

Environmental and Social Considerations in Detailed Planning Survey
(Technical Cooperation for Development Planning)

1. Full title of the Project

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

2. Type of the study

Master Plan Study

3. Categorization and its reason

The Project is classified as 'Category A' because it falls into the port sector and is likely to have significant adverse impact due to its characteristic under the JICA guidelines for environmental and social considerations (April 2004)

4. Agency responsible for the implementation of the project

Sihanoukville Autonomous Port (PAS), Ministry of Public Works and Transport (MPWT)

5. Outline of the Project

(1) Objectives of the Project

- 1) To strengthen competitiveness of Sihanoukville Port
- 2) To develop the Master Plan of Sihanoukville Port

(2) Study Area

The study area is mainly around Sihanoukville Port. In addition, in order to conduct the demand forecast, the study area will entail the whole Cambodia and surrounding countries.

(3) Scope of the Project

In order to achieve the objectives mentioned above, the Scope of Work for the Project shall cover the following items:

- 1) Analysis of the present status
 - a. Review of the past documents and the relevant studies
 - b. Analysis on the trend of socio-economic situation and trade environment
 - c. Survey on the port hinterland
 - d. Survey on the surrounding ports
 - e. Survey on the existing transport industries and service providers including the shipping companies, forwarders and cargo handling companies
 - f. Analysis on the maritime trend including surrounding countries (trunk line/feeder line)
 - g. Analysis on competitiveness of Sihanoukville Port

- 2) Development of strategy to strengthen competitiveness of Sihanoukville Port
 - a. Development of strategy on port service improvement
 - b. Analysis on port management and financial strategy
 - c. Analysis on the organizational strategy
- 3) Development of the Master Plan for Sihanoukville Port

6. Description of the project site

1) Natural Environment

① Climate

The climate of Sihanoukville is tropical monsoon type. The rainy season is from May to November and the period from December to April is the dry season. The tropical wind blows from the southwest during the rainy season and from the northwest during the dry season. According to the record of the meteorological station of Sihanoukville, strong wind has been rarely observed. Wind speed is relatively high when wind blows from the northwest that ranged between 3.1m/s to 4.5m/s. The highest average maximum temperature recorded was 32.7°C in April, while the lowest was 23.7°C recorded in September. (*from 2003 to 2008*)

② Flora and Fauna

There is neither mangrove forest nor coral reef around Sihanoukville Port according to the final report on “The Study on National Integrated Strategy of Coastal Area and Master Plan of Sihanouk-ville for Sustainable Development” (2010, JICA), and coral reefs are found around the islands of Koh Tang (approx. 9 km off from the port) and Kaoh Rung (approx. 19km).

There is no other protected area around the port except for Ream National Park, designated by Ministry of Environment (MOE), located approx. 15 km to the south of the port.

③ Resources for Tourism

In Sihanoukville there are many white beaches like Depot Beach, Victory Beach, Hawaii Beach, Independent Beach, Sokha Beach, Serendipity Beach, Chheuteal Beach and Otres Beach. A lot of local people with family as well as foreign tourists enjoy resting on the beach and swimming in the sea for holidays.

2) Socio-economic Environment

① Population

Population in Sihanoukville is approximately 235,190 with a population density of about 271/km² (2006). The Study area will cover Commune 1:Muoy (population: 14,349) and Commune 3: Bei (population: 13,993). Survey of population and household should be carried out for the fishing village neighboring the port in the Study in order to assess impact on the villagers.

