NCT's SEZ

1) SEZ Demand Forecast and Forecast for New Tenants of the SEZ

In the Report on「Survey on Industrial Policy Formulation Assistance in Cambodia」, the October, 2012 Study by JICA, the demand for industrial sites in Cambodia was forecast on the basis of the past process of FDI for Cambodia. Based on this forecast for the demand for industrial sites and the results of the survey for the current conditions of Cambodian SEZ with process of the tenants into the SEZ, the demand for the SEZ is forecast as 2,058 ha of the area required in 2017 and 2,609 ha of area required in 2020, both in the low growth case. In the present, if the available area to move the tenants into SEZ is not increased by 2020, the area for the tenants in SEZ would be short about 152 ha and 703 ha in 2017 and 2020 respectively. In the current conditions of the SEZ, the Japanese factories represent more than 30% of the tenants of SEZ and it provides the majority of FDI in Cambodia.

The number of Japanese factories moving into the existing SEZ is forecast in this survey based on the current FDI for Cambodia from Japanese firms and the trend of Japanese factories moving into Cambodian SEZ. In the results of the survey, Phnom Penh SEZ will be sold out in 2013 and

Sihanoukville Port SEZ will also be sold out in 2014. Therefore, new SEZ development to accept the Japanese factories is necessary after 2015.

2) Marketing Plan

SEZ should invite non-polluting tenants including manufacturing and commercial facilities and not only conventional labour intensive industries such as shoemaking or sewing industries but also high value-added and export-oriented industries which will earn foreign currency. The management system of SEZ is also important and more than 40 staff shall be required to manage the organization during the peak time. The marketing department is particularly important to bring in foreign excellent companies from all over the world in a short time as their tenants. It is necessary to establish a worldwide marketing network and education system for the marketing personnel. A first-class SEZ which has well-developed infrastructure does not exist in the centre or suburbs of Phnom Penh currently. There are first-class SEZ in the metropolitan areas in Malaysia, Vietnam, Indonesia and Thailand and they became the driving force of economic development. Therefore, it is necessary to construct an SEZ in the metropolitan area where the necessary infrastructure and exists and enough labour, especially engineers for manufacturing industries, the financial institutes and government offices. In addition the plans of SEZ or large industrial complex are underway in Bangladesh and in Myanmar, but the problem is the port situation. SEZ will be constructed near the new Phnom Penh Port which started operation in January this year and in that sense will be advantageous in attracting foreign investors. The following direct effects can be expected by the construction of this SEZ:

- **Industrial Production**: If the tenants have occupied all the SEZ, the total industrial production of $1.5billion will be expected and 80% of which is exported, this is about 23% of the $5.3 billion gross total exports of Cambodia in 2011. It will contribute to earn foreign currency significantly.
- **Job Creation and Capacity Building**: The expected direct job creation will be approximately 25,000 people and capacity building will be expected in the form of technical training by the companies, if SEZ are to be fully occupied.
- **Indirect Effects**: Development and ramifications of various industries in SEZ will be expected in addition to the above. (Logistics, Packing, Canteen Services, Communication Services, Environmental Services and Office Supplies).

3) Logistics Plan

In line with the GOC‘s policy to invite factories into the SEZ, the factories are basically targeted as “Export Processing Industries”. The SEZ is connected directly to the Phnom Penh New Port. Therefore, the cargos generated by the factories are mainly imported and exported through the port. The container cargos generated in the SEZ is estimated as 21,780 TEUs per year for import and 33,540 TEUs per year for export, totally 55,320 TEUs per year. The cargos for the SEZ are transported between the Phnom Penh New Port and the SEZ over the access road to the SEZ. The cargo transportation, debarkation/embarkation of the containers, temporary cargo storage, empty container storage and customs arrangement are planned to be executed by the Logistic Center which is allocated in the SEZ.

(2) SEZ Development Plan

1) SEZ Development Policy and General Layout

The SEZ development at this site would require approximate 1,000 ha in the future. It is recognized as the prerequisite that the SEZ development is to be generally carried out by private investment. To induce the private investment, the scope of this Survey was to establish a development plan as the pilot project for a 143 ha SEZ including industrial park, commercial, residential and public areas with provision of basic common infrastructure and related utility facilities, and an access road connecting to National Road No.1.

The developer shall have basic objectives and principles of SEZ development which are to contribute to the economic development of Cambodia and especially to development of Phnom Penh

City and its surrounding area. It is also to be a project to receive foreign investors, to create jobs and to improve the capacity of the human resources and to establish a better SEZ model than currently in Cambodia or any of the other neighbouring ASEAN countries. The basic concept of SEZ is designed to develop the area of 143 ha in total for the necessary facilities and tenant's area. The development area is divided into 140 ha for SEZ, 1.2 ha for commercial area, 1.2 ha for residential area and 0.6 ha for public buildings.

The implementation agency will be able to secure land acquisition of 205 ha for the SEZ development. In order to secure a competitive price, the required development area is calculated to be more than 100 ha in this project. In the plan of the project, the tenants are planned to establish from 10 to 12 factories per year for five years and totally about 55 factories will be established in this SEZ. The planned factories have an average size of 2ha which yields 110 ha in total tenant areas. Therefore, the suitable development area for the SEZ is calculated as 110 ha plus 28ha (25%) for the road network with green areas and 7ha for common facilities. Therefore, the development area is planned for about 145ha in total. Moreover, the remaining area (205 ha -145 ha = 55 ha) could be utilized as a water reservoir area for the neighbouring rice field. The area shall be excavated to create a pond and the excavated materials could be utilized for filling the SEZ.

2) Preliminary Design and Facility Planning

The basic designs of major SEZ civil and architectural facilities, mechanical and electrical systems are presented below:

- **Civil & Architectural facilities**: As for the civil works of the SEZ, the Development Area is planned for 143 ha (fill volume: 6,900,000 m3), SEZ access road having two lanes each way, a main road having two lanes each way with 1m width median strip in the SEZ, an internal ring road having two lanes each way, a buffer green zone having 5m width on both sides of the roads and open ditches with culverts for rain water drainage alongside of the roads. Also green areas and parks with ponds are planned in the SEZ area. As for architectural facilities, SEZ management office, maintenance office, SEZ gates, safety office and electrical sub-station with control room are planned in the SEZ
- **Mechanical Systems**: PPAP-NCT SEZ water supply pipe is to be connected directly to the water station located along national road No.1 in the area about 1 km from NCT. Water from the city water supply is stored in a water reservoir (storage volume: 2,000 cubic metres) for countermeasures against water outage, the water in the reservoir tank is lifted to an elevated tank (storage volume: 150 cubic meters) by 3 sets (one pump as a backup) of lift pumps (2,500L/min x 0.46MPa), and water is to be supplied to tenants and the facility buildings from the elevated tank. Outdoor hydrants were planned along roads for fire fighting of the PPAP-NCT SEZ. The intervals between the outdoor hydrants is 200 metres. Fire fighting pipe is used for both Fire fighting and Water supply pipe. Fire fighting will be carried out by connecting the fire engine(s) to the outdoor hydrant by cooperating with an existing fire station (located 15 km from PPAP-NCT SEZ) under the jurisdiction. The Sewerage System for the tenants is intended for sewage water from water closets, and miscellaneous drainage from kitchens/wash-basins. The "Oxidation Ditch Process" will be employed for the Sewerage Treatment Plant. The sewer pipe is concrete pipe in consideration of corrosion resistance, impact resistance and cost of the pipe. Industrial and medical wastewater is to be discharged to a sewer manhole after being treated at the respective treatment plant that is to be installed by the tenant.
- **Electrical Systems**: EDC plans a new 115kV transmission line from Phnom Penh to Neak Loeung Bridge along national road No.1, and the transmission line is expected to be completed by 2015. For PPAP-NCT SEZ, EDC will install a 115/22 kV substation in PPAP- NCT SEZ area, and an incoming transmission line of the above 115/22 kV substation is to be connected to the 115 kV transmission line installed along the road No. 1. The 115/22 kV substation will be installed by EDC, however, as a result of consultation with EDC, part of the expenses related to installation of the above substation will be borne by PPAP-NCT

SEZ. A 22 kV 3 phase 3 wire overhead distribution system employing aluminium wire was designed for PPAP-NCT SEZ, the distribution lines are to be installed along roads in consideration of easy hooking up for tenants. However, a direct buried cable was planned from a 22kV distribution panel to the nearest poles for the 22kV overhead distribution line. The 22 kV/380 V substation was planned in an administration area for supplying power to a sewerage treatment plant, a water supply system and an administration building. An emergency generator was planned for supplying essential power in case the commercial power goes out. Pole mounted transformers (22kV/380V) were planned for supplying power to electrical loads of common space in PPAP-NCT SEZ. Road lighting was planned for inner roads and the access road from national road No. 1 to PPAP-NCT SEZ to ensure safe driving at night. The intervals of road lighting fixtures is 30 metres, and the fixtures are mounted on 10 metre poles. Underground empty conduit (100mm dia.) and hand-holes were planned in PPAP-NCT SEZ. In the future, communication cables will be installed by local providers at the request of each tenant.

3) Construction Programme

Major works for the SEZ development are reclamation works for the SEZ, the access road (Materials for land fill for SEZ is planned to come from two sources, excavated soil from the PPAP property land around the SEZ area and the sand extracted from the quarry at Chak-tomuk are transported to the NCT bank by sand barges, and the sands are pumped with water and distributed to the SEZ area for filling), paving works for the roads (the pavement is mainly made from three courses, sub-base course as laterite soil layer, base course as crushed rock layer and surface course as asphalt concrete layer) and the SEZ management & maintenance office with necessary utilities. The works are planned to construct for 36 months (3 years).

3.3. Implementation Programme of Associated Port Facilities Development

(1) Future Development Framework of Associated Port Facilities

1) Cargo Demand Forecast

Container throughput at Phnom Penh Port dramatically increased after the opening of Cai Mep Thi Vai Port in Vietnam. Rates of the increase were 43.7% in 2010, 31.1% in 2011, and 16.8% in 2012, and total container throughput reached 95,000 TEUs, while Sihanoukville Port handled 255,000 TEUs in 2012 which increased by 7.3% from the previous year.

Container export and import has a close relation to economic growth, so the correlation between GDP growth and container cargo growth is examined for the demand forecast. Based on the demand forecast for the whole country, demarcation between PP Port and SHV Port is assessed as well as demarcation between the cross border land transport and Mekong river barge transport. Container cargo throughput of PP Port is estimated by applying these two demarcations.

Following the rapid increase of licensed trucks for the cross border transport (CBT) between Vietnam, the number of laden containers imported through the land gate has rapidly increased, and it is estimated that the number of laden import containers through CBT is the same as over the Mekong River. Import through CBT is expected to increase further. However, the majority of laden export containers is transported by barges, and the export through CBT has a small share. This may be caused by the convenience for shippers and shipping companies who require their cargo be transported in large quantity and arrive at a HCM port simultaneously. This situation will continue for the time being.

Demand for container cargo import and export in Cambodia is carefully examined and estimated at about 1.77 million TEUs in 2030, in which container throughput of Phnom Penh Port is estimated at 559,000 TEUs in the ordinary case, 610,000 TEUs in the high share case, and 449,000 TEUs in the low growth case.

2) Logistics Plan

The container volume generated at the Phnom Penh New Port in 2020 to transport over national road no.1 is estimated at about 100,000 TEU in total. Those containers will be collected and transported to the Inland Container Depot or Logistic Center operated by private companies. The cargo transportation to the Phnom Penh New Port is calculated to reach about 700 trailers during the peak period. Therefore, enough space for the parking of the trucks waiting area around the terminal gate shall be taken into the design of the terminal 2 expansion when the project proceeds. On the other hand, the cargo traffic generated by the Phnom Penh New Port is evaluated for the traffic jams on national road No.1 in the social environmental survey. In the results for the EIA, the cargo volumes generated by the port are too small to have an impact on the total traffic volumes over national road No.1. However, the volume of the traffic is increasing day by day and the border of the Phnom Penh City over crossing the Monivong Bridge in the national road No.1 already hinders traffic chronically. To cope with the issue, the urgent implementation of the diversion road construction planned by GOC as the "Outer Ring Roads No.2 and No.3" shall be watched and forward of the project. This Ring Road No.2 will be constructed by 2019 before this Phnom Penh New Port expansion is constructed. Therefore, the Ring Road No.2 will become the major transportation route of the project.

(2) Extension Plan of Associated Port Facilities

1) General Layout of Associated Port Facilities

Considering the status and development trends of PNH Port and New PNH Port and cargo demand forecast, the planned container throughputs for existing PNH Port and New PNH Port (NCT-1) were respectively 80,000 and 170,000 TEUs/year. Although the container throughput of NCT-1 was originally 120,000 TEUs/year, the throughput of NCT-1 considered providing for an additional 50,000 TEUs/year with minor extension by construction of small infrastructural facilities (maintenance shop, expansion of access road and empty container storage area, and with procurement of additional cargo handling equipment. If the container throughput is beyond 170,000 TEUs/year, NCT-2 will be required as a new terminal extension, which has the container throughput capacity of 250,000 TEUs/year. Totally, the capacity of PNH Port and NCT-1 and -2 will be 500,000 TEUs/year.

In the future, the existing PNH Port area is to be the same as it currently exists due to the restrictions of the berth and yard area, clawer cranes or ship gear cranes for loading/unloading operations from vessels to land, tractor trailers for container transfer inside the terminal, and top-lifter and reach stackers for yard container handling works. On the other hand, NCT-1 and -2 is of QGC (NCT-1: TCC, NCT-2: STS crane) for quay cargo handling operation, Yard Transfer Crane (RTG) for yard cargo handling operation, tractor trailer for container transfer inside terminal, top-lifter and reach stackers for supplemental yard cargo handling operation in order to maintain efficiency of cargo movement.

Upon evaluation of suitable number and type of cargo handling equipment for the planned container throughput, PNH Port requires 3 units Quayside Crane (clawer crane), 15 units Tractor Trailer, and 2 units Reach Stacker (1 for spare). NCT-1 needs 3 units Quayside Gantry Crane (TCC), 5 units Yard Transfer Crane (RTG: Rubber Tired Gantry Crane, 6 over 1), 15 units Tractor Trailer, 1 unit Top Lifter, and 1 unit Reach Stacker. NCT-2 needs 3 units Quayside Gantry Crane (STS crane), 6 units Yard transfer Crane (RTG: Rubber Tired Gantry Crane, 6 over 1), 15 units Tractor Trailer, and 2 units top Lifter. The said numbers of cargo handling equipment include the equipment already procured by PPAP, so the net numbers of the cargo handling equipment considered in this Survey were estimated by the deduction of the numbers of the already procured equipment.

2) Preliminary Design and Facility Planning

a) Civil Facilities

The basic designs of major NCT-2 civil and architectural facilities, and mechanical and electrical systems are presented as below:

- **Civil & Architectural facilities**: Reclamation is required up to +9.5 m elevation the same as NCT-1, considering efficient traffic flow between the existing and the new terminals. Upon comparative study among three structural types of such as deck on piles, gravity wall and steel sheet pipe pile for preliminary selection of quay structure type for NCT-2, the deck on pile type was most recommendable among the types. The elevation and width of the deck were determined respectively as +9.5 and 22m and the length of the access bridge was set at 24 m, since NCT-2 requires continuity with NCT-1 facilities. The width of the crane rail gage was assumed as 16 m in consideration of expandability accommodative for possible large-sized vessel and availability of container cranes to be procured. The NCT-2 container yard is planned to provide four major civil structures such as pavement, concrete slab for the RTG, drainage system and perimeter fence. All the yard pavements are to be concrete in consideration of maintenance and mobility of terminal vehicles. Especially, the container stacking area, terminal service road, other terminal areas and empty container storage area were planned to apply heavy duty concrete pavement, which considered future multi-purpose use for rearrangement of the yard layout. RTG slab foundation is determined as pre-stressed concrete slabs. The drainage system considered surface drainage, underground pipelines and open ditches for the entire yard area. Also perimeter fences were considered as 2.5 m high on all terminal boundaries except for the quay line and connection to NCT-1 area upon the assumption that the same terminal operation will be continued. Aside from the civil facilities, NCT-2 basically was required to provide a Maintenance shop (1,200 m2), Additional entrance gate (2 in & out), Substation (80 m2), Generator house (50 m2), Fuel station (60 m2), Sewerage treatment plant control house (2 m2) and Weigh bridge control house.
- **Mechanical Systems**: A water supply pipe of 150mm was used for receiving city water from the main 200 mm water supply pipe which is installed along national road No.1. The water supply system for PHN port NCT Phase 2 (PHN port NCT2) was designed the same as that of the existing water supply system for PHN port NCT Phase 1 (PHN port NCT1), and a water supply pipe of 150mm was used for receiving city water from the main 200 mm water supply pipe which is installed along national road No.1. Water held in a water reservoir tank is to be pressurized by pumps then water is supplied to the buildings and berths. The Fire Fighting System for the existing PHN port NCT1 consists of a fire storage tank, fire fighting pump and outdoor hydrants. The Fire Fighting System of PHN port NCT2 was designed by expanding the existing fire fighting pipes. The intervals of the hydrants at container yard and berths are 200 metres the same arrangement as the PHN port NCT1. As for PHN port NCT2, sewage water from water closets and miscellaneous drainage from wash basins are to be treated in a septic tank, and after treatment, sewerage water is discharged into the Mekong River. The grease in miscellaneous drainage water is to be separated by a grease trap, and the separated water is to flow into the septic tank. The quality of water discharged from the septic tank must meet the requirements of Cambodian standards. The fuel oil tank (capacity: 30,000L) and fuel oil dispenser were designed to supply fuel oil to the RTG (Rubber Tired Gantry Crane) and Reach Stacker. Weigh Bridges were designed adjacent to the container gate for measuring the weight of containers.
- **Electrical Systems**: Power for PHN Port NCT 2 was planned the same as that of PHN Port NCT 1, and a substation, 22kV/6kV/380V was planned for power distribution to the equipment. A primary cable for the substation is connected to an existing 22kV overhead line. The electrical demand of PHN Port NCT 2 is estimated at about 3 MVA. Rated power distribution voltage for a gantry crane is 3 phase 3 wire (6 kV) and 3 phase 4 wire (380/220 V) for other equipment. An emergency generator was planned to supply emergency power to essential equipment in case of power break down. The emergency power is to be connected to the minimum port facilities that are required for port operation such as gantry crane (2 unit), all Refer containers and berth lighting. The lighting systems were planned at the container yard (30 Lux), the berth (30 Lux) and the road/boundary (25 Lux) for night time port operation. As a part of port security systems, a Closed Circuit Television (CCTV) Surveillance system and boundary lighting were planned.

3) Construction Programme

As for the Container Terminal 1 Complement Project, the project is small scale consisting of the expansion of the empty container yard, entrance gate, construction of a maintenance shop and procurement of additional cargo handling equipment implemented within the period of the SEZ development. As for the Port Expansion of Terminal 2 Project, the project consists of the quay slope excavation, and slope protection done using a grub bucket excavator, the steel pipe pilling works done using a pilling barge, concrete deck structural works on the piles, container yard pavement and land facilities with utility works. NCT-1 complement project is estimated to run for 18 months and to complete in the end of 2016. NCT-2 terminal expansion project is planned to run for 20 months and to complete in February 2020.

3.4. PPP Scheme

(1) PPP Scheme Modelling

In the examination for the PPP Models of the SEZ Development Project, the project is considering two models, the United Model (ODA's finance would be appropriated for the Development and Operation of the PPP Infrastructure Project which is executed by a private corporation using public finance) and the Separated Model (the development of facilities for the Land filling and Access Road as the Public portion is financed by an ODA Loan, the other SEZ facilities and the operation is financed by the private corporation with PPAP). The associated port facilities for the Terminal 1 complement project to add facilities and equipment is a very small scale project and the new facilities can be financed by the PPAP and the new equipment by a Private entity Therefore, the project is adopted as the Separated Model for the additional facilities invested by PPAP and the additional equipment invested by the private entity. As the Terminal 2 expansion is a future large scale project, but it is also planned as separated model (the Public portion is civil works financed by the ODA Loan, handling equipment and buildings financed by the private corporation.).

(2) Fund Sourcing for Project

The source of funds for the SEZ development as the United Model is divided into two cases, the case 1 includes the access road construction and the case 2 excludes the access road which is funded by GOC (both cases finance about 70% of the project fee by PSIF, the other 30% financed by private entities). As for risk reduction of private entities to invest in the Separated Model Project, the public portion will finance the reclamation works with an ODA Loan and the access road will be financed by GOC, and the other works for the SEZ is to be financed by the private entities (SPC). The land lease fee for tenants was set at US$ 59 /m2 based on the results of a competitiveness survey for neighbouring countries and the SEZ conditions in Cambodia. The other service fees for the SEZ operation can be collected as water supply with sewerage treatment fees, toll fee for the access road, electrical power supply fee, other land area leasing fees (apartment, commercial area, school and clinic) and SEZ maintenance service fee. In case of specific services out-sourcing or concession to private entities, the private companies could take the service fee from the tenants directly.

The Terminal 1 Complement project is adopted as the Separated Model for the additional facilities financed by PPAP and the additional equipment financed by the private entity. The Service Charge for the port activities adopts the Port Tariff set by PPAP.

(3) Tariff Plan

The land leasing fee for tenants of the SEZ is the major revenue source providing more than 60% of all the income of the SEZ operation for the long term period. The land leasing fee is a very important factor to be decided for the management of the SEZ. Basically, the leasing term shall be on a long term basis from 50 years to 100 years. For the PPNP SEZ, it is planned to be a 50 year leasing period in line with the GOC suggestion for SEZ. The price of the long term lease shall be decided based on the strategic considerations before invitation of tenants for the SEZ. Upon examination of the competitive land leasing price study, it is consequently recommended in this study that the leasing

price of SEZ is set at $55/m2 ~ $62/m2 (average $59/m2). Operation and service prices of SEZ were determined with reference of other SEZs in Cambodia and neighbouring countries.

Phnom Penh Port charges port dues, pilot fees, channel dues, and cargo handling charges based on the Decision declared by the Ministry of Public Works and Transport in 1993. The board of directors of PPAP is authorized to decide cargo handling charges, therefore, PPAP levies a special tariff on cargo handling charges from the view point of commercial management of a state owned company. Cargo handling charges include stevedoring fees from/to a ship, crane charges, lift on lift off (Lo/Lo) charges, gate fees and the like. However, port dues, pilot charges and other maritime services remain unchanged since 1993. PPAP gives a volume discount on stevedoring fees to shipping companies according to their quantity of container handling, which is a 20 % discount for users handling over 17,000 TEUs per year. Lo/Lo charges changed as of January 2013 from a system to charge lift-on and lift-off fees together at the time of the import, to a system to increase lift-on charges on imported containers and exempted lift-off charges on exported containers whose boxes are imported through Phnom Penh Port, Due to this amendment, PPAP encourages shipping companies and cargo owners to use Phnom Penh Port for both import and export. Consequently, lift-on charges became three times higher than lift-off charges on export containers whose boxes are not imported through Phnom Penh Port.

(4) Implementation Organization

The Operation and Management body for the SEZ is based on an SPC including PPAP and a Japanese private party. The invitation and service for the Tenants shall be mainly executed by the Japanese private company having much experience in the operation of SEZ.

Operation and Management for Terminal 1 Complement Project is executed by the PPAP. However, for the future Terminal 2 Expansion Project, it would be better for a private operator to participate in its operation in order to strengthen the port competitiveness by the effective operation and the improved services.

(5) Operation and Maintenance (O&M) Organization

With consideration of the scale for the development of SEZ, operation and maintenance for the utilities of the SEZ would be outsourced to special maintenance companies for each utility. PPAP (SPC) could maintain the road and drainage for the SEZ and the Access Road. Therefore, the SPC manage the outsourcing works and maintenance done by the specialized companies. The logistic centre planned in the SEZ will also be based on a concession contract with the third party logistic company.

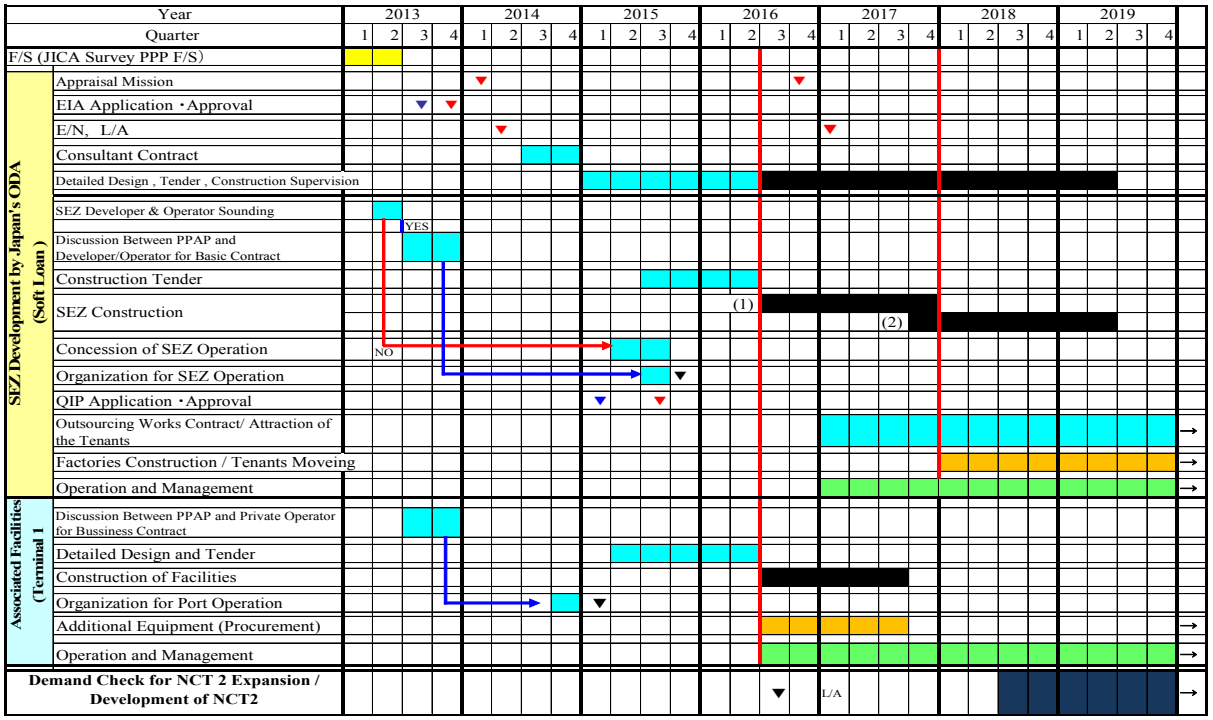
NCT1 Complement Project with Terminal 1 is basically operated by PPAP. PPAP has organized the operation and maintenance for terminal 1. When terminal 2 is constructed, to cope with issues for effective operation and maintenance, the existing organization for the terminal operation is recommended to be modified by involving the participation of a private operator.

3.5. Implementation Programme

A Japanese developer having experience in SEZ operation should join and form the SPC with PPAP for its operation. Therefore, after confirmation of the possibility to be funded by Japanese Firms having SEZ experience, ODA finance will be appropriated for a part of the development to implement the project and to support the SPC.

The associated port facilities plan is divided into the following two phases, the Terminal 1 complement project is aimed to handle the container volumes of 170,000 TEUs including the containers generated from the planned SEZ and the project is required to finish by 2017. Expansion of the new port as Terminal 2 will be necessary to finish by 2020. The Terminal 1 Complement is a small scale project to be implemented by 2017. Therefore, the construction facilities will be done and financed by PPAP and equipment is financed and procured by the Japanese private company, as the separated model.

The Terminal 2 expansion project is required to review the conditions and container demand of the NCT 1 by 2017. After review of the conditions, the development of the Terminal 2 will be implemented by 2020. The Implementation flow for the work together with Phnom Penh New Port SEZ (in case of PSIF funding Scheme), Associated Port Facilities (Terminal 1 Complement) Development and future NCT2 expansion is shown in the following Figure.



3.6. Capital Cost Estimation

The project cost is estimated together with Phnom Penh New Port SEZ Project, Associated Port Facilities (Terminal 1 Complement) and Access Road as US$ 64.1 million (5.84 billion yen). The SEZ project detailed cost is presented as a Separate Model (ODA Loan + Private Finance) as follows.

I. SEZ Development Cost Separated Model		**Million US$**	**(Billion Yen)**
	(1)+(2)+(3) **Total**	**59.0**	**(5.37)**
(1) Public Portion (Yen Loan)	Sub-Total	26.0	(2.37)
① Land Fill (Reclamation)		:21.7	(1.98)
② Temporary, General Expense, Engineering and Contingency		:4.3	(0.39)
(2) Cambodia Government Fund Access Road	Sub-Total	6.4	(0.58)
(3) Private Portion (SPC finance)	Sub-total	26.6	(2.42)
① SEZ Road Pavement		:5.2	(0.47)
② Power Sub-station		:5.0	(0.46)
③ Utility ・Buildings・Sewerage Treatment		:10.7	(0.98)
④ Temporary, General Expense, Engineering and Contingency		:5.7	(0.52)

II. Associated Facilities Cost (Terminal1Complement)	Million US$	(Hundred Million Yen)
	Total 5.2	**(0.47)**
(1) PPAP Portion(Self Finance)	Sub-total 2.5	(0.22)
① Yard･Entrance Expansion･Maintenance Shop	:2.1	(0.19)
② Temporary, General Expense, Engineering and Contingency	:0.33	(0.03)
(2) Private Portion(Self Finance)	Sub-total 2.7	(0.25)
① Handling Equipment	:2.7	(0.25)
III. Total I + II	**:64.1**	**(5.84)**

3.7. Economic and Financial Analysis

(1) Financial Analysis

The profit and loss statement of PPAP shows that operating income of 2011 was US 8.27 million, operating expense was US 5.60 million, and operating revenue was US 2.67 million dollars. Profit after interest and tax was US 1.58 million dollars in 2011.

Quay cranes of PP New Port are installed and operated by a private company and KAMSAB. Therefore, PPAP collects crane charges from containers handled by a crane, and paid 80% of the collected charge to the operators, who bear the cost of fuel, maintenance and crane operators. Since the operating income of PPAP does not include 80% of crane charges, which are paid to a private operator as profit share, actual operating income in 2011 was USD 9.0 million and operating expense was USD 640 million.

PPAP received Chinese preferential Buyer's Credit and developed the new container terminal No.1 beginning in 2010 and completed in August 2012. Amount and conditions of the credit were USD 28.22 million with interest of 2% with a period of 30 years including 8 year grace period. In addition PPAP procured RTGs and other cargo handling equipment and a private company/KAMSAB installed quay cranes. Total investment in cargo handling equipment for NCT No.1 was USD 13.27 million.

1) Financial Analysis of SEZ Project

Total cost for the development of PPAP SEZ is estimated at USD 58.9 million, construction period from 2014 to 2018, first offer for a long-term lease contract in 2016, first construction of a factory in 2017, and first operation of a tenant factory in 2018. Price of long-term lease of SEZ is planned at USD 54/m2 in 2017, USD 57/m2 in 2018, USD 59/m2 in 2019, and USD 62/m2 in 2020 and later. SPC is assumed to be established by private investors and PPAP, and prepare 30% of the construction cost by own fund and 70% by loan from funding agencies. The loan is supposed to be available at a lower interest of 4% with a period of 20 years inclusive of 10 year grace period. As SPC will receive a lump-sum payment at the time of lease contract, it is assumed that redemption of the loan will be finished before 2023.

In case that SPC develops all components of SEZ project, PIRR is calculated at 6.6%, and it is estimated at 9.4% if SPC could save the investment at 90%, and at 9.7% if SPC could save both of the investment and maintenance/operation cost at 90 %. EqIRR is calculated at 10.3% and it is also estimated at 15.7% if SPC could save the investment at 90%, and at 16.1% if SPC could save both of the investment and maintenance/operation cost at 90%. Financial analysis of SEZ project shows that FIRR of the project is 7.2%. Sensitivity analysis shows it if the construction cost and operation cost increase by 10%, FIRR is 5.2%, if the revenue is reduced by 10%, FIRR is 4.8%, and if both took place together, FIRR is 3.02%.

In case that access road is developed by public sector and excluded from SEZ project, SPC develops all other components of SEZ project including land reclamation, the estimated PIRR is 10.6%, EqIRR is 19.1%, and FIRR is 10.3%.
In case that public sector develops access road in its own capacity, PPAP reclaims the land for SEZ area, SPC develops superstructure of SEZ including pavement and utility facilities, and PPAP receives 57.8% of the income from long-term and short term land lease, the estimated PIRR is 10.0%, EqIRR is 21.6%, and FIRR of the investment of SPC is estimated at 11.4%. The estimated FIRR of the investment of PPAP is 11.37%.

2) Financial Analysis of NCT Development as a Public Investment Project

Construction of the Phnom Penh New Container Terminal was started in 2010 and completed with an investment of USD 43.3 million. The new terminal entered into operation in January 2013. NCT No.1 Complement project is assumed to start in 2014 and completed in 2017 with a total investment of USD 5.2 million, and enter into operation in 2018. NCT No.2 terminal is expected to start construction in 2017 and completed in 2020. Investment in NCT No.2 infrastructure is estimated at about USD 31.6 million, cargo handling equipment about USD 22.35 million. The terminal is assumed to open in 2021.

Finance on NCT No.2 infrastructure is supposed to be made by foreign funding agency with an interest of 0.01%, and repayment period of 40 years including 10 years grace period. Since the loan will be sub-leased from MEF to PPAP, it is assumed that interest rate of the sub-loan is 2.5% due to the present practice. Cargo handling equipment and buildings is supposed to be constructed by private companies with their own finance, which may have an interest rate of 4.0%, repayment period of 20 years including 10 years grace period.

NCT No.1 and No.2 terminals will have a total capacity of 420,000 TEUs. It is effective to operate two terminals as one single container terminal from the viewpoint of gate operation, yard planning, empty container stacking and other ancillary services. Supposing NCT No.1 terminal, NCT No.1 Complement facilities and NCT No.2 terminal are managed as one single terminal, financial analysis is made to evaluate financial feasibility of all project.

