

9. ECONOMIC ANALYSIS

9.1 Purpose of Economic Analysis

The purpose of the economic analysis is to study and appraise the economic feasibility of the Short-term Development Plan for Phuket Fishery Complex in the target year (2007) from the view point of national economy. The result of this study revealed that the conventional fishery methods by trawlers and purse seiner boats should remain at the current level in view of future resource management, that new methods by tuna longline boats, and skipjack/tuna purse seiner boats and skipjack pole and line fishing boats should aim at more efficient use of resources, and that fishery products with higher added values for foreign countries such as Sashimi for Japanese market, canned tuna for the United States and rare skipjack roast for other markets should be developed and their export promoted, to thereby contribute to the economic development of Thailand. The Short-term Development Plan aims at realisation of these prospects by constructing berthing facilities for the increasing number of tuna longline boats and for skipjack/tuna purse seiner boats and tuna freezer/carriers at Phuket Fishing Port, and building a fishery processing zone for tuna canning behind the port which will serve as the economic basis for the Andaman Sea coast area.

The purpose of this Chapter is to investigate economic benefits and costs that will arise from this project and to evaluate whether the net benefits will exceed those that could be obtained from other investment opportunity costs in Thailand.

9.2 Methodology of economic Analysis

An economic internal rate of return (EIRR) based on a cost-benefit analysis is used to appraise the feasibility of this project by comparing the case with the project and without the project implementation. Fig.9.2.1 shows the flow chart showing the economic analysis procedure. In estimating the project costs and benefits, they should be fixed quantitatively as much as possible. "Economic Pricing" is applied after the removal of "Transfer Items" such as tax, interest charges and subsidies. "Economic Pricing" here means the appraisal of cost and benefit in terms of international prices("Border Prices").

9.3 Prerequisites of the Economic Analysis

In order to estimate the costs and benefits, the following requisites are assumed for the analysis.

9.3.1 Construction Plan for Short -term Development Plan

Construction of Phuket Fishery Complex will be implemented as follows.

(1) Wharf and Related Facilities to Address Increase of Tuna Longline Boats

Period of Construction	: 2000 - 2001
Use to start in	: 2002

(2) Wharf and Related Facilities for Skipjack/tuna Purse Seiner Boats and Tuna freezer/carriers

Period of Construction : 2002 - 2003

Use to start in : 2004

(3) Fisheries Processing Facilities for Export

Period of Construction : 2002 - 2003

Use to start in : 2005

(4) Tuna Canning Facilities

Removal and construction

Two plants in 2004 ; Operation starts in 2005

Two plants in 2005 ; Operation starts in 2006

Two plants in 2006 ; Operation starts in 2007

9.3.2 Base Year

The "Base Year" here means the standard year used in estimation of costs and benefits. Considering that the base year in cost estimation of construction as discussed in Chapter 7: Construction Plan is 2000, this year is set also as the base year for this study.

9.3.3 Project Life

Considering the depreciation period of the existing and new facilities and repayment of the construction fund discussed in Chapter 10: Financial Analysis, the period of calculation in the economic analysis ("Project Life") shall be 30 years from completion of the fishing port facilities (from 2002 to 2031).

9.3.4 Foreign Exchange Rate

The exchange rate adopted for this analysis shall be the same as that used in the cost estimation US\$1=Baht 25.33.

9.3.5 Prerequisites for Cases "Without" or "With" the Project

The two cases will be compared in respect of the following items.

- : Phuket fishery port facilities and fishery processing facilities
- : Fish landing volume and number of fishing boats at Phuket
- : Tuna processing volume at Phuket tuna canning plants
- : Distribution

(1) Phuket Fishing Port Facilities and Fisheries Processing Facilities

Rough comparison was made of the causes "with" and "without" the project.

<u>"With"</u>		<u>"Without"</u>
[Fishing port facilities]		
Existing facilities	(no investment)	(no investment)
FMO	Quay for trawlers and purse seiners	- same with left-
Private	Quay for trawlers and purse seiners and tuna longline boats	- same with left-
[Extended facilities](Investment)		(no investment)
FMO	Quay for tuna longline boats	None
[New facilities] (Investment)		(no investment)
FMO	Quay for tuna/skipjack purse seiners and tuna freezer/carriers	None <u>(Use of other ports)</u>
[Fisheries processing facilities]		
(Investment)		(no investment)
6 tuna canning plants		<u>(use of existing plants)</u>

NB: FMO: Fishery Marketing Organisation

1) Phuket Fishing Port Facilities

Phuket Fishing Port includes FMO and private facilities. Since the fish volume landed by trawlers and purse seiners at these facilities will not increase after 1995, no investment shall be made for expansion and rehabilitation of the existing facilities for these types of boats. These facilities will be used by trawlers and purse seiners employing traditional fishing methods. Currently, tuna longline boats of Taiwan and China are landing tuna catch at FMO facilities, but their statistical records are not available. Therefore, they are not included in the FMO fish landing volume. A landing quay is being built at the private facilities for Chinese and Taiwanese tuna longline boats, and 70 boats are expected to start using them from 2002.

"With" the project, there will be increases of 70 Thai boats and 105 foreign boats for tuna longline fishing in 2007, and FMO facilities will be expanded and rehabilitated to address these increases. The facilities will be offered for use from 2002. "Without" the project, there will be no increase of the fishing boats. Assuming that tuna canning plants being operation for export in 2005 at the fishery processing zone, the amount of tuna required for processing for export is estimated to be 72,000 tons

in 2007. A berthing facility to accommodate one Thai boat ; two Japanese skipjack/tuna purse seiners and four foreign tuna freezer/carriers will be built to secure tuna supply for canning. "Without" the project, it is assumed that Thai and Japanese skipjack/tuna purse seiners will land their catch at Phuket Port and foreign tuna freezer/carriers at Songkhla and Bangkok Ports.

2) Fisheries Processing Zone for Export of Canned Tuna

"With" the project, there will be built a fisheries processing zone behind Phuket Fishing Port. Six canning plants will be moved from Bangkok , Samut Prakan and Samut Sakhon to start operation in 2005. "Without" the project, existing 6 plants located in those areas will continue their operation and no investment will be made for expansion or rehabilitation of the facilities.

(2) Fish Landing Volume and Number of Fishing Boats at Phuket Fishing Ports

A model for estimating the fish landing volume and the number of fishing boats after 1996 is built in respect of the trawlers and purse seiners employing conventional methods, tuna longline boats, skipjack/tuna purse seiners, and tuna freezer/carriers to supply tuna for canning employing new fishing methods.

[Trawlers and Purse Seinners]

Based on the prospective estimate at the time this survey (1996) and fishery statistics (1991-1995), it is assumed that both the fish landing volume and the number of fishing boats will not increase after 1995 but continue the current conditions. Therefore, by assuming the same conditions for both cases of "with" and "without" the project, the fish landing volume is assumed to be 27,292 tons at FMO facilities , 34,972 tons at private facilities, totalling 62,264 tons. As for trawlers and purse seiners using FMO and private facilities, the same operating conditions are assumed for the same type of boats. The landing volume per operation is assumed to be 14 tons for trawlers and 6 tons for purse seiners.

The volumes at the expanded and newly built facilities landed by Taiwanese, Chinese and Thai tuna longline boats, Thai and Japanese skipjack/tuna purse seiners, and foreign tuna freezer/carriers are assumed for the cases of "with" and "without" the project as follows.

[Tuna Longline Boats]

Under the current operating conditions of boats from Taiwan and China, the catch per operation is 7 tons for Taiwanese boats and 2 tons for Chinese boats. "With" the project, Taiwanese, Chinese and Thai boats will start landing operations at the expanded FMO facilities or private facilities from 2002.

Taiwanese and Chinese boats:

[FMO facilities]; Landing volume per operation
2002→2007: 7 tons, 80→105 boats

[Private facilities]; Landing volume per operation
2002→2007: 7 tons, 70→70 boats

Thai boats

[FMO facilities]; Landing volume per operation
2002→2007: 5→7 tons, 50→70 boats

It is assumed that 60% of tuna landed is frozen and air-freighted to Japan as Sashimi, and the remaining 40% is supplied to tuna canning plants at Phuket Fishery Processing Zone for export to the United States. The zone will reach their maximum operation capacity in 2007 as six canning plants continue their operation, and therefore the landing volume is assumed not to increase after 2008.

The landing volumes from 2002 to 2007 are estimated under the above mentioned conditions "with" the project implementation.

Fish Landing Volume by Tuna Longline Boats

(at FMO extended facilities) (unit: ton)

Boats	2002	2003	2004	2005	2006	2007
(FMO)						
Thai boats						
Sashimi	2,850	3,078	3,967	4,948	5,267	5,586
Can	1,900	2,052	2,645	3,298	3,511	3,274
Total	4,750	5,130	6,612	8,246	8,778	9,310
Foreign boats						
Sashimi	6,384	6,783	7,182	7,581	7,980	8,379
Can	4,256	4,522	4,788	5,054	5,320	5,586
Total	10,640	11,305	11,970	12,635	13,300	13,965
Grand total	15,390	16,435	18,582	20,881	22,078	23,275

(NB)

Foreign boats

Sashimi	11,970	12,369	12,768	13,167	13,566	13,965
Can	7,980	8,246	8,512	8,778	9,044	9,310
Total	19,950	20,615	21,280	21,945	22,610	23,275

The landing volume "Without" the project is assumed not to increase because of the limited landing space in the existing FMO facilities. The volume landed by 70 foreign tuna longline boats at private facilities is assumed to be the same "Without" the project, i.e. 9,310 tons after 2002.

[Skipjack/tuna Purse Seiners]

One Thai boat will begin operation in 2002. By referring to the result of operation by Japanese boats in the East Indian Ocean, the landing volume per operation is assumed to be 480 tons. Based on the volume per operation of two Japanese boats currently landing their catches at Phuket Port, the volume per operation after 2002 is assumed to be 830 tons.

"With" the project, the following volumes are estimated for FMO new facilities. The estimation is for the period between 2007 when the use starts and 2002. The volume is assumed not to increase after 2008. Landing between 2002 and 2003 is assumed to be made by Thai and foreign boats at Phuket Port. All the volume landed is to be supplied to tuna canning plants.

Volume Landed by Skipjack/Tuna Purse Seiners

Boats	(at FMO new facilities)						(unit: ton)
	2002	2003	2004	2005	2006	2007	
Thai boats	0	0	2,880	2,880	2,880	2,880	
Foreign boats	0	0	9,044	9,960	9,960	9,960	
Total	0	0	11,924	12,840	12,840	12,840	

The landing volume "Without" the project is the same as the case "With" the project. It is assumed that landing between 2002 and 2007 will be made by Thai and foreign boats at Phuket Port.

[Tuna Freezer/carriers]

A carrier will supply 1,500 tons per trip to tuna canning plants in the Fisheries Processing Zone.

“With” the project, the operation will be conducted at the above mentioned FMO new facilities. The landing volume is estimated based on the following requirements from 2005 when tuna canning plants start operation in the fisheries processing zone.

Two plants in 2005; 24,000 tons

Four plants in 2006; 48,000 tons

Six plants in 2007; 72,000 tons

The fish landing volume by tuna freezer/carriers is calculated as follows assuming that 40% of tuna longline boats, another source of supply, and 100% of skipjack/tuna purse seiners will supply to the plants. It is assumed that the landing volume will not increase after 2008.

Volume Landed by Tuna Freezer/Carriers

(at FMO new facilities)

["With" the project]	(unit: ton)		
<u>Boats</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
Tuna freezer/carriers	0	22,605	46,126
Tuna longline boats(Thai)	3,298	3,511	3,724
Tuna longline boats(foreign)	8,778	9,044	9,310
Skipjack/tuna purse seiners(Thai)	2,880	2,880	2,880
Skipjack/tuna purse seiners(foreign)	9,044	9,960	9,960
Total	24,000	48,000	72,000

“Without” the project, tuna freezer/carriers will continue landing their catches at Songkhla and Bangkok Ports as they do now. The volume landed is calculated based on the tuna canning requirements as in the case “With” the project.

Volume Landed by Tuna Freezer/Carriers

(at Bangkok Port, etc)

["Without" the project]	(unit: ton)		
Boats	2005	2006	2007
Tuna freezer/carriers(foreign)	7,600	31,436	55,436
Tuna longline boat(foreign)	3,724	3,724	3,724
		(9,310x40%)	
Skipjack/tuna purse seiners(foreign)	12,676	12,840	12,840
Total	24,000	48,000	72,000

Tables 9.3.1 and 9.3.2 show the fish landing volumes and the number of fishing boats broken down by the type of boats for Phuket Fishing Port estimated for the period between 2002 and 2007 which were estimated based on 1995 figures for both "With" and "Without" the project.

(3) Supplies for Tuna Canning Plants at Phuket Fisheries Processing Zone

Supplies for tuna canning plants were discussed in (2) above for both "With" and "Without" the project.

"With" the project, six plants will move to Phuket Fisheries Processing Zone from Bangkok, Samut Prakan and Samut Sakhon and will start operation according to the following schedule when construction of plants is completed.

Two plants in 2005, Four plants in 2006, Six plants in 2007

There will be needed 12,000 tons of tuna per plant or a total of 72,000 tons, which will be transported by trucks to the plants after being landed at Phuket Fishing Port.

"Without" the project, the six plants in Bangkok, etc. will require 72,000 tons of tuna as in the case of "With" the project, which will be transported by trucks to plants after being landed at Phuket, Songkhla or Bangkok Ports.

(4) Distribution

Fig. 9.3.2 shows estimations for distribution of fish landed at the existing, expanded, and new facilities at Phuket Fishing Port "With" or "Without" the project.

Fish landed by trawlers and purse seiners at Phuket Fishing Port are currently transported by trucks to Phuket, Samut Sakhon, Bangkok, Phanga, Songkhla, Krabi, Trang, etc. The situation is assumed to remain the same for "With" and "Without" the project.

At the present time, 60% of tuna landed at FMO by Taiwanese and Chinese tuna longline boats is fresh or chilled for Sashimi and air-freighted to Japan from Phuket International Airport. The remaining 40% is transported by trucks to a canning plants in Songkhla. After processing, tuna cans are transported by trucks to Songkhla Port and shipped to the United States. As mentioned before, the details of landing statistics are not available.

"With" the project, 60% of tuna by tuna longline boats at the extended FMO facilities and private facilities are fresh or chilled for Sashimi for the Japanese Market and shipped from Phuket International Air Port. Remaining 40% is supplied to tuna canning plants at Phuket Fisheries Processing Zone newly established behind Phuket Fishing Port, processed and exported to the United States.

"Without" the project, landing will be only at private facilities by Taiwanese and Chinese tuna longline boats. Distribution after landing is the same as in the case of "With" the project.

At the new facilities, skipjacks and tunas landed by purse seiners are supplied to canning plants in Phuket Fisheries Processing Zone for export to the United States.

"Without" the project, landing is made at Phuket Port, and tunas and skipjacks are transported by trucks to a canning plant in Songkhla, processed and transported by trucks to Songkhla Port for export to the United States.

Tuna landed by tuna freezer/carriers is also supplied to canning plants in Phuket Fisheries Processing Zone and is processed for export to the United States. "Without" the project, the same volume is landed at Songkhla, Bangkok and other ports. Tunas and skipjacks are transported by land from Songkhla Port to Songkhla plant, from Bangkok Port to Bangkok plants, and after canning, they are transported by land to Songkhla Port or Bangkok Port for export to the United States.

9.4 Economic Prices

9.4.1 Method for Converting Market Prices to Economic Prices

For the economic analysis, prices are expressed in economic prices based on the border price concept. There are several methods for converting market prices into border prices. Here, the border prices (economic prices) are calculated after eliminating transfer items such as taxes and subsidies.

In general, all the costs and benefits, are divided into three categories; labor, tradable goods and non-tradable goods. Labor is further classified into skilled labor and unskilled labor. The economic price for skilled labor is determined by multiplying the market wage by the conversion factor for consumption.

The prices of tradable goods are expressed in CIF and FOB values for import goods and export goods respectively.

These values are the actual border prices. However, as border price of non-tradable goods cannot be converted directly, the border price of inputs needed to produce non-tradable goods is considered. After classification into labor and tradable goods,

the final economic price of non-tradable goods are calculated by multiplying the market prices with the standard conversion factor directly.

9.4.2 Transfer Items

Import/export duties, other taxes and subsidies merely transfer items which do not actually reflect any consumption of national resources. Therefore, these transfer items should be excluded in the calculation of the costs and benefits of the project for the economic analysis.

9.4.3 Conversion Factors

Conversion factors for labor and goods are determined as follows:

(1) Standard Conversion Factor (SCF)

The standard conversion factor (SCF) is used to determine the economic prices of certain goods which cannot be directly re-evaluated at border prices. These goods include most non-tradable goods and services. SCF is expressed by the following equation.

$$SCF = \frac{\{X + M\}}{\{(X - Tx) + (M + Tm)\}}$$

Where,

- X : Value of exports
- M : Value of imports
- Tx : Value of taxes on export
- Tm : Value of taxes on import

In this study, the SCF of 0.956, the means of three years from 1993 to 1995 based on the past records of trade and customs.

(2) Conversion Factor for Consumption (CFC)

This conversion factor for consumption is used to convert the market prices of consumption goods into the border prices. CFC is usually calculated in the same manner as the SCF, replacing total imports and exports by consumption goods. This study does not use CFC because of ambiguous import/export statistics concerning consumption goods.

(3) Conversion Factor for Labor (CFL)

For the economic analysis, labor costs are usually measured in terms of their opportunity costs, that is the value of the foregone marginal product from alternate employment due to the employment of laborers for the project.

1) Conversion factor for Skilled Labor

The cost of skilled labor is calculated based on actual market wages, assuming that the market mechanism is functioning properly. However, as these are domestic costs or market costs, they are converted into border prices by multiplying the market wages by standard conversion factor (SCF).

Thus, the conversion factor for skilled labor

$$= (\text{Market wage rate}) \times (\text{SCF}) = 1 \times 0.956$$

$$= 0.956$$

2) Conversion Factor for unskilled labor

As the wages paid to unskilled labors by the project are usually far above the opportunity cost, the market wages should not be used for calculation of the economic value of unskilled labors. Assuming that unskilled is supplied from the central and southern regions near Phuket, economic prices of unskilled labor should be expressed as the value of marginal products lost by employment of other sectors due to employment by the project or the opportunity cost.

Since the minimum wage per person for unskilled labor in the central and southern regions excepting Phuket is 118-126 Baht/day, the opportunity cost of unskilled labor is assumed to equal to the average monthly wage of 3,050 Baht/month in this study. Based on the local data, the average wage of unskilled labor employed in construction work in the domestic market is assumed to be 5,000 Baht/month.

The conversion factor for unskilled labor is therefore calculated by the following equation.

$$\text{CFL for unskilled labor} = \frac{\text{Opportunity Cost}}{\text{Worker's Cost of Construction}} \times \text{SCF}$$

$$= (3.050 / 5.000) \times 0.956$$

$$= 0.58$$

9.5 Project Costs

Project costs must be converted from market prices into economic prices for the economic analysis. The costs arising the implementation of this project are as follows.

9.5.1 Investment Costs

In the economic analysis, investment costs are divided into the foreign currency portion and the local currency portion. Moreover, the local currency portion divided into non-traded goods, skilled labor and unskilled labor. As the foreign currency portion is shown in CIF prices, there is no need for conversion into economic prices. Labor costs (skilled and unskilled) should be converted into economic prices by using the conversion factor estimated in section 9.4.3(3). Table 9.5.1 shows the investment costs. The details are shown in Appendix Tables 9.5.1(1) to 9.5.1(7).

9.5.2 Operation Costs

Based on estimation of operation costs in Chapter 10: Financial Analysis, additional operation costs required for extension of the fishing port or newly built wharf and facilities, and also newly built fisheries processing zone are calculated as follows:

(1) Personnel costs

FMO is responsible for management of the fishing port, and FMO and IEAT jointly for management of the fisheries processing zone. There will be an increase of 24 personnel for the former and 9 new recruits for the latter. Personnel costs (increased portion) are shown in Table 9.5.2. Market prices of personnel costs are converted into economic prices by the conversion factors of skilled and unskilled labor. Economic costs of personnel costs are 4,374,000 Baht/year.

(2) Administration Costs

Based on FMO data analysis, administration costs for the above mentioned two administrative bodies are assumed to be 50% of the personnel costs. Economic prices of administration costs are calculated by multiplying the market prices by the SCF of 0.956, and estimated to be 2,187,000 baht/year as shown in Table 9.5.3.

(3) Maintenance and Repair Costs

Maintenance and repair costs for the new asset are shown in Table 9.5.4. Their economic prices were calculated by multiplying market prices by SCF.

(4) Maintenance Dredging Costs

In order to maintain the entrance channel for skipjack /tuna purse seiners and tuna freezer/carriers, maintenance dredging of 500,000 m³/year is necessary. Economic prices of the maintenance dredging cost were calculated by multiplying market prices by SCF as shown in Table 9.5.5.

(5) Tug Boat Operation Costs

Tug boat operation is necessary for entry and departure of tuna freezer/carriers, and its operation costs were estimated by applying the rental and operating fees for a tug boat for two hours in Phuket Port and shown in Table 9.5.6. Economic prices of the operation costs were calculated by multiplying market prices by SCF.

There will be no freezer/carriers entering the port in 2005. The overall costs for the above mentioned items are shown in table 9.5.7.

9.5.3 Renewal Investment Costs

The renewal investment costs are not considered in this study.

9.6 Benefits of the Project

9.6.1 Items of Benefits

Phuket Fishery Complex Development Project for the Andaman Sea Coast will greatly contribute to the national economy. By assuming the case the "With" or "Without" case, following items are identified as major benefits of the short-term development plan for Phuket fishery complex from the viewpoint of the national economy.

- (1) Increased operation profits by Increase of fish catch
- (2) Increased foreign currency earnings by increase of export
- (3) Savings of foreign currency by self-sufficient supply of material and reduction of material costs
- (4) Increased foreign currency earnings by FMO commissions charged to foreign boat landing
- (5) Reduction of transportation costs
- (6) Increase of land
- (7) Others
 - 8) Improved quality of fish catch
 - 9) Improved safety in the port
 - 10) Development of related industries

Although it is impossible to evaluate all these benefits in monetary terms, items (1) through (6) may be quantified and calculated in monetary terms.

Since benefits listed under (7) cannot be quantified, calculation is not attempted in this study.

9.6.2 Calculation of Benefits

In implementing a project, benefits accrued from the project are calculated in market prices by comparing them to the case of "Without" project implementation, and then market prices are converted into economic prices, which are international prices. Since benefits under items (2) through (4) are expressed in international prices, there is no need for conversion. As benefits under items (1), (5) and (6) are expressed in market prices, they should be converted to economic prices by applying conversion factors.

(1) Increased Operation Profits by Increase of Fish Catch

"With" the project, the fish catch by Thai tuna longline boats will increase compared to the case of "Without" the project, thus generating operation profits shown in Table 9.6.1.

