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INTRODUCTION TO MARITIME ADMINISTRATION IN THE KINGDOM OF CAMBODIA

By

DARA CHAN
The Kingdom of Cambodia

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

in

GENERAL MARITIME ADMINISTRATION AND ENVIRONMENT PROTECTION

1997

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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Title of Dissertation: Introduction To Maritime Administration In the Kingdom Of Cambodia

Degree: MSc

The Dissertation is a study of the management systems and strategies of the maritime administration which can be followed and implemented for the future maritime development in Cambodia. It consists of six chapters, each of which relates and connects with the subject.

First of all, an overview of Cambodia is presented by including its historical background, government management system, and the economic status with a potential growth of domestic products, and external trade. A brief look is also taken at the challenge for all modes of transport in Cambodia.

A general description of the marine affairs of Cambodia is also given, consisting of a short history of the Cambodian Maritime Administration, the present maritime activities, and plans for future maritime development. In addition, some parts of the responsibilities of maritime administration, the involvement of regulatory authorities with their mandates are investigated.

The most specific responsibilities for the prevention and protection of the marine environment at present is delegated to the Ministry of Environment, in collaboration with other relevant institutions.
As far as the environment is concerned, all problems and issues that might result from port and shipping activities/development, and other maritime development projects have to be analysed and solved.

An understanding of the environmental concerns regarding maritime development, the scope of work of maritime matters, and the responsibilities of the maritime administrations, and some methods of management systems and strategies is a better way to create an appropriate maritime administration for Cambodia.

Finally, the establishment of a Maritime Administration in the Kingdom of Cambodia is proposed. The proposal consists of a maritime policy and strategy, the responsibilities in the maritime fields, and the organisational structure.
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<th>Description</th>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>BOT</td>
<td>Built, Operate, Transfer (Singapore)</td>
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<tr>
<td>Cambodia</td>
<td>Kingdom of Cambodia</td>
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<tr>
<td>CCG</td>
<td>Cambodian Coast Guard</td>
</tr>
<tr>
<td>CDC</td>
<td>Council for the Development of Cambodia</td>
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<tr>
<td>CDMM</td>
<td>Cambodian Direction of Merchant Marine</td>
</tr>
<tr>
<td>Class</td>
<td>Classification Society (ies)</td>
</tr>
<tr>
<td>CMA</td>
<td>Cambodian Maritime Administration</td>
</tr>
<tr>
<td>CSS</td>
<td>Customs Surveillance Service</td>
</tr>
<tr>
<td>cu.m</td>
<td>cubic meter</td>
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<tr>
<td>DMC</td>
<td>Direction of Maritime Commerce</td>
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<tr>
<td>DMM</td>
<td>Direction of Merchant Marine</td>
</tr>
<tr>
<td>DNV</td>
<td>Det Norske Veritas</td>
</tr>
<tr>
<td>DOF</td>
<td>Department of Fisheries</td>
</tr>
<tr>
<td>DPC</td>
<td>Department of Pollution Control</td>
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<tr>
<td>dwt</td>
<td>dead weight tonne</td>
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<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<tr>
<td>EFTA</td>
<td>European Free Trade Association</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organisation</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GDT</td>
<td>General Direction of Transport</td>
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<td>GIKC</td>
<td>General Information on the Kingdom of Cambodia</td>
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<td>ha</td>
<td>hectare</td>
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<td>IL</td>
<td>Investment Law</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>ILO</td>
<td>International Labour Organisation</td>
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<td>IMO</td>
<td>International Maritime Organisation</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standardisation Organisation</td>
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<tr>
<td>ITU</td>
<td>International Trade Union</td>
</tr>
<tr>
<td>JICA</td>
<td>Japanese International Cooperation Agency</td>
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<tr>
<td>KAMSAB</td>
<td>Kampuchea Shipping and Brokerage</td>
</tr>
<tr>
<td>LEPNRM</td>
<td>Law on Environmental Protection and Natural Resources Management</td>
</tr>
<tr>
<td>LLMUC</td>
<td>Law on Land Management of Urbanisation and Construction</td>
</tr>
<tr>
<td>LMFA</td>
<td>Law for the Management of Fishery Areas</td>
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<tr>
<td>LPMM</td>
<td>Law on Ports and Merchant Marine</td>
</tr>
<tr>
<td>MAFF</td>
<td>Ministry of Agriculture, Forestry and Fisheries</td>
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<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships</td>
</tr>
<tr>
<td>MEF</td>
<td>Ministry of Economics and Finance</td>
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<tr>
<td>MEYS</td>
<td>Ministry of Education, Youths and Sport</td>
</tr>
<tr>
<td>MFA</td>
<td>Ministry of Foreign Affairs</td>
</tr>
<tr>
<td>MIME</td>
<td>Ministry of Industry, Mines and Energy</td>
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<tr>
<td>MMA</td>
<td>Marine Mining Authority</td>
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<tr>
<td>MML</td>
<td>Mines and Mineral Law</td>
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<tr>
<td>MOD</td>
<td>Ministry of Defence</td>
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<tr>
<td>MOE</td>
<td>Ministry of Environment</td>
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<td>MOP</td>
<td>Ministry of Planning</td>
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<tr>
<td>MOT</td>
<td>Ministry of Tourism</td>
</tr>
<tr>
<td>MPWT</td>
<td>Ministry of Public Works and Transport</td>
</tr>
<tr>
<td>MPWTc</td>
<td>Ministry of Public Works and Telecommunications</td>
</tr>
<tr>
<td>MSRA</td>
<td>Maritime Search and Rescue Agency</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NMA</td>
<td>Norwegian Maritime Administration</td>
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<td>NMD</td>
<td>Norwegian Maritime Directorate</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>NOX</td>
<td>Nitrogen Oxide</td>
</tr>
<tr>
<td>NPRD</td>
<td>National Programme for Rehabilitation and Development</td>
</tr>
<tr>
<td>NR</td>
<td>National Route</td>
</tr>
<tr>
<td>PA</td>
<td>Port Authority</td>
</tr>
<tr>
<td>PR</td>
<td>Provincial Route</td>
</tr>
<tr>
<td>RGC</td>
<td>Royal Government of Cambodia</td>
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<tr>
<td>SEAPOL</td>
<td>Southeast Asian Programme in Ocean Law, Policy, and Management</td>
</tr>
<tr>
<td>SMA</td>
<td>Spanish Maritime Administration</td>
</tr>
<tr>
<td>SFT</td>
<td>State Pollution Control Authority in Norway</td>
</tr>
<tr>
<td>SOLAS</td>
<td>International Convention for the Safety of Life at Sea</td>
</tr>
<tr>
<td>SOX</td>
<td>Sulphuric Oxide</td>
</tr>
<tr>
<td>sq.km</td>
<td>Square Kilometer</td>
</tr>
<tr>
<td>TEU</td>
<td>Twenty Feet Equivalent Unit</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNCLOS</td>
<td>United Nations Conference on the Law of the Sea</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organisation</td>
</tr>
<tr>
<td>UNTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
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INTRODUCTION

Cambodia, one of the Southeast Asian countries, has comfortable weather conditions, and enriches in most sensitive natural resources, among which there are marine fish, coral reefs, seagrass, seabed minerals/oil and gas deposits, and other aquatic resources.

Having recently passed through more than two decades of civil war, particularly during the Khmer Rouge regime, Cambodia’s socio-economic branches, infrastructure, and such natural resources were compromised.

Health, education, production and manufacturing, transportation, foreign relationship and trades, and other aspects of the national economy were seemingly rehabilitated in the early 1980s. The rehabilitation, however, was very slow due to the Vietnamese invasion, economic sanctions, and political instability in some isolated areas.

Rehabilitation and development started again in 1993 after the UN-supervised elections. Since then, all the necessary socio-economic sectors which are targeted for rehabilitation and development, have been put in the national programme. In this programme, the inclusion of marine fisheries, oil and gas exploration/production, maritime transport and its infrastructure have been considered. The programme also includes the reformation of monitoring and management systems and the mechanism to come up to the present and future maritime development levels.

As far as the author is concerned, the population is increasing rapidly, and at the same time there is a growing demand for the consumption of imported and exported goods. The domestic products have potentially and gradually gone up to supply that
demand, and the remaining products will be exported. This will increase foreign trade.

As a maritime country, Cambodia’s international trade goes through sea transport. Therefore, Cambodia needs to develop its ports, mainly its seaport and its infrastructure to reflect an increase in shipping activities and world trade. She also provides services to ensure and promote that trade.

Similar to this, Cambodia needs to establish a maritime policy, maritime legislation, and a regulatory authority to govern the sea of Cambodia and to secure and safeguard Cambodia’s jurisdiction as a coastal state.

Cambodia is a member of the IMO, and has accessed several international conventions regarding the development and management of the sea. She has also opened up to international shipping business, regardless of nationality, and political philosophy.

This paper, therefore, shows a necessity to create the “Cambodian Maritime Administration” to discharge the country’s responsibilities in maritime matters. In other words, the Administration is to be created to ensure the implementation of national requirements of such conventions, and the future maritime development in a sustainable manner.
Chapter I.
PRESENTATION OF CAMBODIA

1.1- Historical Background

1.1.1- Geography
The Kingdom of Cambodia is located in south-east Asia, on the south-west Indochinese peninsula, and lies between latitudes 10 and 15 degrees north, and longitudes 102 and 108 degrees east. It covers an area of 181,035 sq.km (WB, 1992). Its maximum extent is around 580 km from east to west, and 450 km from north to south. Cambodia shares its 2,438 km borders with Thailand in the west and north, Laos in the east, and Vietnam in the south and south-east. In the south-east, Cambodia is alsobordered by the Gulf of Thailand (MOE, 1994). This can be seen in Figure 1 below.

The Cambodian coastline is about 445 km (MOE, 1994) divided into three coastal provinces, Koh Kong, Sihanoukville, and Kampot. The country’s continental plateau consists of 95,000 sq.km or equals 52% of its territory. The average distance between the Thai and the Cambodian coasts is about 600 km, which provides Cambodia with the sovereign right to extend out 12 miles, Territorial Sea, 24 miles, Contiguous Zone and 200 miles, EEZ as other maritime countries (Hol Tol, 1996). However, offshore islands and sections of the boundary and maritime frontiers with Vietnam, and the maritime boundary with Thailand, are not clearly defined (Cambodia 1997).
Compared with Thailand's sea depth, the Cambodia sea water is shallow, and to a large extent, is shallower than 100 m (Hol Tol, 1996). This water tidal, twice daily, with an amplitude of around 2.5 m. Furthermore, in the marine waters of Cambodia there are 64 islands, one of the two biggest of which has been occupied by Vietnam since the 1970s.

1.1.2- The Climate

Cambodia’s climate is characterised by the north-east and south-east tropical monsoons, which create two different seasons throughout the country.

The north-east monsoon produces a rainy season which starts from May or June to October, while the south-east monsoon establishes a dry season which begins in November and lasts to March. There is a small season which is called the “small dry season” from December to February.

The highest temperature occurs in the dry season in April and the lowest in the rainy season in December. The variation of temperatures of Cambodia is small in comparison with other European countries'. The maximum average is 35 degrees Celsius in April and the minimum average is 19 degrees Celsius in December (Monyneath, 1994).

Throughout the whole country, the annual average rainfall is between 1,200 mm and 1,875 mm (Leng, 1995). However, the rainfall in the coastal provinces is much more than rainfall in other places in the Kingdom. The coastal provinces’ annual average rainfall is roughly 4,000 mm (Hol Tol, 1996).
1.1.3- The Population

Cambodia’s demographic profile is directly dependent upon its political history. The country’s population numbered 7.2 millions in 1975 during the Khmer Republic headed by the President Lon Nol. This number dropped to about 6 million in the three-year genocidal regime of the Democratic Kampuchea known as the Khmer Rouge chaired by Pol Pot.

It is recognised that the population has increased since 1979. For instance, the population was estimated to be 9.3 millions with a density of about 51 persons per sq. km in 1993. In July, 1994, the estimated population was 10,246,628 with a density of about 56 persons per sq. km, and a growth rate of roughly 2.87% and about 10.7 million in 1995. The infant mortality rate is very high (11.06% or 1106 deaths/1,000 live births). The life expectancy rate of the Cambodian population above the age of 15 is about 65%.

In Cambodia, there are 5 ethnic groups, a majority of them are Khmers amounting to 85-90% of the total population, the others being Vietnamese 5%, Chinese 1%, and Moslem and Burmese 4% of the total population (Cambodia 1997).

Cambodia’s official language is Khmer, which is spoken by more than 95% of the total population. Other important languages are French and English. French is currently like a second language, mostly spoken by older people, while English is spoken by many youths.

1.2- Administrative Organisation

Cambodia’s administrative structure has been changed many times since the early 1970s. During this period, the country was seriously damaged by the decades of civil wars, which were likely to result in foreign complicity.
As illustrated, Cambodia has passed through the Khmer Republic, the Democratic Kampuchea, the People’s Republic of Cambodia or State of Cambodia, and the Kingdom of Cambodia.

The Kingdom of Cambodia (Cambodia) has been established since 1993, suddenly after the UN-sponsored elections. According to the 1993 Constitution of the Kingdom of Cambodia, there are 3 separate mandates of the management system. These are executive, legislative and judicial bodies.

The executive body is headed by the Royal Government. The Council of Ministers is composed of 19 Ministries and 5 State Secretariats. The Government’s administrative structure seems to be complicated as there are two Prime Ministers (Co-Prime Ministers) and Co-Ministers in some ministries. Each Ministry is chaired by a Minister or Co-Ministers, a Secretary of State or a Vice Minister, and 1-3 Deputy Secretaries of State. However, this provides an excellent solution to compromise all political parties in terms of a national reconciliation.

The legislative body or the National Assembly is chaired by a President with two Vice Presidents. In this Assembly, there are 120 members, who from three big political parties.

The judicial body, in conformity with Article 115 of the 1993 Constitution, is the Supreme Council of the Magistracy charred by the king. This body has not yet been established.

In Cambodia, there are 20 provinces, each of which is headed by a Governor with 2-3 Deputy Governors. The province is divided into districts, each of which is chaired by a district chief with 1-2 vice district chiefs.
The management system is created in such a way that all the Government’s actions can be achieved. Generally, this system is a vertical stream rather than horizontal. However, the present administrative structure will be reformed in order to get an internationally administrative standard in the near future, especially after the next elections.

1.3- Economic situation

Virtually all the Cambodian economy was destroyed by the decades of war, mostly in Pol Pot regime. The constraints on Cambodia’s economy were also within the People’s Republic of Cambodia due to economic embargoes from the international community and the economic pressure of Vietnam.

The Cambodian economy became stronger in 1989, when the People’s Republic of Cambodia had changed to the State of Cambodia free open markets were established. It has witnessed rapid growth since the lift of the economic embargo in January, 1992 by the American President Bush (Indochina Digest 1993). Since then, foreign investment has poured in, mainly for constructions and services, and increasingly to manufacturing and processing. However, the Royal Government’s shortage of experience in administering economic and technical assistance programmes, and rampant corruption among officials, has slowed the growth of investment.

In 1993, the GDP was equivalent to $6 billion, the national product real growth rate 7.5%, and national product per capita $600. This GDP was still weak because of high inflation (60%) and natural disasters (Cambodia 1997).

For the period 1991-1994 the productive sectors contributed little to development per se. The satisfaction of domestic needs is still largely dependent upon foreign assistance (WB, 1994).
While the population increases, an estimation of around 3% per year, the need for consumption has risen proportionally, and this needs stronger economic development.

Therefore, the Royal Government of Cambodia has created a national programme and policy to enhance the development of productive sectors and services, and also to ensure the sustainable environment (RGC, 1995).

1.3.1- Natural Resources
The Kingdom of Cambodia is one of the richest countries in south Asia. It is rich in forests and wildlife, mountains, fertile lands, extensive mineral deposits, fishery resources and other natural resources.

Water resources are very important not only for human beings, but also for the transportation sector. The water system, in particular marine water, can facilitate Cambodia’s economy to get import/export competition in the international market only if it is managed in a proper way.

The Mekong river is the biggest river in Asia flowing through China, Thailand, Laos, Cambodia and Vietnam to the sea. It also provides a good transport system, which links the International Port of Sihanoukville and the International Port of Phnom Penh. Moreover, this river caters fresh water for drinking, fish productivity, agricultural purposes, and for the other aspects of the economic boom.

A significant characteristics of the Mekong river system is the Tonle Sap river, which flows into the Tonle Sap Great Lake. The size of the Great Lake can vary from 2,600 sq.km in the dry season to 10,500 sq.km in the rainy season, while its depth is from 2 m to 4 m at the height of flooding (MOE, 1994, P.15).
The Tonle Sap Great Lake is considered to have the richest inland fish stocks in the world. About 215 species of fish have been found in the Great Lake, and more than 850 species of fish in the Mekong river (MOE, 1994, P.25).

The freshwater fish production was used to provide domestic consumption and export overseas to Vietnam, Thailand, Hong Kong, and Singapore. However, these natural fishery resources have been compromised seriously, recently by overfishing and sedimentation in the Great Lake.