Financial analysis of NCT project shows that FIRR of the project is 13.5%. Sensitivity analysis shows it if the construction cost and operation cost increase by 10%, FIRR is 10.8%, if the revenue is reduced by 10%, FIRR is 9.7%, and if both took place together, FIRR is 6.7%.

3) Rate of Return on Private Investment

It is supposed that NCT No.1 Complement facilities and the cargo handling equipment/building for NCT No.2 will be provided by the private sector and the private investment shall be recovered by profit sharing between PPAP and the private investor. Business Corporation Contract (BCC) shall therefore be agreed between the two parties.

The profit share of cargo handling charges may be carefully assessed by both parties in the business cooperation contract. Provisionally the financial analysis assumed that profit sharing of crane charges is 80% for private sectors and 20% for PPAP, and profit sharing of RTG and trailer operation is 56% for private sectors out of the stevedoring charges in the PPAP tariff and out of the Lo/Lo charges.

In case that SPC constructs NCT No.1 Complement facilities, installs all cargo handling equipment of the NCT No.2 terminal, and operates them with bearing the expenses for fuel, electricity, labour and other operational materials, PIRR is evaluated at 9.1%, EqIRR is 28.1%. If SPC could save the investment at 90%, PIRR is estimated at 15.4% and EqIRR is 32.4%. Return on estimated capital will be satisfactory high in this project.

FIRR for SPC is evaluated at 14.8%. Sensitivity analysis shows it if the construction cost and operation cost increase by 10%, FIRR is 12.65%, if the revenue is reduced by 10%, FIRR is 12.4%, and if both took place together, FIRR is 10.3%.

Supposing that 30% of the total investment is borne by SPC own fund and 70% is financed by PSIF loan, it is revealed that the working ratio, operating ratio, rate of return on net fixed assets, and debt service coverage ratio remain in a satisfactory range. No problem is identified in cash flow or repayment of loans. Maximum dividends payable to shareholders are estimated at about 12% annually.

(2) Economic Analysis

1) Economic Analysis of the Development of SEZ

Development of SEZ brings economic benefit to Cambodia, i.e. the increase of foreign investment, establishment of factories and manufacturers, employment opportunities, tax income of the country, and ripple effect on regional economic activities. It is assumed that the establishment of new factories and manufactures will not be realized or considerably delayed in "without" case, and consumer goods to be produced at the SEZ for domestic use will be imported.

Largest benefit of SEZ development is the establishment of manufacturers and their production, which contributes to the increase of national product and export. Economic benefit of the increase of manufacturing is measured by the amount of value added to their products, which owes to the construction of factories, installation of manufacturing equipment and operation, and partly to the development of SEZ. Therefore, economic benefit of the development of SEZ is measured by ratio of investment in SEZ to the total investment in factories and equipment among the total value added by manufacturers located in the SEZ.

Based on abovementioned economic cost and economic benefit, EIRR of the project is estimated at 22.1%. Ratio of SEZ's contribution to the total economic benefit of industrial production in SEZ is assumed at 11.1%. Sensitivity analysis shows that EIRR is 20.5% in case of 10% cost increase, 20.4% in case of 10% revenue decrease, and 18.9% in case of the both happened at once.

2) Economic Analysis of NCT No.1 Complement Project and NCT No.2 Development Project

Economic benefit of the development of New Container Terminal is to reduce port and terminal congestion anticipated in the near future and to ensure smooth operation of import and export cargoes. In addition, it is expected that port related industries are promoted, employment opportunities increase, and industrial development is encouraged in the hinterland.

In case that NCT No.1 Complement project and NCT No.2 project are not implemented, Phnom Penh Port will be faced with heavy congestion after container cargo reaches 200,000 TEUs. If such situation appears, some containers will use Sihanoukville Port and some will use cross border truck transportation. Shipping companies will charge congestion surcharges on containers through Phnom Penh Port.

Therefore, economic benefit of the project is supposed to be the difference of transportation cost to/from PP Port from/to factories, and the savings of congestion surcharges to be levied at PP Port in "without case".

Based on abovementioned scenario, EIRR of the project is estimated at 17.0%. Sensitivity analysis shows that EIRR is 14.2% in the case of 10% cost increase, 13.9% in the case of 10% revenue decrease, and 11.5% in the case of the both happened at once. EIRR shows that this project is worthy enough to implement from the viewpoint of economic cost and benefit.

3.8. Environmental and Social Considerations

An Environmental Impact Assessment (EIA) study report was prepared for the project of the SEZ, the access road and the NCT. Since the SEZ is developed by landfill in a lowland, it is a concern that the development will make the flooded area spread out into the surroundings because it will decrease the water storage capacity of the area. Also, water volume which is reserved and used for irrigation during the dry season may decrease. For mitigating these impacts, a water reservoir pond is planned to be constructed adjacent to the SEZ to compensate for the decrease of water storage capacity.

As the access road will split the existing canals and roads as well as affecting navigation routes of local fishing boats, bridge and culvert tunnels are planned to be installed in order to mitigate the impacts. During operation of the SEZ, it is proposed to control wastewater carefully so as not to affect surrounding fauna and flora. In addition, ponds and green space are planned in the SEZ for creating their habitats. For the NCT project, monitoring of traffic volume and noise is proposed as the terminal operation will increase traffic. Also, consultation with local fishermen is suggested regarding water area use considering that the fishing ground is located adjacent to the terminal site.

An environmental management and monitoring plan during the construction phase is proposed for PPAP to supervise the contractor who implements the activities. For the operation phase, it is proposed that a Special Purpose Company (SPC), which will be established for the SEZ, will handle the management and the monitoring for the SEZ and the access road as the responsible and implementation agency, while PPAP will be in charge of NCT. The legal procedure to obtain approval of the EIA by the Government of Cambodia is expected to be initiated by PPAP soon after this survey.

As land acquisition is needed for the SEZ and the access road development, an abbreviated Resettlement Action Plan (RAP) was prepared in accordance with JICA's Guidelines for Environmental and Social Consideration.

3.9. Risk Analysis

(1) Assumed Risks and Countermeasures

The major risks and relevant countermeasures in the SEZ and Port Sectors are summarized hereunder.

For SEZ Development

- **Profit Loss Risks (Financial Risks)**: It is essential to procure an experienced and practical developer to promote many qualified enterprises. To overcome the competition, the selling price of the SEZ land lot, and management/operation charges have to be properly determined taking into consideration the distinct higher level facilities and services than other SEZ. The electric power rate will be a big element. The condition of recruitment of factory workers is one of the substantial factors to promote the tenants.
- **Country Risks**: To overcome the competition from other countries, the earliest implementation of the Project is essential.

For Port Development

- **Profit Loss Risks (Financial Risks)**: To strengthen PPAP NCT by reduced port charges taxation and implementation of a fair charging system to dominate over other modal shifts. The improvement of the port competitiveness will also contribute to the promotion of the SEZ tenants and will generate synergy effects between the SEZ and the Port.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusions

(1) Advantages and Necessity of SEZ in Cambodia

The demand for an SEZ in Cambodia is increasing due to the increase in Cambodia's competitiveness because it is becoming more advantageous than those of other ASEAN counties and China due to the worker's wage level, the land price per square meter of SEZ and the stable Cambodian politics, society and public peace and order. The majority of the existing 23 SEZs were developed in the marginal areas of the country. The supply of SEZ in the vicinity of Phnom Penh will be short in near future. The SEZs in Cambodia attracted Japanese enterprises. The share of Japanese enterprises in the existing SEZs of the total amount of foreign investment and of the total number of

foreign enterprises currently operating in Cambodia surpassed others from countries such as China, Korea, Taiwan or Hong Kong. It is apparent that SEZ demand in the Phnom Penh area will rapidly increase, and therefore, the existing SEZ capacities will be insufficient accordingly.

(2) Demand and Competitiveness of SEZ

The development of SEZ is imperative for promotion of foreign direct investment (FDI), for provision of long-term sustainable socio-economic effects in the country, for development of human resources, for enhancement of employment and etc. Currently, only about 1,900 ha of SEZ operative areas are available in the whole of Cambodia, which is even including the 4 SEZs currently under construction. The total SEZ area physically operating is only 299 ha and of the 94 foreign enterprises, 35 Japanese enterprises are operating in the areas. In Vietnam, 49 major SEZs have been developed with a total area of 9,566 ha and 2,979 enterprises (including 544 Japanese enterprises) are operating. There is an overwhelming difference in the present SEZ situation in Vietnam and that in Cambodia. The future SEZ demand as estimated by JICA in 2012 was 2,058 ha in 2017 and 2,609 ha in 2020 (low economic growth case), so the shortage in SEZ area was projected to be 152 ha and 703 ha in 2017 and 2020 respectively.

(3) Importance of Effective Development and Strategic Marketing of SEZ

It is necessary not only to increase FDI through SEZ development but also to establish backbone industries through promotion of a localized industrial framework. In this point of view, some expectations are arising in Cambodia to develop reliable quality FDI from firms such as Japanese enterprises.

(4) Ripple Effects, Site Selection, Proposed Facilities of PHN-NCT SEZ

In the case of a proposed SEZ development scale (possible 100 ha of area available), the SEZ could attract 60 enterprises as tenants, 0.8 to 1 billion USD as initial capital investment for construction and machinery, 25,000 persons as employees, produce 1.5 billion USD as annual production of tenant's factories, and 55,000 TEUs container cargoes newly generated from the SEZ. The SEZ area is expected to be a part of an important logistic corridor to connect with PHN capital city by future construction of an outer ring road (RR3). The proposed NCT-SEZ total area is 143 ha, consisting of 37 ha as public facility area with power supply, sewerage treatment and etc. and 106 ha as area for tenants. It is presumed that 59 USD per square meter as a proposed selling price will be reasonable and competitive compared to other existing SEZ in Cambodia.

(5) Container Cargo Demand in PHN Port

Considering the operation of the SEZ, future container cargo throughput of Cambodia was estimated as 1,770,000 TEUs in 2030, of which, PNH port was estimated to generate 559,000 TEUs, 610,000 TEUs, and 449,000 TEUs in the mid, high and low growth cases, respectively.

(6) Container Cargo Handling Capacity of Existing PHN Port and Proposed NCT-1 Port Facilities

The handling capacity of the existing PHN port including ICD was estimated at 80,000 TEUs/year. NCT1 was estimated to handle 170,000TEUs considering complemental Cargo Handling Equipment and extension of the container yard areas, This indicates that the total 250,000 TEUs of PHN port and NCT-1 will be inadequate in 2020, and consequently new port facilities will be required.

(7) Required NCT-2 Port Facilities as Future Extension of NCT-

The target container cargo handling capacity of NCT-2 was determined as 250,000 TEUs/year, based on the forecast demand of 500,000 TEUs/year in 2028/2029 in the whole of the PHN port including NCT-1 and NCT-2. The major proposed facilities are 350m Quay for 5,000 DWT (min.), 7

ha Container Yard, Cargo handling equipment (3units of QGC, 5 units of RTG, and others), Port utilities, Maintenance shop and etc.

(8) Implementation Programme

The SEZ Project is assumed to apply a PPP Scheme: Financed by ODA (PSIF or Japanese Yen Loan) as well as private funds. If the financing agreement is concluded before the first half of 2014, the SEZ is to be possibly developed by the first half of 2015, thus sales could commence from the beginning of 2015, and the completion of the SEZ development is to be by the first half of 2018. Formation of operation & maintenance organization(s) for the SEZ is necessary by the third quarter of 2014.

NCT-2 extension is assumed to be implemented aside from the SEZ development. If the financing of the extension is completed by 2016, the construction and procurement will commence in the middle of 2018, and the completion will be by the first half of 2020.

(9) Capital Project Cost

The capital Project cost of SEZ and Port (NCT1 complement) by public and Private funding is estimated as shown hereunder:

(Unit: Million US$)

Item	Public	Private	Total
SEZ	26.0	26.6	52.5
Port (NCT-1 Complement Facilities)	2.5	2.7	5.2
Total	28.4	29.3	57.7
Percentage	49 %	51 %	100 %
Access Road	6.4	-	6.4

The development of the NCT2 is deemed as a future expansion project of which total cost is estimated to be US$54 million.

(10) Project Scheme

It is recommended that the suitable project scheme for the procurement of NCT-1 complement facilities is by public (PPAP's own funds) and private funds as presented in the previous Section.

As for the SEZ development, three comparative cases were determined: :Case 1 is of PSIF and private funds including the cost of the Access Road, Case 2 is of PSIF and private funds but not including the cost of the Access Road, and Case 3 is of ODA Loan and private funds. In Cases 1 and 2, the cost of the Access Road and Land Filling could be too great a financial burden for the SPC. Some of private developers deemed the extensive land filling works as a big risk to the investment. In Case 3, the land filling works are separated from other work items and considered to be financed by ODA Loan. This measure will encourage the private sector to invest in the remaining portion of the project scope.

(11) Project Evaluation

The financial evaluation represented by FIRR, indicated 7.15% and 13.49% for the SEZ and Ports (including NCT2) respectively. This shows both sectors are feasible for implementation by PPP scheme. For the Private portion (30%) of NCT2 the FIRR became 14.81% which is adequate to be implemented by the private sector.

In the economic evaluation, the EIRR of the SEZ and Port (NCT-2) extension shows 22.1% and 17.0% respectively which is an adequate figure in terms of cost benefit effect and it is evaluated that implementation of both the development and extension is meaningfully valuable.

(12) Environmental and Social Considerations

The Survey carried out an EIA study for the SEZ development and NCT-2 extension project. For the possible disturbance and/or change of the present situation by work such as soil filling of the SEZ area some mitigation measures were considered for such environmental and social impacts, e.g. provision of floodwater retention ponds, installation of small bridges and some culverts traversing the access road, execution of coordination meetings with fishermen before/during NCT-2 service operation, preparation of RAP for land acquisition of SEZ and new access road areas in accordance with JICA Environmental Guidelines.

4.2. Recommendations

(1) Urgent Project Implementation

The enhancement of FDI by surpassing other SEZ through urgent implementation of an international grade NCT-SEZ Project by PPP is quite essential.

(2) Necessity of Project Implementation by ODA (PSIF or Japanese Yen Loan) with Private Sector Participation

Selection of a soft loan & private funds in a PPP scheme will encourage qualified private developers and tenants and favourable implementation and operation will be realized.

(3) Advantage of Project Implementation of SEZ Development and NCT-2 Extension by ODA

Execution of the proposed SEZ (143 ha) as an urgent pilot project by said PPP for inducing further SEZ (more than 600 ha) developments in future expansion areas to be sourced by the private sector it is emphatically recommended that the Project combining the SEZ development and NCT extension should be executed by ODA (PSIF or Japanese Yen Loan) with involvement of the Japanese private sector, which will be a “primer” for formation of an internationalized logistic supply-demand chain base composed of the proposed SEZ linked with NCT for securing stable and sustainable socio-economic development for the people and nation of Cambodia.

(4) Strengthening of Competitiveness of SEZ and Port

Revision and improvement of the procedure charges and rates are expected in connection with implementation of ASEAN FTA for strengthening competitiveness.

(5) Development and Improvement of Inland Waterway Associated with the Government of Vietnam and MRC

Increasing cargoes will require bigger cargo lot capacity by large-sized vessels connected to the ocean routes in South East Asia in the near future. The waterway could possibly be improved by the Governments of Vietnam and MRC, the maintenance and improvement costs need to be fully/partially shouldered by both Governments based on mutual agreement. It is therefore required to prepare due assistance for organizing and facilitating such framework and co-involvement, taking account of the timeframe of cargo increase and SEZ demands.

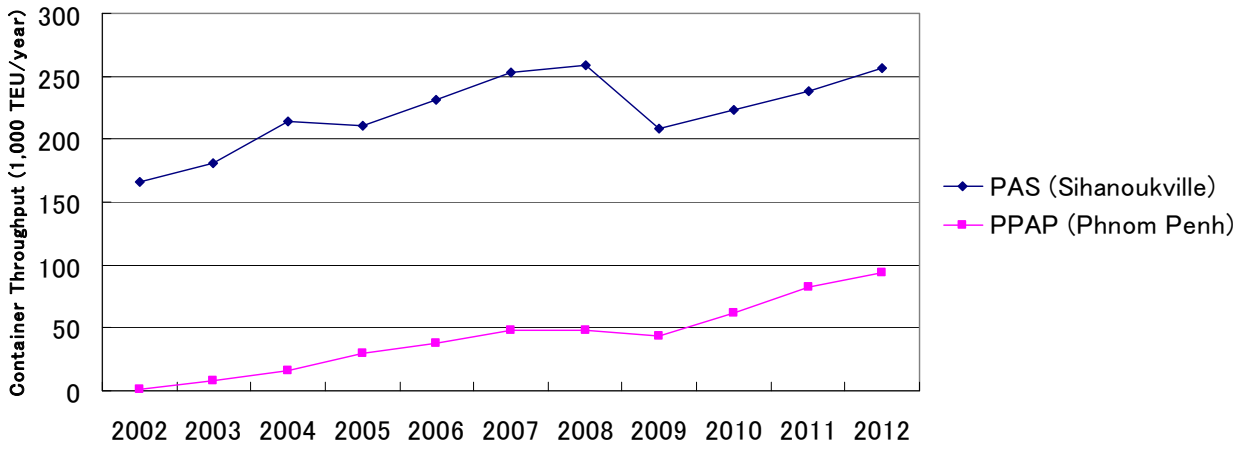
1. OUT LINE OF THE SURVEY

1. OUT LINE OF THE SURVEY

1.1. Background of the Survey

(1) Present Situation

Cambodia's territory area is approximately 180 thousand km^2, with the population of 13 million (2009) and the GNI per capita of US$ 650 (2009). There are two major logistics gateway ports in Cambodia. One is the Phnom Penh Autonomous Port (PPAP), which is a regional river port along Tonle Sap and Mekong Rivers, and the other is the Sihanoukville Autonomous Port (PAS) an international deep seaport. There are some existing municipal and private ports. The significant part of the container cargoes, however, is handled by the two major ports. The container handling volumes of PPAP and PAS in 2012 were 90,533 TEU and 256,344 TEU respectively. Although the volume of PPAP was lower than that of PAS, it is continuously growing by connecting as a feeder port to the Cai Mep/Thi Vai Ports and other ports group in Ho Chi Min City. (see Container Cargo Growth in Fig 1.1-1).



Source: PPAP, PAS, Survey Team

Figure 1.1-1 Actual Growth of Container Cargoes handled by PPAP and PAS

(2) Present Situation of Targeted Sites

The outlines of the port facilities and activities of the two major ports of PPAP (existing port and New Container Terminal (NCT)) and PAS are compared in Table 1.1-1. The PAS Port has a large scale quay and cargo handling facilities and operates with high productivity as a deep sea-port, while PPAP has less water depth with cargo transportation by self-propelled barges and smaller scale cargo handling equipment. The Terminal I (Phase 1 of NCT), that commenced port operation in January 2013, has less productive capacity than PAS port. The capacity of Terminal 1 is estimated to be 120,000 TEUs.

PAS port has not only a container terminal but also has two general cargo berths for break-bulk, bulk, and passenger ships. On the other hand, PPAP does not have adequate facilities or capacity. With the opening of new Terminal 1, PPAP is planning to strengthen the services for break-bulk, bulk and passenger ships.

The present water passage of PPAP connects through the main channel of the Mekong River to Cai Mep Port and other nearby ports. In the future, once the water passages in Vietnam are developed, bigger size ships could pass through Bassac River where the navigation channel is deeper. The Government of Vietnam is undertaking the dredging project including the by-pass canal (Quan Chanh Bo Canal) near the mouth of Bassac River, using its own funds. This project is to schedule the development of the Bassac River by 2015 to be passable for 10,000 DWT vessels up to My Thoi,

which is located 180 km upstream from the estuary of Bassac River. The segment of Bassac River, including the upstream side of My Thoi, Vam Nao Pass, which connects between Bassac and Mekong Rivers, and the segment of Mekong River within the territory of Vietnam would be developed by MRC (Mekong River Commission), according to PPAP.

Table 1.1-1 Existing Port Facilities and Capacity of PPAP and PAS

	PPAP (Phnom Penh)		PAS (Sihanoukville)	
	Existing Port	**NCT (Terminal 1)**	**Container Terminal**	**General Cargo**
Quay Length	300m	300m	400m	280m×2 350m×1
Quay depth	－5.5m	-7m	－10m	－9m
Yard area	Port yard 3ha ICD 9.2ha	10ha	12ha	9.7 ha
Cargo Handling Equipment	Crawler Cranes Crane on barges	TCC：3 units（plan） RTG：4 units（plan）	Quay Gantry Crane：2 units RTG：7 units	Ships gear Mobil harbour crane 2units
Max. Ship	100～150TEU (1500～2000DWT)	351～700TEU （5,000DWT）	1,500 TEU （20,000DWT）	10,000 DWT
Port Capacity	50,000 TEU /yr	120,000 TEU/yr	500,000 TEU/yr	
Channel Depth	－5.5m		－10m	

CD: Inland Container Depot, RTG: Rubber Tired Gantry Crane, TCC: Transfer Container Crane, TEU: 20 Footer Equivalent Unit

Source: PPAP, PAS, Survey Team

(3) Development Issues

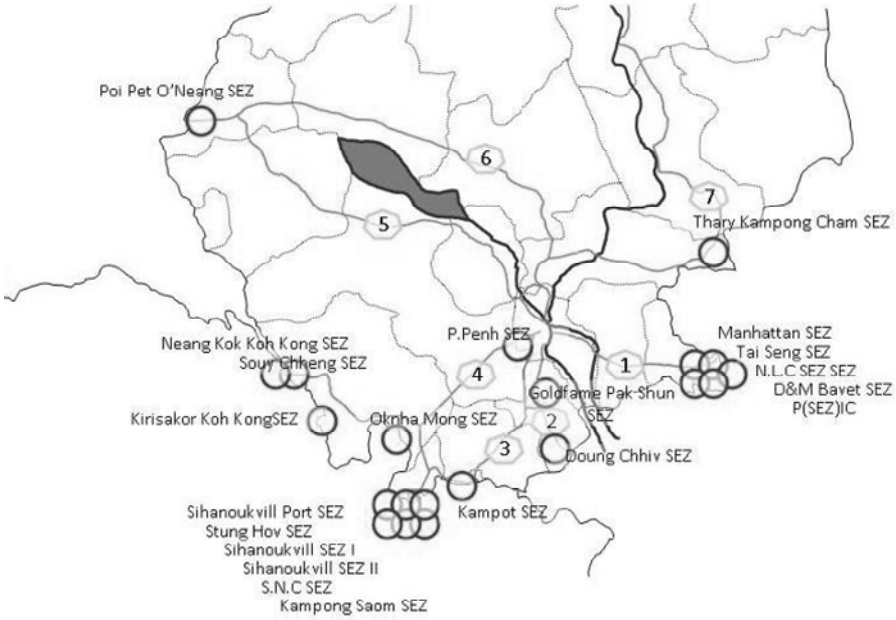
According to the study report "The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port" (JICA, 2012), it was forecast that even if a proper share of roles between the ports of PPAP and PAS was made, the container cargo volume of PPAP would continue to grow, and the development of the port facilities for expansion of the port capacity and improvement of port operation and maintenance are urgent issues.

To deal with the growing container cargo, PPAP implemented the construction of New Container Terminal (NCT) 1 with a Chinese government soft loan fund beginning in 2010, along the right bank of Mekong River 26 km downstream of the existing Phnom Penh Port. The port operation of NCT1 commenced in January 2013. Subsequently, PPAP planned that NCT will account for 75% of container cargoes, and the existing Phnom Penh Port will handle 25% of container cargoes and agricultural bulk cargo such as rice, which is highlighted for promotion for export as part of the national plan. Special cargoes, such as heavy cargo, and passengers will also be handled and utilize the existing Phnom Penh Port. NCT1 is, however, forecast to reach capacity in the forthcoming several years, and further expansion of the Terminal 2 will be needed. The NCT is expected not only to handle container cargoes but also to be a stronghold of logistics in the capital region together with the NCT's SEZ (Special Economic Zone) to be planned in the hinterland of the NCT.

In association with the new port development, it is further necessary for Cambodia to facilitate promotion and development of a strengthening of the basic industrial sector to widely enhance employment opportunities and high value added industries. To achieve this target, the promotion of FDI (Foreign Direct Investment) by means of an SEZ together with port development is indispensable.

Currently, SEZ in Cambodia are mainly located in the Bavet area near the Vietnam border along National Road No.1, Sihanoukville area along National Road No.4, and near the Thai border. (See Figure 1.1-2) In the Capital region, only one SEZ is operating in which tenants are currently conducting business but there is not enough room for late coming tenants. Considering the hike in

workers' wages and land prices in neighbouring countries the competitiveness of the new SEZ in Cambodia will be strengthened. The PPAP NCT's SEZ, which is located in the Phnom Penh City area as a core of production and consumers activities, and directly connecting to the inland waterway transport through NCT, will be, therefore, highly and urgently needed for development. In this situation PPAP is in the process of acquiring the land for SEZ development in the area directly connected to NCT.



Source: CDC

Figure 1.1-2 Location of Existing SEZ in Cambodia

(4) Necessity of the Project

The Cambodian Government designated, in the National Strategic Development Plan (2009-2013), acceleration of private sector development, enhancement of employment opportunities, and enhancement of trading activities, in parallel with the investment for domestic human resources development and education. As for the maritime sector, the development of Sihanoukville and Phnom Penh Ports and strengthening of shipping agents are also indicated as achievement targets.

"The Phnom Penh Autonomous Port New Container Terminals' Special Economic Zone and Associated Facilities Construction Project" (the Project) is aiming to develop the social/economic infrastructure and improve the investment environment by means of improvement of the function of Phnom Penh Port, strengthening of port management operation systems and development of an SEZ, which is directly connected to the port.

The Japanese Government stated in 2008 that growth of the local private sector entities is essential for reduction of poverty and the acceleration of economic growth.

The proposed project is in line with the Cambodian national strategy and Japan's ODA policy. Thus, it is recognized that the need and appropriateness of the assistance by JICA for the implementation of the Project is high.

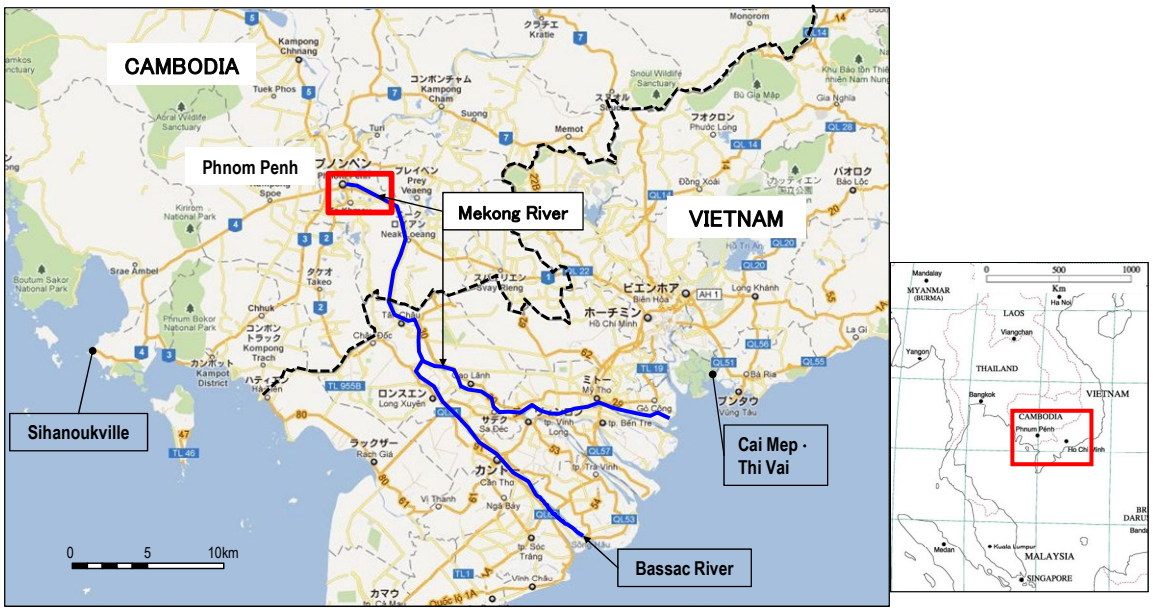
1.2. Objective of the Survey

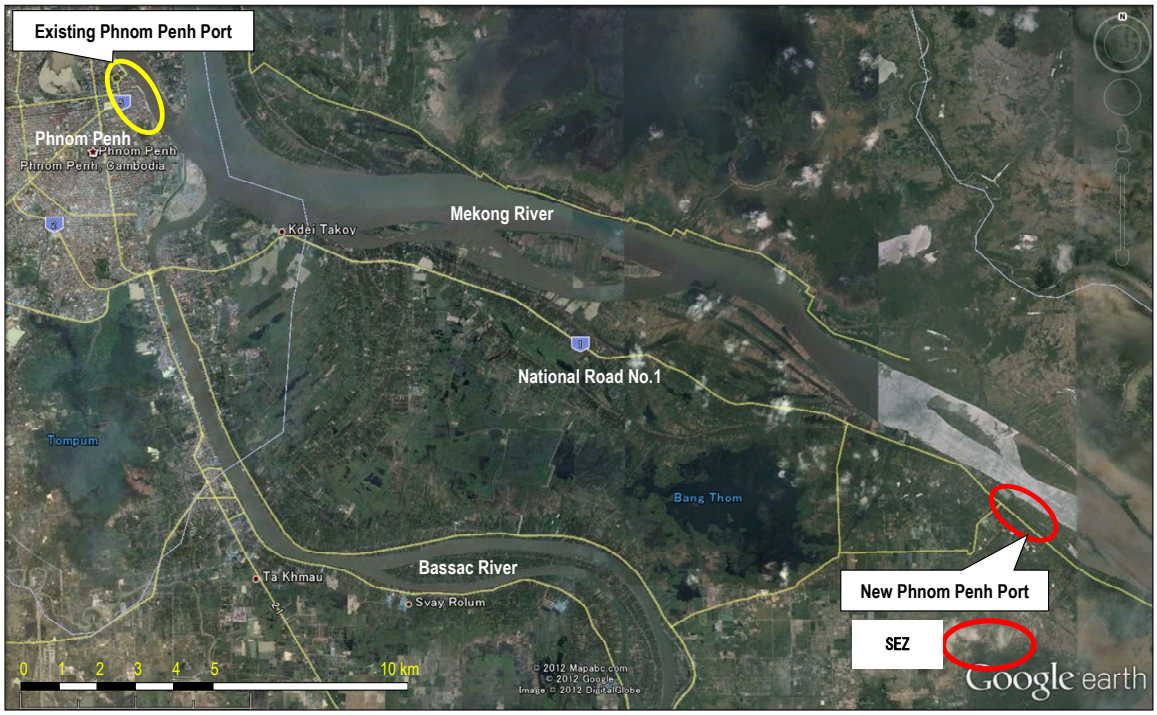
The objective of the proposed Project is to introduce private investment for SEZ development and associated facilities for Phnom Penh Autonomous Port aiming at effective utilization of Japan's technology and know-how, promotion of a package concession contract including building, operation and maintenance, and to consequently contribute to the economic growth of Cambodia.

The objective of the Preparatory Survey is to formulate a Project implementation plan and to conduct a feasibility study for SEZ development and associated facilities for Japanese private firms for possible investment in the Project.

1.3. Target Survey Area

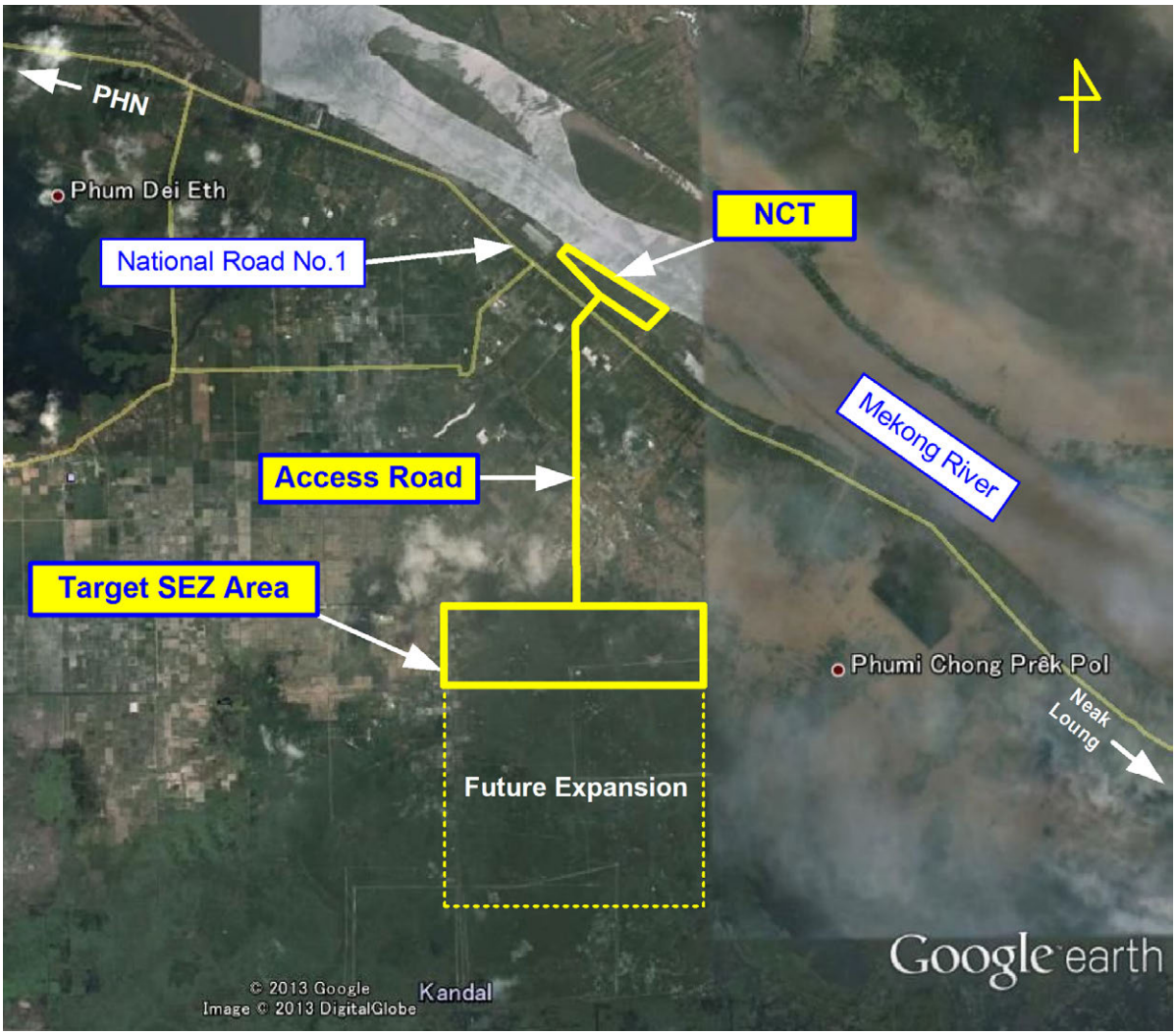
The project location is mainly in the Kien Svay District, Banteay Daek Commune, Kandal Province and Phnom Penh City. Figures 1.3-1 and 1.3-2 respectively show the location maps of the Project and the target Project Areas. Furthermore, as it is essential to analyse the general role allotment within Sihanoukville Port, the nationwide industrial trend, and existing SEZs in order to elaborate the strategies relevant to Phnom Penh Port, the Survey area will encompass the whole of Cambodia.





