13. COLD CHAIN FOR FISHERY PRODUCTS IN PANAY ISLAND

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13.1 Introduction

(1) STUDY BACKGROUND

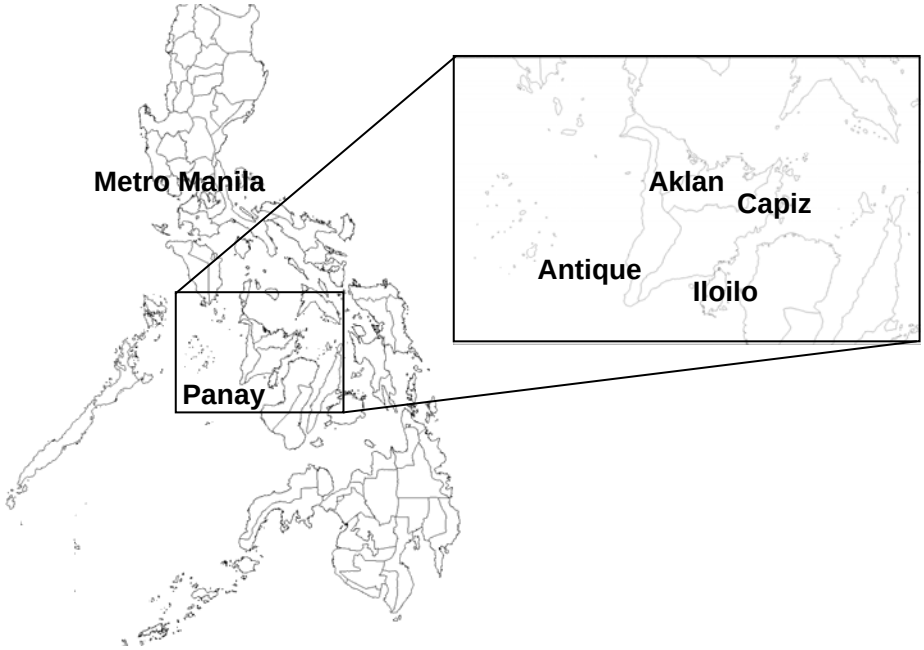
The Philippines is by and large an agricultural economy – in particular the island economies of the Visayas and the remote regions of Mindanao. Agricultural commodities are mostly perishable; hence it is important that a fast and cost-effective transport be available so that agricultural economies in the countryside could reach principal markets, in particular Metro Manila.

Quality preservation is vital so that perishable commodities retain their market value – thus, the development of cold chain system is thought to be one of the key components to improve the domestic shipping service and industry. It is for this reason that it is selected as the subject of further study as discussed in the Domestic Shipping Development Policies and Strategies.

Several corridors have been identified as potential corridors for cold chain development. And as a subject for a pilot study – the Panay to Metro Manila fish corridor was selected.

Panay Island is composed of four provinces – Aklan, Antique, Capiz and Iloilo and its geographic center is roughly 300 nautical miles from Metro Manila. Panay Island is the primary fish producer in the Visayas Region and is one of the primary producers of bangus in the country – an important fish in the Filipino diet, which is referred to as the national fish of the Philippines.

Figure 13.1.1 Location of Panay Island



In terms of marketing and distribution, two main issues face the Panay bangus industry – first is the difficulty in reaching markets due to insufficient maritime transport and second is the marginal value of its products in primary markets, particularly Metro Manila, where quality deterioration due to transport time makes it uncompetitive. These issues are to be addressed in this pilot study.

(2) STUDY OBJECTIVES

The objectives of the study are:

1. To evaluate the viability of introducing a cold chain logistics system that will link Panay Island as the transport origin and Metro Manila as the transport destination of major commodities (perishable goods) such as fish and prepared fish products;
2. To evaluate the financial viability of fish processing plants to produce frozen products; and,
3. To identify issues for the formulation of cold chain project.

(3) STUDY SCOPE AND COMPONENTS

The scope of the study is to assess the present situation of the fishery industry in Panay Island and the potential market for fish and marine products representing perishable commodities as well as its impact on the domestic shipping sector, assuming that a proper cold chain logistical system is established.

For the processing component, an integrated fish processing complex composed of refrigeration facilities (i.e. cold store, freezer, ice making plant, etc.), is planned.

For the transport component, cargo handling facilities, cargo transport means (i.e. reefer container, reefer van, etc.); an information system, a quality management system, etc. are likewise planned. The developed project shall be examined as a new logistics business model that will fit local conditions through supplementary surveys and the involvement of stakeholders. The funding source of the project will also be examined.

(4) STUDY ACTIVITY

The Study on the selected Pilot Project namely “Feasibility Study on Cold Chain for Fishery Product between Panay Island and Metro Manila” has been conducted for the period of 2 months (June – July 2005). The field survey was carried out for the period of 10 days (June 28 – July 3, 2005). A workshop was held on August 5, 2005 to present the results of the study. Several stakeholders, as well as members of the Study Team, discussed important issues regarding the study. The summary of the said workshop are presented in the annex.

(5) TRANSPORT DEMAND OF PERISHABLE COMMODITIES

The estimated movement of perishable commodities up to 2030, including fish; fruits and vegetables; and live animals is summarized as shown in Table 13.1.1.

Table 13.1.1. Volume of Perishable Commodities between Panay and NCR

(Unit: 000’ tons per year)

	Panay - NCR				NCR - Panay			
Year	Fish and Marine Products	Fruits and Vegetables	Live Animals	Total	Fish and Marine Products	Fruits and Vegetables	Live Animals	Total
2003	52.6	13.9	13.0	79.5	1.2	39.6	0	40.8
2010	61.4	16.3	11.7	89.4	1.2	48.8	0	50.0
2015	65.4	17.7	10.3	93.4	1.2	54.8	0	56.0
2020	70.4	19.2	9.7	99.3	1.2	59.4	0	60.6
2025	74.0	20.4	8.9	103.3	1.1	63.2	0	64.3
2030	76.2	21.2	8.0	105.4	1.0	65.9	0	66.9

13.2 Panay Cold Chain Based On Fish Processing

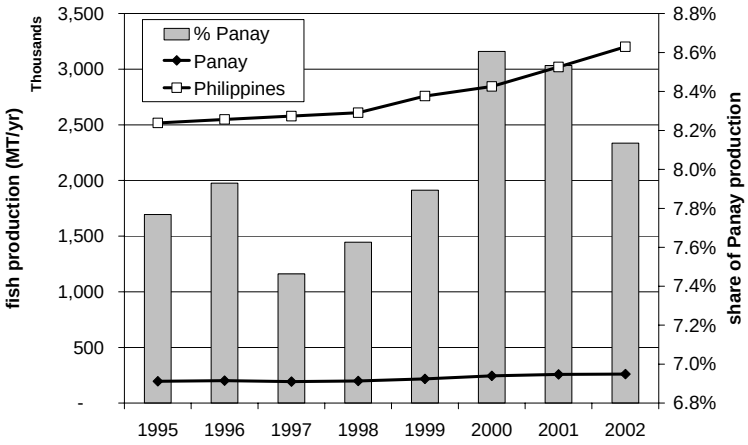
13.2.1 Panay as a Supplier of Fish

As a perennial fish producer, Panay Island has traditionally been self-sufficient in fishery products. The following figure shows the trend of fish production in Panay Island relative to national production. Panay produces about 260,000 MT out of the 3.2 million MT of fish produced nationally, in 2002 – or a share of 8.1%.

The population of Panay is about 3.5 million which is about 4.6% of the national population- thereby it can be clearly seen that Panay is major national supplier of fish, considering that its share in national fish production is 8.1% while its population share is only 4.6%.

It is roughly estimated that Panay has a surplus of about 115,000 MT/yr of fish. Most of the surplus is traded to Metro Manila – with some being traded to neighboring cities of Bacolod and Cebu.

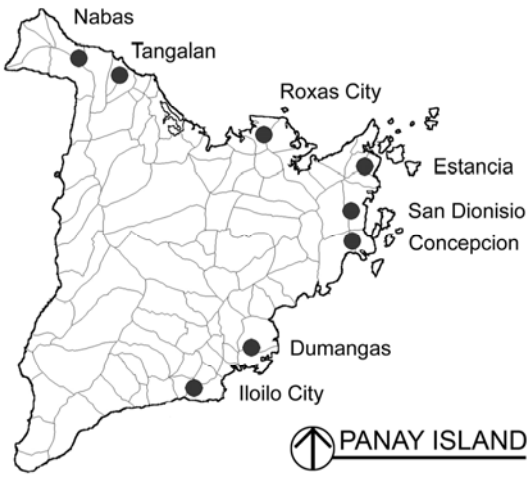
Figure 13.2.1. National and Panay Fish Production



Source: BAS

Based on interviews, the major fishing ports of Panay Island were identified to be located along the western coast of Panay Island, including the municipalities of Estancia, Dumangas as well as in the cities of Roxas and Iloilo. A survey was conducted to identify the nature of fish products in these areas.

Figure 13.2.2. Identified Major Fish Producing Areas in Panay

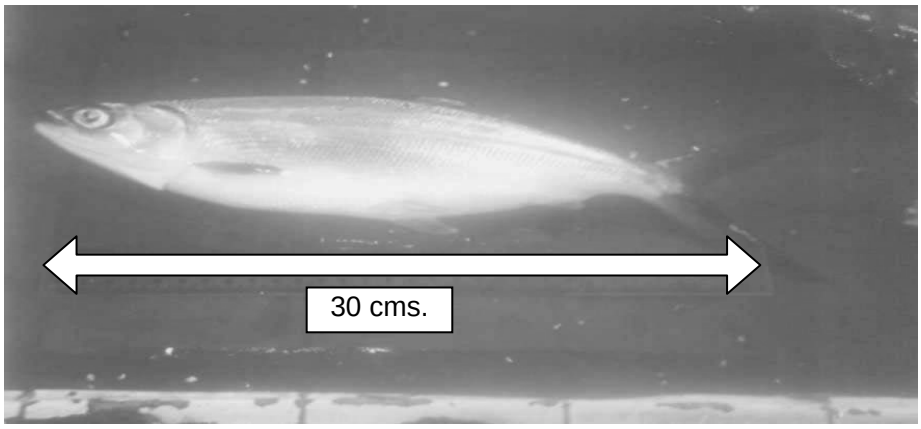


The following Table shows the major types of fish species being produced in the survey area. Total fish production accounted for in the survey is about 90,000 MT/yr or roughly 34% of total fish production in Panay. Based on the survey – the primary species of fish produced is bangus, which accounts for more than 85% of total output of the survey area.

Table 13.2.1. Major Fish Species Produced in Selected Areas in Panay

Municipality	Major Species					Total
	Bangus	Yellow Striped Crevalle	Short Bodied Mackerel	Pony fish	Others	
Dumangas	**8,042**	-	-	254	1,539	9,835
Concepcion	**-**	13	-	-	79	92
Estancia	**-**	130	143	295	852	1,420
Roxas City	**69,914**	-	470	406	7,736	78,526
Nabas, Aklan	**3**	-	18	-	101	122
Total	**77,959**	143	631	955	10,307	89,995
Percentage (%)	**86.50%**	0.20%	0.70%	1.10%	11.50%	100.00%

Figure 13.2.3. Bangus From Dumangas



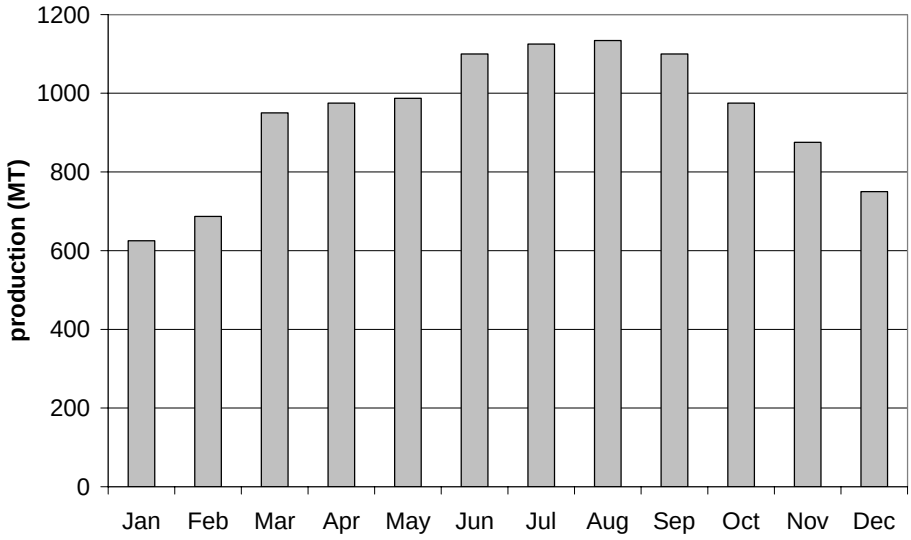
Milkfish (*Chanos chanos*) or bangus is the leading commercial species in the aquaculture industry of the Philippines. It can be cultivated either in brackish water, marine and fresh areas, in ponds and in cages. Because of the ideal geographic characteristics, the Philippines has become the second largest milkfish producer in the world. Total bangus production in the country in 2003 is about 248,000 MT – of which at least 30% is produced in Panay Island.

Of the more than 75,000 MT/yr bangus production in Panay – it is roughly estimated that about 11,000 MT/yr is consumed within the island. Thereby, Panay Island has at least 64,000 MT/yr of surplus bangus. Other major producers include some regions in Northern Luzon with a combined output of 102,500 MT/yr, and parts of Southern Luzon with a combined output of 25,000 MT/yr in 2002.

In Panay Island, most of the produced bangus is grown through aquaculture. However, despite being cultured, bangus production exhibits seasonality– though much less

pronounced than a fish species produced by capture fishery. Low production period is between December to February.

Figure 13.2.4. Monthly Seasonality of Bangus Production in Dumangas



Source: Municipal Government of Dumangas (2003)

Retail price in Panay Island of bangus ranges from 65 pesos/kilo to 100 pesos per kilo – depending on size (bigger is more expensive) and season. However, wholesale or landing price is around 45 ~ 65 pesos per kilo.

Table 13.2.2. Price of Panay Bangus

SOURCE		Roxas	Aklan	Dumangas, Iloilo	Iloilo Fishing Port Complex	AVERAGE
PRICE	At source (PhP/ kg)	60~65	60	60	65	**62**
	At market (PhP/ kg)	65~70	70	70	100	**75**
	During peak (PhP/ kg)	50	45~50	n/a	65	**53**
	During off-peak (PhP/ kg)	85	90	n/a	130	**102**

13.2.2 Market Conditions for Panay Bangus

Filipino consumers in wet markets and fish landing ports demand for fresh milkfish not only as a delicacy but also due to their relatively cheaper price. The following Table illustrates the price of bangus in wet markets in Southern Luzon and Metro Manila. It can be seen that bangus is one of the cheapest fish in the market.

Table 13.2.3. Price Comparison of Bangus vs. other Fish Varieties in Wet Markets

Fish Variety	Price per Kg				
	Cavite (Trece Martires Public Market)	Batangas (New City Market)	Laguna (Calamba Public Market)	M. Mla. (1 Public Market)	Average price
Sugpo	350	-	-	475	413
Lapu-Lapu	-	-	-	240	240
Tanigue	-	-	-	240	240
Maya-maya	-	-	200	223	212
Tuna	-	-	-	205	205
Bisugo	-	-	-	203	203
Alimango	-	-	-	182	182
Dalag	-	-	150	-	150
Pusit	-	-	125	-	125
Hasahasa	-	-	-	120	120
Tambakol	-	100	-	115	108
Dalagang-bukid	-	-	100	-	100
Labahita	-	-	100	-	100
Bangus	**81.25**	**70**	**85**	**95**	**83**
Galungong	80	52.5	63	85	70
Tilapia	77.5	55.75	80	66	70
Tulingan	-	55	70	-	63
Tawilis	-	-	60	-	60
Hito	-	-	-	50	50
Tamban	-	-	43	-	43

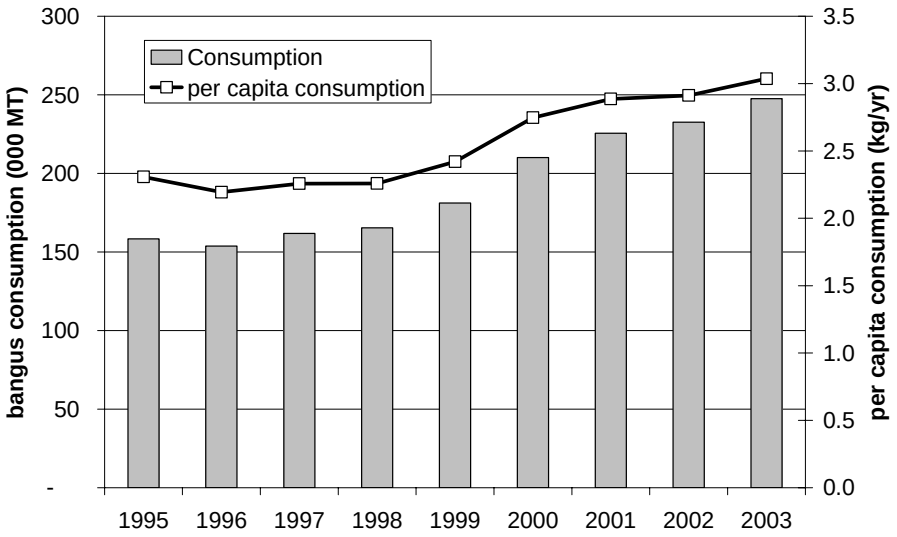
Because of its cheap price, bangus is one of the highest selling fish variety in wet markets. For example, in three surveyed public markets – bangus ranks at 3rd in sales.

Table 13.2.4. Top Selling Fish Variety in Selected Wet Markets

Location	Top fish sales by variety	
Trece Martires Public Market	1st Tilapia	5,170 kg/wk (34% of total)
	2nd Tulingan	2,800 kg/wk (19% of total)
	3rd Bangus	**2,300 kg/wk (15% of total)**
Batangas Public Market	1st Tilapia	8,350 kg/wk (21% of total)
	2nd Tulingan	7,950 kg/wk (20% of total)
	3rd Bangus	**7,770 kg/wk (20% of total)**
Calamba Public Market	**1st Bangus**	**7,426 kg/wk (26% of total)**
	2nd Tilapia	6,340 kg/wk (22% of total)
	3rd Galunggong	4,011 kg/wk (14% of total)

Furthermore, bangus consumption has been increasing since 1995. Per capita consumption has been increasing from about 2.2 kg/capita/year to about 3.0 kg/capita/yr.

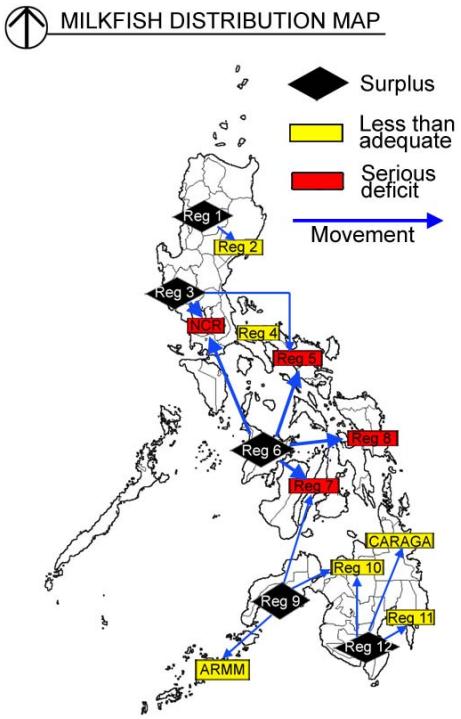
Figure 13.2.5. National Consumption of Bangus



Source: BAS

The map at Figure 13.2.6 illustrates regions wherein there is a surplus and deficit of bangus. It is shown that Panay is strategically located to serve deficit areas in NCR, Bicol Region (Reg. 5), Eastern Visayas (Reg. 8), Central Visayas (Reg. 7), and parts of Western Visayas (Reg. 6), such as Negros Occidental.

Figure 13.2.6. Areas of Bangus Surplus and Deficit



Source: Milkfish Road Map, BFAR (2002)

In the case of Metro Manila (or NCR) – the estimated total bangus consumption is around 30,000 MT/yr. However, its supply requirements are currently mostly being served by production areas in north Luzon. In urban areas outside of Metro Manila, the estimated consumption is about 18,500 MT/yr. Currently much of the demand in

Western Visayas and Central Visayas, including parts of Southern Luzon is being served by Panay. Eastern Visayas region demand is difficult to access by Panay bangus due to insufficient transport service between Panay and Eastern Visayas at present. In all, considering only urban areas, the market size for bangus in areas of close proximity to Panay is around 48,500 MT/yr. If total regional demand is considered, the total demand would be much higher. However, it should be noted that some regions have their own production of bangus; however the supply is not enough to meet local demand.

Table 13.2.5. Estimated Bangus Consumption of Selected Urban Areas

Region	Urban Population (000)	Bangus Consumption	
		kg/week	MT/yr
NCR: Metro Manila	10,000	576,923	30,000
Region 4A: CALABARZON	2,337	134,828	7,011
Region 4B: MIMAROPA	296	17,101	889
Region 5: Bicol Region	825	47,598	2,475
Region 6: Western Visayas	2,148	123,935	6,445
Region 7: Central Visayas	2,269	130,882	6,806
Region 8: Eastern Visayas	610	35,201	1,830
Areas outside of NCR	6,148	354,718	18,445
Total	19,485	931,641	48,456

The market for bangus is therefore robust, and it is expected that Panay will be a key supplier of the national requirement – in particular in deficit areas in close proximity to Panay.

13.2.3 Fish Processing: A Potential Direction of Panay Bangus Products

The market for bangus can be classified into two: fresh bangus and processed bangus market. At present, Panay is almost exclusively dealing with the fresh bangus market.

Though by the high volume of demand for bangus, it can be said that Panay bangus could be sustainable – however if it continues to focus only on the fresh bangus market it may not be able to continue to serve lucrative markets such as Metro Manila and the fast growing Southern Luzon markets, due to competition from Northern Luzon.

One issue is that Panay bangus, though cheap would have to be transported for at least a day to reach Metro Manila markets – leading to deterioration of quality. This is confirmed by interviews of fish retailers in Luzon. The following are opinions of fish stall operators in Luzon on Panay fish:

- Fish stall owners from Trece Martires Market said that fish from Panay are too far, and this would translate to higher transportation cost. They also don't trust the quality of fish from Panay which is attributable to longer handling duration.
- Batangas market stalls already have regular suppliers. They also believe that Panay is too far compared to their present suppliers and has inferior quality.
- Calamba market stall owners also have regular suppliers. They believe that using to other suppliers from Panay might give them an inferior quality and it may take time for it to be trusted by customers. Contracting with such new suppliers might give them less profit and may not be reliable in payment.