Mineral resources could play an important role in the country’s economic development. Based on studies undertaken in the 1950s and 1960s, Cambodia has an abundance of potential mineral deposits. These are bauxite, iron, copper, lead, manganese, tin, zinc, gold, limestone, coal, phosphates, silica and so on. The prospects are limited because of the uneconomic size of the surveyed deposits. However, the best commercial prospects are cement, phosphates, bauxite at Chhlong, south of Kratie, gold at Preah Vihear, and limestone at Battambong and Kampot. Cambodia’s most lucrative mineral commodity is gemstones (WB, 1992, P.7 & MOE, 1994, P.174).

Furthermore, Cambodia also has plenty of oil and gas. Oil and gas exploration made by the French company “Elf du Cambodge” and Marines Associates in 1970 and 1975 is a good evidence.

Since 1991 three companies, namely Enterprise Oil, Campex Oil, and Premier Oil, have been welcomed to Cambodia to do oil and gas exploration projects. The estimated data shows that Cambodia has a potential for 1.5 to 3.5 trillion cubic feet of gas and 30 to 180 million barrels of oil (MOE, 1994, P.180).
1.3.2- Production and External Trade
Cambodia's economy is dependent upon agriculture, which reaches about 50% of GDP (Cambodia 1997). About 63% of agricultural GDP is related to crop production, 24% livestock, 10% fisheries, and 3% forestry. The productive agricultural sector probably increased by 3-4% during 1991-1993 (MOE, 1994, P.40).

1.3.2.1- Fisheries
The fishery sector plays a significant role in the economy. Fishery production is estimated to be 5% of GDP (WB, 1994). The total commercial fish production captured is roughly 100,000-130,000 tons per year. About 70,000 tons of inland fish representing 61%, and 37,000 tons of marine fish representing 32%, were caught annually, and 7,000 tons representing 6% were cultured during 1990-1992. This annual production is around 40,000 to 70,000 tons lower than the annual production produced in the 1960s. Most of fishery production is used for Cambodians' subsistence and the rest of them is exported (MOE, 1994, P.109).

1.3.2.2- Forestry
The Cambodian statistics of forest exploitation was generally unreliable. The minimum estimated account for forest production was about 3% of GDP during the 1980s. In a four year recorded output of wood made by the Department of Forestry (1979-1990), about 389,000 cu.m of trees was cut down annually. In 1993 the exploitation was continued by armed forces using small wood processing units with an overall processing capacity of roughly 2.3 million cu.m. Also at this time an estimated 130,000 cu.m of sawn wood was officially exported. In 1994, the annual logging which ranged between 110,000 and 550,000 cu.m was permitted by the Government (MOE, 1994). However, due to lack of a monitoring system from the Government side, illegal forest exploitation and exportation occasionally occurred until 1995.
The principal importers of logs and timbers from Cambodia are Vietnam, Thailand, Japan and Singapore.

1.3.2.3- Industries
The important considerations of the Government at present are to promote the industrial sector that can optimise the use of local labourers and domestic materials.

Industrial production increased to 15.6% by 1993, accounting for 10% of GDP (Cambodia 1997). About 90% of the previous 70 state-owned firms were privatised after the entry into force of the Investment Law, 1994. Since then, the manufacturing and processing of brewing products, soft drinks, bottling, garments and textiles, handicrafts, jewellery, ceramics, paints, rubber goods, wood products, cigarettes, drinking water bottling, agribusiness, ship repairing and building materials, periodically occur (RGC, 1995, P.60).

1.3.2.4- Livestock
Livestock can provide a significant contribution to rural development in Cambodia.

Livestock production accounted for about 15% of GDP in 1993. Approximately more than 800,000 bullcalves, 2.1 million pigs, 10.7 million poultry and 1.7 million draught animals were officially recorded by the Department of Animal Production and Health in 1993. These kinds of livestock are to be increased from year to year because of simple husbandry techniques, plenty of food for rearing and the large profits. As illustrated in practice, the livestock production growth rate was 7% in 1992 and 18% in 1993. This growth rate will continue to increase in the following years (MOE, 1994, P.68).
1.3.2.5- Agricultural Crops

Crop production is one of the Government’s most significant programmes in the economy. Cambodia’s main agricultural crop production is rice, which accounts for about 75% of the calories the people’s consumption. The cultivation of agricultural crops is very much influenced by seasons- dry season with draught and rainy season with floods. About 85% of the rice crop is lowland rained wet season rice, using traditional methods of cultivation, which is probably vulnerable in the years of poor or much rainfall (MOE, 1994, P.40).

The rice cultivation in Cambodia could be used not only for the people’s subsistence, but also for exportation. For example, the maximum rice production of about 111,800 tons in the 1960s and 120,000 tons in 1996 were officially exported (GIKC 1997). Unfortunately, an estimation of nearly half of the arable land in the country is mined. Thousands of mines were reported to have been planted in Cambodia during the war.

The second most important crop is rubber, which started in 1921. The rubber production accounted for 34,700 tons in 1990, 35,000 tons in 1991, 40,000 tons in 1992 (WB, 1992) and dropped to 23,000 tons in 1993 (Europa, 1995, P.184). Some rubber products were expected to have been exported secretly to Vietnam and Thailand. However, the present annual rubber production is roughly 40,000 tons. According to FAO estimates, Cambodia’s rubber production of about 60,000 tons is produced annually (GIKC 1997).

Cambodia’s important crop products also include corn, cassava, sweet potato, beans, peanut, sesame, sugar cane, jute/kenaf, cotton, tobacco, and black pepper, which are hoped to be exported in the near future (ADB, 1996).
1.3.2.6- External Trade

The Ports of Sihanoukville and Phnom Penh are the lungs of the Cambodian economy as centres for the country’s imports and exports. However, the Port of Sihanoukville is the most active in this respect.

The main imports, which were reported in the early 1990s, are food, fuel, consumer goods, raw materials, cement, equipment and spare parts, and fertilizers. Estimated oil imports for 1993 were about 75,000 tons of fuel oil, 126,000 tons of diesel, and 88,000 tons of gasoline. A small amount of kerosene and liquefied petroleum gas was also imported (MOE, 1994, P.180). The main exports in the same periods were rubber, timber, beans, tobacco, fish, and other seafood.

Starting in the 1980s, Cambodia’s major trading partners were Vietnam, the Union of Soviet Socialist Republic and a few countries of Eastern Europe. Since 1993, its trading partners have been increased significantly. At present, Cambodia’s main trading partners also include Singapore, Malaysia, Japan, Taiwan, Indonesia, Australia, and Hong Kong. There is, therefore, a gradual increase in the import and export volumes (GIKC 1997).

1.4- National Challenge of Transportation

An efficient transport system is the most important component for the country’s economic development. Lack of such a system will stem all kinds of import and export, and production sharing balance throughout the country.

Unfortunately, Cambodia’s transport infrastructure has been severely damaged by decades of war. Lack of good roads and security problems prolonged until the early 1990s made it most difficult to access several parts of the territory.
Since 1993, however, the Royal Government with the auspices of the international community have vigorously and subsequently rehabilitated and developed its transport network including roads, railways, waterways and air transport (RGC, 1995).

1.4.1- Roads

Most of the road networks in Cambodia were constructed in the 1920s and 1930s to serve light vehicle traffic. A majority of them were destroyed due to inadequate maintenance during the war and overweight use started in the early 1980s.

By the late 1980s, the reparation and installation of the road network began. Again, several main roads were destroyed seriously by floods in 1991. By 1992-1993 the rehabilitation of such a damaged network was vented under the assistance of UNDP, ADB, Japan, Thailand, the United States and World Bank.

By 1992, the total length of trafficable road networks accounted for approximately 34,100 km, including 3,000 km of national roads, 3,100 km of provincial roads, and about 28,000 km of tertiary roads. The national roads alone have some 4,100 bridges consisting of roughly 1000 in concrete (WB, 1992, P.82)

The importantly navigable and commercial road, which links the capital city of Phnom Penh to the International Port of Sihanoukville is the National Route No.4 with a length of 235 km. This has now been repaired with United States’ support.

At the end of 1996, an estimated 3000 km of national roads would have been reconstructed and another about 600 km would have been rehabilitated (MOP, 1996).

1.4.2- Railways

Cambodia’s railway system has been constructed since 1931. The system consists of
two single-line tracks of 1 m gauge. One line was built between 1931 and 1943, connecting the capital city of Phnom Penh with the Thai border town of Poipet, totals 385 km in length. Another line installed in the 1960s, which links Phnom Penh to the Port of Sihanoukville, totals about 263 km in length.

Although these railways are old, they are still in service. However, the last part with a total length of 48 km between Sisophon and the Cambodian-Thai border was totally degraded in the 1970s (Figure 1).

The Government policy on the rehabilitation and development of the transport system including the railway network is to ensure that all railways have to be in good condition (WB, 1994).

1.4.3- Waterways

In Cambodia, there are two important waterway systems which play a significant role in the country's economy.

The marine waterway is used mainly for international trade. It links Cambodia's imports and exports to most maritime countries over the world. The Port of Sihanoukville is a centre for this activity.

The inland waterway system is useful for local people using the small-scale and traditional mode of transportation. The system includes the Mekong river and its tributaries, the Tonle Sap river, the Great Lake and its tributaries, and the Bassac river. The total navigable length of the system is roughly 1,750 km, of which 580 km are operated throughout the year (WB, 1992, P.86).

This system links the capital city of Phnom Penh to the provinces around the Mekong river and the Great Lake. Moreover, the system also connects the
International Ports of Phnom Penh and Sihanoukville, and the Ports of other maritime countries.

1.4.4- Airways

Cambodia has one International Airport at Pochintong, about 10 km west of Phnom Penh centre, and some local airports in the provinces. The local airports operating today are in Siem Reap, Sihanoukville, Battambong, Stung Treng, Rattanakiri and Koh Kong. Both local and international airways are expected to expand in the near future (ADB, 1996).
Figure 1. Map of Cambodia

Source: World Bank, 1995
Chapter II.
GENERAL OVERVIEW OF MARINE AFFAIRS

2.1-Brief History of the Cambodian Maritime Administration

A part of the work of the Cambodian Maritime Administration (CMA) started officially in 1954, straight after Cambodia had got its full independence from the French. This part of the work dealt with the registration of ships, mainly related to foreign-owned ships flying the Cambodian flag (RGC, 1954).

The Cambodian Direction of Merchant Marine (CDMM) under the Ministry of Public Works and Telecommunication (MPWTc) was referred to the CMA. The CDMM was officially established in the early 1960s, during which Cambodia became a member of the IMO.

The CDMM’s administrative structure (Figure 2) was created in such a way that the whole duties in maritime transport were achieved. There were four main offices in the CDMM headquarters. Some maritime sections were created in inland water, the transport system of which was connected with maritime transport. These sections were also directly under the CDMM. A Committee for Maritime Navigation was also set up by the MPWTc to work with it as an advisory agency. This agency would present to the RGC all principles or guidelines related to maritime navigation.

The CDMM’s role, generally was to promote, manage, and ensure the work and development of the maritime transport of Cambodia. Its main responsibility was to
administer the operations of all merchant ships, fishing boats, cruise ships, and passenger ships.

Moreover, the CDMM’s responsibility had been shared among its main offices and maritime sections. The roles and responsibilities of these offices and sections remain unclear. These roles and responsibilities were in accordance with the MPWTc’s circulation. Unfortunately, this circulation was perhaps not developed until the late 1960s (RGC, 1961).

**Figure 2.** CDMM’s administrative structure

![CDMM's administrative structure diagram](Image)

**Source:** RGC, 1961

Furthermore, the CDMM, like other aspects of the country’s infrastructure, was destroyed during the civil war. The initiative to redevelop the administration along with the development of the International Port of Sihanoukville and other aspects of
the maritime transport was conducted by the Ministry of Public Works and Transport (MPWT) but has never been a success.

2.2- Maritime Activities and National Plans For Maritime Development

A lot of activities have occurred in the marine zone of Cambodia. However, the major activities and plans for development which can be seen at present, are marine fisheries, transportation, oil and gas exploration, maritime training and safety, and the marine environment.

2.2.1- Marine Fisheries

Fishery exploitation is considered as the normal activity of the people who live in the coastal regions. About 10% of coastal habitants of Kampot, Koh Kong, and Sihanoukville are fishermen. However, Kampot fishermen have been increasing up to 70% of the 26 fishing communities with 7,001 households, recently (ADB, 1996).

The fisheries resources in the EEZ were identified by the marine fisheries research group of the former Soviet Union’s scientists during 1983-1986. These scientists estimated that there was a marine fish stock of 50,000 tonnes in Cambodia’s sea, of which only 20,000 tonnes are allowed to be exploited annually (Tana, 1994). However, this activity did not end the final research, as some fisheries resources have not been assessed yet.

In the past, the fishing activities were mainly inshore rather than offshore. Fishermen captured fish near the coasts using traditional methods of fishing. They used small fishing boats without engines, and traditional fishing gear. With an increase in technology and coastal activities, fish has moved away from the coasts. The traditional methods of fishing, therefore, have been modernised since there was a poor fish stock near the coasts. Moreover, one of the most embarrassing things is
that Cambodian fishermen have never used life saving equipment during the fishing operations.

As can be seen in Table 1, the total amount of fishing boats has changed over the years. The large number of fishing boats reached more than 3,000 in 1990, 1991, and 1994. This has resulted in modernisation and a new favourable business which started in early 1989. However, this number dropped to 2,139 in 1995. The reasons for this are as follows:

- Some fishing boats have been used as merchant ships, operating in the coastal waters since late 1994.
- An increase in large motor fishing boats with modern fishing gear, while small fishing vessels have been declining.
- Marine fish productivity has gradually decreased in recent years, particularly due to overfishing in the inshore areas. In 1990 the total marine fish production was 39,900 tons, but had dropped to 30,000 tons in 1994 (Figure 3).
- Some fishermen went bankrupt due to the tough competition in fishing, economic loss, and other relevant factors.

Fish production is expected to have been under stress and has continuously declined. The reasons associated with this are:

- The suffrage of severe poverty and imbalance of costs and incomes for fishermen due to resources depletion in the inshore areas, poor harvest technology and transport, and market constraints.
- The costs of fishing vessels and gear for reaching the EEZ or offshore areas is a barrier that fishermen cannot overcome. Therefore, they can catch fish in the inshore areas only. This leads to overfishing in the inshore areas, and seldom to fishing activities by the Cambodians in the EEZ.
Table 1- Marine Fishing Boats 1990-1995

<table>
<thead>
<tr>
<th>Year</th>
<th>Fishing boats with engines</th>
<th>Fishing boats without engines</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>1,856</td>
<td>1,418</td>
<td>3,274</td>
</tr>
<tr>
<td>1991</td>
<td>2,086</td>
<td>1,809</td>
<td>3,895</td>
</tr>
<tr>
<td>1992</td>
<td>1,727</td>
<td>632</td>
<td>2,359</td>
</tr>
<tr>
<td>1993</td>
<td>2,046</td>
<td>882</td>
<td>2,928</td>
</tr>
<tr>
<td>1994</td>
<td>2,427</td>
<td>746</td>
<td>3,137</td>
</tr>
<tr>
<td>1995</td>
<td>1,406</td>
<td>733</td>
<td>2,139</td>
</tr>
</tbody>
</table>

Source: Department of Fisheries

- The coral reefs around the islands may interfere with fishing activities.
- Lack of management system that leads to:
  * Anarchy in the use of fisheries resources, in record keeping, and enforcement of regulations,
  * No clear fish stock identification and assessment activities in progress,
  * Acute shortage of finance within fisheries management agencies,
  * Acute shortcomings of equipped patrol boats, fuel and supplies, trained and experienced persons in monitoring and managing marine resources,
  * Foreign fishing vessels are seemingly and freely able to capture the fisheries resources in the EEZ of Cambodia,
  * Poor and unreliable data collection and information (ADB, 1996, P. 9-12).
- Furthermore, Thai fishermen have sought joint ventures, which would allow their fishing ships to fish in the country with unexploited resources (MOE, 1994, P.113).

With an increase in population, the need for fish production will, too, increase, and the catches in marine fish will be the biggest target. In the meantime, modernised fishing boats with modern fishing gear will be expanded to meet the people's
consumption. To come with the increase in fish demand, the Department of Fisheries (DOF)'s policy is to get potential of the marine fish catch yearly. However, without adequate monitoring and control, it is difficult to estimate the amount poached or illegally exported from Cambodia. This is an indication of the decrease in marine fishery resources in the near future.

Figure 3- Marine Fish Production 1990-1994. (Unit-Ton)

Source: Department of Fisheries

Moreover, the huge amount of large motor fishing vessels is found in Koh Kong province. Due to a shortage of markets prepared by the Cambodian Authorities, approximately 80% of marine products are exported to Thailand, crucially from the Koh Kong fishing vessels (ADB, 1996, P.174).

Apart from the fishing activities, a new type of economic development, started in the earlier 1990s, is the mariculture in the coastal zones. The shrimp culture has been expanded in the form of small to large scale in over 1,000 ha of the coastal provinces. A large number of shrimp culture have no permissions. Most shrimp farms are
situated in the inter-tidal mangrove forest near the seaside and the stream bank of the estuarine water. The farming was initiated by the Thai businessmen in the late 1980s. The materials including shrimp seeds and fertilizers, and technology for farm construction and operation are imported from Thailand. Except for the clearance of mangrove forest land for farming, the shrimp farming wastes are usually and directly disposed into the sea (Tana, 1994).