Source: Google Map/Earth, Survey Team

Figure 1.3-1 Project Location



Source: Google Earth, Survey Team

Figure 1.3-2 Target Project Areas

1.4. Survey Framework

(1) Counterpart

The counterpart (CP) agency of the Survey is Phnom Penh Autonomous Port (PPAP) under the jurisdiction of the Ministry of Public Works and Transport (MPWT).

(2) Stakeholders

- Phnom Penh Autonomous Port (PPAP)
- Ministry of Public Works and Transport (MPWT)
- Ministry of Economy and Finance (MEF)
- Council for Development in Cambodia (CDC)
- Ministry of Commerce (MOC)
- Ministry of Industry, Mines and Energy (MIME)
- Kean Svay District, Banteay Daek Commune, Kandal Province

(3) Survey Team

The Survey Team is a joint venture of (Hereinafter called "the Survey Team"):

- MITSUI CO., LTD.
- ORIENTAL CONSULTANTS CO., LTD. and
- IDES INC.

(4) Survey Schedule

The implementation of the Survey is projected to run from 09 October 2012 to 28 October 2013.

2. PRESENT SITUATION RELATED TO PHNOM PENH PORT NEW CONTAINER TERMINAL'S SPECIAL ECONOMIC ZONE AND ASSOCIATED FACILITIES

2. PRESENT SITUATION RELATED TO PHNOM PENH PORT NEW CONTAINER TERMINAL'S SPECIAL ECONOMIC ZONE AND ASSOCIATED FACILITIES

2.1. Related Previous Studies and Projects

2.1.1 General

There are many studies and projects previously conducted relating to existing PNH Port and SEZ in Cambodia. From among such studies and projects, the referable previous studies and projects are summarized below. In particular, the necessity of New Phnom Penh Port, the selection of the new port location, cargo demand and role allocation with Sihanukville Port, problems of existing SEZs and SEZ demand in Cambodia as mentioned in the reports of "The Master Plan for Waterborne Transport on the Mekong River System in Cambodia", "The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port" and "The Data Collection Survey on Industrial Policy Formulation Assistance", are essential upon review and updating for establishment of a development plan for the new SEZ and PNH Port in this Survey.

2.1.2 Abstracts of Related Previous Studies and Projects

(1) The Basic Design Study on the Project for Rehabilitation of Phnom Penh Port

Period:	Basic Design (B/D): JICA Grant Aid 1992- 1993 Construction: JICA Grant Aid 1994 - 1996
Report prepared by:	JICA, Pacific Consultants International
Counterpart Agency:	MPWT, PPAP
Outline of the Project:	This project was to rehabilitate the Phnom Penh Port facilities which were constructed in the 1950's and deteriorated in the Cambodian civil war. The project was implemented by JICA Grant Aid, during the Cambodian post-civil war recovering period initiated by the Paris Peace Agreement and UNTAC (United Nations Transitional Authority in Cambodia). The project included the construction and procurement of Pier, Port yard, Revetment, Cargo Handling Equipment, Machine Work Shop, and Navigation Aids (Buoys, Leading Lights) along the passage from Phnom Penh to the Vietnam Border.

(2) The Master Plan for Waterborne Transport on the Mekong River System in Cambodia

Period:	2005-2007
Report prepared by:	Belgian Technical Cooperation (BTC)
Counterpart Agency:	MPWT
Outline of the Project:	Master Plan study for Mekong River waterway including Phnom Penh Port, some local ports such as Kampong Cham, Siem Reap and some water passages in Vietnam. The study was extended to 60 fields on Economic, Social, Environment, International law, Water transport safety, Port planning/design, Institution and etc. As for Water transport and Ports, 27 action plans were presented. Some of them are enumerated hereunder: **1)** To solve the then existing issues of Phnom Penh Port, such as narrow port area, traffic congestion, shallow water approach and etc., and to meet the increasing port traffic demand, the development of New Port was urgently needed downstream of the existing port where there is a suburb of Phnom Penh City and will be connected to National Road No.1 and the future ring road.

2) The then present waterway transportation by barges (1,900DWT with the draft of 3.8 m and 90 TEU loading capacity) passing Mekong River and South China Sea and connecting the ports group of Ho Chi Min City, could be upsized to handle larger barges or ocean going container ships.

3) For the passage of bigger size ships a deepening of the channel by dredging was needed. The water passage in Vietnam territory, the Bassac River route, would incur less dredging cost than that of Mekong River. The Vietnam Government is currently implementing the improvement of water ways including the by-pass canal in the estuary of Bassac River. Cambodia may have to shoulder the cost of improvement in the future.

4) It is recommendable to implement the new port development including construction operation and management by a PPP (Public Private Partnership) scheme. Of which, it would be preferable if the development of port facilities and channel dredging are implemented by public funds and cargo handling equipment by private funds.

5) The development scenario is presented below:

- 4,000 DWT container ships with 5.5 m draft and 300 TEU loading capacity will pass Mekong River – Vam Nao Pass – Bassac River and connect to the outer sea by 2015.
- After 2015, 5,000 DWT ships with 6.5 m draft and 400 TEU loading capacity will pass Mekong River – Vam Nao Pass – Bassac River – bypass canal (Quan Chanh Bo Canal) and connect to the outer sea.

6) The container cargo demand in 2025 is forecast as shown below:

- Mid scenario (increment 10 %/year) 269,000 TEU/year
- High scenario (increment 15 %/year) 616,000 TEU/year

(3) The Study on the Master Plan for Maritime and Port Sectors

Period:	Master Plan Study, 2006-2007
Report prepared by:	JICA, The Oversea Coastal Area Development Institute of Japan, Japan Maritime Science Co., Ltd
Counterpart Agency:	MPWT
Outline of the Project:	This study aims at making a master plan for maritime and port sectors in Cambodia and proposing improvement plans for port administration systems, in order to make Cambodian maritime and port services more efficient and competitive.

In particular, the study proposed a master plan for the maritime and port sectors in Cambodia toward 2020, in which urgently important projects are chosen for a short-term action plan. An organizational improvement of port administration systems and stipulation of port law and regulations are also proposed in the course of the study. Technical expertise in planning of maritime and port sectors is transferred to counterparts through the implementation of the study.

The short-term action plan includes 1) to improve the Sihanoukville Port as an international gateway, 2) to expand container handling capacity of Phnom Penh Port, 3) to strengthen the flag state control on Cambodian

ships, 4) to enhance maritime education and training, 5) to improve maritime safety, 6) to ensure port security, 7) to build up maritime administration, and 8) to improve the port management system.

(4) The project for Strengthening Port Operation and Management

Period:	Technical Cooperation 2007-2009
Report prepared by:	JICA, Ministry of Land, Infrastructure, Transport and Tourism
Counterpart Agency:	Port Autonome de Sihanoukville (PAS)
Outline of the Project:	This technical cooperation project aims at enhancing the operational and managerial capacity of PAS staff through improving/transferring technical skills in port operation and port management. In particular, efforts are made to improve technical capacity of PAS staff in container cargo handling by using new container terminal operation systems, and to transfer technical skills regarding container terminal operation. As part of the project, a long-term JICA expert for port sector development was assigned to PAS and short-term experts were dispatched to PAS for developing capacity in container terminal operation, reforming port organization and operation, and enhancing port promotion activities.

(5) The Sihanoukville Port Special Economic Zone Development Project

Period:	Detailed Design: 2007 to 2008 Construction: 2010 to 2012
Report prepared by:	JICA, Pacific Consultants International (PCI) Nippon Koei Co., Ltd. (NK) Khmer Consultant Engineering Corporation Ltd. (KCEC)
Counterpart Agency:	MPWT, PAS
Outline of the Project:	The relevant SEZ was implemented by an ODA loan from Japan. The design basis, summary, drawings, technical specifications and others are included in this Report.

(6) The Phnom Penh Port New Container Terminal Construction Project

Period:	Feasibility Study: 2010 Construction: Completed in 2012 preferential buyer's credit loan from China Port operation started in January 2013
Report prepared by:	Shanghai Construction Company
Counterpart Agency:	MPWT, PPAP
Outline of the Project:	Feasibility study report for Phase 1 of the Phnom Penh New Container Terminal constructed 26 km downstream between the right bank of Mekong River and National Road No.1 An outline is given hereunder:

1) Forecast container handling volume in 2015: 120,000 TEU/year

2) Design Vessel: 5,000 DWT Container ship with 6.9 m draft, length 121 m (LOA), Loading capacity 351 to 700 TEU

3) Quay length: 300m (150m x 2 berths), Required depth: -6.85 m, Design depth: -8.5 m considering future maximum size vessel of 10,000DWT with full draft 8.3m, length 141 m (LOA), and loading capacity 701 to 1,050 TEU.

4) Water level: HWL:MSL+8.60 m, LWL:MSL+0.65 m

5) Port area: 10 ha (Resettlement was not required, since there were no residents in the area before commencement of the project)

6) Container yard: 36,420 m2 which includes container slots for laden containers: 908 TEU and for empty containers: 240 TEU.

7) Terminal capacity: 158,000/year

8) Container handling equipment: Container Gantry Crane (Rail Gauge 10.5 m) 2 units, RTG (Rubber Tired Gantry Crane)

9) Construction cost: US$ 32.72 million (For port civil and building works of Phase 1 including contingency cost)

10) FIRR: 10.18 %, (Sensitivity analysis indicated 9.11%>8 %)

(7) The Study for the Economic and Industrial Development in the South Mekong Region

Period: March 2011
Report prepared by: METI, Mitsubishi Research Institute
Counterpart Agency: MPWT, MEF
Outline of the Project: Phnom Penh and Ho Chi Min City are core bases of the South Economic Corridor as an arterial logistics network of the GMS (Greater Mekong Sub Region). This report is to establish the development strategy and action plans by reviewing the connectivity of the economic corridors. The major points of the report are enumerated hereunder:

1) Aiming at the improvement of connectivity, Cambodia is going to implement:

- Improvement on the trading procedure
- Improvement of cross-border physical distribution clearance
- Widening of National Road No.1
- Mutual roll up of vehicles between countries by CBTA (Cross Border Transportation Agreement)
- Development of NCT of PPAP

As for the Vietnam side:

- Dredging of water passages of Vietnam's southern region
- Development of waterborne transportation in Mekong Delta
- Widening of Ho Chi Min – Moc Bai road or upgrade highway.
- One stop custom procedure

2) As mid-term (5 to 10 years) targets of industrial development, sophistication and diversification by promoting light industry, manufacturing/assembling industry, and agro/food related industry are suggested.

3) To invite Japanese enterprises in the short term (3 to 4 years) to mid (5 to 10 years) term ranges, it is suggested to develop infrastructures such as (1) Phnom Penh Outer Ring Road, (2) River Port, (3) Improvement of Custom procedure including introduction of e-custom/e-documentation, (5) Development of power supply/power plant, and (6) CBTA.

4) As a short term long list on the infrastructure development, industrial parks, and river ports are suggested. An industrial park with BDC (Business Development Center) and logistic park are recommended as short listed infrastructures.

5) Although both the industrial and logistic parks are suggested to be developed by private or ODA funds, the investment situation under concession (PPP) business is not satisfactory yet.

6) Comprehensive development of industrial parks together with housing estates, power supply projects, commuter transportation systems and etc.

(8) The Study on the Agricultural and Logistic Infrastructure Development I West Region of the Mekong River

Period:	February 2012
Report prepared by:	METI (Japan), Japan Development Institute、Idemitsu Kosan Co.
Counterpart Agency:	MAFF、MPWT
Outline of the Project:	Feasibility Study for the project described hereunder, in Kratie Province and the north-eastern area of Cambodia:

1) Special Agro-zone Project: Plantation zone, processing zone, access road, housing zone, and loading port.

2) Waterway rehabilitation Project: Channel dredging at 4 sites along Mekong River between Kampong Cham and Kratie.

3) Cassava Bio-ethanol Project: Cassava plantation, ethanol plant.

(9) The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port

Period:	Master Plan 2011-2012
Report prepared by:	JICA, The Overseas Costal Area Development Institute of Japan, Oriental Consultants Co., Ltd., Nippon Koei Co., Ltd., Ides Inc.
Counterpart Agency:	MPWT, PAS
Outline of the Project:	This project is a master plan study for clarifying the roles of two international gateway ports, i.e. Phnom Penh Port and Sihanoukville Port, and making a new development plan for Sihanoukville Port in view of changes of international, regional and national transport around and in Cambodia.

The study proposed 25 action plans for strengthening competitiveness of the Sihanoukville Port. The action plans refer to 1) strengthening the organization, 2) improving cargo handling efficiency, 3) improving service to port users, 4) modernizing port facilities and equipment and maintaining them in good condition, 5) strengthening marketing of the port, 6) ensuring traffic safety, navigation safety, and environmental protection, 7) strengthening financial management, 8) promoting port SEZ, and 9) establishing future development plan and implementation.

Master plan for future development toward 2030 is proposed including the development of two container berths with a water depth of 14 meters, navigation channel, and a bulk terminal.

(10) The Data Collection Survey on Industrial Policy Formulation Assistance

Period:	October 2012
Report prepared by:	JICA, KRI International Corp., EXeIdea Ltd.
Counterpart Agency:	MEF, CDC
Outline of the Project:	In this report, the current status of the main industry sectors and the current status of the industrial policy formulation are examined in order to assist in the formulation of industrial policy in Cambodia. And the descriptions relating to the foreign direct investment into Cambodia, the investment trend, the investment environment, and the human resource development for industry form recent and useful information.

(11) Phnom Penh Special Economic Zone Master Plan and Feasibility Study Report

Period:	April 2006
Report prepared by:	Japan Development Institute (JDI) Asian Engineering Consultants Corp., Ltd. (AEC)
Counterpart Agency:	Attwood Investment Group and Zephyr Co., Ltd.
Outline of the Project:	This report was prepared by JDI and AEC for the JV Company of Attwood Investment Group and Zephyr Co., Ltd. established for the Phnom Penh SEZ. The relevant SEZ developed in the suburbs of Phnom Penh is currently regarded as the most successful example of SEZ development in Cambodia.

(12) The project for Establishment of National Port Policy and Administration System

Period:	Technical Cooperation 2009-2011
Report prepared by:	JICA, The Overseas Coastal Area Development Institute of Japan
Counterpart Agency:	MPWT
Outline of the Project:	This project is a technical cooperation project for assisting the Government of Cambodia in establishing a "National Port Policy", "Port Law and Related Regulations" and system for "National Port Statistics" and in improving port administration of the Government, aiming at realizing orderly port development, utilization, management and operation in Cambodia. Technical experts are dispatched to MPWT in fields of 1) port policy planning, 2) port administration and port laws and regulations, 3) port management, 4) port operation and logistics, 5) port development planning, and 6) port statistics, and collaborate with a counterpart team and taskforce members consisted of MPWT, PAS, PPAP and KAMSAB. JICA experts and the counterpart team prepared a draft of a "National Port Policy", "Draft Port Act and related Regulations" for consideration of MPWT and submission to the Council of Ministers. A pilot project for port statistics was implemented during the technical cooperation and compilation of port statistics is succeeded by PAS and PPAP.

(13) The Data Collection Survey on the Integrated Physical Distribution System

Period:	December 2010
Report prepared by:	JICA, International Development Center of Japan
Counterpart Agency:	MPWT, MEF
Outline of the Project:	The survey was made for formulation of concrete projects on logistics infrastructures in Cambodia by identification of bottlenecks and compilation of basic information for ODA (Official Development

Assistance). The study was centred on the East West Corridor and South Corridor, which connect Thailand-Cambodia-Laos-Vietnam, with an exhaustive survey on waterways, road/railway transportation systems, and presented demand forecasts, capacity, transportation cost, custom/cross border procedure, and cost comparison of logistics. The major points of the report are enumerated hereunder:

1) Cambodian import tax for ASEAN countries is scheduled to be abolished by 2018, after the AFTA (ASEAN Free Trade Area) takes effect in 2015. The AFTA is expected to activate trading in the region. However, it might not be advantageous to Cambodia if the physical distribution in the region made Cambodia the only passage between Thailand and Vietnam. To avoid such situation, the improvement of the productivity of agricultural and relevant processed products such as rice, cassava, and tapioca, the development of mining resources, the promotion of manufacturing industries, together with the development of logistics systems are indispensable. On the basis of such basic economic development, the promotion of FDI (Foreign Direct Investment) is strongly required.

2) As the superior plan: NSDP (National Strategic Development Plan) was extended until 2013, the development of river transportation systems is brought as an item of the rehabilitation and construction of infrastructure in the "Rectangular Strategy Phase II".

3) "The Transport and Traffic Sector Policy" prepared by ADB suggested Cambodia to commit (1) to offer the opportunity for the private sector to participate in port operation/management, (2) to promote the development of SEZ of PAS and PPAP, (3) to legislation on the annex of the "Agreement on waterway transportation" concluded with Vietnam, (4) to International regularization of shipping and port laws.

4) To meet the traffic and cargo demand generated by SEZ, the development of transportation infrastructure will be a key point in establishment of SEZ.

5) The preparation of the logistics system in and near SEZ is needed.

6) With the growing river transportation demand, the proper role share between PAS and PPAP will become more important.

7) As a result of forthcoming (1) Free river navigation between Cambodia and Vietnam, (2) Non-stop cross border procedure, and (3) Development of new passage thorough Vam Nao Pass – Bassac River – Bypass canal – Outer sea, the size of the calling vessels will be larger.

8) The container cargo volume was forecast by an OD (Origin Destination) study for Thailand, Cambodia, Laos and Vietnam. The forecast cargo volume between Cambodia and Vietnam is as shown in the Table below:

Table Forecast Container Cargo Volume between Cambodia and Vietnam

Unit in 1,000 TEU

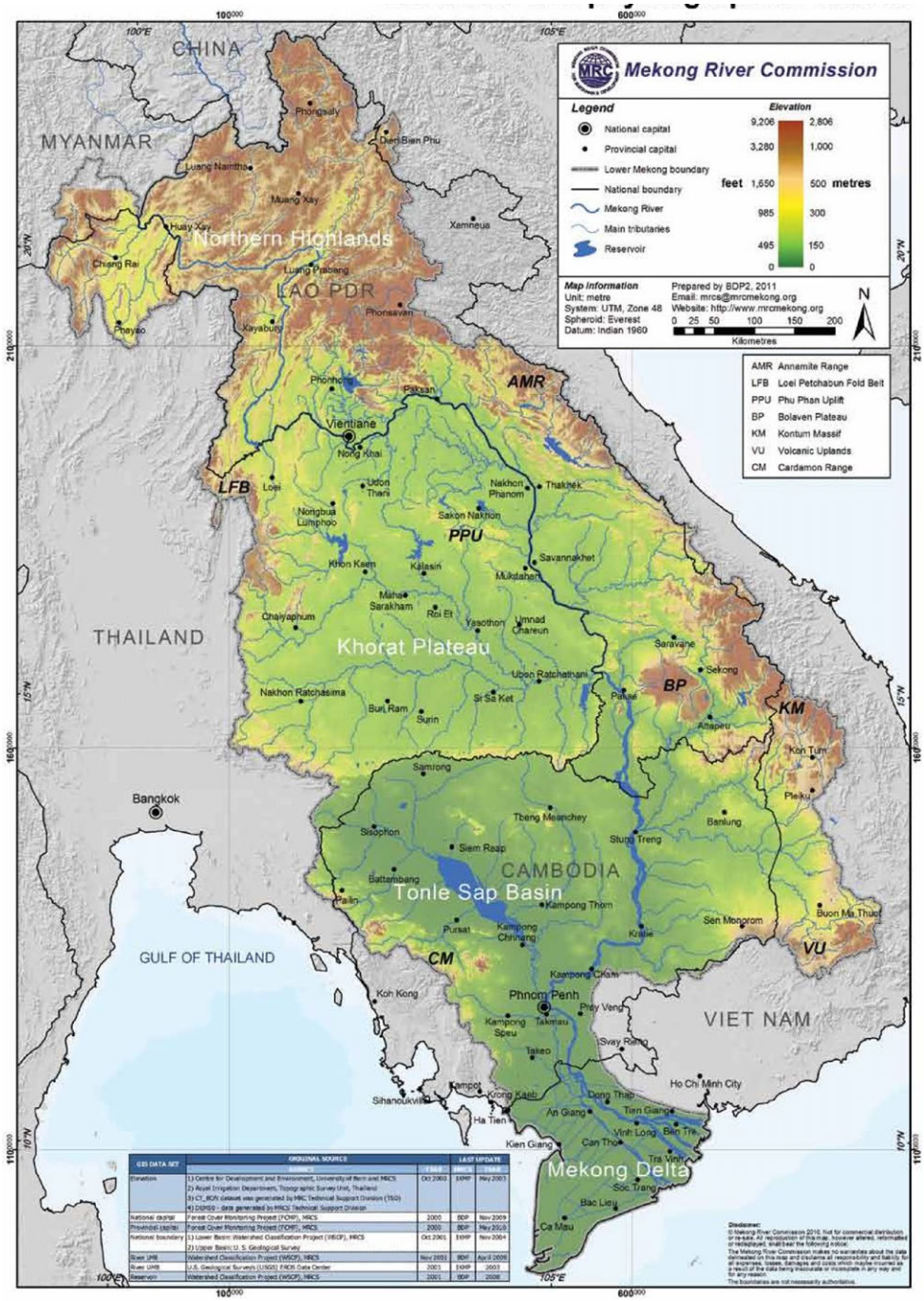
	2010	2020	2030
Water transport	178	380	739
Land transport	374	803	1,562
Total	552	1,183	2,301

2.2. Natural Conditions

2.2.1 Topography

(1) Topographic Features in Cambodia

Figure 2.2-1 shows a topographic features map for the Mekong River countries including Cambodia. As shown in the Figure, average elevations are about 20 m in the Phnom Penh area, 3-10 m from Kandal province and the Vietnam border, and less than 5 m from the Vietnam border to the estuaries. Also the area from Kandal province to the Vietnam border already belongs to the Mekong delta.



Source: MRC, Planning Atlas of the Lower Mekong River Basin (2011)

Figure 2.2-1 Topographic Features of the Mekong River Countries

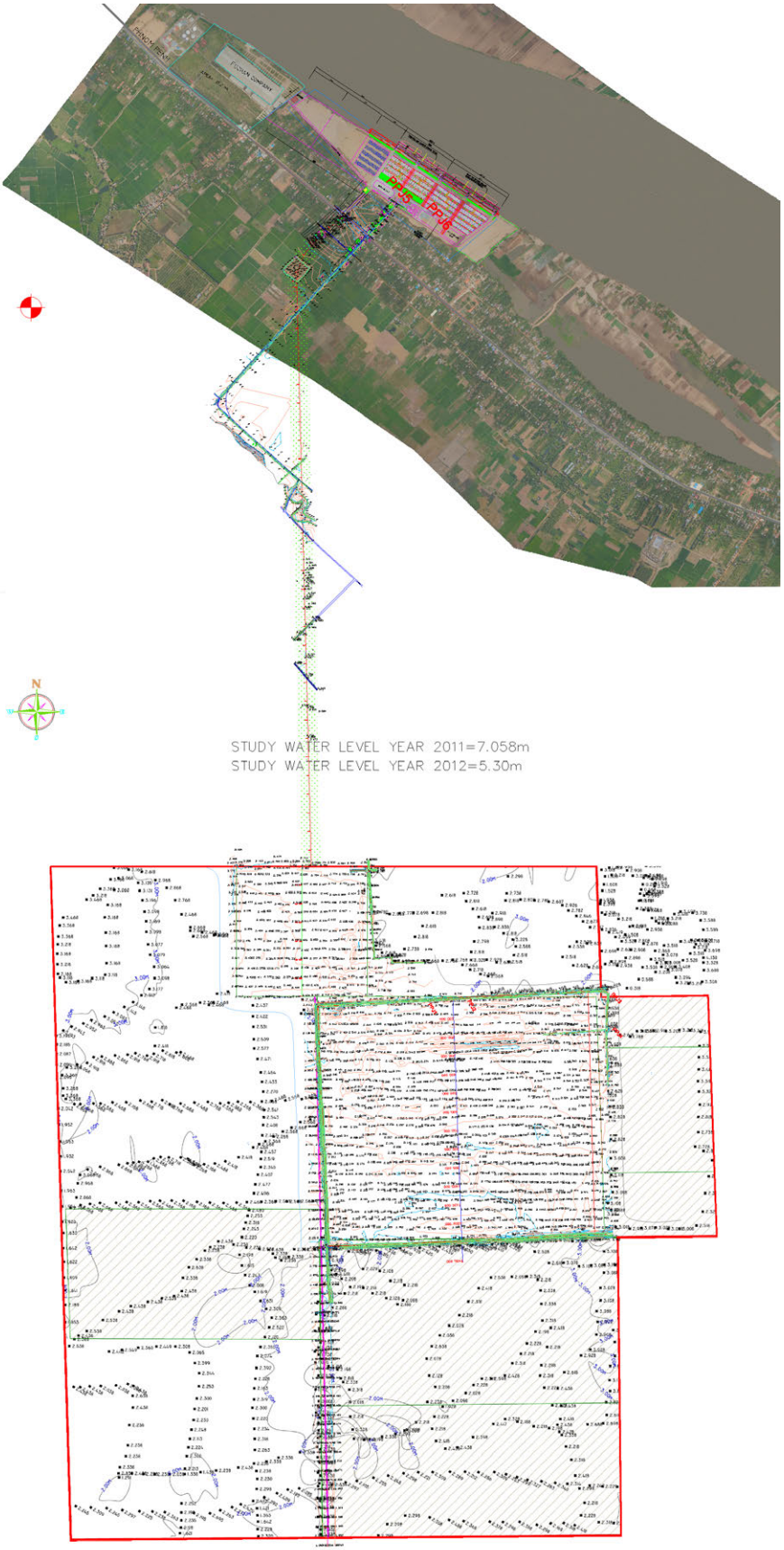
(2) Topographic Features around the Survey Area

Figure 2.2-2 shows topographic features around the survey area. As shown in the Figure, the area is located between the Mekong and the Bassac Rivers. National Road No. 1 splits the two areas where NCT is located along the Mekong River bank and the target SEZ area is located inside farmland and wetland. The area lays on the Mekong delta's north edge and is called the "flood plain" of the Mekong River because it tends to frequently have floods due to its topographic features.

Source: Google Earth, Survey Team

Figure 2.2-2 Topographic Features around Survey Area

The elevation of National Road No. 1 is about 9-11 m and the elevation inclines lower toward the SEZ area. The NCT area maintains 9-10 m elevation due to reclamation made for land development by a pump barge system. Figure 2.2-3 shows a survey map combining the results of the PPAP survey and the topographic survey subcontracted by the JICA Survey Team. As found in the Figure, the target SEZ area is approximately 2-3 m in elevation.

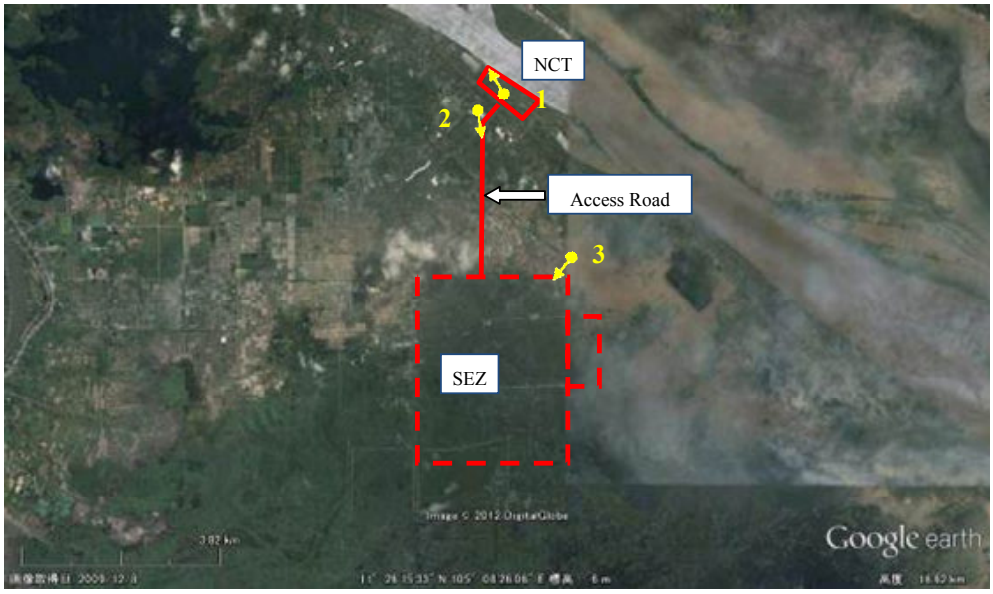


Source: PPAP, Survey Team

Figure 2.2-3 Topographical Survey Map of Target SEZ Area

2.2.2 Land Use

Current land use situation of the target NCT, SEZ and Access road areas are shown below. Figure 2.2-4 shows the location of the project site with the photographic location and direction.

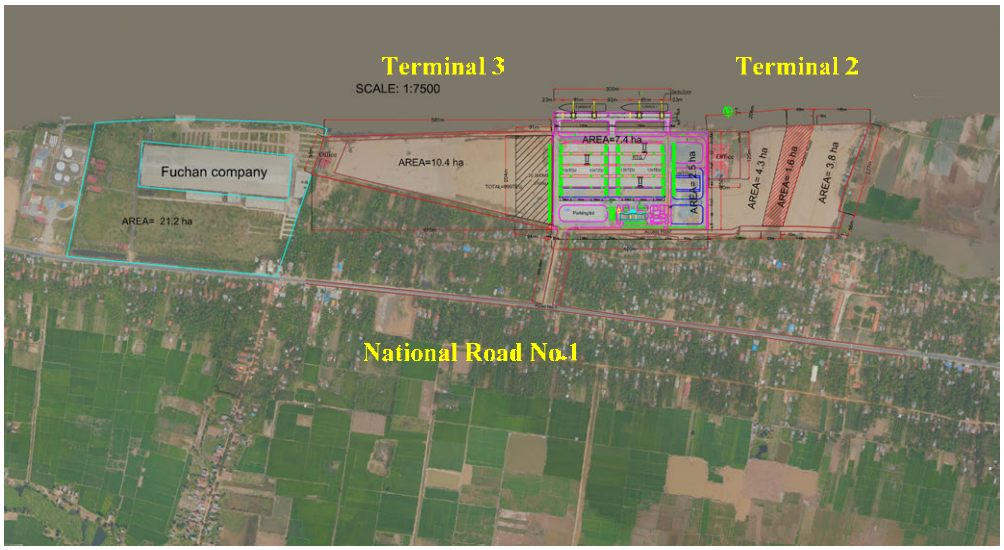


Source: Google Earth, Survey Team
Note: The arrows on the map show the shooting locations and directions

Figure 2.2-4 Location of the Project Site

(1) Target PHN Port NCT Development Area

Figure 2.2-5 shows the port layout and Figure 2.2-6 shows the current situation of terminal 2 and which was taken at no.1 from the air in Figure 2.2-4.The target area for NCT (Terminals 2 and 3) have already been levelled. There are some residential areas between NCT and the national load No.1, and downstream of the terminal 2.



Source: PPAP, Survey Team

Figure 2.2-5 Location of the Target PHN Port NCT Development Area

Source: Survey Team

Figure 2.2-6 Current Situation of the Target PHN Port NCT-2 Development Area

(2) Target SEZ Development Area

Figure 2.2-7 shows the current situation of the target SEZ area, which was taken at no.3 in Figure 2.2-4. The target SEZ area is flooded during the rainy season due to its low level. Major land conditions are swamp, pond and scrub forest. Fishing activity is conducted in the flooded areas. In the dry season, the drying areas are used as farm land while some areas remain swamp and pond. There are no houses in this project site.

Source: Survey Team

Figure 2.2-7 Current Situation of the Target SEZ Development Area

(3) Target Access Road Development Area

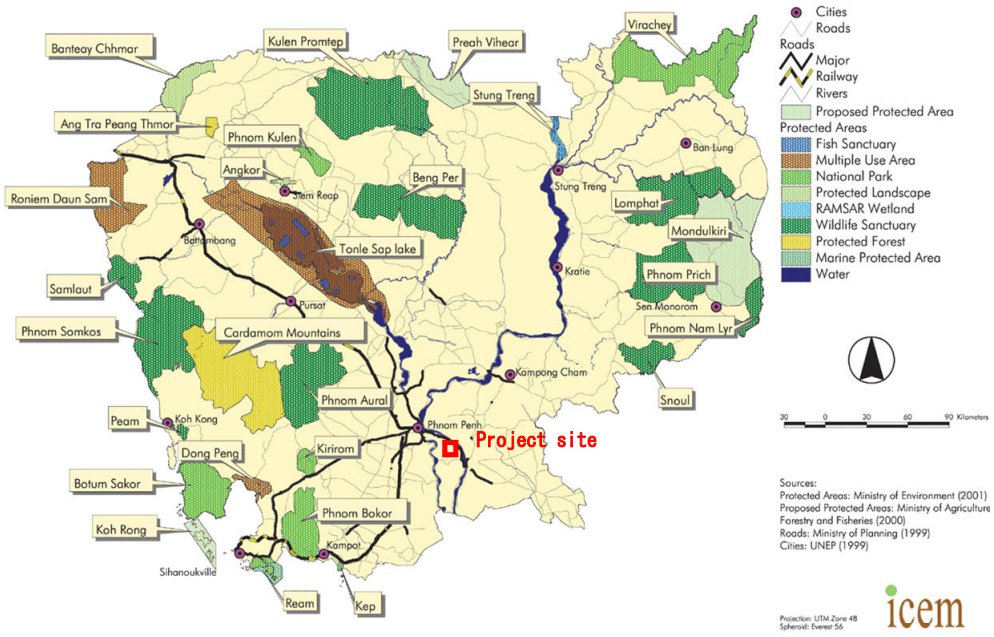
Figure 2.2-8 shows the current situation of the target Access Road area, which was taken at no. 2 in Figure 2.2-4.The northern part of the target access road area, the curved-portion, is already used as a farm road whose width is about 3.5m and there are some houses around the entrance on the national road No.1. There is no existing road in the southern part. The major portion of the area is paddy field and canals are running from west to east.