- Stall owners in Farmers Market in Cubao believe that supply of fish from Batangas is better. Some of them said that they don't need large volumes. Although some are receptive if the price & quality are favorable.

This sentiment is likewise mirrored by fish traders and producers in Panay. The following are the opinion of interviewed stakeholders:

- One pond owner/operator in Dumangas, Iloilo owns a 16 ha. fishpond. He has pond operators while other workers in the pond are "on call" basis. He used to sell his fish in Manila but eventually stopped. He said the existence of fish pens in Laguna resulted in increased supply of bangus in Luzon making his bangus less competitive due to higher transport cost from Iloilo. Eventually, he decided it is better to trade at the Iloilo Fishing Port Complex where he can get a better price.
- One broker/dealer in Barotac Nuevo is used to send bangus to Manila since 1995. He deals with his brother who is a broker in Manila. A family owned corporation, they buy and sell their products to Manila. Currently, they stopped sending their bangus to Manila since they cannot compete with Dagupan bangus. Their other products were shrimps and lapu-lapu. They tried sending their products via the RoRo but found it not so good due to limited number of trips, high transport cost and the need for storage facility. They found that the quality of their products is inferior to Pangasinan. Lastly the low supply of shrimps and other fish caused them to stop bringing them to Manila.

To be able to improve marketability of Panay bangus it is thereby necessary to improve quality preservation through cold chain. Frozen bangus is one potential area – however interviewed traders are skeptical because of the high costs involved and that frozen bangus does not fetch a premium – thus, the price of frozen bangus is either the same or even lower. Furthermore, Filipinos prefer to have their bangus cleaned and gutted by the retailer after being purchased (a free service), which would not be possible for frozen bangus. Chilled bangus is likewise not considered to be potentially advantageous – based on interviews of fish traders who have experimented on transporting chilled bangus, in particular they cited that there is no price advantage of chilled bangus over fresh bangus (packed in ice).

Therefore, it is worthwhile to consider repositioning Panay bangus to serve the processed bangus market and to employ cold-chain logistics to market its products to other parts of the country in particular Metro Manila.

As an indicator, the following are the current retail prices of different types of bangus products in Metro Manila. The margin if sold in Metro Manila as fresh bangus would be about 30 pesos/kg; on the other hand, the margin if sold as processed bangus would be about 150 pesos/kg (assuming frozen boneless type). Clearly the benefit of shifting to processed bangus is apparent.

Table 13.2.6. Indicative Retail Prices for Bangus Products in Metro Manila

Type	Price (P/ kg)
Landing price in Panay	62
Fresh	70 ~ 115
Boneless	175 ~ 190
Frozen (Boneless)	210 ~ 225
Marinated (Boneless)	115 ~ 300
Belly (choice cut)	370 ~ 470

For a more detailed comparison, the following shows retail prices at selected supermarkets.

Table 13.2.7. Price Comparison of Bangus vs. other Fish Varieties in Supermarkets

	Fish Variety	Grocery A	Grocery B	Grocery C	Grocery D	Grocery E
		All prices are per kg.				
1	Bangus	-	-	-	-	-
	Belly	-	370	-	470	-
	Fresh (Boneless)	175	-	190	-	-
	Fresh (Large)	98	-	115	106	109
	Fresh (medium)	71	-	88	-	-
	Frozen (Unseasoned)	-	210	-	225	-
	Marinated	-	115	268	-	300
	Smoked (Tinapa)	-	310	-	69.5	-
2	Asuhos	119	-	130	-	175
3	Bisugo	115	-	150	106	-
4	Dalagang Bukid	115	-	176	118	155
5	Galungong (fresh)	79	-	95	-	130
	Galungong (Smoked)	90	-	-	-	-
6	Hito	69	-	94	-	99
7	Labahita	-	-	-	129	-
8	Langgit	-	-	-	82	-
9	Lapu-lapu (Fresh)	-	-	281	212	275
	Lapu-lapu (Frozen)	-	-	-	420	-
10	Marlin	-	210	-	210	-
11	Maya-maya	175	-	-	153	299
12	Pagi	-	-	-	47	-
13	Pusit	109	-	-	-	-
14	Salay Ginto	-	-	103	-	120
15	Salinas (Smoked)	81	-	-	-	-
16	Salmon	159	300	-	148	-
	Salmon (smoked)	-	560	-	-	-
	Salmon (head)	250	-	-	-	-
19	Sapsap	-	-	234	-	-
20	Tamban	49	-	-	-	-
21	Tanigue	165	260	-	-	-
22	Tawilis	69	-	-	-	-
23	Tilapia	70.5	145.75	80	85	97
24	Tulingan	-	-	-	76	-
25	Tuna	128	-	-	-	-

Note: Tilapia in Grocery B are in fillet form

One example of a successful, albeit small-scale, fish processing venture is illustrated as follows:

- As an example of a successful fish processor with 10 employees, their product lines include bottled bangus in corn oil, tilapia in corn oil and dried fish. They bring their products to shops and cooperatives in Roxas. They are at present waiting for their license from BFAD so they can continuously send their products to major grocery chains in Metro Manila. Their total production capacity is 50-100 kg/day, which yields about 150-300 bottles/day. They use the JRS Express when they send their products to Manila. The company is Filipino-owned and has availed of a loan package from the government trough the 1 Million 1 Product Program – Php 300,000.00 through the Provincial Governor's Office. They were also able to avail of a grant from TESDA in the amount of Php 50,000.00 for training expenses and 2 units of pressure cooker. DOST also financed the fabrication of their fish dryer. Their contract structure for their loan is 1-year grace period and three years to pay without interest. She estimated the company's asset at about Php 1M that includes the building/plant and the lot plus their acquired processing equipment.

13.2.4 Market Potential of Processed Bangus

There are two major types of bangus being sold in the market, fresh and processed. Processed bangus includes several types; such as deboned, marinated, pre-cooked (e.g. relleno) and choice cuts (i.e. belly cuts). The major sales outlets of bangus products are: 1) wet markets and 2) grocery stores.

A fish market survey was conducted in July 2005 to gather relevant information on fish sales in order to estimate the marketing potential of processed bangus. The following table summarizes the results of the survey.

Table 13.2.8. Fish sales of Surveyed Retail Outlets

	Cavite (Trece Martires Public market)		Batangas (New City Market)		Laguna (Calamba Public Market)		7 sample M. Mla. Restaurants		1 sample M. Mla Grocery	
Fish Variety	(kg/wk)	Percent	(kg/wk)	Percent	(kg/wk)	Percent	(kg/wk)	Percent	(kg/wk)	Percent
Fresh Bangus	**2,300**	**15%**	**7,770**	**20%**	**7,426**	**26%**	**64**	**10%**	**80**	**17%**
Processed Bangus	**none**	**0%**	**none**	**0%**	**none**	**0%**	**56**	**9%**	**205**	**44%**
Tilapia	5,170	34%	8,350	21%	6,340	22%	128	19%	120	26%
Tulingan	2,800	19%	7,950	20%	3,649	13%	84	13%	-	-
Galungong	1,250	8%	7,550	19%	4,011	14%	77	12%	-	-
Others	3,570	24%	8,100	20%	7,087	25%	248	38%	65	14%
TOTAL	15,090	100%	39,720	100%	28,513	100%	657	100%	470	100%

From the results it is seen that the sales of processed bangus is only available at grocery stores. This is logical, because public markets are wet markets with no proper cold store facilities, thus are unable to keep processed bangus products. Since only one sample was gathered to estimate grocery sales of processed bangus, it was deemed necessary to gather more information. A supplemental survey was thereby conducted on August 2005 on selected large-scale groceries in Metro Manila. Table 13.2.9 shows the results.

Table 13.2.9. Bangus Sales of Groceries (kg/week)

Sample	Fresh	Processed	
		Sales	Type
Supermarket A	753	53	Boneless Marinated
		27	Boneless Chilled
Supermarket B	420	92	Boneless Marinated
		31	Boneless Dried (Daing)
		48	Boneless Chilled
Supermarket C	N/A	18	Boneless Marinated
Average	**587**	**45**	

Based on the survey results, the following average sales of fresh and processed bangus per outlet type is assumed.

Table 13.2.10. Average Weekly Sales of Bangus (kg/week)

Sales/Retail Outlet	Fresh	Processed	All Bangus
Restaurant	9	8	17
Wet Market	8,673	limited	8,673
Grocery	587	45	632
Total	9,269	53	9,322

In Metro Manila, the estimated number of establishments selling bangus and their estimated sales volume are as follows:

Table 13.2.11. Estimated Sales of Fresh and Processed Bangus (kg/week)

Retail Outlet	Units	Ave Weekly Sales		Weekly Sales		Total (kg)	Share of processed
		Fresh	Processed	Fresh	Processed		
Large Wet Market	34	7,598	No Data	258,332	No Data	258,332	-
Small Wet Market	103	1,075	No Data	110,725	N/A	110,725	-
Large Groceries	70	587	49	41,090	3,430	44,520	7.7%
Unaccounted	-	-	-	160,423	-	160423	-
Total	**207**	**9,260**	**49**	**570,570**	**3,430**	**574,000**	**0.6%**

Unaccounted sales is calculated as the balance of the estimated consumption in Metro Manila based on average per capita consumption and the computed outlet sales from large wet markets, small wet markets and large groceries. Unaccounted sales arises from unaccounted retail outlets such as: retails sales in wholesale markets; very small but numerous informal markets; informal street sellers, including those that go around selling door-to-door; small groceries; direct sales to restaurants, hotels, hospitals, cafeteria, and the like, and, others.

Under the current conditions, the market for processed is very limited wherein its share to total bangus sales is only 0.6% - or 3.5 MT/week.

All of the processed bangus sales are realized in large groceries. In these outlets, where there is available processed bangus, the share on total sales is 7.7% compared to 0% in other outlet types. It is therefore taken that should processed bangus be made available in other retail outlets, it is very possible that its share in the total bangus market could increase from less than 1% at present to nearly 8%.

In addition to serving domestic markets, processed bangus are also marketable to foreign markets, particularly due to the large population of Filipino overseas workers. It is very difficult to derive a good estimate but based on interviews, the market could at least absorb one 40 ft container shipment per month. As a rough estimate, it is assumed that Panay could market one (1) twenty footer (20ft) container a week for export.

To summarize, the following Table provides an indicative market potential for processed bangus from Panay, assuming a 7.7% market share for processed bangus.

Table 13.2.12. Market Potential for Panay Processed Bangus

Demand	Total Bangus Sales	% of processed	Processed Bangus
Retail sales in Metro Manila	82 MT/day	7.7%	6.3 MT/ day
Retail sales outside of M.M.	70 MT/day	7.7%	5.4 MT/ day
Export	34 MT/day	7.7%	2.6 MT/ day
TOTAL	186 MT/day	7.7%	14.3 MT/ day

Figure 13.2.7. Processed Bangus Product Sold in Supermarkets

13.3 Basic Framework for Panay Bangus Processing /Cold Chain

13.3.1 Structure of Cold Chain

The "cold chain" literary means several cold stores are linked as a chain. A cold storage maintains a low temperature to maintain the quality of the perishable products. The zone of temperature maintained for storing of such perishable goods is divided into three zones namely: Chilled Storage (≥+4°C ---- +10°C); Ice Storage (2°C ---- +4°C); and, Deep Freeze Storage (≤-18ºC --- - 60ºC). Basic structure of a cold chain includes a cold store at the point of production and another cold store at the point of sales or distribution. Through a cold store at the point of production, inventory of storage products will lengthen thereby; market prices can be stabilized by controlling the volume of supply. The other receiving store is for distribution of products to the users or consumers. In the case of cold chain for frozen fish or marine products, it consists of a producer's cold store, bulk-cold store, distribution cold store and retailer's cold store as illustrated in Table 13.3.1.

Table 13.3.1. Cold Stores along the Cold Chain

Goods Flow Direction →

Type of Store	Production Store	Distribution Store	Retail Store	Display Cabinet	Home Refrigerator
Period	1 month	1 month	1 week	Few days	Few weeks
Temperature	-25ºC	-25ºC	-20ºC	-18ºC	-18ºC

Source: FAO
Note: The frozen products are stored cold store designed for different functions and transported from left to right.

For the cold chain between Panay Island and Metro Manila, the type of storage selected is deep freezing storage[1] because the selected product to be stored and transported along the cold chain is mainly processed, vacuum packed, frozen fish[2].

To be able to transport goods between cold stores, refrigerated transport is used. It is needed to connect the Production Store to the Distribution Store, and Distribution Store to the Retail Store. From the Production Store to the Distribution Store, larger types of vehicles are used to be take advantage of economies of scale. From the Distribution Store to the Retail Store, smaller types of vehicles are used to be able to effectively cover geographically dispersed retail outlets. There are basically two forms of refrigerated transport possible, one is based on the Road-RoRo inter-modal transport corridor and the other is based on reefer container transport using Ropax vessels (i.e. Direct Shipping).

Finally, a processing plant is needed to improve market value of Panay bangus. Fish Processing Plants (hereinafter called FPP) are composed of fish processing line, ice store, chilled room, deep freezing cold storage, fish meal plant, and other appurtenant facilities. FPP is preferably located to fishing port or RoRo port as close as possible where utilities (power and water) are available.

The development concept of cold chain logistic system for bangus from Panay to Metro Manila is illustrated in Figure 13.3.1.

[1] Refrigeration zone are classified in three zones by temperature level of cold storage. Chilled Storage: ≥+4ºC ↔ +10ºC suitable for fruits and vegetables; Ice Storage: - 2ºC ↔ +4ºC suitable for ice and iced products; Deep Freezing Storage: ≤-18ºC ↔ -60ºC suitable for frozen products.

[2] Processed, marinated, vacuum packed, frozen bangus is produced mainly at Dagupan at present and sold in the large-scale supermarket in Metro Manila at Peso 300 per kg but in a limited volume. The fresh bangus in the same supermarket is priced at Peso 110 per kg.

Figure 13.3.1. Basic Structure of Cold Chain for Frozen Products

Cold Chain Link via RoRo Route		Cold Chain Link by Direct Shipping	
Component	Remarks	Component	Remark
Retailer Retailer		Retailer Retailer	
Trucking		Trucking	
Cold Store (Manila)		Cold Store (Manila)	Mixed with other products
Cold Store (Batangas)		Trucking	
Trucking		Port (Manila)	Port is to be provided with ref. con. plug
RoRo Ferry (Batangas – Calapan)	No ref. con. Plug is needed.		More than 24 hours travel time.
Trucking			
RoRo Ferry (Roxas – Caticlan)	No ref. con. Plug is needed.	Port (Panay Island)	Port is to be provided with ref. con. plug
Trucking	Reefer van of -25 dg. C	Trucking	Refrigerated container
Fish Processing Plant	Processed and frozen product	Fish Processing Plant	Processed and frozen product
Fishing Port	Fish catch is directly landed.	Fishing Port	Fish catch is directly landed
Trucking	Iced fish catch is transported by normal truck.	Trucking	Iced fish catch is transported by normal truck.
Aquaculture Pond Aquaculture Pond Aquaculture Pond	Landed fish is iced and put in insulated box.	Aquaculture Pond Aquaculture Pond Aquaculture Pond	Landed fish is iced and put in insulated box.

Figure 13.3.2. Example of Chain of Major Cold Chain Facilities

Facility	Function and Activity
	Landed fish at fishing port or collected aquaculture fish from fish pond is auctioned and sold to fish processing company to process them in Fish Processing Plant. The fish brought in the plant is iced then processed into fillet, deboned, seasoned, etc. Some fish is suitable for one-night drying in cold store. Some fish is marinated with vinegar and other spices in a FRP tank and stored in chilled store (+4° C) for a certain period.
	Those processed fish is packed in plastic bag designed to show brand name of product, name of processing company, or the name of retailer, etc. and packed by vacuum packing machine. Vacuum packing is necessary to longer the period of product and to keep hygienic condition.
	Those vacuum packed processed fish is put in a freezing pan for quick freezing. The pans filled with product is loaded in quick freezer of - 55° C for one hour or so to freeze the product. Frozen products is unloaded from freezer and packed into carton box.
	Packed frozen fish in carton box is stacked on pallet. The pallet loaded with such carton boxes is now loaded into cold store (-35° C) until it is needed to transfer to the other cold store located in or close to its market. The holding capacity of cold store (-35° C) for packed frozen fish is 200 tons or enough to hold the goods produced for 20 days.
	Reefer van having loading capacity of 10 tons loads the frozen products at fish processing plant at least one unit per day. Loading operation can be done by electric driven reach stacker.
	Reefer van is transported by RoRo ferry and continues to run to the final destination in Batangas. During the waiting time in parking area at the loading port and ferrying the refrigeration machine equipped with reefer van is operated by power available from the power plug provided at port and RoRo ship.
	Reefer van unloads the cargo at cold store complex (tentatively named Low Temperature Logistic Center (LTLC)) which will be located in Batangas designed to store all frozen products transported from remote island via SRNP RoRo route. This center store the products produced in Luzon Island to deliver to these islands as backload cargo which reaches to Batangas from these islands. Reefer van back to Island from Batangas with backload cargo via same RoRo route.
	Reefer van having capacity of 4 – 6 tons loads the frozen products at LTLC in Batangas and delivers the goods to the retailers as per instruction of forwarder. On return to Batangas, the same reefer van collects the goods requires low temperature preservation (i.e. frozen chicken, fruits and vegetables, etc.) from cold store of producers in Manila or surrounding province to cold store center in Batangas.
	The goods delivered by smaller reefer van from Batangas LTLC is stored in a cold room of retailer and displayed in show case in retailer's sale area (i.e. supermarket, department store, market, etc.).

13.3.2 Fish Processing Plant

1）Current Conditions of Panay Fish Processing and Storage Facilities

At present, fish processing in Panay Island is in some sense active – in particular crab picking. In the case of bangus, notable is the processing plant in Roxas City for deboned and smoked bangus with an output of 1MT/week.

The Iloilo Fish Port is equipped for frozen storage, however currently; most fish activity is only trading, while storage is mostly used for imported fruits, vegetables and meat. Most of the fish, including bangus, are traded with very limited value-added processing – products are merely packaged and preserved in ice boxes. Thus the infrastructure for fish processing is limited, and likewise the market practice in Panay is not familiar with fish processing.

Table 13.3.2. Current State of Fish Processing in Panay Island

	Ice Plant	Cold Storage	Fish Processing
Iloilo Fish Port Complex	IFPC is operated by the PFDA. It is situated in a 21 ha. Reclaimed area in Iloilo City. IFPC is fully equipped with all the needed facilities for fish handling, storage, and processing. However, limited fish is being processed or stored (mostly meat and vegetables).		
Roxas City	7 units @ 160 MT/day	-	3 plants: 1 unit for bangus (1MT/wk); 1 unit for crab picking; and, bottled fish (50-100 kg/day)
Estancia	3 units @ 145 MT/day	Chilled and frozen but not operational	1 (non-operational) fish processing plant; 2 crab picking plant (100 kg/day)
Concepcion	None – three ice storage Ice from Ajuy, Estancia, and Balasan.	-	2 plants @ 7-21 MT/wk (crab picking)
Dumangas	None – ice is supplied by 3 ice dealers. Crude ice storage only. Ice plants in nearby town and newly constructed by LGU, not operational.	-	Small scale drying and fermentation
San Dionisio	None – ice from household refrigerator and neighboring towns. No ice storage.	-	4 plants @ 15 MT/wk (drying, chilling, freezing)
Tangalan and Nabas, Aklan	None	-	Local fish drying and fermentation only

2）Basic Design of Fish Processing Plant

The proposed fish processing plant is designed not only to produce value-added products that is worth transporting through reefer containers or reefer trucks in the cold chain system but also takes into account the prevention of environmental wastes through the realization of “Zero Emissions”. The boneless or deboned bangus is a marketable value product from Panay Island. However, the deboning practice is commonly done at backyard levels by households, which produces wastes. However, if this process is done in a collective manner, then the volume of wastes (i.e. fish offal – fish head and guts), as well as the wastewater, used in the processing will be programmed. Fish offal is considered a valuable material for the production of fish-meal which can be recycled to feed ponds with aquaculture products. The wastewater can be treated mechanically to acceptable levels. With this taken into consideration, the plant is designed to be furnished with a fish-meal plant and wastewater treatment unit.

Based on the market analysis, the potential market for processed bangus from Panay Bangus is about 14 MT/ day. It is therefore envisioned that in the first phase an 8MT/day capacity plant will be developed and in the second phase another 8MT/day plant will be added. To be able to output 8MT/day of processed bangus an input of 10MT/day of raw material would be required.

In terms of raw materials, excess supply of bangus in Panay is estimated to be 66,000MT/yr as production is more than 77,000MT/yr while consumption is only 11,000 MT/yr. The raw material requirement of 10MT/day or about 3,000MT/yr could be handily absorbed by the local fish industry and total processing plant production capacity could be further expanded in case demand for processed bangus would increase.

From the 10MT raw materials, 8MT of processed bangus will be the output, which leaves about 2MT of offal, which can be made into 1 ton of fish meal. Through this process, the solid waste that will be generated by this plant will completely be utilized and the plant will act as a zero waste processing plant.

Table 13.3.4 summarizes the production plan of a typical fish processing plant. The major components of the proposed fish processing plant are tabulated below.

The Plant can either be located in Roxas City and/or Dumangas, where bangus production is substantial.