2.2.2- Oil and gas exploration

Based on geological surveys of oil and gas deposits, Cambodia consists of 10 petroleum blocks in the offshore and 19 blocks in the inshore (MOE, 1994 & Bunchin, 1995).

For the short term of development, the Government wishes to explore and exploit oil and gas only in the offshore blocks. Four blocks of the offshore were licensed in 1991 and another three blocks were contracted out a few years later. However, the most successful test result of oil and gas exploration activities was discovered in 1994.

Enterprise Oil’s drilling activities in blocks I & II started in January and lasted until April, 1994. The maximum flow rate of testing was very high- 4.7 million cubic feet of gas and 180 barrels of oil per day. According to this result, the Enterprise Oil Co. Ltd will make a proper decision on the location and timing for future drilling (Bunchin, 1995).

Cambodia Petroleum Exploration Co. Ltd or Campex started the exploration process in block III in 1992 and ended in February, 1994. The most successful test produced a maximum flow rate of 72,000 cubic feet of gas and 224 barrels of oil daily. Unfortunately, one of the two drilling wells was dry (RGC, 1995).
Premier Oil's seismic process was in 1992-1993. It spaded its first well in block IV in May and completed the drilling in September, 1994. The most successful test was very high. Testing produced a maximum flow rate of 1.3 million cubic feet of gas and 1,180 barrels of oil per day (RGC, 1995).

Block V was licensed to Nawa and blocks VI & VII were awarded to Marimex and Technitrade. These blocks are expected to have been in the exploration process (Bunchin, 1995).

On the other hand, one of the offshore blocks at present is considered as an overlapping zone between Cambodia and Thailand. The conflict occurred during the operation of exploration. The two Governments, therefore, have made an effort to find out a peaceful solution. This can be reached only if both sides agree on mutual technical applications and economic interests.

For the long-term planning of development, the Government will continue to explore and exploit oil and gas in the inshore blocks. This can be done only if the political situation, economic position and safe environment are secured and solved. However, the wells with positive test results during the periods of exploration in recent years will be extracted in the near future (Bunchin, 1995).

2.2.3- Maritime Transport

The Cambodian maritime transport is playing a very important role in the development of the country’s economy. It provides the potential of the nation’s external trade with maritime countries all over the world.

The maritime transport activities have been significantly increased since 1992, and this is mainly evidenced by the ports and shipping activities.
2.2.3.1- The Ports

Actually the Cambodian ports have been divided into domestic and international. Throughout the country, there are several domestic ports and only two international ports.

The domestic ports are usually for local transportation, for instance, for fishing vessels and passenger ships. Some of the domestic ports, are also operated for the transhipment of goods to the international ports.

There are some domestic seaports around the coasts of Koh Kong and Kampot.
- The Bak Klong, Koh Sdech, and Sre Ambil ports in Koh Kong province are relatively small, compared with Sihanoukville port. However, they are importantly used for shipping goods between Sihanoukville and Koh Kong.
- Kampot port is also one of the most significant coastal facilities of the small ports. This port can occasionally be used for international trade with Thailand. Nevertheless, the approach channels to the port are respectively shallow, and are for the small ship with a draft of less than 4.6 meters.

All the domestic ports, particularly seaports, will be expanded and developed in accordance with the market demand (ADB, 1996).

The International Port of Sihanoukville consists of a new port, an old port, and an oil port. A part of the new port was expanded, and completely constructed in late 1995 under the support of the Government of Japan. The total capacity of Sihanoukville Port has reached 1.6 million tons since then. Of this miscellaneous goods, bulk cargo, and mostly containers are handled. The Sihanoukville container yard, covering an area of about 2.3 ha, is now being developed (JICA, 1996).
The number of ships entering the Port of Sihanoukville has also increased since 1992, while gradually pushing the total fleet up. The change in the number of vessels and fleets is shown in Table 2.

Table 2- Number of incoming ships and cargo volume in Sihanoukville Port 1991-1995

<table>
<thead>
<tr>
<th>Year</th>
<th>Ships No.</th>
<th>Import</th>
<th>Export</th>
<th>Total (Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>144</td>
<td>45,677</td>
<td>86,873</td>
<td>132,550</td>
</tr>
<tr>
<td>1992</td>
<td>226</td>
<td>206,642</td>
<td>77,350</td>
<td>283,992</td>
</tr>
<tr>
<td>1993</td>
<td>337</td>
<td>322,194</td>
<td>152,193</td>
<td>474,387</td>
</tr>
<tr>
<td>1994</td>
<td>411</td>
<td>439,738</td>
<td>107,574</td>
<td>547,312</td>
</tr>
<tr>
<td>1995</td>
<td>615</td>
<td>554,278</td>
<td>153,427</td>
<td>707,705</td>
</tr>
</tbody>
</table>

Source: Sihanoukville Port

Nowadays, the Port of Sihanoukville is accessible to ships of about 10,000-12,000 dwt. However, ships with a capacity of up to 30,000 dwt are expected to berth at the port safely when it is ready developed (JICA, 1996).

For the long-term planning of maritime transport development, the Port of Sihanoukville will continue to expand to meet the import and export demands. According to its expansion and JICA experts, the port fleets will increase dramatically. An estimated increase of cargo volume to be transported during the years 2000-2015 is shown in Table 3.

The expansion includes the development of port facilities, container yard, new wharf, warehouses, sheds, and the dredging of two channels for ship navigation. The dredging of the channels has not started yet, but is in the process of survey. As increasing maritime trading partners, domestic production, and external trade via
calling vessels, the dredging of these channels is necessary, this activity will be exercised in the near future (JICA, 1996).

Table 3- Cargo Volume Forecast at Sihanoukville Port 2000-2015. (Unit-Ton)

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>1,149,707</td>
<td>1,722,760</td>
<td>2,633,479</td>
<td>4,155,035</td>
</tr>
<tr>
<td>Export</td>
<td>234,604</td>
<td>294,945</td>
<td>375,412</td>
<td>585,134</td>
</tr>
<tr>
<td>Total</td>
<td>1,384,311</td>
<td>2,017,704</td>
<td>3,008,891</td>
<td>4,740,169</td>
</tr>
</tbody>
</table>

Source: JICA, 1996

Apart from Sihanoukville Port, the Port of Phnom Penh also contributes fleets to the nation’s imports and exports. Even though Phnom Penh Port is on a river, it can link Cambodia to other ports, for example the ports of Singapore and Vietnam. Phnom Penh Port’s annual capacity is less than Sihanoukville Port. Its capacity is around 450,000 tons annually. Ships of up to 4,000 dwt can call at this Port in the rainy season, and 2,000 dwt in the dry season (WB, 1992).

The exports and imports of Phnom Penh Port have been very active in recent years. However, its potential of export is lower than import. This can be seen in Tables 2, 3, and 4.

Total imports increased greatly in 1994, reaching about 600 thousand tons. In this year, there were 5 major import commodities, fuel, cement, rice, fertilizer and sugar. The majority of the commodities, however, to be imported in most years is fuel, which represents around 40% of the total cargo volume import.

The total export of cargo also rose significantly in 1994. The main export commodities were timber, plywood, lumber and natural rubber.
Table 4 - Cargo Volume Transport in Phnom Penh Port 1991-1995 (Unit. Ton)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Import</td>
<td>332,814</td>
<td>507,998</td>
<td>462,046</td>
<td>512,381</td>
<td>479,983</td>
</tr>
<tr>
<td>Export</td>
<td>70,888</td>
<td>46,438</td>
<td>45,434</td>
<td>74,888</td>
<td>60,194</td>
</tr>
<tr>
<td>Total</td>
<td>403,702</td>
<td>554,436</td>
<td>507,480</td>
<td>587,269</td>
<td>540,177</td>
</tr>
</tbody>
</table>

Source: Phnom Penh International Port

Furthermore, Cambodia has a dry port, which is located near the Phnom Penh Airport. The port covers an area of 25 ha, where there is a big container yard, a warehouse, and administration building. The container yard and warehouse are expected to be in operation in late 1997. An approximately 80% of containers (800-900 TEU) of Sihanoukville Port will be attracted to this port. Moreover, the port is directly connected to National Route No 4 and the railway. This can provide a good service for the shipping lines and consignors (JICA, 1996).

2.2.3.2- The Shipping

Involved in maritime transport, Cambodia so far has only three ships in operation. One of these consists of a capacity of less than 1,000 dwt, and is more than 70 years old (Leng, 1995). There is a good trend in Cambodia’s maritime transportation, at present, and that is that the Government is open to international shipping. It is evident that Cambodia now has given its nationality to foreign-owned ships, mostly to Singapore. Until now, Cambodia has registered more than 120 vessels with an aggregate of over 300,000 dwt. An estimated amount of foreign owned ships registered by Cambodia at the end of 1997 will be up to 200 ships with more than 500,000 dwt (Osler & Ward, 1997). This can contribute to the national fleet of Cambodia.
The number of vessels calling at the Port of Sihanoukville continues to grow yearly, as shown in Table 2. The turnaround of calling vessels rose from 144 in 1991 to 615 in 1995. This number is estimated to be up to more than 1,000 in 2015 (JICA, 1996).

It is recognised that Koh Kong is separated from other provinces of Cambodia by sea. Therefore, there is no means to access Koh Kong by land transport. Going to or entering Koh Kong is only available through air and water transport. So there is a demand for the expansion of maritime transport, port services, and shipping lines to Koh Kong.

There are, at present, three main shipping lines operating along the coast of Cambodia. Those are the Sihanoukville-Koh Kong, Sihanoukville-Kampot, and Koh Kong-Sre Ambil lines. Cambodia has also inland shipping lines operating in the Mekong river and the Great Lake to some provinces around the lake. These shipping lines are operated by private companies.

There are now four main companies dealing with these matters. The Inland Water Transport (i), the KAMSAB (ii), and the Passenger Transport Companies (iii) were established during the State of Cambodia. In 1994, the Cambodia Shipping Corporation Co. Ltd (iv) was set up to deal with mainly the registration of ships (WB, 1994). Shipping lines are expected to be exclusively developed in the future.

2.2.4- Related Maritime Transport Networks

The Cambodian rail, road, and air transport contribute with good connections to either seaports or inland ports throughout the country. These networks are very much linked to port and shipping activities.

Under foreign assistance, mainly that of ADB, World Bank, UNDP, United States, and Japan, the rehabilitation and development of land and air transport were started (Appendices 1 & 2). The Government, thereby has set its priorities for rehabilitation.
and development, since these networks are vital for maritime transport. Within the Government’s priorities, the National Route No 4 and Phnom Penh-Sihanoukville railway are the most targeted (RGC, 1995).

The National Route No 4, an actively commercial road, has been rebuilt with the support of the United States recently. This road is used not only for light vehicles, but also for very heavy trucks, mainly for container trucks. The successful construction of this road is one of the most important reasons for an increase the port fleets in Sihanoukville.

The Phnom Penh to Sihanoukville railway is also prioritised under the Government’s NPRD. This railway is operated mainly for the transportation of goods from Sihanoukville Port to and from Phnom Penh and the dry port. Supported by ADB, the World Bank, UNDP and Singapore, this railway has been rebuilt. However, the track and train are very old, and need to be improved. In the Government’s future programme, the track, locomotive and wagons, and other old facilities will be renewed (RGC, 1995).

Furthermore, the construction of all national roads are also included in the Government’s prioritised programme. Most of the national roads have been rehabilitated, but a few are still in the process. These roads encourage the transportation of cargo through the international port of Phnom Penh.

Moreover, Kang Keng Sihanoukville and Koh Kong airports are rehabilitated and used for passenger lines locally (RGC, 1995). These airports, at least, are expected to provide good services for Maritime Search and Rescue facilities in the future.
2.2.5- Maritime Education and Training, Safety and Marine Environment Protection

Maritime Training, Safety and Marine Environment Protection has become important world-wide since there are a lot of accidents at sea. All maritime countries, who are affected by maritime activities, and bound by the IMO Conventions need attention in these aspects.

2.2.5.1- Maritime Education and Training

The proper education and training of marine affairs seem not to exist in Cambodia. However, two vocational schools and three institutes are considered to provide, at least, a few parts of maritime matters.

- The Tek Tla Vocational School provides mainly the driving skills of land transportation means and mechanical reparation.
- The Agriculture Vocational School conducts one-year or three-year academic programmes, among others, of fisheries skills.
- The Royal Institute of Agriculture may provide a five-year academic programme at engineering levels. One of the five faculties is the Faculty of Fisheries dealing with fisheries science.
- The Institute of Technology provides also a five-year academic programme, one of which is concerned with civil engineering background.
- The Institute of Economics consists of a five-year academic programme on the different economic backgrounds of various types of national economic development.

The Government's agenda 1995-2000 for the rehabilitation and development of Cambodia, may strengthen the capacity buildings for all sectors through education and training programmes. The vocational schools and the institutes are, therefore, put under these programmes (RGC, 1995).
Moreover, training of onshore personnel and seafarers is compulsory. This is given an initiative in the safety of sea-going vessel navigation, port operation and safe environment.

Unfortunately, Cambodia has so far no maritime training centre. With respect to the proposed 1994-1996 transport investment programme, technical assistance coupled with suitable training programme is said to be conducted (WB, 1994).

To implement the NPRD, however, there is no maritime training. Only the autonomous International Port of Sihanoukville has its 1996-2000 training programme on port management and port operation (JICA, 1996).

2.2.5.2- Maritime Safety
Similar to maritime training, Cambodia has not had any Maritime Search and Rescue coordination centre covering its sea waters. This service is needed to have been in place for the safety of ships manoeuvring in the waters of Cambodia’s jurisdiction.

Regarding the safety at the port area, the port authority has arranged a traffic scheme, placing navigational aids in the approach channels. The pilotage and tug services under the Harbour Master Office provide a good service for the safe navigation of ships. However, the service operates only during the daylight hours (JICA, 1996).

2.2.5.3- Marine Environment Protection
The degradation of the marine environment in Cambodia is caused mainly by overfishing and land-based activities. Cambodia has not faced serious pollution brought about by sunken ships or oil tanker accidents. However, marine pollution from ship and port operations are considered to occur.
Marine environment protection in Cambodia is not catered for specifically in the national programme. Nevertheless, it can be included in general environment protection, which has been created in the Government's programme (RGC, 1994 & 1995).

2.3- Institutional and Legal Framework in Marine Affairs

2.3.1- Institutions Involved in Marine Affairs

There are seven main institutions involved in marine affairs. The responsibilities of marine affairs, therefore, have been shared among them.

Apart from land and air transport, the MPWT is playing a leading role in the field of maritime transport. This role consists of port and shipping development, among which is the establishment of a national port policy, the development of the administrative units of MPWT for administering economic functions of waterways, a monitoring system and the support of maritime services (RGC, 1995). The Ministry has catered for a service for the registration of ships flying the Cambodian flag, as a good example. The Ministry's role, on behalf of the Government, also includes participation in the IMO Conventions.

The Sihanoukville Port Authority, one of the subordinates of the MPWT, may take a huge responsibility for the management and operation of the Port. As an autonomous organ, the Authority is in charge of the following duties:

- Self-financing and social affairs,
- Staff training programmes, port security and safety, and waste disposal of ship-generated sources, and other wastes at the port,
- Provision of maritime services such as pilotage, tugs, and lighthouses for ship navigation,
• Port expansion and planning for port development, maintenance of port buildings, materials and equipment,
• Control and preparation of cargo handling, transportation equipment, storage, and
• Duty of entering contracts with customers and other companies.

With respect to the maritime field, the Ministry of Industry, Mines and Energy (MIME) is responsible for administering the seabed minerals of Cambodia. The exploration, mining, transportation, marketing, processing, and export of minerals in the Cambodian sea have to be under its control. Thus the Ministry’s responsibility also includes licences, licensing confiscation, mining designated areas, ownership and its transfer of these activities (MIME, 1994).

The Ministry of Environment (MOE) is a vital institution to co-ordinate with all the productive sectors concerned to deal with the environment in Cambodia. The MOE’s main responsibilities are (i) to protect the environment by controlling all pollution, (ii) to assess the environmental impact of proposed investment projects, (iii) to ensure sustainable development, and (iv) to promote and enable the public to be involved in environmental protection and natural resource management. Thus the Ministry can very much participate in the protection of all pollution from any source, even from a ship (MOE, 1996). Moreover, the MOE also has a close relationship with the Ministry of Education, Youths and Sports (MEYS), jointly to undertake the integration of the marine environmental programme in the educational curricular (ADB, 1996).

The Ministry of Foreign Affairs (MFA), in close relationship with the MAFF, the MPWT, and the MIME, is responsible for ocean policy, the determination of the Cambodian international frontiers, international cooperation and settlement of conflicts that might occur in the Cambodian sea borders. The MFA, on behalf of the Government, is also involved in IMO conventions, meetings and ratifications.
The Ministry of Tourism (MOT) is responsible for tourism development along with conservation and protection of the marine environment. With regard to this, the MOT enhances the use of the natural sites and natural resources as tourism attraction areas, the greatest importance of which is the coastal and marine zones, which cover a lot of islands, natural resources and beautiful scenery (ADB, 1996).

The Ministry of Agriculture, Fisheries and Forestry (MAFF) is very much involved in marine affairs. Under its control, the DOF is delegated to manage fishery resources. The DOF’s main responsibility in marine waters is to administer and control the exploitation and transportation of such resources (State Council No 33, 1987).