Source: Survey Team

Figure 2.2-8 Current Situation of the Target Access Road Development Area

(4) Protected Areas in Cambodia

Protected areas are designated in Cambodia based on the protected area law as shown in Figure 2.2-9 but there are no protected areas in or around the project site.



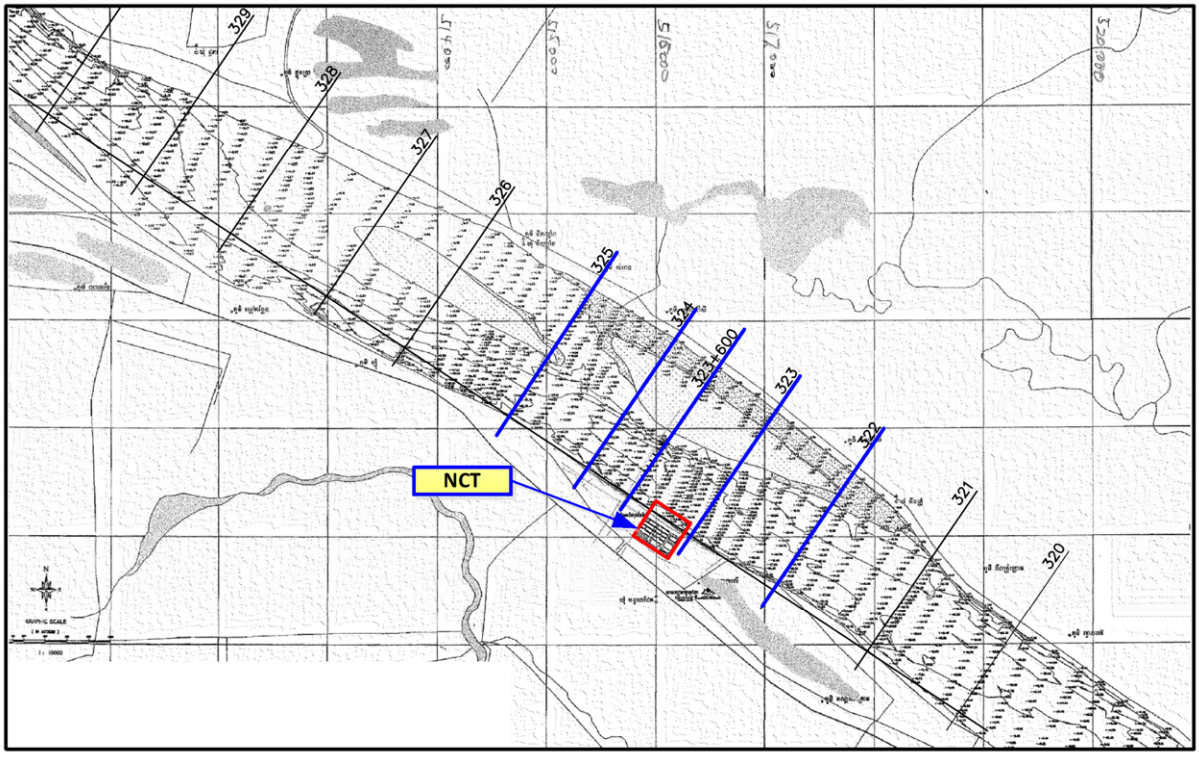
Source: International Centre for Environmental Management

Figure 2.2-9 Protected Areas in Cambodia

2.2.3 Sedimentation of Waterway and Basin

In the Cambodian territory, there are several "hot-spots" confirmed at both up and down stream of Chaktomuk, where precautions are needed for navigation as mentioned in Section 2.9.2, Outline of Inland Waterways, and the depths are comparatively shallower than others along the waterways. In the Vietnam territory as well, there are some hot-spots that always need to be dredged for securing safe navigation. According a report provided by Belgian Technical Cooperation (BTC)[1], it was roughly estimated from Phnom Penh to the Vietnam border that about 0.43 and 0.88 million m3 are required for respectively maintaining 6 and 7 m depths with a 60 m width channel. The report also summarized that in the Mekong Mainstream navigational route, Km251 and Km 199 near the Vietnam border and six other points including the estuary, periodically require a total of 4.6 million m3 dredging volume to maintain 100 m width and 6m depth, and a total of 11 million m3 dredging volume to maintain 100 m width and 7 m depth. On the other hand, in the Bassac River navigational route, at least four points, including the estuary, periodically require a total of 0.8 million m3 dredging volume to maintain 100 width and 6m depth, and a total of 2.6 million m3 dredging volume to maintain 100 m width and 7 m depth.

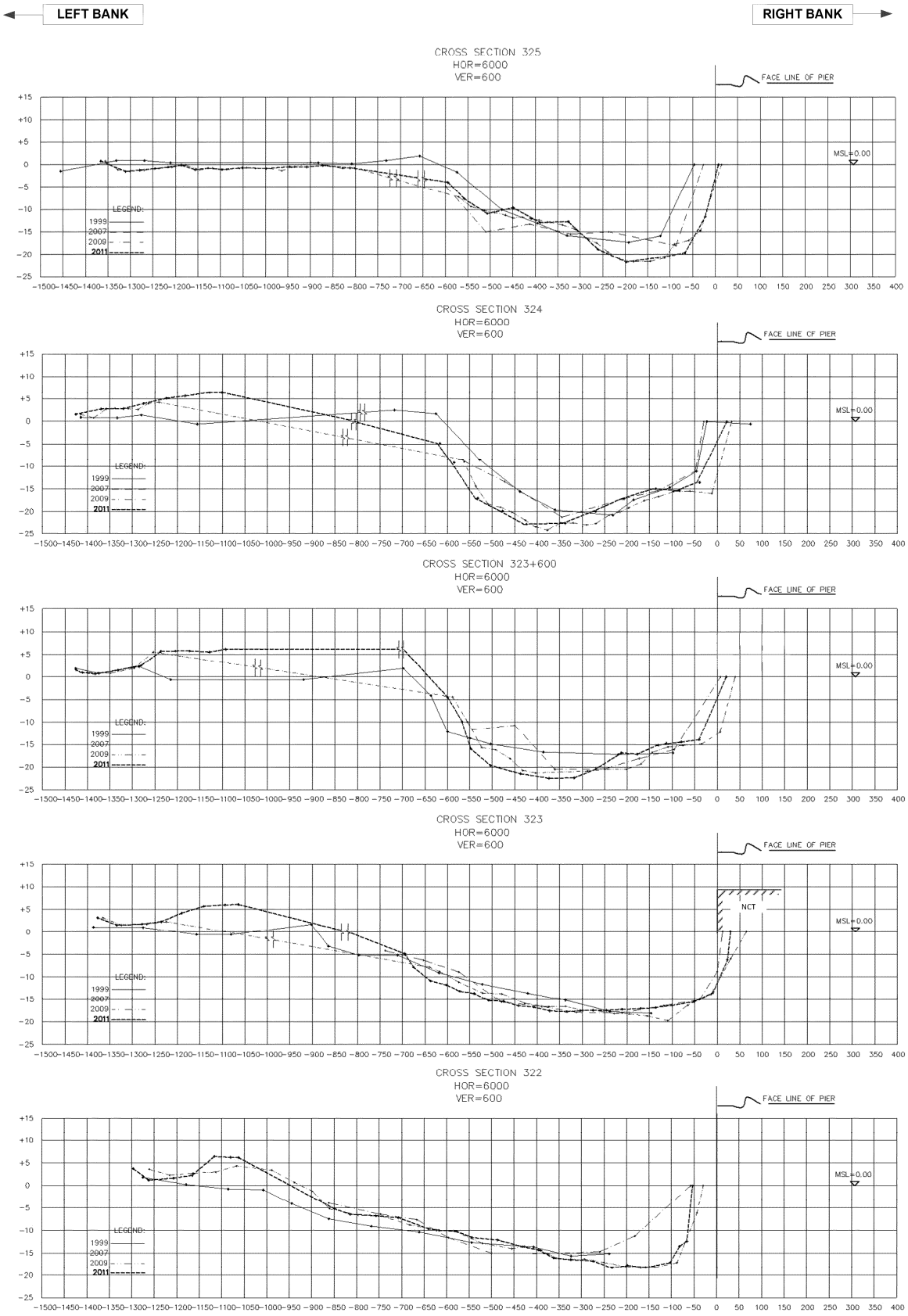
Figures 2.2-10 and 2.2-11 respectively show the locations of selected cross sections of hydrographic surveys and historical comparisons of Riverbed configurations around the NCT area based on the results of hydrographic surveys sourced from PPAP. As seen in both Figures, the Riverbeds around the NCT area secure 500 m width and 10 m depth of the waterway as well as can accommodate more than 3 times the length of the target vessel in the basin area, e.g. 3 x LOA 139 m (10,000 DWT) = 417 m, for safe manoeuvring in front of the quay. Also none of the sections basically show any trend of sedimentation and the area has a low probability to have continuous sedimentation to hamper safe navigation. However, there are some portions which are subject to erosion, especially at the River bank, so it is duly required to consider River bank protection in case of providing new River structures with detailed technical assessment and continuous survey monitoring.



Source: PPAP, Survey Team

Figure 2.2-10 Location of Selected Cross Sections of the Hydrographic Survey around NCT

[1] MPWT, Belgian Technical Cooperation (BTC), (2006), Master Plan for Waterborne Transport on the Mekong River System in Cambodia, MP09-Waterway Design



Source: PPAP, Survey Team

Figure 2.2-11 Historical Comparisons of Riverbed Configurations around NCT

2.2.4 Meteorology

Cambodia is located in an area with a tropical monsoon climate, which broadly consists of two seasons: the rainy season (from May to October) and the dry season (from Nov to Apr). Monthly mean temperature, humidity, rainfall and monthly maximum wind from 2009 to 2011 in Phnom Penh Municipality (Pochentong, 11m above sea level) are shown in Tables 2.2-1 to 2.2-4. The monthly mean temperature ranges between 19.2 - 38.7°C, with the lowest in January and the highest in April. The monthly mean humidity ranges between 68.9-83.4%, with the lowest in January and the highest in September. The monthly rainfall ranges between 4.9-290.8mm, with the lowest in February and the highest in September. The monthly maximum wind speed ranges 9-16m/s, with the lowest during January – February and the highest in August. The wind direction at maximum wind speed is generally northerly during November – January and southerly during February to October.

Table 2.2-1 Monthly Mean Temperature in Phnom Penh Municipality (Pochentong)

Unit: °C

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
2009	min	17.8	20.6	23.2	22.3	23.3	23.0	22.3	22.3	22.3	24.0	21.7	20.5	21.9
	max	33.5	36.2	37.4	38.3	36.8	36.5	35.4	35.8	35.1	35.0	34.3	34.5	35.7
2010	min	21.4	22.7	23.1	24.1	24.5	23.5	23.8	22.4	23.3	22.3	22.2	20.0	22.8
	max	35.3	38.1	40.0	38.8	40.0	39.2	35.5	34.8	34.6	33.5	32.5	32.7	36.3
2011	min	18.5	20.8	21.5	22.5	23.5	23.2	22.8	22.5	23.3	23.5	22.5	19.4	22.0
	max	34.7	34.8	35.3	39.0	37.0	35.2	35.4	35.0	34.0	33.4	32.8	37.2	35.3
Mean	min	19.2	21.4	22.6	23.0	23.8	23.2	23.0	22.4	23.0	23.3	22.1	20.0	22.2
	max	34.5	36.4	37.6	38.7	37.9	37.0	35.4	35.2	34.6	34.0	33.2	34.8	35.8

Source: Ministry of water resources and meteorology

Table 2.2-2 Monthly Mean Humidity in Phnom Penh Municipality (Pochentong)

Unit: %

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
2009	67.0	71.0	68.0	75.0	79.0	75.0	78.0	79.0	84.0	82.0	75.0	70.0	75.3
2010	71.7	70.1	65.8	68.2	69.0	79.2	79.9	81.5	82.9	84.1	77.3	74.6	75.4
2011	67.9	70.6	67.1	72.3	77.4	77.5	79.5	82.2	83.3	81.5	78.4	73.1	75.9
Mean	68.9	70.6	67.0	71.8	75.1	77.2	79.1	80.9	83.4	82.5	76.9	72.6	75.5

Source: Ministry of water resources and meteorology

Table 2.2-3 Monthly Rainfall in Phnom Penh Municipality (Pochentong)

Unit: mm

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2009	0.0	14.6	1.7	112.7	241.5	148.2	151.8	273.6	303.8	123.8	84.4	0.0	1456.1
2010	25.4	0.0	35.6	55.9	26.9	254.3	84.1	233.0	324.3	387.1	94.3	69.9	1590.8
2011	0.8	0.0	11.4	130.9	131.4	113.3	227.8	249.7	244.4	311.7	67.0	7.0	1495.4
Mean	8.7	4.9	16.2	99.8	133.3	171.9	154.6	252.1	290.8	274.2	81.9	25.6	1514.1

Source: Ministry of water resources and meteorology

Table 2.2-4 Monthly Max Wind Speed & Direction in Phnom Penh Municipality (Pochentong)

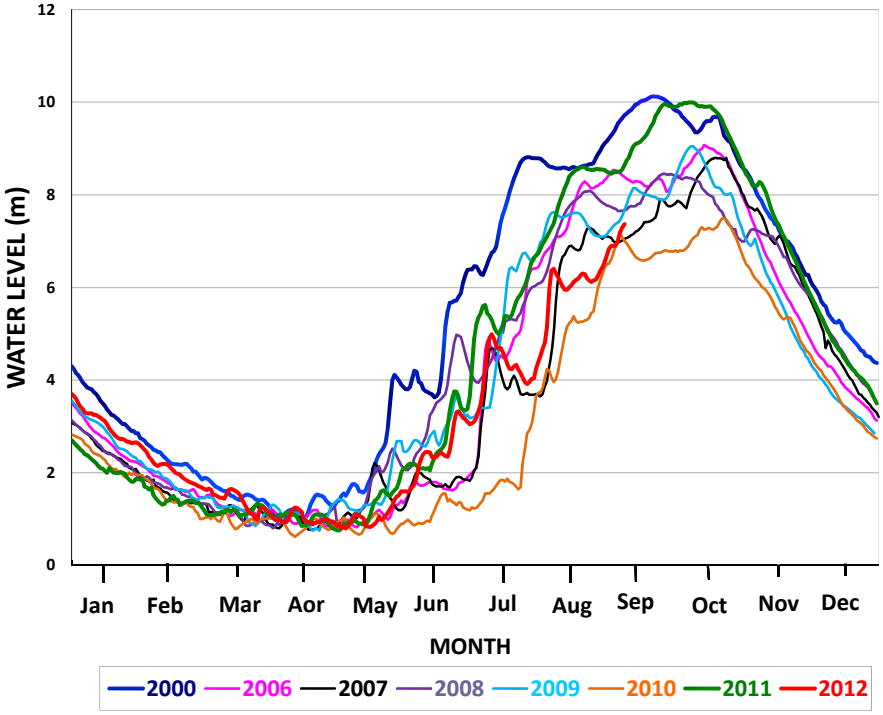
Unit: m/s

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
2009	dir	N	SE	SE/N	NW/N	N/SE	W/SW	SW/W	SW/W	SW/W	S	N	N	-
	speed	8	8	6	13	16	10	10	18	13	16	10	10	12
2010	dir	NE	SE	NE	S	SE	W	SW	SW	SW	SE	N	N	-
	speed	10	10	12	12	14	15	13	13	12	10	12	10	12
2010	dir	NE	NE	NE/N	SE/S	SW	W	W	SW/NE	S/W	E	N	N	-
	speed	10	10	10	8	17	18	19	12	12	16	13	12	13
Mean	speed	9	9	9	13	15	13	12	16	13	13	11	10	12

Source: Ministry of water resources and meteorology

2.2.5 Water Level Fluctuation

Water levels from 2000 and 2006 to 2011 in Phnom Penh Port are shown in Figure 2.2-12. Water level in Phnom Penh Port becomes lowest during April-May, the end of the dry season, and highest around October, the end of the rainy season. The water level difference reaches 7-9m.



Source: PPAP

Figure 2.2-12 Water Level in Phnom Penh Port

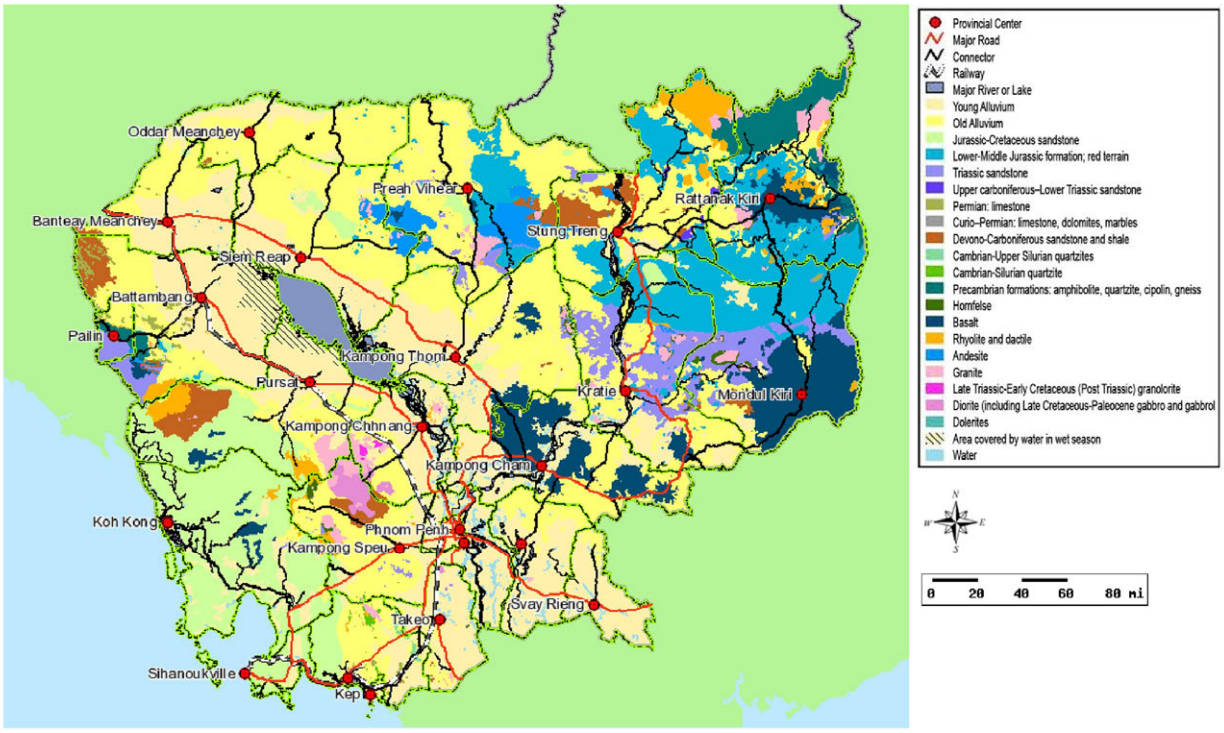
2.2.6 Soil

(1) Geology and Soil in Cambodia

Figures 2.2-13 and 2.2-14 respectively show a geologic map and soil map for Cambodia.

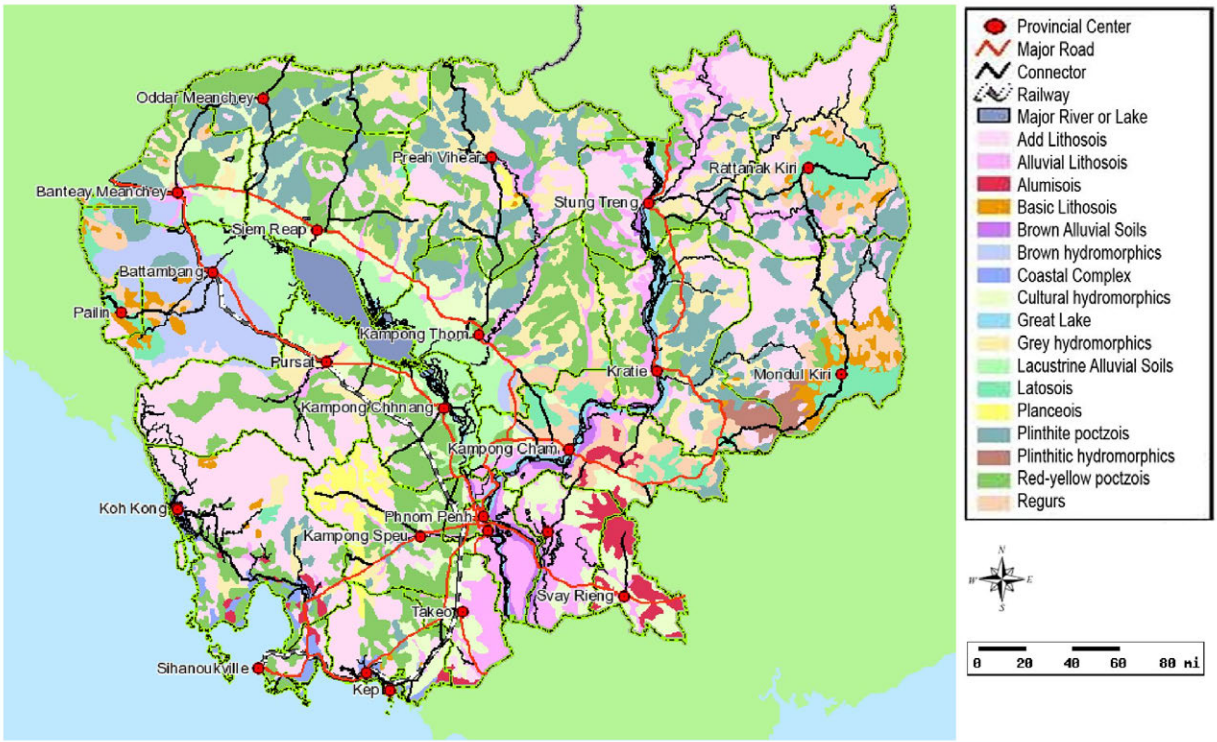
As shown in Figure 2.2-13, alluvium is widely distributed along the Tonle Sap and the Mekong Rivers. Especially, a young alluvium covers an old alluvium around Tonle Sap Lake and River and along the Mekong River downstream from Kampong Cham. Rock layers such as basalt and sand stone are distributed on the east side of the upper stream reaches of Kratie. Also, the coastal region facing the Thai Gulf has a distribution of rock layers such as granite and sandstone. In this geologic map, the Geology of Kandal province is categorized in the young alluvium.

As shown in Figure 2.2-14, some alluvium soils are mainly distributed in a wide range, but latosol, lithosol and podosol soils are confirmed in several parts in Cambodia. In this soil map, soil of Kandal province is classified as blown alluvium and alluvial lithosol.



Source: Mango Map

Figure 2.2-13 Geologic Map in Cambodia

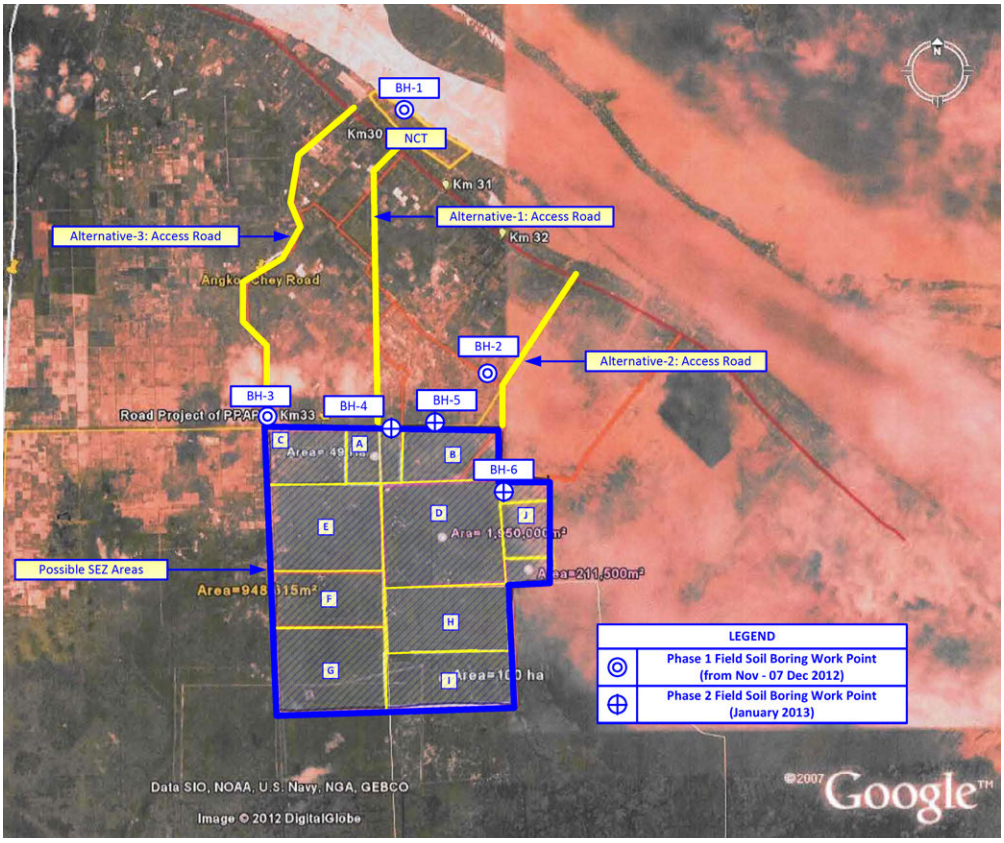


Source: Mango Map

Figure 2.2-14 Soil Map in Cambodia

(2) Subsoil Conditions of Target Survey Areas

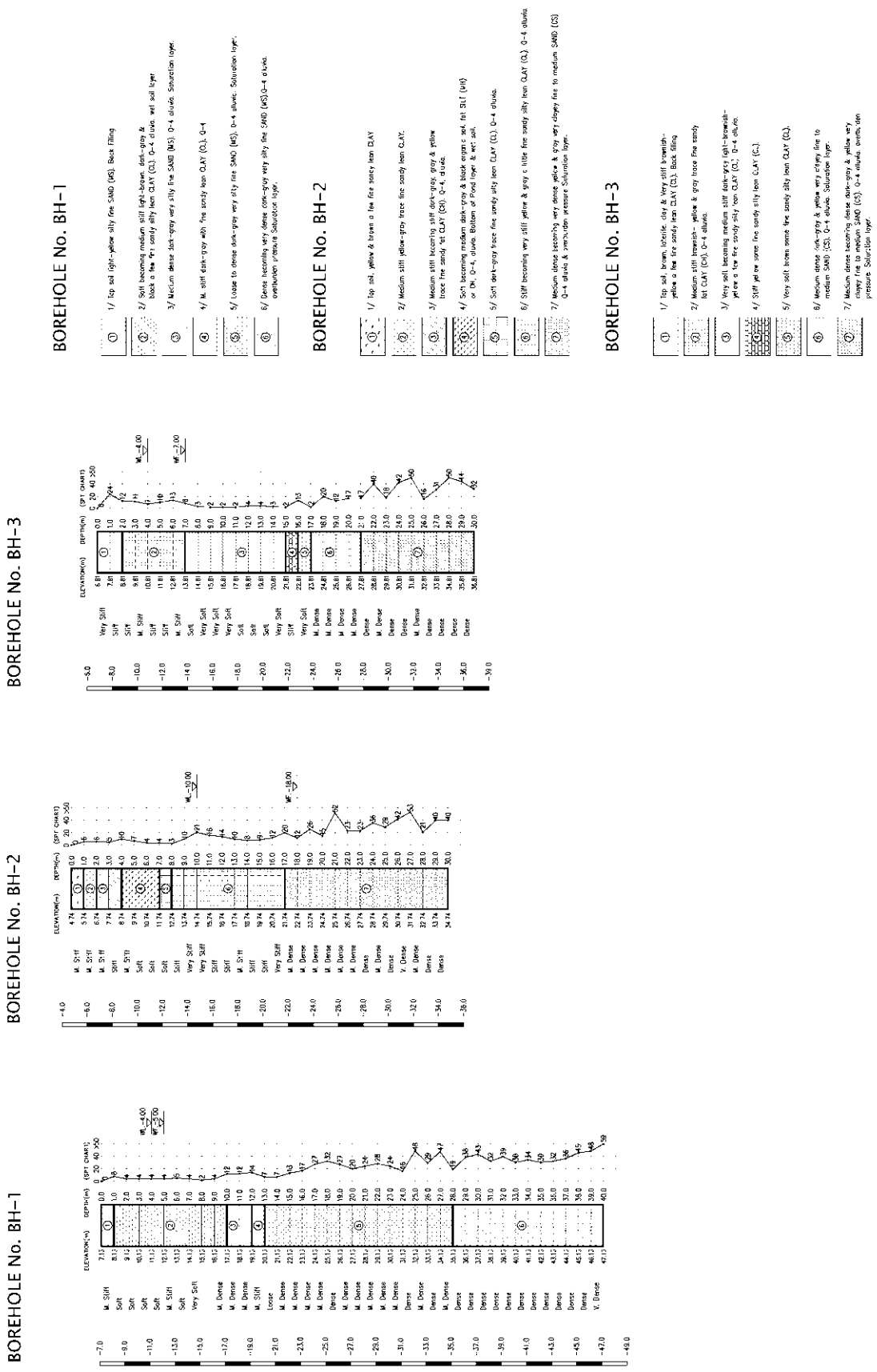
The only soil information available around the target survey areas is that provided on design and construction drawings of NCT-1. Target SEZ areas do not have any soil investigation due to being farmland and wetland. Considering the above situation, as shown in Figure 2.2-15, this Survey conducted three soil borings in the target SEZ areas, two soil borings along candidate access roads and one soil boring in the NCT-2 expansion area. The SEZ areas are normally submerged until December, so the soil boring works started with accessible conditions from January 2013.



Source: Google Earth, Survey Team

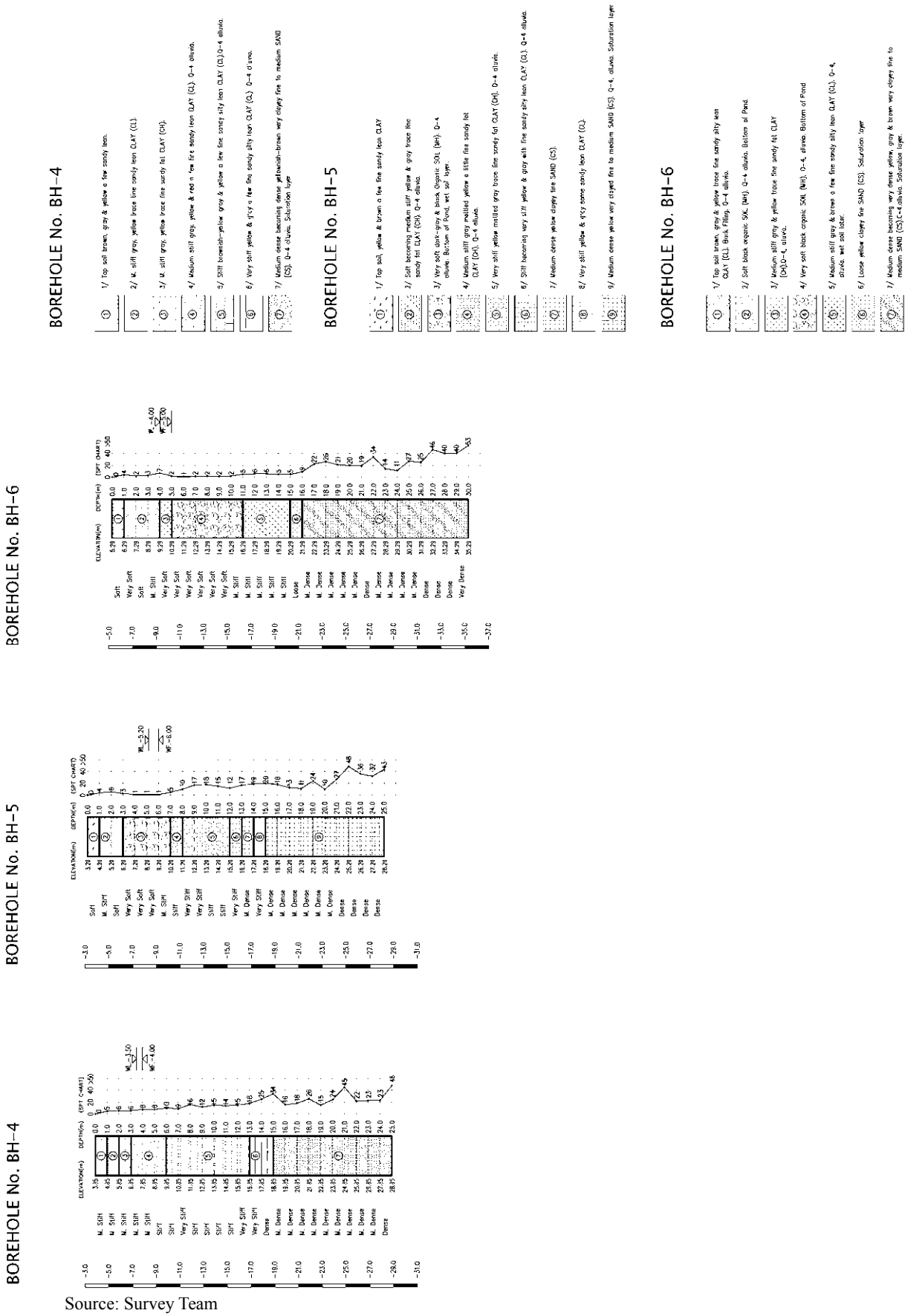
Figure 2.2-15 Location Map of Boreholes at NCT-2 and Target SEZ Areas

Figures 2.2-16 and 2.2-17 show the results of the soil borings carried out in NCT-2 (boring No. BH-1), access road area (boring Nos. BH-2 and BH-3) and SEZ area (boring Nos. BH-4, BH-5 and BH-6) and also the results of laboratory tests for each borehole are presented in ANNEX-A. As shown in the both Figures, the NCT-2 area had silt clay from the existing ground to 10 m below with average N value 4, silt sand layer from 10 to 16 m with average N value 21, silt fine sand layer from 16 to 29 m with average N value 28, and dense silt fine sand from 29 to 35 m with average N value 35. Compared with existing subsoil in NCT-1, the above layer composition of NCT-2 was similar to the existing. On the other hand, the access road and SEZ areas had a silt clay layer from the existing ground to 15 m below with N values 7-13, and fine sand layer from 15 to 33 m with N values 20-40.