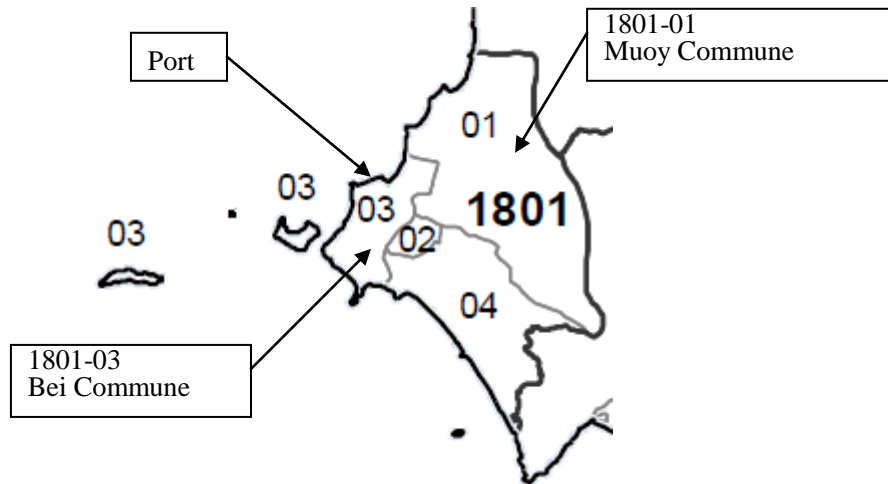


Figure 1 Communes related to the Port

(Source: JICA Study Team)

② Economy

The industrial structure in Sihanoukville is as follows;

- Agricultural Works = 50.8%,
- Industrial Works = 11.3%
- Services = 37.9%.

The standard of living of Sihanoukville people is reported to be of the following ratios as shown below;

- High Level = 10%,
- Medium Level = 50%
- Low Level = 40%.

(Source: *Sihanouk Port Urgent Development for Oil Supply Base and Multipurpose Terminal, 2008*)

Community Fisheries Management System was established based on Law on Fisheries in 2006, to improve the current living standard by using and processing fisheries resources sustainably to contribute to economic and social improvement and poverty alleviation. All Cambodian citizens have the rights to form Community Fisheries in their own areas to take part in the sustainable management of fishery resources. Around Sihanoukville, however, fisheries rights are not established because the Management Plan and Area Agreement of Community Fisheries have not been submitted to Fisheries Administration of Ministry of Agriculture, Forestry and Fisheries(MAFF).

③ Coastal Zone Development Plan

Coastal zone development plan in Sihanoukville is as shown in Figure 2. The area along the

coastal line north to the port is designated as the zone to be used for development of port facility.