The Ministry of Economics and Finance (MEF), through its subordinates, provides the administrative services for the entire economic development of the country. Under its control are two main services dealing with maritime matters. The Customs Service has the authority to determine and collect taxes from the import and export of goods. It can also provide good procedures for the movement of cargo and control the formalities and flow of goods, even in ports. The Council for the Development of Cambodia (CDC) acts as a “One-Stop-Service” on behalf of the Government to ensure the development of public investment programmes. The Council is also in charge of providing coordination with governmental agencies and international organisations to promote the implementation of the NPRD, and enhance the environmental quality (RGC, 1995).

The Secretariat for the Post and Telecommunications may provide a good policy to attract foreign investors to invest in the telecommunication systems and services for communications throughout the country (RGC, 1995).
The Municipality may take some responsibility for those mentioned institutions. For instance, except at the Sihanoukville International Port, which is under the Port Authority, the Sihanoukville Port, and other domestic ports around the coasts, come under the responsibility of the local communities or municipalities (JICA, 1996).

Besides the above institutions, the Cambodian Coast Guard (CCG) under the Ministry of Defence (MOD), is also involved in marine affairs. Its main responsibility is to ensure security over the Cambodian sea waters. The CCG is the only armed force to defend the country's sovereignty and the terrestrial integrity of the marine zone of Cambodia (Indochina Digest 1994).

2.3.2- Legal Framework in Marine Affairs

There are several legislation and legal instruments, which can be used for dealing with maritime matters. This is due to the complexity of interests arising from maritime development and other economic developments. Therefore, the need for having legal requirements, in order to tackle possible problems or conflicts among responsible agencies and interest groups, has to be in place. Because maritime development comes along with internationally crossed trade, there is a necessity, not only for national legislation, but also for international regulations.

2.3.2.1- National Legislation

Due to decades of war, Cambodia is considered to have a shortage of legal instruments. Of course, the Constitution has only just been established after the 1993-UN-Sponsored elections, when some new laws, decrees, and other regulations were drafted and adopted. However, the existing legislation has to be in force until a new set of legislation is amended or adopted. There are some legal instruments concerning the compliance with marine affairs.
* Law for the Management of Fishery Areas (LMFA):
This law was adopted in 1987, by the State Council of the People’s Republic of Cambodia. As the title implies, it aims at managing the fishery resources throughout the country, even in the marine waters. The following items related to the management of marine fishery areas are:

- To define fishing lots for fishery exploitation, and fishery reserves for fish productivity,
- To limit the use of fishing boats and fishing gears in appropriate fishing lots, seasons and even species,
- To control the sale and transportation of fish products and inundated forest firewood known as mangroves,
- To determine aquaculture in fishing areas,
- To conduct fishery research wherever it is necessary, and
- To protect all marine fishery resources (MOE, 1994).

* Final Draft on Mine and Mineral Law (MML):
This draft was completed in 1994 by the MIME. The management of various types of mining surveys, exploratory mining in line with the environmental protection in Cambodia is bound by this law. The specific objectives concerning the management of marine mineral resources are as follows:

- To define and control mineral exploration and exploitation in the Territorial Sea, the Continental Shelf, and the EEZ of Cambodia,
- To administer the transportation, marketing, processing, and export of minerals in the above zones,
- To manage and protect the seabed mineral resources of Cambodia (MIME, 1994).

* Royal Decree No.902 on the Registration of Vessels:
The Decree established by the MPWTc in 1954, has been proposed to be enforced by the MPWT in 1994. It deals with the registration of ships, mainly the foreign owned ships flying the Cambodian flags operating internationally. The certification of registry, transfer of ownership of vessels, nationality of ship, and other registration procedures are mentioned in this Decree. The most important for ownership is that Article 4 requires the foreign shipping companies to comply with the following items:

- Less than 51% of the capital of ships as joint-venture with Cambodians,
- Cambodian-Based Office,
- Director of the company is of Khmer nationality.

Furthermore, the Decree requires all merchant ships, fishing boats, and cruise ships to have licences for their operations. However, the foreign ships with less than 100 dwt are not permitted for registration.

* Law on Environment Protection and Natural Resource Management-LEPNRM: This law was adopted by the National Assembly in late 1996. The main objectives are to protect and enhance the environment, to manage and promote economic development in a sustainable way. The environmental plans, monitoring, inspection and management of natural resources, and EIA are also mentioned. The key point to prevent against environmental degradation is to conduct the EIA process. This law requires all investment projects to undertake the EIA before the start of the projects, including maritime development. Those who violate this law, let's say, serious marine pollution, which causes heavy damages on the marine environment, or loss of human wealth, health, life and injures, are fined, compensated and/or put in jail. The period of punishment varies from one month to five years in accordance with the severity of the violations.

* In addition, there are some national legal instruments for maritime development:
• The Investment Law (IL), which was adopted in 1994, among other things, promotes the development of the maritime industry of Cambodia. This law also provides incentives to protect the marine environment (RGC, 1994).

• Law on Land Management of Urbanisation and Construction (LLMUC) has been passed by the National Assembly recently. One of the most important objectives is to protect the marine natural resources and the environment caused by the economic boom. It is also a good instrument for zoning for all aspects of development zones, even for the development of the Sihanoukville Port (MOE, 1994).

• The Sub-decree on "Cargo Handling, Transport, Received-Delivery, and Maintenance in Ports", contributes to the operations of all ports of Cambodia (State Council No.99, 1982).

• The 1993 Constitution, the Administrative and Civil Law, and other national legal instruments can also facilitate the maritime development of Cambodia.

2.3.2.2- International Legislation

Cambodia became a member of the International Maritime Organization (IMO) since 1961. However, as a result of decades of war, she seems to be outside IMO’s membership. Actually, Cambodia is still a member of IMO, but is required to pay its debts from 1973 to 1995, and continue to pay annually as usual (MFA, 1994).

Since 1994, most of the IMO conventions have been signed by Cambodia. According to the IMO handbook, 1994, and the Maritime Environment Protection Committee’s 37th session, agenda item 2, these international conventions can be seen clearly below:

• The International Convention for the Prevention of Pollution from Ships (MARPOL 1973/1978) was accessed by Cambodia on 28 November, 1994 and
entered into force on 28 February, 1995. However, the date of accession and entry into force of its annexes is somehow different.

* Annexes I and II were accepted on 21 July, 1995.
* Annexes III and V were accepted on 28 November, 1994 and entered into force on 28 February, 1995.

- The International Convention for the Safety of Life at Sea (SOLAS 1974) was accessed on 28 November, 1994 and entered into force on 28 February, 1995. SOLAS 1978 was accessed on 31 October, 1980 and entered into force on 1 May, 1981.

- The International Convention for Preventing Collisions at Sea (COLREG 1972) was signed on 28 November, 1994 and entered into force on 28 February, 1995.


- The International Convention on Civil Liability for Oil Pollution Damage (CLC 1969) was accepted on 21 July, 1995.

- The International Convention on Tonnage Measurement of Ships (TONNAGE 1969) was accessed on 28 November, 1994 and entered into force on the same date as the LL 1966.


The continuity of Cambodia's mandates in IMO, and her accession to this Organization are the sign of accepting international regulations into the national legislation. These very much contribute to the development of the maritime industry, including the registration of ships.
Chapter III.
ROLE OF THE MINISTRY OF
ENVIRONMENT IN MARITIME DEVELOPMENT

Environmental degradation and concerns occurring mostly in maritime countries in recent years, have forced Cambodia to pay much attention to the environment in the economic development. Thus, Cambodia wishes to rehabilitate and develop, among other things, the maritime field with minimum impact on the marine environment. This objective can be achieved significantly depending upon the MOE, which has discharged its distinctive responsibility for the protection and management of the environment throughout the country since its inception.

The MOE, so created, is to act as the governmental machinery to protect and manage the environment, and enhance the environmental quality nation-wide on behalf of the Government. It plays an important role in making national environmental policy, to setting up environmental law and relevant legal instruments thereof, and ensuring environmental implementation in a proper way.

3.1- Environmental Policy

The environmental policy is not a set of any specific items related to the protection and management of maritime development. However, this policy can more-or-less be applied to the marine environment. Policy on marine environmental protection and management can be defined as follows:
• To promote the creation of environmental units in line agencies, such as MAFF, MIME, MOT, MPWT, CDC, and others, the purpose of which is to strengthen the sustainable use of the natural resources, and the protection of the marine environment in line with respective economic development.

• To promote the development of cross-sectoral programmes for natural resource management and EIA that involve relevant ministries, MOE and CDC. This includes the development of marine resource data collection and inventories, and marine sustainable development.

• To draft regulations, guidelines, and standards for environmental management, pollution control over any sources, and monitoring systems.

• To promote compliance with marine environmental protection and management requirements, and to enhance marine water quality.

• To encourage marine environmental education, training, and awareness at all levels of national educational programmes.

• To cooperate and coordinate with relevant ministries and other agencies, both national and international (MOE & ADB, 1996).

3.2- Environmental Legislation

The LEPNRM, which has been adopted since late 1996, very much applies to the protection, conservation, and management of the marine environment and sustainable maritime development. The important items which relate to this development are as follows:

• To conduct the EIA for all investment projects and economic activity that might cause any impacts on the environment. This requires those who wishes to do the development to undertake the EIA. This EIA will give what might be affected on human health, wealth, loss of life and injuries resulting from that development. Then the investors can avoid or minimise the impact of their activities and of
course, they can obtain more benefits due to the environmentally sound conditions. As illustrated, the Sihanoukville Port expansion and development, with the future plan for dredging the approach channels, has to be influenced by the EIA.

- To control and manage the use of natural resources. These resources consist of seawater, seafloor minerals, seagrass, coral reefs, fish, marine ecosystems, and other aquatic resources. Such resources have to be used, managed, and developed in a sustainable way, avoiding any damage or pollution.

- To determine the sources, types, and amounts or levels of pollutants, toxic and hazardous substances, and wastes, transported through the sea. Hence, the generation, treatment, storage, and disposal of oily wastes or deleterious chemical substances are bound by this law,

- To define the sources, types, and extent of noise, and vibration disturbances, that may occur from maritime industrial development,

- To suppress any acts, which abuse the marine environment protection in conformity with the principle of "polluter-pay",

- To prepare national and regional environmental plans for environmental protection and natural resource management, in which marine environmental protection from any sources of pollution shall be included. In addition to this, there are the needs for the development of the sub-decree on the EIA, pollution control act, and other relevant environmental requirements so that the marine environmental protection and management are achieved (MOE, 1996).

3.3- Implementation on the Marine Environment

The LEPNRM provides the authority to the MOE to implement it in coordination with line Ministries and other related agencies. The MOE is the body carrying-out the marine environmental protection and marine sustainable resource management in line with maritime development and marine affairs but to overlap at almost all points
with the actual mandates of other agencies. Therefore, most of this responsibility must be shared among the MOE and other relevant institutions. Some key areas of currently sharing responsibility among the MOE and other agencies are presented in Table 5 below:

Table 5- Some key areas and responsibilities

<table>
<thead>
<tr>
<th>Areas of responsibility</th>
<th>Other Ministries</th>
<th>MOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Port and shipping policy</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>2. Maritime safety standards/legislation</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>3. Inspection, surveys, and maritime</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>casualty investigations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Certification and registration of ships</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>5. Reception facilities in ports</td>
<td>MPWT</td>
<td>Y</td>
</tr>
<tr>
<td>6. Maritime training of seafarers and personnel</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>7. Provisions of maritime services</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>8. Port construction and development</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>9. Dumping of waste at sea</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>10. Marine pollution from ships</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>11. Mines and mining policy/legislation</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>12. Designation of mining areas</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>13. Offshore oil and gas exploration and its future exploitation plan</td>
<td>MINE</td>
<td>Y</td>
</tr>
<tr>
<td>14. Mining activities and pollution</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>15. Aquatic resource protection and</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
<td>Responsible Ministries</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>16.</td>
<td>Mangrove and wildlife protection</td>
<td>MAFF, DOF</td>
</tr>
<tr>
<td>17.</td>
<td>Tourism policy and legislation</td>
<td>N</td>
</tr>
<tr>
<td>18.</td>
<td>Tourism development, particularly in the coastal and marine zones</td>
<td>MOT</td>
</tr>
<tr>
<td>19.</td>
<td>Environmental education, training at all levels of educational programmes</td>
<td>MEYS</td>
</tr>
<tr>
<td>20.</td>
<td>Ocean policy, international conflicts</td>
<td>MFA, MAFF, MIME, and CCG</td>
</tr>
</tbody>
</table>

Note: N - The MOE probably is not involved  
Y - The MOE is probably involved

The environmental protection and resource management have been delegated to the MOE just for four years. Since then the MOE has endeavoured to strengthen its administration, develop environmental policies and strategies, draft the law and relevant legal requirements thereof, and enforce legal implementation procedures and government policy on the protection and management of the environment. Thus the Ministry, in close collaboration with line Ministries or relevant agencies, undertakes the planning for marine protection and management, access to marine resource management, the EIA and pollution control over various economic development and activities.

Moreover, the MOE also conducts the promotion of environmental education, training, and awareness, and ensures participation from the public in marine environmental protection and sustainable marine resource management.
3.3.1- Planning

The MOE is initially taking the responsibilities to establish both national and regional environmental plans, the main objectives of which are to identify the critical environmental issues and the important natural resource management of related socio-economic development. In other words, the MOE provides environmental information techniques to prevent marine resources, which might deteriorate through economic development and activities, for instance, of oil and gas exploration/exploitation, fishery exploitation, and maritime transports. This is also one of the MOE’s future duties to comply with the government policy, the 1993 Constitution, in order to reach the goal of environmental protection, resource management and marine sustainable environment in Cambodian maritime waters.

The achievements, which have been made recently by the MOE, are that the MOE is involved in the emerging land-use planning and zoning of the Sihanokville Port to define the future location of that port for development. It has also participated in the zoning of the future industrial development plan of oil and gas activities, oil storage and refinery construction and facilities (MOE, 1996).

3.3.2- Data Collection and Inventory of Marine Resources

The MOE has the power to undertake the collecting of data and make an inventory of both marine natural and man-made resources so as to protect and manage such resources properly. The purpose of this is to quantify the resources, and place them rationally for the use of development. It is also to avoid any damage to human health, welfare, and safety, and marine living and non-living resources, and to protect and sustain the legitimate activities in the coastal and marine waters.

It is evident that the research on coral reef zones, species and biodiversity, mangrove destruction, marine water quality, and any sources of pollution of air, land, and water is conducted by the MOE.
One of the most successful results in 1996 was that the MOE, in close cooperation with the ADB, prepared the master plan known as the “Coastal and Marine Environmental Management for the Kingdom of Cambodia”. As a result of data collection, this describes the coastal and marine natural resources, fishery exploitation, oil and gas exploration and future production, and port and shipping activities. It also mentions the pressure on the marine environment from the above activities, and measures to be taken to prevent and avoid the impact on the marine environment for the present and future maritime development (ADB, 1996).

3.3.3- Environmental Impact Assessment-EIA

The conduct of the EIA process is one of the key measures of the MOE to ensure the successful completion of its mandate in the protection, conservation, and management of the marine environment.

The EIA is an integral part of the project development in any project including maritime developmental projects. It contains a description of the environmental impact of a maritime project, the necessary changes to the project design to prevent, mitigate, and compensate these impacts, and to integrate these changes into the draft proposal of the project.

The MOE is required to overview and evaluate the EIA of every project development and activities of both private and public sectors. The review and evaluation of the project are taken into account not only for future project development, but also for existing activities that have not yet been assessed for environmental impact.

The EIA process can be accomplished by either private or public sectors, or those who are involved in respective projects. However, this process is going to be followed the provisions and procedures, which will prescribe the EIA Sub-decree drafted by the MOE (MOE, 1996).
3.3.4- Pollution Control

As illustrated, the MOE is responsible for the prevention and protection of all pollution sources, mainly from coastal industrial activities, port development and activities, shipping activities, fishing and mining activities. These activities may produce either liquid, airborne, or solid wastes, which seriously cause a negative impact on the marine environment.

Therefore, the main responsibilities of the MOE for marine environmental protection and waste management are to control the dumping of ship wastes at sea, the dumping of dredging mud, waste treatment plants, reception facilities, and any discharge of waste into the sea water. The MOE is also responsible for ensuring the use of cost-effective treatment and disposal methods, and proper maintenance of waste management facilities (ADB, 1996).

Apart from these responsibilities, the MOE has the authority to require the owner or responsible person(s) of pollution sources, industrial sites, and sites of natural resource developmental activities to install monitoring equipment, to provide samples, and to maintain records of pollutants. Thus, the MOE inspector or controller may conduct an inspection in a site of manufacturing, or transport facilities to find out any pollution sources, which might affect on the marine environment, human health, properties, marine life, legitimate activities, marine ecosystem, and other aquatic resources.

The procedures and provisions to control airborne, water, and land pollution including noise and vibration disturbances, wastes, toxic and hazardous substances will be stated in the Sub-decree drafted by the MOE (MOE, 1996).
3.3.5- Public Participation

Understanding of the importance of public participation in the marine environmental protection and natural resource management, the MOE provides credibility to those who are particularly concerned with the potential impact from maritime activities.

Promoted by the MOE, the public participants, especially local communities, can take part in the creation and implementation of national and regional environmental plans, and day-to-day environmental protection and management. The participants provided with current and practical information related to marine natural resources, historical development, and how to protect and survive themselves from seriously environmental impact.