The longline boat is of a class of 450 HP and 50 GRT manned by 12 crew and has been remodelled from one of many existing boats which are either idle or unused. By improving the operation and techniques of remodelled boats by 2001 when the

fishing port expansion will be completed, the catch of 5 ton per trip will be aimed. The fish catch is assumed to increase from 5 tons to 6 tons between 2002 and 2004, and then to 7 tons in 2005 when canning plants at the fisheries processing zone start operation.

Of tuna landed at Phuket Port, 60% is expected to Japan as Sashimi and 40% as tuna cans to the United States. Considering the 1995 import statistics of Japan and US, the export statistics of Thailand, the market conditions and trading companies' commissions, the tuna landing price was estimated as \$3,478/tons for fresh or chilled tuna and \$912/ton for canned tuna.

Table 9.6.2 shows operation profits of longline boats. The profit ratio obtained from economic prices was estimated to be 3.2 % for 2002(catch; 5 tons), 3.2% for 2003 (5 tons), 19.0% for 2004 (6 tons), and 30.3% after 2005 (7 tons).

(2) Increased Foreign Currency Earnings by Increase of Export

"With" the project, 60% of tuna landed at Phuket Fishing Port by Thai tuna longline boats is exported to Japan in fresh or chilled state, and the remaining 40% as canned tuna to the United States. Table 9.6.3 shows foreign currencies earned by their export. Assuming that 100% of tuna landed for Sashimi and 58% landed for canning are exported, export prices are assumed to be \$4,000/ton for the former and \$2,543/ton for the latter.

Considering trader's commissions in Thailand, the profit ratio is assumed to be 15% for Sashimi and 2.2-4% for canned tuna. During the period from 2002 to 2004 preceding completion of the Fishery Processing Zone in Phuket, it is assumed that fish landed for canning by longline boats is supplied to the existing plant in Songkhla and the profit ratio for plants is 2.2%. After 2005, the profit ratio of plants moved to the zone in Phuket is assumed to be 4%.

(3) Savings of Foreign Currency by Self-sufficient Supplying of Materials and Decrease in Materials

"With" the project, Thai longline boats will supply raw materials to canning plants, whereas "Without" the project, foreign boats will supply material. In the former case, there will be savings of foreign currency. "With" the project, Taiwanese and Chinese tuna longline boats and Thai and Japanese skipjack/tuna purse seiners can land their catch at Phuket Fishing Port. "Without" the project, they will land their catch in Phuket, Songkhla and Bangkok Ports, generating transportation costs by trucks. Landing the catch at Phuket Fishing Port will result in savings in transportation costs and reduce prices of material supply to canning plants, which means savings in foreign currency. Table 9.6.4 shows these savings in foreign currency. Unit prices for the raw material are \$912/ton for Phuket Fishing Port, and \$925/ton for Songkhla and Bangkok Ports.

(4) Increase of Foreign Currency Earnings by FMO Commission Charged to Foreign Boat's Landing

"With" the project, Phuket Fishing Port will be managed under FMO's integrated management. In Chapter 10: Financial Analysis, we proposed to charge fees to all the fishing boats including those using private facilities for landing catch. By

collecting the fees (2%), foreign currency can be earned from foreign boats as shown in Table 9.6.5.

(5) Reduction of Transportation Costs

Fig.9.6.1 shows that the transportation volumes and routes for tunas for canning "With" and "Without" the project.

"With" the project, 24,000 tons, 48,000 tons and 72,000 tons of tuna will be purchased by Phuket tuna canning plants in 2005, 2006 and 2007 respectively at Phuket Fishing Port, transported by trucks to the canning plants, and 13,920 tons, 27,840 tons and 41,760 tons of canned tuna will be transported by containers to Phuket Port and shipped to the United States.

"Without" the project, tuna will be purchased by Songkhla plants from tuna longline boats landing at private facilities in Phuket Fishing Port, from Thai and foreign skipjack/tuna purse seiners at Phuket Port, and from tuna freezer/carriers at Songkhla Port, transported by trucks to the plant, and canned products will be transported in containers to Songkhla Port for shipping to the United States. Also, tuna will be purchased by Bangkok plants from tuna freezer/carriers landing at Bangkok Port, transported by trucks to the plants, and canned products will be transported in containers to Bangkok Port for shipping to the United States. Similarly to the case of "With" the project, the materials purchased will be 24,000 tons, 48,000 tons and 72,000 tons in 2005, 2006, and 2007 respectively.

The two cases were examined in respect of the material transportation costs to plants, transportation costs of canned tuna from plants to ports, and port handling charges. Table 9.6.6 shows savings in transportation costs.

(6) Increase of Land

"With" the project, there will be related reclaimed land for Phuket Fisheries Processing Zone. It is assumed that six tuna canning plants will move into the zone under the sale/lease agreement. Table 9.6.7 shows the increase of land as evaluated in terms of the sale/lease prices. Table 9.6.8 shows the entire items for cost benefits.

9.6.3 Calculation of the EIRR

The economic internal rate of return (EIRR) based on the cost-benefit analysis is used to appraise the economic feasibility of the project.

The EIRR is calculated using the following equation.

$$\sum_{i=1}^n \frac{Bi - Ci}{(1+r)^i} = 0$$

where, n : Period of economic calculation (project life)

Bi : Benefits in i -th year

ci : Costs in i -th year

r : Discount rate

EIRR of the Short-term Plan is calculated as 12.02%. Table 9.6.9 shows the result of calculation.

(1) Sensitivity Analysis

In order to determine whether or not the project is feasible when certain conditions change, a sensitivity analysis is conducted for the following three alternatives.

Case A : The cost increase by 10%,

Case B : The benefits by 10%,

Case C : The costs increase by 10% and the benefits decrease by 10%

The sensitivity analysis for three alternative is calculated by using above formula as the base case and the results are shown below.

Case	EIRR(%)
A	10.25
B	13.38
C	9.39

(2) Evaluation

There are various views concerning the appropriate EIRR level used to determine whether or not a project is feasible. The leading view is that the project is feasible if the EIRR exceeds the opportunity cost of capital.

In general, the opportunity cost of capital is considered to range between 8% and 12% according to the degree of development in each country. It is generally considered that with an EIRR of more than 10% infrastructure or social service project are economically feasible.

For this project, even though the economic calculation took into account only the items which are easily quantified. EIRR exceeds 10%, and even in the case C in where EIRR at 9.39%.

It is therefore determined that this Short-term Development Plan is feasible from the viewpoint of the national economy.

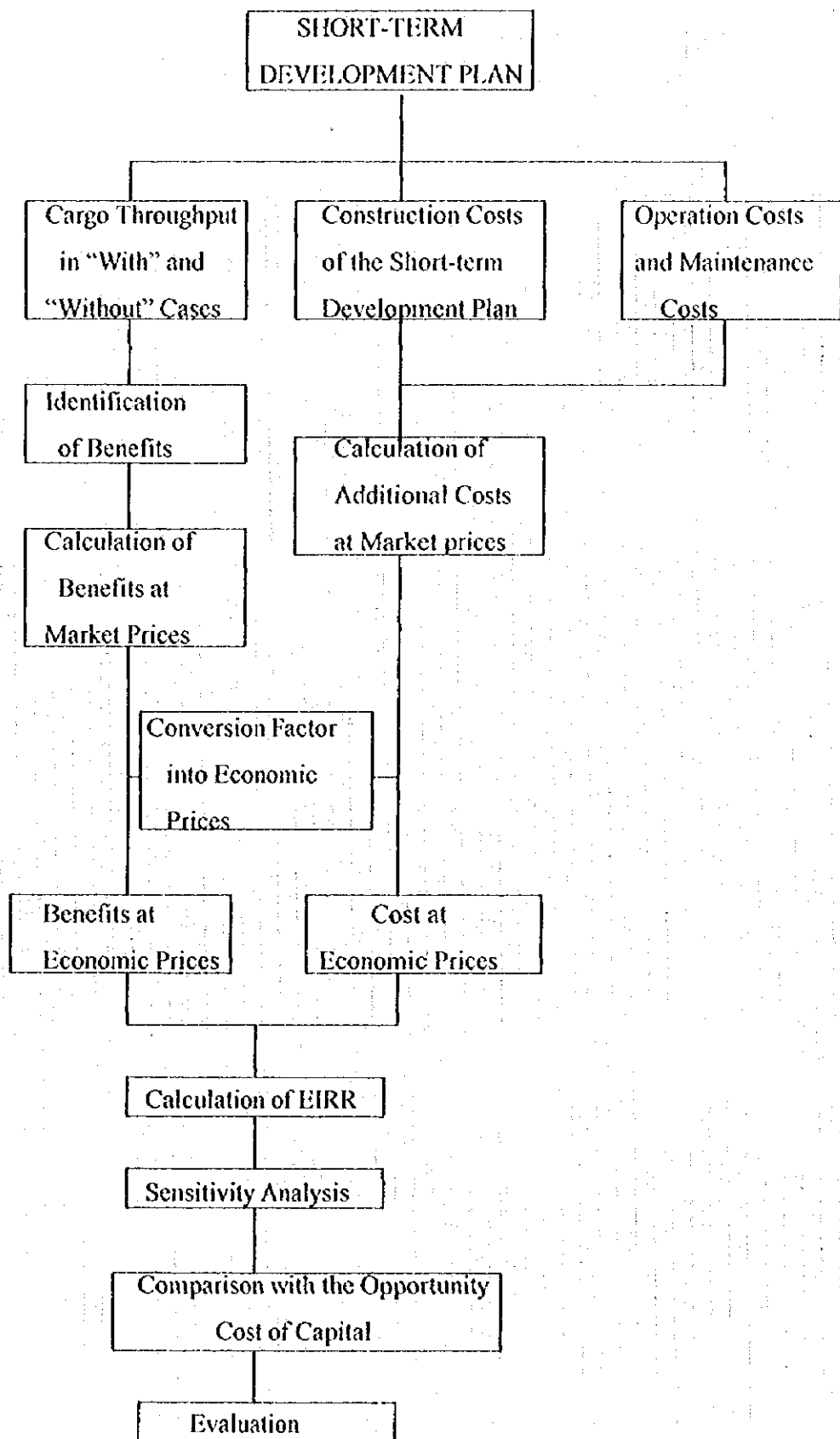


Fig. 9.2.1 Procedure of the Economic Analysis

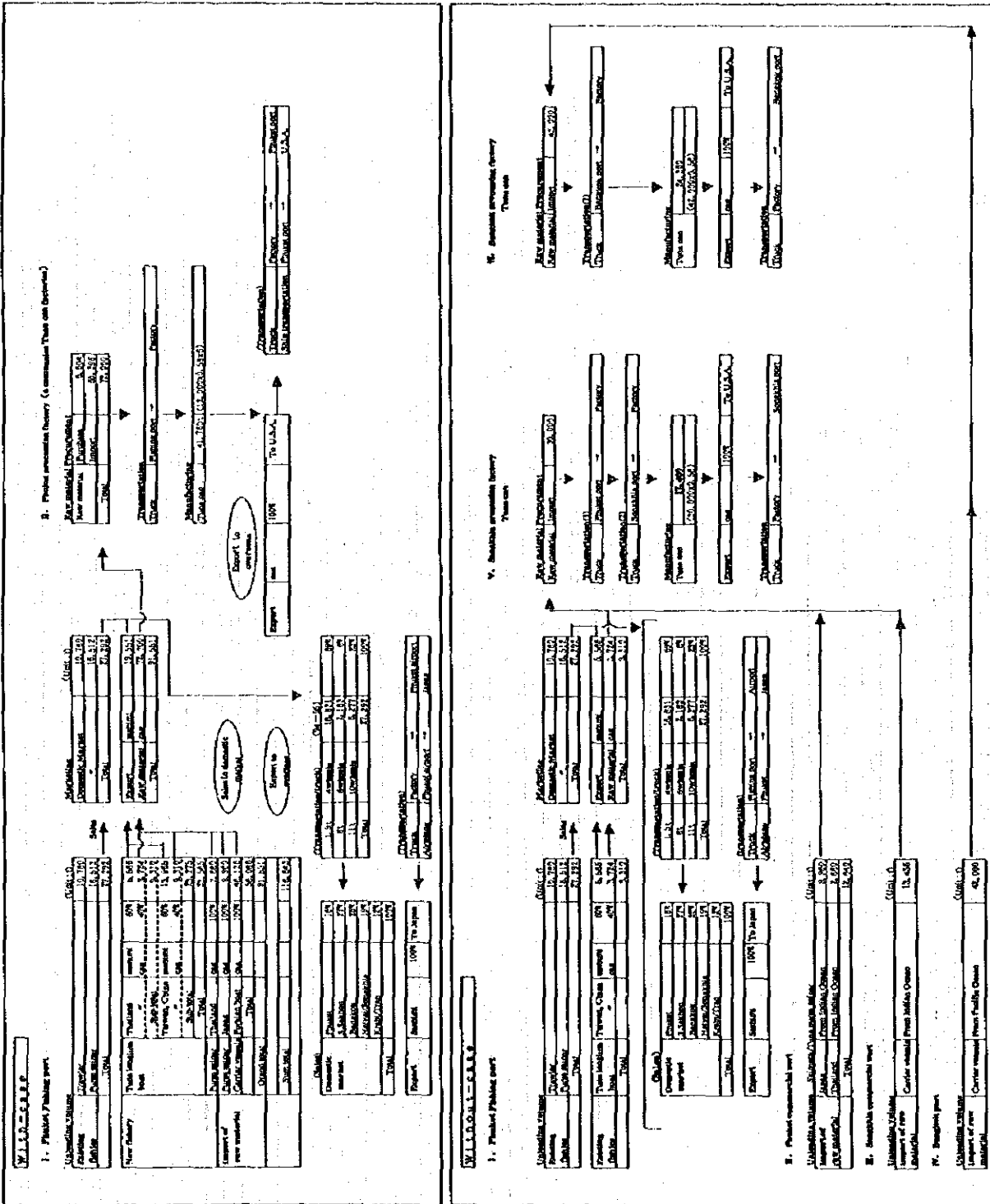


Figure 9.3.1 Phuket Fishery Complex Development Plan Marketing Flow (Target Year 2007)

Table 9.3.1(1) Estimation of unloaded fish volume and numbers of fishing boats at Phuket fishing port for 1996 to 2031 (with project)

Unit	FMO				Private sector				Phuket fishing port		Phuket		Grand Total	
	Trawler (Thailand)	Purse seiner (Thailand)	Tuna longline (Thailand)	Skippack, tuna purse seiner (Thailand)	Tuna carrier vessels (Foreign)	Sub total	Trawler (Thailand)	Purse seiner (Thailand)	Tuna longline (Foreign)	Sub total	Port Total	Commercial port (Thailand)		Commercial port (Foreign)
1,996														
Numbers of fishing boats	77	32	0	0	0	109	95	42	0	137	246	0	2	248
Unloaded volume per boat	14	6	0	0	0	14	14	6	0	20	46	0	830	876
Number of trips	10	86	0	0	0	96	10	86	0	96	62,264	0	9,960	72,224
Unloaded volume per year	10,780	16,512	0	0	0	27,292	13,300	21,672	0	34,972	62,264	0	9,960	72,224
Consumer fish	10,780	16,512	0	0	0	27,292	13,300	21,672	0	34,972	62,264	0	9,960	72,224
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	0	0	0	3,522	950	3,612	0	4,562	8,084	0	12	8,096
2,002														
Numbers of fishing boats	77	32	80	50	0	239	95	42	70	207	446	1	2	449
Unloaded volume per boat	14	6	7	5	0	14	14	6	7	27	46	480	830	1,366
Number of trips	10	86	19	19	0	124	10	86	19	134	86,364	2,880	9,960	99,304
Unloaded volume per year	10,780	16,512	10,640	4,750	0	42,682	13,300	21,672	9,310	44,282	86,364	2,880	9,960	99,304
Consumer fish	10,780	16,512	10,640	4,750	0	42,682	13,300	21,672	9,310	44,282	86,364	2,880	9,960	99,304
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,520	0	5,992	950	3,612	1,330	5,892	11,884	6	12	11,902	
2,003														
Numbers of fishing boats	77	32	85	54	0	248	95	42	70	207	455	1	2	458
Unloaded volume per boat	14	6	7	5	0	14	14	6	7	27	46	480	830	1,366
Number of trips	10	86	19	19	0	124	10	86	19	134	88,009	2,880	9,960	100,849
Unloaded volume per year	10,780	16,512	11,305	5,130	0	43,727	13,300	21,672	9,310	44,282	88,009	2,880	9,960	100,849
Consumer fish	10,780	16,512	11,305	5,130	0	43,727	13,300	21,672	9,310	44,282	88,009	2,880	9,960	100,849
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,615	1,025	0	6,163	950	3,612	1,330	5,892	12,055	6	12	12,073
2,004														
Numbers of fishing boats	77	32	90	58	0	257	95	42	70	207	464	1	2	467
Unloaded volume per boat	14	6	7	6	0	14	14	6	7	27	46	480	830	1,366
Number of trips	10	86	19	19	0	124	10	86	19	134	90,156	2,880	9,960	102,996
Unloaded volume per year	10,780	16,512	11,970	6,612	0	45,874	13,300	21,672	9,310	44,282	90,156	2,880	9,960	102,996
Consumer fish	10,780	16,512	11,970	6,612	0	45,874	13,300	21,672	9,310	44,282	90,156	2,880	9,960	102,996
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,710	1,102	0	6,334	950	3,612	1,330	5,892	12,226	6	12	12,244

(Remarks)
 1. Unloaded fish volume by tuna longline boat : 40% fresh frozen tuna exported to Japan, 40% raw material for tuna can exported to U.S.A.
 2. Unloaded fish volume by skippack / tuna purse seiner : 100% raw material for tuna can exported to U.S.A.
 3. Unloaded fish volume by tuna carrier vessel : 100% raw material for tuna can exported to U.S.A.
 4. Raw material of tuna necessary tuna can : 2007 2 company - 34,000, 2006 4 company - 44,000, 2007 6 company - 72,000

Table 9.3.1(2) Estimation of unloaded fish volume and numbers of fishing boats at Phuket fishing port for 1996 to 2031 (with project)

Unit	FMO										Private sector			Phuket fishing		Phuket commercial		Total	Grand total
	Trawler		Tuna		Skipjack tuna		Sub total		Tuna		Sub total		Phuket fishing		Phuket commercial				
	(Thailand)	(Thailand)	longline (Foreign)	longline (Thailand)	purse seiner (Thailand)	Skipjack tuna purse seiner (Thailand)	Tuna carrier vessels (Foreign)	(Thailand)	(Thailand)	purse seiner (Thailand)	longline (Foreign)	(Thailand)	purse seiner (Thailand)	longline (Foreign)	Skipjack tuna purse seiner (Thailand)	Skipjack tuna purse seiner (Foreign)			
2,005																			
Numbers of fishing boats	77	32	95	62	1	1	2	0	283	95	42	70	207	476	0	0	0	0	476
Unloaded volume per boat	14	6	7	7	480	330	0	0	14	14	6	7	7	7	0	0	0	0	7
Number of trips	10	86	19	19	6	5.5	0	0	10	10	86	19	104	104	0	0	0	0	104
Unloaded volume per year	10,780	16,512	12,965	8,246	2,880	9,044	0	60,097	13,300	21,672	9,310	44,282	104,379	104,379	0	0	0	0	104,379
Consumer fish	10,780	16,512	12,965	8,246	2,880	9,044	0	60,097	13,300	21,672	9,310	44,282	104,379	104,379	0	0	0	0	104,379
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,995	1,178	6	11	0	6,522	950	3,612	1,330	5,892	12,414	12,414	0	0	0	0	12,414
2,007																			
Numbers of fishing boats	77	32	105	70	1	1	2	4	291	95	42	70	207	498	0	0	0	0	498
Unloaded volume per boat	14	6	7	7	480	330	0	0	14	14	6	7	7	7	0	0	0	0	7
Number of trips	10	86	19	19	6	5.5	0	0	10	10	86	19	104	104	0	0	0	0	104
Unloaded volume per year	10,780	16,512	13,965	9,310	2,880	9,960	46,126	109,533	13,300	21,672	9,310	44,282	152,815	152,815	0	0	0	0	152,815
Consumer fish	10,780	16,512	13,965	9,310	2,880	9,960	46,126	109,533	13,300	21,672	9,310	44,282	152,815	152,815	0	0	0	0	152,815
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,995	1,330	6	12	0	6,896	950	3,612	1,330	5,892	12,788	12,788	0	0	0	0	12,788
2,031																			
Numbers of fishing boats	77	32	105	70	1	1	2	4	291	95	42	70	207	498	0	0	0	0	498
Unloaded volume per boat	14	6	7	7	480	330	0	0	14	14	6	7	7	7	0	0	0	0	7
Number of trips	10	86	19	19	6	5.5	0	0	10	10	86	19	104	104	0	0	0	0	104
Unloaded volume per year	10,780	16,512	13,965	9,310	2,880	9,960	46,126	109,533	13,300	21,672	9,310	44,282	152,815	152,815	0	0	0	0	152,815
Consumer fish	10,780	16,512	13,965	9,310	2,880	9,960	46,126	109,533	13,300	21,672	9,310	44,282	152,815	152,815	0	0	0	0	152,815
Trash fish	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of boat's call	770	2,752	1,995	1,330	6	12	0	6,896	950	3,612	1,330	5,892	12,788	12,788	0	0	0	0	12,788

(Remarks)
 1. Unloaded fish volume by tuna longline boat : 60% fresh frozen tuna exported to Japan, 40% raw material for tuna can exported to U.S.A.
 2. Unloaded fish volume by skipjack / tuna purse seiner : 100% raw / 100% raw material for tuna can exported to U.S.A.
 3. Unloaded fish volume by tuna carrier vessel : 100% raw material for tuna can exported to U.S.A.
 4. Raw material of tuna necessary tuna can : 2005 car factory 2 company - 24,000t, 2006 6 company - 48,000t, 2007 6 company - 72,000t.