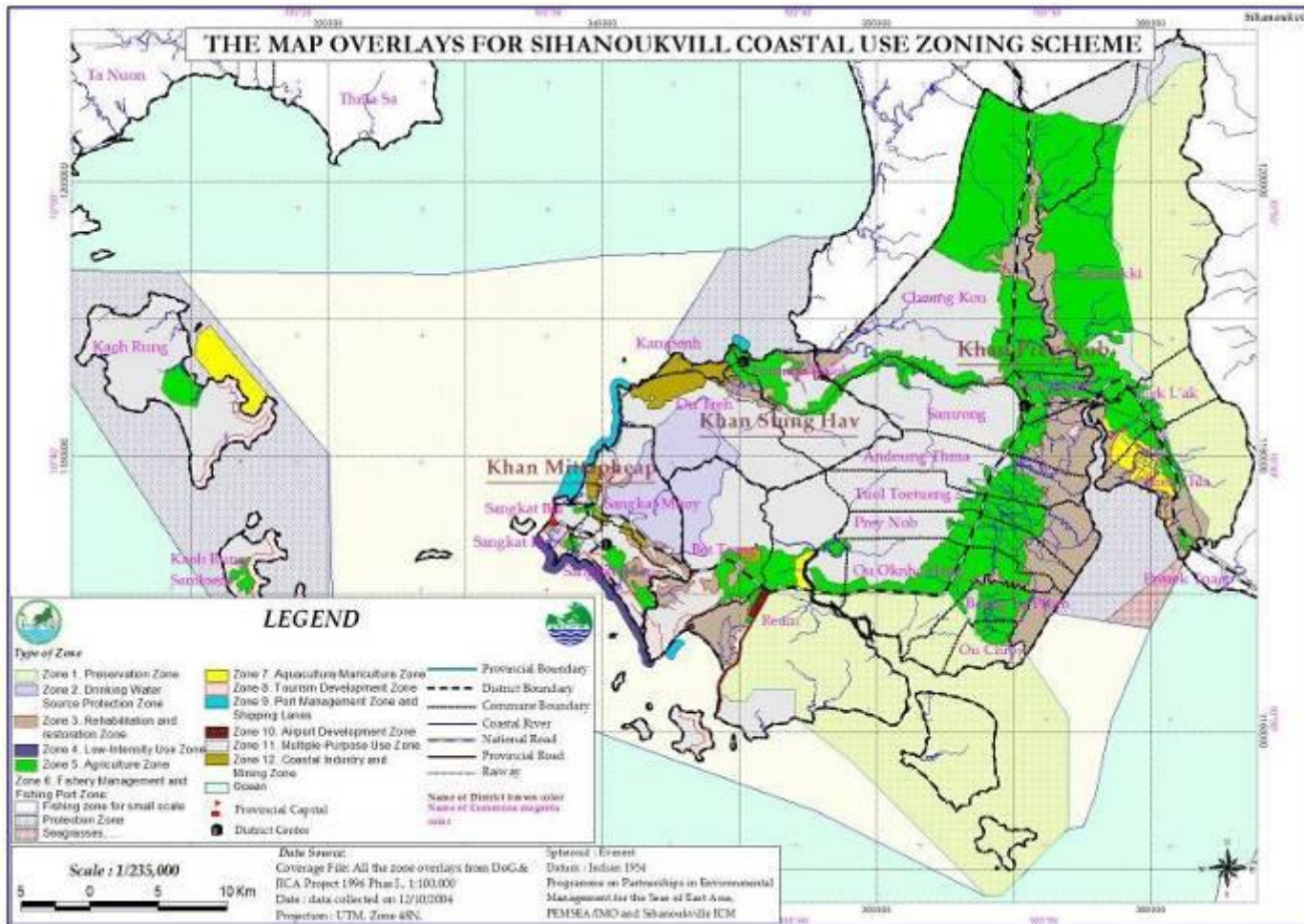


Figure 2 Development Plan around Sihanoukville Port

3) Pollution

① Air quality

The result of air quality measured for 24 hours at Sihanoukville Port is as shown in Table 1. All data do not exceed environmental standard because the space around survey area is open without any high buildings in the port.

Table 1 Air Quality in the Port Area (2007)

Items	Measured result (mg/m ³)	Environmental Standard (mg/m ³)
CO	<10	(8-hours-average) 20
NO ₂	0.012	0.1
SO ₂	0.004	0.3
TSP	0.02	0.33

(Source : Sihanouk Port Urgent Development for Oil Supply Base and Multipurpose Terminal, 2008)

② Water Quality

The result of water quality measured within the Breakwaters of the port is as shown in Table 2 and the sampling point was shown in Figure 3. The water is not seriously polluted.

Table 2 Water Quality within Breakwaters (1996/2007)

Item	Unit	St1	St2	St3	St4	Sp1	Sp2	Sp3
pH		6.6	6.6	6.6	6.6	8.4	8.5	8.4
SS	mg/l	40	40	50	40	1	3	4
COD	mg/l	0.5	0.5	0.6	<0.5	<0.5	0.7	1.5
DO	mg/l	4.7	5.6	5.0	5.8	7.3	8.5	7.9
Oil&Grease	mg/l	6	11	10	ND	0	<1	<1
Coliform	MPN/100ml	40	2	8	6	0	0	0
T-N	mg/l	0.66	1.00	0.65	0.68			
T-P	mg/l	0.030	ND	ND	ND	<0.003	<0.003	0.016
T-Hg	mg/l	0.004	0.002	0.003	ND			
R-Hg	mg/l	0.002	ND	0.002	ND			
Cd	mg/l	0.002	ND	0.002	ND			
CN	mg/l	0.1	<0.1	0.1	<0.1			
Pb	mg/l	0.27	0.19	0.14	0.22			
Cr	mg/l	<0.1	<0.1	ND	<0.1			
As	mg/l	<0.005	<0.005	ND	ND			
PCB	mg/l	ND	ND	ND	ND			