One of the most important aspects of marine environmental protection and management is that the environmental fund for protection and management expenditures can be donated by local communities, NGOs, companies, or other kinds of people.

Working together with public participants, the MOE, step-by-step is enabled to improve its capability to tackle marine environmental problems. In the meantime, the public participants are able to gain much experience and knowledge about protection and management, and sustainability of the marine environment (MOE, 1996).

3.3.6- Education, Training and Awareness

The concept of the environment appeared in the Kingdom of Cambodia only for 4 years ago. In fact, people live and depend on the environment, but they never know the consequences arising from damages to it. Thus environmental education, training, and awareness on the environmental protection and management, mainly on marine environment are required.
The initiatives for this falls into the lap of the MOE. With respect to this, the MOE, in coordination and cooperation with the MEYS, prepares a comprehensive environmental programme for all levels of students, and teachers throughout the country.

The educational environmental information is also distributed by the monks among the people in the communities, in order to make sure that the present and future environmental health are protected and managed properly. The attempt to assimilate the environmental knowledge, awareness, and information through training, media, newspapers, magazines, brochures, postcard, and coursebooks is supported by the MOE (MOE, 1996).

The training of staff on the concept of the environment, and the technically described conditions, have been conducted by the MOE with the assistance of NGOs since its establishment. Seminars and workshops on environmental impact from development, environmental protection and management of marine resources and safe environment, have also been conducted by the MOE. Very recently the training of its staff and line ministries' staff on the EIA has become one of the priorities of the MOE's responsibilities to enforce the LEPNRM, which entered into force in late 1996 (ADB, 1996).
Chapter IV.
EVALUATION OF ENVIRONMENTAL CONCERNS
RELATIVE TO MARITIME DEVELOPMENT PLANS

The major environmental concerns in line with the maritime development plans are influenced by port and shipping development. In addition to this, appropriate legal and institutional framework and safe marine environment are also considered.

4.1- Consideration of Environmental Issues of Port Development

The critical causes of the impact on the environment will refer to the port expansion in Sihanoukville. Port construction, reclamation of the sea land, the dredging of channels for navigation, and other port activities, will be included in this expansion.

4.1.1- Impact on Coastal Tourism

The coastal zone facing the Sihanoukville Port area has a very wonderful seaside. Several rocky areas and sandy beaches are now utilised as bathing and scenic places for both local and foreign tourists. Furthermore, the Koah Poah island, also has a beautiful rocky area. These rocky and sandy beaches will be periodically affected by the dredging activities. The impact will concern beach erosion, change of coastal nature, the growth of water currents and tide, sedimentation and water pollution.

4.1.2- Impact on Marine Biodiversity

It is difficult to evaluate the impact on marine biodiversity as there is a lack of data collection. However, the expectation is that the dredging activities of channels will
generate a large amount of impact on marine aquatic resources. The expected impact on marine biodiversity are considered as:

- The spread of dredged materials to the areas surrounding the channels or within the sea water. These materials, perhaps, will consist of harmful chemical substances which pollute the water where marine life exists,
- The suspension of sediments over the seabed. Thus will close the bottom organism’s caves, coral reefs, and seagrass down, leading to the reduction of future fish production,
- The dredging operation can be in line with the use of dredging ships, tugs, supply vessels, rubble, and other dredging equipment. This will create unfavourable conditions for the fish and other fishery resources. To this end, the operation will force the fish, mainly the commercial fish, to move away from the coasts.

4.1.3- Impact on Water Quality

Good water quality is a wonderful and important element for the well-being of all. The port development other than the dredging activities, will include the road construction from the new port to the oil port. It will also include the construction of warehouses, container yards, cargo handling equipment, and a port jetty. A small part of the dredged materials may be used to fill the port reclamation land. Other dredged materials will be disposed of in landfills. In this case, the chemical and hazardous substances will probably precipitate into the underground water and finally pour into the sea water. As a result, the sea water will be polluted.

4.1.4- Impact on Inhabitants

The Sihanoukville Port is located along the coastal shore and beside a road from the new port to the oil port. The expansion of this port will, therefore, require a road to be constructed and a fishing village to be removed. The removal will also include a school in the fishing village, small fish processing handicrafts, restaurants, shops,
and an immigration police office. This will cause many difficulties to the Authorities to find a new location. The relocation of the fishing village to somewhere else along the coast will also affect seriously the environment. The environmental concerns in the new location will be caused by garbage, waste from the fishermen, land encroachment, and danger to marine life.

4.1.5- Impact of Air, Noise, and Vibration

For the future development of the Sihanoukville Port, there might be air, noise, and vibration pollution. Port construction work, and cargo handling operations will, to some extent, produce such pollution.

With an increase of cargo in the future, moreover, vehicle transportation between the new port and the oil port will also increase. This will make an awful noise and vibrate the habitants beside the road, around the port area, and the air pollution as well.

4.2- Consideration of Environmental Issues of Shipping

Cambodian shipping is going to increase. Accordingly, there might be lots of ships or vessels operating in the Cambodian Sea, especially in the coastal waters. These ships will include merchant, naval, cruise, dredging and drilling ships, and fishing vessels. Such types of ships will, to a large extent, have some consequences on the marine environment.

4.2.1- Ship’s Waste

Ship operations will produce either solid, liquid, or gaseous wastes, which can pollute water, air or interfere with aquatic resources.
Plastic wastes and other garbage have been seen in Cambodian seawater. Usually these wastes are released from passenger ships, yachts or cruise ships or boats, fishing vessels and drilling installations. The degradation of most solid wastes will cause chronic pollution to the sea. The solid wastes, which are made from plastic materials, will stay for a very long time in the water. The solid wastes will probably increase with growing shipping activities, due to lack of safe techniques and management.

Liquid wastes are also expected to increase in the near future. With an increase in ships including oil tankers docking at the Sihanoukville Port, the oily wastes from barges and slop tanks will increase. There is, therefore, a need for the establishment of adequate reception facilities at the port. This matter remains so difficult and unclear since adequate reception facilities are very costly. Therefore, some ships will continue to discharge oily wastes into the sea of Cambodia.

Furthermore, the normal operations of ships will also release at least a small amount of oily residues in the water. This very often refers to coastal fishing boats.

The gaseous emission from the ships to the air has to be considered. Due to the big engines of ships, their release of gases is often far more than the release of gases of any means of land or air transport. The ship engines produce some hazardous gases, for instance, SOX and NOX, which seriously pollute the atmosphere.

4.2.2- Pollution From Fishing and Drilling Activities
Besides the above types of wastes, oil drilling and fishing activities will generate pollution hazards in the environment.

The leakage of oil, the breakdown of oil pipes or platforms during oil drilling operations, will occasionally occur. In the operation, the accidents of tanker spillages
and collisions might happen when the ships are docking at the platforms. The oily water, or oil residues, the dumping of oil-related debris, and oil-based drilling mud might also appear. The chemical biocides used as coating substances will keep the marine species away from the platforms in the areas around. This will lead to the damage or reduction of fish in the Cambodian Sea, and affect human health and other legitimate activities.

Fishing boats in line with modern fishing gear, fishing near the coasts, will spoil breeding grounds, and resediment the mud. Not only the oily wastes, but all garbage from fishing vessels will continue to be discharged into the sea. An increase in fishing activities, therefore, will pollute the sea water and mitigate the marine ecosystem and fishery resources.

4.2.3- Aquatic Interference

The impact of shipping activities on aquatic resources as well as the marine ecosystem will, to a large extent, occur. The increase in ships and their activities will not only cause water and air pollution, but also the destruction of the marine ecosystem. The ships intending to enter the port, in some cases, will be under the wrong course. The repercussion of which will mean that the ships will be grounded, stranded or capsized. If the ships are aground, or stranded in an area with plenty of coral reefs or seagrass, they will compromise such resources.

In the case of collisions or accidents, spillage will extend into large areas of the sea, even inland, marine estuaries and sandy beaches. As a result, marine organisms such as fish and large crustaceans will escape from polluted areas to dwell somewhere else. Some fishes or other fishery resources, when ingesting the food or breathing will accumulate the hydrocarbons. These kinds of resources are contaminated with some pollution, and will weaken human health after their consumption.
4.3- Consideration of Maritime Education and Training, Safety and Marine Environment Protection

4.3.1- Consideration of Maritime Education and Training

The human element is the main factor to perform any functions to support maritime transport development. The staff who work in the maritime field need to be trained and educated. Non-trained or not well trained personnel cannot properly accomplish their duties in an environmentally sound manner.

To increase maritime transport and registration of ships under the Cambodian flag, there is a need for qualified personnel. Those personnel are seafarers on board, onshore personnel, or personnel at the administration, qualified maritime inspectors, trainers and related qualified people.

Since there are, so far, no specific maritime schools and universities or maritime training centres the development of maritime transport, will face many problems. The above mentioned vocational schools and the institutes are hardly available for the maritime sector at present. Only the Sihanoukville Port itself cannot conduct all aspects of maritime training. The Port will train only its important personnel to know how to effectively undertake port management and operations, including the safety of the port area.

Training of safety at sea, safe technical navigation, the protection of pollution from ships, all have to be arranged or administered by the maritime administration.

Non-professional performance of port and shipping operations will access to accidents and environmental degradation, and finally lead to the reluctance of foreign ships to call at the ports of Cambodia.
4.3.2- Consideration of Maritime Safety
The absence of a maritime training centre, and maritime safety co-ordinating centre will be an obstacle for maritime development.

Port and shipping businesses need the Maritime Search and Rescue and safety measures that can limit environmental damage. Ships operating in the Cambodian Sea, in the case of an Action of God, or accidents, require all help from the onshore centres. This it can sometimes be successfully achieved by communications through a co-ordinating centre. This centre, therefore, will be vital to maintain safety and safe environment in Cambodia. The Centre will also contribute to the promotion of attracting shipping companies to invest in Cambodia.

Since there are no Maritime Search and Rescue, and lack of maritime emergency plans, the safety of ships will be under threats. If there is an accident, for instance, oil tanker collision, an oil spill will spread out without combating measures taking place.

The safety of ships at the Sihanoukville Port is limited. The navigational aids at the approach channels are limited to use during daylight hours.

With the increase of ships and port operations, the development of navigational aids, Maritime Search and Rescue Centre, co-ordinating and other support services will be required. Of course, this development will take time and cost money.

4.3.3- Consideration of Marine Environment Protection
Future port and shipping development will seriously affect the marine environment only if it is neglected. The protection of pollution from ships is required to integrate it into the maritime emergency plans. The most important elements of the plans are to have adequate emergency equipment such as protection clothes, materials, booms,
skimmers, pumps, combating vessels and other related materials are also needed. However, this equipment and materials are very expensive.

The absence of a co-ordinating centre, Maritime Search and Rescue centre, and other support services also influence the protection of pollution from ships.

4.4- Legal and Institutional Framework Evaluation

Poor maritime development, and an exacerbated political situation during decades of war, have led to a shortage of maritime legislation and the management system thereof.

4.4.1- Legal Framework Evaluation

A significant point to cope with the rapid maritime development is that Cambodia must have specific maritime legislation.

The maritime policy, which is defined in the Government’s NPRD, does not mention clearly maritime development. In addition to this, the environmental policy, which is set by the MOE is too general. This policy clearly describes some important items pertaining to the marine environmental protection and management of marine resources. This does not state the very specific items and measures taken to prevent marine pollution accidents caused by maritime developments.

The Royal Decree on the registration of ships, which was proposed to be implemented by the MPWT, has not been updated. This Decree seems to be very strict for foreign investors in terms of nationality, based-location, and equity procedures. In addition to this, Cambodia is still poor both in finance and human resources which are needed be able to compete in the international markets. Therefore, this Royal Decree needs to be updated.
Sub-decree No.99, passed by the State Council in 1982, is also not updated. This Sub-decree is available for the State-owned companies or enterprises only. It applies to the State market or non-competition market. For rapid economic development and free economic market competition, this Sub-decree is not available.

Most of the national laws and decrees partly prescribe the promotion and enhancement of environmental quality and environment conservation and protection. The LMFA, MML, LLMUC, for instance, are respectively empowered to the DOF, MIME, and Committee for Land-Use to protect the environment. This is sometimes burdensome to these authorities. An apparent illustration is that some LMFA provisions are bound by the LEPNRM. In other words, the LEPNRM generally constitutes all aspects related to the environment, even marine environment protection.

As regards the international regulations, Cambodia has become a party to several international conventions, as accessory. This means that Cambodia has accepted the international legal instruments as its national legislation. The reasons for the accession to the conventions can be considered as follows:

- To participate in the international community for technical co-operation for the maritime development,
- To include some suitable legal instruments for marine affairs, especially for the development of the maritime industry,
- To ensure competition in the world market, mainly for the registration of ships under the Cambodian flag,
- To join with the future oil and gas exploitation in the offshore of the Gulf of Thailand,
- To ensure the sovereign rights and terrestrial integrity of the Cambodian Sea, the use of marine natural resources, and the protection of the marine environment.
However, there might be some gaps in the implementation of the above regulations. Some requirements are not suitable for Cambodia to comply with. The economic, political and technical conditions can be good reasons for this.

Therefore, the need to create specific national maritime legislation in line with future maritime development must be considered. The proper creation of regulations related to, for instance, shipping law, port management, or registration of ships decrees or sub-decrees, must be done.

4.4.2- Institutional Framework Evaluation

The adoption and accession of both national and international legislation are a little bit easier, but how to implement them is difficult.

The CDMM was so created to deal with maritime transport but has not had a good enough management system for the present situation. Its administrative structure should consist of some more offices like Training, Technical, Financial or Registration of Ship Offices. One Office or Section to take care of marine environment protection against ship pollution should be included.

Several laws passed by the National Assembly, Royal decrees by the King, and other existing legislation are still not effectively enforced. Again, the political conflict, the economic situation, and technical conditions including human resources can justify the reasons.

The international regulations, which were acceded by Cambodia, need to be enforced mainly by the MPWT. The implementation will be limited due to the lack of a management system, or not having a Maritime Administration.
The compliance with the LEPNRM will be difficult since some of the key provisions and procedures are not mentioned in it. These provisions will be enacted upon in separate sets of regulations which are considered to take a very long time. The MOE, in fact, is authorised to look after the environment throughout the country. However, its mandates and missions are limited, probably because of the co-ordinating functions which have been mentioned in the LEPNRM.
Chapter V.

METHODS OF MARITIME ADMINISTRATIONS IN NORWAY AND SPAIN

The Maritime Administration in one country varies from another. It is dependent upon the geographical features, socio-economic developments and activities, and the political appearance of the country. However, the author tries to choose only two appropriate maritime administrations from two different countries, in order to suggest one maritime administration practicable to his country.

5.1- Maritime Administration in Norway

Since Norway is an old maritime nation engaged in maritime cross-trading, petroleum and refinery activities, and with a large fleet transporting goods to and from it, the Norwegian Maritime Administration (NMA) management system is very complex.

5.1.1- Organisational Structure and Responsibility

The NMA organisational structure (Figure 4) is organised in such a way that several agencies or departments are involved in both the establishment of maritime legislation and policy, and the implementation of such legislation and policy, which relate to marine affairs.

The NMA’s main responsibility is as follows:

- To ensure maritime safety standard/laws, and appropriate maritime policy,
• To conduct maritime education and training, to control the qualifications and manning, professions, working environment and social affairs of seafarers,
• To undertake the inspections, surveys, and certifications of ships and offshore mobile units, to investigate maritime accidents, and violated regulations,
• To ensure the registrations of ships, vessels and offshore mobile units, the specifications of newbuildings of ships and drilling rigs, and vessels, ports, and other maritime installations,
• To provide maritime services such as maritime communication centres, seamen’s welfare services, and ensure free and fair competition world-wide for the nation in the fields of maritime transport,
• To facilitate the marine environmental quality, and to prevent and protect the marine environment,
• To cooperate and coordinate with relevant institutions among the Government and international agencies such as the Classification Societies, and other organisations.

However, the NMA’s responsibility has been shared among Ministries/Directorates and other institutions.

Regarding the responsibility of the maritime industry, maritime policy and maritime safety, the NMA is mostly under the direction of the Ministry of Foreign Affairs. This Ministry’s main executive organ, among other departments, is the Norwegian Maritime Directorate (NMD), which makes up seven departments with offices. In terms of the prevention of pollution from ships, and the protection of the marine environment, the NMD is also under the direction of the MOE. Other than its supervisors and subordinates, the NMD mainly works with the Petroleum Directorate and the State Pollution Control Authority (SFT).

The MOE discharges a huge responsibility to protect the environment, particularly the marine environment. Under its control, there are several agencies, one of which is the SFT, directly dealing with the prevention of the marine environment.
The SFT’s primary responsibility is to combat pollution, noise and vibration disturbances, and wastes from any sources to the marine environment. The use of environmentally hazardous materials and products is regulated by it. The Authority is also responsible for preparing and implementing the national emergency response system for maritime accidents and other acute marine pollution.