Source: Survey Team

Figure 2.2-16 Soil Boring Logs (NCT-2 and Access Road Areas)



Source: Survey Team

Figure 2.2-17 Soil Boring Logs (SEZ Area)

2.2.7 Historical Flood Records

(1) General

The target survey areas are required to prepare precautionary measures for flood every year, because the areas are topographically part of the flood plain of the Mekong River. On the other hand the areas utilize the water from the swollen River as irrigation during the rainy season. In every September, farmland and wetland, including the target SEZ areas, are irrigated by the water from the swollen River. The water gets discharged gradually from the end of the rainy season in December and rice cultivation starts from the place that the water goes down. Therefore, it is recognized that the areas are not completely flooded but are rather soaked sometime by rising water taken from the River on purpose.

There is some information for historical flood records along the Mekong River, which is published by Mekong River Commission (MRC). Table 2.2-5 presents comparative maximum historical flood water levels in the Cambodian flood plain and Mekong delta area.

Table 2.2-5 Comparative Maximum Historical Flood in Cambodia and Mekong Delta Area

Comparative maximum historical flood water levels in the Cambodian floodplain and Mekong delta area							
Gauge station / flood level	**Stung Treng FL=12.00m**	**Kratie FL=23.00m**	**Kampong Cham FL=16.20m**	**Phnom Penh Chaktomuk FL=12.00m**	**Neak Luong FL=8.00m**	**Tan Chau FL=4.50m**	**Chau Doc FL=4.00m**
1978[5]	17.08.1978 12.10m	19.08.1978 22.13m	17.08.1978 **16.83m**	No record available	20.08.1978 7.87m	03.10.1978 4.78m	10.10.1978 4.44
1996	24.09.1996 **12.19m**	28.09.1998 **23.02m**	29.09.1996 16.11	02.10.1996 10.9m	02.10.1996 8.00m	05.10.1996 4.86m	07.10.1996 4.54m
2000	16.09.2000 11.48m	17.09.2000 22.6m	18.09.2000 15.91m	19.09.2000 **11.20m**	20.09.2000 **8.12m**	23.09.2000 **5.05m**	23.09.2000 **4.89m**
2011	23.09.2011 11.25m	24.09.2011 22.88m	25.09.2011 16.02m	28.09.2011 10.85m	29.09.2011 8.06m	09.10.2011 4.77m	03.10.2011 4.18m

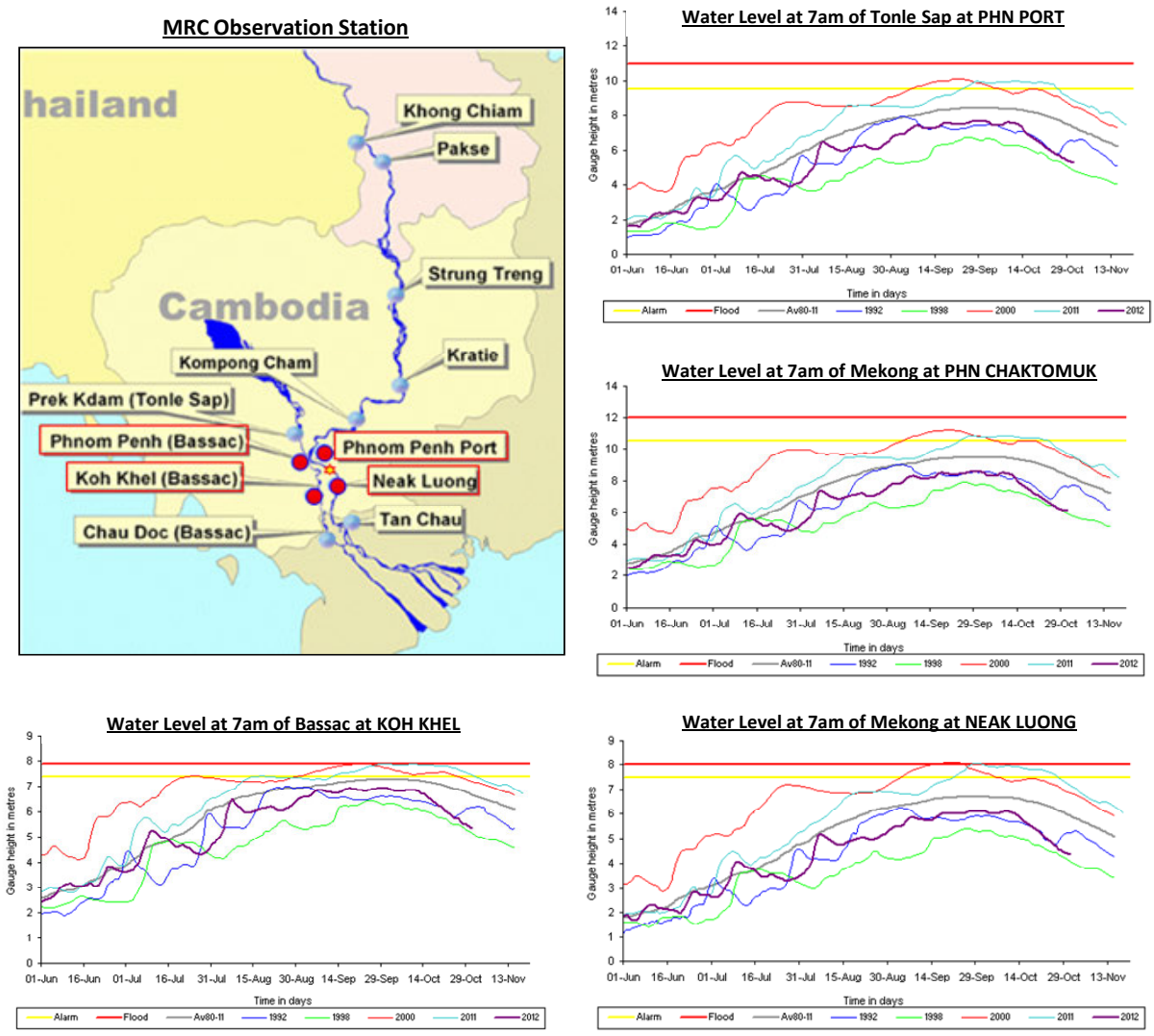
Source: MRC, Flood Situation Report 2011

As shown in the table, Phnom Penh Chaktomuk and Neak Loeung stations adjacent to the target survey areas had floods in 1996, 2000 and 2011. Among those years, the flood in 2000 respectively recorded 11.2 m and 8.12 m in the said two stations and both the records seem to be historical maximums. So this study discusses the floods of years 2000 and 2011 that had the most effect among the historical records as shown below.

(2) Flood in year 2000

Figure 2.2-18 presents the historical River water level observation records at MRC stations near the target survey areas, such as Tonle Sap at Phnom Penh Port, Mekong at Phnom Penh Chaktomuk, Mekong at Neak Loeung and Bassac at Koh Khel. This figure suggests the following points:

- Water levels in all years peaked between the middle of September and the end of October
- Water levels in 2000 and 2011 obviously exceeded the water level average between 1980 and 2011and were recorded as maximum historical water levels
- Water levels in Mekong at Neak Loeung and Bassac at Koh Khel reached flood level above warning level more often than those in Tonle Sap at Phnom Penh Port and Mekong at Phnom Penh Chaktomuk
- Water levels of 2011 in Mekong at Neak Loeung and Bassac at Koh Khel recoded higher levels than those of 2000 in the same stations and the peak levels of 2011 were of longer periods than those of 2000



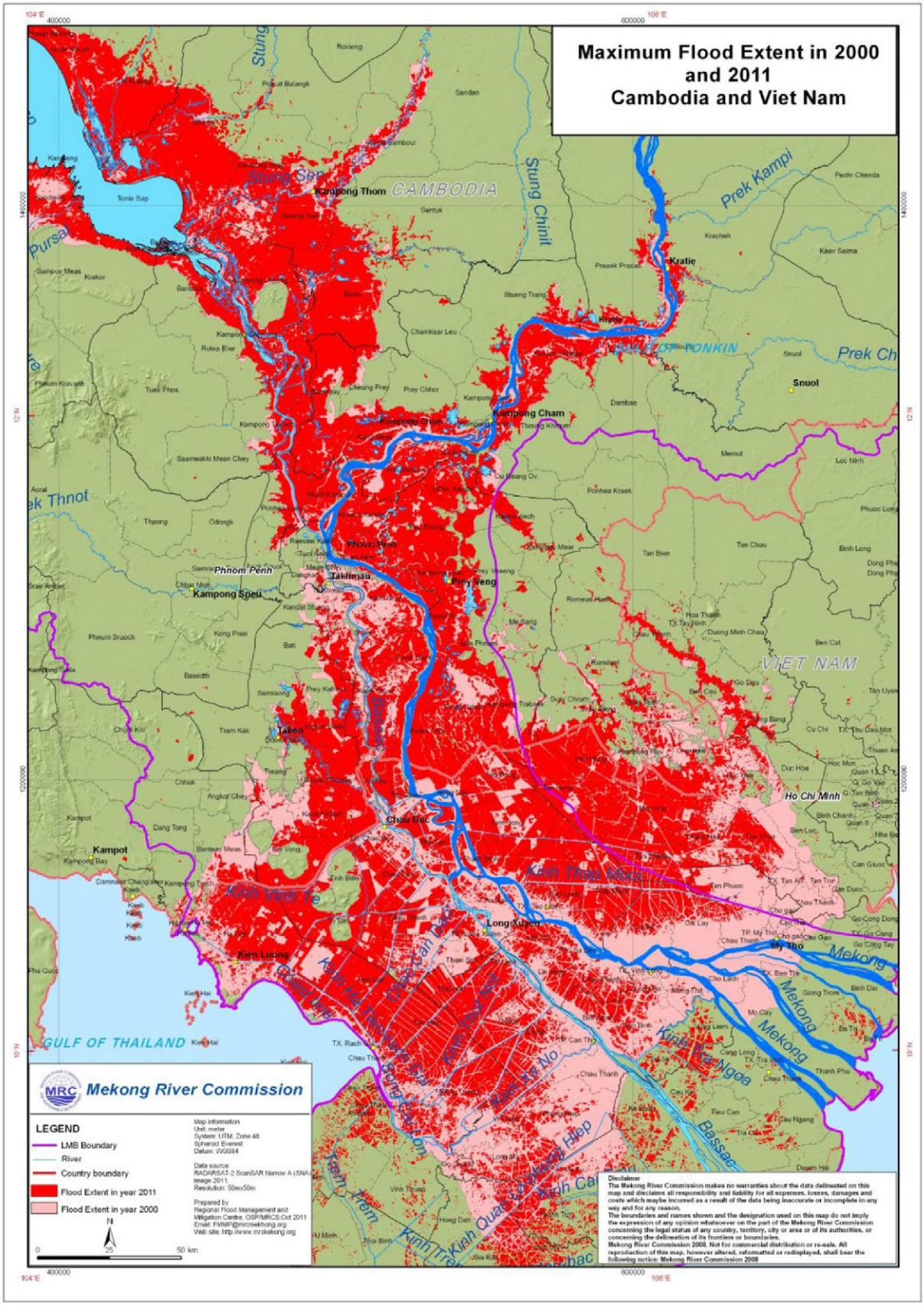
Source: MRC Data Portal, River Monitoring

Figure 2.2-18 River Water Level Observation Records near the Target Survey Areas

Figure 2.2-19 shows a comparative distribution map of maximum flood water levels in 2000 and 2011. As found in the figure:

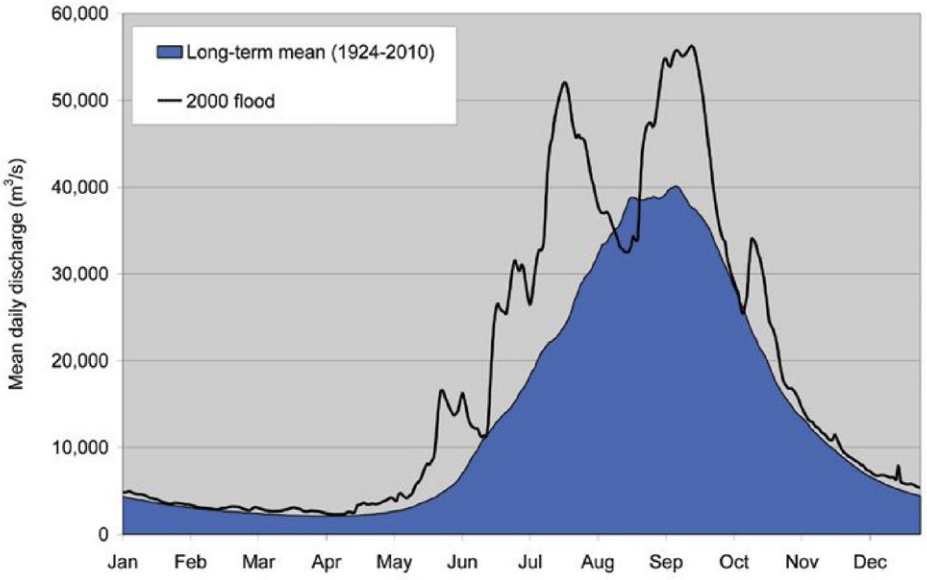
- The distribution in 2000 was over a wider area than the one in 2011
- Affected flood area in 2011 at the Mekong delta was comparatively smaller than the one in 2000
- Flooded areas in 2000 and 2011 had almost the same range

Figure 2.2-20 presents a comparison of average daily discharges for 86 years (1924-2011) and 2000. According to this figure, the average daily discharge peaked between September and October. In 2000 it was about 1.4 times that of the average discharges for the past 86 years, so it is clearly assumed that the flood in 2000 was historically the worst along the Mekong River.



Source: MRC, Flood Situation Report 2011

Figure 2.2-19 Comparative Maximum Flood Water Level Distribution Map (2000 vs 2011)



Source: MRC, Planning Atlas of the Lower Mekong River Basin

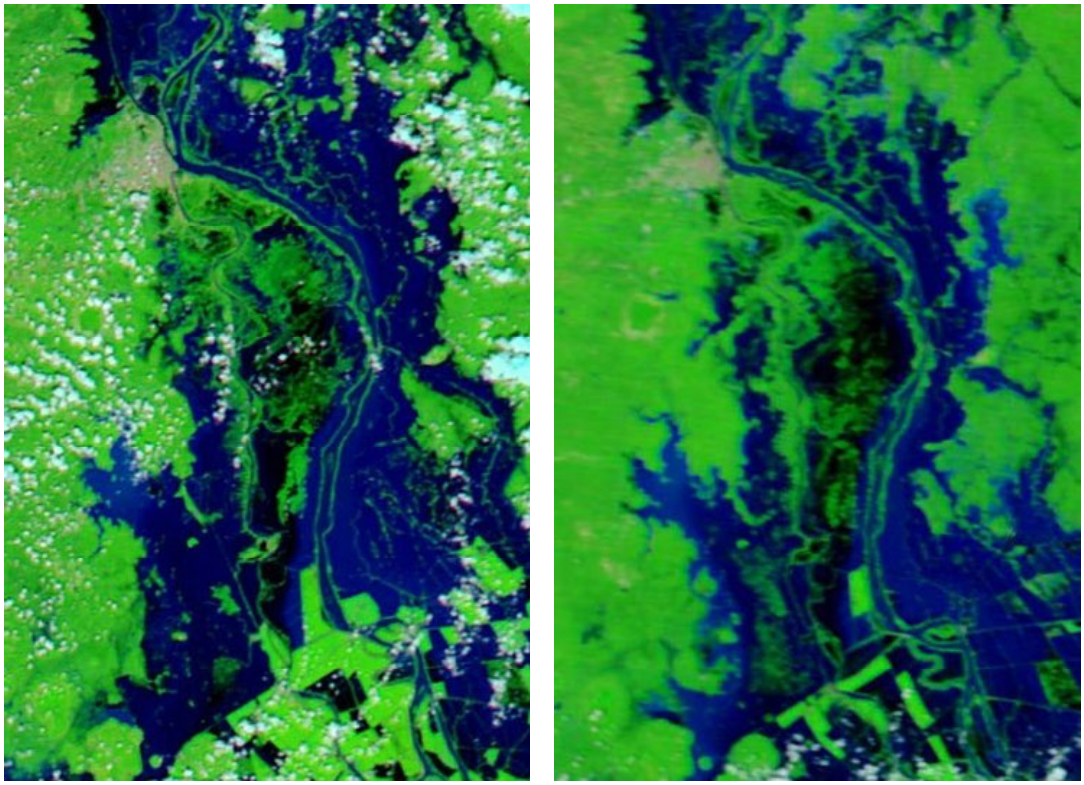
Figure 2.2-20 Comparison of Monthly Daily Discharge (Kratie)

(3) Flood in year 2011

Figure 2.2-21 shows a comparison of flood water distribution satellite images taken by NASA on 26 October 2006 and 18 October 2011. Based on the figure, the distribution in 2011 covered a wider range of flood water from the Mekong and Bassac Rivers. The north and south parts of Kandal province were significantly more affected by the flood in 2011 compared with the one in 2006. The target survey areas located in the centre of Kandal province were not submerged by either flood especially along the National Road No.1 including NCT. However, the target SEZ areas were underwater during both the flood seasons.

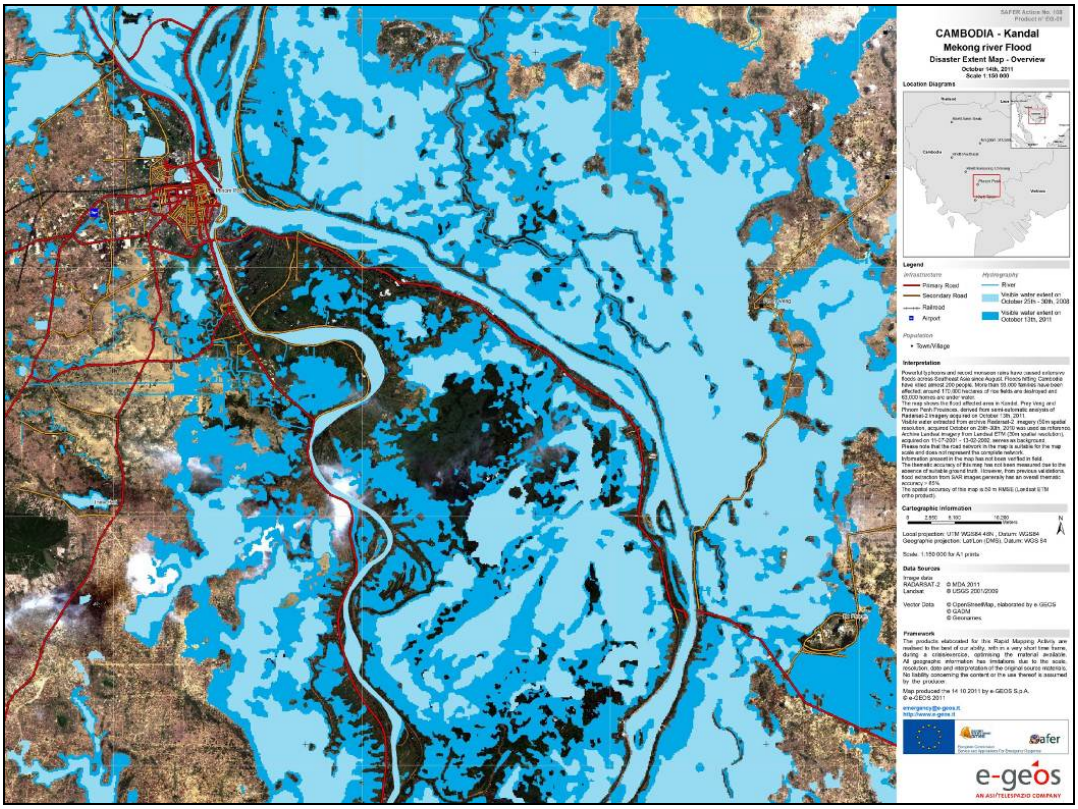
Figure 2.2-22 presents a comparative distribution map of maximum flood water levels based on analysis of satellite images taken on 25-30 October 2008 and 13 October 2011. The shown light and dark blues respectively mean the distributions in 2008 and in 2011. According to this figure, the area along the National Road No.1 including NCT was not affected by either flood but the target SEZ areas were almost inundated in both the floods. Locally, it is observed that the flood in 2011 affected the areas around the SEZ target more than the one in 2008.

Acquired on 18 October 2011 **Acquired on 26 October 2006**



Source: NASA Earth Observatory

Figure 2.2-21 Comparison of Flood Situations based upon Satellite Image Analysis



Source: e-gios

Figure 2.2-22 Comparison Map of Flood Situations at Kandal Province (2008 vs 2011)

2.3. Environmental and Social Conditions

2.3.1 Baseline Information of the Natural Environment

For baseline information regarding the natural environment, the surveys were conducted from December 2012 to January 2013 as listed in Table 2.3-1. The results are described in the EIA Study Report.

Table 2.3-1 Contents of Baseline Survey for the Natural Environment

Projects	Items	Method	Parameters	Quantity (Locations)
Common	Air Quality	Continuous measurement for 24 hours	CO, NO2, SO2, TSP, PM10, Wind direction and speed	5 survey points
	Noise	Continuous measurement for 24 hours	Equivalent sound level (Laeq), max/min sound level	5 survey points
SEZ	Water Quality	Water sampling	Water temperature, pH, Suspended Solids, Turbidity, Dissolved Oxygen, COD, BOD, Ammonium Nitrogen (NH4-N), Total Nitrogen, Phosphate (PO4-P), Total Phosphorus, Total Coliform	5 survey points (Canals in/around the project site)
	Flora	Observation along routes in/around the project site.	Species list, abundant species	Entire project site and the surroundings
	Birds	Observation along routes in/around the project site.	Species list, abundant species	Entire project site and the surroundings
	Amphibians and Reptiles	Observation along routes in/around the project site.	Species list, abundant species	Entire project site and the surroundings
	Mammals	Observation along routes in/around the project site.	Species list, abundant species	Entire project site and the surroundings
	Aquatic Fauna	Sample collection by nets	Species list, number of catches	8 survey points (Canals, paddies and ponds in/around the project site)
Port Terminal	Water Quality	Water sampling	(Same as SEZ)	3 survey points (In front of the port terminal)
	Sediment Quality	Sediment sampling using grab sampler	Grain size distribution, Density, Water content, Mercury, Arsenic, Lead, Chromium, Cadmium, Copper, Nickel, Zinc, PCBs,	3 survey points (Dredging area)
	Aquatic Fauna	Sample collection by nets	Species list, number of catches	3 survey points (In front of the port terminal)

Source: Survey Team

2.3.2 Baseline Information of Social Environment

(1) Population

Cambodia consists of 23 provinces and one municipality (Phnom Phen municipality) as shown in Figure 2.3-1. The project area is located in Banteay Daek commune Kien Svay district Kandal

Province. There were six villages in Banteay Daek commune as of 2012 and their populations are shown in Table 2.3-2. In addition, population is 1,095,397 (210,187 families) in Phnom Phen municipality, 1,300,797 (270,230 families) in Kandal province and 170,759 (36,568families) in Kien Svay district. [2]

Source: WFP Cambodia

Figure 2.3-1 Administrative Districts in Kandal Province

Table 2.3-2 Population in Banteay Daek Commune (2012)

No.	Village	Family	Population		
			Female	Male	Total
1	Khsom	572	1802	772	2574
2	Angkor Chey	401	1017	981	1998
3	Kandal Leu	621	1627	1400	3027
4	Kandal	345	913	916	1829
5	Kandal Kraom	490	1063	1001	2064
6	Preak Paol	511	1864	1587	3451
Total		2940	8286	6657	14943

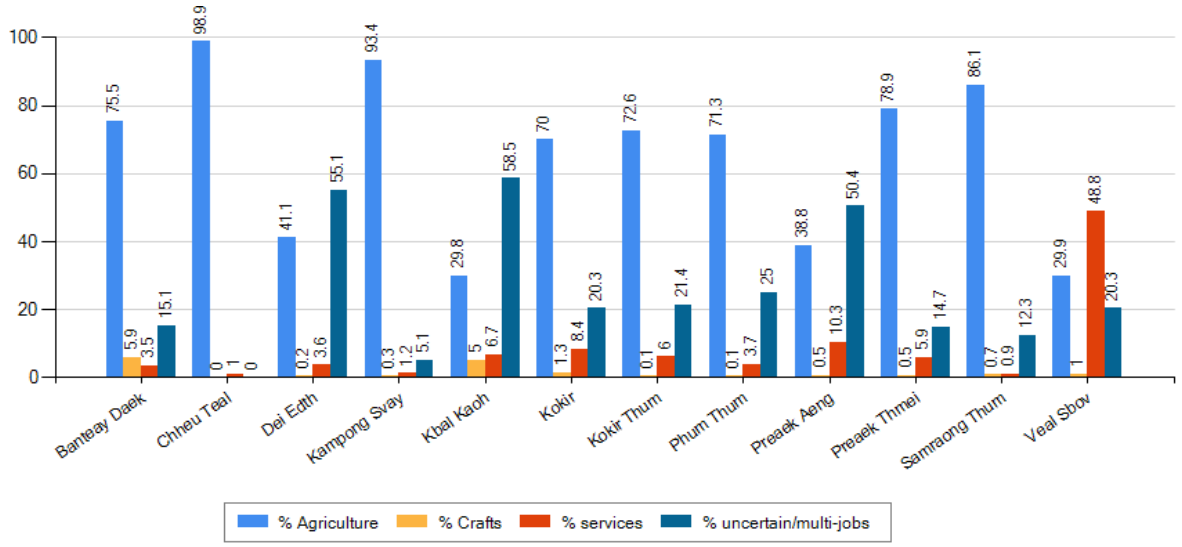
Source: Commune profile (Banteay Daek commune), 2012

(2) Occupations

The percentages of families in major occupations in Kien Svay district are shown in Figure 2.3-2. According to the Commune Database, occupations are divided into four groups, agriculture,

[2] Commune Database(2010)

craft (wood, metal and plastic, food etc.), service (trader, repairer, transport etc.) and Uncertain (multi). The families whose primary occupation is agriculture occupy the major portion in Banteay Daek commune, with 75.5% (2,365 families). In adjacent Samraong Thum commune and Kampong Svay commune, the families whose primary occupation is agriculture also occupy the major portion, with 86.1% and 93.4% respectively. Breakdowns in the agriculture in Banteay Daek commune are rice farming (82.0%, 1,940 families), vegetables (8.84%, 209 families), other farm products (8.46%, 200 families), fishermen (0.34%, 8 families) and livestock farmers (0.34%, 8 families).



Source: Commune Database (2010)

Figure 2.3-2 Percentage of Families in Four Major Occupations in Kien Svay District (2010)

(3) Infectious Disease

There are nine families who live with members infected with HIV/AIDS, which accounts for 0.29% of all 3,134 families in Banteay Daek commune as shown in Table 2.3-3. This proportion is lower than in Kandal province and Kien Svay district.

Table 2.3-3 Families with Members Infected with HIV/AIDS (2010)

Place	Population	Family (A)	Families living with HIV/AIDS (B)	(B)/(A) (%)
Kandal Province	1,300,797	270,230	1,583	0.59
Kien Svay District	170,759	36,568	273	0.75
Banteay Daek Commune	15,537	3,134	9	0.29
Samraong Thum Commune	20,926	4,866	33	0.68
Kanpong Svay Commune	10,790	2,379	6	0.25
Dei Edth Commune	16,029	3,391	43	1.27

Source: Commune Database (2010)

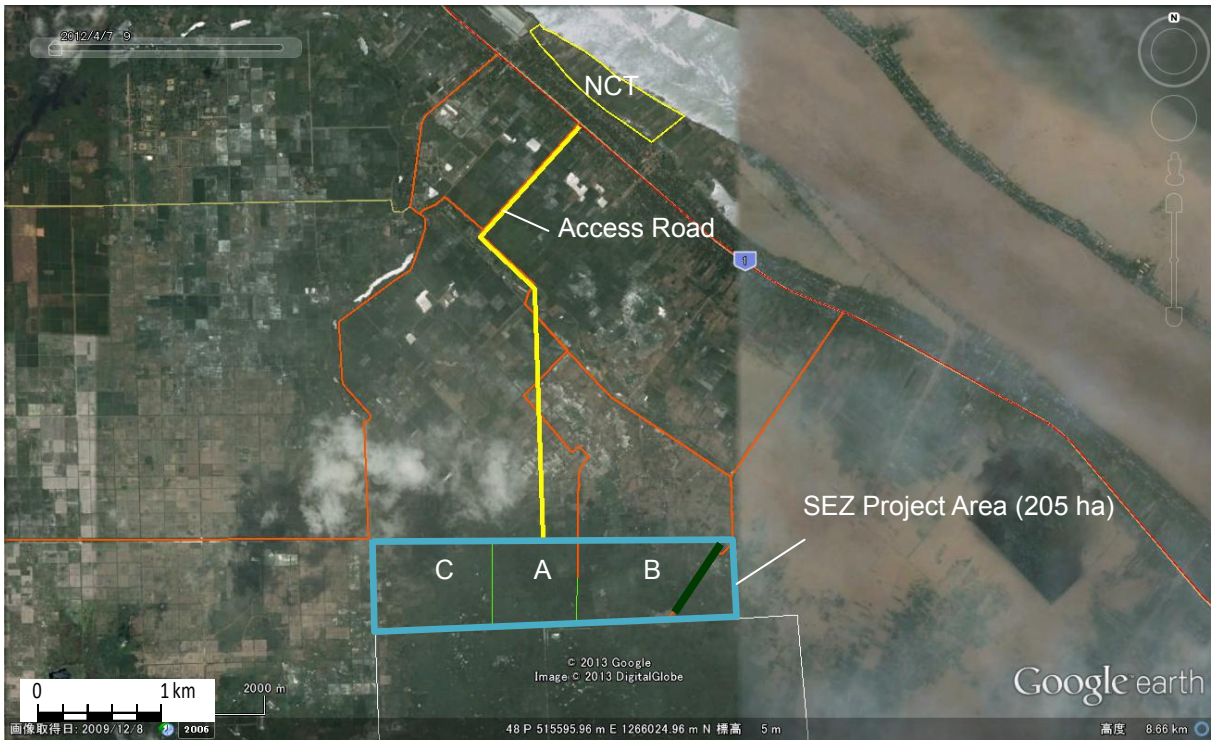
2.3.3 Status of Land Acquisition

(1) PPAP-NCT SEZ and the Access Road

1) Outline

Figure 2.3-3 presents the location of the land to be acquired for this project. Sizes of the land and the status of the acquisition are shown in Table 2.3-4.

The land acquisition process has already been initiated by PPAP. The process is a market transaction based on individual negotiation with landowners. Considering the difficulties for collecting information of landownership due to lack of cadastral registration in this area, PPAP is purchasing the land through a local resident who works as a mediator. As of March in 2013, transaction agreements for 47.5 ha out of 205 ha of the SEZ area have been completed between the mediator and the landowners. The agreed price is not in writing as they are verbal contacts.



Source: Google Earth, Survey Team

Figure 2.3-3 Location of Land Acquisition for SEZ and the Access Road

Table 2.3-4 Sizes and Status of the Land to be Acquired for SEZ and the Access Road

Area		ha	Status of the Acquisition
SEZ	Lot A	47.5	Agreed by the landowners in April-October, 2012.
		1.5	Not yet.
	Lot B and C	156	Not yet.
	(Total)	(205)	-
Access Road		10	Not yet.

Source: Survey Team

2) Measures for Narrowing the Disparities with JICA's Guidelines

A comparison analysis was made regarding the ongoing process of the land acquisition and the requirements of JICA's Guidelines for Environmental and Social Considerations to prepare measures for narrowing the disparities (Table 2.3-5). Also, an abbreviated Resettlement Action Plan (RAP) was developed based on those measures. The RAP is proposed to be applicable to the landowners who already agreed to sell their land.