Table 13.3.3. Raw Materials Conversion in Fish Processing Plant

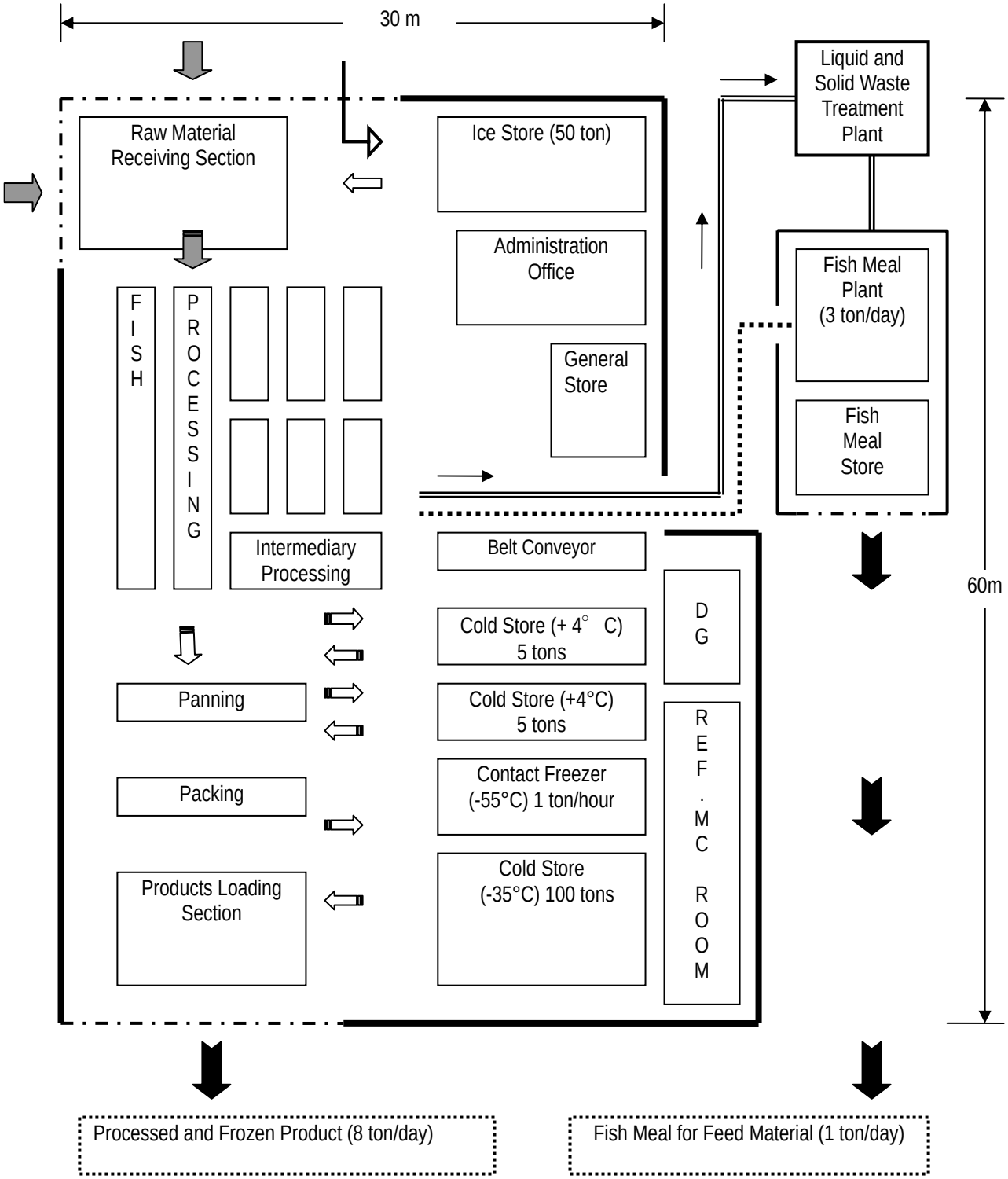
Raw Material Weight	Product Weight	Offal Weight	Fish Meal Weight
10 tons	8 tons	2 tons	1 ton

Note: (Unit: ton per day)

Table 13.3.4. Particulars of Typical Fish Processing Plant (FPP)

Item	Size/Capacity	Remarks
Land Area	4,000 m2	
Building	1,800 m2	Pre-engineered, prefabricated steel building with insulated external sandwich panel
Ice Storage	10 tons	Ice is brought from ice making plant located near by the plant
Raw Material Receiving Tank	10 tons	RC Tank
Processing Line	10 tons per day	Various type of product can be processed
Packing Line	8 tons per day	Vacuum packing
Panning Line	8 tons per day	Vacuum packed product is panned for contact freezing
Cold Store	10 tons	+ 4ºC for drying process
Cold Store	50 tons for preparation	+ 4ºC (Marinated product)
Contact Freezer	1 ton per hour	- 55ºC
De-panning Line		Thaw by water
Packing Line		Packed by carton box
Cold Store (Deep Freezer)	100 tons	- 35ºC (for 10 days)
Delivery Section		Reach stacker
Fish Meal Plant	1 ton per day	Packing to 40kg craft bag
Storage		Packing material, etc.
Elevated Water Tank	5 ton	Prefabricated tank
Waste Water Treatment Unit	5 ton	
Stand-by Diesel Generator	40 kW	For cold store operation
Workshop		Spare parts and tools
Reefer Van	10 ton per vehicle	3 units

Figure 13.3.3. Layout Plan of Fish Processing Plant



13.3.3 Transportation Linkages

1) Comparison of Road-RoRo Intermodal Corridor and Direct Shipping

As earlier stated, bangus products can either be transported either by direct shipping or by refrigerated van using the RoRo in between islands. Table 13.3.5 shows the comparison of transport cost in two different modes in the case of iced bangus – under the following assumptions.

- Landed bangus is loaded into insulated boxes weighing between 35 – 50 kg. Each box has a number of layers of crushed ice of almost same weight of fish covers each layer.
- For RoRo transport, around 200 boxes or 10 tons of iced bangus are loaded on a truck and uses the Strong Republic Nautical Highway composed of the RoRo links of Caticlan (Panay) – Roxas (Mindoro) and Calapan (Mindoro) – Batangas (Southern Luzon).
- For direct shipping services, it is assumed that iced and boxed bangus is transported by 20-footer container. It is likewise assumed that such containers are transported from Iloilo to Metro Manila. Based on this assumption the current transport cost is collected from different sources.

Table 13.3.5. Comparison of Transport Cost

(Unit: Peso)

Cost Item	Direct Shipping	RoRo
Freight (Net)	29,572.00	24,000.00
Handling Charge (Manila)	823.85	-
Wharfage (Manila)	75.90	-
Trucking (Manila)	4,250.00	-
Handling (Iloilo)	597.85	-
Wharfage (Iloilo)	75.90	-
Trucking (Iloilo)	2,239.00	-
Stamp Duty	10.00	-
Handling Cost (30%)	-	10,285.71
Total Freight	37,644.76	34,285.71
Maximum Load	12 tons	12 tons
Cost per Ton	3,137.06	2,857.14
Cost per Kilo of Fish	3.14	2.86

Source: Interview Survey by the Study Team in July 2005

As shown in Table 13.3.5 the transport cost of the case of using RoRo is used is cheaper than direct shipping. This is confirmed by interviews of fish traders interviewed during field surveys. The following is one case wherein RoRo has reduced transport cost:

One fish processing plant that has been in the Philippines since the 1960's has plants in Sorsogon, Manila, Paranaque, Iloilo, Catbalogan and they are now starting to open another plant in Silay City which they hope to become operational soon. The Iloilo Plant has 300 workers. They have been shipping assorted marine products to Manila. They are all frozen products of: shrimp and dried lobo-lobo. They recently added another product, mango halves. Before they use the cryo van for their shipment but now they shifted to use the nautical highway RO-RO route. They believed that shipment of their product through RO-RO is more advantageous because it is less expensive. They have saved almost 50% in travel expenses by using RO-RO route. When they were using the cryo transport service, they pay Php 45.000/shipment of

6-ton products. The company opted to invest on a refrigerator van and use the RO-RO route. They pay Php 16,000.00/4-ton shipment.

It is thereby proposed that the cold chain logistics scheme based on the Road-RoRo intermodal corridor be adopted for the Panay Bangus Cold Chain Logistics Scheme.

2) Features of Road-RoRo Corridor at Present

The Road-RoRo intermodal transport corridor between Panay and Metro Manila is actually what is commonly referred to as the Strong Republic Nautical Highway or the Western Seaboard of the Road-RoRo Terminal System.

Figure 13.3.4. SRNH Corridor

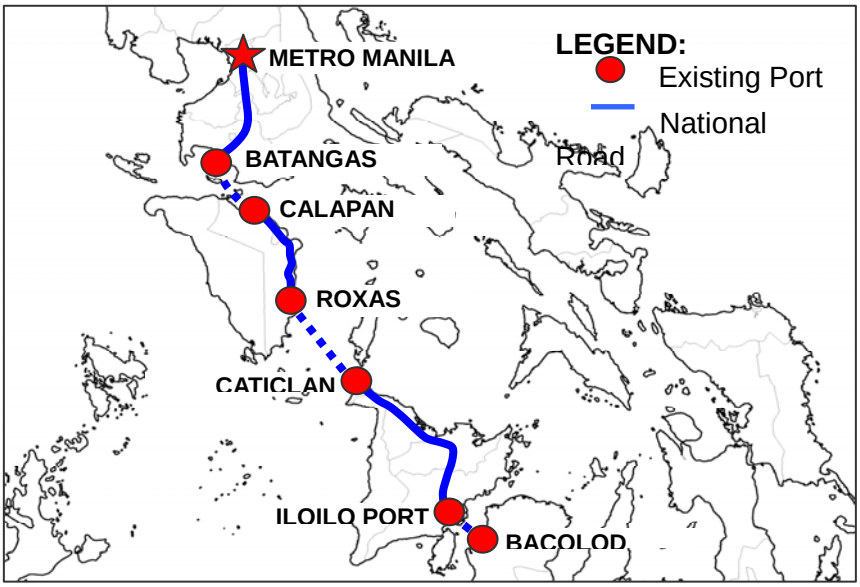


Figure 13.3.5. SRNH RoRo Vessel

Table 13.3.6. Distance and Travel Time by Link

Link	Mode	Distance	Net Travel Time	Remarks
Pasay Bus Depot	Road	20 km	1.00 hour	1.0 hour for boarding
Pasay - Batangas	Road	90 km	3.00 hours	1.0 hour for rest
Batangas - Calapan	Sea	50 km	1.50 hours	1.0 hour for boarding
Calapan – Roxas	Road	110 km	3.50 hours	0.5 hour for off loading
Roxas - Caticlan	Sea	90 km	3.50 hours	1.5 hour for boarding
Caticlan - Iloilo City	Road	220 km	5.50 hours	1.0 hour for rest
Total (Net)		560 km	17.00 hours	6.0 hours for not running
Total (Gross)			23.00 hours	

Table 13.3.7. Distance and Travel Time by Transport Mode

Mode	Distance	Travel Time	Average Speed
Road	420 km	12.0 hours	35 km/hour
RoRo Ship	140 km	5.0 hours	28 km/hour
Total	560 km	17.0 hours	33 km/hour

Table 13.3.8. Schedule of RoRo in Batangas and Calapan

DEPARTURE BATANGAS

Name of Vessel	Time	Lead Time	Day
Ma. Rebecca	1:00 AM	1:30	Daily
Starlite Pacific	2:00 AM	1:00	Daily
Ma. Olivia	2:30 AM	0:30	Daily
Peñafrancia 5	3:00 AM	0:30	T/W/F/Sun
Ma. Josefa	3:30 AM	0:30	Daily
Ma. Natasha	4:00 AM	0:30	Daily
Starlite Nautica	4:30 AM	0:30	Daily
Ferry Kay	5:00 AM	0:30	Daily
Ma. Helena	5:30 AM	0:30	T/W/F/Sun
Starlite Ferry	6:00 AM	0:30	Daily
Ace 1	6:30 AM	0:30	Daily
Colleen	7:00 AM	0:30	Daily
Ma. Angela	7:30 AM	0:30	Daily
Ma. Rebecca	8:30 AM	1:00	Daily
Ruby	9:00 AM	0:30	Daily
Starlite Pacific	10:30 AM	1:30	Daily
Ferry Kay	11:00 AM	0:30	Daily
Ma. Josefa	11:30 AM	0:30	Daily
Peñafrancia 5	12:00 PM	0:30	Tuesday
Stralite Nautica	12:30 PM	0:30	Daily
Ace 1	1:30 PM	1:00	Daily
Ma. Olivia	2:00 PM	0:30	Daily
Ma. Angela	2:30 PM	0:30	Daily
Ma. Helena	3:00 PM	0:30	Daily
Starlite Ferry	3:30 PM	0:30	Daily
Ma. Rebecca	4:30 PM	1:00	Daily
Starlite Pacific	5:30 PM	1:00	Daily
Ma. Josefa	6:30 PM	1:00	Daily
Starlite Nautica	7:30 PM	1:00	Daily
Ma. Natasha	8:00 PM	0:30	Daily
Ma. Isabel	8:30 PM	0:30	Monday
Ma. Angela	9:30 PM	1:00	Daily
Ma. Helena	10:00 PM	0:30	Tuesday
Ruby I	10:30 PM	0:30	Daily
Ma. Natasha	11:00 PM	0:30	Daily
Starlite Ferry	11:30 PM	0:30	Daily

DEPARTURE CALAPAN

Name of Vessel	Time	Lead Time	Day
Ma. Natasha	1:00 AM	1:30	Daily
Angela	1:30 AM	0:30	Daily
Ma. Helena	2:00 AM	0:30	Wednesday
Starlite Ferry	2:30 AM	0:30	Daily
Ruby	3:30 AM	1:00	Daily
Ma. Rebecca	4:30 AM	1:00	Daily
Ruby	5:30 AM	1:00	Daily
Ma. Olivia	6:00 AM	0:30	Daily
Stralite Pacific	6:30 AM	0:30	Daily
Peñafrancia 5	7:00 AM	0:30	T/W/F/Sun
Ma. Josefa	7:30 AM	0:30	Daily
Ferry Kay	8:00 AM	0:30	Daily
Ma. Helena	9:30 AM	1:30	Daily
Ace 1	10:30 AM	1:00	Daily
Ferry Kay	11:00 AM	0:30	Daily
Starlite Ferry	11:30 AM	0:30	Daily
Ma. Rebecca	12:30 PM	1:00	Daily
Colleen	1:00 PM	0:30	Daily
Starlite Pacific	1:30 PM	0:30	Daily
Ma. Josefa	2:30 PM	1:00	Daily
Ferry Kay	3:00 PM	0:30	Daily
Starlite Nautica	3:30 PM	0:30	Daily
Peñafrancia 5	4:00 PM	0:30	Tuesday
Ruby	4:30 PM	0:30	Daily
Ma. Natasha	5:00 PM	0:30	Daily
Ace 1	5:30 PM	0:30	Daily
Ma. Angela	6:30 PM	1:00	Daily
Ma. Helena	7:00 PM	0:30	Tuesday
Starlite Ferry	7:30 PM	0:30	Daily
Ma. Rebecca	8:30 PM	1:00	Daily
Ma. Olivia	9:00 PM	0:30	Daily
Ma. Josefa	9:30 PM	0:30	Daily
Ma. Josefa	10:30 PM	1:00	Daily
Starlite Nautica	11:30 PM	1:00	Daily

Table 13.3.9. Schedule of RoRo in Roxas and Caticlan

Roxas to Caticlan	
Name of Vessel	**Time**
S Voyager	3:00 AM
Maharlika 3	8:00 AM
MV Vanessa	12:00 NN
MV Vanessa	12:00 PM

Caticlan to Roxas	
Name of Vessel	**Time**
MV Vanessa	6:00 AM
S Voyager	9:00 AM
Maharlika 3	3:00 PM
MV Vanessa	6:00 PM

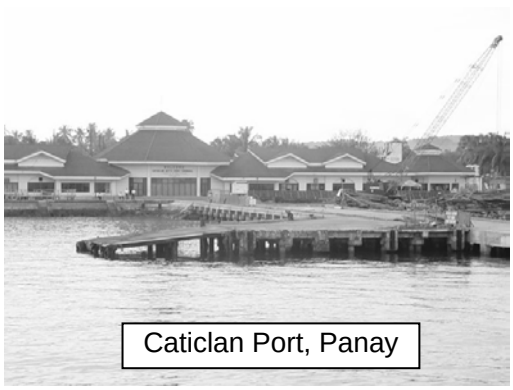
3）Directions for Improving the SRNH (Panay-Batangas)

Based on the field reconnaissance survey, the following weak points in the system are noted:

- The service between Caticlan and Roxas is not very frequent – and it is sometimes difficult to get a space for cargo trucks. Currently, much of the capacity (80%) is being used by busses. At present, there is a good potential for additional ship bottoms, especially a ship dedicated for cargo trucks.
- To improve safety of nighttime operation, it would be necessary to install Aids-To-Navigation, especially at Roxas and Caticlan ports.

Figure 13.3.6. Roxas Port in Mindoro and Caticlan Port in Panay

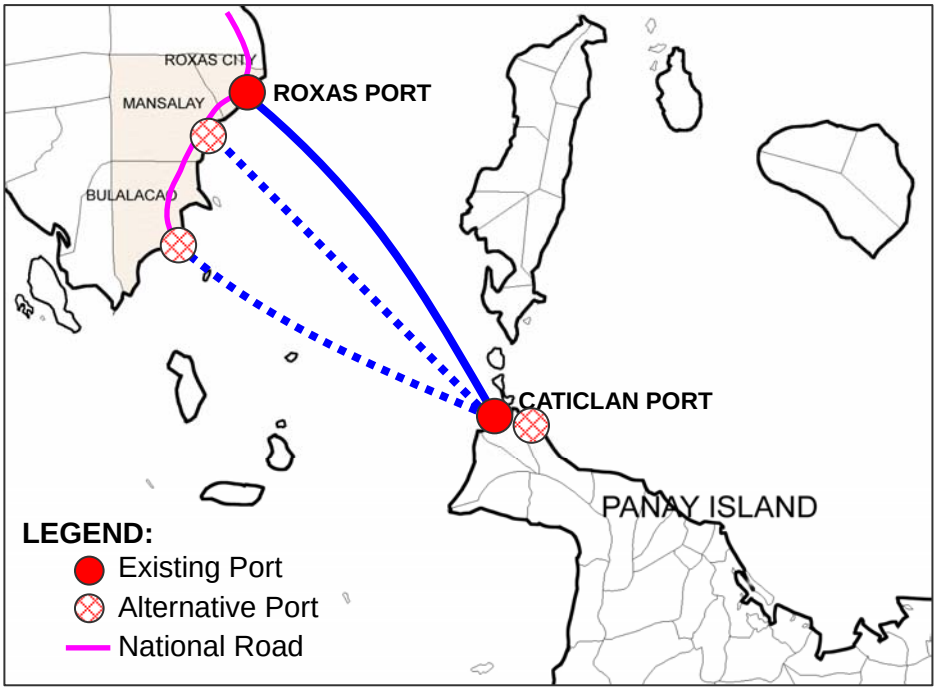

Roxas Port, Mindoro


Caticlan Port, Panay

- Roxas port in Mindoro is problematic for RoRo operation, because it is exposed to open waters and there are times wherein operations are disrupted. Moreover, it only serves the western coast of Mindoro island, and is not well suited to serve the eastern coast (i.e. Occidental Minodoro). There are several options to be considered, including:
  - Transfer of RoRo operation to Mansalay – it is about 15 minutes from Roxas port. It has a suitable port, but RoRo ramps are not available. Unlike Roxas Port, it has calmer waters.
  - Transfer of RoRo operation to Bulalacao – It is southernmost point of Mindoro Island and could serve both the eastern and western coasts of Minodoro Island. Alongside depth is sufficient and water conditions are calm. However roads needs improvement and no port infrastructure at present.
  - Further development of Roxas Port – for example, building of breakwater.
- Similar to Roxas Port (Mindoro), Caticlan Port is affected by wave conditions. It is likewise recommended to strengthen the terminal for Panay island of the SRNH, by considering developing an alternative port along the coast of Unidos,

for example near Tabun Pt. Improvement of the existing port may be considered, but it may be difficult because it is located in front of a channel, thus building of a breakwater may not be feasible.

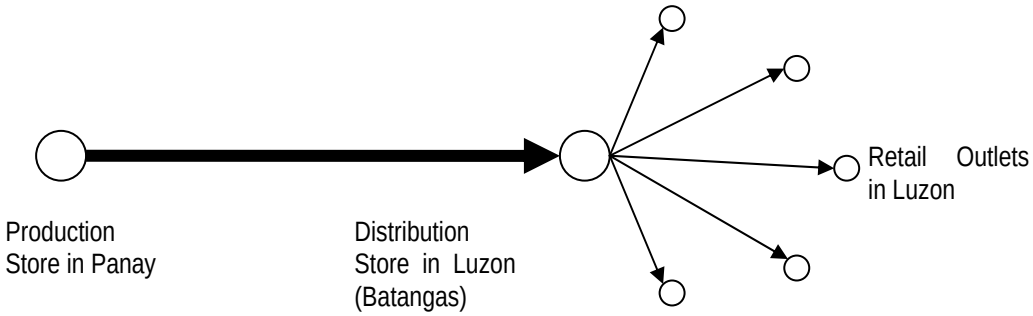
Figure 13.3.7. Alternatives to Roxas Port and Caticlan Port



4) Truck Requirements

It is proposed earlier to develop an 8MT/day capacity Fish Processing Plant. To be able to move products continuously through the SRNH corridor and be able to distribute in Metro Manila the following distribution system is envisaged. It is composed of two components – first is a trunk line shipment via the SRNH from the Production Store in Panay to the Distribution Store in Batangas (Luzon); and, second is a distribution system to deliver to retails outlets in Metro Manila.

Figure 13.3.8. Distribution System



For the main line, the round-trip along the SRNH from Panay to Luzon would require about two days. Thus to be able to ensure stable delivery of products, about 2 units of large sized trucks that are capable of carrying at least 8MT per trip would be required

– taken to have a total capacity of 10MT (with allowance on capacity).

For the distribution system, it is very difficult to estimate to some degree of certainty the needed trucks because of lack of information on the location and order requirements of retail outlets. Nonetheless, it is very roughly estimated that around 5 units of smaller trucks able to carry about 4MT per delivery is required.

Both the 10MT trucks and the 4MT trucks are equipped with reefer capabilities. Because the 10MT trucks have to turn off their engine while at sea – it should be properly insulated to be able to retain temperatures low enough to maintain quality for at least for 4 to 5 hours with the engine turned off.

To summarize, the following are the envisaged trucking requirements:

- 2 x 10MT reefer trucks/plant
- 5 x 4 MT reefer trucks/plant

13.3.4 Cold Store Facility

1) Need for a Cold Store Facility in Luzon

According to Cold Chain Association of the Philippines (CCAP), there are several cold store operators in the country; however the potential for additional capacity is high – not just for fish, but also for meats, fruits and vegetables. According to CCAP, the demand for cold store facilities would be dependent on the realization of cold store facilities – or in other words, there is a strong latent demand for cold storage.

There are several potential locations for investment on cold store, as shown in the sixteen cold chain corridors identified earlier. However for the purpose of the Panay fish processing, a cold store facility at the Batangas area is envisaged as the distribution center because of it being the primary gateway to NCR for the RRTS/SRNH intermodal transport system. In addition, with the wide space available for cold store facilities in Batangas Port, and the lack of space at Manila Port for the same – development of cold store facilities in Batangas Port could actually be strategic not just for RRTS/SRNH but also to direct shipping (i.e. container or Ropax) modalities for mid to longer haul cold chain corridors such as Mindanao-Luzon.

It is estimated that the potential volume of perishable products going into NCR alone from the Visayas and Mindanao are as follows:

Table 13.3.10. Perishable Cargo from Vis-Min going to NCR (MT/yr)

Origin	Live Animals	Fruits and Vegetables	Fish	Total
Agusan del Norte	-	65,386	-	65,386
Capiz	-	-	42,697	42,697
Cebu	17,814	-	-	17,814
Davao del Sur	-	311,090	-	311,090
Iloilo	11,807	12,061	8,860	32,729
Misamis Oriental	78,756	87,550	-	166,307
Palawan	-	-	36,553	36,553
South Cotabato	83,525	99,862	60,895	244,281
Zamboanga del Sur	-	-	41,974	41,974
Total	191,903	575,948	190,979	958,830

Assuming average storage duration is ten days, the required cold store capacity to

handle the entire lot of perishable cargo incoming to Metro Manila would be about 25,000 tons of aggregate holding capacity.