The NMD, which is a subordinate of the Ministry of Foreign Affairs, is also under the MOE with respect to the prevention of pollution from ships and protection of the marine environment. As one of the most important responsible organs of the NMA, the NMD is composed of seven departments which have combined with shipmasters, mates, naval architects, engineers and technicians, lawyers, computer specialists, economists, and other related expertise. The Directorate takes the following responsibility:

- To adequately establish contingency plans, measures for prevention of oil spills from ships, and other procedures for fire and explosion reduction, and other marine accidents,
• To assist the Petroleum Directorate in complying with the Petroleum Act on the Norwegian Continental Shelf, and in matters of life saving equipment/appliance, stability of and safety on production installations,
• To undertake inspections, surveys, and issuance of certificates for the Norwegian-registered mobile units, and of Letters of Compliance to appropriate foreign-registered mobile units as requested, and
• To conduct maritime casualty investigations, and ensure its competence of project-coordination, planning, information and participation in international fora, and aid to the developing world, and research.

The Ministry of Foreign Affairs, in the maritime field, is responsible for the maritime transport policy, maritime legislation and international cooperation. Ship registration, licensing, marketing and economic assessment of maritime transport, participation in and relations with IMO, ILO or other world organisations are also under its responsibility. Moreover, the other affairs of the NMD can be included in its competency.

Other key areas of responsibility and responsible Ministries are shown in Table 6.

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<tr>
<th>Areas of Responsibility</th>
<th>Responsible Ministry</th>
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<tr>
<td>1. General transport</td>
<td>Ministry of Communication</td>
</tr>
<tr>
<td>2. Shipyards, overall strategy related to activities on the Continental Shelf, and operator licences</td>
<td>Ministry of Industry</td>
</tr>
<tr>
<td>3. Fisheries, pilotage, lighthouse services, and labour activities</td>
<td>Ministry of Fisheries</td>
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</table>
Maritime education and training is not the sole responsibility of the Ministry of Education, Research and Church Affairs, but some other institutions are also involved in it. The main institutions conducting maritime training in Norway, other than the Ministry, are:

- The SFT can conduct training of mariners, officers, and its administrative personnel for maritime traffic safety, an effective emergency response to marine accidents, and other environmental technology (SFT, 1995).
- The Det Norske Veritas (DNV) Classification Society contributes pretty much to the training on safety of ship operation and the protection of marine environment to seafarers, and promotes the implementation of the ISM Code (DNV, 1995).
- The Kongsberg Norcontrol also provides good training facilities for instructors, and seafarers on matters related to the safety and efficiency in maritime transportation. Thus it can cater for the training of computer systems on board modern vessels, maritime simulators and training systems, and vessel traffic surveillance systems. The training for the clean-up operation and oil spills from maritime accidents and the combat of fire and explosion fighting are also undertaken by it (J. Cross, 1997).
With regard to the safety standards and safety at sea, the Classification Societies are delegated to take some part of the NMD's responsibility. In this scene, the Class may undertake the inspections and surveys of ships, and mobile offshore units and installations on behalf of the Administration. The reasons for this are:

- The Class’s rule related to the Safety at Sea is internationally recognised. It abides by both national and international legislation,
- The Class is considered as having enough qualified and experienced staff to deal with all technical aspects regarding the safety of ships,
- The Class combines all interest groups to work together, to make good standards and rules on the Safety at Sea,
- The Class is known as a non-profit organisation, accomplishing an international mission to promote the Safety at Sea, to prevent maritime accidents, and to protect the marine environment.

5.1.2 - National Maritime Policy

The Norwegian National Maritime Policy is created to ensure the environmentally sound sustainability of maritime development and other marine legitimate activities. There are two main parts of the Policy.

One is to deal with maritime safety aspects. Thus the safety of ships, of petroleum mobile units and offshore installations, the protection and prevention of the marine environment and clean oceans must be included. To make sure that this work is achieved, the competence of Flag State Implementation and Port State Control, including surveys and inspection of ships, and investigations on maritime accidents, is also taken into account. The Policy, moreover, comes along with the engagement in IMO, ILO, and other international and regional organisations, in order to develop joint programmes on the safety of ships and sustainable marine environment.
Another part of the Policy is to promote and ensure competition world-wide on commercial aspects of maritime development and local employment opportunities, provided that there are no restrictions on the nationalities of ships. However, this policy does not encourage the Government to give any subsidy to national fleets.

5.1.3- Maritime Legislation
The involvement of multiple users of the sea, both nationals and internationals, needs to have adequate legal instruments so as to avoid the conflicts within the use of resources and sustainability of the environment. Similar to most maritime nations, Norway can manage and protect its marine environment fairly through both national and international requirements.

5.1.3.1- National Maritime Legislation
The national maritime legislation and their amendments, similar to other national ones in Norway, must be adopted by the National Assembly. However, the performance of detailed regulations thereby is authorised to the respective Ministries or Directorates.

As mentioned earlier, the responsibility in maritime matters has been divided to responsible sectors. Therefore, there are accordingly several national maritime laws with respect to these matters.

§ The Pollution Control Act, the related maritime goals of which are:
- To protect the marine environment by minimising pollution from any sources, for instance, fishing, agriculture, factories and refineries, port and shipping, and production platforms,
- To regulate and permit polluting activities,
- To identify and analyse the sources, types, amount and levels of pollution, and to require compensation for damages in the principle of the “polluter-pays”,

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• To encourage better treatment of waste management, requiring adequate construction, operation, and maintenance of:
  * Sewage systems to collect waste water, septic tanks from municipal activities,
  * Reception facilities to collect ship-generated wastes and other wastes from maritime installations,
  * Recycling and treatment plants, and
  * Waste disposal management systems,

• To provide the SFT the authority to undertake the necessary contingency system for marine acute pollution, in order to prevent, discover, stop, remove and limit the effect of the pollution, and

• To ensure environmental quality, avoiding any harm to human health, well-being, and reproductivity resulting from the pollution and wastes (MOE, 1981).

§ The Petroleum Act deals with such matters related to life saving equipment, stability of mobile units and production installations, including pipelines. The petroleum exploration and exploitation, transportation, designation of mining areas, operator certificates/licences and penalties thereof are also included in this Act.

§ The Seaworthiness Act deals with the seaworthiness of ships, stability of ships, and some other measures related to the safe manner in ship loading, navigation, and safety on board.

§ The Seamen’s Act relates to the manning of ships, the amount of crews on the ships, the working conditions of crews, the position of seafarers and so on.

§ In addition, there is some other legislation, which also deals specifically with maritime matters, for instance, the Maritime Act, and the Hours of Work Act (T. Langjord, 1996).
5.1.3.2- International Legislation

In addition to the national maritime legislation, and as one of the leading parties to the IMO, Norway always participates in the Organization’s meetings in initiating the creation of the drafts of regulations. It has also ratified almost all the IMO Conventions. Apart from being a party to IMO, Norway is also a member of ILO, FAO, ISO, EFTA, and EU. Hence it has also recognised most of these Organisations’ regulations and agreements.

5.2- Maritime Administration in Spain

Spain, in its history and geographical characteristics, is considered as one of the leading maritime industrial countries, in which trade is significant through maritime transport. Among the commercial ports of national interest, the maritime fishing industry with a large number of fishing vessels and ports is very important for the Spanish economy.

5.2.1- Organisational Structure

There are two main maritime authorities responsible for maritime matters in Spain: the General Directorate of Merchant Marine (DMM) and the Port Administrations (PA). The PA is separated from the DMM by law, and is under the general control of a National Port Authority. However, both Administrations are the subordinates of the Ministry of Development, renamed and restructured from the Ministry of Public Works and Transport.

Besides these Administrations, there are several important institutions involved in dealing with marine affairs. These are the Ministry of Environment, the Ministry of Defence, the Ministry of Interior, the Ministry of Agriculture, Fisheries and Food, the Ministry of Economy, the Regional Governments and the Red Cross.
5.2.2- The Spanish Maritime Administration’s Responsibility

The responsibility of the Spanish Maritime Administration (SMA) is somewhat similar to the NMA’s. This responsibility can be considered as follows:

- To ensure the national maritime policy, maritime safety standards, and maritime legislation,
- To administer the compliance with such policy, standards, and legislation by undertaking the inspections, surveys, and maritime casualty investigations, from which the technical improvements and requirements can be taken,
- To conduct infractions and penalties against violators, who violate either national legislation or international legislation to which Spain is a party,
- To provide appropriate maritime services for port and shipping industry in accordance with the needs of the nation,
- To ensure maritime education and training for crews and the administrative personnel on respectively technical considerable aspects,
- To ensure the development of maritime industry, competition world-wide, and to promote employment opportunity to the nation,
- To enhance the quality of the marine environment, and prevent and protect the marine environment, and
- To ensure coordination and cooperation at local, national as well as international levels to achieve its mission.

The responsibility, furthermore, has been shared among the above mentioned Administrations and institutions.

The DMM is assigned to accomplish the implementation and enforcement of the national legislation and international conventions to which Spain is a party. It takes most of the SMA’s responsibility in maritime police competencies. The Directorate is mainly responsible for maritime transport policy, maritime traffic systems and
regulations, maritime safety and control of marine pollution. The inspections of ships and mobile units, and the control of dumping of waste at sea also fall under its competency. However, the observation and prosecution of violators of regulations are delegated to the Local Maritime Authorities in the main ports in the province. Furthermore, some small competencies are given to the Maritime Police under the Ministry of Interior.

The main responsibilities of the PA, except as the Vessel Traffic Services, are as follows:
• To manage and control the safety and security of ports, the compliance with regulations, port services, lighthouses and, aids to navigation,
• To organise the use of ports and port development including port policy,
• To promote the construction of necessary installations, port police regulations, training of personnel on port management and operations, and
• To approve the taxes for deferent services of the ports.

In contrast to the NMA, the SMA gives least responsibility to the Ministry of Environment to prevent and protect the marine environment. The Ministry is responsible only for the general policy for the environment. The prevention of marine pollution from ships and offshore installations/mobile units, and the protection of marine environment are still in the competencies of the DMM, Local Maritime Authorities and the Regional Governments. The reception facilities in ports are the responsibility of the DMM and the Regional Governments. The DMM is responsible for floating reception facilities, while the Regional Governments are responsible for inland reception facilities.

The Ministry of Economy gives the power to the Customs Surveillance Service (CSS) to implement the custom requirements in order to collect the import and
export taxes, and to control illegal goods. The Service is also involved in pollution detection and combating spilled accidents.

The Navy, under the Ministry of Defence, may operate its ships or aircraft to patrol and protect fishery resources within the territorial sea and the high sea.

The State Agency on Salvage and Maritime Safety, under the Ministry of Development provides services for the Maritime Search and Rescue. The State Agency coordinates with the Regional Governments, the CSS, the Air Force of the Ministry of Defence, Oil Companies and other pertinent institutions to respond to emergency cases for the protection of loss of life, and properties and the marine environment. The State operates the Marine Rescue Coordination Center, Vessel Traffic Service, pollution and fire fighting equipment and resources, salvage vessels, and rescue boats and helicopters. It also undertakes training on the utilisation of such equipment, and materials for those who are concerned.

5.2.3- Maritime Legislation
Much the same as other maritime countries, Spain is engaged in maritime cross-trading of goods, main fishing activities, and petroleum exploitation, and other maritime activities. As a result of a lot of interest groups and activities occurring in marine waters, there is a need for existing requirements regulated by the responsible authorities to control these activities. The purpose of having that legislation is to provide the balance of using the resources for the society, by developing the economy and sustaining the marine environment. There are two types of maritime legislation in Spain. These are national legislation and international regulations to which Spain is a party.
5.2.3.1- National Maritime Legislation

There are several national laws dealing with marine affairs in Spain. However, the major national legislation related to the management of maritime development is referred to in the Law on Ports and Merchant Marine (LPMM), adopted by Parliament in 1992, and entering into force in 1993. The main objectives of this law are as follows:

- To define and classify the ports of national interest, and maritime installations,
- To regulate the planning, organisation, management, financing approach, and policy of ports including the use and services in ports,
- To regulate the DMM and PAs, and
- To establish a legal framework of merchant marine in which the infractions and penalties are included.

Other legal instruments which are considered as the national legislation pertaining to tackle maritime matters are:

- The 38/1972 Law on the Atmospheric Protection, which provides a general policy to monitor and prevent air pollution from industrial activities, even from ships, mobile units, and the production platforms,
- The 1978 Constitution, in which the rational use of natural resources, the prevention and protection of marine environment, and criminal and administrative penalties against violators are considered,
- The 29/1985 Law for the Use and Protection of Continental Surface and Underground Water, which ensures water quality and proper use of the water,
- The 20/1986 Law on Toxic and Dangerous Wastes to regulate the production, utilisation, treatment and disposal of wastes. A Decree of this law deals with the reception facilities for ship-generated wastes,
- The 22/1988 Law for the Use and Protection of Coastal Zones, which tends to protect territorial water, beaches, and adjacent land of the coasts from economic development and activities, and
• Other Decrees thereof related to maritime matters, and the prevention and protection of the marine environment.

5.2.3.2- International Legislation
Similar to the NMA with respect to the international conventions and agreements, Spain has ratified almost all the IMO Conventions. These Conventions have been converted and integrated into the national legislation, in order to ensure the compliance of such requirements.

5.2.4- Maritime Education and Training
Maritime education and training in Spain is under the full responsibility of the Ministry of Education to provide maritime knowledge and qualifications. However, the professional certificates of competency for marine masters, officers, crews, and qualified staff at the Administration and other maritime services are administered and issued by the Maritime Administration (F. Pardo, 1996).
Chapter VI.

PROPOSAL FOR THE ESTABLISHMENT OF
A CAMBODIAN MARITIME ADMINISTRATION

As one of the maritime countries in the world, Cambodia needs to have a Maritime Administration in place, in order to manage, develop and ensure the sustainable environment of the sea.

Cambodia will embrace, with a good maritime administration, the lessons learnt from the NMA and the SMA, the historical background of the CDMM management systems, the government policy, and the need for future maritime development.

The CMA will be set in such a way that the whole process of management systems including mechanisms to deal with maritime matters, is achieved. Thus the Administration is more likely to be an integrated organisation, of which each authority may take its responsibility in conformity with its mandate.

Coming with the real situation of maritime activities and national plans for development, and the issues thereof, there has to be a necessity to create an appropriate national policy and strategy.

6.1- National Maritime Policy

The proposed national maritime policy is considered as an integrated management policy. The policy should be in conformity with:
• The general government policy to rehabilitate and develop Cambodia, known as the NPRD in the short and long-term perspectives.
• The need for sustaining a socio-economic atmosphere conductive to private investment in fisheries, energy, transportation, communication, and other physical infrastructures. This includes the development of the national economy, the provision of services, employment opportunities, repatriation of technology, and the rational use and management of the sea. The integration of the national economy into the regional and local economies is also considered.
• The planned programmes, interests, policies, strategies, and other legal requirements of the involved maritime sectors.
• The principles of the integrated management system of most of the leading maritime countries in using, monitoring, protecting and managing the marine resources, as well as the marine environment.
• The necessity to strengthen monitoring and enforcement mechanisms both at national and local levels through international co-ordination and co-operation for the implementation of the governmental agenda or the NPRD.
• The need for safety and response to maritime emergency cases along with maritime development and activities, and the protection of the environment for the nation.
• And the need establish adequate national legislation, coordinative and co-operative actions, avoiding all possible duplications and conflicts among responsible sectors.

The national maritime policy proposed, moreover, is developed to cover all matters pertaining to maritime activities and development. In this sense, the policy should be composed of port and shipping development, marine resources management, oil and gas exploration/exploitation, and environmental protection.
6.1.1- Marine Fisheries Management Policy

Seeing the problems and issues associated with the marine fisheries activities and plans for development, special considerations of management policy have to be presented.

The management of marine fisheries resources, which is under the direct control of the DOF of the MAFF, should include a clear management policy. The DOF should create this policy and its objectives to ensure the adequate demand for the consumption and economy, the sustainability of marine fisheries and the protection of the marine environment.

The proposed marine fisheries management policy should, therefore, be in touch with the following components:

- To ensure the implementation of the NPRD.
- To conserve and protect the marine fisheries reserves, where there are breeding grounds, seagrass, coral reefs, and mangroves, which provide favourable conditions for fish propagation.
- To promote the monitoring and control systems, via an integrated approach, of marine fisheries activities, in order to avoid illegal fishing, and exporting whether by foreign or domestic traders. At this point, the strengthening of the technical competence and enforcement capacity of the marine fisheries management institutions in the three coastal provinces has to be taken into account.
- To improve and strengthen the institutional capacity for technical research on marine fisheries resources. Thus, data collection and information, inventory of fish stock, fishing effort and annual sustainable yields have to be considered.
- To promote credit programmes to upgrade the existing fishermen so that they can reach the EEZ for fishing. The programmes are also encouraged to raise the value of catches, through the improvement of post harvest technology, transportation and services, and market access.
- To ensure the creation of marine protected areas and marine sanctuaries.
- To ensure the technical assistance, basic necessities, vocational and in-service training for operators, and fisheries staff.
- To provide awareness campaigns for the fishermen not to use destructive and illegal harvesting methods and practices.
- To ensure the amendment of the LMFA with the real fisheries situation.
- To best understand the marine environmental impact that may be caused by fish depletion and marine fisheries exploitation.
- To promote the development of mariculture and aquaculture, in order to minimise marine catches.
- To promote the safety management of fishing vessels, and suitable measures of preventing and protecting any pollution caused by fishing activities.

6.1.2- Marine Mining Management Policy

Oil and gas exploration/exploitation is one of the key targets in the NPRD for economic development. It will provide huge benefits to the society, but the environmental issues might raise the public concern.