Table 2.3-5 Comparison Analysis between Ongoing Land Acquisition Process and the Requirements of JICA's Guidelines

	Item	JICA's Guidelines	Current procedure	Measures for correcting disparity
1	Approval for recipients of compensation	All affected people are approved as candidate recipients of compensation regardless of their status as legal/ illegal dwellers	Since the process is purchase and sales agreements, compensation has not been considered except payment to the landowners.	Renters and employed workers are eligible to request an income restoration program if they are affected.
2	Support for illegal dwellers	People to be resettled involuntarily and people whose means of livelihood will be hindered or lost should be sufficiently compensated and supported by the project proponents at the appropriate time.	Illegal dwellers are not identified. The ownership of land and residences are authorized by local authorities (commune and village).	-
3	Support system for socially vulnerable groups	Socially vulnerable groups tend to be exposed to environmental and social impacts. In addition, they have limited access to a process of decision making. Thus, it is necessary to give appropriate consideration to them.	Special consideration for vulnerable groups has not been prepared.	Special consideration is applied depending on the situation if vulnerable groups such as the poor, elderly, widows or disabled persons are affected.
4	Consideration on living standards and income opportunities of affected people	Living standards and income opportunities of affected people should be improved or at least restored to pre-project levels	Since the process is based on the individual purchase and sales agreements, comparison of living standards before and after acquisition has not been considered. On the other hand, the affected people can select the option not to sell the property if they don't agree with the price.	Grievance redress mechanism is prepared for affected people to request income restoration programs if the living standard and the income opportunities become worse.
5	Enhancement of public participation in planning and implementation of resettlement plans	Appropriate participation by the affected people and their communities should be promoted in planning, implementation and monitoring of involuntary resettlement plans and measures taken against the loss of their means of livelihood	Opportunities for public participation have not been prepared since the acquisition is based on individual agreements.	Consultation meeting was held on February 2013 for the landowners including former landowners.
6	Grievance redress mechanism	Grievance redress system must be formulated and must function appropriately	Not been formed. Grievance has not been identified according to the village chief and the former landowners.	Grievance redress mechanism is prepared.
7	Compensation rate	Replacement cost should be applied.	Market price is applied based on the individual negotiations.	Standard price is proposed for applying replacement cost.

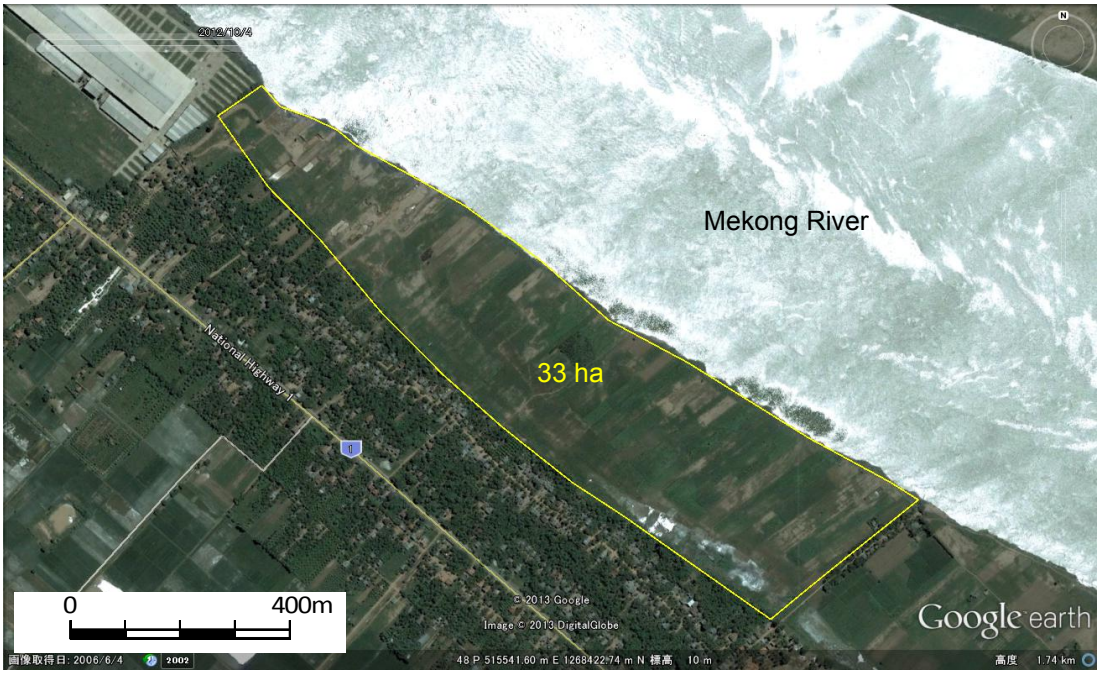
Source: Survey Team

(2) PHN Port NCT

1) Outline

The land for NCT (33 ha) has already been acquired for the existing terminal-1 and the future terminals-2 and 3. Land levelling for terminals-2 and 3 has also been completed. Also in the case of the SEZ, the acquisition process was a kind of market transaction through mediators. PPAP completed purchasing from the mediators and registering on PPAP's asset list in 2012.

As shown in Figure 2.3-4, there were no houses in the area and the land had been used as farmland.



Source: Google Earth, Survey Team

Figure 2.3-4 Condition of the Area for NCT before the Land Acquisition (in 2006)

2) Monitoring Results of the Impacts

Since there were more than a hundred former landowners before the acquisition and the records to trace them have not been kept, it is of great difficulty to monitor each affected person individually. Therefore, an interview survey was executed with the village chief of Kandal Leu village where the project site is located for assessing the acquisition process and the social impacts due to the acquisition. As summarized in Table 2.3-6, no social impacts are identified in the land acquisition.

Table 2.3-6 Results of the Interview to Monitor the Impacts of Land Acquisition for NCT

Items	Interview Results
Land use and the ownership before the acquisition	- Before the acquisition, the land had been used as farmland for vegetables such as corn and string-beans by local residents. There were no houses. - The land ownership had been unofficial being occupied by the local residents since after the Pol Pot regime, 1979. After that, the village and the commune allocated the land to each household in accordance with the number of family members and authorized the ownership in 1982-1983. - Estimated number of the households who owned the land is about 110-120. The exact number is not clear.
Process of acquisition	- The land transaction was arranged by five coordinators (local residents) in 2006-2009. The price was 8-14USD/m^2. - The owners who sold the land paid a commission fee of 3% to the coordinators.
Market price	- Market price of the land for the project and the downstream side was as low as 1.5-2USD/m^2 while the upstream side was higher at 10-20USD/m^2 at that time. The transaction was completed at an equitable price.
Livelihood after selling the land	- Most of the former landowners are still living in the same place or the same commune where they were living before selling the land. - Livelihood has not changed between before and after selling the land. Farmers purchased alternative farmland around the area with the income from selling the land and continued farming.
Grievance	- No grievances or problems related to the land transaction have occurred.

Source: Survey Team

3) Measures for Narrowing the Disparities with JICA's Guidelines

As the land acquisition process for NCT is a kind of market transaction, disparities with JICA's Guidelines are identified the same as for the SEZ (see Table 2.3-6). However, the transaction price was sufficient comparing with the market price at the time and the affected people could continue their livelihoods by purchasing alternative farmland. No grievances or problems have occurred. Considering the situation, measures such as additional compensation do not need to be taken for this project.

2.4. Socio-Economic Trends

2.4.1 National Trends

(1) Socio-economic Indicators

1) Population and Land

National population censuses were conducted in Cambodia in 1998 and 2008. The census of 2008 reported a population of 13.4 million and included breakdowns of the population by province, sex, age and other categories. Based on this census, the Cambodian National Institute of Statistics (NIS) estimated the population from 2008 to 2030 assuming annual growth rates from 2008-2030. Cambodian population in 2012 is estimated at about 1.47 million by NIS.

Phnom Penh city had a population of 1.33 million in 2008 and neighbouring Kandal province had 1.26 million. Metropolitan population is therefore deemed at about 2 million. Other populated areas are Kampong Cham, Prey Veng, Battambang and Siem Reap Provinces. Nearly half of the population inhabits the plain region, i.e. Phnom Penh, Kandal, Kampong Cham, Svay Rieng, Prey Veng and Takeo.

Total land area of Cambodia is 181 million m2, and more than 80% of population inhabits rural areas (2008). Birth rate is 26.5-29.6 per thousand. Historical change of population is shown in Table 2.4-1 and population by group of provinces is shown in Table 2.4-2.

Table 2.4-1 Population and Annual Growth Rate (1921-2012)

Year	Population (million)	Annual Growth Rate	Sources of data
1921	2.4		
1931	2.8		
1939	3.2		Statistical Yearbook of Cambodia 1958
1948	3.7		
1958	4.7		
1962	5.7		Population census 1962
1970	6.8		
1981	6.7		
1985	7.5	2.80%	
1991	8.8	2.50%	
1993	9.3		NIS Provincial Reports
1996	10.7		DSC96
1997	10.4		CSES97
1998	11.4	2.50%	GPCC98
2004	12.8	1.81%	CIPS 2004
2008	13.4	1.54%	GPCC 2008
2009	14.1	1.57%	Population projection
2010	14.3	1.54%	
2011	14.5	1.53%	
2012	14.7	1.52%	

Source: National Institute of Statistics (NIS)

Table 2.4-2 Land Areas and Population by Group of Provinces

Province	Land Area (Km2)	Population 2008 (in 1,000)
Cambodia	181,035	13,396
A. Plain Region	25,069	6,548
(Phnom Penh)	294	1,328
(Kandal)	3,564	1,256
B. Tonle Sap Lake Region	67,668	4,357
(Siem Reap)	10,299	896
C. Coastal Region	17,237	960
(Preah Sihanouk)	1,983	221
D. Plateau and Mountainous Region	68,061	1,531

Source: National Institute of Statistics (NIS)

Future population of Cambodia is estimated by NIS at about 15.4 million in 2015, 16.5 million in 2020 and 18.4 million in 2030 as shown in Table 2.4-3. Annual growth rate will decline from 1.54% in 2008 to 0.90% in 2030.

Table 2.4-3 Population projection by NIS

Year	Population	Annual Growth
2012	14,741,414	1.52%
2015	15,405,157	1.46%
2020	16,505,156	1.33%
2025	17,519,272	1.10%
2030	18,390,683	0.90%

Source: National Institute of Statistics (NIS), POPULATION PROJECTIONS FOR CAMBODIA, 2008-2030

2) Gross Domestic Product

The Cambodian economy experienced stagnation in 2009 after the world recession in 2008 and GDP growth rate declined to 0.1% in 2009. However, the economy soon recovered from recession and GDP growth rate reached 6.1% in 2010 and 7.1% in 2011. GDP per capita has trebled from USD319 in 2001 to USD909 in 2011.

Cambodia realized very rapid economic growth in the recent decade. GDP annual growth rates exceeded 10% during the four years from 2004 through 2007, which was one of the highest growth rates in the ASEAN region. After the world recession, GDP growth rates recovered to 6.1%-6.7%, and the growth rate of 6.5%-7.5% is expected after 2012. IMF released a projection of GDP growth of Cambodia, which estimates the growth rates shown in Table 2.5-4. The IMF projection indicates that the Cambodian economy will enjoy high growth from 2015 for several years with a growth rate of about 7.5%.

The Government expressed a goal that GDP shall double by 2020, for which it may need a growth rate of 7.5% following IMF's projection up to 2017. Table 2.4-4 shows the GDP of Cambodia since 2001 in real prices, current prices, GDP per capita, GDP growth rates and official growth rates. Sources of GDP statistics are the Statistical Yearbook of Cambodia, 2011, Cambodia Trade Statistics Yearbook in Jan. 2012, and recent IMF publications on the web in 2012.

Table 2.4-4 GDP, Annual Growth Rate, GDP per Capita and Exchange Rate

	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP Current Price									
N. Stat. USD, million	3,984	4,280	4,663	5,339	6,293	7,275	8,361	10,337	10,400
(IMF, USD million)*[1]	3.984	4.283	4.657	5.332	6.293	7.275	8.639	10.352	10.414
(IMF Riel billion)*[1]	15,633	16,781	18,535	21,438	25,754	29,849	35,042	41,968	43,108
GDP Deflator (2000=100)	102.6	103.4	105.2	110.3	117.0	122.4	130.4	146.4	150.2
GDP Constant Price (at 2000 Constant Price)									
IMF Riel (Billion)*[1]	15,230	16,232	17,613	19,434	22,009	24,380	26,870	28,668	28,693
Growth Rate									
N. Statis. Nominal	9.20%	7.40%	9.00%	14.50%	17.90%	15.60%	18.60%	19.80%	0.60%
N Statis. Constant							10.20%	6.70%	0.10%
(IMF Constant)	8.15%	6.58%	8.51%	10.34%	13.25%	10.77%	10.21%	6.69%	0.09%
GDP per Capita									
National Statistics Yearbook	319	340	367	417	487	558	656	760	753
MEF Report 2012*[2]	308	326	345	389	448	513	589	739	769
IMF Current Price/Population	309	327	349	393	455	514	603	711	703
Official Exchange Rate									
Riel/USD		3924	3921	3975	4015	4092	4103	4060	4140

			IMF Estimates					
	2010	2011	2012	2013	2014	2015	2016	2017
GDP Current Price								
N. Stat. USD, million	11,634	12,830*[3]	-	-	-	-	-	-
(IMF, USD million)*[1]	11.255	12.890	14.246	15.676	17.291	19.097	21.121	23.383
(IMF Riel billion)*[1]	47,102	52,154	57,540	63,413	70,159	77,721	86,218	95,745
GDP Deflator (2000=100)	154.7	160.0	165.8	171.3	176.7	182.3	188.0	193.9
GDP Constant Price (at 2000 Constant Price)								
IMF Riel (Billion)*[1]	30,442	32,597	34,700	37,016	39,695	42,631	45,854	49,375
Growth Rate								
N. Statis. Nominal	11.90%	-	-	-	-	-	-	-
N Statis. Constant	6.00%	7.10%*[4]	-	-	-	-	-	-
(IMF Constant)	6.10%	7.08%	6.45%	6.68%	7.24%	7.40%	7.56%	7.68%
GDP per Capita								
National Statistics Yearbook	830	-	-	-	-	-	-	-
MEF Report 2012*[2]	830	909	-	-	-	-	-	-
IMF Current Price/Population	753	853	934	1,018	1,111	1,215	1,331	1,459
Official Exchange Rate								
Riel/USD	4044							

Source:
Statistical Year Book of Cambodia 2011, National Institute of Statistics
1) IMF Publications on Web (*1)
2) Cambodian Trade Statistics Yearbook 2011 (published in 2012), Ministry of Commerce (*2)
3) World Bank Data Base (*3)
4) MEF (*4)

(2) Trade

1) Trade Balance

As shown in Table 2.4-5, the trade performance of Cambodia was active from 2002 to 2010 and the volume of both exports and imports has been increasing about 12% per year on average. But since the imports have also kept growing, the balance of trade has remained in the red, quickly widening its gap from 2002 to 2008 but the deficit has been shrinking for the last three years. In the process of increasing foreign investment for the manufacturing industry field, the import of capital machinery and equipment will usually increase at the initial stage of operation.

Table 2.4-5 Trade Statistics (2002~2011)

Unit: million US$

year / Trade	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Export	1,755.0	2,227.0	2,588.0	2,910.0	3,692.4	4,088.5	4,708.0	4,186.2	4,686.6	5,350.2
Increase %	-	26.8	16.2	12.4	26.8	10.7	15.5	-11.0	11.9	14.1
Import	-2,318,0	-2,560.0	-3,269.0	-3,927.0	-4771,2	-5,431.8	-6,508.8	-5,804.4	-6,384.2	-6,962.6
Increase %	-	10.7	27.6	20.1	21.4	13.8	19.8	-10.8	9.9	9.0
Balance	-563.0	-533.0	-681.0	-1,017.0	-1,078.8	-1,343.3	-1,808.8	-1,634.2	-1,697.8	-1,612.4

Remarks: The increase ratio is the ratio compared with the previous year and calculated by JICA expert.
The amount of exports and imports is based on FOB value.

Source: Ministry of Planning (Statistics Dept. 2012), CDC "Guidance for Investment" (2011)

2) Exports

As shown in Table 2.4-5, exports have been increasing yearly since 2002 and the export amount has approximately trebled from about US$1.75billion in 2002 to about US$5.35billion in 2011. The break-down of the export items is shown in Table 2.4-6 and except for the year of 2009 when the world-wide economic crisis occurred, the export for all the items has an increasing trend in volume.

The main export items are textiles/garments and shoes using the incentive of GSP to Cambodia, and the export value of the textiles/garments in 2010 reached about US$3.02 billion which occupied about 64.5% of the total export value and their destination is mostly to the USA and EU countries (about US$1.82 billion to USA and about US$0.71 billion to EU countries.) The trend of export increase for this main item is expected to continue also in the future, but this ratio of export will gradually decrease as new foreign investment increases for manufacturing other industrial products for export such as mechanical products, electric and electronics products, agro-products etc.

As a reference, Table 2.4-6 shows the top 10 export items in 2011. As shown in this table, it is noted that the main export items are textiles/garments.

Table 2.4-6 Top 10 Exported Products in 2011

Unit: million US$

Exported Products	Value (million Riels)	Value (million US$)	Ratio of Total Export Value (%)
(1) Unused postage, revenue or similar stamps, banknotes, cheque forms; stock, share or bond certificates and similar documents	6,391,512.9	1,558.9	23.5
(2) Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swim wear)	4,216,122.6	1,028.3	15.5
(3) Jerseys, Pullovers, cardigans, waistcoats and similar articles, knitted or crocheted.	3,172,916.8	773.9	11.7
(4) Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breaches and shorts (other than swim wear)	2,781,633.5	678.4	10.2
(5) T-shirts, singlets and other vests.	1,969,031.5	480.3	7.2
(6) Women's or girls' slips, petticoats, briefs, panties, nightdresses, pyjamas, negligees, bathrobes, dressing gowns and similar articles	816,203.0	199.1	3.0
(7) Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in Primary forms or in plates, sheets or strips.	774,364.7	188.9	2.8
(8) Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of leather.	748,528.5	182.6	2.8

Exported Products	Value (million Riels)	Value (million US$)	Ratio of Total Export Value (%)
(9) Motor cars and other motor vehicles, including station wagons and racing cars.	739,020.1	180.2	2.7
(10) Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted	580,288.7	141.5	2.1
Total of Cambodia's top 10 Export products in 2011	22,189,622.4	5,412.1	81.6
Total of all Cambodia's export Products	27,207,243.8	$6,635.9	100.0

Remarks: exchange rate 1US$=4,100 Khmer Riel
Source: Cambodia Trade Statistics – Year Book 2011 published in 2012(MOC)

3) Imports

As shown in Table 2.4-5, the imports have also been increasing and the import value in 2011 trebled to US$69.9biliion from US$23.1 billion in 2002, but the increasing ratio has a trend of decreasing.

The main import items are textiles (22.6 % for total import value) and oil (30.2% for total import value) and these items occupied over half of the total import amount. As with the export trend, the import ratio of these two items is projected to decrease due to the new incoming foreign investment for manufacturing other industrial products such as importing of capital machinery and equipment and raw materials or parts required for the manufacturing.

As reference, the top import items in 2011 are as per Table 2.4-7.

Table 2.4-7 Top 10 Imported Products in 2011

Unit: million US$

Imported Products	Value (million Riels)	Value (million US$)	Ratio of Total Import Value (%)
(1) Petroleum oils and oils obtained From bituminous minerals, other than crude;	3,259,077	794.90	13.1
(2) Other knitted or crocheted fabrics	2,593,102	632.46	10.4
(3) Knitted or crocheted fabrics of a width not exceeding 30cm	2,026,938	494.38	8.1
(4) Other woven fabrics of synthetic staple fibres	1,880,997	458.78	7.5
(5) Motor cars and other motor vehicles principally designed for the transport of persons	728,075	177.58	2.9
(6) Yarn (other than sewing thread) of synthetic staple fibres, not put up for retail sale.	587,164	143.21	2.4
(7) Cigars, cheroots, cigarillos and cigarettes, of tobacco or of tobacco substitutes	527,432	128.64	2.1
(8) Electrical apparatus for line telephony, including line telephone sets with cordless handsets and telecommunication apparatus; videophones	392,874	95.82	1.6
(9) Medicine	386,342	94.23	1.5
(10) Dump trucksdesigned for off-highway use	386,161	94.19	1.5
Cambodia's Total Import Cost For Top-10 Products:	12,768,162	3,114.19	51.2
Cambodia's Total Import in 2011:	24,931,347	6,080.82	

Remarks: exchange rate 1US$=4,100 Khmer Riel
Source: Cambodia Trade Statistics – Year Book 2011 published in 2012(MOC)

(3) Industry

1) Main Existing Industry and It's Trend

There are many kinds of industry but most of the local companies in Cambodia are micro, small and middle scaled manufacturing industry for the domestic market. Currently the existing manufacturing industries that have been established by foreign investment for export are mainly textiles, garments and shoes as mentioned hereunder. While the current situation of each industry and its trend is as follows:

- Textile and Garment Industry:

The garment manufacturing industry has been continuously growing since 1996 due to the incentive granted by the USA and EU as GSP/MFN and the export value for this product reached nearly 70% of the total exported value and created job opportunities for about 460,000 at the peak time, which contributed much to the economic growth in Cambodia, and its trend will be expected to continue growing also in the future as long as GSP/MFN will also be granted. However, new manufacturing industry in other fields by foreign investment in the future will reduce the ratio gradually of this existing textile and garment industry.

- Shoe Industry:

This industry is also contributing to the export from Cambodia but the total amount of export of about US$170 million and its ratio of export is not so large compared with the above textile and garment industry, although the export amount has quadrupled since 2004. In the future, export markets other than Japan, USA and EU may be expected to be expanded.

- Fabricated metal , electric/electronics/IT Industry:

According to the statistics by the Ministry of Minerals, Industry & Energy, the manufacturers registered totalled 21 companies in this field in 2008 while in 2011 the number of these manufacturers increased to 30 companies. The ratio of these industries in the total industrial fields increased to 4.4% in 2011 from 3.7% in 2008. Among 30 manufacturers, 9 companies are engaged in assembling and repairing automobiles/motorbikes/bicycles, 8 companies in manufacturing construction materials and roofing materials, and 3 other companies in manufacturing electric cable and wire.

- Automobile Industry:

Motorbike Industry: Three Japanese companies have already invested in this field as joint ventures with local companies. One is Suzuki, the second is Honda and third is Yamaha-Toyota Tsusho although Yamaha has not yet started to construct the factory. There are other motorbike assembling factories invested in and operated by a Chinese company or local company, but in view of the current scale of the Cambodian market and population, the number of motorbikes to be assembled may have some limitation unless they will also have overseas markets.

Automobile Industry: Hundai (Korea) is now assembling about 1000 automobiles (USV) per year and planning to expand up to 3000 per year including a new line of minibus in the future. Also Ford started to assemble ambulances at their warehouse in Sihanoukville Port and plans to establish a new assembly factory. Also Beijing Automobile works (China) is assembling automobiles. Cambodia is now importing many second-hand cars but unless the government limits or bans the import of these second-hand automobiles, the market for newly assembled cars will not expand much. Also in view of the marketing scale of Cambodia, the mass-assembling of automobiles may not be expected unless the market may be expanded to overseas not just in the Cambodian market.

- Ago-Industry:

The production of food, beverages (including alcohol) and tobacco industries is 15.5% of total manufacturing in 2010 increasing yearly from 2006 and showed a 7.9% increase in 2010 from 2009. According to the statistics of the Ministry of Minerals, Industry & Energy, the agro processing company register totalled 56 companies in 2011 among which 46% are by foreign investment. The agro-industry will have a very wide field and recently Ajinomoto (Japan) has started to construct a

factory. There may be great possibility to increase the investment rapidly in the agro-industry using the local agricultural products.

- Primary Agriculture/Fishery/Forestry Industry:

These primary industries occupied about 30.1% in 2006 and 33.9% in 2010 of total GDP showing yearly increases, which is owing to the constant increase in the amount of crops. It is expected that the production from these primary industries will also increase due to the foreign investment in the field of agro-industry. Especially the increase of the fishery industry will rapidly expand in Cambodia due to the fact that the demand for fishery products in the world, especially in China is rapidly increasing and also Cambodia has rich fishery fields both in rivers and the sea. Also the forestry industry may be expected to expand in Cambodia due to the big demand for timber chips that is still increasing in the world together with new tree plantation projects.

The natural rubber production may also increase since the plantation area of natural rubber is now expanding in Cambodia.

- Tourism Industry & Service Industry:

Cambodia has the famous world heritage of Angkor Wat in Sieam Reap and the total tourists to visit there reached about 4 million in 2011, among which 42.1% were from Asian-Pacific countries, 27.4% from the USA and EU countries. Most of such tourists will also visit Phnom Penh as the capital and therefore Angkor Watt contributes much to earn foreign currency for Cambodia and indirectly to the development of the capital. The number of hotels in Cambodia increased from 247 in 2001 to 440 in 2010, and the number of guest houses went from 370 in 2001 to 1,087 in 2010 according to the statistics of Ministry of Tourism. And naturally the development of the tourism industry will have a good impact on the development of various service industries.

2) New Prospective Industry

- Parts industry for Automobiles/motorbikes:

Cambodia is already assembling motorbikes and automobiles and one of the biggest world-wide Japanese automobile wire-harness companies decided to establish a factory in Cambodia. This kind of factory needs a few thousands workers for the one factory and actually in Vietnam two Japanese wire-harness companies, whose total world share for both companies reached about 50%, has a total of 5 factories and employed huge numbers of workers and contributed much for job creation but those factories also export from Vietnam. In addition to the above wire-harnesses, Cambodia can expect the following foreign investment in the following categories of parts industry for automobiles like other ASEAN countries.

- Wire cables for automobiles
- Plastic parts
- Metal parts
- Die cast parts
- Instruments

- Steel Fabrication Industry

In 1990, a Japanese Galvanized corrugated sheet manufacturing factory started producing roofing materials in Cambodia but there are no big scale steel fabricators, only small scale. In the process of industrial development, the following foreign investment may be expected, because Cambodia has been importing up till now and to reduce cost in the future, it is preferable to do such works locally.

- Steel fabrication for factory and roofing materials etc.
- Various storage tanks (steel or stainless etc.)
- Steel furniture for houses/offices (lockers, desks, chairs, shelves etc.)

- Metal Processing Parts and Products Industry

This industry will cover very wide fields such as for construction, automobiles, electric, electronics, IT etc., and the following will be expected as prospective products to be invested in not only by the foreign companies but also local companies.

- Construction materials for buildings and housing (aluminium frames etc.)
- Metal parts for automobiles (light reflective metal parts, etc.)
- Metal parts for Electric, electronics & IT products (wire-harnesses etc.)

- Plastics Industry

This industry will tend to develop as the economy is growing all over the country. Actually, there is the same tendency in Malaysia, Thailand, Indonesia and Vietnam as that is where they are in their development stage and the same trend will come to Cambodia. The production of precision plastic parts requires special technology in metal moulding for which the foreign investment is essential.

- Furniture (tables, chairs etc.)
- Household goods (pet bottles, tableware, kitchen goods, etc.)
- Packing materials (vinyl packing, shock absorbing sheets, packing films for vegetables and other foods, etc.)
- Parts for automobiles & motorbikes (various parts)
- Electric, electronics and IT parts (various parts and precision parts)

- Electric, Electronics and IT Assembly Industry

The domestic market is not so large in Cambodia but in the future it is expected that Cambodia can export these goods to the neighbouring countries by assembling them in Cambodia. Assembling work is rather easier than complicated parts manufacturing because at the first stage, the assembling work will start from importing the various parts or semi-products from foreign countries and then the products will be assembled by the labour forces. Therefore, these assembling industries are rather easier for foreign investors to engage in by using cheaper and rich labour forces.

Recently, one of the world's biggest electric motor companies from Japan decided to establish a factory in Cambodia and it is one of the examples. Due to the strong Baht of Thailand, there may be a possibility that many assembling factories in Thailand will shift to Cambodia.

- Wood products and Paper Industry

There are many natural forestry resources, the following products will have potential using local materials in the future.

- Wood chips
- Curtain Boxes
- Tissue paper and Household goods
- Wooden furniture
- Plywood

- Agro-Industry

This industry has much potential using local agricultural materials. However, for such development, a cold chain system, establishment of quality control, product standards, and a quarantine system are required. The potential products are as follows:

- Fresh vegetables and fruits (for domestic supermarkets, for export by processing including cooling, washing, sorting and packing)
- Dry fruits
- Various juices
- Products made of rice etc.
- Livestock products
- Fishery products

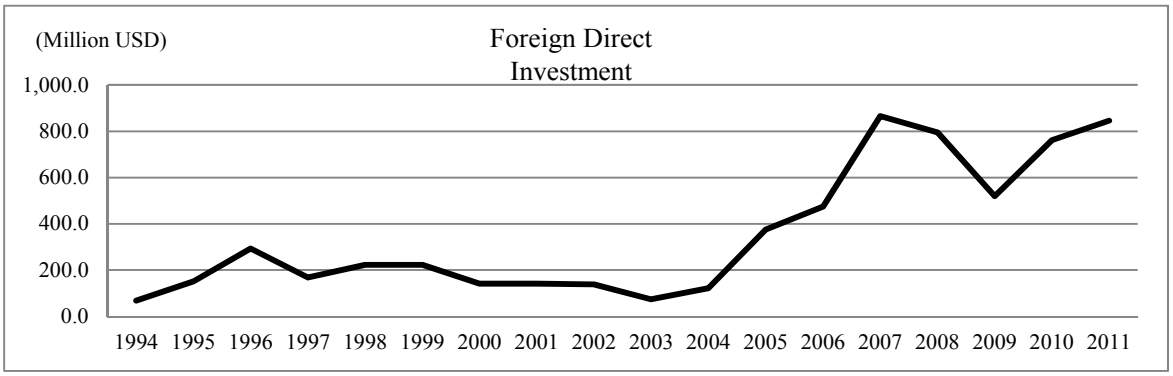
(4) Investment

1) Foreign Direct Investment into Cambodia

The Foreign Direct Investment (FDI) into Cambodia has increased steadily, as shown in Figure 2.4-1, since 1994 when the Law on Investment was promulgated and the approval of qualified investment projects (QIP) began. The amount of the annual average FDI in 2006-2011 was USD 711 million and that is 4.2 times that in 2001-2005. Though FDI in 2009 decreased by 35% compared with the previous year due to the global financial crisis, there is a tendency for FDI to increase continuously not only in terms of its amount but also its GDP ratio.

Unit: Million USD

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
FDI	69.0	150.7	293.7	168.1	223.0	223.1	141.9	142.1	139.1	74.3	121.2	374.9	474.8	866.2	794.7	520.2	762.0	846.2
FDI-GDP Ratio	2.5	4.4	8.4	4.9	7.1	6.3	3.9	3.6	3.2	1.6	2.3	6.0	6.5	10.0	7.7	5.0	6.8	6.6
Acc. Amount	1,269.6							851.6					4,264.1					
Annual Average	181.4							170.3					710.7					



Source: JICA Study Team based on ADB "Cambodia: Key Indicators for Asia and the Pacific 2012"

Figure 2.4-1 Foreign Direct Investment

2) Trend of Qualified Investment Projects

The Qualified Investment Projects (QIP) by sector over 2006-2011 are shown in Table 2.4-8. Out of the total USD 33.5 billion in the relevant period, the tourism sector occupied approximately 50%, the service sector and the industry sector accounted for about 20% each, and the agriculture sector was relatively small with 8.5%. The investment in the agriculture sector was almost flat except for the decrease in 2008 because of the economic crisis, and the investment in the tourism sector decreased sharply in 2010 but was restored in 2011.

As for the total amount of QIP over 1994-2011, the top three investors consisted of China, Korea and Malaysia, and these were followed by the UK and USA as shown in Table 2.4-9. The UK became the largest investor in 2011 because of the huge investments in two projects for an ammonia urea fertilizer plant (2,220 million USD) and a garment factory (16 million USD). Also, the recent increase in investment from Malaysia and Vietnam is notable. Though the past investment from Japan was relatively small at 14th place, according to the information of CDC Japan Desk, the investment from Japanese companies became active in 2012, and projects under the QIP application and/or its preparation are increasing rapidly.

Table 2.4-8 Investment in QIP by Sector

Unit: Million USD

Sector	2006	2007	2008	2009	2010	2011	Total	(%)
1. Agriculture	505	371	95	590	554	725	2,840	8.5
2. Industries	987	337	726	958	946	2,869	6,823	20.3
Energy	596	11	494	665	589	0	2,355	7.0
Food Processing	4	21	4	12	40	0	81	0.2
Garment/Textile	149	205	147	93	134	361	1,089	3.2
Machine/Metal/Electronics	4	4	12	2	8	0	30	0.1
Mining	3	31	5	15	92	31	177	0.5
Petroleum/Plastic	0	5	6	5	6	0	22	0.1
Others	231	60	58	166	77	2,477	3,069	9.1
3. Services	2,171	653	1,292	410	1,059	658	6,243	18.6
Construction/Infrastructure	2,156	640	260	410	1,059	567	5,092	15.2
Services	15	13	1,032	0	0	91	1,151	3.4
4. Tourism	777	1,295	8,776	3,901	132	2,760	17,641	52.6
Hotel	21	113	1,189	17	4	283	1,627	4.8
Tourism	756	1,182	7,587	3,884	128	2,477	16,014	47.7
Total	4,440	2,656	10,889	5,859	2,691	7,012	33,547	100

Source: Cambodia Investment Guidebook (Jan. 2012), JETRO Web Data (Data of 2011)

Table 2.4-9 Investment in QIP by Country

Unit: Million USD

Country	1994-2005 Total		2006	2007	2008	2009	2010	2011	1994-2011 Total	
Asia										
Cambodia	2,260	-	2,081	1,323	3,932	3,753	391	1,930	15,670	-
China	864	2	717	180	4,371	893	694	1,193	8,912	1
Korea	351	5	1,010	148	1,238	120	1,026	146	4,039	2
Malaysia	1,932	1	28	241	3	7	167	235	2,613	3
Vietnam	25	11	56	139	21	210	115	631	1,197	6
Taiwan	529	3	48	40	22	27	92	82	840	7
Thailand	284	6	100	108	74	178	2	0	746	8
Singapore	260	7	12	2	52	273	37	14	650	9
Hong Kong	244	8	4	26	0	7	30	331	642	10
Japan	20	12	2	113	8	5	0	6	154	14
Others										
UK	103	10	4	26	6	6	11	2,238	2,394	4
USA	366	4	62	3	672	2	36	144	1,285	5
Russia	2	13	278	0	103	235	0	0	618	11
Israel	-	14	0	2	300	0	2	0	304	12
France	208	9	0	35	6	50	0	0	299	13
Others	229	-	38	270	81	93	88	62	861	-
Total	7,677		4,440	2,656	10,889	5,859	2,691	7,012	41,224	

Source: Cambodia Investment Guidebook (Jan. 2012), JETRO Web Data (Data of 2011)

3) Investment in SEZ

The first investment in the SEZ was initiated by Taiwan in 2006 as shown in Table 2.4-10. Then investments by Asian countries such as Japan, China, Malaysia, Singapore, etc. increased rapidly. Investments from Japan increased sharply to USD 98 million in 2011, almost four-fold when compared to USD 26 million in 2010. As for the investment in SEZ, Japan was the largest investor in 2011 and 2012. As a characteristic of the foreign direct investment from Japan, the ratio of the investment in SEZ is comparatively high.