Table 9.3.2(1) Estimation of unloaded fish volume and numbers of fishing boats at Phuket fishing port for 1996 to 2031 (without project)

	Unit	EMO		Private sector		Phuket port		Phuket port - Bangkok port etc.		Grand total
		Trawler (Thailand)	Purse seiner (Thailand)	Trawler (Thailand)	Purse seiner (Thailand)	Skijack,tuna purse seiner (Thailand)	Skijack,tuna purse seiner (Foreign)	Tuna carrier vessels (Foreign)	Total	
1996										
Numbers of fishing boats	boat	77	32	95	42	0	137	248	0	248
Unloaded volume per boat	t	14	6	14	6	0	0	830	0	830
Number of trips	trip	10	86	10	86	0	0	6	0	6
Unloaded volume per year	t	10,780	16,512	27,292	21,672	0	34,972	62,264	0	9,960
Consumer fish	t	10,780	16,512	27,292	21,672	0	34,972	62,264	0	9,960
Trash fish	t	0	0	0	0	0	0	0	0	0
Number of boat's call	boat	770	2,752	950	3,612	0	4,562	8,084	0	12
2002										
Numbers of fishing boats	boat	77	32	109	42	70	207	316	0	3
Unloaded volume per boat	t	14	6	14	6	7	0	430	0	830
Number of trips	trip	10	86	10	86	19	0	6	0	6
Unloaded volume per year	t	10,780	16,512	27,292	21,672	9,310	44,282	71,574	0	12,840
Consumer fish	t	10,780	16,512	27,292	21,672	9,310	44,282	71,574	0	12,840
Trash fish	t	0	0	0	0	0	0	0	0	0
Number of boat's call	boat	770	2,752	3,522	3,612	1,230	4,562	8,084	0	18
2003										
Numbers of fishing boats	boat									2
Unloaded volume per boat	t									316
Number of trips	trip									0
Unloaded volume per year	t									71,574
Consumer fish	t									59,718
Trash fish	t									11,856
Number of boat's call	boat									8,084
2004										
Numbers of fishing boats	boat									316
Unloaded volume per boat	t									0
Number of trips	trip									0
Unloaded volume per year	t									71,574
Consumer fish	t									59,718
Trash fish	t									11,856
Number of boat's call	boat									8,084
Remarks										
1. Unloaded by foreign tuna longline boat will be done on private facilities only. 60% - Sashimi (fresh and frozen tuna) exported to Japan 40% - Raw material for tuna can exported to U.S.A										
2. Unloaded by skipjack / tuna purse seiner will be done as follows: Thailand's ship at Phuket port and Foreign's ship at Songkhla. 100% - Raw material for tuna can exported to U.S.A.										
3. Unloading by tuna carrier vessel will be done on Songkhla and Bangkok port. 100% - Raw material for tuna can exported to U.S.A.										

Table 9.3.2(2) Estimation of unloaded fish volume and numbers of fishing boats at Phuket fishing port for 1996 to 2031 (without project)

Unit	FMO		Private sector		Sub total	Total	Phuket port		Bangkok port etc.		Grand total	
	Trawler (Thailand)	Purse seiner (Thailand)	Trawler (Thailand)	Purse seiner (Thailand)			Skippack/tuna purse-seiner (Thailand)	Skippack/tuna purse-seiner (Foreign)	Skippack/tuna purse-seiner (Foreign)	Tuna carrier vessels (Foreign)		
2005												
Numbers of fishing boats	77	32	109	95	42	70	207	316	1	2	1	4
Unloaded volume per boat	14	6	14	14	6	7	480	830	1,500			
Number of trips	10	86	10	36	19			6	6	5		
Unloaded volume per year	10,780	16,512	27,292	13,300	21,672	9,310	44,282	71,574	2,880	9,796	7,436	20,112
Consumer fish	10,780	16,512	27,292	13,300	21,672	9,310	44,282	59,718	2,880	9,796	7,436	20,112
Trash fish	0	0	0	0	0	0	0	11,856	0	0	0	11,856
Number of boat's call	770	2,752	3,522	950	3,612	1,330	4,942	8,084	6	12	5	23
2006												
Numbers of fishing boats								316	1	2	3	6
Unloaded volume per boat								480	830	1,500		
Number of trips								6	6	7		
Unloaded volume per year								71,574	2,880	9,960	31,436	44,276
Consumer fish								59,718	2,880	9,960	31,436	44,276
Trash fish								11,856	0	0	0	11,856
Number of boat's call								8,084	6	12	39	8,123
2007												
Numbers of fishing boats								316			5	*REF!
Unloaded volume per boat											1,500	
Number of trips											7.4	
Unloaded volume per year								71,574			55,436	55,436
Consumer fish								59,718			55,436	55,436
Trash fish								11,856			0	11,856
Number of boat's call								8,084			37	8,121
2031												
Numbers of fishing boats	77	32	109	95	42	70	207	316	1	2	5	8
Unloaded volume per boat	14	6	14	14	6	7	480	830	1,500			
Number of trips	10	86	10	36	19			6	6	5		
Unloaded volume per year	10,780	16,512	27,292	13,300	21,672	9,310	44,282	71,574	2,880	9,960	55,436	88,276
Consumer fish	10,780	16,512	27,292	13,300	21,672	9,310	44,282	59,718	2,880	9,960	55,436	88,276
Trash fish	0	0	0	0	0	0	0	11,856	0	0	0	11,856
Number of boat's call	770	2,752	3,522	950	3,612	1,330	4,942	8,084	6	12	37	55

(Remarks)
 1. Unloaded by foreign tuna longline boat will be done on private facilities only; 60%: Sashimi (fresh and frozen tuna) exported to Japan 40%: Raw material for tuna can exported to U.S.A.
 2. Unloaded by skipjack / purse seiner will be done as follows: Thailand's ship at Phuket port and Foreign's ship at Songkhla.
 3. 100%: Raw material for tuna can exported to U.S.A.
 4. Unloaded by tuna carrier vessel will be done on Songkhla and Bangkok port; 100%: Raw material for tuna can exported to U.S.A.

Table 9.5.1 Investment Cost (Economic Price)

(Unit : 1000 Baht)

Year	Market price Investment cost	Economic price 0.959
2000	126,450	121,771
2001	887,008	851,169
2002	176,113	169,597
2003	579,008	557,585
2004	363,925	350,461
2005	363,925	350,461
2006	363,925	350,461
Total	2,880,351	2,754,524

Table 9.5.2 Labor Cost (Increase)

(Unit : 1,000 Baht)

Term	Execution Agency	Staff	Number Increase	Salary Yearly rate	Marketing price		Economic price		
					Labor cost Increase	Total	Skilled 0.956	Unskilled 0.583	
Fishing port	FMO	Manager	0	360,000	0	0	0	0	0
		Deputy Manager	1	240,000	240	229	229	0	0
		Accountant, admin	1	156,000	156	149	149	0	0
		Auction seller	4	144,000	576	551	551	0	0
		Operation management	5	144,000	720	688	688	0	0
		Statistics	2	144,000	288	275	275	0	0
		Watch man	6	96,000	576	336	0	336	0
		Chief of quality control	1	180,000	180	172	172	0	0
		Quality control	2	144,000	288	275	275	0	0
		Resources control	2	156,000	312	298	298	0	0
		Total	24		3,336	2,974	2,639	336	
Export processing zone	FMO/IEAT	Manager	1	240,000	240	229	229	0	0
		Deputy Manager	1	180,000	180	172	172	0	0
		Accountant, admin	2	156,000	312	298	298	0	0
		Engineer	2	156,000	312	298	298	0	0
		Permit	1	144,000	144	138	138	0	0
		Accountant	1	144,000	144	138	138	0	0
		Secretary	1	132,000	132	126	126	0	0
				Total	9		1,464	1,400	1,400
		Grand Total	33		4,800	4,374	4,038	336	

- (Remark)
1. In respect to FMO (fishing port) and FMO & IEAT (processing zone) a detail of the labor cost is shown under below.
 2. Labor cost of FMO was estimated based on a basic salary and financial statement of FMO in 1995.
 3. Present staff members of FMO are 15 persons including 2 persons of cleaning. Consequently, these 2 persons were excluded from present staff.
 4. Labor cost of processing zone was newly set up considering labor cost of FMO. 2001, 2003, 2004: Manager, engineer, accountant 825,000 baht.

Details of labor cost

(Unit : 1,000 Baht)

Term	Execution Agency	Staff	Number			Salary		Labor cost (Year)		
			Present	Increase	Total	Monthly rate	Yearly rate	Present	Increase	Total
Fishing port	FMO	Manager	1	0	1	30,000	360,000	360,000	0	360,000
		Deputy Manager	0	1	1	20,000	240,000	0	240,000	240,000
		Accountant, admin	4	1	5	13,000	156,000	624,000	156,000	780,000
		Auction seller	4	4	8	12,000	144,000	576,000	576,000	1,152,000
		Operation management	1	5	6	12,000	144,000	144,000	720,000	864,000
		Statistics	0	2	2	12,000	144,000	0	288,000	288,000
		Watch man	4	6	10	8,000	96,000	384,000	576,000	960,000
		Chief of quality control	0	1	1	15,000	180,000	0	180,000	180,000
		Quality control	0	2	2	12,000	144,000	0	288,000	288,000
		Resources control	0	2	2	13,000	156,000	0	312,000	312,000
		Total	14	24	33			2,088,000	3,336,000	5,424,000
Export processing zone	FMO/IEAT	Manager	0	1	1	20,000	240,000	0	240,000	240,000
		Deputy Manager	0	1	1	15,000	180,000	0	180,000	180,000
		Accountant, admin	0	2	2	13,000	156,000	0	312,000	312,000
		Engineer	0	2	2	13,000	156,000	0	312,000	312,000
		Permit	0	1	1	12,000	144,000	0	144,000	144,000
		Accountant	0	1	1	12,000	144,000	0	144,000	144,000
		Secretary	0	1	1	11,000	132,000	0	132,000	132,000
		Total	0	9	9			0	1,464,000	1,464,000
		Grand Total	14	33	47			2,088,000	4,800,000	6,888,000

Table 9.5.3 Administration Cost (Increase)

Term	Execution agency	Labor cost	Rate	Economic price Administration cost
Fishing port	FMO	2,974	50%	1,487
Export processing zone	FMO/IFAT	1,400	50%	700
Total		4,374		2,187

- (Remark)1. Rate of operation expenses was estimated considering financial statements in 1994 and 1995.
 2. Administration cost of Fisheries Processing Zone:
 2001,2003, 2004: labor cost 825,000 Bahtx 50%=413,000baht

Table 9.5.4 Maintenance and Repair Cost (New Assets) (Economic Price)

(Unit : 1,000 Baht)

Year	Acquisition Cost		Repair Ratio		Maintenance & Repair Cost		
	Fishing Port	Processing Zone	Fishing Port	Processing Zone	Fishing Port	Processing Zone	Total
2001	142,735	0	0.5%	0.0%	714	0	714
2002	869,416	175,532	0.5%	0.0%	4,347	0	4,347
2003	1,294,086	175,532	0.5%	0.0%	6,470	0	6,470
2004	1,529,036	267,079	0.5%	0.0%	7,645	0	7,645
2005	2,132,505	595,488	0.5%	0.0%	10,663	0	10,663
2006	2,132,505	923,897	0.5%	0.0%	10,663	0	10,663
2007	2,132,505	1,252,306	1.0%	0.5%	21,325	6,262	27,587

Table 9.5.5 Maintenance Dredging Cost

(Unit:1,000 Baht)

Year	Dredging volume	Unit price	Marketing cost	Economic cost
	m ³	Baht	Dredging cost	0.956
2002	500,000	55	27,500	26,290
2003	500,000	55	27,500	26,290
2004	500,000	55	27,500	26,290
2005	500,000	55	27,500	26,290
2006	500,000	55	27,500	26,290
2007	500,000	55	27,500	26,290
▼				
2031	500,000	55	27,500	26,290

Table 9.5.6 Maneuvering Cost by Tug Boat

(Unit:1,000 Baht)

Year	Boat	Number of boat's call	Maneuvering time (H)	Rental fee	Marketing cost	Economic cost
					Maneuvering cost	
2006	carrier vessel	15	2	8,000	240	229
2007	carrier vessel	31	2	8,000	496	474
▼						
2031	carrier vessel	31	2	8,000	496	474

(Remark) Maneuvering time (H): Entrance 1.5 H, Leaving 0.5 H Total 2H
 Rental fee of tug boat : By tug boat charge of Phuket Port
 Rental fee first 1 hour 4,000Baht,
 every 30

Table 9.5.7 Operation Cost

(Unit : 1,000Baht)

Year	Total	Labor cost	Administratio n cost	Repair & maintenance cost	Maintenance dredging cost	Maneuvering by tug boat
2001	1,952	825	413	714	0	0
2002	35,098	2,974	1,487	4,347	26,290	0
2003	37,221	2,974	1,487	6,470	26,290	0
2004	38,396	2,974	1,487	7,645	26,290	0
2005	43,514	4,374	2,187	10,663	26,290	0
2006	43,743	4,374	2,187	10,663	26,290	229
2007	60,912	4,374	2,187	27,587	26,290	474
▼						
2031	60,912	4,374	2,187	27,587	26,290	474

Table 9.6.1 Increase of Operation Profit by Increase of Fish Catch

(Unit : 1,000Baht)

			Economic Price				
2002			Unloading vol(0)	Unit price	Selling price	Profit rate	Operation profit
Tuna longline boat	Thailand	sashimi	2,850	88,098	251,079		
		can	1,900	23,100	43,890		
Total			4,750		294,969	3.5%	10,324
2003							
Tuna longline boat	Thailand	sashimi	3,078	88,098	271,166		
		can	2,052	23,100	47,401		
Total			5,130		318,567	3.5%	11,150
2004							
Tuna longline boat	Thailand	sashimi	3,967	88,098	349,502		
		can	2,645	23,100	61,095		
Total			6,612		410,597	19.1%	78,424
2005							
Tuna longline boat	Thailand	sashimi	4,948	88,098	435,874		
		can	3,298	23,100	76,193		
Total			8,246		512,067	30.2%	154,644
2006							
Tuna longline boat	Thailand	sashimi	5,267	88,098	463,995		
		can	3,511	23,100	81,109		
Total			8,778		545,103	30.2%	164,621
2007							
Tuna longline boat	Thailand	sashimi	5,586	88,098	492,115		
		can	3,724	23,100	86,024		
Total			9,310		578,140	30.2%	174,598
▼							
2031							
Tuna longline boat	Thailand	sashimi	5,586	88,098	492,115		
		can	3,724	23,100	86,024		
Total			9,310		578,140	30.2%	174,598

0.6 0.4

(Remark)

- Unloaded fish volume is shown by the deference of "With project" and "Without project".
- Sales price of unloaded fish by tuna longline boat

Sashimi (fresh,frozen)	$3,478 \times 25.33 =$ Baht88,09
Tuna can	$912 \times 25.33 =$ Baht23,100
- Rate of operation profit of tuna longline boat (Sales price x %)

2002	3.5%
2003	3.5%
2004	19.1%
2005	30.2%
2006	30.2%
2007	30.2%

Table 9.6.2 Operation Cost of Tuna Longline Boat Per One Trip (Economic Price)

Prerequisite	Ship type	Tonnage	Horse power	Fish catch volume (t) per trip	Number of trip	Total fish catch volume
	5661	5661	450			
Fish catch volume per year	Year	Number of boats				
	2002	56		5	19	4,150
	2003	54		5	19	5,130
	2004	58		6	19	6,612
	2005	62		7	19	8,245
	2006	66		7	19	8,173
2007	76		7	19	9,310	
Number of trip per year	Working days	Operation days	Number of trip			
	333	18	19			
Working days per trip	Navigation	Finding	Operation	At Port	Total	
	4	2	9	3	18	

A: Direct Cost

1. Fuel cost

(Unit: Baht)								
Engine	Horse power	Consumption volume	Day	Time	R Ratio	Unit price	Economic price	
Main Engine	Navigation	450	0.189	4	24	0.80	6.5	42,457
	Finding	450	0.189	2	24	0.40	6.5	10,814
	Operation	450	0.189	9	24	0.45	6.5	53,738
	At Port			3				
	Total			18				106,806
Aux Engine	50	0.189	18	24	0.85	6.5	22,555	
Grand Total								129,361

(Remark) 1. Unit price of fuel : 9.6 Baht/l by Phuket market price, 6.3 Baht/l by ocean market price, average price 8 Baht/l including total 32% of Import Tax and vat
Economic price 6.5 Baht/l (9,610.68)

2. Lubricants oil

(Unit: Baht)			
Main engine fuel cost	Consumption rate	Unit price	Economic price
19,902	0.103	65	1,293

(Remark) 1. Unit price : Fuel x 10

3. Ice

(Unit: Baht)							
Year	Fish catch volume per trip	Ice volume needed t x 1.5t	Weight of block (kg) 1,000	Number of block 150	Unit price	Marketing price	Economic price 0.956
2002	5	1.5	1,500	50	45	2,250	2,151
2003	5	1.5	1,500	50	45	2,250	2,151
2004	6	1.5	3,000	60	43	2,700	2,581
2005	7	1.5	10,500	70	43	3,150	3,011
2006	7	1.5	10,500	70	45	3,150	3,011
2007	7	1.5	10,500	70	45	3,150	3,011

4. Fishing implement

(Unit: Baht)	
Market price	Economic price
25,721	24,121

5. Foods, water

(Unit: Baht)				
Crew	Day	Unit price	Marketing price	Economic price 0.956
12	15	80	14,400	13,768

6. Salary

(Unit: Baht)				
Crew	Monthly salary	Month (18/30)	Marketing price	Economic price
12	15,250	0.60	103,800	98,811

(Unit: Baht)

Member	Number	Unit price	Market price		Economic price		Total
			Monthly salary 30	Salary per month 18	Skilled labor 0.956	Unskilled labor 0.593	
Master	1	70,000	70,000	42,000	40,152	0	40,152
Captain	1	50,000	50,000	30,000	28,680	0	28,680
Engineer	1	13,000	13,000	7,800	7,457	0	7,457
Boatswain	1	10,000	10,000	6,000	5,736	0	5,736
Deck hands	8	5,000	40,000	24,000	0	13,992	13,992
Total			183,000	109,800	82,025	13,992	96,017

Total Direct Cost

(Unit: Baht)	
Year	Economic price
2002	266,718
2003	266,718
2004	267,148
2005	267,516
2006	267,516
2007	267,516

B: Indirect Cost

1. Depreciation cost

(Unit: Baht)					
Acquisition cost	Depreciation life	Depreciation cost per year	Number of trip	Market price	Economic price
3,670,000	15	244,667	19	12,871	12,311

(Remark) Acquisition cost : 6,400,000 x 1/2 + 470,000 (Reconstruction cost) = 3,670,000 Baht

2. Repair & Maintenance cost

(Unit: Baht)			
Repair & Maintenance cost per year	Number of trip	Market price	Economic price
250,000	19	13,158	12,579

Total Indirect Cost

Economic price	24,890 Baht
----------------	-------------

C: Fishing port charges
1. Unloading fee

(Unit Baht)				
Year	Unloaded fish volume per trip	Rate	Market price	Economic price 0.956
2002	5	200	1,000	956
2003	5	200	1,000	956
2004	6	200	1,200	1,141
2005	7	200	1,400	1,332
2006	7	200	1,490	1,338
2007	7	200	1,490	1,338

2. Truck entrance fee

(Unit Baht)						
Year	Unloaded fish volume per trip	Containertruck Carrying capacity	Containertruck Number of trips	Rate	Market price	Economic price 0.956
2002	5	20	0.25	40	10	10
2003	5	20	0.25	40	10	10
2004	6	20	0.30	42	12	11
2005	7	20	0.35	40	14	13
2006	7	20	0.35	40	14	13
2007	7	20	0.35	40	15	13

3. Ice service fee

(Unit Baht)				
Year	Number of blocks	Unit price	Market price	Economic price 0.956
2002	50	0.5	25	21
2003	50	0.5	25	21
2004	60	0.5	30	22
2005	70	0.5	35	23
2006	70	0.5	35	23
2007	70	0.5	35	23

4. Fuel service fee

(Unit Baht)										
Engine		Horse power	Consumption ratio	Day	Time	R Ratio	Consumption volume (L)	Unit price	Market price Amount	Economic price 0.956
Main engine	Navigator	450	0.189	4	24	0.80	6,532			
	Finding	450	0.189	2	24	0.40	1,633			
	Operation	450	0.189	9	24	0.45	8,267			
	At Port				3					
Total				18			16,432	0.05	822	783

5. Berthing fee

(Unit Baht)	
Market price	Economic price 0.956
100	96

6. Sales Commission

(Unit Baht)							
Year	Unloaded fish volume per trip	Detail	Unit price	Sales price	Charge rate	Economic price	
2002	5	sashimi	3.00	88,098	264,294		
		can	2.00	23,100	46,200		
		Total	5.00		310,494	0.02	6,210
2003	5	sashimi	3.00	88,098	264,294		
		can	2.00	23,100	46,200		
		Total	5.00		310,494	0.02	6,210
2004	6	sashimi	3.60	88,098	317,153		
		can	2.40	23,100	55,440		
		Total	6.00		372,593	0.02	7,452
2005	7	sashimi	4.20	88,098	370,012		
		can	2.80	23,100	64,680		
		Total	7.00		434,692	0.02	8,694
2006	7	sashimi	4.20	88,098	370,012		
		can	2.80	23,100	64,680		
		Total	7.00		434,692	0.02	8,694
2007	7	sashimi	4.20	88,098	370,012		
		can	2.80	23,100	64,680		
		Total	7.00		434,692	0.02	8,694

Total Fishing port charges

(Unit Baht)	
Year	Amount
2002	8,050
2003	8,880
2004	9,520
2005	10,560
2006	10,560
2007	10,560

Grand Total Operation Cost (A+B+C)

(Unit Baht)	
Year	Amount
2002	293,636
2003	299,686
2004	301,556
2005	303,426
2006	303,426
2007	303,426

Operation Profit

(Unit Baht)				
Year	Revenue	Operation cost	Profit	Profit ratio
2002	310,494	293,636	16,858	3.5%
2003	310,494	299,686	10,808	3.5%
2004	372,593	301,556	71,037	19.1%
2005	434,692	303,426	131,266	30.2%
2006	434,692	303,426	131,266	30.2%
2007	434,692	303,426	131,266	30.2%

Table 9.6.3 Foreign currency earnings by increase of export

(Unit : 1000Baht)

Year		Unloading vol(t)	Export vol(t)	Unit price	Export amount	Profit ratio	Profit
2002	Tuna longline boat	sashimi	2,850	101,320	288,762	15.0%	43,314
	(Thailand)	can	1,900	64,418	70,989	2.2%	1,562
		Total	4,750		359,751		44,876
2003	Tuna longline boat	sashimi	3,078	101,320	311,863	15.0%	46,779
	(Thailand)	can	2,052	64,418	76,668	2.2%	1,687
		Total	5,130		388,531		48,466
2004	Tuna longline boat	sashimi	3,967	101,320	401,936	15.0%	60,290
	(Thailand)	can	2,645	64,418	98,824	2.2%	2,174
		Total	6,612		500,760		62,465
2005	Tuna longline boat	sashimi	4,948	101,320	501,331	15.0%	75,200
	(Thailand)	can	3,298	64,418	123,221	4.0%	4,929
		Total	8,246		624,553		80,129
2006	Tuna longline boat	sashimi	5,267	101,320	533,652	15.0%	80,048
	(Thailand)	can	3,511	64,418	131,180	4.0%	5,247
		Total	8,778		664,832		85,295
2007	Tuna longline boat	sashimi	5,586	101,320	565,974	15.0%	84,896
	(Thailand)	can	3,724	64,418	139,138	4.0%	5,566
		Total	9,310		705,111		90,462
▼							
2031	Tuna longline boat	sashimi	5,586	101,320	565,974	15%	84,896
	(Thailand)	can	3,724	64,418	139,138	4%	5,566
		Total	9,310		705,111		90,462

(Remark)

1. Unloaded fish volume is shown by the difference of "with project" and "without case"
2. Unloaded fish will be supplied to existing factory in Songkhla for 2002 to 2004 and supplied to tuna canning factories in Phuket export processing zone from 2005.
3. Export volume : Fresh, frozen fish (Sashimi) : 100% of unloaded fish
Tuna can : 58% of raw material of unloaded fish
4. Export price unit : Sashimi (fresh, frozen fish) $54,000 \times 25.33 = \text{Baht}101,320$
(* Japan Marine Products Imports Association)
(FOB price) Tuna can $52,543 \times 25.33 = \text{Baht}1,331,418$
5. Profit ratio : Sashimi 15% of FOB price
Tuna can 2.2% of FOB price for 2002-2004, 40% of FOB price after 2005
6. Profit is shown by economic price.