- St shows the point within breakwaters in 1996 (JICA)
- Sp2 & Sp3 show the points within breakwaters and Sp1 shows the point outside breakwater in 2007 (MOE)

(Source: JICA Study Team)

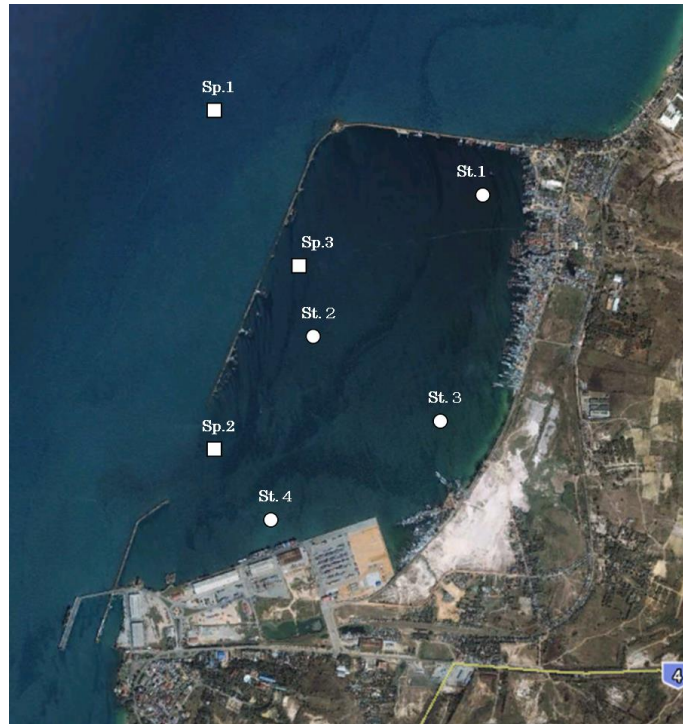


Figure 3 Sampling Point of Water Quality Survey

* St1, 2, 3 & 4: Sampling point of sea water in 1996

* Sp.1,2&3; Sampling point of sea water in 2007

(Source: The Study on the Mater Planning and Feasibility Study of the Sihanoukville Port)

③ Noise

Judging from the result of noise measured for 24 hours at Sihanoukville Port, average noise levels are 49.2~56.2dB(A) (Standard: 70dB(A)) during daytime, 48.9~54.4dB(a)(Standard: 65dB(a)) during evening and 45.4~49.8dB(A) (Standard: 50dB(A)) at night. All data do not exceed the standard.

(Source: *Sihanouk Port Urgent Development for Oil Supply Base and Multipurpose Terminal, 2008*)

7. Legal Framework of Environmental and Social Considerations

(1) Background

Laws, Decrees, Sub-Decrees and regulations for environmental and social considerations have been published in Cambodia, as shown below.

- Law on Environmental Protection and Natural Resource Management, 1997
- Sub-Decree on Environmental Impact Assessment Process, 1999
- Prakas on General Guideline for preparing IEIA and full-scale EIA Report, 2009
- Sub-Decree on Air Pollution Control and Noise Disturbance, 2000

- Sub-Decree on Water Pollution Control, 1999
- Law on Water Resources Management of the Kingdom of Cambodia, 2007
- Sub-Decree on Solid Waste Management, 1999
- Law on Land Traffic, 2006
- Law on Forestry, 2002
- Law on Fisheries, 2006
- Land Law, 2001
- Sub-Decree on Community Forestry Management, 2003
- Sub-Decree on Community Fisheries Management
- Prakas on Guidelines for Community Fisheries
- Expropriation Law, 2010

*Prakas is a ministerial decree.