In the first stage, a 1,500 MT capacity is envisaged for Batangas Port – which would be sufficient to accommodate the volume of processed bangus coming from Panay and a share of the perishable cargo going into Metro Manila and Southern Luzon.

2) Low Temperature Logistic Center in Batangas

The frozen products transported from Panay Island to Batangas via RoRo route (SRNH) are temporarily stored in distribution storage. It is difficult to deliver the product constantly to the retailers by large size refrigerated truck for each retailer. Therefore, the collected and stored frozen product is planned to be delivered to each retailer having small cold store by small size reefer van from this distribution storage.

The storage should be located at an appropriate place as close as possible to large consumption area like Metro Manila. This large size cold store would function not only to store the products transported from Panay Island but to store the frozen or chilled products (perishable commodities) produced in Luzon Island and delivered to Panay Island or any island along the SRNH as a backload cargo for reefer van linking Luzon Island and Panay Island. With backload, the transport cost incurred by reefer van can be minimized.

The facility is planned to provide a considerable size of cold store designed to receive and store the frozen products transported to and from Panay Island and Luzon Island via RoRo route (SRNH) can be named as Low Temperature Logistic Center (LTLC). The size of cold store provided to the Low Temperature Logistic Center in Batangas is planned to be around 1,500 tons as explained earlier. The LTLC is composed of 1,000 ton deep freezing storage at -35ºC and 500 tons chilled storage of +4ºC with platform for loading and unloading cargoes. The photo below shows the image of distribution store of similar size discussed in preceding paragraph. Figure 13.3.11 illustrates the general layout of Low Temperature Logistic Center in Batangas. The cold store of this type employs the prefabricated sandwiched insulation panel and constructed on RC floor with insulation material as well as ventilation pipe beneath the floor as shown in the photo below.

Figure 13.3.9. Distribution Store

Figure 13.3.10. Section Plan of Cold Store

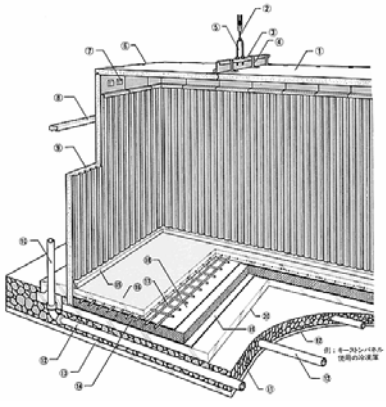
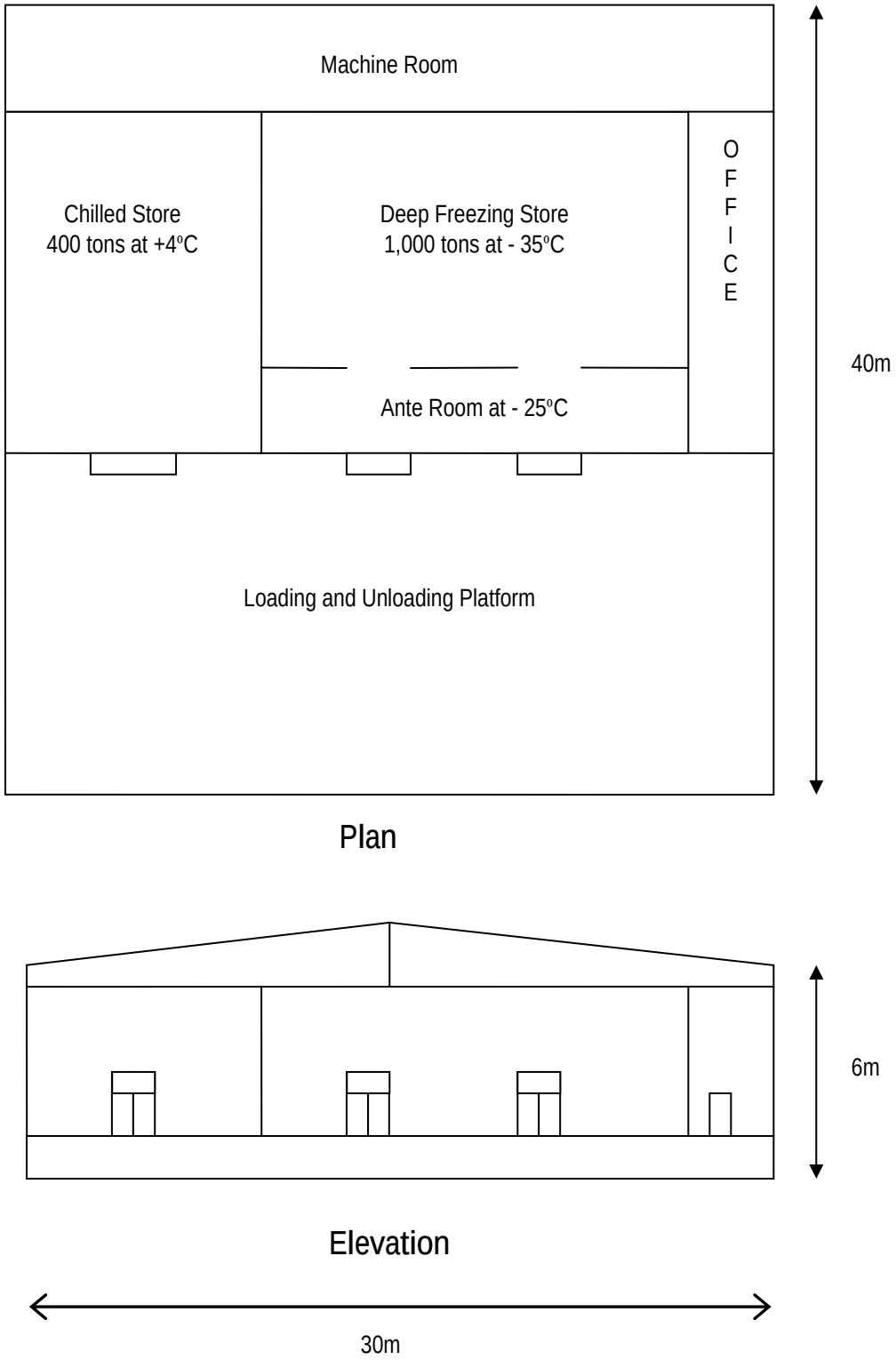


Figure 13.3.11. Layout Plan of Low Temperature Logistic Center



3）Development of Cold Store Capabilities in Retail Outlets

As earlier explained, for processed bangus potential to be developed from a market share of currently only 0.6% of total bangus sales to 7.7% as observed in grocery stores – it is crucial that cold store facilities be developed at public markets.

It is estimated that in Metro Manila alone, there are about 34 large scale public markets and 103 small to medium scale public markets, all of which do not have the cold store facility to be able to keep and sell processed bangus products envisaged for Panay. In addition, small to medium sized groceries could likewise have their cold store facilities installed to be able to retail processed bangus.

As a rough estimate, it is envisaged that about 150 units of cold store units are needed to be installed at various retail outlets for processed bangus. Such cold store units will not only serve processed bangus, but also other perishable commodities.

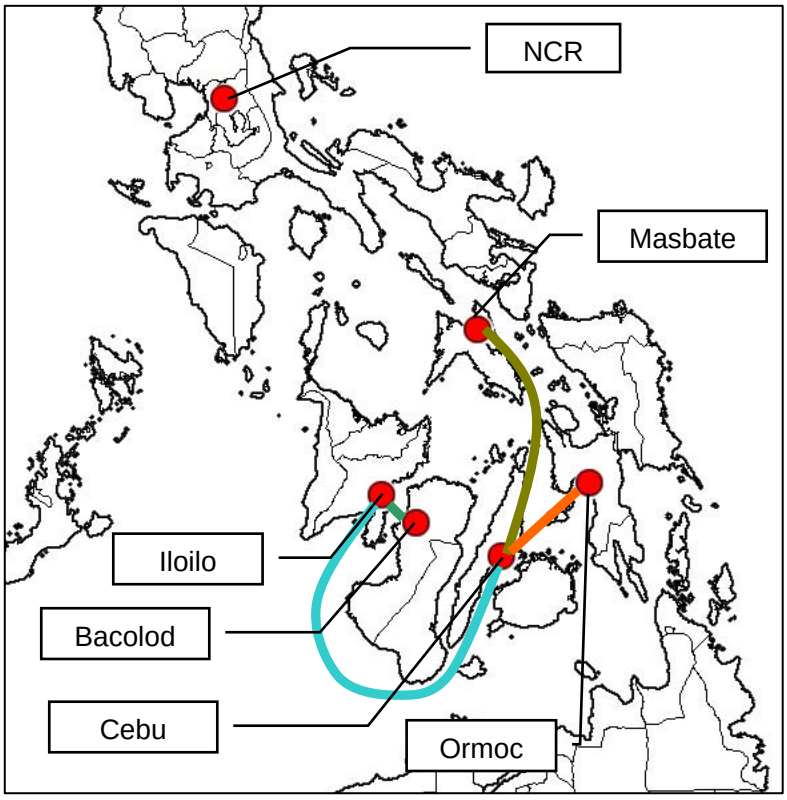
13.3.5 Transport Conditions of Potential Market Corridors in the Visayas

The potential market corridor for Panay processed bangus does not only cover the Panay-Southern Luzon-Metro Manila Corridor as shown in an earlier section. It also includes the following corridors:

- Panay – Central Visayas (e.g. Cebu)
- Panay – Other parts of Western Visyas (e.g. Bacolod)
- Panay – Bicol Region (e.g. Masbate)
- Panay – Eastern Visayas (e.g. Ormoc)

The following Figure illustrates the level of maritime transport service for Panay processed bangus to reach potential market areas. It is very apparent that the linkages with market areas in the eastern regions of Visayas are very weak – requiring transit in Cebu, thus it is very expensive and lengthy. Strengthening of maritime linkages to these areas are issues that need to be further addressed.

Figure 13.3.12. Accessibility of Potential Markets Areas in the Visayas



13.3.6 Panay Processed Bangus Cold Chain Project Components

As a summary the following are the project components of the Panay Processed Bangus Cold Chain Project and their indicative cost. It should be noted, that the investment are composed of core investment (for the sole purpose of the project); cold store support facilities (for the purpose of cold chain in general); and, transport support facilities (for the general purpose of trading between Panay and Luzon).

Table 13.3.11. Outline of the Project Package

Components	Units and Costs	Remarks
A. Core Investment		
Fish Processing Plant (FPP)		
Total number of FPP by 2015	**2 units**	
Output of processed, frozen fish	8 ton per day	2,400 tons per year
Output of fish meal	1 ton per day	300 tons per year
Capacity of contact freezer	1 ton per 1 hours	-55ºC contact freezer
Cold Store for Product	100 ton	-35ºC
Fish meal plant Capacity	2 ton per day	Raw material weight
Capital investment required per unit	US$ 2.5 million	
Total capital investment by 2015	**US$ 5 million**	
Refrigerated Truck (10 tons)		
Total number of 10 tons refrigerated truck	**4 units**	2 units for each plant
Particulars of 10 ton refrigerated truck	-25ºC	
Capital investment per 10 ton ref. truck	US$200,000 per unit	
Total capital investment by 2015	**US$ 0.8 million**	
Refrigerated Truck (4 tons)		
Total number of 4 tons refrigerated truck	**10 units**	For DCS, 5 units/plant
Particulars of 4 ton refrigerated truck	-25ºC, +4ºC	Two compartment
Capital investment per 4 ton ref. truck	US$ 80,000 per unit	
Total capital investment by 2015	**US$ 0.8 million**	
B. Cold Store Support Facilities		
Distribution Cold Store (LTLC in Laguna)		
Total number of DCS	**1 unit**	NCR
Storage capacity	1,500 tons	For 10 days
Capital investment required	US$ 3 million	
Total capital investment by 2015	**US$ 3 million**	
Retail Storage		
Total number of Retail Storage	**150 units**	
Total Capital Investment by 2015	**US$ 1.50 million**	
C. Transport Support Facilities		
RoRo ship		
1,000 GT RoRo Vessel	**1 unit**	12 unit of 10 ton truck
Capital investment by 2015	**US$ 3.0 million**	
Improvement of RoRo port		
Improvement of Southern Terminal of Mindoro and Northern Terminal of Panay for SRNH	Undetermined	For future study
Capital investment by 2015		
Navigation Aid for RoRo ferry		
Set of buoy, beacon, etc.		
Capital investment by 2015	**US$ 1.0 million**	
A. Core Investment	**US$ 6.6 million**	
B. Cold Store Support Facilities	**US$ 4.5 million**	
C. Transport Support Facilities	**US$ 4.0 million ++**	
Total Capital Investment Amount by 2015	**US$ 15.1 million**	**Equiv. 830 mill. pesos**

13.4 Operation and Management Plan

13.4.1 Operation and Management

The cold chain system is comprised of processing plants, cold stores, and transport means of chilled or frozen product. In this study the cold store at transport origin is incorporated into the fish processing plant and the transport means is through trucking by refrigerated trucks using RoRo through the SRNH route. The probable management entities of these components are tabulated in Table 13.4.1.

The financial capability of local companies in Panay Island is weak and most of local enterprise falls under the classification of small and medium size enterprise (SME). The initiative of promoting the development of fish processing plant aiming to maximize the added value generated locally is better to be undertaken by relevant local government unit (LGU). Financial viability of the Project is examined based on three cases. The scheme wherein the LGU will provide the FPP in total and lease this FPP to the private operating company is judged as the best mode of operation of FPP in view of financial return and easier way of management taking into consideration of local conditions. Table 13.4.1 shows the operation and management plan of cold chain.

Table 13.4.1 Operation and Management Plan of FPP

Component	Operation Entity	Remark
Fish Processing Plant (Production Store)	LGU initiated private company formed with various local companies including bank and insurance company	Cold store is incorporated in Fish Processing Plant. Ice making plant is added where it is necessary.
Refrigerated Trucks	Private trucking company	Or owned by Fish Processing Plant Operating Company
RoRo ship	Private shipping company plying two islands	RoRo routes are Batangas – Calapan and Roxas (Oriental Mindoro) – Caticlan (Panay Island)
Cold Store (Distribution Store)	LGU initiated private warehousing company formed with Panay's private companies or Manila based private warehousing company which include RoRo operator in Batangas.	Capacity of cold store is sufficient to store 15 days delivery of frozen products from Panay Island (i.e. 60 tons per day x 15 days = 900 tons or 1,000 tons at - 25°C)
Marketing Company	LGU initiated private trading and marketing company for sale and distribution of products made in Panay	Perishable commodities (i.e. frozen chicken, frozen meat, fruits and vegetables, etc.) as backload to be arranged.

13.4.2 Total Plant Lease System

The total necessary facilities including buildings, plants, and infrastructure composing various necessary facilities (i.e. land, connection with utility sources, liquid and solid waste treatment unit, etc.) for operation of the plant is proposed to be leased out to the private operation company who commensurate with the operation and management of the proposed plant or the private company organized under the leadership of concerned local government unit. In such way, the project can be financed out under current conditions of institutional financing.

13.4.3 Potential Financial Source

At present, DBP-SLDP provides an entire financial support to cold chain development such as processing plants, distribution centers and transport equipment. The outline of this program loan is summarized in Table 13.4.2.

Table 13.4.2 Outline of the SLDP

Objectives	PHP billion	US$ Mil.
Road-RoRo Terminal System (RRTS)	7.4	134
Improvement of RoRo (90 units)	4.0	72
Development and improvement of RoRo ports	3.5	63
Cold Chain	16.0	290
Marketing and processing plants (16 locations)	8.0	145
Collection and distribution center (500 locations)	3.0	54
Transport equipment with refrigeration function (500 units)	5.0	90
Bulk-chain	6.5	119
Construction of collection and processing plant (12 locations)	2.5	45
Construction of bulk-terminal and transport equipment (12 locations)	4.0	74
Total	30.0	545

Source: DBP

13.5 EVALUATION

13.5.1 Indicative Economic Benefit of Processed Bangus Cold Chain Project

The quantitative direct economic benefit of the project is not easy to estimate due to lack of data and information. However, indirect economic benefits can easily be implied are as follows:

- Continued access of Panay bangus to profitable markets in Metro Manila and Southern Luzon (at least 2,400 MT/yr of processed bangus on the first year)
- Increased added value (45 pesos per kg of added value equals to 108 million pesos per year in the first year)
- Increased direct employment opportunities (80 employees per plant – 160 jobs in total)
- Multiplier effects related to investment for plant operation.
- Potential dollar earnings from export
- The project will stimulate the promotion of cold chain system which ensures the added value to the rural economy throughout the country where such system is applicable in view of financial viability.

Table 13.5.1. Estimated Added-value on Processed Frozen Bangus

ITEM	Price/kg
Bangus (at source)	62
Processing price	34.28
Ex-Factory Price	96.28
Expected Transport Cost (Manila)	4.58
Metro Manila (Processed)	150
Metro Manila (Fresh)	90
Sales Margin of retailer (Processed)	53.72
Sales Margin of retailer (Fresh)	23.42

Under current marketing structure of fresh fish from Panay Island (rural production area) to Metro Manila (major consumption area) no economic value added is left to the producer and fisher folks. Most of the profit is enjoyed by traders and the margin earned by traders is not known clearly to the fisher folks. There is no confidence between traders and fisher folks or marine product producers. This hinders the modernization of local fishery industry. However, the proposed project would be able to distribute income derived from the project in equitable and fair means. The probable income to key players concerned to the project can be summarized as shown in Table 13.5.2 as an example. As shown in this table, the derived income can be distributed almost evenly to all players for operation of the cold chain based on fish processing plant operation proposed hereto.

Table 13.5.2. Projected Income Distributions

(Unit: Peso per kg)

Key Player	Sale Price	Income	Current Price
Fisher folks	80	20	60
Processors	115	35	
Transporters	135	20	
Retailer	170	35	

13.5.2 Financial Analysis for Integrated Fish Processing Plant (FPP)

Assumptions: The presumption to compute analytic indicators for the financial viability of the proposed project is tabulated in Table 13.5.3.

Table 13.5.3. Presumption of Analysis on Financial Viability

Items	Conditions	Remarks
Production Capacity of Frozen Fish	8 ton per day	
Production Capacity of Fish Meal	1 ton per day	
Number of Working Days	300 days per year	
Total Initial Capital Investment	US$ 2,000,000	Whole plant except tools
Total Initial Capital Investment	US$500,000	Tools for fish processing
Debt and Equity Ratio	8 : 2	
Project Life	15 years	
Period of Depreciation	15 years	
Residual Value at Terminal Year	10 %	
Depreciation Ratio	14.2 %	
Loan Period	10 years	
Grace Period of Repayment	1 year	
Bank Interest	10 %	

The computation of financial viability indicator such as FIRR is conducted for three cases as:

A. One private entity own, operate and manage Fish Processing Plant;
B. Concerned LGU invest and own a Fish Processing Plant which is to be operated and managed by private entity, as a lessor:
C. Private entity pay annual lease amount to LGU, operate and manage the Fish Processing Plant as a lessee.

The result of computation for financial viability indicators is as shown in Table 13.5.4.

Table 13.5.4. Result of Financial Analysis on Fish Processing Plant (FPP)

Mode of Operation	Case-A Totally by Private Operator	Case-B Private operator invests only for fish processing tools.	Case-C Plant except fish processing tools is leased out to private operator.
FIRR (Before Tax)	15.0 %	12.5 %	12.5 %
FIRR (After Tax)	13.3 %	11.7 %	11.1%
Capital Investment	US$ 2.5 million	US$ 0.5 million	US$ 2.0 million
Price in Show Case	Peso 166/kg	Peso 166/kg	
Ex-factory Price	Peso 113/kg	Peso 113/kg	
Raw Material Price	Peso 80/kg	Peso 80/kg	
Annual Leasing Fee			US$ 340,000

Note:
1) Current price in showcase in major supermarket is Peso 240 - 300 per kg or Peso 60 - 75 per 250g vacuumed plastic bag.

13.5.3 Financial Analysis for Low Temperature Logistics Center (LTLC)

The presumption to compute analytic indicators for the financial viability of the proposed project is tabulated in Table 13.5.5. The result of computation for financial viability indicators is shown in Table 13.5.6.

Table 13.5.5. Presumption of Analysis on Financial Viability for LTLC

Items	Conditions	Remarks
Storage Capacity for Frozen Product	1,000 tons	100 tons for 10 days
Storage Capacity for Chilled Product	500 tons	50 tons for 5 days
Number of Working Days	300 days per year	
Total Initial Capital Investment	US$ 3,000,000	
Debt and Equity Ratio	8 : 2	
Project Life	15 years	
Period of Depreciation	15 years	
Residual Value at Terminal Year	10 %	
Depreciation Ratio	14.2 %	
Loan Period	10 years	
Grace Period of Repayment	1 year	
Bank Interest	10 %	

Table 13.5.6. Result of Financial Analysis on Low Temperature Logistics Center (LTLC)

FIRR (Before Tax)	15.0 %
FIRR (After Tax)	11.3 %
Capital Investment	US$ 3.0 million

13.5.4 Conclusion of Financial Analysis

As shown in Table 13.5.4 for FPP and Table 13.5.6 for LTLC, the Financial Internal Rate of Return (FIRR) is more than bank interest rate for loans and within the attractive ranges of returns on investment on commercial basis in the Philippines. Thus both projects are considered to be feasible on conditions that the assumed conditions are realized and transportation infrastructure is provided in an acceptable conditions for transportation of refrigerated products.

13.6 CONCLUSION AND RECOMMENDATIONS

13.6.1 Conclusion

- The proposed project is considered to be financially feasible under given conditions for the computation of the financial viability discussed above. The best scenario is that the LGUs initiate the project and establish the fish processing plant of integrated nature through the utilization of available institutional financial system and lease it to a qualified private fish processing operator. In this way the operation of a number of fish processing plants will be made possible in Panay Island by 2015 and it will enhance the domestic shipping along the RoRo route between Iloilo and Batangas.
- Due to the implementation of the establishment of cold chain between Panay Island and Metro Manila, a considerable added-value can be generated and constant income of fisher folks as well as processing workers will be realized in the future due to the implementation of the project.
- The establishment of cold chain is eligible to be financed through existing institutional financing scheme designed to improve the domestic shipping sector.