Table 9.6.4 Saving of foreign money by decrease of raw material for tuna can

(Unit:1,000Baht)

Fishing port	With project						Without project			Balance	
	Unloaded Place	Volume(t)	Unit cost	Raw material	Unloaded Place	Volume(t)	Unit cost	Raw material	Decrease of raw material cost		
2005	Longline boat	Thai	Phuket F.Port	3,238	23,100	76,184	-	-	-	-	
	Longline boat	Foreign	"	8,778	23,100	202,772	Phuket F.Port	3,724	23,100	86,024	
	Purse seiner	Thai	"	2,880	23,100	66,528	Phuket port	2,880	23,100	66,528	
	Purse seiner	Foreign	"	9,044	23,100	208,916	Phuket port	9,736	23,100	226,288	
	Carrier vessel	Foreign	"	0	23,100	0	Songkhla port	7,600	23,430	178,068	
	Total			24,000		554,400		24,000		556,908	2,508
2006	Longline boat	Thai	Phuket F.Port	3,511	23,100	81,104	-	-	-	-	
	Longline boat	Foreign	"	9,044	23,100	208,916	Phuket F.Port	3,724	23,100	86,024	
	Purse seiner	Thai	"	2,880	23,100	66,528	Phuket port	2,880	23,100	66,528	
	Purse seiner	Foreign	"	9,960	23,100	230,076	Phuket port	9,960	23,100	230,076	
	Carrier vessel	Foreign	"	22,605	23,100	522,176	Songkhla port	30,000	23,430	702,900	
	Total			48,000		1,108,800		48,000		1,206,427	97,627
2007	Longline boat	Thai	Phuket F.Port	3,724	23,100	86,024	-	-	-	-	
	Longline boat	Foreign	"	9,310	23,100	215,061	Phuket F.Port	3,724	23,100	86,024	
	Purse seiner	Thai	"	2,880	23,100	66,528	Phuket port	2,880	23,100	66,528	
	Purse seiner	Foreign	"	9,960	23,100	230,076	Phuket port	9,960	23,100	230,076	
	Carrier vessel	Foreign	"	46,126	23,100	1,065,511	Songkhla port	30,000	23,430	702,900	
	Total			72,000		1,663,200		72,000		1,768,747	105,547
2031	Longline boat	Thai	Phuket F.Port	3,724	23,100	86,024	-	-	-	-	
	Longline boat	Foreign	"	9,310	23,100	215,061	Phuket F.Port	3,724	23,100	86,024	
	Purse seiner	Thai	"	2,880	23,100	66,528	Phuket port	2,880	23,100	66,528	
	Purse seiner	Foreign	"	9,960	23,100	230,076	Phuket port	9,960	23,100	230,076	
	Carrier vessel	Foreign	"	46,126	23,100	1,065,511	Songkhla port	30,000	23,430	702,900	
	Total			72,000		1,663,200		72,000		1,768,747	105,547

(Remark) 1. Unit price of tuna as raw material :

Same as Phuket F.Port and Phuket port, \$912 x 25.33 = 23,100 Baht/t.

Same as Songkhla Port and Bangkok Port, \$925 x 25.33 = 23,430 Baht/t.

Transportation cost of the latter is more cheaper \$13 than the former, $\times 25.33 = 330$ Baht.

2. Decreased material cost is shown by economic price.

Table 9.6.5 FMO's commission against sales price of unloaded fishes (foreign currency earnings)

(Unit : 1,000Baht)

	Fishing boat		Unloading vol	Unit price	Sales price	Rate	Commission
2002	Tuna longline boat	sashimi	11,970	88,098	1,054,533	0.02	21,091
		can	7,980	23,100	184,338	0.02	3,687
	Purse seiner	can	0	23,100	0	0.02	0
	Tuna carrier vessels	can	0	23,100	0	0.02	0
	Total		19,950		1,238,871		24,777
2003	Tuna longline boat	sashimi	12,369	88,098	1,089,684	0.02	21,794
		can	8,246	23,100	190,483	0.02	3,810
	Purse seiner	can	0	23,100	0	0.02	0
	Tuna carrier vessels	can	0	23,100	0	0.02	0
	Total		20,615		1,280,167		25,603
2004	Tuna longline boat	sashimi	12,768	88,098	1,124,835	0.02	22,497
		can	8,512	23,100	196,627	0.02	3,933
	Purse seiner	can	0	23,100	0	0.02	0
	Tuna carrier vessels	can	0	23,100	0	0.02	0
	Total		21,280		1,321,462		26,429
2005	Tuna longline boat	sashimi	13,167	88,098	1,159,986	0.02	23,200
		can	8,778	23,100	202,772	0.02	4,055
	Purse seiner	can	9,044	23,100	208,916	0.02	4,178
	Tuna carrier vessels	can	0	23,100	0	0.02	0
	Total		30,989		1,571,675		31,433
2006	Tuna longline boat	sashimi	13,566	88,098	1,195,137	0.02	23,903
		can	9,044	23,100	208,916	0.02	4,178
	Purse seiner	can	9,960	23,100	230,076	0.02	4,602
	Tuna carrier vessels	can	22,605	23,100	522,176	0.02	10,444
	Total		55,175		2,156,305		43,126
2007	Tuna longline boat	sashimi	13,965	88,098	1,230,289	0.02	24,606
		can	9,310	23,100	215,061	0.02	4,301
	Purse seiner	can	9,960	23,100	230,076	0.02	4,602
	Tuna carrier vessels	can	46,126	23,100	1,065,511	0.02	21,310
	Total		79,361		2,740,936		54,819
▼							
2031	Tuna longline boat	sashimi	13,965	88,098	1,230,289	0.02	24,606
		can	9,310	23,100	215,061	0.02	4,301
	Purse seiner	can	9,960	23,100	230,076	0.02	4,602
	Tuna carrier vessels	can	46,126	23,100	1,065,511	0.02	21,310
	Total		79,361				54,819

- (Remark) 1. Sales price : Sashimi 88,098 Baht/t, Tuna can 23,100 Baht/t
 2. Commission rate is 2% against sales price of unloaded fish.
 3. Commission is shown by economic price

Table 9.6.6 Decrease of Transportation Cost

(Unit: 1,000Bait)

Year	Fishing boat	Marketing cost										Economic cost 0.956
		Transportation by truck		Transportation by container		Loading in Container		Total		Balance		
		Volume(0)	Unit price	Amount	Volume(0)	Unit price	Amount	Volume(0)	Unit price		Amount	
[With project]												
2005		24,000	40	960	13,920	60	835	13,920	10	139	1,924	
2006		48,000	40	1,920	27,840	60	1,670	27,840	10	278	3,869	
2007		72,000	40	2,880	41,760	50	2,506	41,760	10	418	5,803	
[Without project]												
2005	a. Tuna longline boat (Foreign)	3,724	800	2,979	2,160	100	216	2,160	10	22	3,217	
	b. Skipjack/tuna purse seiner(Thai)	2,880	800	2,304	1,670	100	167	1,670	10	17	2,488	
	c. Skipjack/tuna purse seiner(Forei)	9,796	800	7,837	5,882	100	588	5,882	10	57	8,482	
	d. Tuna carrier vessels(Foreign)	7,500	100	750	4,408	100	441	4,408	10	44	1,245	
	e. Tuna carrier vessels(Foreign)	24,000	100	2,400	0	190	0	0	10	0	2,400	
	Total	31,800		16,280	13,920		1,392	13,920		139	17,811	15,178
2006	a. Tuna longline boat (Foreign)	3,724	800	2,979	2,160	100	216	2,160	10	22	3,217	
	b. Skipjack/tuna purse seiner(Thai)	2,880	800	2,304	1,670	100	167	1,670	10	17	2,488	
	c. Skipjack/tuna purse seiner(Forei)	9,960	800	7,968	5,777	100	578	5,777	10	58	8,603	
	d. Tuna carrier vessels(Foreign)	30,000	100	3,000	17,400	100	1,740	17,400	10	174	4,914	
	e. Tuna carrier vessels(Foreign)	1,436	100	144	833	190	158	833	10	8	310	
	Total	48,000		16,395	27,840		2,839	27,840		278	19,582	14,974
2007	a. Tuna longline boat (Foreign)	3,724	800	2,979	2,160	100	216	2,160	10	22	3,217	
	b. Skipjack/tuna purse seiner(Thai)	2,880	800	2,304	1,670	100	167	1,670	10	17	2,488	
	c. Skipjack/tuna purse seiner(Forei)	9,960	800	7,968	5,777	100	578	5,777	10	58	8,603	
	d. Tuna carrier vessels(Foreign)	30,000	100	3,000	17,400	100	1,740	17,400	10	174	4,914	
	e. Tuna carrier vessels(Foreign)	25,436	100	2,544	14,753	190	2,803	14,753	10	148	5,494	
	Total	72,000		18,795	41,760		5,504	41,760		418	24,716	18,081

Table 9.6.7 Increase of Land

(Unit:1,000Baht)

Land area (rai)	Market price		Conversion factor	Economic price
	Unit price	Land lease price		
168	107,000	17,976	0.956	17,185
Year				
2005				5,728
2006				11,457
2007				17,185

- (Remark)
1. Fisheries export processing zone will be completed in 2004.
Total land area of 6 factories : 28 rai 6 factories 168rai
 2. Unit price: 107,000.
Schedule of factories's operation is as follows
2005-2 factories, 2006-2 factories, 2007-2 factories
 3. Market price is converted to Economic price, multiplying
standard conversion factor 0.956.

Table 9.6.8 Total Benefit

(Unit : 1,000 Baht)

Year	Total	Increase of export	Decrease of raw material	Commission against sales price	Increase of operation profit	Saving of transportation cost	Increase of Land
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	79,977	44,876	0	24,777	10,324	0	0
2003	85,219	48,466	0	25,603	11,150	0	0
2004	167,318	62,465	0	26,429	78,424	0	0
2005	287,326	80,129	2,508	31,433	154,614	12,884	5,728
2006	417,927	85,295	97,627	43,126	164,621	15,801	11,457
2007	461,518	90,462	105,547	54,819	174,598	18,907	17,185
▼							
2031	461,518	90,462	105,547	54,819	174,598	18,907	17,185

Table 9.6.9 Cost/Benefit Analysis and Economic Internal Rate of Return (EIRR) (Economic Price)

EIRR = 12.03%

No	Year	Cost			Benefit	Net benefit	Present value (Discount rate = 12.03%)		Present value (Discount rate = 13%)		Present value (Discount rate = 14%)	
		Total	Construction cost	Operation cost			Residual value	Present value	Net benefit	Present value	Net benefit	Present value
0	2000	142,735	142,735	0	0	-142,735	1,000,000	-142,735	1,000,000	-142,735	1,000,000	
1	2001	904,165	902,213	1,952	0	-904,165	-807,073	-892,623	-800,146	-892,623	-792,127	
2	2002	439,768	424,670	35,098	0	-439,768	303,314	0,798,776	-298,125	0,783,147	-292,918	
3	2003	363,718	326,497	37,221	0	-363,718	84,283	-198,754	0,711,221	-193,676	0,590,500	
4	2004	366,305	328,409	37,896	0	-366,305	166,907	-126,906	0,634,852	-127,601	0,513,319	
5	2005	371,923	328,409	43,514	0	-371,923	287,338	-84,085	0,565,684	-47,650	0,542,760	
6	2006	374,152	328,409	45,743	0	-374,152	418,472	23,430	0,508,835	22,248	0,480,319	
7	2007	60,912	0	60,912	0	462,096	181,143	0,451,520	170,528	0,425,061	160,223	
8	2008	60,912	0	60,912	0	462,096	161,592	0,403,032	150,909	0,376,160	140,629	
9	2009	60,912	0	60,912	0	462,096	144,330	0,359,760	133,548	0,332,335	123,367	
10	2010	60,912	0	60,912	0	462,096	128,832	0,321,130	118,184	0,294,538	108,217	
11	2011	60,912	0	60,912	0	462,096	114,999	0,286,643	104,588	0,260,638	94,927	
12	2012	60,912	0	60,912	0	462,096	102,651	0,253,859	92,556	0,230,708	82,459	
13	2013	60,912	0	60,912	0	462,096	91,628	0,223,395	81,908	0,204,165	73,043	
14	2014	60,912	0	60,912	0	462,096	81,789	0,200,870	72,485	0,180,677	64,072	
15	2015	60,912	0	60,912	0	462,096	73,007	0,181,979	64,146	0,159,891	56,204	
16	2016	60,912	0	60,912	0	462,096	65,168	0,162,439	56,766	0,141,486	49,302	
17	2017	60,912	0	60,912	0	462,096	58,170	0,144,997	50,235	0,125,218	43,243	
18	2018	60,912	0	60,912	0	462,096	51,924	0,129,428	44,556	0,110,812	37,936	
19	2019	60,912	0	60,912	0	462,096	46,249	0,115,301	39,342	0,098,064	32,777	
20	2020	60,912	0	60,912	0	462,096	41,184	0,103,128	34,816	0,086,782	29,191	
21	2021	60,912	0	60,912	0	462,096	36,830	0,092,052	30,810	0,075,798	25,606	
22	2022	60,912	0	60,912	0	462,096	32,964	0,082,157	27,263	0,065,963	22,461	
23	2023	60,912	0	60,912	0	462,096	29,424	0,073,244	24,129	0,060,144	19,702	
24	2024	60,912	0	60,912	0	462,096	26,255	0,065,669	21,353	0,053,225	17,233	
25	2025	60,912	0	60,912	0	462,096	23,445	0,058,829	18,997	0,047,102	15,161	
26	2026	60,912	0	60,912	0	462,096	20,977	0,052,154	16,723	0,041,683	13,244	
27	2027	60,912	0	60,912	0	462,096	18,860	0,046,663	14,799	0,036,888	11,666	
28	2028	60,912	0	60,912	0	462,096	16,974	0,041,163	13,096	0,032,944	10,233	
29	2029	60,912	0	60,912	0	462,096	14,884	0,037,100	11,590	0,029,566	8,976	
30	2030	60,912	0	60,912	0	462,096	13,286	0,033,116	10,256	0,025,685	7,874	
31	2031	-433,472	0	60,912	0	462,096	895,588	26,474	0,029,561	20,261	0,022,624	
Total		4,009,682	2,781,362	1,228,320	0	8,579,290	0	-157,026	0	-157,026	-293,676	



10. Financial Analysis

10.1 Purpose of the Financial Analysis

In the Economic Analysis of the preceding Chapter, the economic effectiveness was studied from the viewpoint of the national economy.

The purpose of this analysis is to study and appraise the financial feasibility of the Short-term Development Plan for Phuket Fishery Complex in the target year (2007) concerning both aspects of the profitability of the project itself with the investment and the financial soundness of the execution agency.

10.2 Methodology of the Financial Analysis

10.2.1 Financial Cost-Benefit Analysis

The profitability of the project itself with the investment is analysed using the financial rate of return by means of a cost-benefit analysis similar to the economic analysis. The FIRR is a discount rate that makes net present value of cash flow (revenues-costs) during the project life equal to be zero, and it is calculated using the following formula;

$$\sum_{i=1}^n \frac{B_i - C_i}{(1+r)^{i-1}} = 0$$

where, n : Project life

B_i : Revenue in the i-th year

C_i : Cost in the i-th year

r : Discount rate

The benefits consist of operation revenues and residual value of the fixed assets in the last year of the project life with the investment. The costs consist of the investment costs and operation costs excluding depreciation costs of the investment and interest rate of long-term loan. It is generally considered that with an FIRR of more than interest rate of the funds for the investment is financially feasible.

10.2.2 Analysis of Financial Statements

With the project, the financial soundness of the execution agency is appraised based on its projected financial statement (Income Statement, Cash Flow Statement and Balance Sheet). The appraisal is made from the viewpoint of profitability, loan repayment capacity, using the following ratios;

(1) Profitability

Rate of Return on Net Fixed Assets:

$$\frac{\text{Net Operating Income}}{\text{Net Fixed Assets}} \times 100$$

This indicator shows the profitability of the investments. It is necessary to keep the rate above the average interest rate of the funds for investment.

(2) Loan repayment capacity

Debt Service Coverage Ratio:

$$\frac{\text{Net Operating Income before Depreciation}}{\text{Repayment and interest of Long-term loan}}$$

This indicator shows whether the operating income can cover the repayment and the interest on long-term loan. The ratio must be higher than 1.0

(3) Operational Efficiency

Operating Ratio:

$$\frac{\text{Operating Expenses}}{\text{Operating Revenues}} \times 100$$

Working Ratio:

$$\frac{\text{Operating Expenses- Depreciation Expense}}{\text{Operating revenues}} \times 100$$

The operating ratio shows the operational efficiency of the execution agency of the project and the working ratio shows the efficiency of the routine operation. When the calculated operating ratio is less than 70-75% and the working ratio is less than 50-60%, the operations are efficient.

10.3 Prerequisites of the Financial Analysis

10.3.1 Execution Agency

(1) Phuket Fishing Port - FMO Phuket Fishing Port

Phuket Fishing Port consists of public port facilities managed by Fishery Marketing Organisation (FMO) and private port facilities managed by fish agents.

With the project, FMO has a concept of integrating both fishery activities of FMO itself and private sector in the fishing port under the control and management of FMO. This analysis will be done based on the above concept.

(2) Phuket Fisheries Processing Zone - Joint Organisation of FMO and IEAT

The Fisheries Processing Zone will be managed by joint organisation of FMO and IEAT. FMO will reclaim land for the processing zone making use of sand dredged in the construction works of the Fishing Port. After that, IEAT will adjust the land and make planning, detail design and construction supervision for the infrastructure and external works. After the completion of the works, IEAT will promote luring concerning the removal of tuna canned factories to the zone from present location.

It is assumed that 6 companies will remove to the zone from Bangkok, Samut Prakan and Samut Sakhon, etc. IEAT will operate and manage the Fisheries Processing Zone as well as repair and maintenance of the facilities.

10.3.2 Object of Financial Analysis

In this analysis, each management conditions will be studied in respect of the execution agencies of FMO for the Fishing Port and FMO/IEAT for the Fisheries Processing Zone.

10.3.3 Term of Calculation for Financial Analysis

(1) Phuket Fishing Port

The term of the cost-benefit analysis and financial statements analysis are from the year 2000 to 2031 and from 1996 to 2031, respectively.

The projected revenues and costs of the execution agencies are estimated as follows:

1) Before the commencement of the project (1996 to 1999)

The revenue will remain the same level of 1995.

2) During the construction period (2000 to 2006)

The revenue will estimated based on the two aspects from the operation time of constructed facilities and the conditions of unloaded fish volume and fishing boats of that time.

After the construction (2008-2031)

The revenue will remain the same level of 2007 since 2007 to 2031 because all 6 tuna canning plants in the Fisheries Processing Zone will fully operate in 2007 and the raw materials of tuna supplied by fishing boats will arrive at the limitation.

(2) Phuket Fisheries Processing Zone

The term of Cost-Benefit Analysis and Financial Statements Analysis is from 2001 in when the construction of the zone will begin to 2031 when the project life will end. During the period from 2005 to 2007, the revenues will be estimated based on the supplied materials volume of tuna. Since 2008 to 2031, the revenues will remain the same level of 2007.

10.3.4 Project Life

Taking account of the average depreciation lives of existing facilities and new facilities with the project in the Fishing Port and the Fisheries Processing Zone and also the repayment period of long-term loans for the investment, the project life is determined to be 30 years(2002 to 2031).

10.3.5 Fund Raising for the Investment

The local portion of the investment cost is assumed to be raised by self-finance of the execution agency or the government fund (subsidy) and the foreign portion raised by foreign loan and borrowing conditions is as follows:

Interest rate: 3 %, Loan period: 25 years, including Grace Periods: 7 years

In respect of the Fisheries Processing Zone, the investment cost is only local portion and 60% of the total cost is assumed to be raised by long-term loan same as the above borrowing conditions.

10.3.6 Fixed Assets

The fixed assets consist of existing assets and new assets after the investment. The annual depreciation costs of these assets are calculated by the straight line method on their depreciation lives. Residual values after the depreciation are estimated as zero.

Depreciation life is based on the rule of FMO as follows:

Building and structures: 40 years, Vehicle: 15 years, Equipment: 10 years

10.3.7 Foreign Exchange Rate

Foreign exchange rate is as follows: US\$=Baht25.33

10.3.8 Base Year

For the estimation, costs, and revenues analysed quantitatively here, 1996 prices are predominantly used. Neither price inflation nor increases in nominal wages are considered during the project life.

10.3.9 Income Tax

Income tax is assumed to be not levied against revenues.

10.3.10 Calculation of Revenue

(1) Phuket Fishing Port

The revenues of the fishing port is calculated based on the present tariff of 1996. With the project, FMO have a concept of integrating both fishery activities of FMO itself and the private sector in the fishing port under the control and management of FMO in order to realise efficient and sound management. Then, a revised or new tariff for unloaded charges and berthing charges taking account of the present tariff of FMO and Phuket Port will be applied to tuna longline boats, skipjack/tuna purse seiners and tuna freezer/carriers using both extended facilities and newly constructed facilities of FMO. Also, unloading charges and berthing charges of present tariff will be applied to trawlers and purse seiners and tuna longline boats using private facilities. FMO will inspect and weigh fish volume unloaded by those boats using private facilities.

FMO has an act of organising the fish marketing activities established in 1952 providing that FMO can collect a commission of service charge by a rate of 3% against the sales prices of unloaded fishes from agents. This act has not been enforced until now. With the project, it is necessary for FMO to raise fund for a great amount of investment cost. According to Economic Analysis studied in the preceding Chapter, the project implementation is economically feasible. The commission charges will be useful for the fund of the investment. On the occasion of the project, it is recommended that FMO will apply a commission of service charge at rate of two (2) % to every fishing boats based upon the above ACT.