(2) EIA and SEA

The kinds of project for which proponents shall conduct EIA (Environmental Impact Assessment) are prescribed in Annex of “Sub-Decree on Environmental Impact Assessment Process, 1999”. EIA shall be conducted for “all sizes of port construction” regardless of scale of the project according to the Sub-Decree. Proponents shall usually conduct EIA in accordance with EIA Guideline in Cambodia. However, they can conduct Initial Environmental Impact Assessment (IEIA) instead of EIA and submit it to Ministry of Environment (MOE), in case that the project may not give serious impact on environment. If serious impact is expected after review of IEIA by MOE, a full-scale EIA is required occasionally.

The report of Pre-F/S or F/S shall be submitted together with EIA Report, and proponents need not to carry out EIA at the stage of Master Plan and there is no system of SEA (Strategic Environmental Assessment) in Cambodia at present. However, according to the officials of MOE, it has experiences of SEA for Master Plans of Development of Tourism and Land Management funded by ADB.

(3) Criteria

In order to assess environmental impact given by a project implementation, environmental standards or criteria are necessary. In Cambodia the environmental standards of air quality, water quality and noise have been established.

(4) Land Acquisition and Resettlement

① Basic Policy

In Cambodia a proponent has to prepare budget for compensation of resettlement of local people even if they have been illegally living in the project site, according to the opinion of concerned parties of Preah Sihanouk Provincial Government, MOE, Phnom Penh Autonomous Port

(PPAP) and PAS, This is not legislative system, but basic policy which has been put into effect in Cambodia. The project site for Sihanoukville Port SEZ, now under construction, was designated by Sub-Decree in 1960s as the state land for port facility and it was illegal for local people to live within the project site area. However, PAS prepared a new land for resettlement and paid compensation to them.

Since “Law on Expropriation” became effective on December 28, 2009, smooth land acquisition will be conducted for public works, while resettlement procedure for illegal inhabitants is not prescribed in the law. On the other hand, “Circular on Settlement of the Illegal Construction on the State Land in Cities and Urban Areas” put into force on May 31st, 2010 for illegal issues in urban area. However, land acquisition and resettlement for illegal habitants will be conducted on the basis of traditional policy for some time.

② Case of Sihanoukville Port SEZ

It is reported, in the “Environmental Impact Assessment Report for Sihanoukville Port SEZ Development Project, November 2007”, that resettlement was planned for construction of a new access road for SEZ. It turned up that 14 households among 20 households living in the project site purchased the land and built their houses while the remaining 6 households occupied the land. And PAS issued land ownership certificate to 8 households among 14 households and gave approval for them to live there although the certificate was not authorized as any legal ownership document. PAS also issued the certificate even to 3 households among 6 households who had not paid money for the land. Eventually PAS issued land ownership certificate to 11 households among 20 households who should have resettled, while the remaining 9 households have no certificate from any institute. It proves in practice that it is not easy to judge whether they are living illegally or not, and it is necessary to take a cautious approach to development project accompanied by resettlement in Cambodia.

(5) Stakeholder Meeting and Information Disclosure

It is promoted to open the information of a project to stakeholders in the early stages because public participation is important for smooth implementation of the project, in “Sub-decree on Environmental Impact Assessment Process 1999”. However, it is said that there are many projects laid down in Cambodia because the land price of project site went up sharply after project information was disclosed in the early stage. According to information from PPAP, the land price of a new port could be controlled by means of nondisclosure of the location of project site even to the Departments concerned with the project. Therefore, in Cambodia, when implementing the Master Plan Study, several alternatives should be prepared before information disclosure so that project site cannot be identified in the early stages.