13.6.2 Recommendations

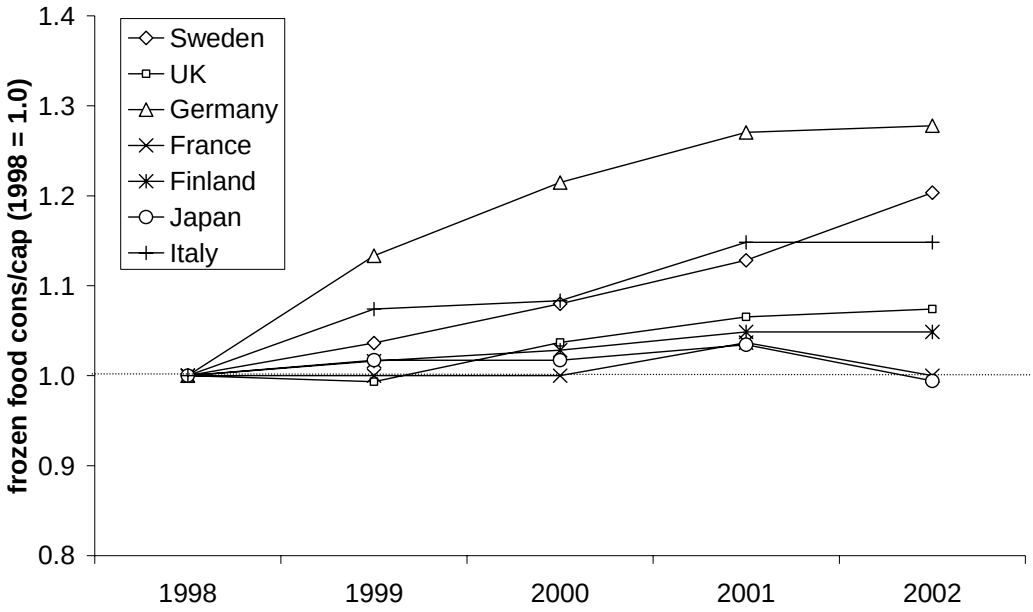
- **Enhancement of the Fish Processing Industry in Panay Island-** Although it requires a number of improvements in facilities, scheduling, transport capacities, safety, etc., the RoRo service is available at present between Panay Island and Metro Manila or Batangas. Therefore, it is recommended to establish a fish processing plant as transport origin for frozen product (e.g. deboned, vacuum packed, frozen bangus) with a production capacity of 10 tons per day in raw material weight so as to stimulate the local economy and realize the production of value added products.
- **Establishment of Low Temperature Logistics Center in Batangas Port-** The establishment of Low Temperature Logistics Center as distribution store is necessary to maximize the effects of cold chain system.

13.6.3 Critical Factors

Marketing of Frozen Processed Goods: As indicated before, current share of processed bangus sales is less than 1% of total bangus sales in Metro Manila. The financial viability of the proposed cold chain and processing plants depend on the realization of a higher market share of processed bangus. Based on the market survey – the share of processed bangus could be as high as 8% under certain conditions, and the viability of the proposed project will be hinged in the realization of this market share.

Based on experiences from other countries it is quite reasonable to assume that at the very least the market share of processed and/or frozen products will be increasing in the future.

Figure 13.6.1 Growth in Frozen Food Consumption in Selected Countries



Source: Japan Frozen Food Association

Table 13.6.1. Market Potential for Frozen Fish in Selected Countries

Country	Frozen Food Consumption
Spain	* Frozen food represent 8% of total food consumption * For fish consumption – frozen fish represents 12.5% of total fish consumption. * Frozen ready-to-eat fish consumption is increasing. Source: USDA (2003)
Japan	*Frozen food represent 4.5% of total food consumption Source: Japan Frozen Food Assoc.
Australian	* Frozen fish consumption is increasing 5% per annum Source: Quick Frozen Foods International (2003)
UK	* Frozen fish accounts for 36% of total retail sales in 2003 Source: (UK) Fish and Fish Markets Report (2004)

However, increase of market share of processed bangus will not increase naturally – without the improvement of cold chain facilities as well as marketing. Currently sales of bangus are mostly in public wet markets. Public wet markets do not have the cold store facilities to be able to keep an inventory of processed bangus. This is a major hindrance in the marketing of processed bangus – and of other frozen and chilled food products. For example, chicken and meat products companies indicate that their sales in public wet markets are about 50% of their total sales. Thus improvement of cold store in public markets, not only affects the Panay Processed Bangus project, but likewise other cold chain development projects.

Ancillary Business Development: Another critical issue is the development of ancillary business to support the high cost of processing. In the Panay Processed Bangus project, the development of fish meal production is emphasized, because of the high

cost of processing it is vital that efficiency is realized in processing plants to bring down costs and ultimately retail price of products.

This not only concerns this project but likewise other cold chain development projects. For example, interviewed swine traders in Mindanao indicate that even though per unit price of dressed meat is higher and may involve cheaper per unit transport cost than live animals; bottom-line profits are lower – because dressed meat leaves residue weight which have no market. It was pointed out that development of ancillary businesses such as hotdog factories are important to improve profitability of transporting dressed meat rather than in live form.

Supporting Transport and Storage Infrastructure: Unlike specialized cargo shipping, such as tanker and bulk shipping, cold chain projects do not generate enough volume to be able to justify investment on specialized vessels. Nonetheless, improvements in transport are vital to ensure that not only products are delivered at lower costs, but also are delivered in time and consistently. In the case of Panay Bangus Processing Project investments in port improvements and vessels are vital, but could not be justified based on frozen goods demand alone.

An analogous situation exists for cold store facilities. The cold store facility would not be viable when it deals with a single commodity. Only with the combined volume of several frozen/chilled commodities will the cold store be viable.

In the same vein, the management of backhaul cargo would be able to improve the load factor of vessels and trucks, as well as, cold stores.

Thereby, an integrated perspective is needed to be able to improve viability of supporting infrastructure and storage facilities. This means bringing together various stakeholders from varying industries to together. The role of the public sector is thereby crucial.

Expansion of Geographic Market: An issue that is specific for Panay Processed Bangus is the threat of competition from Northern Luzon suppliers. In particular is the proposed Dagupan Bangus Processing Plant – which reportedly would have a capacity of 16MT/day. The implementation of this processing plant would therefore constrict sales of Panay Processed Bangus in Metro Manila. However, the implementation of this plant is still unclear – with detailed plans yet to be done and funding is yet to be laid out.

At any rate, the Panay Bangus should look into other markets, such as, Southern Luzon, Bicol Region, Eastern Visayas, Central Visayas and Western Visayas. The major problem identified is the difficult access to the Bicol Region and Eastern Visayas. Improvements in shipping service are needed before Panay Processed Bangus can penetrate these markets.

14. FOSTERING PROGRAM FOR NMEC

14. FOSTERING PROGRAM FOR NMEC

It is deemed a challenging and rewarding way for NMEC to exercise an alternative ship finance scheme. NMEC was just created with limited staff and experience. Therefore the Study Team employed a unique approach in the course of the services. This is co-works with NMEC personnel on activities, including field surveys such as the Central Nautical Highway and PT. PANN Indonesia, learning sessions and a workshop, and formulating this fostering program. The Study Team also conducted a workshop among the different stakeholders. During the workshop which was held on August 19, 2005, the results of the study as well as different issues regarding the matter were discussed. The summary of what transpired during the workshop are presented in appendix 9.1. This chapter includes the following sections: background (14.1); exploration of NMEC's expected roles and tools (14.2); design of operational guidelines (14.3); and technical guidelines (14.4); business scale expansion in terms of organization and funding (14.5); and financial analysis of the proposed NMEC fleet leasing plan (14.6); and a framework of the proposed program (14.7).

14.1 Establishment of NMEC

1) Legal Base

National Development Company (NDC) is the business development arm of the government through the Department of Trade and Industry. The company is mandated under Presidential Decree 1648 (NDC Charter) to "promote, overall economic development through assistance to commercial, industrial, agricultural or mining ventures". Specifically, the company is mandated to:

- Undertake developmental projects, with specific reference to Section 4 (1) and 916 of NDC Charter as legal base;
- Embark on the divestment of its shareholdings; and,
- Operate or monitor the performance of those companies to maximize NDC's investment return.

2) Business Environment and Process to its Establishment

Due to the unfavourable and adverse economic and financial conditions from the late 1990s and up to the present time surrounding domestic shipping and related maritime industry in the country, NDC has come to the understanding that the industry's availability of financial resources for investment funds has been constrained, specifically due to:

- Continued slowdown in the economy and the rapid deterioration of the local currency has led to prohibitive prices of both new and second-hand vessels relative to the Peso budgets of ship owners and operators; and,
- Limited ability of targeted borrowers in meeting equity and collateral requirements of policy-based lending programs such as DSMP II despite its preferential treatment for small and medium shipping enterprises.

With a vision to spearhead the government's efforts and create a corporate vehicle that will address the need for a sustainable long-term financing scheme for the shipping sector, and specifically for the mobilization of funds available under the on-going DSMP II aiming at domestic vessel fleet modernization, NDC had been pursuing the process of creation of NDC Maritime Equity Corporation (NMEC). The creation of the entity is not entirely new but transforming the original registration of a government owned and controlled corporation (GOCC) called NATIONAL ALCOHOL

CORPORATION to a Ship Financing Company. The schedule of operationalization of NMEC is as follows:

- SEC registration (March 2005)
- Organizational set-up (May 2005)
- Preparation of business plan and the first sub-loan agreement with DBP (September 2005)
- Official launching of ship leasing business (October 2005)

3) Corporate Objectives

NMEC rationale and two initial offerings are as follows:

NMEC is to engage in the business of domestic, interisland or coastwise shipping by owning, managing, leasing, selling or through other finance-related transactions such as but not limited to sale-leaseback arrangements, hire-purchase arrangements and other lease financing schemes for all kinds of equipment, machinery, facilities, and maritime vessels for the carriage of passengers, cargo, vehicles and merchandise.

Specifically, the company will initially offer (1) lease-to-own financing scheme of RORO vessels to RRTS shipping service providers in order to increase safety, efficiency and affordability; and, (2) contribute to the upgrading and modernization program of the maritime industry in the Philippines.

The Mid-term Philippine Development Plan 2004-2010 describes NMEC as follows:

“A Maritime Equity Corporation of the Philippines will be established to provide support to the full implementation of the Road-RORO Terminal System through the acquisition of modern RORO vessels to be leased to qualified operators under a lease purchase agreement.”

Therefore it is unanimously recognized that NMEC is going to deliver RORO vessels to shipping operators as its main task during the inception period.

4) Ship Leasing Conditions

For commencement of the NMEC operation, basic leasing conditions are tentatively determined as of August 2005 as shown in Table 14.1.1.

Table 14.1.1. NMEC Ship Leasing Conditions

Items	Conditions
Eligible Lessee	• Filipino Citizens • Local Government Units (LGUs) • Domestic corporations (at least 70% Filipino owned)
Eligible Purposes	Eligible lease purpose shall be project-related and shall include acquisition of vessels, port facilities and equipment. Vessels already registered and operating in the Philippines are not acceptable in as much as it will not result to additional bottoms. Age of vessels should not go beyond 15 years. Vessels over 15 years may be qualified unless a classification society certifies that it is willing to accept the vessel despite the age.
Lease Terms	• Minimum lease term: 3 years • Maximum lease term: 15 years • Amortization: Monthly • Lease Deposit: 10% of vessel cost • Other terms: Advance payment equivalent to two months lease amortization NMEC will offer flexible lease financing structure and reasonable transaction costs on certain routes considered as missionary and developmental.
Insurance	Hull and Machinery, Protection and Indemnity Insurance Policy endorsed in favor of NMEC should be obtained. Such insurance will have to be in effect for the duration of the lease.
Project Monitoring	NMEC shall closely monitor technical and financial aspects of the lessee's operation. It shall also regularly check lessee's compliance to lease covenants/agreement with NMEC. Project status report shall be prepared regularly or as required under the lease agreement.
Eligibility Requirements	Project's eligibility for financing shall be assessed by the NMEC team of external consultants and internal credit officers. Prior to credit evaluation, a project brief should be submitted to NMEC for eligibility clearance. Suggested outline of the project brief is as follows: • Brief history of the company • Present status of the company • Owners, management and staff • Major assets and financial status • Existing operations and market • Company proposed project • Modernization aspects and development impact of the project • Projected market and marketing strategy • Description of selected mode of operation • Projected income statement and cash flows • Facilities/equipment to be acquired and project timetable • Additional management and staff to be hired • Trainings and preventive maintenance to be adopted • Amount of financing required and purposes of financing • Layout and development plans/ship drawings if any
Further Project Justification	Once a project has been considered eligible for financing, detailed project feasibility study and drawings should be submitted by the lessee to NMEC.

Source: NMEC Business Plan (October, 2005)

14.2 Expected Performance 2006-2015

(1) Expected Roles

Historically an alternative ship finance institution was introduced by JICA experts attached to MARINA particularly after the Asian Financial Crisis because of DSMP's slow disbursement issue.[1] The alternative scheme to ordinary loan finance based on collateral is characterized as no collateral requirement and more involvement in the financed ship from construction to operation phases. Therefore the alternative scheme needs a professional institution to manage shipping.

After several years for internal research and discussions in and around MARINA, DBP took action to conceptualize a Maritime Equity Corporation and suggested NDC to establish it. Although DBP's pressing concern is to increase ship investment for RRTS development, other countries' experiences demonstrate that the alternative ship finance scheme can take a leading role in domestic fleet development, like in Japan and Indonesia (refer to Column 14-1 and 14-2).

The Study observed that RRTS development deserves priority since the coordinated system development efforts of ports, access roads and shipping are weak; butthe combination of short-distance RORO and highway enables competition with direct shipping and provides safe and reliable shipping services to islanders. At the same time, the Study observed other critical development problems, as follows:

- There are still 1,604 wooden-hull banca boats engaged in inter-island and coastwise liner shipping;
- Aging vessels with poor seaworthiness are widely observed regardless of ship types and service areas. Middle to long-distance Ropax fleet (95 vessels with 361 thousand GT), the core fleet of liner shipping, is 31 years old in average;
- Container shipping use old and small vessels between poorly developed ports and thus it can't show a scale merit of unitized service;
- Dry bulk shipping has not been introduced along the long-distance routes such as Luzon – Mindanao. Many of domestic products are disadvantaged to be competitive against imported products.
- The tanker industry has fleet shortage and quality problems;
- Regardless of size, almost all shipping operators face difficulty in vessel acquisition due to inadequate financial support and a dried-up second-hand market;
- In this sense, existing vessels must be treated as priceless assets. However, operators' ship management is poor and the IACS services cannot ensure fleet quality in many cases; and,
- Finally, limited practices in local shipbuilding discourage sipping companies to hold brand new tonnage.

Therefore the necessity of an alternative ship finance scheme has been increasing for shipping companies, shipbuilders and even ordinary financial institutions in order to address the present predicaments. It is quite the right time for NDC to establish MEC.

The Study recommends NMEC take three important roles for domestic shipping development. They are:

- Urgent replacement of aging vessels and modernization of domestic fleet;

[1] For instance, one JICA contribution was "A Pre-Study on the Establishment of Maritime Equity Corporation in the Philippines" submitted to MARINA in January 2002.

- Provision of new shipping tonnage and services through public private partnership in ship finance, building and operation; and,
- Support of small to medium operators to meet local shipping needs.

(2) Potent Tools

Although there is no practice in the Philippines, theoretically NMEC is endowed with potent tools to meet the expected roles. They are (i) ship leasing without collateral, (ii) collective deal as a large shipowner, and (iii) technical assistance particularly to small to medium shipping companies.

1) Ship leasing

Lease is defined as renting equipment and facilities on hire to be used exclusively by a corporate for comparatively a longer time. While in rental business, general-purpose object is rented on hire to unspecified number of users temporarily, in leasing on the other hand the object with a particular purpose is let out on hire to a specific user for a long time. In investment, a corporate may procure the objects by buying them with their own reserved fund or financial resources borrowed from outside, but procurement through lease may be another option. There are two types of lease: financial lease and operating lease. When SMEs procure equipment and facilities including vessels through lease, they can expect the following benefits over investments financed by other means such as bank loans and self-financing.

Under financial lease contract, rescission before maturity is not allowed because full-payout principle is applied, provided that almost the whole procurement cost and related expenses and charges are repaid in lease charge. The lease finance company does not accept rescission before maturity under financial lease contract since they expect to collect the whole cost and expenses associated with the investment in the payment of lease charge. Therefore, financial lease has nearly the same economic function as lending money for the investment, but it is legally provided as a rental contract.

Operating lease, on the contrary, is based on the premise that full-payout of all costs and expenses is not accomplished. Under the contract, lease charges are calculated with due consideration to residual value, and not based on the assumption of repayment of total cost and expenses. Period of lease contract is shorter than financial lease. Rescission before maturity is allowed in some contracts. Objects for lease are general-purpose goods and market for re-selling of those goods needs to be developed.

Advantages of taking to the lease are as follows:

- Big amount of money is not necessary at the onset of an investment, because the whole costs and expenses are divided equally in lease charge over the economic life of the object;
- No real estate collateral requirement;
- Faster processing time and less documentation on taxes and depreciation;
- Effective for inflation-hedging; and,
- Ideal for the availment of the latest model of equipment, and the case of operating lease avoiding product obsolescence,

Consequently, financial lease has the following advantages over bank loans:

- Investment is possible without using credit lines given by their banks;

- Lease charges are booked as eligible expenses in their entirety, whereas only payment of interest out of the whole debt service is booked as eligible expense for tax purpose: and,
- Cost of the object of investment may be included in expenses to be paid in a period of the financial lease contract that may be shorter than the relevant statutory depreciation period, whereas depreciation is allowed only in accordance with the statutory process and period if the object is procured outright.

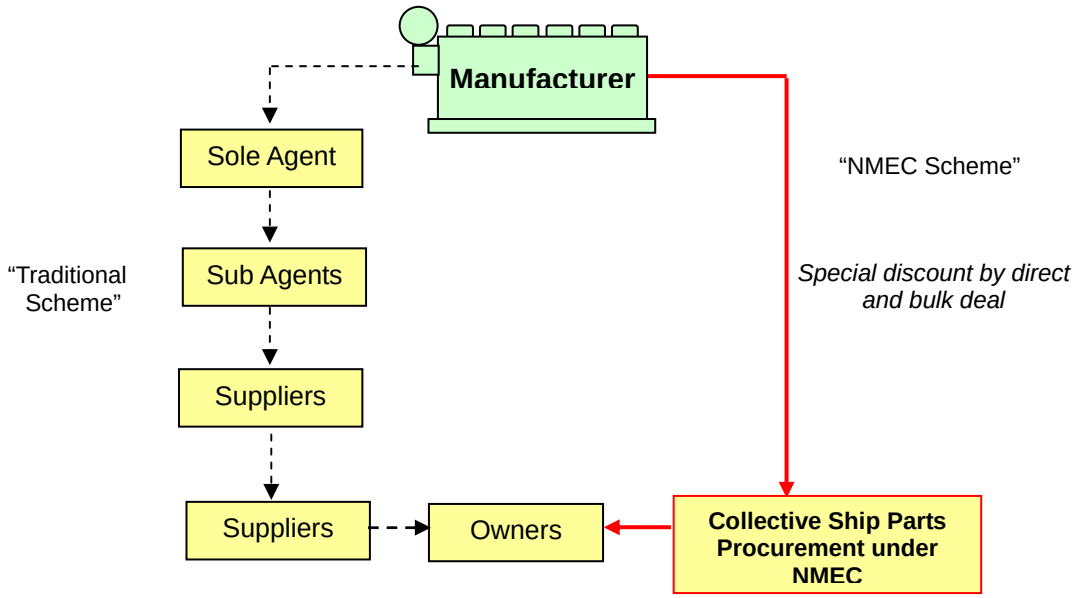
2） Collective deals

Collective deals with shipyards and marine insurers can reduce building and repairing costs and charges, as well as, arrange other favourable conditions such as docking schedule and scheduled ship delivery. It is possible for NMEC, when it becomes a large shipowner and such package deal arrangements can benefit NMEC lessees.

The possible merits of collective deals as a large shipowner covers aspects in marine insurance, spare parts supply and standardized shipbuilding as follows:

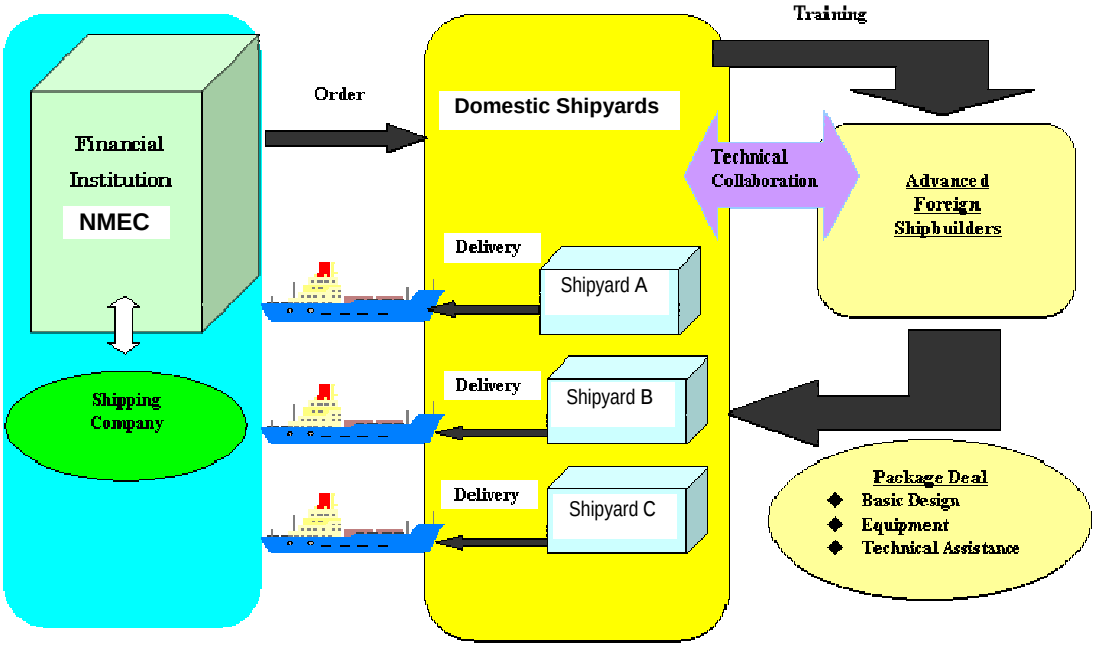
- **Marine insurance (hull and P&I club)**: A premium rate is determined based on the fleet under the control of a shipping company. That means if fleet size is large, the insurance cost could be reduced. Thus even if one insurance claim is made for the compensation for a marine accident, the insurance company could readily absorb the loss.
- **Spare parts supply:** If NMEC exploits a direct channel to the manufacturers of main machineries (main engine, propeller & propeller shaft, main generator, navigation equipment, etc.) for NMEC new vessels, NMEC lessees can enjoy some merits such as direct dealing with manufacturers, receiving technical know-how and the latest news and information and a special discount through bulk purchase. If NMEC lessees cooperate further for lump sum purchase, they can obtain not only reduced cost of spare parts in total but also minimization of spare parts inventory.