Table 2.4-10 Investment in SEZ by Country

Unit: Million USD

Country	2006	2007	2008	2009	2010	2011	2012	Total
Japan	-	-	13.4	39.9	26.0	98.0	22.7	200.0
China	-	-	9.0	1.2	17.2	32.1	15.0	74.5
Taiwan	15.4	-	12.8	5.0	17.2	10.0	15.0	75.4
Korea	-	-	3.0	50.0	-	-	-	53.0
Malaysia	-	-	1.0	195.4	2.0	-	-	198.4
Singapore	-	-	4.0	53.7	-	1.0	16.7	75.4
Philippines	-	-	-	-	5.0	-	-	5.0
Vietnam	-	-	-	-	5.4	-	-	5.4
Cambodia	-	-	-	-	-	0.6	-	0.6
Hong Kong	-	1.1	-	-	27.8	-	2.0	30.9
Ireland	-	-	-	-	1.7	-	-	1.7
USA	-	-	-	1.9	-	1.0	-	2.9
France	-	-	-	-	-	1.0	-	1.0
Thailand	-	-	-	-	0.8	10.0	-	10.8
Russia	-	-	4.3	-	-	-	-	4.3
Total	15.4	1.1	47.5	347.1	103.1	153.7	71.4	739.3

Source: CDC Japan Desk (2012), Figures in 2012 are only for January and February.

As shown in Table 2.4-11, the textile and garment sector occupied the major share in the initial stage of the investment in SEZs, however, in recent years the type of invested sector has been diversified. Excluding a large investment in the electricity sector in 2009, the textile and garment sector absorbs the largest share, approximately one third of the total investments in 2006-2012, and it is followed by automobile assembly and electrical equipment manufacturing. As mentioned above, the Japanese firms' investment into Cambodia became active recently, and it shall be noted that many firms have selected SEZs as the place for investment projects.

Table 2.4-11 Investment in SEZ by Sector

Unit: Million USD

No.	Sector	2006	2007	2008	2009	2010	2011	2012	Total
1	Textile & Garment	13.4	-	25.8	8.4	36.9	38.0	33.5	156.0
2	Automobile Assembly	-	-	11.5	50.0	-	8.9	-	70.4
3	Electrical Equipment Manufacturin	-	-	-	-	24.2	32.2		56.4
4	Bicycle Manufacturing	2.0	-	-	-	9.5	1.0	15.0	27.5
5	Plastic Manufacturing	-	1.1	5.4	5.0	4.0	9.3	-	24.8
6	Wire Harness Manufacturing	-	-	-	-	-	22.7	-	22.7
7	Medical Product Manufacturing	-	-	-	-	-	-	15.0	15.0
8	Food processing	-	-	-	31.5	5.0	2.6	-	39.1
9	Wood Processing	-	-	-	-	-	12.7	-	12.7
10	Packaging	-	-	0.5	1.9	4.4	5.0	-	11.8
11	Dry Port	-	-	3.3	-	-	-	-	3.3
12	Steel Processing	-	-	1.0	-	1.9	-	-	2.9
13	Other Manufacturing	-	-	-	1.2	7.1	12.4	7.0	27.7
14	Electricity	-	-	-	249.1	-	-	-	249.1
15	Paper Processing	-	-	-	-	1.9	1.6	-	3.5
16	Ice Production	-	-	-	-	2.0	-	-	2.0
17	Animal Feed	-	-	-	-	5.0	-	-	5.0
18	Bio-energy Manufacturing	-	-	-	-	-	0.6	-	0.6
19	Electronics Assembly	-	-	-	-	-	2.5	0.9	3.4
20	Home Appliances	-	-	-	-	1.2	4.2	-	5.4
	Total	15.4	1.1	45.3	321.1	103.1	153.7	71.4	739.3

Source: CDC Japan Desk (2012), Figures in 2012 are only for January and February.

An SEZ, which plays a vital role in attracting investment, has been approved for 23 places in Cambodia, and 10 SEZs are currently in operation receiving FDIs. It shall be noted that in particular FDIs have been gathered into SEZs located in the following four districts in Cambodia.

i. Phnom Penh SEZ located in a suburb of the capital city Phnom Penh:

According to the web data in January 2013, it has 33 investors including 17 Japanese firms, and the number of investors is the maximum in all SEZs. Recently the yen has been strong and the wage rates in China and Vietnam have been increasing, and also no other SEZ is located near the capital Phnom Penh. Therefore, many companies from Japan as well as other nations have decided to invest in this SEZ one after another.

ii. Sihanoukville Port SEZ by Japanese ODA and Sihanoukville SEZ by Chinese funding are located in the southern harbour city Sihanoukville:

The development of Sihanoukville Port SEZ funded by Japanese ODA was completed in May 2012. A factory funded by a Japanese manufacturer of paper products is under construction. This SEZ is directly connected with the container terminal of Sihanoukville port which is the only international deep sea port in Cambodia, and is superior to other SEZs with respect to the convenience for import and export.

iii. Manhattan SEZ and Tai Seng Bavet SEZ located in the south eastern area of Bavet near the Vietnam border:

In this area, while utilizing the infrastructure of ports in southern Vietnam, Cambodia's merits including the preferential tariff scheme for developed countries and the incentive measures for investment can be enjoyed. Therefore, it is noted as the new investment area. Because of the rising labour wages in China and the utilization of preferential tariff scheme for developed countries, the investments by Japanese-affiliated companies currently located in China are remarkable.

iv. Koh Kong SEZ has a coastal location near the Thai border:

Visits and studies regarding investment by Japanese-affiliated firms in Thailand are occurring frequently.

4) Cambodia's Climate for Attracting FDI

There were 50 regular members of the Japanese Chamber of Commerce in Cambodia at the end of 2010 and this has increased to 87 in March 2012. It is anticipated that the investment from Japan will increase continuously because Cambodia is a market as well as a manufacturing base.

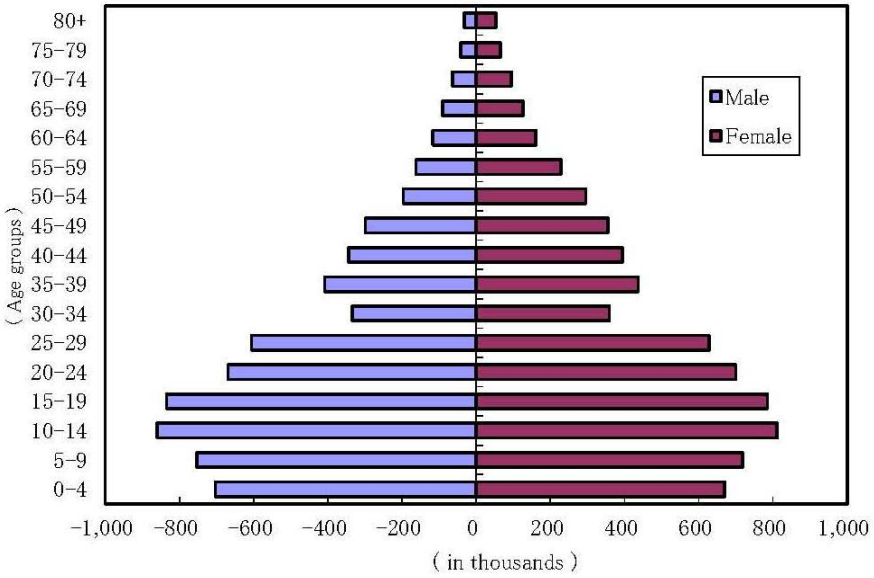
- In order to attract further foreign direct investments into Cambodia in the future, Cambodia's investment environment must be improved more with respect to the following matters, as proposed in the final report (October, 2012) of the "data collection survey on industrial policy formulation assistance in Cambodia" which was executed by Japanese consultants under contract with JICA. Improvement of physical infrastructure (infrastructure for stable power supply, transportation and industrial agglomeration areas in particular)
- Human resource development for industry
- Improvement of governance (legal enforcement, transparency of administrative procedures)
- Stable financial market (the mechanisms to provide funds for local small and medium enterprises shall be developed)
- Stable macro economy (deficit in the overall balance of payment shall be avoided)

(5) Labour Force and Manpower Supply

1) Labour Force

According to the latest Population Census, which was conducted in 2008, Cambodia's

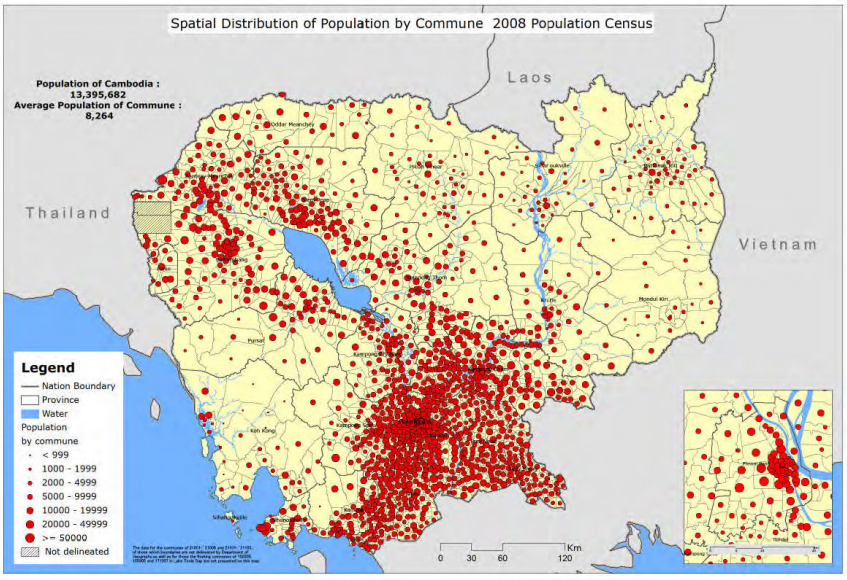
population was 13.4 million. This is almost the same as Tokyo. As shown in Figure 2.4-2, the ratio of young among the total population is very high with 77% 40 years old or younger, and 46% 20 years old or younger. As for the situation that the proportion of economically active population (15-64) is high with 62% and the dependent population is comparatively less, this is considered as an advantageous environment in pushing forward the economic growth.



Source: General Population Census of Cambodia 2008

Figure 2.4-2 Population Distribution by Age Group and Sex

The population distribution by area (commune) is as shown in Figure 2.4-3. The population of approximately 3,400,000 (over 25% of the total population) is concentrated in the capital city Phnom Penh and its neighbouring area of Kandal Province and Takeo Province resulting in a high population density.

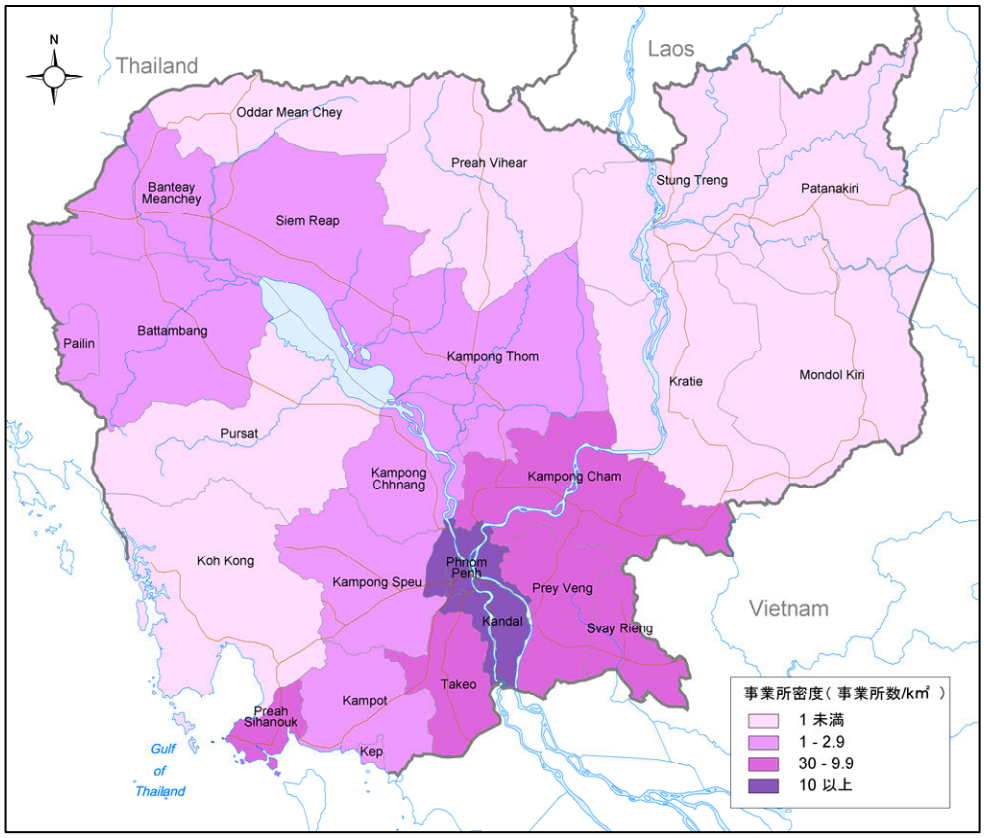


Source: General Population Census of Cambodia 2008

Figure 2.4-3 Population Distribution by Commune

The establishment density by province, which was based on the Cambodian 2011 Economic Census, is shown in Figure 2.4-4. As proved by the result of Population Distribution by Commune, Phnom Penh and its neighbouring area and also the provinces where major SEZs are located, have

high business establishment density. There were almost 505,000 establishments in Cambodia as of 1 March 2011 according to the results of the EC2011. The number of persons engaged in these establishments was 1,680,000 being composed of 650,000 males accounting for 38.8% and 1,030,000 females (61.2%) females.



Source: General Population Census of Cambodia 2008

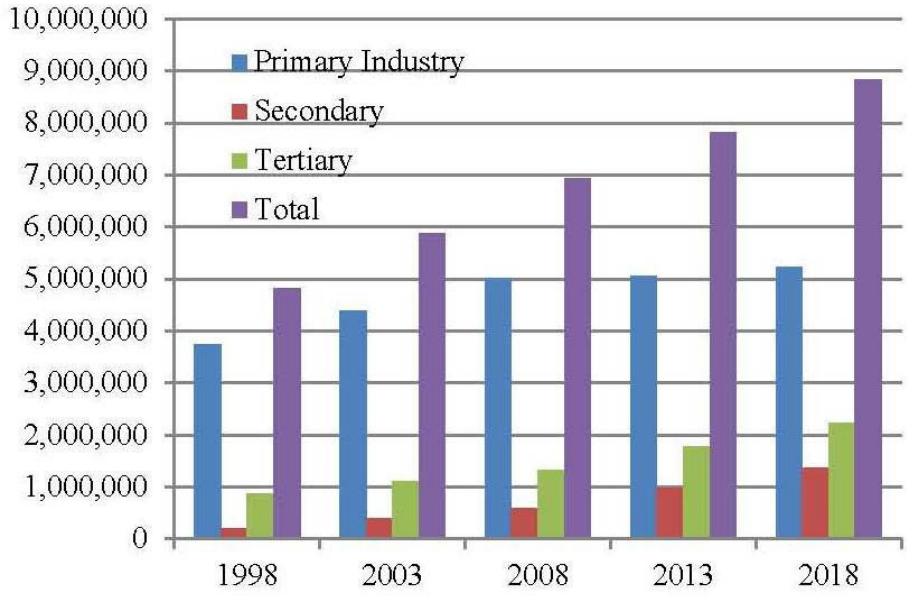
Figure 2.4-4 Establishment Density by Province

According to "the demand projection for labour force by industry" shown in "the final report (March 2012) for the "preparatory study on the program for human resource development for industry in the Kingdom of Cambodia" which was executed by Japanese consultants under contract with JICA, it is forecast that the number of persons engaged in secondary industry will increase from 600,000 in 2008 to 1,400,000 in 2018 and those in primary industry will remain at the same level in the future as shown in Table 2.4-12 and Figure 2.4-5. In other words, it is predicted that the increase in the labour force will be absorbed by the new demand for labour in the secondary and tertiary industries in the future.

Table 2.4-12 Demand Projection of Labour Force by Industry

	Primary Industry	Secondary Industry	Tertiary Industry	Total
1998	3,739,000	205,000	879,000	4,823,000
2003	4,377,000	398,000	1,104,000	5,879,000
2008	5,014,000	592,000	1,329,000	6,935,000
2013	5,050,000	980,000	1,778,000	7,808,000
2018	5,235,000	1,368,000	2,228,000	8,830,000

Source: JICA (March 2012): the preparatory study on program for human resource development for industry in the Kingdom of Cambodia



Source: JICA (March 2012): the preparatory study on program for human resource development for industry in the Kingdom of Cambodia

Figure 2.4-5 Demand Projection of Labour Force by Industry

2) Manpower Supply

In "the final report (March 2012) for the preparatory study on the program for human resource development for industry in the Kingdom of Cambodia", as a result of the interviews with Japanese invested enterprises operating in Cambodia and with other related institutes and organizations, the characteristics regarding the nature and ability of Cambodian human resources for industry are summarized as shown in Table 2.4-13.

Japanese invested companies in Cambodia, for the recruitment of staff, are getting information and advice from CDC, JETRO, the Japanese Chamber of Commerce, SEZ Administration Office, existing foreign invested enterprises, etc. and are contriving various means. Each of the existing foreign invested enterprises has experienced considerable difficulties in finding human resources at the setup stage. As for a company which was invested almost one year ago and is establishing its operation system currently, their concern on securing human resources has shifted from how to recruit human resources to how to reduce the resignation of employees.

Table 2.4-13 Characteristics regarding the Nature & Ability of Cambodian Human Resources for Industry

Nature and Ability	Worker	Management/Supervisory Staff	Comments
Basic Scholastic Ability	There are a lot of people who considerably lack the ability for reading, writing and calculation.	Since the scholastic ability regarding science and mathematics is low generally, even a university graduate that uses an electronic calculator easily, cannot draw a projection chart, and/or cannot objectively report the observed phenomenon.	Supplementing the basic education is required.

Nature and Ability	Worker	Management/Supervisory Staff	Comments
General Ability	Difficult for them to make an effort steadily. Apt to hold everything to oneself without sharing it with colleagues. Not want to admit own mistake, and rather rebel against instruction. Calm character. Not familiar with getting to work on time. Have deep devotion to one's family and give priority to family/ friends over work. Unpolished gem may be found.	Technicians are apt to be disdained and being a white-colour worker is favourable. Despite low qualifications, want high salary. Not admit own mistake obediently, and rather rebel against instruction. Once he recognizes the problem, he is able to cope with it properly.	Training in teamwork is necessary. Before starting a matter, it must be explained and understood in advance. It is necessary for a company to make an effort to keep high transparency in its business. The eye to select a qualified person as a leader is required.
Technical Capability	Even at the worker level, there are capable people who can be educated as an operator or a repairman of machines.	It seems that the classroom learning is adequate but the practical training is insufficient and there are people who do not understand the industrial bookkeeping or the actual trade business.	Practical education is necessary. Consent of other staff is required in advance for employee to be exceptionally promoted.
Japanese language Capability	It is not a necessary ability. There are a lot of opinions that a few words of greeting are enough and English may be more useful.	It is desirable for manager class staff to have the ability. However, if there is no proper understanding of the Japanese culture and customs, it may cause trouble.	If Japanese ability is needed for management staff, such staff may be selected from people who have studied in Japan, or have been brought up there.

Source: JICA (March 2012): the preparatory study on program for human resource development for industry in the Kingdom of Cambodia

Human resources are mainly recruited from private universities and technical training centres as well as national universities, technical schools and vocational training centres. Among them, the Institute of Technology of Cambodia, the Norton University and Don Bosco are famous as the suppliers of new graduates in technical fields. However, for many Japanese invested companies using technology that is new and unfamiliar to Cambodia's people, it is a big constraint on the employment that technical matters are apt to be disdained and the number of technical graduates and engineers is few in Cambodia.

As mentioned before, as a serious problem in the human resource development for industry in Cambodia, there are many cases that defects in the basic education are found in even university graduates. And the necessity to rectify the lack of basic scholastic ability is pointed out. To cope with this situation, each Japanese invested firm is making efforts to rectify this deficiency, by providing lectures in the company premises for the employees.

2.4.2 Regional Trends

(1) Industry in Each Province

The trend of industry in each main province is listed in Table 2.4-14. The general trend of industry will change and develop through the following factors in each province which may sometimes result in a different type of existing industry.

Taking into consideration such factors, Cambodia must make up new middle and long term master plans for the country's industrialization at the earliest time, because recently, the economic circumstances in the world and the stream of the trading surrounding Cambodia has been drastically changing and also the heavy competition of each ASEAN country may be developed while the cooperation among ASEAN countries is proceeding. Such new master plans can be realized to protect the environment from destruction by rapid industrialization and also use efficient infrastructures.

Meantime, the industry in Cambodia must be shifted from the cheaper labour-force type industry to a new type of industry which is something different and with characteristics such that Cambodia will not be behind the other countries.

- Expansion of trade among Thailand, Vietnam and Laos by transportation using roads, railroads, rivers and sea lines, which will be improved and newly constructed.
- New industry and processing industry using the local procured materials (in the fields of fresh vegetables and fruits to be required for processing, agro-products, fish farming, fishery products, wooden products, etc.)
- New coming industry by foreign investment which Cambodia has not had in the past such as automobile parts industry, assembling electric/electronics/IT equipment or products or manufacturing such parts, optical products etc.)
- Incentive to be given to the foreign investor by the Government or Province
- Existence of industrial parks with well-facilitated infrastructures to receive the foreign investors (location and scale)

Table 2.4-14 Prospective Industry in Each Province

Name of Province	Province & Existing Industry	Prospective Industry
Battambang Land: 11,702km2 Population; 1.13 mil. Labour Force: 0.61mil	(Characteristics) ● Easy access to Thailand through Roads No.5 and 57 and convenient to trading with Thailand ● Transportation network by roads, railways, and rivers to be connected to Thailand, Phnom Penh and other main cities. ● Fertile agricultural land and good irrigation systems from 3 large dams ● Rich and young labour forces (Existing Industry) Grain, logistics, hotels	● Agriculture, agro-industry (grain, starch, ethanol, animal feed, juice, dry fruits, processed food stuff etc.) ● Fishery and its processed products. (fresh water fish farming, eels, crocodile, etc.) ● Mining (phosphoric rock, iron ore, gold, limestone, bauxite, etc.)
Kompong Cham Land: 9,799km2 Population: 1.75mil Labour Force: 0.97mil	(Characteristics) ● Easy access to Thailand and Vietnam by road, railway, and river transportation networks ● Rich and young labour forces ● Open policy and regulations with transparency regarding trade activity (Existing Industry) Rubber goods, wooden products (using rubber trees), grain, starch, animal feeds, beer, beverages, garments, shoes, etc.	● Agriculture, Agro-industry (existing agro-products, caju products. fresh vegetables, other processed products) ● Mining (gold, iron ore) ● Fishery (fish farming)
Kampot Land: 4,873km2 Population: 0.61 mil Labour Force: 0.34mil	(Characteristics) ● Fertile agricultural land in east part, and forestry area in west part, fishery /livestock/salt in south-west part ● Natural resources for tourism ● Two sea ports convenient for export (Existing Industry) Tourism, agriculture, cement, bricks, fish sauce, wooden furniture, animal feed, Salt	● Tourism industry ● Fishery, fishery products ● Agriculture, agro-industry (fresh fruits, processed fruits, grain, food stuffs, etc.) Forestry industry (tree plantation, chips, wooden products.)

Name of Province	Province & Existing Industry	Prospective Industry
Kandal Land: 3,255km2 Population: .1.19mil Labour Force: 0.78mil	(Characteristics) ● Important logistic place to connect Between Phnom Penh and Vietnam border cities ● Transportation network by roads and water-ways to Vietnam ● Rich water resources (rivers, lakes) ● Fertile soil (Existing Industry) Garment, shoes	● Agro-industry ● Fishery (farming and processed products)
Koh Kong Land: 10,045km2 Population: 0.13mil Labour Force: 0.07mil	(Characteristics) ● facing Thailand's bay and next to Sihanouk and Kompon Speu province ● Transportation by roads and water-lanes ● International Gate Way at border ● Fertile soil and rich water resources (Existing Industry) Sugar, garments, fishery, food stuffs	● Tourism ● Agro-industry ● Fishery (fish farming)
Preah Sihanouk Land: 2,536km2 Population: 0.25mil Labour Force:0.14mil	(Characteristics) ● Industrial Zones (Stenghav area, Kampong Sela area, Sihanoukville City, SEZ along national road No.4 etc.) ● Easy to do international business activities through various transport-tation infrastructures - National Road No.4 - Railway between Phnom Penh and Sihanoukville - International Sea Port with sufficient facilities - International airport (Kang Keng) ● Good natural resources for tourism (white sand and islands) ● Natural resources for fishery ● Incentive to the foreign investors (Existing Industry) Apparel, motorbikes, wood chips, wooden products, fishery (refrigerated sea-food), shoes	● Oil refinery ● Agro-industry ● Fishery and fishery products ● Assembling of machinery, electric products, electronics, etc. ● Various industrial parts ● Plastic parts and products
Siem Reap Land: 10,299km2 Population: 1.0mil Labour Force:0.53mil	(Characteristics) ● Existence of famous world heritage "Ankor Watt" (4 million tourists per year) ● International Airport (to Thailand, Vietnam, etc.) ● Various service industries (Hotels, restaurants, souvenir shops, estates etc.) ● Fertile agricultural land	● Tourism industry ● Estate development ● Agriculture, agro industry ● Environmental industry

Name of Province	Province & Existing Industry	Prospective Industry
	(Existing Industry) Tourist industry (hotels, guest houses), art goods (including metal arts), food processing (noodles, beverages), agro industry (greenhouse cultivation, garden products), wooden products (furniture etc.), service industry (restaurants, food sales, repairing services, health industry, construction and construction materials, ceramics, etc.	
Phnom Penh City	(Characteristics) ● Capital and presence of all the Government offices and banks, etc. required for business activities ● Rich labour force and easy to employ capable staff and engineers ● Good infrastructure such as roads, electricity, water supply, and telecommunications (Existing Industry) Estate industry, service industry, agro-industry, motorbike assembling, electric cable, electric parts, mechanical parts, garments, etc.	● Estate industry ● Service industry ● Agro-industry ● Fishery product industry ● Wooden products ● Electric, electronics, IT etc. (parts and products) ● Mechanical parts ● Steel fabrication ● Plastic products and parts ● Garments, apparel ● Ship building (small vessels, boats, barges etc.) and repairing ● Environmental industry ● Logistics industry ● Construction industry ● Banking industry ● Human resources training Business ● IT industry

Source: JICA expert by his study and based on CDC "Cambodia Guide Book" (2012/January)

2.5. Related Laws and Regulations

2.5.1 Laws and Regulations Related to PPP

Major laws and regulations to be applied to a project, which implements the development, construction and operation of an infrastructure by a PPP scheme in Cambodia, are shown in Table 2.5-1.

Table 2.5-1 Major Relevant Laws and Regulations

Category	Name	Comments
Basic	Civil Code of Cambodia (Dec. 2007)	Provisions on land ownership, perpetual leases, and rights created by concession, are prescribed.
	Law on the Implementation of the Civil Code (May 2011)	
Business	Law on Amendment to Law on the Commercial Regulations and Commerce Register (Nov. 1999)	To establish a new company for business, these laws will be applicable.
	Law on Commercial Enterprises (Sep. 2005)	
Investment	Law on Investment (Aug. 1994) and Law on Amendment to the Law on Investment (Mar. 2003) Sub-Decree #111 on the Implementation of the Law on Amendment to the Law on Investment (Sep. 2005)	Provisions on investment incentives and investment licenses, etc. for SEZs.
Land	Land Law (Aug. 2001)	The authority of the ministry of land management, urban planning and construction for the management of immovable property and the competence to issue titles related to immovable property is stipulated. The legal right of a land concession is prescribed also. As for the land rights prescribed in a concession, the Civil Code of Cambodia shall be applied, if no other regulation is available.
	Sub-Decree #146 on Economic Land Concessions (Dec. 2005)	The regulation for initiating and granting new economic land concessions that may develop intensive agricultural and industrial-agricultural activities.
	Law on Concessions (Oct. 2007)	The Law to promote and facilitate the implementation of privately financed projects in the Kingdom of Cambodia in order to ensure the public interest and the fulfilment of the national economic and social objectives. It relates to the development of infrastructure for SEZ, the social supply of housing, etc.
	Sub Decree # 118, on State Land Management (Oct. 2005)	The regulations applicable to the approval of ELC
	Law on Land Use Planning, Urbanization and Construction (May 1994)	
	Sub Decree # 46 on Procedures for Establishing Cadastral Maps and Land Register (May 2002)	
	Prakas # 1222 on Real Estate Development Business Management (Dec. 2009)	The regulation with respect to the Management of Real Estate Development Businesses
Trade, Custom	Prakas #734 Issued by the Ministry of Economy and Finance on Special Customs Procedure for the Implementation of the Special Economic Zone (Sep. 2008)	The regulation on businesses relating to SEZ
	PRAKAS #906 (MEF) on Creation and Implementation of Private Sector Partnership Scheme with the Customs Administration (Oct. 2009)	The regulation to be discussed with the Custom Administration as an SEZ developer with respect to the port and logistics
Others	Sub-Decree #86 on Construction Permits (Dec. 1997) Other laws and regulations on the Environment, Construction, Labour Employment, etc.	There are many laws and regulations other than items listed in the left cells with respect to the development, construction and operation of an SEZ.

Source: The Government of Cambodia

2.5.2 Laws and Regulations Related to Investments

The main laws and regulations related to investments in the Kingdom of Cambodia are shown below and the collected laws and regulations are presented in ANNEX-B. The current legal framework, as prescribed in the Law on Investment, Sub-Decree No. 111, 148, 149, etc., has provided an organized foundation for FDI, and is at the stage to ensure their appropriate implementation. Further strengthening is required in the area of services responding to the issues arising after the issuance of a Final Registration Certificate.

(1) Law on Investment (5 August, 1994) and Law on the Amendment to the Law on Investment (24 March, 2003)

This law governs all Qualified Investment Projects and defines procedures by which any person can establish a Qualified Investment Project. In Article 3 it is defined that the Council for the Development of Cambodia is the sole and One-Stop Service organization responsible for the rehabilitation, development and the oversight of investment activities. Also, the Investment Procedures, the Investment Guarantees, the Investment Incentives, and the Land Ownership and Use are stipulated in the Chapter 3, 4, 5 and 6.

(2) Sub-Decree No. 17 on the Establishment of the Sub-Committee on Investment of the Province-Municipalities (9 February 2005)

This Sub-Decree governs the Sub-Committee on Investment of the Provinces-Municipalities that shall perform its roles and duties according to the Laws and Regulations on Investment in relation to the registration of investment proposals of new companies as a QIP with an investment capital of less than USD 2,000,000.

(3) Sub-Decree No. 111 ANK/BK on the Implementation of the Law on the Amendment to the Law on Investment (27 September, 2005)

This Sub-Decree supplements and governs the application and implementation of the Law on Investment and is intended to encourage and regulate investments in the Kingdom of Cambodia by Cambodian entities and foreign entities. The investment proposals and registration certificates, the joint ventures and the taxation are prescribed in Chapters 2, 4 and 5. Also, the "Investment Activities Prohibited by the Relevant Laws and Sub-Decrees" and the "Investment Activities Not Eligible for Incentives" are stipulated in Section 1 and Section 2 of Annex 1.

(4) Sub-Decree No. 34 (RGC) on Adjustment to Section 1, Schedule 1 of the Sub-Decree No.111 ANK/BK on the Implementation of the Law on the Amendment to the Law on Investment (23 April, 2007)

This Sub-Decree prescribes that the item number 5 of "investment activities prohibited by law" in Section 1 of Annex 1 of the Sub-Decree No.111 ANK/BK on the Implementation of the Law on the Amendment to the Law on Investment shall be deleted and that all other provisions including all annexes shall be effective continuously.

(5) Sub-Decree No. 147 on the Organization and Functioning of CDC (29 December, 2005): Replaced with Sub-Decree No. 149 dated 3 October, 2008

The organization, the roles and responsibilities and the function of CDC have been prescribed in Chapters 1, 2 and 3 respectively.

(6) Sub-Decree No.148 ANKr.BK on the Establishment and Management of the Special Economic Zones (29 December, 2005)

This Sub-Decree defines the procedures and regulations related to the establishment, management and coordination of all investment activities and promotion of investments of Zone developers and Zone Investors in the SEZs in the Kingdom of Cambodia. The procedures for the

establishment of an SEZ, the management structure and duties of an SEZ, the incentives for SEZ and the special rules related to the management of the export processing zone of an SEZ are prescribed in Chapters 2, 3, 4 and 5 respectively.

(7) Sub-Decree No.148 ANKr.BK on the Establishment and Management of the Special Economic Zone (29 December, 2005)

The composition of the SEZ Trouble Shooting Committee is partially amended.

(8) Sub-Decree No.149 on the Organization and Functioning of the CDC (3 October, 2008)

The replacement of the Sub-Decree No. 147 ANK/ BK dated 29 December, 2005 with this Sub-Decree, is prescribed in Article 36. This Sub-Decree is almost the same composition as the Sub-Decree No. 147. And the organization, the roles and responsibilities and the function of CDC are prescribed in Chapters 1, 2 and 3 respectively. The main amendments are made in Articles 1, 9, 23 and 25 relating to the composition of CDC and minor changes are shown in other parts also.