8. Provisional Scoping

The result of provisional scoping and mitigation measures are as shown in Table 3 and twelve items were selected to be assessed. The scoping will be revised through public consultations.

- i) Involuntary Resettlement
- ii) Local economy such as employment and livelihood, etc.
- iii) Water Usage
- iv) Infectious diseases such as HIV/AIDS
- v) Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)
- vi) Flora, Fauna and Biodiversity
- vii) Air Pollution
- viii) Water Pollution
- ix) Waste
- x) Noise & Vibration
- xi) Bottom sediment
- xii) Accidents

9. Alternatives to the project activities including 'without project' option

While PAS proposes four alternatives for port development site at present, strengthening of competitiveness of Sihanoukville Port shall be studied in large part, including one alternative of no activity.

10. Result of the consultation with recipient government on environmental and social consideration including roles and responsibilities

The proponent of PAS is responsible for environmental and social considerations. Although conduct of EIA is not necessary, Strategic Environmental Assessment should be carried out for the Master Plan with support of JICA Study Team.

Table 3 Result of Provisional Scoping

NO	Impacts	Rating	Description	Mitigation Measures
Social Environment				
1	Involuntary resettlement	(A)	A lot of involuntary resettlement may be expected depending the alternative project site	Involuntary resettlement should be avoided or minimized.
2	Local economy such as employment and livelihood, etc.	B	Involuntary resettlement may give some impact on local economy and livelihood.	Involuntary resettlement should be avoided or minimized.
3	Land use and utilization of local resources	C	The project site for Master Plan belongs to the project owner, Port Authority of Sihanoukville.	
4	Social institutions such as social infrastructure and local decision-making institutions	C	The project gives little impact on social infrastructure.	
5	Existing social infrastructures and services	C	The project gives little impact on existing social infrastructure.	
6	The poor, indigenous and ethnic people	C	The project has little relation to the poor, indigenous and ethnic people.	
7	Misdistribution of benefit and damage	C	The project gives little impact on misdistribution of benefit and damage because operation of the port brings fairly benefits to local people.	
8	Local conflicts of interests	C	The project gives little impact on local conflict of interests.	
9	Water Usage	B	Some impact would be given on fishing activities due to construction of new facility although it is not legal to be engaged in fishery within the port area or to pass through the area by fishing boat. Impact during construction of new facility in sea area may not be negligible.	Social considerations should be taken into on fishing activities in formulation of Master Plan of the port.
10	Gender	C	The project gives little impact on gender.	
11	Children's right	C	The project gives little impact on children's right.	
12	Cultural heritage	C	There is no cultural heritage in the project site.	
13	Infectious diseases such as HIV/AIDS	B	At present HIV/AIDS protection programme has been implemented in other project.	Management and monitoring plan of health care and education of workers should be recommended.
14	Working Conditions	C	Working condition will seldom be changed after expansion of the port.	
Natural Environment				
15	Topography and Geographical features	C	Topography and Geographical feature is not changed much	
16	Hydrological Situation	C	Development of the port gives little impact on hydrological situation because the project site is located downstream of catchment area.	
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)	B	The project may give a little impact on the surrounding area although development of the port is conducted within the existing port area.	Prior to formulation of Master Plan, field survey should be conducted to grasp the current situation and serious impact should be avoided.