Figure 14.2.1. Discounted Spare Parts Supply



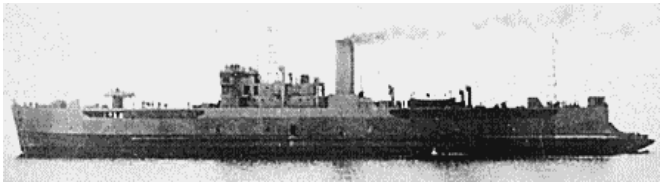
- **Standardized shipbuilding**: By the development and standardization of the most appropriate vessel design, serial construction of sister ships would be effective for both shipping companies and shipbuilders in terms of (1) cost reduction by serial construction, (2) standardization of operation system, (3) standardization of maintenance, (4) common utilization of components and spare parts and (5) improvement of local shipbuilder's capability. Under the present situations, Filipino shipbuilders are forced to highly depend on imported raw materials, components and equipment for new shipbuilding. Adding to this, it is quite difficult to continuously get the latest technical and commercial information from manufacturers due to the small demand for new building in the Philippines. In this regards, so-called package deal method under a cooperative construction scheme between advanced foreign shipbuilders and capable domestic shipbuilders is recommended.

Figure 14.2.2. Package Deal Method



3) Technical assistance

Technical assistance is effective to reinforce and foster small to medium operators' capability. Usually those operators are weak in ship investment planning, ship designing and supervising shipbuilding and repairing even they have core business capability in shipping such as marketing and ship operation. NMEC has merits to extend technical assistance to prepare a more attractive business plan and to check and preserve NMEC fleet assets.

Column 14-1	Japan's Experience in Public Ship Finance Institution
History	The first public ship finance institution, Specified Vessels Improvement Corporation, was founded in 1959 to replace wartime standard vessels after a mass of distresses. The first institution dealt with only cargo passenger vessels as the main liner fleet in those days. The first institution was renamed to Maritime Credit Corporation (MCC) with expanding its scope to cargo vessels in 1966. Again, MCC was renamed to Corporation for Advanced Transport and Technology (CATT) in 1977 and to Japan Railway Construction, Transport and Technology Agency (JRTT) in 2003 in order to meet new government policy initiatives.  *Standardized Wartime Ship In Japan* Historically, JRTT has employed a unique tonnage development method, so-called "Joint shipbuilding and joint shipowning", with the following incentives rendered to shipowners: 1. Financing (maximum 90%) 2. Long-term and fixed low interest rate 3. No collateral requirement 4. Technical assistance: ship design, building, maintenance, others
Achievements	JRTT holds 1,469 thousand GT (446 thousand GT for passenger transport and 1,018 thousand GT for cargo use). JRTT is the largest shipowner in the Japanese domestic shipping with a share of 29%.
Challenges	Recognizant of the fulfillment in ordinary shipping development in Japan, JRTT is tasked to promote advanced and environmental friendly shipping such as a modal shift from road-based transport. However remote island shipping has still remained to request public support. <u>For passenger vessels</u> • Modal Shift Vessels (ROPAX, etc.) • Barrier-free Vessels • Remote Island Service Vessels <u>For cargo vessels</u> • Modal Shift Vessels (Container, RORO, etc.) • EcoShips (new technology for CO2 reduction and water pollution prevention) • Advanced Vessels with ICT and efficient cargo handling  *Very Fast RORO Ship (30 knots) To compete with Highway Truckers*

Column 14-2	Indonesia's Experience in Public Ship Finance Institution
History	PT. PANN (Pengembangan Armada Niaga Nasional or National Fleet Development Corp.) was established in 1974. A state-owned non-bank financial institution by Ministry of Finance (60%) and then Indonesian Development Bank (40%) under supervision of Ministry of Communications.  *Standardized Caraka Jaya Ship Built in a local shipyard* To develop large new tonnage for the domestic shipping industry, the Government implemented the standardized shipbuilding project or so-called Caraka Jaya. PT. PANN borrowed necessary funds from the Government and other institutions and implement the Project. The Project was divided into 3 phases where 6 domestic shipyards participated in. • Phase I (1986-1990): 6 semi-container vessels (3,000 dwt) • Phase II (1989 – 1993): 15 semi or full container vessels and 12 general cargo vessels (3,200 – 3,650 dwt) • Phase III: Suspended due to the Asian Financial Crisis
Achievements	Provision of ship leasing service for inter-island fleet, especially for SME. So far 199 vessels procured and currently 60 vessels or 167 thousand DWT/GT in operation through either financial lease or purchase on installment. PT. PANN's remarkable contribution is to have modernize domestic shipping particularly container liner shipping with supporting SME. Some of them has grown up as major inter-island operators. Now, 34 companies with 96 vessels engage in inter-island container trade. The core and leading fleet is a fleet of 21 PANN/Caraka Jaya vessels.
Challenges	Recently the Government issued the Presidential Instruction on Shipping Industry Empowerment (INPRES No.5/2005). It instructs to expand PT. PANN's role to increase national tonnage as follows: *"Developing non-bank financial institutions involved in shipping to provide alternative ship finance schemes"* (Section 2.b) To meet this government policy, PT. PANN is seeking for various sources including JBIC fund like DSMP in the Philippines.

(3) Fleet Procurement Plan 2006-2015

NMEC's fleet procurement plan has been formulated taking the following policy considerations and empirical figures into account:

- According to its Business Plan, the most important task of NMEC up to 2015 is to lease short-distance RoRo vessels to RRTS shipping service providers. The Study estimates that the investment in small-sized RORO of less than 1,500 GT is 79 units in the next decade although this O-D matrix based fleet demand projection cannot illustrate exact routes to be assigned. It is intended that NMEC will be a major short-haul RoRo fleet supplier to the domestic shipping industry.
- Since MARINA is keen on increasing capability of the domestic shipbuilding industry and has the policy intention to restrict small vessel importation into account, short-haul RoRo vessels will be newly built at domestic shipyards after 2008.
- To address the present aging Ropax vessels and likely insufficient supply of Japanese-made second-hand vessels, the new-generation trunkline Ropax vessel project is proposed in the Study. The project would be viable only when the public sector integrates the project components including shipping service, port terminal and ship finance in a coordinated manner. In this sense, NMEC's involvement would be crucial and it is expected to participate in the project. Thus NMEC will newly build part of the Ropax fleet.
- There may be various ship leasing needs covering other liner vessels and non-liner vessels. To modernize domestic fleets as a whole is also one of NMEC corporate objectives and thus NMEC will allocate a minor share for those vessels.
- As described in the previous section, one of NMEC's potent tools is collective deals which enables considerable reduction in ship procurement and maintenance and then offer favorable lease conditions. Larger holding tonnage also contributes to more profitable and stable business base (refer to Section 14.6).
- Review of similar ship financing institutions in other countries, e.g., JRTT in Japan and PT. PANN in Indonesia indicate that, a 10% share is desirable to effectively implement the alternative ship finance method. PT. PANN's experience also shows that they dealt with a limited number of vessels; say 7 vessels per year, after several years from its inception in 1974.

Based on the above, procurement of vessels by NMEC has been assumed at roughly 5% up to 2010 and 10% up to 2015 out of the requirement of the whole country. Against 1,878 thousand tonnage of total requirement up to 2015, total procurement by NMEC has been assumed at 193 thousand tonnage. Due to initial organizational constraint, NMEC will procure 7 vessels per year at best toward 2015.

The assumption requires NMEC to invest 193,400 GT or 17,032 million pesos to be a 10% ship owner in the sector. Since the domestic shipping sector requires 1,411,000 GT for replacement and additional tonnage or 93 billion pesos during the same period 2005-2015, it also means that NMEC will take a 13.7% share in tonnage and an 18.3% share in investment.

Table 14.2.1. Estimated Domestic Fleet Composition up to 2015

(unit: 1,000GT)

Type of Vessel	2004	2010	2015
Container	113	137	159
Conventional	539	620	661
Passenger Ferry	32	30	33
Tanker	184	207	211
Passenger Cargo	35	19	16
RoRo / Ropax	484	580	686
Dry Bulk	97	109	112
Total	1,485	1,702	1,878

Source: DSDP

Table 14.2.2. Estimated Domestic Fleet Procurement up to 2015

(unit: 1,000GT)

Type of Vessel	2004-2010	2011-2015
Container	67	63
Conventional	185	249
Passenger Ferry	8	9
Tanker	49	75
Passenger Cargo	3	8
RoRo / Ropax	358	275
Dry Bulk	28	34
Total	697	714

Source: DSDP

Table 14.2.3. NMEC / Total Vessel Purchase for Leasing up to 2015

Type of Vessel	Vessel Unit	Total GT	(% in GT)	Cost (Unit: million Peso)	(% in Cost)
Short-distance RoRo	37	41,400	(21.4)	6,850	(40.2)
Middle to Long –distance Ropax	7	88,000	(45.6)	7,062	(41.5)
Other Liner Ships*	8	32,000	(16.5)	1,360	(8.0)
Non-liner Ships	8	32,000	(16.5)	1,760	(10.3)
Total	60	193,400	(100.0)	17,032	(100.0)

(Note) Other Liner Ships*: Container Ship, Passenger Ferry, Cargo Passenger Ship

14.3 Operation Guidelines

Upon completion of the company registration in the Securities and Exchange Commission in March 2005, NDC Maritime Equity Corporation（NMEC）started hiring management and senior officers in May, then junior officers and supporting staff in June. As of the end of August 2005, the total number of officers and staff is 11. Some of them, including the chairman and the president, have their seats in their parent company, National Development Company (NDC) concurrently. But, according to NMEC, all the personnel expenses of officers and staff except their chairman are paid by NMEC. In June, NMEC also started building their organization, their office, and preparation of internal guidelines and manuals for business operation. As of September they are mostly focused on their internal capacity building and preparatory and coordination works with related organization such as DBP and MARINA.

For designing internal operation guidelines, we consider PT. PANN's experience in Indonesia as both informative and educational to NMEC since the Indonesian firm has successfully provided ship leasing services particularly to small to medium domestic shipping companies. Therefore in this section, key operational guidelines in regard to appraisal, lease operation and operation monitoring are discussed based on PT. PANN's experience.

(1) Appraisal Flow and Guideline

The process of vessel procurement and leasing operation, which starts at the reception of application letter from a proponent and ends at closing of the lease finance contract is illustrated from Figure 14.3.1 to Figure 14.3.4. The illustration includes the processes applied to both second-hand vessel and new building.

1） Flowchart of Appraisal

Having received an application letter for lease finance from a proponent, NMEC starts its appraisal process, which ends either in rejection of the application or signing of pre-agreement. The flow of the process is described in Figure 14.3.1. In normal and regular business activities of NMEC, NMEC will conduct some preparatory and preliminary analysis before a proponent actually submits their application letter to NMEC, and broadly those analyses include:

- Past and present conditions of the proponent, including history and general conditions of operation, including number of vessels, operating routes, organization, number of staff, etc., results of their operation, past performance of debt repayment, etc.;
- Project (Ship for proposed finance): Expected cash flow and general conditions of the proposed route(s); and,
- Legal Issues: Nationality of the proposed ship, present conditions of registration, insurance conditions.

More specifically, it covers:

(1) The proponent's firm intention to procure the vessel(s) and operate them in some designated routes;

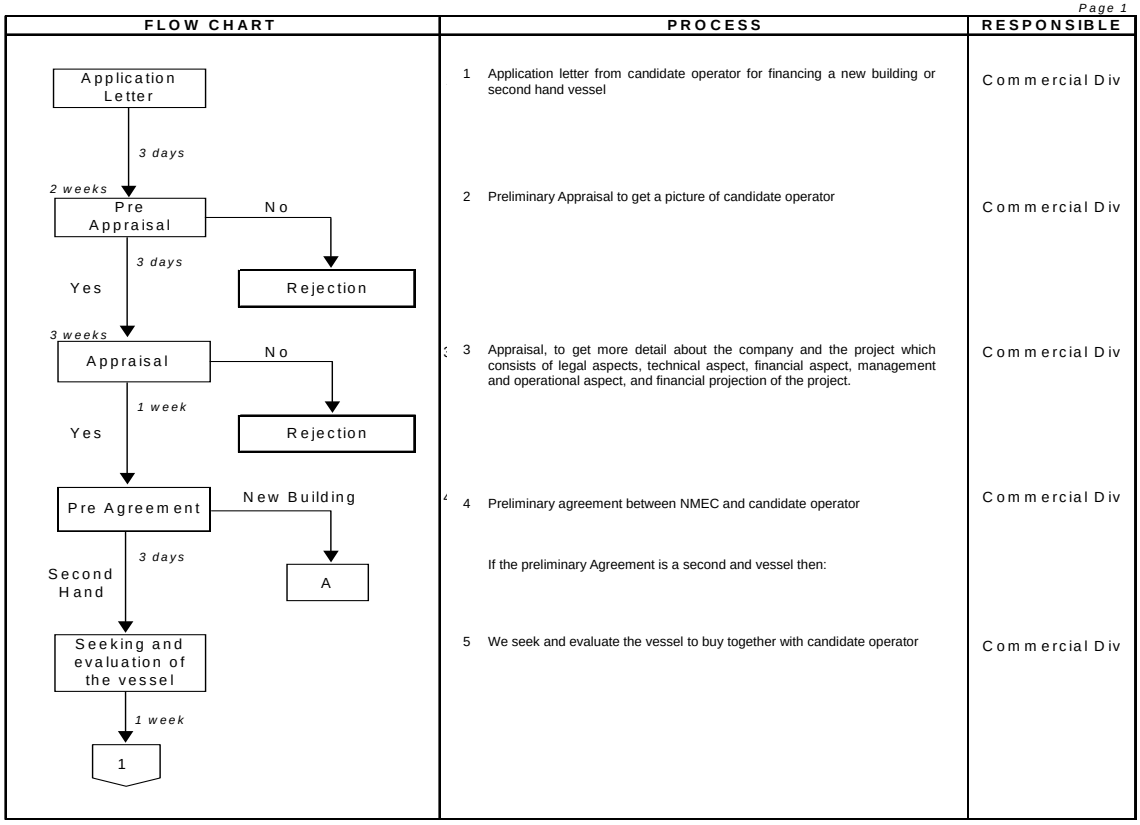
(2) Planned vessel(s) (type and GT/DWT) and route(s) to operate as well as estimated cargo volume / number of passengers, load factor, and operation cost;

(3) Expected profitability and cashflow; and,

(4) General preparedness of NMEC to extending lease finance, not in a specific case but particularly in the availability of fund.

Total number of day required for each process (indication only) is 58 day, or roughly 2 months.

Figure 14.3.1. Flow of Vessel Procurement and Leasing Operation – Initiation



2) Guideline of Appraisal

(a) Objectives

(a)-1. To know the viability of financing object operation that was being proposed and seen from the aspect of organization and management, finance, law aspect and technical aspect of Candidate Operator, as well as, knowing the rate of return from the investment.
(a)-2. To know the adequacy of collateral requirement fulfilment, which will be given by the Candidate Operator regarding the proposed financing scheme.

(b) Scope

This procedure covers the financing proposal approved by the Board of Directors to conduct an appraisal wherein the Candidate Operator has agreed to the financing requirement.

(c) Definition

Appraisal is an assessment of adequacy of financing object operation, which is being proposed and seen from the aspect of organization and management, finance, law and technical of Candidate Operator. It is also an assessment concerning the

collateral, coming from the Candidate Operator.

After pre-agreement, NMEC together with the proponent go on to seeking and evaluation of the vessel in case of second-hand vessel, or bidding of shipyard in case of building new vessels.

(2) Lease Operation Flow and Guideline

1) Flowchart of Lease Operation for Second-hand Vessel Procurement

Having reached a Pre-Agreement between the proponent and NMEC, and having identified the vessel(s) to buy, NMEC takes up their lease operation process, which starts at vessel inspection and ends at the signing of both lease financing contract with the proponent and buy and sale contract with a shipyard. The flow of the process is described in Figure 14.3.2. It should be noted that collaboration of responsible divisions/sections is required within NMEC, which is the most difficult aspect during the vessel procurement phase.

Total number of days required for each process (indication only) is 12 days, or a little less than 2 weeks.

2) Guideline of Appraisal on Procurement of Second-hand Vessel

(a) Objectives

(a)-1.Ensuring the procured Second-hand Vessel to be suitable to the planned specification, in good condition and worthy to operate in accordance to the current regulation.

(a)-2 Ensuring the Second-hand Vessel is procured at reasonable and competitive price and not exceeding the maximum limit of financing value.

(b) Scope

This procedure covers financing application for Second-hand Vessel procurement, approved by the Board of Directors. The process of procurement will be conducted domestically.

3) Flowchart of Lease Operation for Procurement of Newly-built Vessel

Having reached to Pre-Agreement between the proponent and NMEC to buy a newly-built ship, NMEC puts up a bid to several shipyards. Upon finalizing the evaluation of the bid, NMEC signs a new building contract with the selected shipyard. The flow of the process is described in Figure 14.3.3. It is a normal practice that as owner of a contracted ship, NMEC sends a shipbuilding engineer(s) to stay in a shipyard to monitor the progress of the building of the contracted ship.

After signing of the building contract, there are processes of drawing → drawing approval → building works → keel laying → launching → completion and commissioning. These processes are not mentioned in the flowchart.

Total number of days required for each process, starting from bidding to the signing of new building contract, is roughly 4 weeks.

Figure 14.3.2. Flow of Vessel Procurement and Leasing Operation – Second-hand Vessel

Page 2

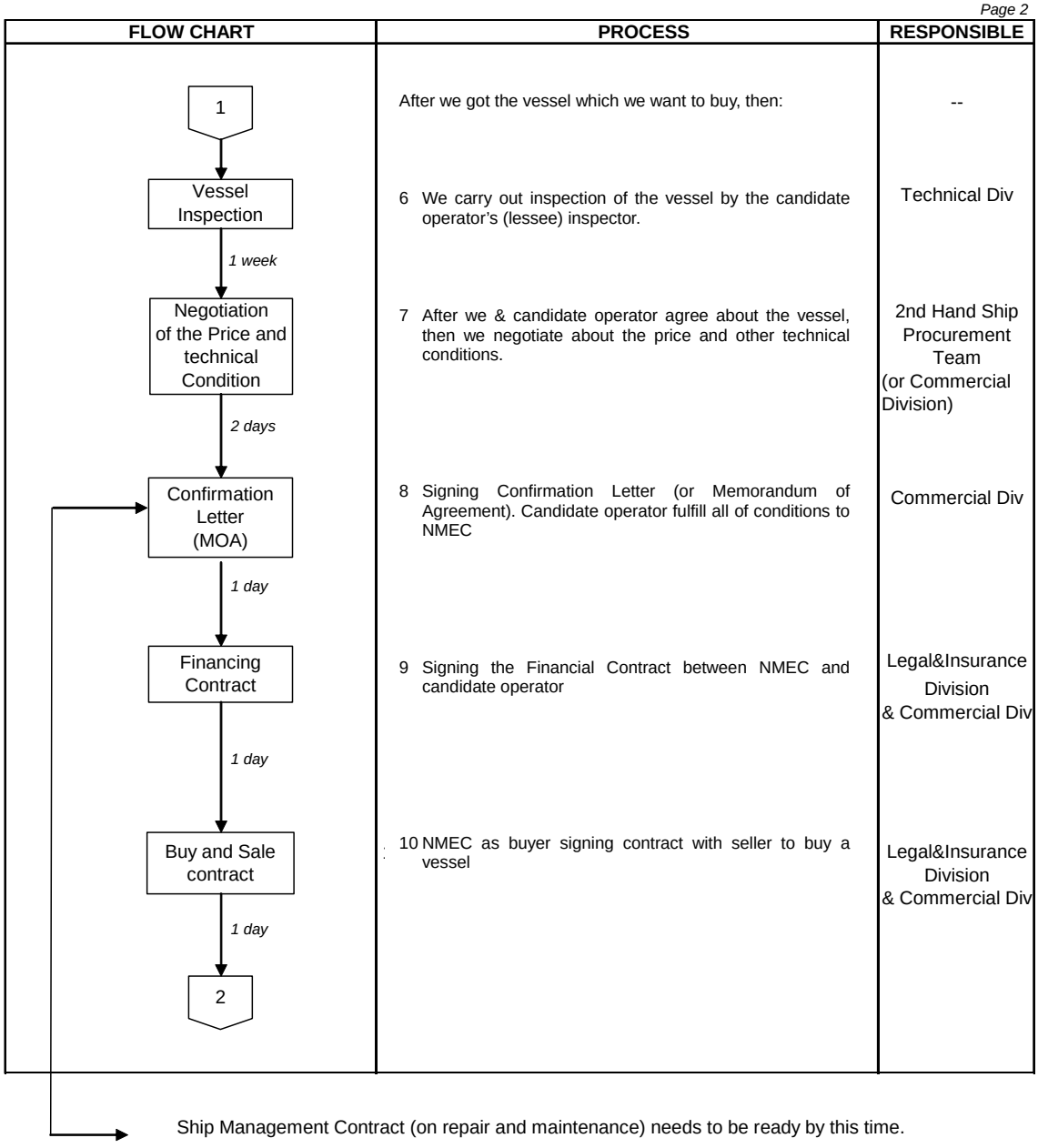
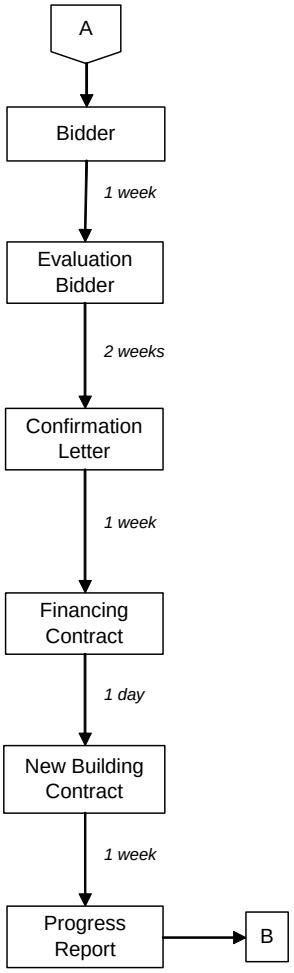


Figure 14.3.3. Flow of Vessel Procurement and Leasing Operation － Newly-built Vessel

Page 3

FLOW CHART	PROCESS	RESPONSIBLE
	If the preliminary agreement is a new building vessel then: 6 We bid a new building vessel to several shipyards 7 We make evaluation of Bidder by our internal team 8 Signing confirmation letter & candidate operator fulfill all of conditions to NMEC 9 Signing the financial contract between NMEC and candidate operator 10 Signing a new building contract between NMEC and shipyard 11 Make a progress report during construction period	Technical Div New Ship Bld Procurement Team Commercial Div Legal&Insurance Division Legal&Insurance Division Technical Div

(3) Operation Monitoring Flow and Guideline

1) Objectives

1) To monitor the requirements due date of the payment based on the contract.

2) To reassure that all operators' financial obligations are being settled.