(9) Sub-Decree No.146 on Economic Land Concession (ELC) (27 December, 2005)

The objectives of this Sub-Decree are to determine the criteria, procedures, mechanisms and institutional arrangements for initiating and granting new ELCs, for monitoring the performance of all economic land concession contracts, and for reviewing ELCs entered into prior to the effective date of this Sub-Decree for compliance with the Land Law of 2001. The general conditions for granting an ELC, the procedures for initiating, requesting and granting ELCs, and the administration and implementation mechanism are stipulated in Chapters 2, 3 and 5 respectively.

(10) Sub-Decree No.114 on the Mortgage and Transfer of the Rights over a Long-Term Lease or an Economic Land Concession (29 August, 2007)

The purpose of this Sub-Decree is to determine principles and terms and conditions for granting rights to investors to put up as security and transfer of rights over a long-term lease or an economic land concession during the period of time not exceeding the period prescribed in the long -term lease agreement or the economic land concession agreement.

(11) Law on Concessions (19 October, 2007)

The purpose of this Law is to promote and facilitate the implementation of privately financed projects in the Kingdom of Cambodia in order to ensure the public interest and the fulfilment of the national economic and social objectives. This Law governs Concessions as specified in Article 5 of this law. A Concession shall be granted by a Concession Contract in accordance with the provisions of this Law, and its related regulations. The administrative co-ordination and services by CDC, the selection and organization of the concessionaire, the concession period termination and the penalties are stipulated in Chapters 2, 3, 4 and 5 respectively.

2.5.3 Other Laws and Regulations on Project Implementation

This Project is planned as an Infrastructure Project, which consists of the New Phnom Penh Port SEZ, the Access-road to the SEZ and the New Phnom Penh Port Container Terminal, to be implemented by a Public and Private Partnership. In consideration of the objective of the Law on Concessions, the Project shall be implemented in accordance with the Law on Concessions and its related regulations. Therefore, the procedures for granting Concessions, the procedures for SEZ establishment, and others are outlined as follows.

(1) Procedure for Granting Concessions

Definition of words is stipulated in Article 3 of the Law on Concessions, and only the main words are extracted as follows:

- ✧ "Authorisations" means the authorisations, clearances, consents, licences, permits or registrations required to be obtained from any competent institution for implementation of a Concession Project as stipulated by Cambodian laws and regulations.
- ✧ "Concession" means any act attributable to the state whereby a competent institution entrusts to a private third party the total or partial implementation of an Infrastructure Project for which that institution would normally be responsible and for which the third party assumes a major part of the construction and/or operating risks or receives a benefit by way of compensation from government revenue or from fees and charges collected from users or customers.
- ✧ "Concessionaire" means the person that carries out an Infrastructure Project under a Concession Contract entered into with a Contracting institution.
- ✧ "Concession Contract" means the mutually binding agreement between the Contracting institution and the Concessionaire that sets forth the terms and conditions for the implementation of an Infrastructure Project.
- ✧ "Contracting institution" means the competent institution that has the power to enter into a Concession Contract, as specified in Article 4 of this law.

The eligible infrastructure sectors for the Concession Project are specified in Article 5, including Port, (access) Road and SEZ which are planned in the Project. The means of a Concession Contract are stipulated in Article 6, and the joint public-private implementation of Infrastructure Facilities, which may be applied in the Project, are included also. The administrative co-ordination and services by CDC in relation to the implementation of a Concession Project are prescribed in Articles 8, 9 and 10 in Chapter 2. The procedures for granting Concessions, which are stipulated in the Law on Concessions, are summarized in Table 2.5-2.

Table 2.5-2 Procedure for Granting Concessions

Item	Description
① Approval as a Concession Project	Approval as a Concession Project in accordance with the procedures set forth in the Sub-Decree is required prior to the commencement of selection for a Concession Contract. (Article 7)
② Selection of Concessionaire	The contracting institution shall select a Concessionaire through international or national bidding procedures, or by negotiated procedure according to the circumstances. The selection of Concessionaire shall be carried out in accordance with the procedures provided in the Sub-Decree. (Article 11)
③ Approval of the final terms of the Concession Contract	The Contracting institution shall obtain approvals of the final terms of the Concession Contract as required by and in accordance with the procedures set forth in the Sub-Decree. (Article 12)
④ Notification of award, signing of Concession Contract	The Contracting institution shall issue a notification of award to the selected candidate prior to execution of the Concession Contract. The Concession Contract will be signed within 6 months of the notification of award. (Article 13)
⑤ Implementation entity Establishment, final registration certificate	Within 60 days of receiving the notification of award, the Concessionaire shall establish and incorporate the legal entity that will implement the Concession Project, and apply to CDC for a final registration certificate in accordance with the Law on Investment. (Article 14)

Source: The Government of Cambodia

As for the Sub-Decree prescribed in Article 7, Article 11 and others, the draft of the Sub-Decree, which was prepared in 2004 and titled the "Sub-Decree on Implementation of the Law on Concessions", provisionally, has been under discussion for several years and is not yet promulgated. So, in the meantime, the old Sub-Decree may be applied. However, with respect to the provision that no selection procedure for a Concession Contract shall commence unless the eligible Infrastructure

Project has been approved as a Concession Project in accordance with the procedures set forth in the Sub-Decree, arrangements between the people concerned will be necessary.

In the draft Sub-Decree, the following provisions are stipulated as the exceptions to the rules governing the selection proceedings. Article 26: Admissibility of Unsolicited Proposals, Article 27: Procedure for determining the admissibility of unsolicited proposals, Article 28: Procedure for Award of Unsolicited Proposals.

(2) Procedure for SEZ Establishment

The procedure for application/approval for the establishment of an SEZ is stipulated in Item 3.2 in Article 3 of the Sub-Decree No. 148. Its outline is shown in Table 2.5-3.

Table 2.5-3 Procedure for SEZ Establishment

Item	Description
① Application for SEZ Development	The Zone Developer submits a request for approval for the development of a Special Economic Zone to the Cambodian Special Economic Zone Board (CSEZB). It must be registered as a Qualified Investment Project (QIP).
② Examination of an application	CSEZB shall respond as to whether it will approve or reject the request to the Zone Developer within 28 working days. When it is approved, a Conditional Registration Certificate shall be issued.
③ Feasibility study, master plan of infrastructures	The Zone Developer who receives an approval for the establishment of an SEZ shall conduct the F/S and prepare the master plan of infrastructures and other documents required within 180 days, and submit those documents to CSEZB for the issuance of the Final Registration Certificate.
④ Final Registration Certificate	Within 100 working days after receiving the above documents, CSEZ shall obtain all necessary approvals and authorizations from the government and issue the FRC.
⑤ Declaration of SEZ establishment	Upon issuance of the FRC by CSEZB, the Sub-Decree is issued to define the establishment of the SEZ and its boundaries.

Source: The Government of Cambodia

However, CSEZB has the right to withdraw the approval on the establishment of the zone on the basis that the Zone Developer has not implemented work with a value equal to at least 30% of the total investment capital of the project within 365 working days after receiving the FRC.

(3) Public Procurement Law

A draft public procurement law, approved by the Cambodian National Assembly in January 2012, is expected to be implemented this year. This law is one of the laws and regulations to be noted in the implementation of the Project. The law will codify current procurement regulations, as set forth by a number of internal guidelines and regulations, providing for competitive bidding, domestic canvassing, direct purchasing, and direct contracting. Competitive bidding is for the purchase of goods or services worth more than $25,000, except when there is an urgent need or for procurement after natural disasters, when the use of non-competitive procurement methods, such as direct contracting, is allowed.

(4) Sub-Decree No.11 on Build-Operate-Transfer (BOT) Contracts (13 February, 1998)

A Build-Operate-Transfer (BOT) project is based on a Concession contract in which a Contracting institution grants a Concession to a Concessionaire who is responsible for the construction and operation of a facility over the period of the Concession before finally transferring the facility, at no cost to the Contracting institution, as a fully operational facility. This Sub-Decree shall cover only projects where the State or public legal entity is the Contracting institution and private legal entities are the Concessionaire. It shall not cover projects between private individuals. Only infrastructure projects declared by CDC or an entity authorized by the Government can be the subject of a BOT contract.

(5) Sub-Decree on the Establishment of PPAP

Phnom Penh Autonomous Port was established in 1998 by Sub-Decree # 51 (RGC) on Establishment of Phnom Penh Autonomous Port (July 17, 1998), which stipulates the powers, functions, duties, members of the board, and other articles on management of the port.

Main articles of the Sub-Decree are that PPAP is under the supervision of the Ministry of Public Works and Transport and the Ministry of Economy and Finance. Assets to be transferred to PPAP and listed in the PPAP balance sheet shall be approved by both the ministries. Members of the PPAP Board are appointed from officials of the Council of Ministers, Ministry of Public Works and Transport, Ministry of Economy and Finance, Ministry of Commerce, Phnom Penh Municipality, PPAP staff, and the General Manager of PPAP.

Articles of the Sub-Decree also stipulate that the fiscal year shall be from 01 January to 31 December, every year, and a budget plan shall be submitted to the MEF before 30 September of the previous year. PPAP shall get approval for raising long-term loans for capital investment and has the power to suspend the business of users when they fail to pay charges claimed. Other provisions necessary for port operation and company management are included in the Sub-Decree.

(6) Sub-Decree on PPAP Business Zone

Water areas for the business of PPAP are stipulated by Sub-Decree # 01 (RGC) on the Establishment of Phnom Penh Port Business Zone (January 5, 2009). This sub-decree is the full revision of the previous Sub-Decree #02 (ANK BK) on Determination of Waterway Business Zone of Phnom Penh Port (January 31, 1986). Business zones in PPAP are considerably expanded by the new sub-decree to water areas which have a limit bounded by Neak Loeung in the south, Kampong Cham in the north on the Mekong River, and Tonle Sap River and Bassac River waters in Phnom Penh city.

The Sub-Decree stipulates that vessels entering into or departing from the business zone shall be under the pilotage service of PPAP and supervised by PPAP. Construction of port facilities in the business zone are requested to obtain approval of the PPAP.

(7) Sub-Decree on Import Export Gate Control

Sub-Decree # 64 (RGC) on the Designation and Management of the Control Offices at the International Gates, the International Border Gates, the Bilateral Border Gates, the Gates at the Border Areas and the Seaport Gates across the Kingdom of Cambodia (July 9, 2001) designates gates for international or bilateral trade, including airports, ports and land checkpoints on the border.

It stipulates the organizational structure of the control office at each border gate including Phnom Penh Port and Sihanoukville Port. The control office of Phnom Penh Port consists of:

Officials of Phnom Penh International Port, Ministry of Public Works and Transport;
Manager and Assistant: 3 persons.
Officials of National Police, Department of Foreigners, Ministry of the Interior;
Assistant Directors and Collaborators: 29 persons
Officials of Customs and Excise, Ministry of Economy and Finance;
Members and Collaborators: 30 persons
Officials of CAMCONTROL, Ministry of Commerce;
Members and collaborators: 14 persons
Officials of KAMSAB, Ministry of Public Works and Transport;
Members and Collaborators 2 persons

2.5.4 Environmental Laws and Regulations

(1) EIA System in Cambodia

1) General Outline of EIA System

An operator whose project is prescribed in the Sub-Decree on the Environmental Impact Assessment Process (1999) shall be required to conduct an EIA which complies with the Prakas (Declaration) in the General Guideline for Conducting Initial and Full Environmental Impact Assessment Reports (2009) based on the Law on Environmental Protection and Natural Resource Management (1996). The EIA report shall be approved by the Ministry of Environment (MOE). Projects which are prescribed in the Sub-Decree on Environmental Impact Assessment Process (1999) are categorized into four major groups (Industrial, Agricultural, Tourism and Infrastructure), with sub-classifications. The infrastructure group includes our projects, port construction and Industrial zones, which are required to conduct an IEIA (Initial Environmental Impact Assessment) regardless of the project size. If the project is judged in the IEIA to cause a serious impact to the environment, implementation of a Full EIA shall be required. The IEIA evaluates the impact based on secondary data while a Full EIA is based on a detailed environmental survey.

2) IEIA/EIA Approval Procedure

An operator that is required to submit an IEIA/EIA shall gain approval from MOE. The procedure shall be applied to National or Provincial environmental departments based on the jurisdiction. Once the application is accepted, the National or Provincial environmental department will conduct the procedures and give approval or request amendment by the operator within 30 days.

3) Policy in this Survey

As stated above, in Cambodia's EIA system an operator shall proceed on to an EIA if the project is judged in the IEIA process to cause a serious impact to the environment. However, it is alleged to be possible to skip the IEIA and to conduct an EIA. This Survey is classified category A and requires an environmental and social consideration survey at the EIA level in JICA guidelines for environmental and social considerations (hereinafter JICA guideline). For this reason, Survey and Support are conducted at the EIA level in this survey.

(2) Legal and policy framework for resettlement and land acquisition in Cambodia

In Cambodia the fundamental systems for resettlement and land acquisition are still improving. In the present situation, the fundamental legal base for resettlement is the Constitution (1993), Land Law (2001) and Expropriation Law (2010). As enforcement orders for those fundamental laws, there are the Anukret/Sub-Decree, Prakas/Declaration, and Sarachor/Circular under control of the Ministry of Economy and Finance (MEF), Ministry of Land Management, Urban Planning and Construction (MLMUPC) and other related ministries and institutions.

Legal and policy framework for resettlement and land acquisition in Cambodia is stated in Table 2.5-4.

Table 2.5-4 Related Laws and Regulations to Resettlement and Land Acquisition

Function	Laws and Regulations	Institution in Charge
Constitution	Constitution (1993)	Kingdom of Cambodia
Land management/ Land legislation	Land Law (2001)	MLMUPC
Land acquisition	Expropriation Law (2010)	MEF
Concession	Sub-Decree on Social Land Concessions (2003)	MLMUPC
	Sub-Decree on Economic Land Concession (2003)	MAFF (Ministry of Agriculture, Forestry and Fisheries)

Function	Laws and Regulations	Institution in Charge
Resettlement	Sub-Decree on Addressing Socio-Economic Impacts caused by Development Projects (Draft)	MEF
Right of Way (ROW)	Sub-Decree on Right of Way of National roads, waterway channels and Railroads of the Kingdom of Cambodia (2009)	MPWT

Source: Arranged by the project for the study on strengthening competitiveness and development of Sihanoukville port in The Kingdom of Cambodia (JICA, July 2012)

(3) Comparison and Verification between JICA Guideline and Cambodian Legal and Policy Framework for Resettlement and Land Acquisition

Comparison and verification between JICA guideline and Cambodian legal and policy framework for resettlement and land acquisition are stated in Table 2.5-5.

Table 2.5-5 Comparison and Verification between JICA Guideline and Cambodian Legal and Policy Framework for Resettlement and Land Acquisition

No.	Item	JICA Guideline	Policy in Cambodia
1	Approval for recipients of compensation	All affected people are approved as candidate recipients of compensation regardless of their status as legal/ illegal dwellers	Compensation for illegal dwellers is not stipulated
2	Support for illegal dwellers	People to be resettled involuntarily and people whose means of livelihood will be hindered or lost should be sufficiently compensated and supported by the project proponents in appropriate time.	Compensation for illegal dwellers is not stipulated
3	Support system for socially vulnerable groups	Socially vulnerable groups tend to be exposed to environmental and social impacts. In addition, they have limited access to a process of decision making. Thus, it is necessary to give appropriate consideration to them.	Sub-Decree on Social land concession (article 3) provides land to poor people
4	Consideration on living standards and income opportunities of affected people	Living standards and income opportunities of affected people should be improved or at least restored to pre-project levels	There are no policies to support relocation or to give job training /opportunities to restore the livelihoods.
5	Enhancement of public participation in planning and implementation of resettlement plans	Appropriate participation by the affected people and their communities should be promoted in planning, implementation and monitoring of involuntary resettlement plans and measures taken against the loss of their means of livelihood	Expropriation Law (article 16) stipulates public participation.
6	Grievance redress mechanism	Grievance redress system must be formulated and must function appropriately	Grievance redress system is stipulated in the expropriation law (article 14,18)
7	Compensation rate	Replacement cost should be applied.	Expropriation Law stipulates fair and just compensation for any construction, rehabilitation, or public physical infrastructure expansion (article1,22-29)

Source: Survey Team

2.6. Current PPP in Cambodia

Infrastructure development in Cambodia generally relies on concessions to the private sector and bilateral and multilateral assistance. In order to implement business and operation, one of the prioritized policies in the National Development Plan is to increase private sector foreign investment by improvement of the environment for private sector involvement under the slogan of environmental improvement of policy implementation and collaborative development.

Following this policy, the NSDP has established an action plan including facilitation of the PPP environment, encouragement of active investments, and collaboration between public and private sectors in maritime and port development sectors abreast of the promotion of human resources and educational development. At present, the related agency has to apply for the PPP scheme to its supervising authority and the Council for the Development of Cambodia (CDC) for approval.

In the case of the development of SEZ, the CDC and Ministry of Commerce promotes legislation and improvement of regulations for efficient operation of SEZ, PPP encouragement regarding related infrastructure and regional revitalization. The CDC and Ministry of Commerce also advocate to develop and to operate the Phnom Penh New Port SEZ by PPAP as a PPP scheme.

Prior to the SEZ development, an SEZ developer is required to create a detailed development plan along with a pre-feasibility study for approval complying with the Sub-Decree No.148 regarding SEZ. The procedures to obtain relevant permits and licenses for the SEZ are shown in Table 2.5-3.

Notwithstanding the above, the GOC reserves the right to repeal the permit from the applicant, providing the applicant does not develop land worth more than 30% of the total investment for the development within a year of the issuance of the final Certificate of Registration.

PPAP is a state owned company under the umbrella of the MEF for its finance and MPWT for technical and operational management. It is necessary to have close communication and opinion exchanges with these two authorities. The authorities have recognized the importance of privatization for the port operation in order to strengthen the competitiveness in the future. However, the authorities take a careful position regarding the port privatization due to the port operation providing major national revenue. On the other hand, MEF actively encourages induction of private investment and the power and water supply businesses are particularly experienced in applying such investment methods under the Law on Concessions.

In the case of the concession for infrastructure development, the GOC recently has suspended the concessions while awaiting improvement of the following matters of the private investors.

i) Tendering procedure and concession agreement

ii) Replacement of residents' land that has been acquired

iii) Resale of the concession

iv) Restraint for the commencement of the development and its period

v) Tariff determination

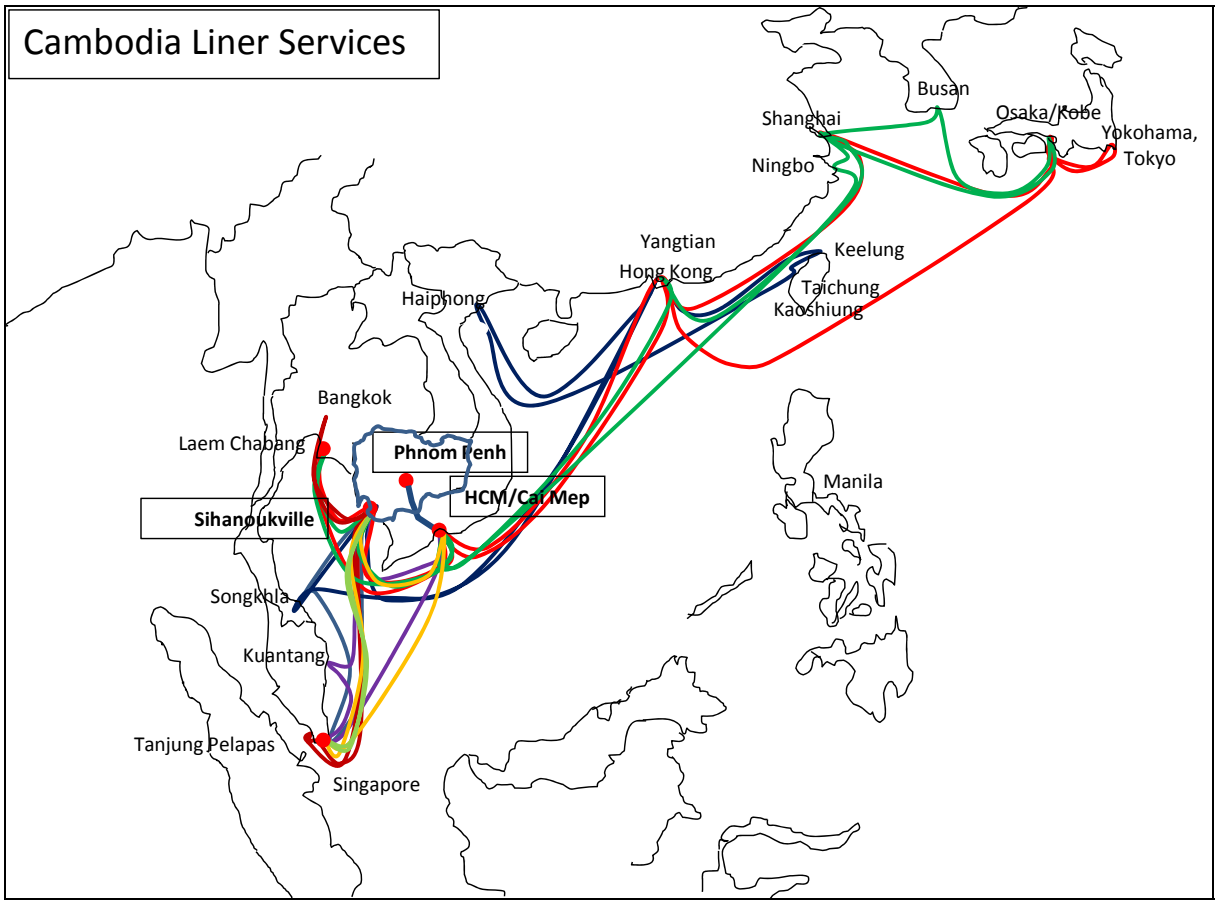
2.7. International and Regional Cargo Transportation

2.7.1 International Maritime Transportation around Cambodia

International liner services are calling at Sihanoukville Port, but services are limited to ASEAN and East Asian ports as shown in Figure 2.7-1. Directly linked ports are Singapore, Tanjung Pelapas, Hong Kong, Ho Chi Minh, Cai Mep, Laem Chabang, Songkhla, Kuantang, Kobe, Osaka, Tokyo, Yokohama, Shanghai, Busan, Ningbo, and Yangtian. Singapore Port plays the role of a hub port which connects Sihanoukville Port to major trunk services to Europe and North America.

Phnom Penh Port is a river port and container service is limited to Ho Chi Minh and Cai Mep. Vessels deployed are barge type container vessels with a capacity of 120 TEUs or less. All containers are transshipped at HCM or Cai Mep Port and carried to final destinations. Due to the availability of truck liner services from Cai Mep Port, export containers from Phnom Penh Port are destined for North America and East Asian countries. Containers to Europe are mainly carried through Sihanoukville Port.

Shipping companies serving at Phnom Penh Port are Sovereign, GEMADEPT, and New Port Cypress (Ben Line Agencies) as shown in Table 2.8-1. Other shipping companies suspended services to Phnom Penh Port as of October 2012. GEMADEPT has the largest share of 66.7% followed by Sovereign of 22.1% and New Port Cypress of 11.3%. Liner shipping loops from/to Sihanoukville port are shown in Figure 2.7-1 and their details are as shown in Table 2.7-2.



Source: Survey Team

Figure 2.7-1 Liner Service Loops from Sihanoukville Port

Table 2.7-1 Shipping companies serving Phnom Penh Port (2012)

Shipping Companies	Liner Service	Share in 2011
SOVEREIGN	☑	22.1%
GEMADEPT	☑	66.5%
New Port Cypress	☑	11.3%
China Shipping	-	-
Song Dao	-	-
Hai Minh	-	-

Source: PPAP

Table 2.7-2 Liner shipping services from Sihanoukville Port (2012)

Lines	Calling Schedules	Rotation Ports
RCL (3 calls/week)	Wed. 08:00-Thu.16:00 Thu. 14:00-Fri. 22:00 Fri. 20:00-Sat. 23:59	SIN-SHV-SGZ-SIN HKG-SHV-SGZ-HKG-(HPH-TXG/KEL) KUN-SHV-SGZ-SIN-KUN
MAERSK LINE (2 calls/week)	Thu. 08:00-Fri. 20:00 Fri. 22:00-Sun. 00.01	SGN-SHV-LZP-SGN-HKG-OSA-TYO-YOK-KOB-SGH-YAT-SGN SIN-SHV-TPP-SIN
SITC (BEN LINE) (1 call/week)	Sun. 09:00 -23:00	HCM-SHV-LZP-HCM-NBO-SGH-OSA-KOB-BUS-SGH-HGK-HCM
ITL (ACL) (1 call/week)	Sat. 06:00 -Sun. 08:00	SGZ-SHV-SIN-SGZ
APL (1 call/week)	Fri. 08:00 -Sun. 06:00	SIN-SHV-SIN
COTS (2 calls/month)	irregular	BKK-S HV-BKK (LZP)

Remarks: BKK = Bangkok, Thailand	SGH =Shanghai, China
BUS =Busan, Korea	SGN =Saigon, Vietnam
HKG =Hong Kong	SGZ =Songkhla, Thailand
HPH = Hai Phong, Vietnam	SHV = Sihanoukville, Cambodia
KAO =Kaoshiung, Taiwan	SIN = Singapore
KEL =Keelung, Taiwan	TPP =Tanjung Pelapas, Malaysia
KOB = Kobe, Japan	TYO =Tokyo, Japan
KUN =Kuantan, Malaysia	TXG =Taichung, Taiwan
LZP =Leam Chabang, Thailand	YAT =Yantian, China
NBO =Ningbo, China	YOK = Yokohama, Japan
OSA =Osaka, Japan	

Source: PAS Brochure 2012

2.7.2 Demarcation between Mekong River Transport and Land Transport

In addition to the maritime transportation through Sihanoukville Port, transship transportation via Phnom Penh Port and HCM/Cai Mep Port is emerging after the opening of Cai Mep Thi Vai Port in South Vietnam in 2009. Land transportation is also emerging due to the development of the "South Corridor" from Ho Chi Min to Bangkok. The gates of the South Corridor are Bavet on the Vietnam border and Poipet on the Thai Border.

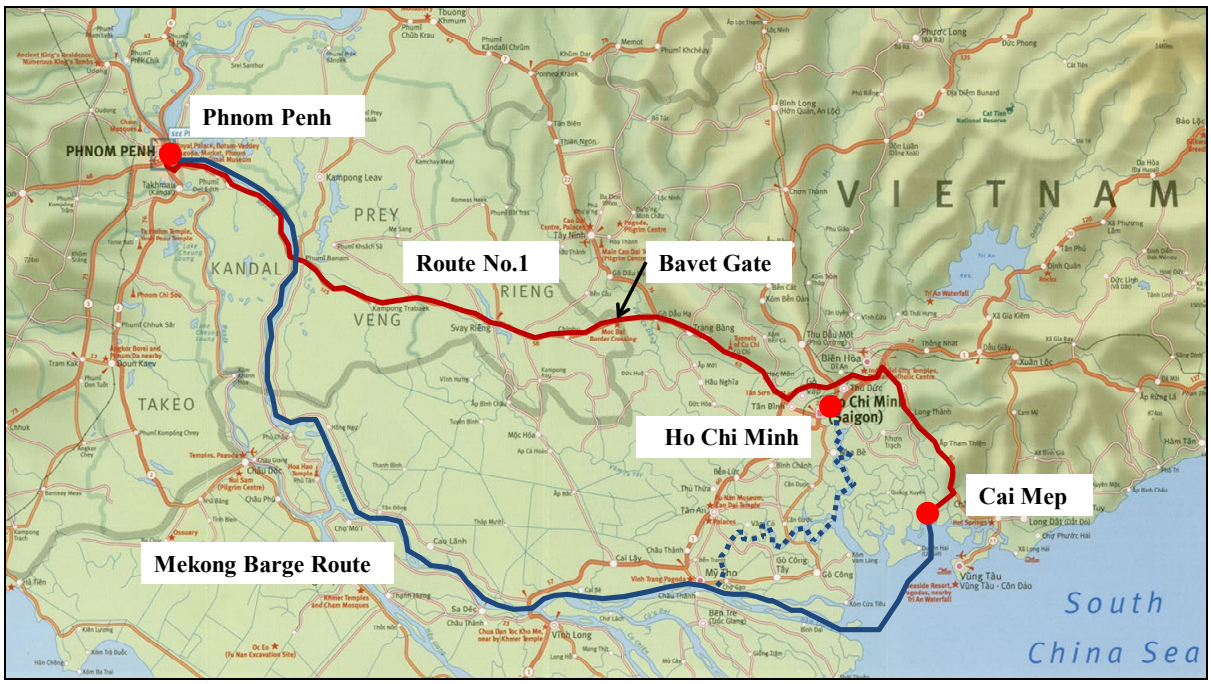
Direct land transportation to Cambodia from Vietnam and Thailand is increasing due to bilateral agreements on through land transport. The quota, the sum of the through traffic of buses and trucks, is agreed between neighbouring counties. It was 300 units between Cambodia and Vietnam as of 2012, and each country can allocate its quota to transport companies by its own decision. The competent authority of each country is allowed to issue the certificate for through traffic up to the quota and submit the list of certified buses and trucks to the other party.

The quota of through traffic between Cambodia and Thailand was 40 as of 2012. Both Vietnam and Thailand tend to allocate their quota to buses due to demand for tourism, but Cambodia mainly allocates its quota to trucks. Through traffic between Cambodia and Thailand is limited to small numbers as the quota is very small. Trucking companies indicate that it is difficult to operate services with a small quota of 2-3 trucks for one company, and request the authority to increase the quota. The quota between Cambodia and Vietnam has now reached a satisfactory level for the business of trucking companies. It is planned to increase the quota from 300 to 500 in the near future.

Vietnam has developed a new deep sea port located in Cai Mep Thi Vai area, Vung Tau province, 90 km south east of Ho Chi Minh City, and the first terminal of the port entered into operation in 2009. Trunk liner services to North America started calling at the port in 2009 and container cargo to North America is gradually shifting from Sihanoukville Port to Cai Mep Port. However, Sihanoukville Port has an advantage in providing services via Singapore, which is the biggest hub port in ASEAN and provides frequent services to North America and has enough space for every user. In this sense, Phnom Penh Port and Sihanoukville port share the export transportation to North America and co-exist together in the export container transport market.

In the import container transport market, Sihanoukville port is preferred over Phnom Penh Port due to origins of import cargoes and contents of import cargoes. Therefore, a cargo shift from Sihanoukville Port to Phnom Penh Port hasn't progressed much in terms of container import. Cargo statistics of Sihanoukville Port show that the import of laden containers increased by 13.8% in 2012 and the export of laden containers decreased by 0.78%, which indicated that container export has shifted to Phnom Penh Port in 2012, but container import remained the same as in the past.

Transportation routes from Ho Chi Minh Port and Cai Mep Port to Phnom Penh are shown in Figure 2.7-2, in which road distance from Phnom Penh to Ho Chi Minh is about 240 km, and to Cai Mep is about 330 km. The Mekong river route has a distance of 380 km from Phnom Penh to Ho Chi Minh and takes 36 hours, and the distance to Cai Mep Port is about 355 km. Distances from Phnom Penh to Cai Mep Port by land and river differ by only 20 km, but the travel time may differ by a factor of three.



Source: Survey Team

Figure 2.7-2 Routes from HCM Port and Cai Mep Port

Following the increase of quota of through transportation between Vietnam and Cambodia, the number of trucks through Bavet border is rapidly increasing. In particular, the number of import containers through Bavet has increased by 3.4 times from 2009 to 2011. The number of container trucks which transported import containers to Bavet area was 4,773 in 2011, and those which passed through the gate with an import container to Phnom Penh area was 15,243 in 2011. Non-container trucks which passed through the gate were 4,135 in 2011, all of which were destined for the SEZ or industrial areas near the Bavet border. Factories within 20 km of the Bavet gate are allowed to receive trucks directly from Vietnam, which are excluded from the quota of the through transportation agreement. A licensed truck for direct transportation sometimes transfers a container to another truck due to operational reasons. Therefore, the number of trucks which transported containers directly from HCM to PP is not available.

Compared with import container trucks, the number of export container trucks is considerably smaller as shown in Table 2.7-3 due to the fact that trucks carrying empty containers or no cargo are not counted in the statistics. The number of trucks with a laden export container in 2011 was 4,250, in which only 951 trucks were from Phnom Penh area. A trucking company employee explained that nearly 95% of container trucks from Phnom Penh to HCM/Cai Mep carry empty containers.

Supposing that Neak Loeung Bridge will be completed by 2015 and the ferry service will become unnecessary for truck transportation, cross border road transportation will have a much bigger share in container transportation between HCM/Cai Mep and Phnom Penh. However, this will not be applied to export containers as shippers prefer to use river barges rather than trucks. Fare of the import trucks is higher than the fare of export trucks in the case of land transportation, while the fare of export barge transport is higher than the fare of import barge in the case of river transport.

In this connection, import of containers through Bavet border will be encouraged and the share of cross border land transport will increase further. However, exporters of containers will prefer to use barge transport due to the fact that export containers are shipped and carried in a large lot to meet the cut off time of a mother ship at HCM Port or Cai Mep Port. The share of cross border land transport may remain at the same level or increase gradually. Barge transport will play a major role in exporting containers via HCM/Cai Mep Port.

Table 2.7-3 Cross Boarder Transport through Bavet Gate

		2007	2008	2009	2010	2011
Import	Import Value (USD)	94,862,989	74,405,246	184,526,610	248,628,629	395,359,564
	Weight (Ton)	37,133	35,288	58,492	80,502	108,997
	Container Trucks to Bavet Area	2,097	2,856	2,200	3,085	4,773
	Non Container Trucks to Bavet Area	1,314	1,613	2,957	3,376	4,135
	Container Trucks to PP Area	-	1,478	3,673	10,974	15,243
	Bus	5,018	7,716	9,825	14,658	17,996
Export	Export Value (USD)	74,532,421	84,204,754	139,408,340	149,112,568	221,860,556
	Weight (Ton)	14,524	14,668	22,289	20,376	22,715
	Container Trucks from Bavet Area	1,923	2,198	1,901	2,591	3,299
	Non Container Trucks from Bavet Area	213	79	411	532	596
	Container Trucks from PP Area	-	-	161	736	951
	Bus	5,015	7,714	9,868	14,608	18,001

Source: General Department of Customs and Excise, 2012