Even though oil and gas development has been prescribed in the Government’s NPRD, it still needs some more specific policies to manage the mining activities.

With respect to this, the MIME should propose a marine mining management policy, which includes the following items:
- To sustain socio-economic growth, political stability, and create employment opportunities for local people.
- To attract and promote investment, particularly foreign direct investment for the mining, exploration/exploitation of minerals, and oil and gas in the Cambodian jurisdiction from the inshore to the offshore areas.
- To ensure the implementation of the NPRD.
• To create a proper institutional framework, for instance, a Marine Mining Authority (MMA) to manage and regulate oil and gas development in the country.

• To ensure the transfer of technology to Cambodian nationals, by conducting training on the mining and oil and gas management and operations.

• To ensure the monitoring and control approach of the mining, exploration, production, and sales of crude oil, natural gas, minerals, products and by-products.

• To ensure the establishment and enforcement of a legal framework, also in accordance with the 1982 UNCLOS, and other related conventions.

• To promote the safety of mobile units, production platforms, pipelines and oil refineries, as well as workers, and the prevention and protection of marine environment. Here, the EIA on mining projects, the contingency plans for the response to the incidental accidents of mining, and oil and gas activities are also included.

• And to facilitate the co-ordination and co-operation among responsible sectors and internationals to exchange information technology, to provide technical assistance, and to ensure the sustainable environment for mining, and oil and gas development.

6.1.3- Port and Shipping Management Policy

As mentioned earlier, port and shipping activities and development have been increased in recent years, in order to ensure the international competition markets in world trade. However, there is no specific maritime policy to be in touch with these activities/developments. The Government policy, moreover, has a set of very general terms in settling these matters.

Therefore, the necessity for the establishment of a port and shipping management policy along with maritime development plans has to be taken into consideration.
To achieve this objective, the MPWT should take an initiative to propose and approve the policy. The proposed port and shipping management policy should:

- Promote economic growth of productive sectors, and services by increasing port and shipping activities and international trades.
- Follow up the NPRD.
- Promote the port expansion/development along with administrative buildings, warehouses, dry port and port yards, dredging of channels for ship navigation, port equipment and materials, and other port activities.
- Facilitate the development of transport infrastructures connecting the port to distributing areas.
- Promote the development of shipyard and ship repair facilities.
- Attract and encourage particularly foreign investment.
- Promote job opportunities, and social, and economic, and eventually political stability.
- Ensure competition world-wide in the port and shipping business.
- Provide the authority with the appropriate responsible agency to implement this policy.
- Provide the promotion of the creation of maritime legislation in conformity with international obligations, safety standards and procedures to facilitate port and shipping management and operations.
- Promote the development of maritime services contributing to port and shipping activities. Such services, for instance, are tug, pilotage, warehouse, multimodal transport, forwarding agents, maritime search and rescue, and other administrative services of the port.
- Encourage the expansion of the registration of ships, especially for foreign owners.
- Ensure qualified and professional seafarers, marine officers, masters, and staff at related maritime services. This can be achieved by providing maritime education and training by the responsible authorities.
• Ensure the safety of navigation and port safety. This includes, for example, the safe manning of ships, provisions of shore-based navigational aids.
• Promote the prevention and protection of marine environment that may be raised by the port and shipping activities through the establishment of the contingency plans, and the compliance with national and international requirements.
• Strengthen co-ordination and co-operation among responsible and world communities to ensure the proper implementation of port and shipping management policies.

6.1.4- Environmental Protection Management Policy
The environmental protection management policy has been clearly enough described in a previous chapter, parts of which have also been in the marine fisheries, marine mining, and port and shipping management policies. This policy aims at managing the economic developmental activities of the sea in a sustainable manner for the benefits of the nation. It also shows the leading role and responsibility of the MOE to co-ordinate and cooperate with the responsible institutions to deal with all possible environmental issues through the legal requirements.

6.2- National Maritime Management Strategies
The national maritime management strategies are created for ensuring the implementation of safety standards, environmental requirements, maritime management policies, and growth of national economy and sustainable development. The strategies should compile all the necessary maritime elements and matters that Cambodia needs to realise current and future maritime development.

6.2.1- The Need for Maritime Legislation Management Strategies
According to what has been presented in the previous chapter, there is some national legislation, certain provisions of which deal with marine affairs. The truth is that the
LMFA, LEPNRM, MML, IL, LLMUC, and decrees and sub-decrees may prevail over a certain part of the maritime matters. Therefore, there has to be far more specific national maritime legislation such as maritime law, shipping law, hours of work law or labour law, port sub-decree, seamen sub-decree, seaworthiness sub-decree, pollution control sub-decree and other legal instruments.

The proposed national maritime legislation management strategies should include the following main items:

- To ensure and support the socio-economic development for the nation as a whole, and promote the stabilisation of the political situation for the country's safety and security.
- To follow up the Constitution of Cambodia, Royal Decrees, and existing laws, and international conventions, as well as the national policy.
- To provide the authority with the appropriate mechanisms to take responsibility to deal with the specific duties on marine affairs.
- To ensure safety of navigation, surveys and inspection procedures for port state and flag state controllers, management and operations of port and shipping and maritime industry, the prevention and protection of marine environment, security and fair working conditions of seafarers.
- To provide co-ordination and co-operation action both at national and international levels.

Furthermore, the existing 902/1954 Royal Decree on the Registration of Ships, and the existing 99/1982 Sub-decree on “Cargo Handling, Transport, Received-Delivery and Maintenance in Ports” should be updated to international standards.

In addition, the international conventions, except as those have been prescribed in the previous chapter, should be considered and ratified by Cambodia in the near future. These are:
• The International Convention on Standards of Training, Certification and Watchkeeping (STCW), 1978, which was went into force in 1984, as amended in 1995.

• The International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995.

• The International Management Code for the Safe Operations of Ships and for Pollution Prevention or the International Safety Management Code (ISM Code) which will be entered into force in 1998.


• The International Maritime Dangerous Goods Code (IMDG Code).

• The International Convention for Safe Containers (CSC), 1972.

• The International Convention on Salvage (SALVAGE), 1989.

• The International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC), 1990.

• The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND), 1971.

• And some other internationally recognised maritime conventions, codes and guidelines.

6.2.2- The Need for Maritime Education and Training Management Strategies

To best get a successful maritime economic development and sustainable environment, it is necessary to have maritime human resources. This can be achieved only if the maritime education and training management strategies are taken into consideration.
Maritime education should be available for all students who after graduation, wish to work for the maritime sector. However, maritime training should be conducted for those who are being employed in maritime services, even in the CMA.

The proposed maritime education and training management strategies should consider the following key elements:

- To ensure adequate human resources, and promote job opportunities for the maritime sector. Here, the students may find the jobs, not only for the governmental authorities, but also for private maritime services even on the international scene.

- To create maritime education and training centres responding to the necessary demands of the nation. The centres so created should be somewhere near the coast so that the students are able to reach the sea easily for practice or job training. If it is impossible to do so, such education and training should be included in the existing Universities, Colleges, or Vocational Schools.

- To provide trainers or instructors to conduct the maritime training on specific technical subjects for particular maritime services.

- To conduct examinations and provide certificates to seafarers,

- To conduct research and studies of issues, and new technology on maritime matters. This should consist of:
  
  * Safe management and operations of port and shipping industry,
  
  * Safety standards of ships including fishing vessels, and mobile units or other offshore installations,
  
  * Management and operations of maritime communication systems, and maritime simulation, and safe navigation and standards,
  
  * Prevention and protection of the marine environment. This also includes the methods of producing the EIA, and contingency plans for maritime emergencies,
  
  * Procedures for surveys, inspections and maritime casualty investigation.
• To coordinate and cooperate with the national and international organisations, in order to get technical assistance in the form of finance and expertise, particularly at the beginning, and finally to ensure success in maritime education and training.

6.2.3- The Need for Management Strategies of the Registration of Ships

The registration of ships is one of the most important aspects for Cambodian maritime development. Registration includes merchant ships, fishing vessels, cruise ships, and mobile units. It may provide huge advantages to the nation without investing much cost. On the other hand, it will cause critical social, economic, and environmental losses if there is a lack of management strategies.

The registration of ships applies to both national and foreign ships to get the nationality and the rights to be legally in service. In general real practices, the registration of national ships may not be a problem. However, the registration of foreign ships flying the flag of Cambodia might have some difficulties since the owners of the registered ships stay outside Cambodia, and the safety standards of ships are concerned.

The management strategies to deal with the registration of ships, therefore, should be proposed as follows:

• To implement the national maritime policy and the NPRD, and legal requirements.

• To create an appropriate agency to take the responsibility of the Ship Registry nationwide and worldwide.

• To amend an existing 902/1954 Royal Decree, and if necessary to set up a draft of law or sub-decree for the registration of ships in coherence with national and international requirements. International requirements, Articles 91, 92, 93 and 94 of the UNCLOS 1982 are taken to be followed up.

• To be arranged and supported by the proposed agency in:
* Locating and providing services of registry both inside and outside the country,
* Conducting planning, marketing, contractual formalities and other registration procedures for the Cambodian ship registry,
* Granting the nationality and flag of Cambodia, either permanently or temporarily, to foreign ships,
* Transferring ownership of ships as requested,
* Giving certificates of registry to allowably registered ships,
* Keeping or maintaining the documents of registry,
* Determining a tariff of registry in accordance with world competition markets.

- To provide co-ordination and co-operation with shipowners or shipping companies, whose ships are registered, as well as the Port State Control and Classification Societies to ensure safe management and operations of the registered ships.

6.2.4- The Need for Enforcement Management Strategies

The threats to safety of ship navigation, port activities, future mobile units and production platforms, and maritime accidents and marine pollution, raise the need for appropriate enforcement management strategies to comply with the legal requirements.

The ships being put into service have to have all the formalities prescribed in legal instruments in the forms of certificates. The certificates are required for all ships on voyages, mobile units, and other offshore installations, and for seafarers or operators as well.
To be sure that all of these activities comply with the national legislation and international conventions to which Cambodia is a party, the surveys and inspections have to be taken into considerations.

The proposed enforcement management strategies should be as follows:

- To follow up the national maritime policy, the NPRD, and the national and international requirements.
- To establish appropriate mechanisms to deal with the surveys and inspections of ships, mobile units, and other offshore installations, and maritime casualty investigations so that such policy and requirements are complied with.
- To come along with various types of surveys and inspections mentioned in the national maritime legislation, and the international maritime regulations such as MARPOL 1973/1978, SOLAS 1974, LL 1966, and TONNAGE 1969.

  # Initial surveys/inspections are undertaken before the ships are put in service for the first time. The surveys/inspections include ship structure, machinery, equipment, systems, fittings, and other ship technology, and arrangements and materials. These are used as evidence of the issuance of each ship’s certificates. The certificates should be:

* The Passenger Ship Safety Certificate along with a Record of Equipment,
* The Cargo Ship Safety Equipment Certificate with a Record of Equipment,
* The Cargo Ship Safety Radio Certificate with a Record of Equipment,
* The Cargo Ship Safety Construction Certificate,
* The International Oil Pollution Prevention Certificate for oil tanker,
* The International Pollution Prevention Certificate for the compliance with the Annex II of MARPOL 1973/1978, and

* Other certificates/licenses such as “LL Certificate”, “TONNAGE Certificate”, “Local Cargo Ship Safety Certificate”, Mobile Units and Offshore Installation Licenses”, and “Exemption Certificate” if necessary.
Periodical surveys/inspections are taken at specified intervals, but not more than five years. This is to ensure what has been surveyed and inspected in the initial step still fully complies with the requirements.

Immediate surveys/inspections are conducted during the validity of the Certificate. These surveys/inspections must be held not before six months prior to, nor later than six months after the half way date of the Certificate's period of validity. Again, this is to ensure that ship structure, machinery, equipment and other safety standards/systems are still in safe operation.

Moreover, the ships are subject to surveys/inspections by the responsible authorities—Port State and Flag State, at any unscheduled time during the validity of the Certificate.

- To monitor and control the Cambodian jurisdiction to find out if there is violation against regulations or any non-compliance with the regulations. This includes the control of the discharge of ballast water and oil residues, and the disposal of plastics, paper products, glass, dunnage, lining and packing materials, food wastes, and other garbage into the sea, especially from the Contiguous Zone to the shore. If necessary the ships are subject to detention and a fine.

- To plan and implement the port state control procedures and jurisdiction on foreign ships.

- To arrange and enforce the flag state implementation procedures as Cambodia is a Flag State. The surveys/inspections programmes, including maritime casualty investigations, the establishment of a support of infrastructure with personnel and expertise, administrative instructions, facilities, and number, type, tonnage of flagged vessels and resources, are also considered.

- To improve the development of maritime equipment, safety standards/systems, and to support the amendments of regulations through recommendations of maritime casualty investigations.

- To coordinate and cooperate with those who are concerned about port and shipping business, petroleum exploration/exploitation, fishing, and the
Classification Societies to ensure the success of enforcement management strategies.

6.2.5- The Need for Co-ordination and Co-operation Management Strategies

The proposed co-ordination and co-operation management strategies are developed to ensure the ties of national responsible authorities, the companies, and the international organisations the objectives of achieving successful maritime missions in Cambodia.

In addition to the relationship within the Cambodian authorities, the CMA should closely cooperate with various international organisations. The main organisations to deal with maritime matters should be:

- The International Maritime Organisation (IMO) to deal with safety of navigation, maritime transport development, maritime regulations and implementation, manning, education and training of seafarers, prevention and protection of maritime accidents/marine pollution from ships.
- The International Labour Organisation (ILO) to deal with social affairs in maritime sectors. This includes working environment conditions, hours of works, wages, medical care, and other welfare, safety, security, and social benefits for seafarers.
- The Food and Agriculture Organisation (FAO) to support the development and protection of marine fisheries resources, and the prevention and protection of marine environment.
- The United Nations Development Programme (UNDP) to support the establishment of national maritime development programmes, policy and legislation, port reception facilities, and maritime infrastructure.
• The United Nations Conference on Trade and Development (UNTAD) to support the maritime training of multimodal transport, the programmes for facilitating the development and improvement of Electronic Data Interchange of such business.

• The United Nations Educational, Scientific and Cultural Organisation (UNESCO) to support the development of maritime education and training.

• The United Nations Environment Programmes (UNEP) to assist in the development of marine environmental prevention and protection programmes.

• The regional organisation of Southeast Asian Programme in Ocean Law, Policy and Management (SEAPOL) to promote the implementation of the law of the sea in the region, and to provide preliminary assistance in the fields of ocean law, policy, and management.

• And other non-specialised and specialised agencies of the United Nations, the external Governments, and the Classification Societies to support the development of maritime sectors in a sustainable manner.

6.3- The Proposed Structure and the Responsibility of the CMA

6.3.1- Objectives of the CMA Proposal

The main objectives of the establishment of the CMA are:

• To ensure the development and facilitation of maritime transport, port and the shipping industry, fishing industry, offshore installations, and the provision of maritime services thereof.

• To ensure the development of maritime national policy, legislation and the implementation of such policy, legislation, and the international regulations, which have been signed by Cambodia.

• To ensure the terrestrial sovereignty and integrity, and security of the sea, the safety of navigation, and the prevention and protection of the marine environment.
• To provide and promote job opportunities, upgrade socio-economic and political stability, and eventually ensure the quality of life of the people of Cambodia.

6.3.2- The Proposed Structure of the CMA
The CMA’s structure (Figure 5) is proposed in accordance with the real situation of maritime activities/development, the proposed maritime policies and legislation, and the proposed maritime management strategies. In other words, it is created to take duties of marine affairs of Cambodia from now and into the future.

It is proposed that the CMA is to get involved with all responsible institutions, either directly or indirectly, in dealing with maritime matters. These institutions are:

• The MPWT, the General Department of Transport (GDT).
• The MOE, the Department of Pollution Control (DPC), and EIA Department.
• The MIME, the Marine Mining Authority (MMA).
• The MAFF, the DOF, the Marine Fisheries Offices, and Central Marine Fisheries Inspection Division.
• The MEYS, the General Department for Education.
• The MEF, the CDC and the Customs Service.
• The MOD, the CCG.
• The MFA.
• And the Municipalities.

The proposed CMA, however, is essentially put under the direct control of the GDT, which is a subordinate of the MPWT. Under the GDT supervision, there are three bodies-the Direction of Maritime Commerce (DMC), the Maritime Search and Rescue Agency (MSRA), and the Port Authority.
The DMC should consist of seven main offices. These are Administrative, Seamen, Safety Navigation, Maritime Transport, Registration and Statistic, Technical Supervision, and Environment Offices.

The Port Authority is outside DMC control, but it is created as a subordinate of the GDT. This Authority, in long-term planning, should be composed of some important regional ports.

The MSRA is created under the supervision of the DGT, as a coordination agency which should be composed of some technically responsible institutions from relevant ministries/departments.

The Executive Assistant, moreover, is proposed to the structure, and is assigned to assist the Director General of Transport with the planning, policy, decision making, actions and the management of the organisation. The assistant should be a national and mainly external expert, who have good experience and be qualified in maritime laws/regulations, port and shipping business, naval architecture, management and operations of maritime industry, and have other related experience.

6.3.3- The Responsibility of the CMA

According to the organisational structure proposed, CMA’s responsibilities will have to include being in touch with or sharing the relevant ministries/ departments and other agencies.