(2) Phuket Fisheries Processing Zone

Revenues consist of sale/lease of land paid to FMO by companies of processing plants and service charges for public facilities in the zone paid to IEAF by the companies.

10.3.11 Calculation of Project Cost

(1) Phuket fishing Port

Project costs consist of investment cost, and the existing and additional operation costs (personnel costs, administration costs, maintenance & repair costs, maintenance dredging costs and manoeuvring costs by tug boats) with the project.

(2) Fisheries Processing Zone

Project costs consist of investment cost for infrastructure and operation costs (personnel costs, administration costs and maintenance & repair costs).

10.4 Revenue

10.4.1 Revenue of Phuket Fishing Port

(1) Tariff Rate by FMO

1) Present Tariff Rate

It is composed of the following Items. Table 10.4.1 shows the present tariff.

- | | |
|------------------------------|--|
| ①* Charges for unloading: | Unloaded weight(kg)or HP x trips time,
GRT x Unit Price |
| ② Entrance charges of truck: | Entrance times of truck x Unit Price |
| ③ Service charge of Ice: | Numbers of block ice or weight(t) of crush ice
x Unit Price |
| ④ Service charge of fuel: | Quantity(L) x Unit Price |
| ⑤ Premise fee(package): | Usage times of truck x Unit Price |
| ⑥* Berthage fee: | Numbers of boat per size x Unit Price |
| ⑦ Electric fee: | Consumption(kwh) x Unit Price |
| ⑧ Rental fee of real estate: | Number of rooms or area of land x Unit Price |

(Remark) * With the project, the above items of charges for unloading and berthage fee are assumed to be applied to every boats.

2) Revised or New Tariff Rate

With the project, the following tariff are applied to tuna longline boats, skipjack/tuna purse seiners and tuna freezer/carriers by new fishery method.

① Charge for unloading:

Tuna longline boat(Foreign): 0.3 Baht(present tariff: 0.2)/unloaded weight(kg)

Skipjack/tuna purse seiner boat(Thai): 0.15 Baht/ unloaded weight(kg)

Skipjack/tuna purse seiner boat(Thai): 0.2 Baht/ unloaded weight(kg)

Tuna freezer/carrier(foreign): 0.2 Baht/ unloaded weight(kg)

(Remark) Tuna longline boat(Thai): 0.2 Baht(present tariff:)/unloaded weight(kg)

② Commission of service charge for sales price: unloaded fish(kg) x sales price x 2%. This charge is applied to every boats regardless of foreign or local boats.

③ Berthing charges:

Skipjack/tuna purse seiner: basic charges (berthing days x 1,000 Baht)+4 baht per 100GRT.

Tuna freezer/carrier: basic charges (berthing days x 1,000Baht)+7 Baht per 100GRT.

(2) Forecast of unloaded fish volume and numbers of fishing boat(1996-2007

Table 9.3.1 shows the forecast.

(3) Revenue of Phuket Fishing Port

Table 10.4.2. shows the revenues. The details are shown in Appendix Table 10.4.2(1) to 10.4.2(3).

10.4.2 Revenue of Phuket Fisheries Processing Zone

The revenue of the zone consist of lease/sale of land from 6 companies of tuna canning plants and service charges of public facilities in the zone.

(1) Lease/sale of Land

The total area of 6 plants is 168 rai (1 rai=1,600km²). The revenue is estimated at 12,390,000 baht/year, applying the price of 107,000 baht/ rai/year for the estimation. (Ref: IEAT' rental fee which has been applied to export processing zone of industrial estate in Thailand: 73,750/rai/year)

(2) Service Charge for Public Facilities and Maintenance & Repair Charges

IEAT will offer the following services for the public facilities in the zone.

① Cleaning and repair & maintenance of drainage, ② Street cleaning, ③ Street lamp, ④ Street tree and etc.

Applying 500 Baht for the monthly service charges per rai, total income as service charges is estimated at 1,008,000 Baht/year for six plants.

Maintenance & repair charges as 0.5% of the investment cost is estimated at 1,511,000 Baht

Table 10.4.3 shows the total revenue of the Zone. The details are shown in Appendix Table 10.4.3(1).

10.5 Project Cost

10.5.1 Investment Costs

Table 10.5.1 shows the investment cost of the Fishing Port and the Fisheries Processing Zone. The details are shown in Appendix Tables 10.5.1(1) to 10.5.1(6).

10.5.2 Operation Costs

The annual operation costs are assumed as follows;

(1) Personnel Costs

The annual personnel costs are estimated, based on the organisation proposed for the Fishing Port and the Fisheries Processing Zone and existing pay scales of FMO. Personnel costs and number of workers are shown in Table 10.5.2.

(2) Administration Costs

Administration cost is assumed to be 50% of personnel costs based on the present conditions shown in Table 10.5.3.

(3) Maintenance and Repair Costs

In respect of the existing facilities of the Fishing Port, annual maintenance and repair costs are assumed to be 1.3% against the total acquisition cost of all fixed assets. Annual maintenance and repair costs for new facilities of the Fishing Port are calculated as 0.5 % of the original investment cost for 2002 to 2006 and 1% since 2007. As for the Fisheries Processing Zone, annual maintenance and repair costs are calculated as 0.5% since 2007.

Table 10.5.4 shows overall maintenance and repair cost.

(4) Maintenance Dredging Costs

With the project, annual maintenance dredging of 500,000 m³ is necessary. Appendix Table 10.5.2(1) shows the costs. However, this dredging is assumed to be done by the budget of Harbor Department.

(5) Maneuvering Costs by Tug Boats

With the project, the manoeuvring by the tug boats is necessary for tuna freezer/carries when they will enter into the port and leave the port. It is assumed

that the manoeuvring time per one carrier takes about 2 hours. The maneuvering costs are estimated in application of the rental fee of tug boat in Phuket Commercial Port shown in Table 10.5.6.

Table 10.5.6 shows the overall operation cost.

10.6 Depreciation Costs

The annual depreciation costs are calculated by the straight line method on their service lives. Residual values after all depreciation are estimated as zero.

In respect to the depreciation of the Fishing Port and the Fisheries Processing Zone, Tables 10.6.1 and 10.6.2 show the change of depreciation. The details are shown in Appendix Tables 10.6.1(1) and 10.6.1(5).

10.7 Fund Raising of Foreign Loan

In respect to long-term loan for the investment cost, the repayment schedules of the Fishing Port and the Fisheries Processing Zone are shown in Tables 10.7.1 to 10.7.4 and Tables 10.7.5 to 10.7.5 respectively.

10.8 Evaluation by Cost-Benefit Analysis

10.8.1 Result of FIRR Calculation

The financial rate of return (FIRR) based on the cost-benefit analysis is shown below as stated in Tables from 10.8.1 to 10.8.3.

For Phuket Fishing Port: 4.17 %,

For Fisheries Processing Estate : 3.07%,

For the both facilities: 3.99%

Judging from the results, as FIRR exceeds 3% of the interest rate of the loan, the project is regarded as financially feasible.

10.8.2 Sensitivity Analysis

In order to determine whether or not the project is feasible when certain conditions change, a sensitivity analysis was conducted for the following three alternatives.

	<u>Phuket Fishing Port</u>	<u>Processing Zone</u>
	FIRR(%)	FIRR(%)
Case A: Cost increase by 10%	3.41	2.46
Case B: Benefit increase by 10%	4.97	3.70
Case C: Cost increase by 10%, Benefit decrease by 10%	2.63	1.82

Another analyses shows that in order to achieve over 10.6 % of FIRR, the increase of revenues are needed for the Fishing Port to be 1.9 times and the Fisheries Processing Zone to be 2.5 times. Furthermore, when the maintenance dredging of the amount 27,550,000 baht per year will be done by FMO's budget, FIRR will be 1.95% as shown in Table 10.8.4 and consequently, the project implementation is financially difficult.

10.8.3 Revise of Tariff

As mentioned above in Section 10.4.1(2), the port tariffs of Phuket Fishing Port concerning unloaded charges and berthing charges were revised and also 2% of commission charges for sales price of unloaded fish was newly set up. It resulted in that the project will be feasible. Consequently, we recommend that the above revise or establishment of tariff are absolutely necessary for the project implementation/

10.9 Evaluation of Financial Statements Analysis

The financial Statements of the Fishing Port were made up for 1996 to 2031. Tables 10.9.1 shows the Income Statement. Table 10.9.2 shows the Statement of Cash Flow. Table 10.9.3 shows the Balance Sheet. As for the Fisheries Processing Zone, the financial statements were made up for 2004 to 2031 shown in Table 10.8.4 to 10.8.6.

As stated in 10.2.2, the financial soundness of execution agency by the financial statements were studied from the viewpoint of profitability, loan repayment capacity and operational efficiency, using authorised ratios. The results are as follows.

10.9.1 Profitability

The rate of return on net fixed assets is more than the average interest rate of the fund shown in Table 10.9.7.

10.9.2 Loan Repayment Capacity

The debt service coverage ratios are more than 1 shown in Table 10.9.8.

10.9.3 Operational efficiency

Both the operating ratios and the working ratios are favourable levels shown in Table 10.9.8.

10.10 Evaluation

Judging from the result of the FIRR calculation, it is possible to ensure the financial feasibility of the project. According to the results, the financial soundness of the execution agency with the project is considered to be reasonable. Consequently, from the results of the two analysis, it is appraised that the project implementation is feasible financially.

Table 10.4.1 Tariff of Phuket Fishing Port by FMO

1. Charges for Unroading		
(1) Trash Fish	0.02 Baht/kg	(20 Baht/t)
(2) Consumer Fish		
a. Purse seiner	0.04 Baht/kg	(40 Baht/t)
b. Trawler(in Thai Water)	HP of Boatx Trip Timesx 1.50 Baht	
Trawler(in Foreign Water)	HP of Boatx Trip Timesx 2.50 Baht	
c. Longline Boat	0.2 Baht/t	(200 Baht/t)
d. Tuna Longline Boat (Foreign)	0.2 Baht/t	(200 Baht/t)
e. Foreign Vessel	50 Baht/GRT of Vessel	
2. Vehicle Entrance Charge		
a. 4 Wheels	10 Baht/trip	
b. 6 Wheels	15 Baht/trip	
c. 10 Wheels	20 Baht/trip	
d. Tourist Car 4 Wheels	20 Baht/trip	
Van	25 Baht/trip	
Mini Bus	30 Baht/trip	
Mechium Bus	40 Baht/trip	
Coach	50 Baht/trip	
3. Berthing Charge		
a. less than GRT 60t	100 Baht/boat	
b. over GRT 60	200 Baht/boat	
c. less than GRT 100t	500 Baht/boat	
d. over GRT 1,000	700 Baht/boat	
4. Rental Charges for using Auction Hall (for packing to truck)		
a. 10 Wheels	300 Baht/truck	
b. 6 Wheels	200 Baht/truck	
c. 4 Wheels	150 Baht/truck	
5. Charges for Ice Supply		
a. Block Ice	0.5 Baht/block	
b. Crush Ice	3 baht/t	
6. Charges for Fuel Supply	0.065 Baht/time	
7. Charges for Lubricating Oil	0.03 Baht/time	
8. Electricity Light		
a. in Auction Hall	3 Baht/kwh	
b. in Boat	150 Baht/boat	
10. Electricity using with Pump		
a. within 6 hours	50 Baht	
b. within 12 hours	100 Baht	
11. Electricity for Repairing	400 Baht/day	
12. Rental Charge of Room to Agent(66 rooms)	Monthly amount: 500 Baht/room	
	Total yearly amount: 396,000 Baht	
13. Rental Charges of Land		
a. Shipyard B(3,600 wa2)	18 Baht/wa2	Total yearly amount: 64,800
b. Shipyard A(1,200 wa2)	18 Baht/wa2	Total yearly amount: 21,600
c. Processing Factory(2,400 wa2)	23 Baht/wa2	Total yearly amount: 55,200
d. Fuel Supply Base	3,000 Baht/month	Total yearly amount: 36,000
e. Canteen	3,000 Baht/month	Total yearly amount: 36,000
(Remark) 400 wa2=1 rai		

Table 10.4.2 Revenues of Phuket Fishing Port (1996-2051)

Items	1996	2001	2002	2003	2004	2005	2006	2007	2031
(Unit : 1,000 Baht)									
New facilities									
(FMO)									
Charges for Unloading	0	0	4,142	4,418	4,913	7,681	12,691	17,701	17,701
Vehicle Entrance Charge	0	0	18	20	22	25	26	28	28
Berthing Charge	0	0	646	690	733	812	934	1,061	1,061
Rental Charges for using Auction Hall by Truck	0	0	18	20	22	25	26	28	28
Charges for Ice Supply	0	0	117	125	141	159	168	177	177
Charges for Fuel Supply	0	0	664	710	756	834	918	1,004	1,004
Electricity	0	0	222	238	253	285	337	390	390
Rental Charge for Estate	0	0	8,792	8,792	8,792	8,792	8,792	8,792	8,792
Commission Charge for Fish Sales Supply	0	0	19,114	20,412	28,587	31,866	43,796	56,149	56,149
Total	0	0	33,793	35,425	44,219	50,479	67,688	85,330	85,330
Existing facilities									
(FMO)									
Charges for Unloading	1,336	1,336	1,244	1,244	1,244	1,244	1,244	1,244	1,244
Vehicle Entrance Charge	706	706	706	706	706	706	706	706	706
Berthing Charge	570	570	1,479	1,479	1,479	1,479	1,479	1,479	1,479
Rental Charges for using Auction Hall by Truck	438	438	438	438	438	438	438	438	438
Charges for Ice Supply	352	352	352	352	352	352	352	352	352
Charges for Fuel Supply	149	149	149	149	149	149	149	149	149
Electricity	423	423	423	423	423	423	423	423	423
Rental Charge for Estate	610	610	610	610	610	610	610	610	610
Commission Charge for Fish Sales Supply	0	0	5,775	5,775	5,775	5,775	5,775	5,775	5,775
Others	250	250	250	250	250	250	250	250	250
Sub-total	4,834	4,834	11,426	11,426	11,426	11,426	11,426	11,426	11,426
(Private Facilities)									
Charges for Unloading	4,604	4,604	4,604	4,604	4,604	4,604	4,604	4,604	4,604
Berthing Charge	1,612	1,612	1,612	1,612	1,612	1,612	1,612	1,612	1,612
Commission Charge for Fish Sales Supply	11,557	11,557	11,557	11,557	11,557	11,557	11,557	11,557	11,557
Sub-total	17,773	17,773	17,773	17,773	17,773	17,773	17,773	17,773	17,773
Total	22,607	22,607	29,199	29,199	29,199	29,199	29,199	29,199	29,199
C. Total	22,607	22,607	62,832	64,624	73,418	79,678	96,887	114,529	114,529

Table 10.4.3 Revenues of Fisheries Processing Zone

Items	(unit : Baht)		
	2005	2006	2007
Lease/Agreement of land	5,892,000	11,984,000	17,976,000
Utility Service and Repair	336,000	672,000	2,519,000
Total	6,228,000	12,656,000	20,495,000

Table 10.4.3 (1) Revenues of Lease/Agreement of Land

Items	Rai	Unit Price	(unit : Baht)					
			2005		2006		2007	
			Nos. of Plant	Amount	Nos. of Plant	Amount	Nos. of Plant	Amount
Canning Plants	28	107,000	2	5,892,000	4	11,984,000	6	17,976,000

(Remark) 1. Estimation of Unit Price : In conditions that foreign portion in investment cost with 6 % of interest rate and local portion with 3% of commission charges will be reimbursed for 25 years, reimbursement amount per year is assured to be 107,000 Baht, 45% up of 73,750 Baht/rai as unit price of EPZ set up by IEAT.

Table 10.4.3 (2) Charges for Utility Services and Repair & Maintenance

Items	Rai	Unit Price	(unit : Baht)					
			2005		2006		2007	
			Nos. of Plant	Amount	Nos. of Plant	Amount	Nos. of Plant	Amount
Utility services								
Canning Plants	28	6,000	2	336,000	4	672,000	6	1,008,000
Repair and maintenance								
Total				336,000		672,000		2,519,000

(Remark) 1. Utility service charge is estimated based on 500 Baht per month set up generally for Thai industrial estates by IEAT for cleaning and repair of drainage, cleaning of street, street lamp, maintenance of street trees.
 2. Repair and maintenance for the utilities will be begun from 2007 with the amount of 0.5% against the total investment cost for the utilities as follows and paid by the canning plants:
 Repair & maintenance cost : Investment cost 302,232 x 0.5% = 1,511 (1,000 Baht).

Table 10.5.2 Personnel Cost

(unit : 1,000 Baht)

Term	Execution Agency	Staff	Number			Salary			Personnel cost(Year)				
			Present	Increase	Total	Monthly rate	Yearly rate	Yearly rate	Present	Increase	Total		
Fishing Port	FMO	Manager	1	0	1	30,000	360,000	360,000	360,000	0	360,000		
		Deputy Manager	0	1	1	20,000	240,000	240,000	0	240,000	240,000		
		Accounting - Admini.	4	1	5	13,000	156,000	156,000	624,000	156,000	780,000		
		Auction seller	4	4	8	12,000	144,000	144,000	576,000	576,000	1,152,000		
		Operation Management	1	5	6	12,000	144,000	144,000	144,000	720,000	864,000		
		Statistics	0	2	2	12,000	144,000	144,000	0	288,000	288,000		
		Hatch man	4	6	10	8,000	96,000	96,000	384,000	576,000	960,000		
		Chief of quality control	0	1	1	15,000	180,000	180,000	0	180,000	180,000		
		Quality control	0	2	2	12,000	144,000	144,000	0	288,000	288,000		
		Resources control	0	2	2	13,000	156,000	156,000	0	312,000	312,000		
		Total	14	24	38				2,088,000	3,336,000	5,424,000		
		Processing Zone	FMO/FEAT	Manager	0	1	1	20,000	240,000	240,000	0	240,000	240,000
				Deputy Manager	0	1	1	15,000	180,000	180,000	0	180,000	180,000
				Accounting - Admini.	0	2	2	13,000	156,000	156,000	0	312,000	312,000
Engineer	0			2	2	13,000	156,000	156,000	0	312,000	312,000		
Permit	0			1	1	12,000	144,000	144,000	0	144,000	144,000		
Finance	0			1	1	12,000	144,000	144,000	0	144,000	144,000		
Secretary	0			1	1	11,000	132,000	132,000	0	132,000	132,000		
Total	0	9	9				2,088,000	4,800,000	5,888,000				
G. Total		14	33	47				2,088,000	4,800,000	5,888,000			

(Remark) 1. Personnel cost of FMO was estimated based on a basic salary and financial statement of FMO in 1995.

2. Personnel cost consists of basic salary and others(36% of basic salary) and the total cost was estimated to be

1.86 times of basic salary.

3. Personnel cost of fisheries processing zone was newly set up in consideration of the personnel cost of FMO.

4. The personnel cost of FMO was counted from 2002.

5. The personnel cost of processing zone was estimated as follows.

2002: Manager(1), Engineer(1), Accounting/Administration (1) Total 552,000 Baht

2003: Manager(1), Engineer(1), Accounting/Administration (1) Total 552,000 Baht

2004: Manager(1), Engineer(1), Accounting/Administration (1) Total 552,000 Baht

Since 2005: full staff, 1,464,000 baht

Table 10.5.3 Administration Cost

				(unit: 1,000 Baht)
Term	Execution Agency	Personnel Cost	Ratio	Administration Cost
Fishing Port	FMO	5,424	50%	2,712
Processing Zone	FMO/IEAT	1,464	50%	732
Total		6,888		3,444

(Remark) 1. The ratio of administration cost against the personnel cost was estimated in consideration of financial statements of FMO in 1994 and 1995.