NO	Impacts	Rating	Description	Mitigation Measures
Natural Environment				
18	Flora, Fauna and Biodiversity	B	Development of the port gives some impact on natural condition in sea area although there is rarely flora, fauna and biodiversity around candidate site..	Prior to formulation of Master Plan, field survey should be conducted to grasp the current situation and serious impact should be avoided.
19	Landscape	C	There is no protected landscape designated by MOE. The landscape will be almost familiar sight to the local people although the landscape of the port will be changed a little due to appearance of a new facility.	
20	Protected Area	C	There is no protected area designated by MOE/DOE near the project site.	
21	Management of Abandoned Sites	C	Abandoned sites will give little impact on surrounding area because human activities concered with operation of the port facility terminates..	
22	Global Warming	C	Development of the port gives little impact on global warming.	
Pollution				
23	Air Pollution	B	Construction equipment and vehicles will emit air pollutant during construction. Emission gas will increase in proportion to increase of number of ships and trucks.	Recommendation should be conducted in Master Plan to prepare Environmental Management Plan and Environmental Monitoring Plan at the phase of Feasibility Study.
24	Water Pollution	B	Discharge of wastewater will increase due to increase of people concerned with port activity	A new wastewater treatment system should be planned.
25	Soil Contamination	C	Development of the port gives little impact on soil.	
26	Waste	B	Waste will increase in proportion to expansion of port facility.	A new contract should be concluded between the proponent and solid waste management company
27	Noise and Vibration	B	Noise and vibration will increase in proportion to increase of transportation.	Recommendation should be conducted in Master Plan to prepare Environmental Management Plan and Environmental Monitoring Plan at the phase of Feasibility Study.
28	Ground Subsidence	C	Groundwater is not utilized for the project..	
29	Offensive Odor	C	No cause of offensive odor	
30	Bottom sediment	B	New facility may give some impact on bottom sediment.	Prior to formulation of Master Plan, field survey should be conducted to grasp the current situation and recommendation should be conducted in Master Plan to prepare Environmental Management Plan and Environmental Monitoring Plan at the phase of Feasibili
31	Accidents	B	Traffic accident may possibly increase due to frequent transportation.	Recommendation should be conducted in Master Plan to prepare Environmental Management Plan and Environmental Monitoring Plan at the phase of Feasibility Study.

Rating:

- A: Serious impact is expected.
- B: Some impact is expected.
- C: Little impact is expected.
- (A) Unknown, but possibly serious

11. Terms of Reference for Environmental and Social Considerations

1. Project Summary

1.1 Project Title

The Project for the Study on Strengthening Competitiveness and Development of Sihanoukville Port in Kingdom of Cambodia

1.2 The Type of the Study

Master Plan Study

1.3 Project Description

Information of background, location, type/size and activity of the project as stated in Master Plan should be described.

(1) Objectives of the Project

- ① To strengthen competitiveness of Sihanoukville Port
- ② To develop the Master Plan of Sihanoukville Port

(2) Study Area

The study area is mainly around Sihanoukville Port. In addition, in order to conduct the demand forecast, the study area will entail the whole Cambodia and surrounding countries.

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 - Analysis on competitiveness of Sihanoukville Port
- ② Development of strategy to strengthen competitiveness of Sihanoukville Port
 - Development of strategy on port service improvement
 - Analysis on port management and financial strategy
 - Analysis on the organizational strategy
- ③ Development of the Master Plan for Sihanoukville Port

2. Result of Screening

The Project is classified as 'Category A' because it falls into the port sector and is likely to have significant adverse impact due to its characteristic under the JICA guidelines for environmental

and social considerations (April 2004).

3. Provisional Scoping

The result of provisional scoping and mitigation measures are as shown in Table 1, and twelve items were selected to be assessed. The scoping will be revised through public consultations.

- i) Involuntary Resettlement
- ii) Local economy such as employment and livelihood, etc.
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- v) Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)
- vi) Flora, Fauna and Biodiversity
- vii) Air Pollution
- viii) Water Pollution
- ix) Waste
- x) Noise & Vibration
- xi) Bottom sediment
- xii) Accidents

4. Baseline Study

1) Involuntary Resettlement

Baseline Social Condition Survey should be conducted by questionnaire method for all fishing villagers in the study area A and on the breakwater shown in Figure 4. The number of households, living condition and precondition for resettlement, etc. should be analyzed.

2) Local economy such as employment and livelihood, etc.

The information of local economy including employment and income should be collected from the existing data.