The CMA’s main responsibilities, however, are authorised to the GDT of the MPWT, where the DMC may take a leading role in the fields of maritime safety and other maritime matters.
The whole picture of the CMA's main responsibilities is to perform maritime functions. These include the development of the draft of set of legislation, enforcement of laws, sub-decrees and regulations at sea, detention and arrest of abused ships or violators of legal requirements. The functions also consist of maritime search and rescue, prevention of maritime pollution, regulation of vessel traffic, services concerning hydrography and aids to navigation and other competencies of maritime matters.

To best understand most responsibilities of the DMC, its subordinates' duties have to be identified.

- Administrative Office
  The responsibility of which is to provide services for personnel and legal affairs, computerising, budgeting and accounting, and other administrative support and matter of the DMC.

- Seamen's Office
  This Office is responsible for the safety affairs of seafarers which include manning of ships, seamen training, examinations and certification. Its responsibility, in a close relationship with the ILO convention, also consists of medical fitness, health, hours of work, working environment conditions, and other social and safety matters for seafarers.

- Safety Navigation Office
  As the title implies, the Office is responsible for the safety affairs of navigation and for the flag state implementation. Its responsibilities are:
    * To ensure hydrographical and meteorological surveys and information, oceanographic observation, identification of line of transportation navigation, and navigation messages for ships and mariners,
* To ensure the regulation and provision of navigational aids, This includes construction, operations, and maintenance of buoys, lighthouses and other aids to navigation,

* To ensure operations and maintenance of the DMC’s vessels, craft, and communication facilities,

* To provide maritime guard and rescue for maritime accidents- collisions, groundings, fire and explosions, and the marine pollution of ships, mobile units, and offshore installations in close co-operation with the CCG and MSRA,

* To ensure, in a close co-operation with the CCG, the supervision of crimes at sea, detention and arrest of violators of both national and international requirements,

* To ensure the creation of related services in other countries, which are necessary and where it is allowed to conduct surveys/inspections on foreign vessels, flying Cambodia’s flag in case of an absence of valid certificate/ documents, and clear grounds. In this case, the co-operation with the Classification Societies and the Port State Controls of concerned maritime countries should be considered,

* To conduct maritime casualty investigations within Cambodian jurisdiction, and outside the country if the case warrants or is requested,

* To ensure the draft of legislation and the compliance with national and international requirements regarding the safety of navigation.

• Maritime Transport Office

The Office is responsible for planning, policy making, co-ordination of maritime transport, and supervision of maritime business. Thus the Office is in charge of:

* Port and shipping policy, both at national and international levels,

* Guidelines for maritime transportation line,

* Licensing and fee procedures and approval of domestic maritime transport, which includes coastal cargo ships, passenger ships, fishing vessels, cruise ships, and port transport business,
* Services for the port and shipping business.

- Registration and Statistics Office
  The Office is created mainly to manage and regulate the registration of ships or nationalisation of ships. Thus the Office is responsible for:
    * Policy, procedures and regulations for the registration of ships, including fishing vessels, merchant ships, and offshore mobile units,
    * Registration and statistics of ships,
    * Transfer of ownership of ships,
    * Certification and licence of documents to ships,
    * Publication of the register book of seagoing and island ships of Cambodia,
    * Verification of documents, and
    * Provision of services thereof.

- Technical Supervision Office
  The Office is created to act mainly as the Port State Control functions for foreign ships calling at the ports of Cambodia. The Office is in charge of:
    * Technical supervision of ships. This consists of the control of ship structure, machinery, fittings, systems, equipment, safety standards and other technical characteristics of ships,
    * Inspection, tonnage measurement and containers of ships,
    * Surveys/inspections of ships, in accordance with the national and international requirements, and guidelines of the DMC related to the technical standards and other safety standards,
    * Detention of ships if clear evidence of breaching the regulations, is found.

- Environment Office
  The Office is in charge of:
* The procedures of compliance with the LEPNRM, the national and international regulations pertaining to the prevention and protection of the marine environment from ships,

* The procedures of the EIA in maritime transport and maritime development in close co-ordination and co-operation with the MOE,

* The preparation and regulation of contingency plans for the response to maritime accidents/marine pollution from ships,

* The promotion of the development of reception facilities in ports/terminals, treatment process and final disposal of ship-generated wastes.

The Port Authority is proposed to CMA’s structure, in order to take some parts of the DMC duties by:

- Providing services for the safety management and operations of ports and ships mooring in the ports.

- Providing services for the port contingency plans and maritime combating pollution in the port areas, and outside its jurisdiction if requested.

- Being involved in maritime safety, search and rescue affairs in the particular regions of Sihanoukville, Koh Kong, Kampot and Phnom Penh. In each region, the Harbour Master Office plays a very important role in safety matters.

- Implementing guidelines of the DMC, national and international requirements.

- Providing the navigational aids to approach channels where necessary in its jurisdiction.

- Ensuring adequate reception facilities are available in ports for ship produced wastes.

The MSRA is an another subordinate of the MPWT. It is created to support the CMA to safeguard human life and properties at sea, and to promote any action directly upgrading safety at sea and marine pollution response.
The Agency is an co-ordination institution, which is set up in such a way that the responsible institutions, especially those who are able to participate in maritime safety matters, salvage and pollution response operations, and maritime contingency plans.

The institutional co-ordination of the Agency should be the CCG, DOF, MMA, DPC, DMC, Port Authority, Health Department, Municipalities, and concerned companies.

The whole picture of the Agency's responsibilities is of:

- Maritime search and rescue for all maritime accidents, disabled ships, mobile units and other offshore installations.
- Preparation and implementation of maritime contingency plans for the response to maritime accidents/marine pollution.
- Facilitation of maritime traffic systems, pollution patrols over the maritime activities in Cambodian jurisdiction.
- Creation of maritime search and rescue co-ordination centre and complementary services for safety matters, safety of life at sea, and combating marine pollution prevention.
- Promotion of human resources for Maritime Search and Rescue operations.

The responsibilities of the CMA, furthermore, should be under the competencies of the other institutions.

- The MOE should be in charge of:
  * Developing policy, and legislation pertaining to the prevention and protection of marine resources and environment, which may be caused by the maritime industry,
* Controlling marine water quality, marine pollution sources, and other abuses of the LEPNRM and sub-decrees thereof, and prosecuting or taking action against violators,

* Being involved in marine pollution response operations in co-operation with the MSRA,

* Developing guidelines or procedures for the development of contingency plans, and the EIA of particular projects of maritime development,

* Creating guidelines for the development of reception facilities, treatment processes, and final disposal of ship-generated wastes,

* Assessing and approving the EIA of all projects of maritime development which are expected to harm to human life and the marine environment,

* Being involved in the fields of maritime training of seafarers or personnel at the CMA on the environmental degradation from ships and measures to be taken.

- The MIME should be responsible for:
  
  * Creating policy and legislation concerning the administration of the seabed minerals,

  * Licensing and permitting mineral activities in the particular designated areas. The licence/permit covers the exploration, mining, transportation, marketing, and processing of minerals. The ownership and its transfer of mining areas and activities are also included. However, licences to mobile units are not in its competencies,

  * Conducting the EIA of marine mineral projects,

  * Being involved in the pollution prevention response operations for maritime accidents caused by mining activities through the MSRA,

  * Undertaking training on safety of operations, and the model of prevention and protection of the marine environment caused by mineral activities.
• The MEYS, the responsibilities of which are:
  * To develop policy and legislation, which promote the efficiency of maritime education and training,
  * To integrate the maritime fields into particular educational programmes for vocational schools and universities,
  * To create a maritime academy to produce Cambodian seafarers, marine officers, ship masters, and qualified personnel in line with international standards. Thus, the academy may conduct examinations and certification, but the professional certificates must be issued by the DMC.

• The MFA should be responsible for:
  * International conferences concerning international regulations, ocean policy and management, international sea frontiers, conflicts, and co-operation,
  * Ratification/accession of international conventions on behalf of the Government,
  * Promotion of international relationships with regards to maritime matters.

• The MAFF should undertake the following responsibilities:
  * To manage the marine fisheries resources,
  * To license or permit fishing vessels for fishing, but for transportation this comes under the competencies of the Maritime Transport Office of the DMC,
  * To patrol the fisheries areas, fishing, and prosecute those who violate the fisheries requirements,
  * To conduct data collection and fisheries scientific research,
  * To control fisheries quotas, while the safety of fishing vessels, non-compliance with the environmental requirements, and international maritime regulations are out of its competency,
* To promote the training of fisheries staff, and awareness of fishermen on safety affairs and the prevention and protection of the marine environment, caused by fishing activities,

* To be involved in pollution prevention response operations and other fields of the MSRA.

- The MEF should be in charge of:
  * Creating policy and legislation, which stimulate the increase of import and export volumes through international trade,
  * Increasing foreign investment for maritime development projects,
  * Promoting the development of maritime human resources,
  * Facilitating the customs procedures and formalities for import/export,
  * Promoting the development of the CMA’s administrative and maritime services, and
  * Ensuring free and fair competition between/among the maritime sectors in the world markets.

- The MOD should discharge the following responsibilities:
  * Maintaining security, terrestrial integrity, and sovereign rights in Cambodia’s jurisdiction, as Cambodia is a coastal state,
  * Suppressing crimes/piracy on ships and other maritime business,
  * Arresting criminals or violators in compliance with both national and international requirements,
  * Undertaking maritime safety, maritime search and rescue in close relationship with the DMC and the SMRA,
  * Being involved in the prevention and implementation of maritime contingency plans,
* Promoting the development of maritime training of its staff, related to safety, salvage operations, prevention of pollution, and compliance with national and international requirements.

- The MOT should be in charge of:
  * Investments in the development of marine sanctuaries,
  * The prevention and protection of pollution from tourism activities,
  * The safety of cruise ships, protection of marine resources and the environment in sanctuaries,
  * The training of guides and tourism staff for the awareness of tourists in the protection of marine sanctuaries.

- The Municipalities should be in charge of:
  * Managing and controlling local ports and small passenger boats, small cruise boats, and fishing vessels other than the vessels licensed by the above authorities.
  * Being involved in the development and implementation of the contingency plans,
  * Promoting the awareness of local people on safety, prevention and protection of the marine environment.
Figure 5 - Proposed CMA Organisational Structure

Ministry of Public Works and Transport (MPWT) → Relavant Ministries and Government Agencies

General Department of Public Works

Executive Assistant

Direction of Maritime Commerce (DMC)
- Administrative Office
- Seamen’s Office
- Safety Navigation Office
- Maritime Transport Office
- Registration and Statistics Office
- Technical Supervision Office
- Environment Office

CMA General Department of Transport (GDT)

Port Authority
- Sihanoukville Port Authority
- Phnom Penh Port Authority

Maritime Search and Rescue Agency
CONCLUSIONS

As a maritime country, Cambodia can develop its economy to be dependent upon, among other things, the existing marine natural resources in the form of service or exploitation.

Maritime activities and plans for development, which have been described in this dissertation, must be operated and managed in a sustainable way so that they will not spoil the current and future generations' interests.

The existing problems and future issues envisaged with maritime activities and the development plans of ports, shipping, oil and gas exploration/production, marine fisheries, and other related maritime developments and infrastructure must be analysed and settled.

To come along with an increase in the population, and the need for the economic development, the development of maritime activities and services thereof, is the highest priority.

The oil and gas deposits, which have been explored and tested recently, need to be produced in the near future. This plan will be operated with the construction of production platforms and other offshore installations, drilling wells, pipelines, supply vessels, and tanker traffic, and in some cases storage facilities and refineries. This needs to have a precautions management system.

The marine fisheries should be developed and managed in a proper way. Thus, the safety of fishing vessels, and the spoilage of the marine environment by wastes from fishing activities, must be handled by the CMA.
The development of the port and its infrastructure is needed to fit an increase in calling ships and international trade. The safety of ship navigation, of life at sea, manning of ships, the pressure of crimes and any other violation, the provision of maritime services, human resources development and other affairs of concerning maritime matters are the most important aspects.

It should be borne in mind that one of the good tendencies to sustain the marine environment is to provide the sales of appropriate services rather than to exploit natural resources. Pilotage, warehouses, lighthouses, forwarding agents, multimodal transport, registration of ships, maritime search and rescue, training centres, and administrative services and other services provided, may benefit the nation.

The creation of maritime policy and legislation, and maritime management strategies, and the effective implementation of national and international requirements must be defined.

The sharing of the responsibilities of marine affairs among regulatory responsible authorities, especially those who are concerned with the prevention and protection of the marine environment against maritime accidents and marine pollution should be clearly defined.

There is so far no maritime authority or specialised agency to take on all the matters related to maritime activities and development. In 1961, moreover, the likely maritime administration was proposed to take on some parts of marine affairs, but this has never been achieved.

The existing organisations dealing with these affairs are not considered as the Cambodian Maritime Administration. The reasons for this are (i) each organisation is separately responsible for its mandate, which seems to be duplicable to another;
(ii) most of the responsibilities of marine affairs are not taken into consideration; (iii) there is a lack of a cooperative mechanism to perform functions on maritime safety, prevention and protection of the marine environment, and other duties of marine affairs; (iv) there is no maritime policy, maritime legislation, and the implementation thereof; and (v) there are inadequate human resources and finance due to decades of war.

Creating the Cambodian Maritime Administration is not an easy task since there is a complexity of the existing responsibilities in marine affairs.

The author, however, has learnt a lot of the methods of the management systems of the maritime administrations in some countries during studies at World Maritime University and the field trips to other maritime countries.

According to these lessons, and the actual situation of the present and future maritime development of Cambodia, the author proposes the establishment of a Maritime Administration in Cambodia. The Administration is to be created in such a way that all responsibilities of maritime matters will be governed by it.

Finally, this paper is hoped very much to help the Ministry of Public Works and Transport, and other regulatory responsible authorities to consider and create such an Administration in the Kingdom of Cambodia in the near future.
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Appendix 1. Foreign Assistance Programme For the Rehabilitation of the Transportation Sector

<table>
<thead>
<tr>
<th>Project Title</th>
<th>E. Cost</th>
<th>Donor</th>
<th>On-going</th>
<th>1994-1995</th>
<th>1996-2000</th>
<th>Observation (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* NR 3 and 4</td>
<td>24.00</td>
<td>USA</td>
<td></td>
<td>24.00</td>
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<td>2</td>
</tr>
<tr>
<td>* NR 1,2,3,5, and 6</td>
<td>15.20</td>
<td>ADB</td>
<td>15.20</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>* NR 6 A</td>
<td>13.00</td>
<td>Japan</td>
<td>13.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Railways</td>
<td>2.50</td>
<td>France</td>
<td></td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Inland Waterways</td>
<td>8.20</td>
<td>Denmark</td>
<td></td>
<td>8.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Procurement of a super stacker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for containers in Sihanoukville</td>
<td>0.60</td>
<td>France</td>
<td></td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Phnom Penh Port</td>
<td>18.00</td>
<td>Japan</td>
<td>18.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Maritime Telecommunication Port</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sihanoukville- Phnom Penh</td>
<td>0.50</td>
<td></td>
<td></td>
<td>0.50</td>
<td></td>
<td></td>
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</tbody>
</table>

Source: RGC, 1994

Note: E.Cost- Estimated Cost, $ US Million.
Appendix 2. Foreign Assistance Programme For the Rehabilitation and Construction of the Transport Infrastructure

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Donor</th>
<th>On-going</th>
<th>1995</th>
<th>1996</th>
<th>After 1996</th>
<th>C. Total</th>
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<tr>
<td>1. Roads</td>
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<tr>
<td>* NR 1,2,3,and 6</td>
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<td>4.00</td>
<td>3.00</td>
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<td>12.60</td>
</tr>
<tr>
<td>* NR 3</td>
<td>USA</td>
<td>4.00</td>
<td>4.00</td>
<td></td>
<td></td>
<td>8.00</td>
</tr>
<tr>
<td>* NR 5</td>
<td>ADB / UN</td>
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<td></td>
<td>56.80</td>
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<td></td>
<td>DP ADB</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* PR 11</td>
<td>ADB</td>
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<td>1.00</td>
<td></td>
<td></td>
<td>3.00</td>
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<td>2. Rolling stock supply and equipment</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>4.10</td>
</tr>
<tr>
<td>3. Ports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Container stack yard in Phnom Penh for Sihanoukville traffic</td>
<td>BOT</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td>2.00</td>
</tr>
<tr>
<td>* Improvement of technical Sihanoukville port for larger ships</td>
<td>Petro Cos</td>
<td>2.50</td>
<td>2.50</td>
<td></td>
<td></td>
<td>5.00</td>
</tr>
<tr>
<td>4. Inland waterways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Hydraulic survey equipment</td>
<td>WB</td>
<td>3.20</td>
<td></td>
<td></td>
<td></td>
<td>3.20</td>
</tr>
<tr>
<td>* Dredging Mekong River</td>
<td>WB</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
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<tr>
<td>* Mekong River Mapping</td>
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<td>0.30</td>
<td></td>
<td></td>
<td>0.60</td>
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<td>* Development Strategies for Tonle Sap</td>
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<td></td>
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<td>5. Coastal Maritime Radio Network</td>
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<td>0.90</td>
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<td></td>
<td>1.50</td>
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</tbody>
</table>

Source: RGC, 1995

Note: C. Total- Cost Total, $ US Million.