2. Administration cost of FMO for 1996-2001 is as follows: $2,038 \times 50\% = 1,019$ (1,000 Baht).
3. Administration cost of FMO was counted 2002.
4. Administration cost of processing zone was counted from 2001.
2001, 2003, 2004: 276,000 Baht/year
Since 2005: 732,000 Baht

Table 10.5.4(1) Repair & Maintenance Cost (Phuket Fishing Port)(FMO)
(unit : 1,000 Baht)

Year	Acquisition Cost	Ratio	Repair and maintenance Cost
New assets			
2001	114,043	0.5%	570
2002	363,657	0.5%	1,818
2003	790,772	0.5%	3,954
2004	1,078,369	0.5%	5,392
2005	1,078,369	0.5%	5,392
2006	1,078,369	0.5%	5,392
2007	1,078,369	1.0%	10,784
Existing assets			
1996	37,988	1.3%	494
2031	37,988	1.3%	494

Table 10.5.4(2) Repair and Maintenance Cost Processing Zone)
(unit : 1,000 Baht)

Year	Acquisition Cost	Ratio	Repair and maintenance Cost
New assets			
2004	302,232	0.0%	0
2005	302,232	0.0%	0
2006	302,232	0.0%	0
2007	302,232	0.5%	1,511

Table 10.5.5 Maneuvering cost by tug boat

(unit : 1,000 Baht)

Year	Boat	Trip times	Maneuvering times	Rental fee of tug boat	Maneuvering cost
2006	Freezer/carrier	15	2	8,000	240
2007	Freezer/carrier	31	2	8,000	496
▼					
2031	Freezer/carrier	31	2	8,000	496

(Remark) Maneuvering time: at entrance 1.5 hours, in departure 0.5 hours

2. Rental fee of tug boat by Phuket Port.

(Distance: 5km, Speed: 11 knots)

First one hour: 4,000 Baht

Every 30 minutes: addition 2,000 baht

Table 10.5.6(1) Operation Cost of Phuket Fishing Port

(unit: 1,000 Baht)

Year	Personnel Cost	Administration Cost	Maintenance & Repair	Maneuvering Cost by tug	Total
1996	2,088	1,044	494	0	3,626
1997	2,088	1,044	494	0	3,626
1998	2,088	1,044	494	0	3,626
1999	2,088	1,044	494	0	3,626
2000	2,088	1,044	494	0	3,626
2001	2,088	1,044	1,064	0	4,196
2002	5,424	2,712	2,312	0	10,448
2003	5,424	2,712	4,448	0	12,584
2004	5,424	2,712	5,886	0	14,022
2005	5,424	2,712	5,886	0	14,022
2006	5,424	2,712	5,886	240	14,262
2007	5,424	2,712	11,278	496	19,910
↓					
2031	5,424	2,712	11,278	496	19,910

Table 10.5.6(2) Operation Cost of Fisheries Processing Zone

(unit: 1,000 Baht)

Year	Personnel Cost	Administration Cost	Maintenance & Repair	Total
2001	552	276	0	828
2002	0	0	0	0
2003	552	276	0	828
2004	552	276	0	828
2005	1,464	732	0	2,196
2006	1,464	732	0	2,196
2007	1,464	732	1,511	3,707
↓				
2031	1,464	732	1,511	3,707

Table 10.6.1 Fixed Assets of Phuket Fishing Port

(Unit:1000Baht)

Item	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Fixed Assets at beginning Year	20,301	19,514	18,727	17,940	17,153	16,366	15,579	14,792	14,005	13,218	12,431	11,644
Existing Facilities	0	0	0	0	0	114,043	899,484	1,304,041	1,538,402	1,517,976	1,427,550	1,437,124
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Investment	0	0	0	0	150,911	753,040	465,640	247,456	0	0	0	0
Facilities & Equipments	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation	787	787	787	787	787	787	787	787	787	787	787	787
Existing Facilities	0	0	0	0	0	2,831	22,538	35,336	40,426	40,426	40,426	40,426
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Assets at end of Year	19,514	18,727	17,940	17,153	16,366	15,579	14,792	14,005	13,218	12,431	11,644	10,857
Land	0	0	0	0	0	0	0	0	0	0	0	0
Existing Facilities	19,514	18,727	17,940	17,153	16,366	15,579	14,792	14,005	13,218	12,431	11,644	10,857
New Facilities	0	0	0	0	11,404	899,484	1,304,041	1,538,402	1,517,976	1,477,550	1,437,124	1,396,698
Work in Progress	0	0	0	0	36,868	1,616	40,141	0	0	0	0	0
Total	19,514	18,727	17,940	17,153	16,727	916,679	1,338,674	1,572,407	1,531,194	1,469,981	1,408,768	1,407,555

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Fixed Assets at beginning Year	10,857	10,070	9,283	8,496	7,709	6,922	6,135	5,348	4,561	3,774	2,987	2,200
Existing Facilities	1,366,698	1,356,272	1,315,846	1,275,420	1,234,994	1,194,568	1,154,142	1,113,716	1,073,290	1,032,864	992,438	952,012
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Investment	0	0	0	0	0	0	0	0	0	0	0	0
Facilities & Equipments	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation	787	787	787	787	787	787	787	787	787	787	787	787
Existing Facilities	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Assets at end of Year	10,070	9,283	8,496	7,709	6,922	6,135	5,348	4,561	3,774	2,987	2,200	1,413
Land	0	0	0	0	0	0	0	0	0	0	0	0
Existing Facilities	10,070	9,283	8,496	7,709	6,922	6,135	5,348	4,561	3,774	2,987	2,200	1,413
New Facilities	1,356,272	1,315,846	1,275,420	1,234,994	1,194,568	1,154,142	1,113,716	1,073,290	1,032,864	992,438	952,012	911,596
Work in Progress	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,366,747	1,325,129	1,285,916	1,244,703	1,201,490	1,160,277	1,119,064	1,077,851	1,036,638	995,423	954,212	912,900

Item	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fixed Assets at beginning Year	1,413	626	0	0	0	0	0	0	0	0	0	0
Existing Facilities	911,596	871,160	830,724	790,288	749,852	709,416	668,980	628,544	588,108	547,672	507,236	466,800
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Investment	0	0	0	0	0	0	0	0	0	0	0	0
Facilities & Equipments	0	0	0	0	0	0	0	0	0	0	0	0
Depreciation	787	787	787	787	787	787	787	787	787	787	787	787
Existing Facilities	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426
New Facilities	0	0	0	0	0	0	0	0	0	0	0	0
Fixed Assets at end of Year	1,413	626	0	0	0	0	0	0	0	0	0	0
Land	0	0	0	0	0	0	0	0	0	0	0	0
Existing Facilities	1,413	626	0	0	0	0	0	0	0	0	0	0
New Facilities	871,160	830,724	790,288	749,852	709,416	668,980	628,544	588,108	547,672	507,236	466,800	426,474
Work in Progress	0	0	0	0	0	0	0	0	0	0	0	0
Total	871,786	830,724	790,288	749,852	709,416	668,980	628,544	588,108	547,672	507,236	466,800	426,474

Table 10.6.2 Fixed Assets of Fisheries Processing Zone

		(Unit: '000 Rupee)													
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		
Fixed Assets at beginning Year															
New Facilities		0	0	0	202,232	294,676	287,120	279,564	272,008	264,452	256,896	249,340	241,784		
Investment															
Facilities & Equipments		199,704	0	102,528	0	0	0	0	0	0	0	0	0		
Depreciation															
New Facilities		0	0	0	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556		
Fixed Assets at end of Year															
New Facilities		0	0	302,232	294,676	287,120	279,564	272,008	264,452	256,896	249,340	241,784	234,228		
Work in Progress		199,704	199,704	0	0	0	0	0	0	0	0	0	0		
Total		199,704	199,704	302,232	294,676	287,120	279,564	272,008	264,452	256,896	249,340	241,784	234,228		
Item		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
Fixed Assets at beginning Year															
New Facilities		226,672	226,672	219,116	211,560	204,004	196,448	188,892	181,336	173,780	166,224	158,668	151,112		
Investment															
Facilities & Equipments		0	0	0	0	0	0	0	0	0	0	0	0		
Depreciation															
New Facilities		7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556		
Fixed Assets at end of Year															
New Facilities		226,672	219,116	211,560	204,004	196,448	188,892	181,336	173,780	166,224	158,668	151,112	143,556		
Work in Progress		0	0	0	0	0	0	0	0	0	0	0	0		
Total		226,672	219,116	211,560	204,004	196,448	188,892	181,336	173,780	166,224	158,668	151,112	143,556		
Item		2025	2026	2027	2028	2029	2030	2031							
Fixed Assets at beginning Year															
New Facilities		143,556	136,000	128,444	120,888	113,332	105,776	98,220							
Investment															
Facilities & Equipments		0	0	0	0	0	0	0							
Depreciation															
New Facilities		7,556	7,556	7,556	7,556	7,556	7,556	7,556							
Fixed Assets at end of Year															
New Facilities		136,000	128,444	120,888	113,332	105,776	98,220	90,664							
Work in Progress		0	0	0	0	0	0	0							
Total		136,000	128,444	120,888	113,332	105,776	98,220	90,664							

Table 10.7.1 Repayment Schedule of Loan Phuket Fishing Port (2000)

A. Borrowing Conditions (in 2000)

Borrowing	79,876,000	Interest rate	3.0%	Grace period	7years
				Repayment period	18years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	2,396,280	2000
2	2,396,280	2001
3	2,396,280	2002
4	2,396,280	2003
5	2,396,280	2004
6	2,396,280	2005
7	2,396,280	2006

2. Repayment

Total Repayment 81,786,474

Borrowing	79,876,000	Interest rate	3.0%	Repayment year	18
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(unit: Baht)

Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	79,876,000	199,690	4,344,003	4,543,693	75,531,997	2007
2	75,531,997	188,829	4,354,864	4,543,693	71,177,133	2008
3	71,177,133	177,942	4,365,751	4,543,693	66,811,382	2009
4	66,811,382	167,028	4,376,665	4,543,693	62,434,717	2010
5	62,434,717	156,086	4,387,607	4,543,693	58,047,110	2011
6	58,047,110	145,117	4,398,576	4,543,693	53,648,534	2012
7	53,648,534	134,121	4,409,572	4,543,693	49,238,962	2013
8	49,238,962	123,097	4,420,596	4,543,693	44,818,366	2014
9	44,818,366	112,045	4,431,648	4,543,693	40,386,718	2015
10	40,386,718	100,966	4,442,727	4,543,693	35,943,991	2016
11	35,943,991	89,859	4,453,834	4,543,693	31,490,157	2017
12	31,490,157	78,725	4,464,968	4,543,693	27,025,189	2018
13	27,025,189	67,562	4,476,131	4,543,693	22,549,058	2019
14	22,549,058	56,372	4,487,321	4,543,693	18,061,737	2020
15	18,061,737	45,154	4,498,539	4,543,693	13,563,198	2021
16	13,563,198	33,907	4,509,786	4,543,693	9,053,412	2022
17	9,053,412	22,633	4,521,060	4,543,693	4,532,352	2023
18	4,532,352	11,330	4,532,363	4,543,693	-11	2024
Total		1,910,463	79,876,011	81,786,474		

Table 10.7.2 Repayment Schedule of Loan Phuket Fishing Port (2001)

A. Borrowing Conditions (in 2001)

Borrowing	502,858,000	Interest rate	3.0%	Grace period	7years
				Repayment period	18years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	15,085,740	2001
2	15,085,740	2002
3	15,085,740	2003
4	15,085,740	2004
5	15,085,740	2005
6	15,085,740	2006
7	15,085,740	2007

2. Repayment

Total Repayment 514,885,356

Borrowing	502,858,000	Interest rate	3.0%	Repayment year	18	
(unit: Baht)						
Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	502,858,000	1,257,145	27,347,597	28,604,742	475,510,403	2008
2	475,510,403	1,188,776	27,415,966	28,604,742	448,094,437	2009
3	448,094,437	1,120,236	27,484,506	28,604,742	420,609,931	2010
4	420,609,931	1,051,524	27,553,218	28,604,742	393,056,713	2011
5	393,056,713	982,641	27,622,101	28,604,742	365,434,612	2012
6	365,434,612	913,586	27,691,156	28,604,742	337,743,456	2013
7	337,743,456	844,358	27,760,384	28,604,742	309,983,072	2014
8	309,983,072	774,957	27,829,785	28,604,742	282,153,287	2015
9	282,153,287	705,383	27,899,359	28,604,742	254,253,928	2016
10	254,253,928	635,634	27,969,108	28,604,742	226,284,820	2017
11	226,284,820	565,712	28,039,030	28,604,742	198,245,790	2018
12	198,245,790	495,614	28,109,128	28,604,742	170,136,662	2019
13	170,136,662	425,341	28,179,401	28,604,742	141,957,261	2020
14	141,957,261	354,893	28,249,849	28,604,742	113,707,412	2021
15	113,707,412	284,268	28,320,474	28,604,742	85,386,938	2022
16	85,386,938	213,467	28,391,275	28,604,742	56,995,663	2023
17	56,995,663	142,489	28,462,253	28,604,742	28,533,410	2024
18	28,533,410	71,333	28,533,409	28,604,742	1	2025
Total		12,027,357	502,857,999	514,885,356		

Table 10.7.3 Repayment Schedule of Loan Phuket Fishing Port (2002)

A. Borrowing Conditions (in 2002)

Borrowing	142,744,000	Interest rate	3.0%	Grace period	7 years
				Repayment period	18 years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	4,282,320	2002
2	4,282,320	2003
3	4,282,320	2004
4	4,282,320	2005
5	4,282,320	2006
6	4,282,320	2007
7	4,282,320	2008

2. Repayment

Total Repayment 146,158,146

Borrowing	142,744,000	Interest rate	3.0%	Repayment year	18	
(unit: Baht)						
Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	142,744,000	356,860	7,763,037	8,119,897	134,980,963	2009
2	134,980,963	337,452	7,782,445	8,119,897	127,198,518	2010
3	127,198,518	317,996	7,801,901	8,119,897	119,396,617	2011
4	119,396,617	298,491	7,821,406	8,119,897	111,575,211	2012
5	111,575,211	278,938	7,840,959	8,119,897	103,734,252	2013
6	103,734,252	259,335	7,860,562	8,119,897	95,873,690	2014
7	95,873,690	239,684	7,880,213	8,119,897	87,993,477	2015
8	87,993,477	219,983	7,899,914	8,119,897	80,093,563	2016
9	80,093,563	200,233	7,919,664	8,119,897	72,173,899	2017
10	72,173,899	180,434	7,939,463	8,119,897	64,234,436	2018
11	64,234,436	160,586	7,959,311	8,119,897	56,275,125	2019
12	56,275,125	140,687	7,979,210	8,119,897	48,295,915	2020
13	48,295,915	120,739	7,999,158	8,119,897	40,296,757	2021
14	40,296,757	100,741	8,019,156	8,119,897	32,277,601	2022
15	32,277,601	80,694	8,039,203	8,119,897	24,238,398	2023
16	24,238,398	60,595	8,059,302	8,119,897	16,179,096	2024
17	16,179,096	40,447	8,079,450	8,119,897	8,099,646	2025
18	8,099,646	20,249	8,099,648	8,119,897	-2	2026
Total		3,414,144	142,744,002	146,158,146		

Table 10.7.4 Repayment Schedule of Loan Phuket Fishing Port (2003)

A. Borrowing Conditions (in 2003)

Borrowing	135,539,000	Interest rate	3.0%	Grace period	7years
				Repayment period	18years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	4,066,170	2003
2	4,066,170	2004
3	4,066,170	2005
4	4,066,170	2006
5	4,066,170	2007
6	4,066,170	2008
7	4,066,170	2009

2. Repayment

Total Repayment 138,780,810

Borrowing	135,539,000	Interest rate	3.0%	Repayment year	18	
(unit - Baht)						
Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	135,539,000	338,847	7,371,198	7,710,045	128,167,802	2010
2	128,167,802	320,419	7,389,626	7,710,045	120,778,176	2011
3	120,778,176	301,945	7,408,100	7,710,045	113,370,076	2012
4	113,370,076	283,425	7,426,620	7,710,045	105,943,456	2013
5	105,943,456	264,858	7,445,187	7,710,045	98,498,269	2014
6	98,498,269	246,245	7,463,800	7,710,045	91,034,469	2015
7	91,034,469	227,586	7,482,459	7,710,045	83,552,010	2016
8	83,552,010	208,880	7,501,165	7,710,045	76,050,845	2017
9	76,050,845	190,127	7,519,918	7,710,045	68,530,927	2018
10	68,530,927	171,327	7,538,718	7,710,045	60,992,209	2019
11	60,992,209	152,480	7,557,565	7,710,045	53,434,644	2020
12	53,434,644	133,586	7,576,459	7,710,045	45,858,185	2021
13	45,858,185	114,645	7,595,400	7,710,045	38,262,785	2022
14	38,262,785	95,656	7,614,389	7,710,045	30,648,396	2023
15	30,648,396	76,620	7,633,425	7,710,045	23,014,971	2024
16	23,014,971	57,537	7,652,508	7,710,045	15,362,463	2025
17	15,362,463	38,406	7,671,639	7,710,045	7,690,824	2026
18	7,690,824	19,227	7,690,818	7,710,045	6	2027
Total		3,241,816	135,538,994	138,780,810		

Table 10.7.5 Repayment Schedule of Loan Fisheries Processing Zone (2001)

A. Borrowing Conditions (in 2001)

Borrowing	135,539,000	Interest rate	3.0%	Grace period	7years
				Repayment period	18years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	4,066,170	2001
2	4,066,170	2002
3	4,066,170	2003
4	4,066,170	2004
5	4,066,170	2005
6	4,066,170	2006
7	4,066,170	2007

2. Repayment

Total Repayment 138,780,810

Borrowing	135,539,000	Interest rate	3.0%	Repayment year	18	
(unit : Baht)						
Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	135,539,000	338,847	7,371,198	7,710,045	128,167,802	2008
2	128,167,802	320,419	7,389,626	7,710,045	120,778,176	2009
3	120,778,176	301,945	7,408,100	7,710,045	113,370,076	2010
4	113,370,076	283,425	7,426,620	7,710,045	105,943,456	2011
5	105,943,456	264,858	7,445,187	7,710,045	98,498,269	2012
6	98,498,269	246,245	7,463,800	7,710,045	91,034,469	2013
7	91,034,469	227,586	7,482,459	7,710,045	83,552,010	2014
8	83,552,010	208,880	7,501,165	7,710,045	76,050,845	2015
9	76,050,845	190,127	7,519,918	7,710,045	68,530,927	2016
10	68,530,927	171,327	7,538,718	7,710,045	60,992,209	2017
11	60,992,209	152,480	7,557,565	7,710,045	53,434,644	2018
12	53,434,644	133,586	7,576,459	7,710,045	45,858,185	2019
13	45,858,185	114,645	7,595,400	7,710,045	38,262,785	2020
14	38,262,785	95,656	7,614,389	7,710,045	30,648,396	2021
15	30,648,396	76,620	7,633,425	7,710,045	23,014,971	2022
16	23,014,971	57,537	7,652,508	7,710,045	15,362,463	2023
17	15,362,463	38,406	7,671,639	7,710,045	7,690,824	2024
18	7,690,824	19,227	7,690,818	7,710,045	6	2025
Total		3,241,816	135,538,994	138,780,810		

Table 10.7.6 Repayment Schedule of Loan Fisheries Processing Zone (2003)

B. Borrowing Conditions (in 2003)

Borrowing	61,517,000	Interest rate	3.0%	Grace period	7 years
				Repayment period	18 years

1. Payment of Interest for Grace Period

Grace period	Interest	
1	1,845,510	2003
2	1,845,510	2004
3	1,845,510	2005
4	1,845,510	2006
5	1,845,510	2007
6	1,845,510	2008
7	1,845,510	2009

2. Repayment

Total Repayment 62,988,354

Borrowing	61,517,000	Interest rate	3.0%	Repayment year	18	
						(unit : Baht)
Repayment Year	Principal	Interest	Principal Repayment	Total Repayment	Balance	
1	61,517,000	153,792	3,345,561	3,499,353	58,171,439	2010
2	58,171,439	145,428	3,353,925	3,499,353	54,817,514	2011
3	54,817,514	137,043	3,362,310	3,499,353	51,455,204	2012
4	51,455,204	128,638	3,370,715	3,499,353	48,084,489	2013
5	48,084,489	120,211	3,379,142	3,499,353	44,705,347	2014
6	44,705,347	111,763	3,387,590	3,499,353	41,317,757	2015
7	41,317,757	103,294	3,396,059	3,499,353	37,921,698	2016
8	37,921,698	94,804	3,404,549	3,499,353	34,517,149	2017
9	34,517,149	86,292	3,413,061	3,499,353	31,104,088	2018
10	31,104,088	77,760	3,421,593	3,499,353	27,682,495	2019
11	27,682,495	69,206	3,430,147	3,499,353	24,252,348	2020
12	24,252,348	60,630	3,438,723	3,499,353	20,813,625	2021
13	20,813,625	52,034	3,447,319	3,499,353	17,366,306	2022
14	17,366,306	43,415	3,455,938	3,499,353	13,910,368	2023
15	13,910,368	34,775	3,464,578	3,499,353	10,445,790	2024
16	10,445,790	26,114	3,473,239	3,499,353	6,972,551	2025
17	6,972,551	17,431	3,481,922	3,499,353	3,490,629	2026
18	3,490,629	8,726	3,490,627	3,499,353	2	2027
Total		1,471,356	61,516,998	62,988,354		

Table 10.8.1 Costs-Benefits Analysis and FIRR (Market Price) Phuket Fishing Port

FIRR = 4.17%

No	Year	Total		Costs		Residual Value	Benefits	Net benefit	Net Present Value (Discount rate = 4.17%)	Net Present Value (Discount rate = 3%)	Net Present Value (Discount rate = 11%)
		Construction Cost	Operation Cost	Construction Cost	Operation Cost						
0	2000	154,597	3,625	150,911	0	0	-149,704	1,000,000	-149,704	1,000,000	-149,704
1	2001	757,236	4,196	753,040	0	4,833	-722,299	0	659,990	0	670,873
2	2002	476,088	0	455,640	0	62,832	-369,751	0	321,582	0	342,465
3	2003	260,040	0	247,458	0	64,824	-172,888	0	184,710	0	197,888
4	2004	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
5	2005	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
6	2006	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
7	2007	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
8	2008	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
9	2009	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
10	2010	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
11	2011	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
12	2012	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
13	2013	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
14	2014	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
15	2015	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
16	2016	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
17	2017	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
18	2018	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
19	2019	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
20	2020	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
21	2021	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
22	2022	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
23	2023	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
24	2024	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
25	2025	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
26	2026	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
27	2027	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
28	2028	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
29	2029	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
30	2030	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
31	2031	14,022	0	14,022	0	79,418	59,396	0	64,631	0	68,847
Total		1,761,483	568,088	1,197,047	-428,474	3,200,430	1,488,947	0	280,574	0	280,574

Table 10.8.2 Costs-Benefits Analysis and FIRR (Market Price) Fisheries Processing Zone

FIRR = 3.07%

No	Year	Costs			Residual Cost	Benefits	Net Benefits	Net Present Value (Discount rate = 3.07%)	Net Present Value (Discount rate = 3.%)	Net Present Value (Discount rate = 11%)
		Total	Construction Cost	Operation Cost						
0	2000	0	0	0	0	0	1.000000	0	1.000000	1.000000
1	2001	200.592	199.704	828	0	0	-200.592	-194.558	0.970874	-130.559
2	2002	0	0	828	0	0	0	0	0.942596	0
3	2003	103.356	102.528	828	0	0	-103.356	-94.391	0.915142	-75.573
4	2004	828	0	828	0	0	-828	-734	0.888187	-545
5	2005	2.196	0	2.196	0	5.328	4.132	3.552	0.859504	2.452
6	2006	2.196	0	2.196	0	12.656	10.460	8.724	0.837482	5.93451
7	2007	3.707	0	3.707	0	20.495	16.788	13.585	0.813092	8.038
8	2008	3.707	0	3.707	0	20.495	16.788	13.585	0.789403	7.285
9	2009	3.707	0	3.707	0	20.495	16.788	12.857	0.764417	5.563
10	2010	3.707	0	3.707	0	20.495	16.788	12.406	0.740094	5.012
11	2011	3.707	0	3.707	0	20.495	16.788	11.978	0.716986	4.527
12	2012	3.707	0	3.707	0	20.495	16.788	11.575	0.694904	4.093
13	2013	3.707	0	3.707	0	20.495	16.788	11.199	0.673851	3.714
14	2014	3.707	0	3.707	0	20.495	16.788	10.853	0.653829	3.385
15	2015	3.707	0	3.707	0	20.495	16.788	10.535	0.634836	3.093
16	2016	3.707	0	3.707	0	20.495	16.788	10.243	0.616863	2.831
17	2017	3.707	0	3.707	0	20.495	16.788	9.974	0.600016	2.598
18	2018	3.707	0	3.707	0	20.495	16.788	9.726	0.584301	2.391
19	2019	3.707	0	3.707	0	20.495	16.788	9.497	0.569722	2.208
20	2020	3.707	0	3.707	0	20.495	16.788	9.285	0.556285	2.048
21	2021	3.707	0	3.707	0	20.495	16.788	9.089	0.543997	1.908
22	2022	3.707	0	3.707	0	20.495	16.788	8.908	0.532774	1.787
23	2023	3.707	0	3.707	0	20.495	16.788	8.741	0.522531	1.683
24	2024	3.707	0	3.707	0	20.495	16.788	8.588	0.513284	1.594
25	2025	3.707	0	3.707	0	20.495	16.788	8.448	0.505059	1.519
26	2026	3.707	0	3.707	0	20.495	16.788	8.320	0.497781	1.457
27	2027	3.707	0	3.707	0	20.495	16.788	8.203	0.491476	1.406
28	2028	3.707	0	3.707	0	20.495	16.788	8.097	0.486170	1.365
29	2029	3.707	0	3.707	0	20.495	16.788	8.001	0.481889	1.332
30	2030	3.707	0	3.707	0	20.495	16.788	7.915	0.478659	1.306
31	2031	88.957	3.707	3.707	-90.664	20.495	107.452	42.873	0.476403	4.229
Total		311.119	302.232	98.733	-90.664	591.359	220.240	3.402	-169.573	0.03854