3) Water Usage

The location of Community fisheries Domain around the port should be clarified on the map.

4) Infectious diseases such as HIV/AIDS

The current situation should be grasped based on the information from Health Department of Preah Sihanouk Province.

5) Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)

Sea's ecosystem and habitat environment of sea plant should be studied, including coral reef by diving and visual observation method in the area No.1 to No.4, shown in Figure 4

6) Flora, Fauna and Biodiversity

Existing flora, fauna and biodiversity on land area along the coast in the area No.3 should be studied by field survey and visual observation method.

7) Air Pollution

The air quality around the port should be studied based on the existing data measured in other

project.

8) Water Pollution

The water quality should be analyzed on the sea water taken at each sampling station NO.1 to NO.4, shown in Figure 4. Analysis should be conducted for seven items of pH, COD, Dissolved Oxygen, Coliform, Oil Content, Total Nitrogen and Total Phosphorus in Ambient Seawater Quality in the Public Area in Annex 4 of Sub-Decree on Water Pollution Control in Cambodia.

9) Waste

The current system of discharge, collection, transportation and final disposal of solid waste generated in the port facility should be studied.

10) Noise & Vibration

Noise and vibration around the port should be studied based on the existing data measured in other project.

11) Bottom sediment

Chemicals should be analyzed on the bottom sediment taken at each sampling station NO.1 to NO.4, shown in Figure 4. Analysis should be conducted for seventeen items of Grease and Oil, Detergents, Phenol, Nitrate, Chlorine, Sulphide, Phosphate, Cyanide, Barium, Arsenic, Tin, Iron, Manganese, Cadmium, Chromium+6, Lead and Mercury, selected from Annex 2 of Sub-Decree on Water Pollution Control in Cambodia.

12) Accidents

Traffic accidents concerned with port activity should be studied based on the information from police in Preah Sihanouk Province.

5. Strategic Environmental Assessment

1) Assessment of Environmental Impact

Environmental impact due to four alternatives to the project activities and 'without project' option should be assessed by each item of impacts shown in Table 2. For example, regarding 'Involuntary Resettlement', a lot of local people in the fishing village shall move to other place in case of alternative 2 and a several houses on the breakwater have to be moved in case of alternative 4, while no resettlement in case of alternative 1&3. The matrix should be filled with A, B and C, after detailed prediction of impact based on the port development plan and the result of baseline study.

2) Strategic Environmental Assessment

The Master Plan shall be assessed strategically based on process of a number of discussions on Master Plan of Port Development, including not only natural conservation strategy, but also social and economic development strategy.

Table 2 Matrix of Impact Assessment by Alternative

No	Impacts	No Project	Alt1	Alt2	Alt3	Alt4
1	Involuntary Resettlement	-	C	A	C	B
2	Local economies, such as employment and livelihood, etc.					
3	Water Usage					
4	Infectious diseases such as HIV/AIDS					
5	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)					
6	Flora, Fauna and Biodiversity					
7	Air Pollution					
8	Water Pollution					
9	Waste					
10	Noise and Vibrations					
11	Bottom sediment					
12	Accidents					

6. Environmental Management Plan

All of mitigation measures introduced to reduce impact given on each environmental item should be recommended for arrangement of environmental management plan.

7. Environmental Monitoring Plan

During construction and operation, all of mitigation measures have to be preserved and monitored to evaluate impact in comparison to criteria and/or environmental standards. The recommendation for environmental monitoring plan should be proposed

8. Preparation of Draft SEA Report

A draft report of SEA is prepared by compilation of all things mentioned above.

9. Public Consultation I & II

The stakeholder meeting will be held twice at the beginning of SEA and after completion of Draft Report of SEA and the opinions from the stakeholder at the meeting will be reflected in the Final Report of SEA.



Figure 4 Survey Sites

① : Sampling Point of Water and Sediment

A: Area of Social Survey