2) Scope

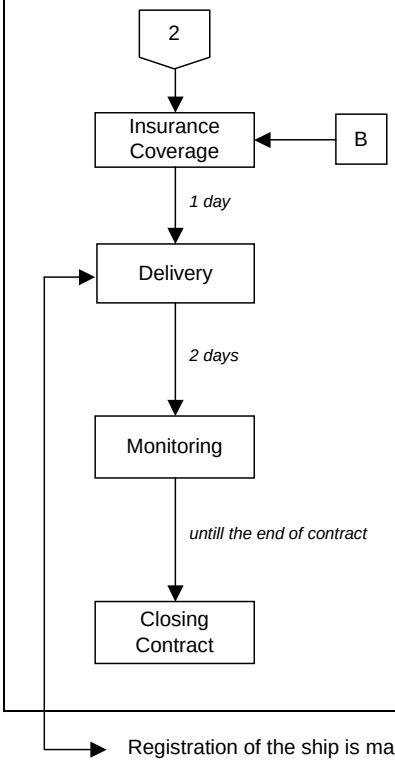
This procedure covers all leasing obligations or due date instalment payment and includes the delinquent actions of operator and ex-operator.

3) Definition

Credit supervision is an activity that monitors the due date of debts payment and arrears of operator and ex-operator.

Figure 14.3.4. Flow of Vessel Procurement and Leasing Operation － Operation Monitoring

Page 4

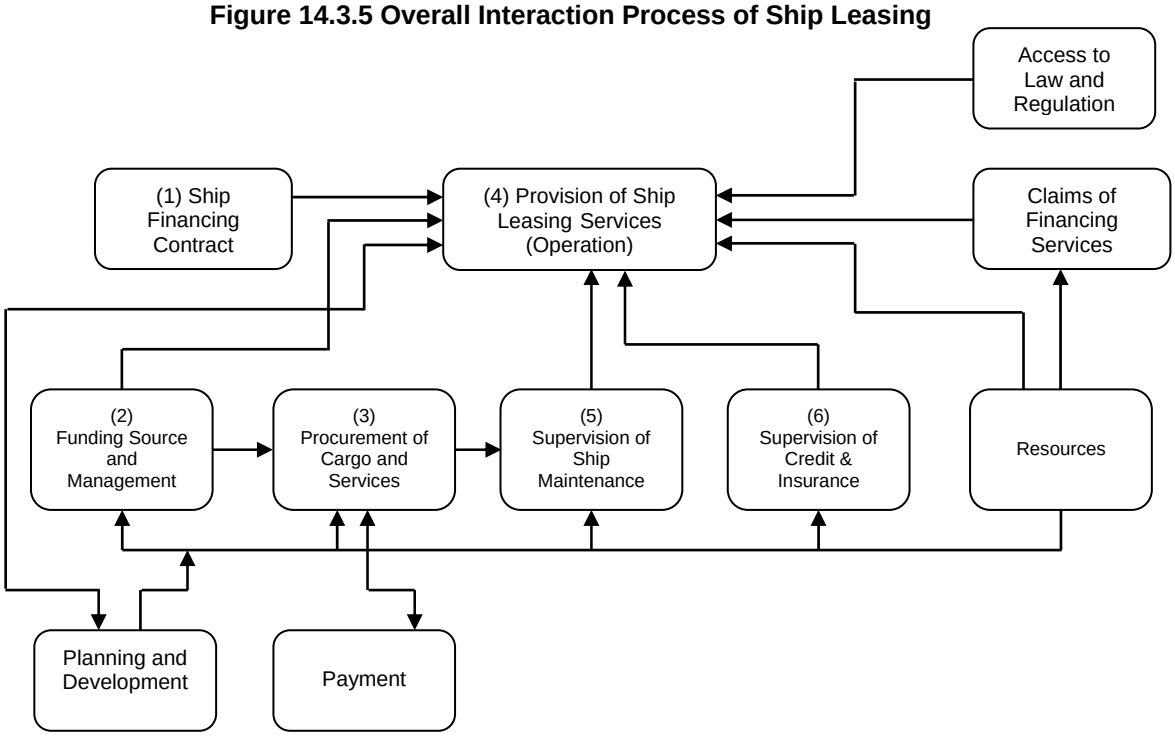
FLOW CHART	PROCESS	RESPONSIBLE
	After NMEC signed contract with seller, then:	--
	11 We covere the insurance of the vessel	Legal&Insurance Division
	12 Delivery of the vessel	Technical Div
	13 Monitoring along the period of the contract	Commercial Div
	14 We close the contract at the end of the period.	

Registration of the ship is made at this point of time at MARINA.

(4) Overall Interaction Process of Ship Leasing

Overall interaction of ship leasing including all the processes described above is depicted in Figure 14.3.5.

Figure 14.3.5 Overall Interaction Process of Ship Leasing



14.4 Technical Guidelines

14.4.1 Preparatory Process before Contract

(1) Ship Specifications and Conditions

To prepare construction specifications with due considerations may contribute to reducing construction prices as well. When the same type of ship is ordered to the same shipyard, construction cost savings can be realized by as much as 20%. Moreover, careful planning would improve the appropriateness of vessel specifications, thereby minimizing design modifications during construction. If main specifications are changed by request of ship-owner, there is a possibility of increasing the construction cost. Sufficient examination by a competent consultant is deemed necessary.

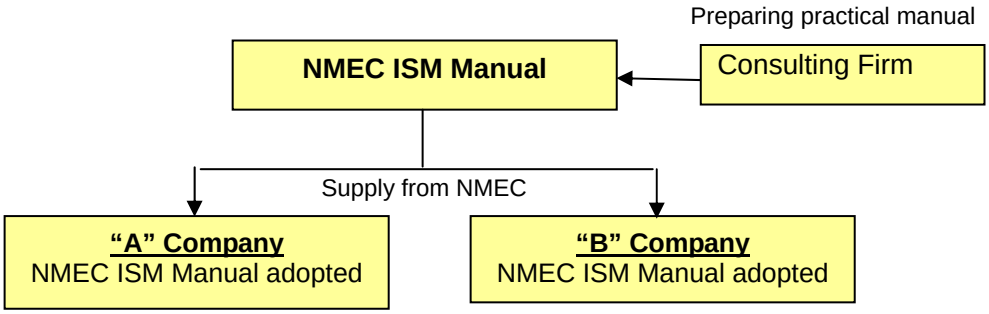
(2) Preparation of ISM Document

The unified ISM (NSM) should be introduced into NMEC. Because simple ISM system is indispensable to NMEC in order to establish a healthy management base with safe operation of fleet by effective advice to its clients (ship-owners).

If any lease ship is returned to NMEC for any reasons, not concerning the ship condition of lay up or under operation, NMEC must apply DOC for the company and SMC for each ship. Therefore, an ISM manual, a procedure document, and checklists are strictly needed early on.

The immediate contract after negotiation with a professional consulting firm is required for these preparations.

Figure 14.4.1. Adoption of Common ISM Standards



(3) Consultancy Services

In addition to the above ISM manual preparation, it is advisable for NMEC to ask the following consulting services for contract preparation when necessary:

- To prepare Ship Guidance for NMEC staff;
- To produce specifications of newly built ships;
- To prepare construction drawings for the approval;
- To produce checklists for the time of delivery of a new ship and the time of re-delivery of the ship;
- To supervise new shipbuilding and give training to superintendent at the client side ;
- To select and evaluate installed machineries and advice on their procurement;
- To evaluate actual ship operation practice (with an evaluation checklist) and advice

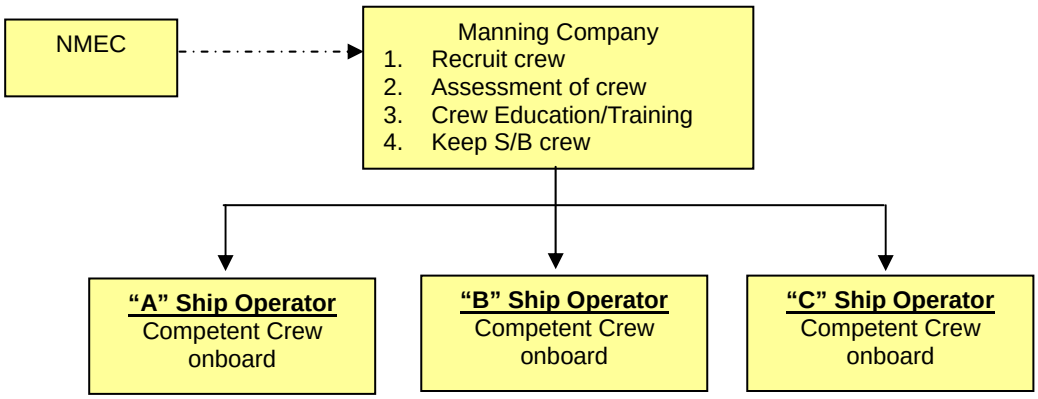
for better operation;

- To evaluate some selected shipyards in terms of technical skill and others;
- To advise training on employees of the contracted ship-owners; and,
- To counsel appropriate measures after a ship incident happens.

(4) Crew Manning

Minor ship-owners face difficulty in reserving or assigning good crew on their vessels. If a certain manning company undertakes crew management, it is helpful to ensure safe operation and good onboard maintenance. It is advisable for NMEC to make a contract with such a professional manning agent and introduce their services to NMEC clients.

Figure 14.4.2. Utilization of Manning Agent



14.4.2 Purchase and Leasing Contract

(1) Secondhand Ship Purchase Contract

Dealing of second hand ship should be concluded in a short period of time. Right and quick decision must be necessary based on systematic procedures. Educational instructions manuals, such as system flow of vessel outlined theory and vessel dealing, should be required in advance for the person in charge.

The procurement of a second hand vessel undergoes several steps. The first step is the "initiation" stage, wherein a buyer specifies the basic features of the desired vessel, including a price range. Through ship brokers, a seller is identified and the seller will offer a specific vessel to the buyer. In the second stage, the seller will organize for a superficial investigation of the vessel. The buyer will send an inspector to conduct the superficial investigation. As the third step, the basic terms of the purchase will be set and a Memorandum of Agreement between the seller and buyer will be signed. Fourthly, detailed investigation will be undertaken. In the fifth stage necessary repairs will be undertaken. In the sixth stage, a final inspection will be undertaken. Finally, the payment is completed and the ship will be turned over to the new owner. Details of each stage are illustrated by succeeding Figures.

Stage 1: Initiation - A ship operator or shipping company's management decides to purchase a 2nd hand vessel. A preliminary agreement is reached between a financier should the vessel be taken out on loans. Included in the management's decision to procure a 2nd hand vessel are the basic specification of the vessel – including ship particulars, indicative price, delivery time and terms. The ship operator/company as the potential buyer employs a broker to locate a suitable seller. The seller is identified

through the seller's broker, who informs the buyer's broker of the particulars of a specific vessel. The buyer will then decide if the particular vessel offered by the seller's broker is suitable or not.

Stage 2: Superficial Investigation – Should both the buyer find the offered vessel suitable, the seller will then arrange for a superficial investigation. The seller will arrange the place and time for the inspection. The seller will likewise inform the Master of the scheduled investigation and to prepare documents such as the deck/engine logbook, class reports and certificates. The seller will likewise inform the classification society of the planned sale, to apply for a review. The buyer will get the survey report from the class society. During inspection, several documents will be reviewed, including deck/engine records, record of running hours, inventory of stores, spare part inventory, inventory of rented equipment, docking records and current letters of protest. The inspector of the buyer will then report to the buyer. The buyer will then decide whether to abandon the sale or not.

Stage 3: Signing of MOA – A memorandum of agreement will now be signed between the seller and buyer spelling out the terms under which the sale of the vessel will proceed. The MOA will include ageed terms, including: price, delivery port, delivery date, and others. The terms of payment will likewise be agreed upon and a bank account will be set-up for the purpose. Both parties have to agree to the MOA and sign.

Stage 4: Detailed Inspection – The buyer will now inform the Master of the pending sale and will arrange for any necessary repairs and/or surveys. The Buyer on the other hand will inform their class society of the sale so the buyer's class society could communicate with the seller's class society. The buyer will then dispatch a representative to conduct detailed ship inspection, including underwater survey.

Stage 5: Repairs of Damages – The seller will then arrange for dry docking to repair whatever damage is required to be rectified. The buyer may also conduct necessary some works, such as sand blasting, painting, etc. The seller will then arrange the Notice of Readiness and the Class Maintenance Certificate. After repairs are made, the NOR will then be forwarded to the buyer for signing.

Stage 6: Final Check – The buyer will then conduct a final inspection of the vessel and if deemed satisfactory the NOR will be signed. Certificates and other relevant documentations will be turned over to the Buyer's crew and checked.

Stage 7: The final payment will then be remitted and confirmed. The vessel will then be turned over to the buyer, including all other remaining documentations.

(2) New Ship Purchase Contract

Compared with the 2nd hand ship purchase contract, new ship contract can be made through a rather straightforward process. However some local business patterns must be taken into account. In the Philippines shipyards, the term of penalty contract (completion delivery time is overdue) is not contained in many cases. It should be covered in the contract clearly. The checking of sea trial data based on contracted specifications, should be engaged to present plan of sea trial including attendance, various data record, etc. before sea trial for mutual agreement.

(3) Purchase of Ship under Leasing Contract

Basically a buyer undergoes the same procurement steps as a 2nd hand ship. In addition, attention should be paid to the statutory certificate and the classification certificate. The checkpoint is whether they are well maintained on the term valid for more than three months without any recommendation on the certificates and any

notes after the re-delivery of the ship on completion of leasing contract. It is necessary to scrutinize the valid leasing contract on each item based on the check list of NMEC in advance.

14.4.3 Assessment of Ship Management

(1) Internal audit at lessee

It is desirable to request a lessee to designate a superintendent in charge of an NMEC ship. The superintendent will be a member of an ISM internal audit team on the leasing contract, and to obligate him to participate in the deficiency, accident prevention, and the surveillance of ship management.

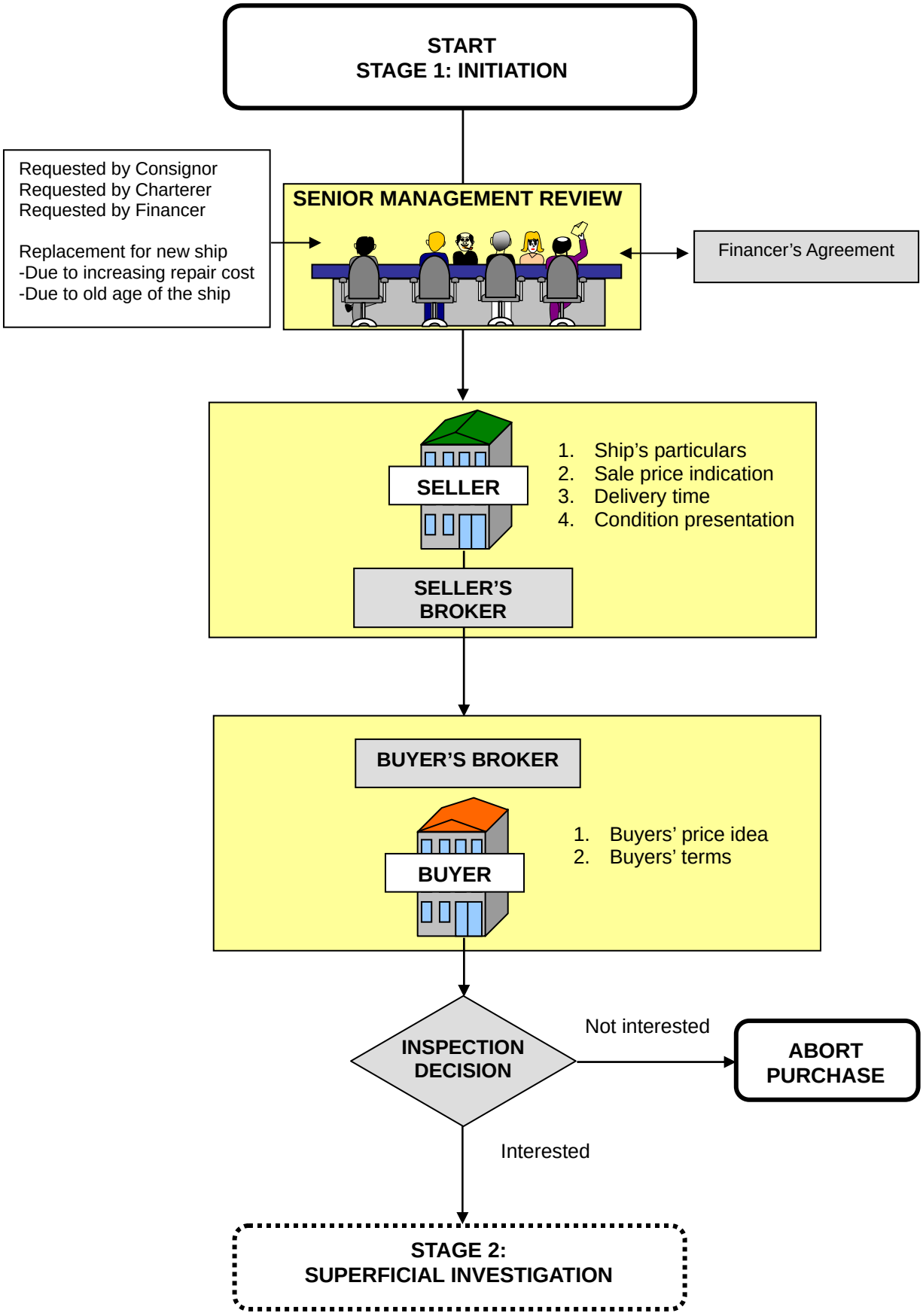
(2) Class Survey

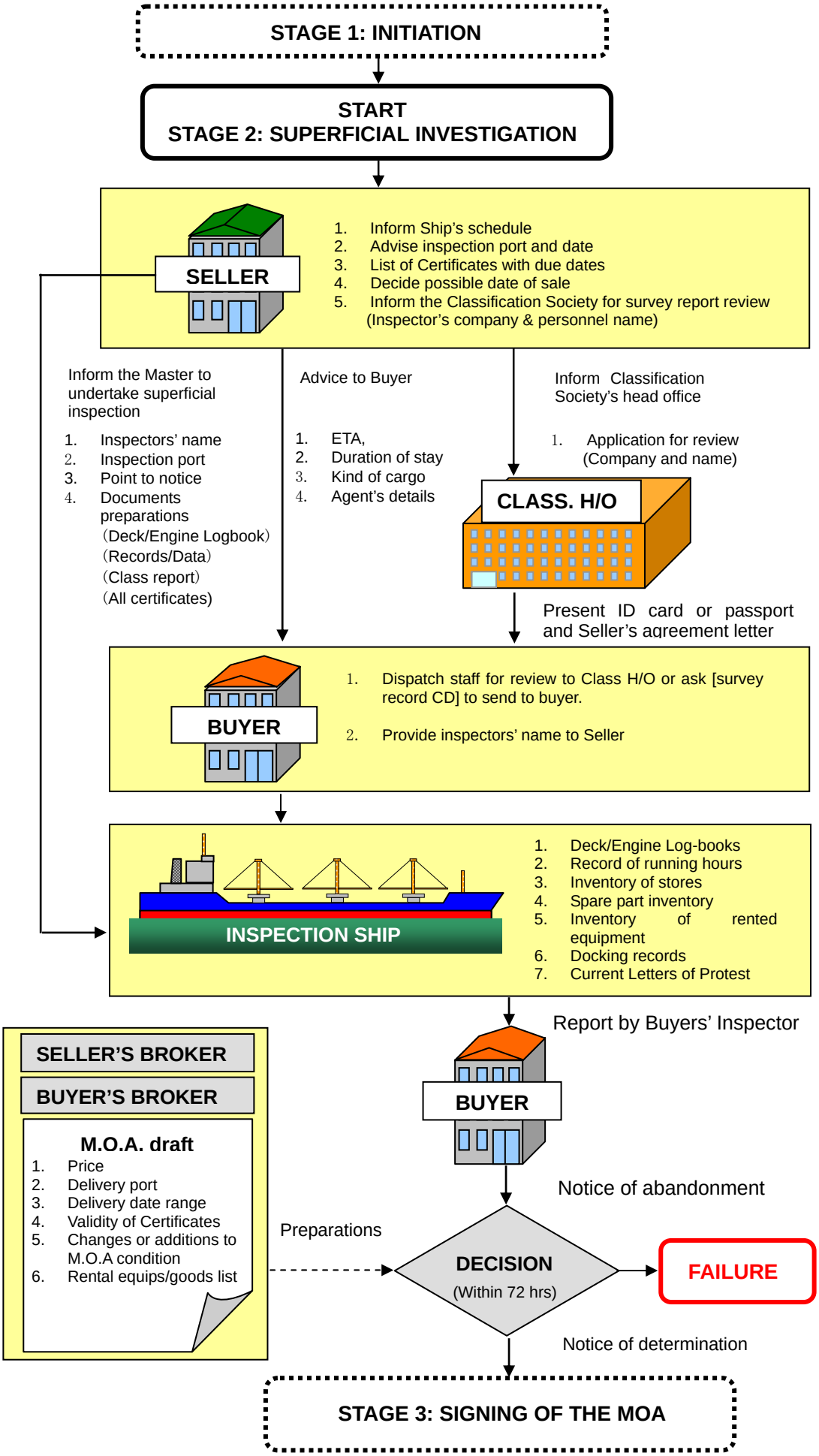
The Study Team observed many deficiencies in the domestic ships classed by some IACS members. It shows that their duty is not fully achieved. From a long-term viewpoint, it is suggested to work with Philippines classification since the tie-up between NMEC and the local classification entity would be able to contribute to domestic capacity building at both the sides and reducing IACS related financial burden at the lessee side

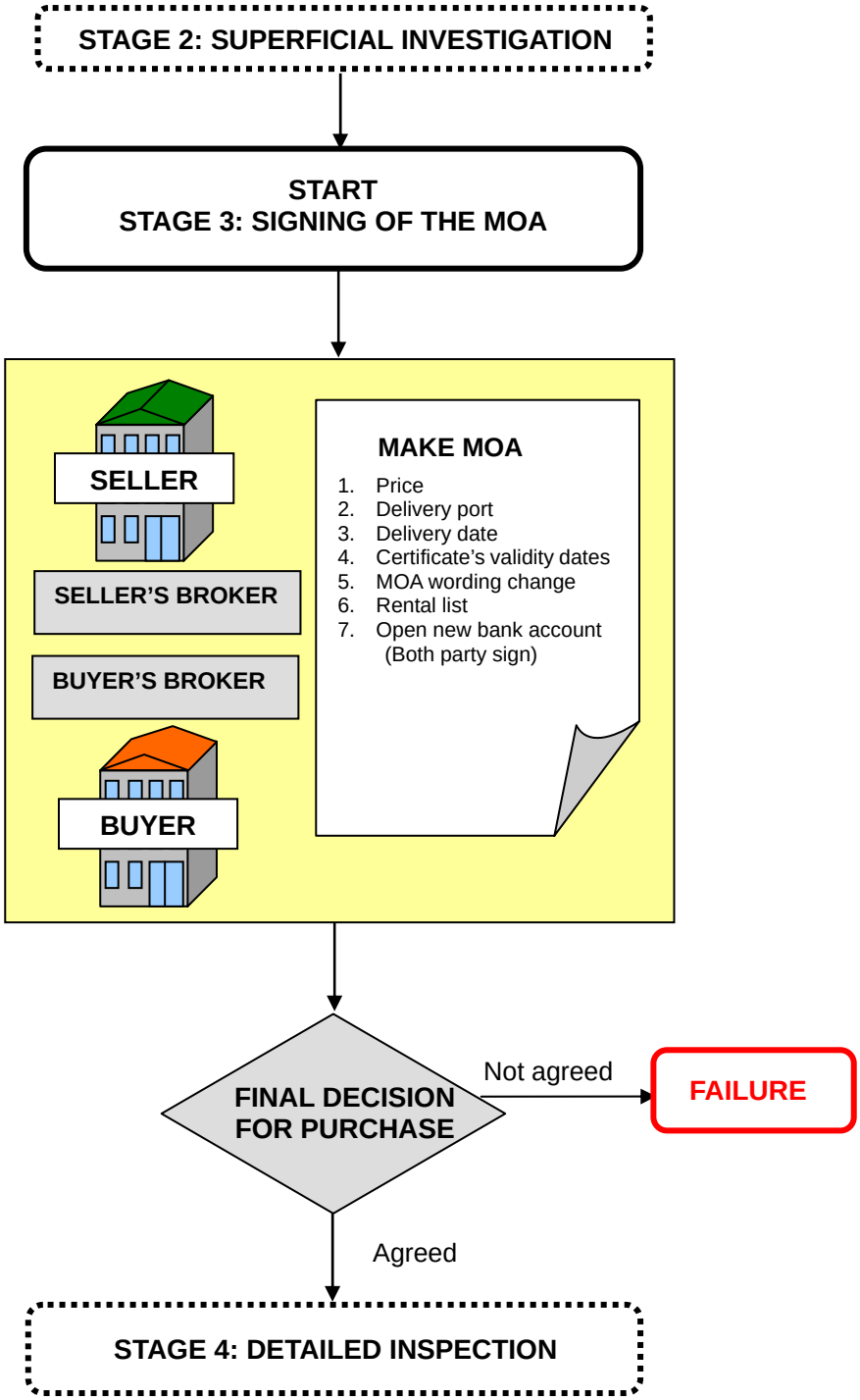
(3) Afloat Repair and Maintenance Plan

A RO-RO ship engaged in scheduled liner service has difficulty in receiving sufficient ship maintenance. Therefore, it is necessary to formulate and implement a ship maintenance plan as well as a ship equipment maintenance plan in accordance with the ISM-Code. However, excessive examination beyond necessity must be avoided.