Table 10.8.3 Costs-Benefits Analysis and FIRR (Market Price) Whole of Phuket Fishing Port and Processing Zone

FIRR = 3.98%

No	Year	Costs			Benefits	Net Benefits	Net Present Value (Discount rate = 3.98%)	Net Present Value (Discount rate = 3%)	Net Present Value (Discount rate = 11%)
		Total	Construction Cost	Operation Cost					
0	2000	154,587	150,911	3,676	0	-149,704	-149,704	-149,704	1,000,000
1	2001	957,788	952,744	5,044	4,833	-952,871	-952,871	-952,871	0
2	2002	478,088	465,840	12,248	82,092	-432,156	-432,156	-432,156	0
3	2003	363,358	359,384	3,974	64,324	-298,172	-298,172	-298,172	0
4	2004	14,850	14,850	0	73,418	58,568	58,568	58,568	0
5	2005	18,218	18,218	0	89,006	69,788	69,788	69,788	0
6	2006	18,458	18,458	0	109,543	93,085	93,085	93,085	0
7	2007	23,617	23,617	0	139,024	115,407	115,407	115,407	0
8	2008	23,617	23,617	0	159,024	135,407	135,407	135,407	0
9	2009	23,617	23,617	0	179,024	155,407	155,407	155,407	0
10	2010	23,617	23,617	0	199,024	175,407	175,407	175,407	0
11	2011	23,617	23,617	0	219,024	195,407	195,407	195,407	0
12	2012	23,617	23,617	0	239,024	215,407	215,407	215,407	0
13	2013	23,617	23,617	0	259,024	235,407	235,407	235,407	0
14	2014	23,617	23,617	0	279,024	255,407	255,407	255,407	0
15	2015	23,617	23,617	0	299,024	275,407	275,407	275,407	0
16	2016	23,617	23,617	0	319,024	295,407	295,407	295,407	0
17	2017	23,617	23,617	0	339,024	315,407	315,407	315,407	0
18	2018	23,617	23,617	0	359,024	335,407	335,407	335,407	0
19	2019	23,617	23,617	0	379,024	355,407	355,407	355,407	0
20	2020	23,617	23,617	0	399,024	375,407	375,407	375,407	0
21	2021	23,617	23,617	0	419,024	395,407	395,407	395,407	0
22	2022	23,617	23,617	0	439,024	415,407	415,407	415,407	0
23	2023	23,617	23,617	0	459,024	435,407	435,407	435,407	0
24	2024	23,617	23,617	0	479,024	455,407	455,407	455,407	0
25	2025	23,617	23,617	0	499,024	475,407	475,407	475,407	0
26	2026	23,617	23,617	0	519,024	495,407	495,407	495,407	0
27	2027	23,617	23,617	0	539,024	515,407	515,407	515,407	0
28	2028	23,617	23,617	0	559,024	535,407	535,407	535,407	0
29	2029	23,617	23,617	0	579,024	555,407	555,407	555,407	0
30	2030	23,617	23,617	0	599,024	575,407	575,407	575,407	0
31	2031	-493,521	-493,521	0	35,024	628,545	628,545	628,545	0
Total		2,072,802	1,919,279	153,523	3,731,189	1,709,187	1,709,187	1,709,187	-910,250

Table 10.8.4 Costs-Benefits Analysis and FIRR (Market Price) Phuket Fishing Port
(Including Maintenance Dredging Cost)

FIRR = 1.95%

(unit: 1,000 baht)

No	Year	Costs		Residual cost	Benefits	Net Benefits	Net Present Value (Discount rate= 1.95%)	Net Present Value (Discount rate= 3%)	Net Present Value (Discount rate= 11%)
		Construction Cost	Operation Cost						
0	2000	154,537	3,628	0	4,893	-149,704	1,000,000	-149,704	1,000,000
1	2001	751,236	4,198	0	4,933	-752,203	0.980888	-730,394	0.970874
2	2002	503,588	37,948	0	52,932	-440,656	0.961102	-415,381	0.942596
3	2003	287,540	40,084	0	54,874	-229,618	0.942714	-204,000	0.915142
4	2004	64,522	41,522	0	73,418	31,896	0.925717	28,389	0.888487
5	2005	41,522	41,522	0	88,156	34,637	0.910075	32,414	0.862603
6	2006	41,782	41,782	0	96,887	55,105	0.895671	46,166	0.837484
7	2007	47,410	47,410	0	114,529	67,119	0.879649	54,574	0.813092
8	2008	47,410	47,410	0	114,529	67,119	0.865932	52,984	0.793005
9	2009	47,410	47,410	0	114,529	67,119	0.853575	51,451	0.778417
10	2010	47,410	47,410	0	114,529	67,119	0.842510	49,943	0.764094
11	2011	47,410	47,410	0	114,529	67,119	0.832752	48,488	0.750721
12	2012	47,410	47,410	0	114,529	67,119	0.824295	47,078	0.738200
13	2013	47,410	47,410	0	114,529	67,119	0.817138	45,705	0.726451
14	2014	47,410	47,410	0	114,529	67,119	0.811263	44,374	0.715485
15	2015	47,410	47,410	0	114,529	67,119	0.805676	43,081	0.705304
16	2016	47,410	47,410	0	114,529	67,119	0.800382	41,824	0.695907
17	2017	47,410	47,410	0	114,529	67,119	0.795387	40,608	0.687282
18	2018	47,410	47,410	0	114,529	67,119	0.790596	39,425	0.679436
19	2019	47,410	47,410	0	114,529	67,119	0.786012	38,277	0.672272
20	2020	47,410	47,410	0	114,529	67,119	0.781637	37,162	0.665788
21	2021	47,410	47,410	0	114,529	67,119	0.777474	36,080	0.659974
22	2022	47,410	47,410	0	114,529	67,119	0.773524	35,029	0.654829
23	2023	47,410	47,410	0	114,529	67,119	0.769788	34,009	0.649353
24	2024	47,410	47,410	0	114,529	67,119	0.766266	33,018	0.644554
25	2025	47,410	47,410	0	114,529	67,119	0.762958	32,055	0.639431
26	2026	47,410	47,410	0	114,529	67,119	0.759864	31,123	0.634984
27	2027	47,410	47,410	0	114,529	67,119	0.756984	30,215	0.630312
28	2028	47,410	47,410	0	114,529	67,119	0.754317	29,335	0.626322
29	2029	47,410	47,410	0	114,529	67,119	0.751864	28,482	0.623012
30	2030	47,410	47,410	0	114,529	67,119	0.749624	27,652	0.619381
31	2031	47,410	47,410	0	114,529	67,119	0.747596	26,851	0.616424
Total		1,617,047	1,388,088	-428,474	3,250,530	864,047	0.549893	-242,641	-255,975

Table 10.9.1 Income Statement of Phuket Fishing Port

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Income	4,802	4,833	4,833	4,833	4,833	4,833	4,833	62,932	64,624	73,418	79,678	96,887	114,529
Expenditure	3,332	3,626	3,626	3,626	3,626	3,626	4,196	10,448	12,584	14,022	14,022	14,262	19,910
Interest	0	0	0	0	0	2,396	17,482	21,764	25,830	25,830	25,830	25,830	26,030
Profit before Depreciation	1,470	1,207	1,207	1,207	1,207	-1,189	-6,843	30,720	26,210	33,566	39,826	56,793	68,589
Depreciation	787	787	787	787	787	787	3,638	23,343	34,023	41,213	41,213	41,213	41,213
Profit after Depreciation	683	420	420	420	420	-1,976	-20,083	7,375	-7,813	-7,647	-1,387	15,582	27,376
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit after Income Tax	683	420	420	420	420	-1,976	-20,083	7,375	-7,813	-7,647	-1,387	15,582	27,376
Accumulated Net Profit	683	1,103	1,523	1,943	2,363	387	-20,096	-12,721	-20,534	-28,181	-29,568	-13,986	13,390

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Income	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529
Expenditure	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910
Interest	9,794	3,730	1,993	1,346	1,724	1,610	1,491	1,373	1,234	1,135	1,015	896	774
Profit before Depreciation	84,825	88,889	92,656	92,773	92,891	93,009	93,128	93,246	93,365	93,484	93,604	93,723	93,843
Depreciation	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213	41,213
Profit after Depreciation	43,612	47,676	51,443	51,560	51,678	51,796	51,915	52,033	52,152	52,271	52,391	52,510	52,632
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit after Income Tax	43,612	47,676	51,443	51,560	51,678	51,796	51,915	52,033	52,152	52,271	52,391	52,510	52,632
Accumulated Net Profit	57,002	104,678	156,121	207,681	259,359	311,155	363,070	415,103	467,255	519,526	571,917	624,427	677,059

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Income	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529	114,529
Expenditure	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910	19,910
Interest	655	534	413	290	169	5K	19				
Profit before Depreciation	93,964	94,085	94,206	94,329	94,450	94,561	94,680	94,800	94,919	95,039	95,159
Depreciation	41,052	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426	40,426
Profit after Depreciation	52,912	53,659	53,780	53,903	54,024	54,145	54,274	54,393	54,513	54,633	54,753
Income Tax	0	0	0	0	0	0	0	0	0	0	0
Net Profit after Income Tax	52,912	53,659	53,780	53,903	54,024	54,145	54,274	54,393	54,513	54,633	54,753
Accumulated Net Profit	729,971	783,630	837,410	891,313	945,337	999,472	1,053,646	1,107,839	1,162,032	1,216,225	1,270,418

Table 10.9.2 Cash Flow Statement of Phuket Fishing Port

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Source of Funds	1,270	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207
Profit before Depreciation	1,270	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207
Depreciation	0	0	0	0	0	0	0	0	0	0	0	0	0
Long-term Loans	0	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	0	0	0	0	0	0	0	0	0	0	0	0	0
Acquisition Cost of New Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Income/Decrease of Net Current Assets	1,270	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207	1,207
Current Assets at End of Year	0	1,207	2,414	3,621	4,828	6,035	7,242	8,449	9,656	10,863	12,070	13,277	14,484
Source of Funds	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Profit before Depreciation	84,823	84,889	92,656	92,773	92,891	93,009	93,128	93,246	93,365	93,484	93,604	93,723	93,843
Depreciation	0	0	0	0	0	0	0	0	0	0	0	0	0
Long-term Loans	0	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	31,703	39,545	47,015	47,133	47,250	47,367	47,484	47,601	47,718	47,835	47,952	48,069	48,186
Acquisition Cost of New Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	31,703	39,545	47,015	47,133	47,250	47,367	47,484	47,601	47,718	47,835	47,952	48,069	48,186
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Income/Decrease of Net Current Assets	53,120	45,344	45,641	45,640	45,641	45,640	45,641	45,640	45,641	45,640	45,641	45,640	45,641
Current Assets at End of Year	464,752	413,408	369,767	324,127	278,486	232,846	187,203	141,563	95,924	50,284	4,643	40,997	86,639
Source of Funds	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031		
Profit before Depreciation	93,504	94,085	94,206	94,329	94,450	94,561	94,680	94,799	94,919	95,038	95,157	95,276	95,395
Depreciation	0	0	0	0	0	0	0	0	0	0	0	0	0
Long-term Loans	0	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	41,324	46,444	48,363	48,683	49,003	49,323	49,643	49,963	50,283	50,603	50,923	51,243	51,563
Acquisition Cost of New Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	41,324	46,444	48,363	48,683	49,003	49,323	49,643	49,963	50,283	50,603	50,923	51,243	51,563
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Income/Decrease of Net Current Assets	52,180	47,641	45,843	45,646	45,447	45,248	45,049	44,850	44,651	44,452	44,253	44,054	43,855
Current Assets at End of Year	134,279	177,920	221,561	265,202	308,843	352,484	396,125	439,766	483,407	527,048	570,689	614,330	657,971

Table 10.9.3 Balance Sheet of Phuket Fishing Port

(Unit: 000 Baht)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Assets													
Fixed Assets	20,301	19,514	18,727	17,940	17,153	150,409	915,063	1,318,833	1,572,407	1,531,194	1,489,981	1,448,768	1,407,555
Work in Progress	0	0	0	0	0	36,968	1,616	40,141					
Net Current Assets	0	1,207	2,414	3,621	4,828	467,396	1,334,423	626,599	-712,306	-678,740	-638,914	-582,119	-517,874
Total	20,301	20,721	21,141	21,561	21,981	99,881	549,256	715,373	860,101	852,454	851,067	866,649	889,681
Capital Employed													
Capital Fund	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618
Long-Term Loans	0	0	0	0	0	79,876	548,734	725,478	861,017	861,017	861,017	861,017	858,673
Other Reserve and Provision	683	1,103	1,523	1,943	2,363	387	-20,096	-12,721	-20,534	-28,181	-29,568	-13,986	-13,390
Total	20,301	20,721	21,141	21,561	21,981	99,881	549,256	715,373	860,101	852,454	851,067	866,649	889,681
Assets													
Fixed Assets	1,566,342	1,325,129	1,283,916	1,242,703	1,201,490	1,160,277	1,119,064	1,077,851	1,036,638	995,425	954,212	912,999	871,786
Net Current Assets	-464,752	-415,408	-369,767	-324,127	-278,486	-232,946	-187,205	-141,565	-95,924	-50,284	-4,843	40,997	86,639
Total	901,590	909,721	914,149	918,576	923,004	927,431	931,859	936,286	940,714	945,141	949,369	953,996	958,425
Capital Employed													
Capital Fund	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618
Long-Term Loans	824,970	785,425	736,410	691,277	644,027	596,658	549,171	501,565	453,841	405,997	358,034	309,931	261,748
Other Reserve and Provision	57,002	104,678	136,121	207,081	259,359	311,155	363,070	415,103	467,255	519,328	571,917	624,427	677,059
Total	901,590	909,721	914,149	918,576	923,004	927,431	931,859	936,286	940,714	945,141	949,369	953,996	958,425
Assets													
Fixed Assets	836,734	790,308	749,382	709,476	669,030	628,604	588,178	547,752	507,326	466,900	426,474		
Net Current Assets	132,279	171,920	223,561	269,207	319,390	398,177	485,086	579,705	674,324	768,943	863,562		
Total	969,013	968,228	973,443	978,683	988,420	1,026,781	1,073,264	1,127,457	1,181,650	1,235,843	1,290,036		
Capital Employed													
Capital Fund	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618	19,618
Long-Term Loans	213,424	164,980	116,415	67,732	23,465	7,691	0	0	0	0	0	0	0
Other Reserve and Provision	729,971	783,650	837,410	891,313	945,337	999,472	1,053,646	1,107,839	1,162,032	1,216,223	1,270,418		
Total	969,013	968,228	973,443	978,683	988,420	1,026,781	1,073,264	1,127,457	1,181,650	1,235,843	1,290,036		

Table 10.9.4 Income Statement of Fisheries Processing Zone

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Income	0	0	0	0	6,328	12,656	20,495	20,495	20,495	20,495	20,495	20,495	20,495
Expenditure	828	0	828	828	2,196	2,196	3,707	3,707	3,707	3,707	3,707	3,707	3,707
Interest	3,395	3,395	3,441	3,441	3,441	3,441	3,441	2,146	2,129	421	396	371	347
Profit before Depreciation	-423	-3,595	-6,269	-6,269	-1,309	3,019	11,347	14,642	14,639	16,367	16,392	16,417	16,441
Depreciation	0	0	0	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556
Profit after Depreciation	-423	-3,595	-6,269	-13,825	-8,865	-2,537	3,791	7,086	7,103	8,811	8,836	8,861	8,885
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit after Income Tax	-423	-3,595	-6,269	-13,825	-8,865	-2,537	3,791	7,086	7,103	8,811	8,836	8,861	8,885
Accumulated Net Profit	-423	-8,018	-14,287	-28,112	-36,977	-39,514	-35,723	-28,637	-21,534	-12,723	-3,887	4,974	13,859

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Income	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495	20,495
Expenditure	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707	3,707
Interest	321	297	271	246	221	196	170	146	120	94	69	42	17
Profit before Depreciation	16,467	16,491	16,517	16,542	16,567	16,592	16,618	16,642	16,668	16,694	16,719	16,746	16,771
Depreciation	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556	7,556
Profit after Depreciation	8,911	8,935	8,961	8,986	9,011	9,036	9,062	9,086	9,112	9,138	9,163	9,190	9,215
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit after Income Tax	8,911	8,935	8,961	8,986	9,011	9,036	9,062	9,086	9,112	9,138	9,163	9,190	9,215
Accumulated Net Profit	22,770	31,705	40,666	49,652	58,663	67,699	76,761	85,847	94,959	104,097	113,250	122,430	131,645

	2027	2028	2029	2030	2031
Income	20,495	20,495	20,495	20,495	20,495
Expenditure	3,707	3,707	3,707	3,707	3,707
Interest	9	0	0	0	0
Profit before Depreciation	16,779	16,788	16,788	16,788	16,788
Depreciation	7,556	7,556	7,556	7,556	7,556
Profit after Depreciation	9,223	9,232	9,232	9,232	9,232
Income Tax	0	0	0	0	0
Net Profit after Income Tax	9,223	9,232	9,232	9,232	9,232
Accumulated Net Profit	140,898	150,120	159,352	168,584	177,816

Table 10.9.5 Cash Flow Statement of Fisheries Processing Zone

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Source of Funds	115,299	1,395	22,244	-4,209	-1,309	5,019	11,347	14,042	14,039	10,367	10,392	16,317	10,441
Profit before Depreciation	-1423	-3,395	-6,269	-1,309	-1,309	3,019	11,347	14,042	14,039	16,367	16,392	16,317	16,341
Long-term Loans	119,822	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	199,704	0	102,528	0	0	0	0	6,316	6,333	9,893	9,919	9,944	9,969
Acquisition Cost of New Facilities	199,704	0	102,528	0	0	0	0	0	0	0	0	0	0
Repayment	0	0	0	0	0	0	0	6,316	6,333	9,893	9,919	9,944	9,969
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Increase/Decrease of Net Current Assets	-84,205	-3,395	-87,280	-1,309	-1,309	3,019	11,347	8,126	8,126	6,472	6,473	6,373	6,372
Current Assets at End of Year	0	-3,395	-90,875	-92,184	-93,493	-90,474	-79,127	-71,001	-62,875	-56,403	-50,930	-45,557	-40,185
Source of Funds	16,697	16,491	16,317	16,542	16,367	16,392	16,018	16,642	16,668	16,694	16,719	16,746	16,771
Profit before Depreciation	16,497	16,471	16,317	16,542	16,367	16,392	16,018	16,642	16,668	16,694	16,719	16,746	16,771
Long-term Loans	0	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	9,396	10,019	10,044	10,070	10,094	10,120	10,145	10,170	10,195	10,221	10,247	10,273	10,299
Acquisition Cost of New Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Repayment	9,394	10,019	10,044	10,070	10,094	10,120	10,145	10,170	10,195	10,221	10,247	10,273	10,299
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Increase/Decrease of Net Current Assets	6,472	6,472	6,473	6,472	6,473	6,472	6,473	6,472	6,473	6,473	6,473	6,473	6,473
Current Assets at End of Year	6,472	13,000	19,473	25,945	32,418	38,890	45,363	51,835	58,308	64,781	71,253	77,726	84,199
Source of Funds	16,779	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788
Profit before Depreciation	16,779	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788
Long-term Loans	0	0	0	0	0	0	0	0	0	0	0	0	0
Application of Funds	3,489	0	0	0	0	0	0	0	0	0	0	0	0
Acquisition Cost of New Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0
Repayment	3,489	0	0	0	0	0	0	0	0	0	0	0	0
Income Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Increase/Decrease of Net Current Assets	13,290	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788	16,788
Current Assets at End of Year	104,303	121,093	137,881	154,669	171,457	188,245	205,033	221,821	238,609	255,397	272,185	288,973	305,761

Table 10.9.6 Balance Sheet of Fisheries Processing Zone

(Unit: 000 Baht)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Assets													
Fixed Assets	0	302,232	294,676	287,120	279,564	272,008	264,452	256,896	249,340	241,784	234,228	226,672	
Work in Progress	196,704	199,704											
Net Current Assets	0	-3,395	-50,875	-57,144	-58,453	-53,334	-42,087	-33,061	-25,835	-19,363	-12,890	-6,477	55
Total	196,704	196,109	251,357	237,532	228,667	226,130	229,921	230,491	231,061	229,977	228,894	227,811	226,727
Capital Employed													
Capital Fund	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305
Long-Term Loans	119,822	119,822	181,339	181,339	181,339	181,339	181,339	174,823	168,296	158,395	148,476	138,552	128,560
Other Reserve and Provision	4,423	-8,018	-14,297	-24,112	-56,977	-39,514	-35,723	-28,657	-21,534	-12,723	-3,887	-4,974	-13,859
Total	196,704	196,109	251,357	237,532	228,667	226,130	229,921	230,491	231,061	229,977	228,894	227,811	226,727
Assets													
Fixed Assets	219,116	211,560	204,004	196,448	188,892	181,336	173,780	166,224	158,668	151,112	143,556	136,000	128,444
Net Current Assets	6,528	-3,000	-19,473	-24,945	-32,418	-34,890	-45,363	-51,835	-58,308	-64,781	-71,253	-77,726	-84,200
Total	225,644	224,560	223,477	222,393	221,310	220,226	219,143	218,059	216,976	215,893	214,809	213,726	212,642
Capital Employed													
Capital Fund	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305	84,305
Long-Term Loans	118,549	108,550	98,506	88,436	78,342	68,222	58,077	47,907	37,712	27,491	17,244	6,971	-3,489
Other Reserve and Provision	22,770	31,705	40,666	49,652	58,663	67,699	76,761	85,847	94,959	104,097	113,260	122,450	131,665
Total	225,644	224,560	223,477	222,393	221,310	220,226	219,143	218,059	216,976	215,893	214,809	213,726	212,642
Assets													
Fixed Assets	120,888	113,332	105,776	98,220	90,664								
Net Current Assets	104,305	121,093	137,881	154,669	171,457								
Total	225,193	234,425	243,657	252,889	262,121								
Capital Employed													
Capital Fund	84,305	84,305	84,305	84,305	84,305								
Long-Term Loans	0	0	0	0	0								
Other Reserve and Provision	140,888	150,120	159,352	168,584	177,816								
Total	225,193	234,425	243,657	252,889	262,121								

Table 10.9.7 Financial Ratio of Phuket Fishing Port

Phuket Fishing Port	Financial Ratio																											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
Profitability (Rate of Return on Net Fixed Assets) Mark: over 3% of interest rate	3	2	2	2	2	-2	-2	1	-0	-0	-0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Net Operating Income x 100%	3	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Net Fixed Assets	6	7	7	8	8	9	9	10	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Loan repayment capacity (Debt Service Coverage Ratio) Mark: over 1	1.95	1.96	1.97	1.98	1.99	2.00	2.01	2.02	2.03	2.04	2.05	2.06	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
Net operating income before Depreciation Repayment and interest of long-term loan	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Operational efficiency (Operating Ratio) Mark: less than 70-75%	86	91	91	91	91	141	524	88	112	110	102	84	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
Operation Expenses x 100%	62	58	55	55	55	55	55	55	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
Operation Revenues	54	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
(Working Ratio) Mark: less than 50-60%	69	75	75	75	75	125	449	51	59	54	50	41	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Operation expenses-depreciation x 100%	26	22	19	19	19	19	19	19	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Operation Revenues	18	18	18	18	18	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

Table 10.9.8 Financial Ratio of Fisheries Processing Zone

Fisheries Processing Zone		Financial Ratio																										
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Profitability (Rate of Return on Net Fixed Assets) Mark: over 3% of interest rate		-	-	-2	-5	-3	-1	1	3	3	4	4	4	4	4	4	4	4	4	5	5	5	6	6	6	7	7	7
Net operating income x 100% Net Fixed Assets		4	4	4	5	5	5	5	5	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
		100	8	9	9	10																						
Loan repayment capacity (Debt Service Coverage ratio) Mark: Over 1		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
		-1	-1	-1	-1	-0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Net operating income before depreciation Repayment and interest of long-term loan		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		2027	2028	2029	2030	2031																						
		5																										
Operational efficiency (Operating Ratio) Mark: less than 70-75%		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
		-	-	-	-	240	82	82	65	65	57	57	57	57	57	57	57	57	56	56	56	56	55	55	55	55	55	
Operation Expenses x 100% Operation Revenues		57	56	56	56	56	56	56	56	56	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
		2027	2028	2029	2030	2031																						
		100	55	55	55	55																						
(Working Ratio) Mark: less than 50-60%		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
		-	-	-	-	121	60	45	29	28	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Operation expenses-depreciation x 100% Operation revenues		20	20	19	19	19	19	19	19	19	19	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
		2027	2028	2029	2030	2031																						
		100	18	18	18	18																						

11 Conclusions and Recommendations

11.1 Conclusions

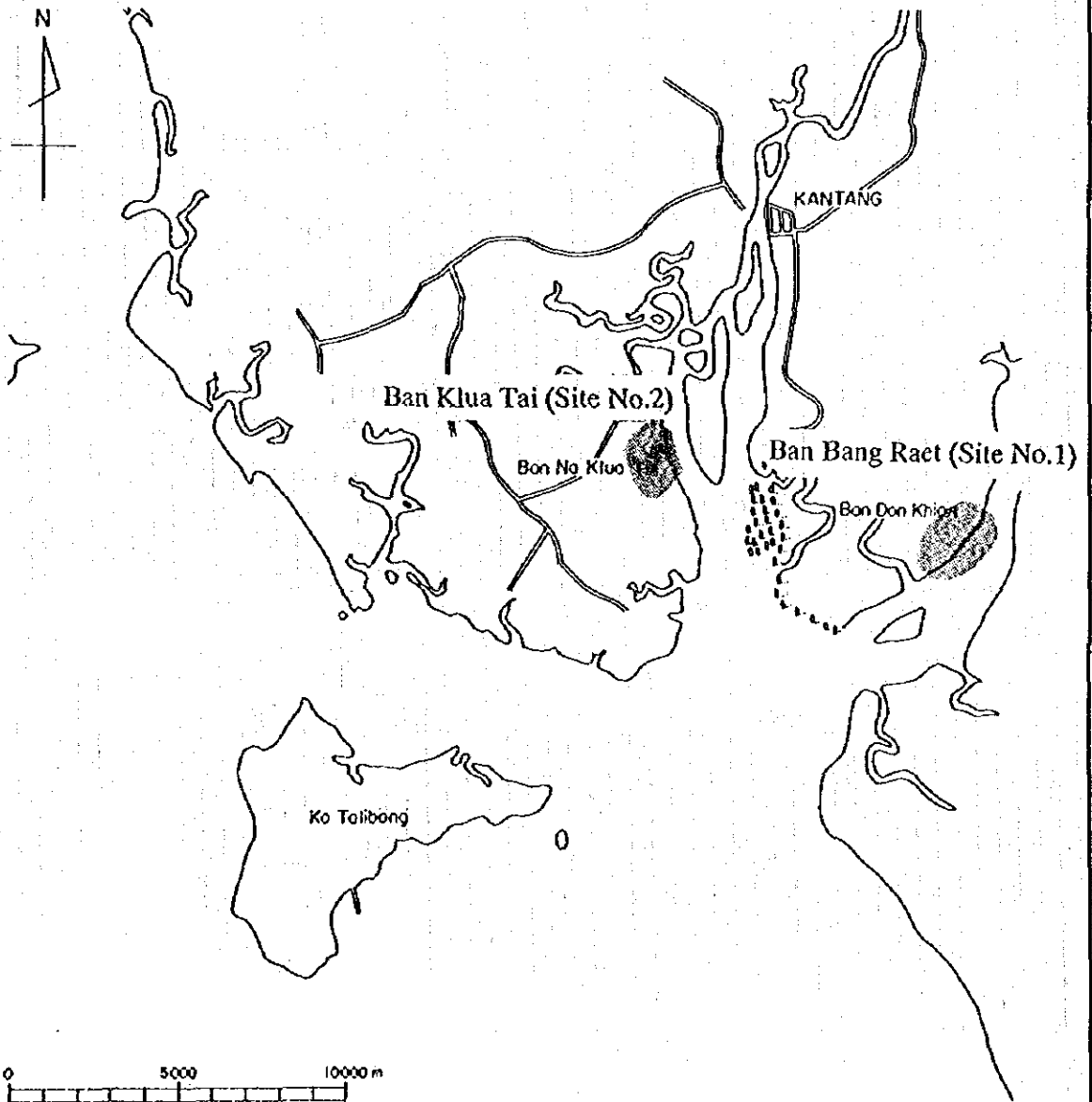
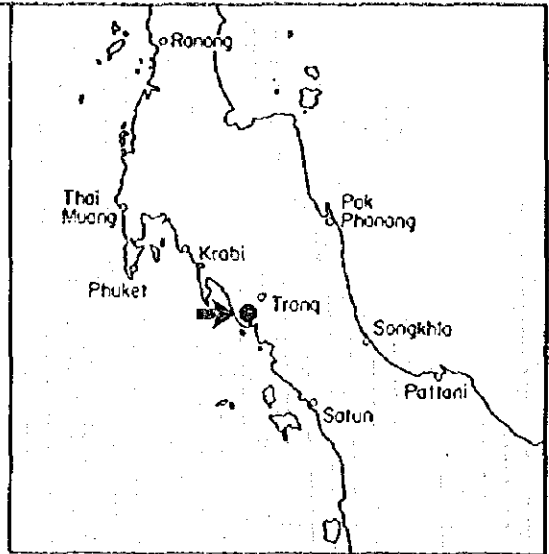
- (1) The current fishery situation shows tendency toward decrease of a fish catch volume by present fishing operation in Thai territorial waters in the Andaman Sea. The tendency leads Thai fishery to necessity of stock control and new fishing ground development for sustainable fishing in the Thai waters of Andaman Sea and Indian Ocean. The former represents necessity to introduce resources management to fishing in Andaman Sea and the latter means development of tuna fishing in the sea and Indian Ocean. Fishery Complex Project will be to develop Phuket Fishing Port as a pilot fishing port for future fishery development.
- (2) The present project aims at relocating fish process plants to the estate. Implementation of the project will enable to reduce transportation costs for processing plants in Phuket and other provinces since these plants will obtain stable supplies of reasonable raw material from the Phuket Fishing Port. The products will be distributed in the local market and exported to the international market.
- (3) Considering the start of full operation of plants, year 2007 is set to be the target year for the short term plan.
- (4) Investment to fishing port facilities for the existing fishery will be minimized with utilizing the existing facilities efficiently. The Project will provide exclusive landing wharves which are expected to improve landing efficiency and exclusive wharves for lay-by and preparation.
- (5) One segment of this project proposes the relocation of fish processing factories in Bangkok and its surrounding areas to the project site, Phuket. This move is recommended in terms of environmental conservation, alleviating the disparities between urban and rural areas and it is in line with the national plan. In addition, relocated factories will receive special tax benefits. Some of the attractive incentives for factories willing to relocate to Phuket are the infrastructure of the industrial estate, low interest capital for relocation activities, procurement of labor, low purchasing cost of raw materials, etc. Therefore, a "Phuket Industrial Estate Operation and Management Committee" will be established to promote the cooperation of relevant agencies and private companies through an exchange of opinions and information. This committee will be comprised of members from DOF, FMO, IEAT, Thai Industrial Financing Corporation, regional autonomous bodies, and other public agencies, and fish processors, and raw material importers from the private sector.
- (6) The total project cost is estimated at 2,869 million Baht and construction term is estimated at 4 years for civil works and FMO facilities, and 3 years for construction of processing plants.
- (7) The EIRR of the project was calculated at 12.02 % and the project is evaluated as feasible from a viewpoint of the national economy. The FIRR of the project was calculated at 4.17 %, exceeding the interest rate of loan. The project is financially viable because of securing profitability and financial soundness.

11.2 Recommendations

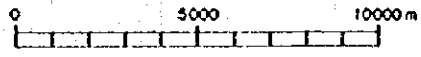
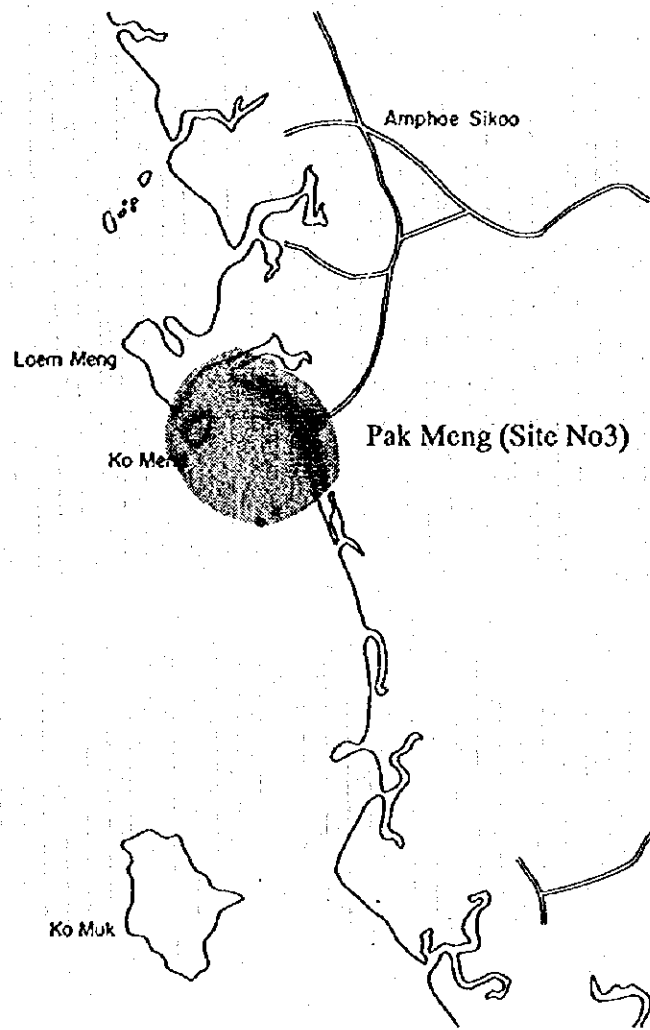
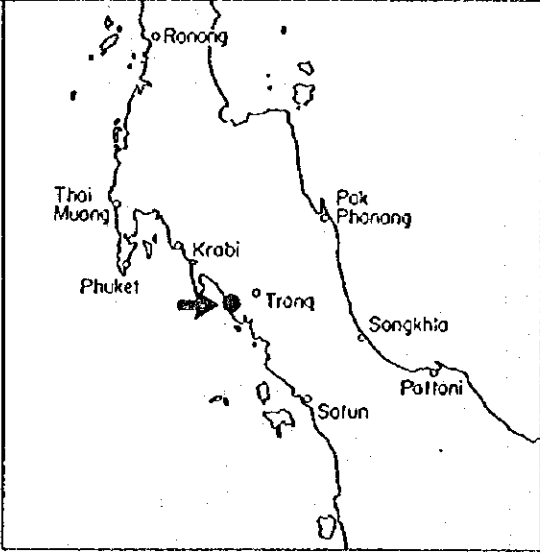
- (1) The short-term development plan as proposed in the study is recommended to urgently implemented.
- (2) Introduction of fish resources management is recommended to all fishing ports along Andaman Sea coast as proposed in the plan for development at Phuket
- (3) For efficient utilization of idling fishing boats and compensation of decreased fish landing volume by trawlers and purse seiners, these boats are recommended to be modified for long line or pole-and-bait fishing. DOF and related governmental authority is expected to render financial assistance for the promotion.
- (4) Acquisition of accurate information on fish catch is indispensable for resource management. To ensure the acquisition, the whole fishing boats involved in trawl and purse seine fishing shall be under the control of FMO with comprehensive authority for the control to the chief of fishing port management.
- (5) The fishing port management shall be given authorities to control entry of fishing boats, to assign wharves for fishing boats, and to control safe traffic in the fishing port and channels
- (6) The fishing port is recommended to be improved environmentally with implementing the project. For the purpose, authority to control discharge of any material will be entrusted to the fishing port manager.
- (7) Hygienical handling and quality control of fish are recommended.
- (8) Legislation on efficient management and operation of fishing ports will be required as modification of the Act, enactment of new Act, or notification of the regulations.
- (9) The whole sale market and its companies shall be urgently established for fair transaction.
- (10) It is proposed to establish Fishery Complex Management Committee composed of FMO, DOF, wholesales company, fish agents, etc. for aiming at smooth management of the fishing port.
- (11) An industrial estate must be developed in order to relocate the fish processing factories. The joint development, management and operation of the industrial estate proposed in this Project by IEAT and FMO is desired.

APPENDIX

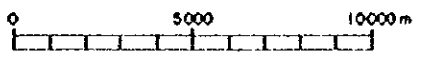
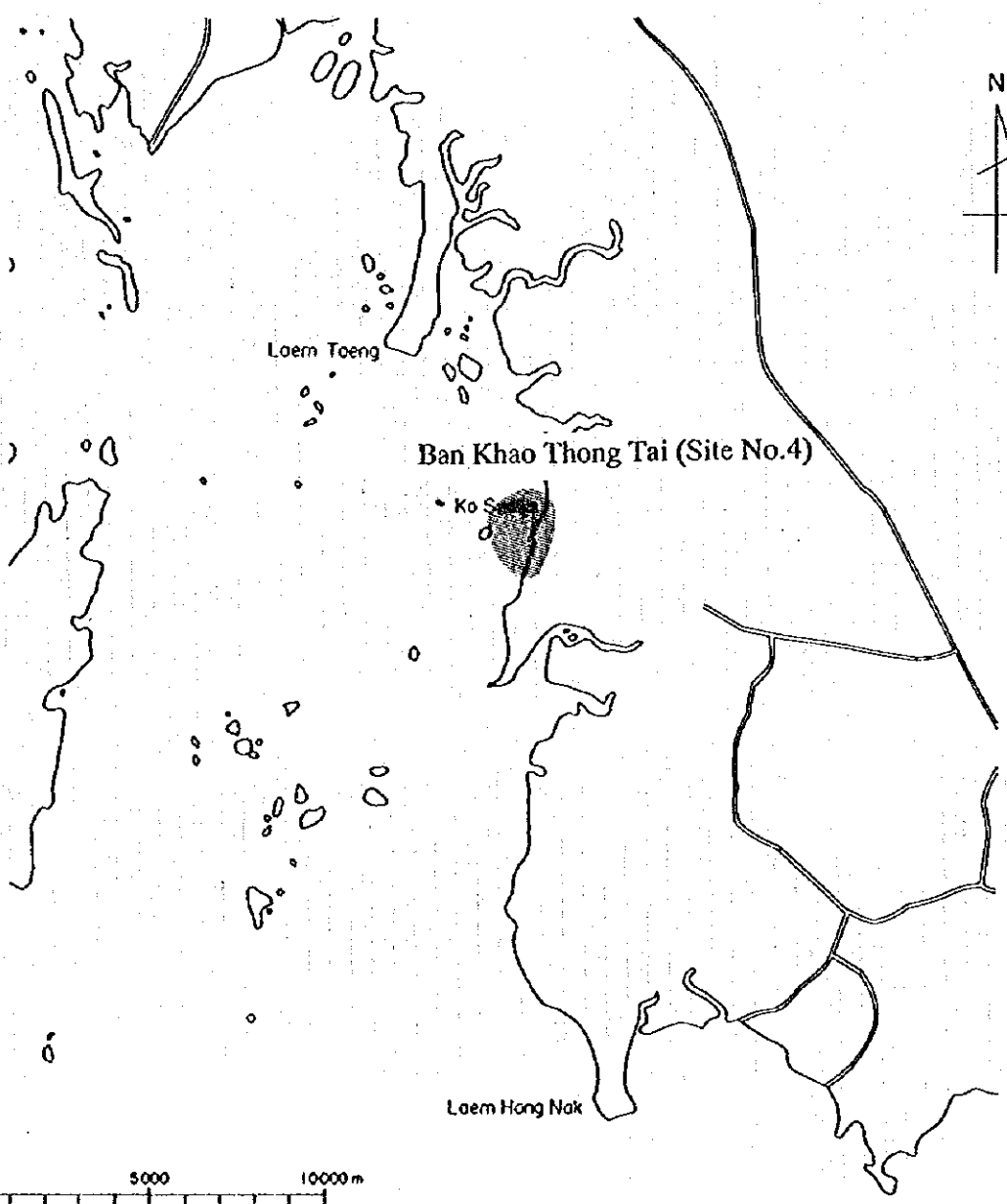
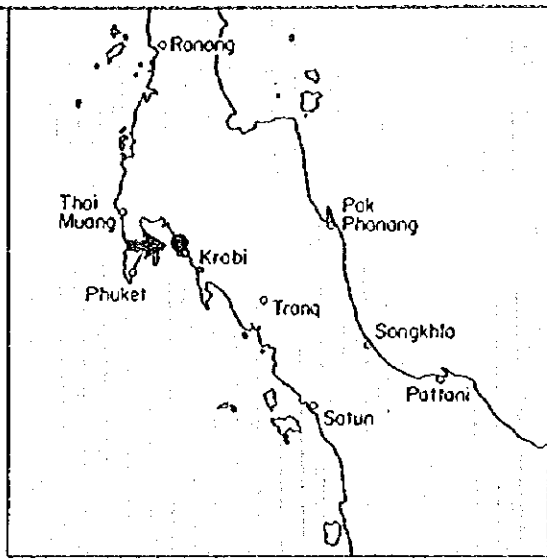
Appendix 3.3 Locations of Proposed Project Site



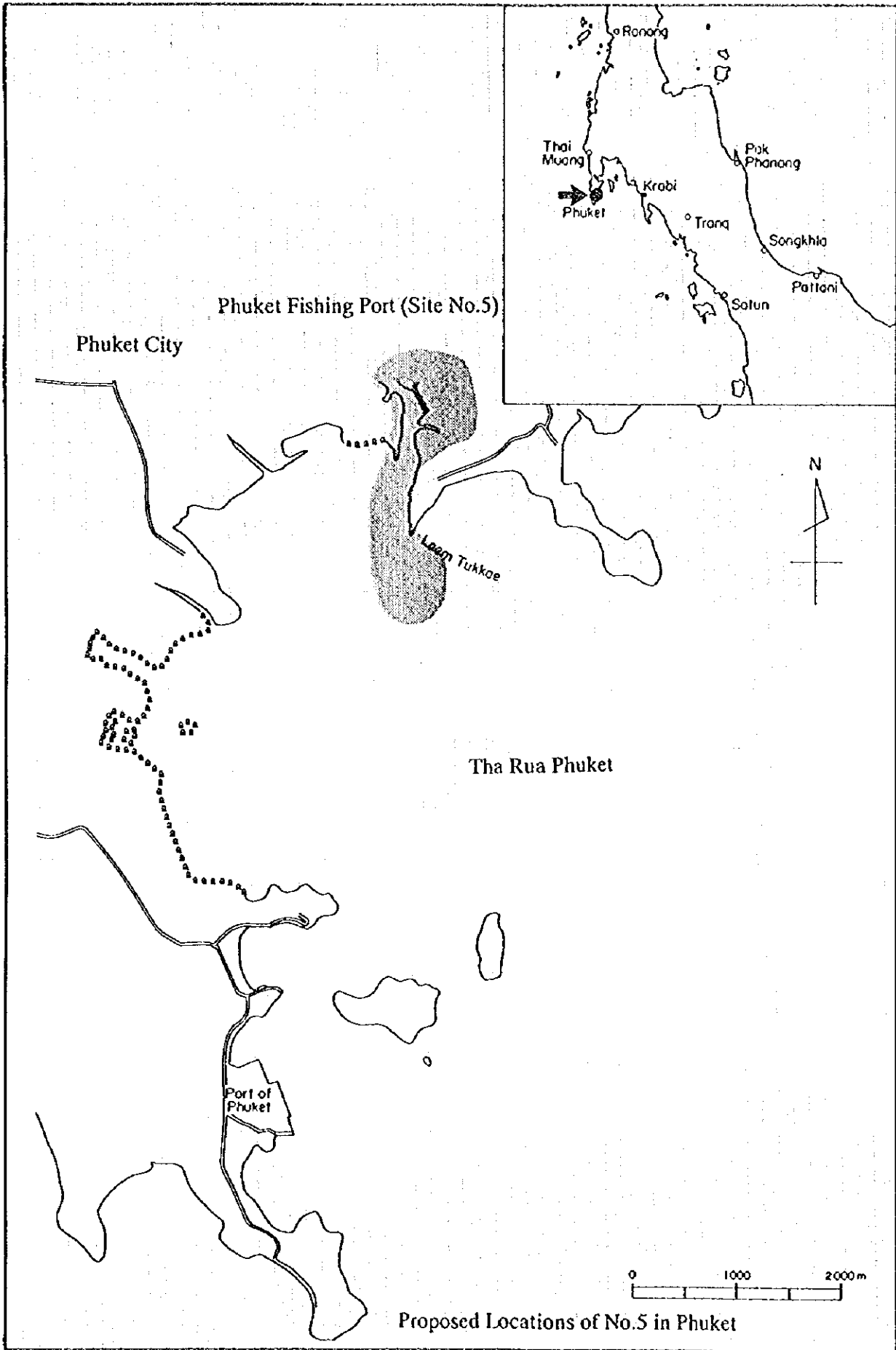
Proposed Locations of No.1 and No.2 in Trang



Proposed Locations of No.3 in Trang



Proposed Locations of No.4 in Krabi



Proposed Locations of No.5 in Phuket