Figure 14.4.3. Second-hand Ship Procurement Flowchart




STAGE 1: INITIATION
START
STAGE 2: SUPERFICIAL INVESTIGATION
SELLER
1. Inform Ship's schedule
2. Advise inspection port and date
3. List of Certificates with due dates
4. Decide possible date of sale
5. Inform the Classification Society for survey report review
(Inspector's company & personnel name)
Inform the Master to undertake superficial inspection
1. Inspectors' name
2. Inspection port
3. Point to notice
4. Documents preparations
(Deck/Engine Logbook)
(Records/Data)
(Class report)
(All certificates)
Advice to Buyer
1. ETA,
2. Duration of stay
3. Kind of cargo
4. Agent's details
Inform Classification Society's head office
1. Application for review (Company and name)
CLASS. H/O
Present ID card or passport and Seller's agreement letter
BUYER
1. Dispatch staff for review to Class H/O or ask [survey record CD] to send to buyer.
2. Provide inspectors' name to Seller
INSPECTION SHIP
1. Deck/Engine Log-books
2. Record of running hours
3. Inventory of stores
4. Spare part inventory
5. Inventory of rented equipment
6. Docking records
7. Current Letters of Protest
Report by Buyers' Inspector
SELLER'S BROKER
BUYER'S BROKER
M.O.A. draft
1. Price
2. Delivery port
3. Delivery date range
4. Validity of Certificates
5. Changes or additions to M.O.A condition
6. Rental equips/goods list
BUYER
Notice of abandonment
Preparations
DECISION
(Within 72 hrs)
FAILURE
Notice of determination
STAGE 3: SIGNING OF THE MOA


STAGE 2: SUPERFICIAL INVESTIGATION
START
STAGE 3: SIGNING OF THE MOA
SELLER
SELLER'S BROKER
BUYER'S BROKER
BUYER
MAKE MOA
1. Price
2. Delivery port
3. Delivery date
4. Certificate's validity dates
5. MOA wording change
6. Rental list
7. Open new bank account
(Both party sign)
FINAL DECISION FOR PURCHASE
Not agreed
FAILURE
Agreed
STAGE 4: DETAILED INSPECTION

STAGE 3: SIGNING OF THE MOA

START
STAGE 4: DETAILED INSPECTION

BUYER

1. Arrange crew / VISA
2. Inform new Class. Soc. if appropriate
3. Appoint a local Agent

Inform Classification Soc. office

SELLER

1. Inform Master of delivery of ship
2. Give buyer's rep name to Master
3. Arrange any necessary repairs and /or surveys
4. Inform crew about changeover
5. Appoint a local Agent

BUYER'S CLASS

Request information

Give Information

SELLERS' CLASS

CLASS RECOMMENDATION

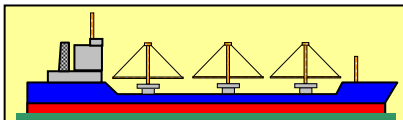
Yes

Nil

Seller to arrange repairs and surveys as required

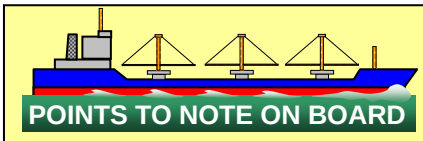
Only the seller's rep. is to attend the onboard survey.

If the Buyer's surveyor interferes with the survey the Seller should issue a Note of Protest



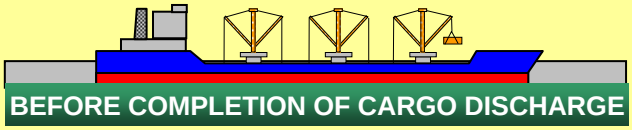
BUYER'S REP. ONBOARD

1. Report ship's schedule to office
2. Obtain a letter of indemnity from buyer's rep(s).
3. Examine all records, reports, official letters and requisitions held by the Master. These details are not yet to be disclosed to the buyer's rep..
4. All negotiations are to be restricted to the Master and the Chief Engineer.



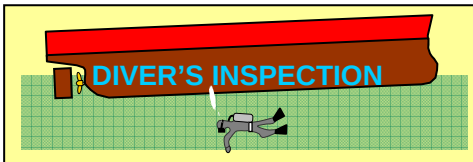
POINTS TO NOTE ON BOARD

1. Buyer's rep. To have unrestricted access (bridge, Engine room)
2. Buyer's rep. can require crew to start, operate or demonstration any equipment
3. Buyer's rep. not to be given access to the ISM system kept by Master
4. Buyer's rep not to be given access to stores and spare parts requisitions.
5. Information relating to any damage, unsatisfactory condition of machinery or equipment may be withheld from buyer's rep.
6. Ships condition at time of inspection to be maintained
7. Seller is not required to repair any areas of corrosion, any damage, or inoperative equipment. (The Class Surveyor cannot survey unless the seller calls survey, and "the Class Maintenance Certificate" is to be issued by the Classification Society indicating the condition at the last survey).
8. Seller is not required to disclose information on any leakage of ballast tanks, but it should be recorded on the Tank Condition Record (ship's condition to be maintained at the time of inspection)
9. Only the Master and Chief Engineer are to discuss the ship's condition.



BEFORE COMPLETION OF CARGO DISCHARGE

1. Buyer's underwater inspection whilst working cargo can be accepted provided it does not interfere with the working of the cargo
2. Class surveyor should attend for inspection of the bottom
3. Seller is responsible for cleaning all cargo holds if requested by the buyer
4. Seller is not required to ballast the ship for shifting in port limits. (This to avoid showing tank condition and pumping efficiency etc.)
5. Navigating equipments should not to be operated, if possible.



DIVER'S INSPECTION

Seller and Buyer shall accept the Class surveyor's findings. This includes but is not limited to:

1. Damage discovered below the full load line
2. Damage to the bilge keel and adjacent shell plating
3. Cracks in the bilge keel
4. Distortion or other damage to the propeller such as missing blade tips
5. Rudder damage

Natural wear down of the rudderstock or propeller shaft clearance is not applicable.

STAGE 5: REPAIRS OF DAMAGE

STAGE 4: DETAILED INSPECTION

UNDERWATER CONDITION

No damage

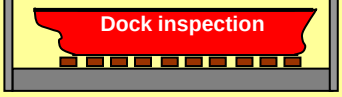
Survey fee/Divers' fee
(Buyers are to pay all cost)

Found damage

Survey fee/Divers' fee
(Sellers are to pay all cost)

START
STAGE 5: REPAIRS OF DAMAGE

SELLER TO ARRANGE DRY-DOCK



(Notes)
If no suitable dry-docking facilities, are available, Seller can arrange another dock / port within 14 days max.

Buyer can only carry out the following work:
1. Painting
2. Sand blasting
3. Propeller shaft draw out inspection

The seller must exercise caution when undertaking these projects, otherwise accidents or incidents that may occur may incur claims for compensation. P&I cover may be restricted when the accident occurs during dry-docking.

SELLER'S NOTICE TO BUYER

Seller's must receive written notice of acceptance from the Buyer within 72 hrs of the completion of repairs or inspection

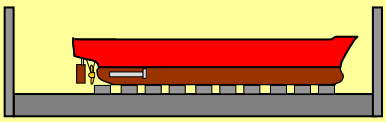
SELLER TO ARRANGE

NOR **CMC**

NOR ⋯Notice of Readiness

CMC ⋯Class Maintenance Certificate

ARRANGE BY SELLER



(Note)
Buyer must not prevent propeller shaft draw out work or inspection by the Seller.

Work which may be undertaken by the buyer:
1. Hull painting
2. Sand blasting
3. Change of ship's name

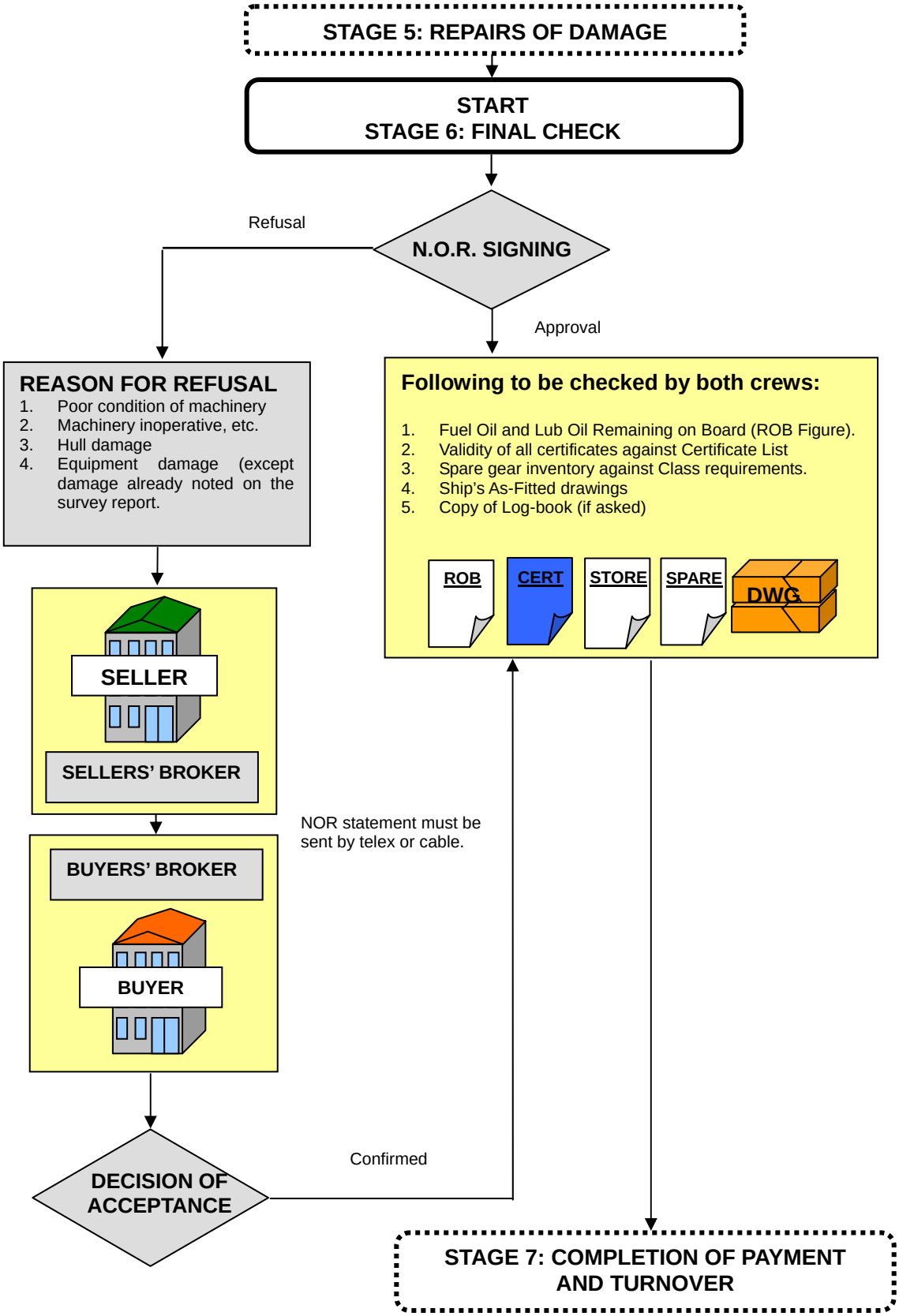
Requested

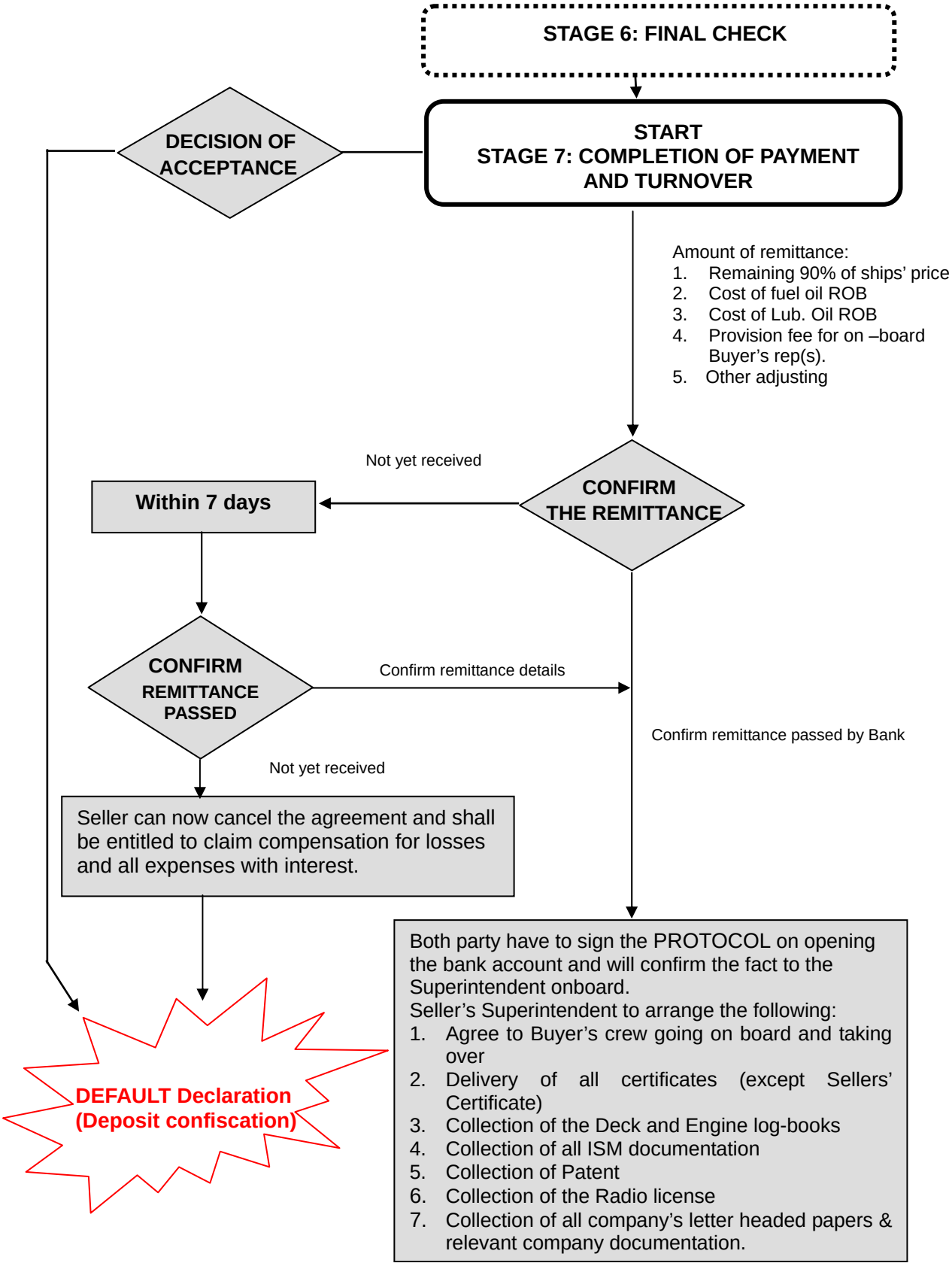
REQUEST SHAFT DRAW OUT

Not

N.O.R. SIGNING

STAGE 6: FINAL CHECK


STAGE 5: REPAIRS OF DAMAGE
START
STAGE 6: FINAL CHECK
N.O.R. SIGNING
Refusal
Approval
REASON FOR REFUSAL
1. Poor condition of machinery
2. Machinery inoperative, etc.
3. Hull damage
4. Equipment damage (except damage already noted on the survey report.
Following to be checked by both crews:
1. Fuel Oil and Lub Oil Remaining on Board (ROB Figure).
2. Validity of all certificates against Certificate List
3. Spare gear inventory against Class requirements.
4. Ship's As-Fitted drawings
5. Copy of Log-book (if asked)
ROB
CERT
STORE
SPARE
DWG
SELLER
SELLERS' BROKER
NOR statement must be sent by telex or cable.
BUYERS' BROKER
BUYER
DECISION OF ACCEPTANCE
Confirmed
STAGE 7: COMPLETION OF PAYMENT AND TURNOVER


STAGE 6: FINAL CHECK
START
STAGE 7: COMPLETION OF PAYMENT AND TURNOVER
DECISION OF ACCEPTANCE
Amount of remittance:
1. Remaining 90% of ships' price
2. Cost of fuel oil ROB
3. Cost of Lub. Oil ROB
4. Provision fee for on –board Buyer's rep(s).
5. Other adjusting
CONFIRM THE REMITTANCE
Not yet received
Within 7 days
CONFIRM REMITTANCE PASSED
Confirm remittance details
Confirm remittance passed by Bank
Not yet received
Seller can now cancel the agreement and shall be entitled to claim compensation for losses and all expenses with interest.
DEFAULT Declaration (Deposit confiscation)
Both party have to sign the PROTOCOL on opening the bank account and will confirm the fact to the Superintendent onboard.
Seller's Superintendent to arrange the following:
1. Agree to Buyer's crew going on board and taking over
2. Delivery of all certificates (except Sellers' Certificate)
3. Collection of the Deck and Engine log-books
4. Collection of all ISM documentation
5. Collection of Patent
6. Collection of the Radio license
7. Collection of all company's letter headed papers & relevant company documentation.

14.5 Expanding Business Scale

There is a need for NMEC to hold a considerable tonnage of vessels. With holding considerable vessels, NMEC can enjoy scale of economy such as discounted insurance, ship and equipment procurement, and provide technical assistance to lessees. Expanding holding tonnage in a sustainable manner must contribute to stable business operation and NMEC may survive under a narrower financial spread. In this section, the way to expand NMEC business scale is discussed from two resources, i.e., organizational development or capacity building and fund raising and other financial arrangement.

14.5.1 Organizational Expansion

(1) JRTT's Case

JRTT has 75 staff for joint-shipowning business who manage a domestic fleet of 1,464 thousand tons which accounts for 29% of the total domestic fleet in Japan. With such big tonnage, JRTT offer a little financial spread for their service: 0.2% - 0.4% in addition to long-term prime rate. (Refer to Figure 14.5.1)

Since approximately 3/4 of the JRTT clients or partners in joint shipbuilding and shipowning projects are grouped into small to medium enterprises, JRTT has a unique section for them: Technical Assistance Department consisting of project planning assistance (presently 4 experts) and marine engineering assistance (presently 9 experts).

Thanks to the government's strict regulation of market access to the domestic shipping such as ship registry and route franchise, JRTT was free of overdue for a long time. After deregulation policy came in the late 1990s, JRTT suffered from many overdue cases. In response, their Legal Affairs Division (6 experts inside) has tried to facilitate filing claims and even lawsuits and withdrawing their vessels for liquidation. Because of such recent efforts, the financial condition has been improved. Today, JRTT lays more stress on project appraisal and applicant's tracking records. Although a long-term carrier contract between cargo owner and shipping company is highly appreciated, JRTT still does not require real estate collateral.

(2) PT. PANN's Case

PT. PANN in Indonesia has a history of 31 years of lease finance business as of year 2005, most of them financial lease. It has 60 vessels or 167 thousand DWT/GT which are under outstanding lease contracts as of now. The company is proud to say that there were no on-going legal cases or non-performing projects as of the writing of this report due to their good performance of credit monitoring and ship management.

PT. PANN leased out 7 vessels in the first operation year of 1974. Since then, 199 vessels have been leased to around 30 shipping companies, mostly ranging from small to medium enterprises. PT. PANN has 80 staff including drivers and guards and offers a financial spread of 1.5% in addition to the collected fund in the commercial market, i.e., 13%-14% currently. PT. PANN also has technical staff to support lessees such as Engineering Division (6 experts) and Development and Planning Division (4 experts). (Refer to Figure 14.5.2)

PT. PANN has two corporate strategies for business expansion. One is to seek for a long-term and low interest fund such as JBIC-DSMP in the Philippines. The other is to establish subsidiary companies to expand their service range such as Insurance Broker, Ship Management Company and Shipping Company.

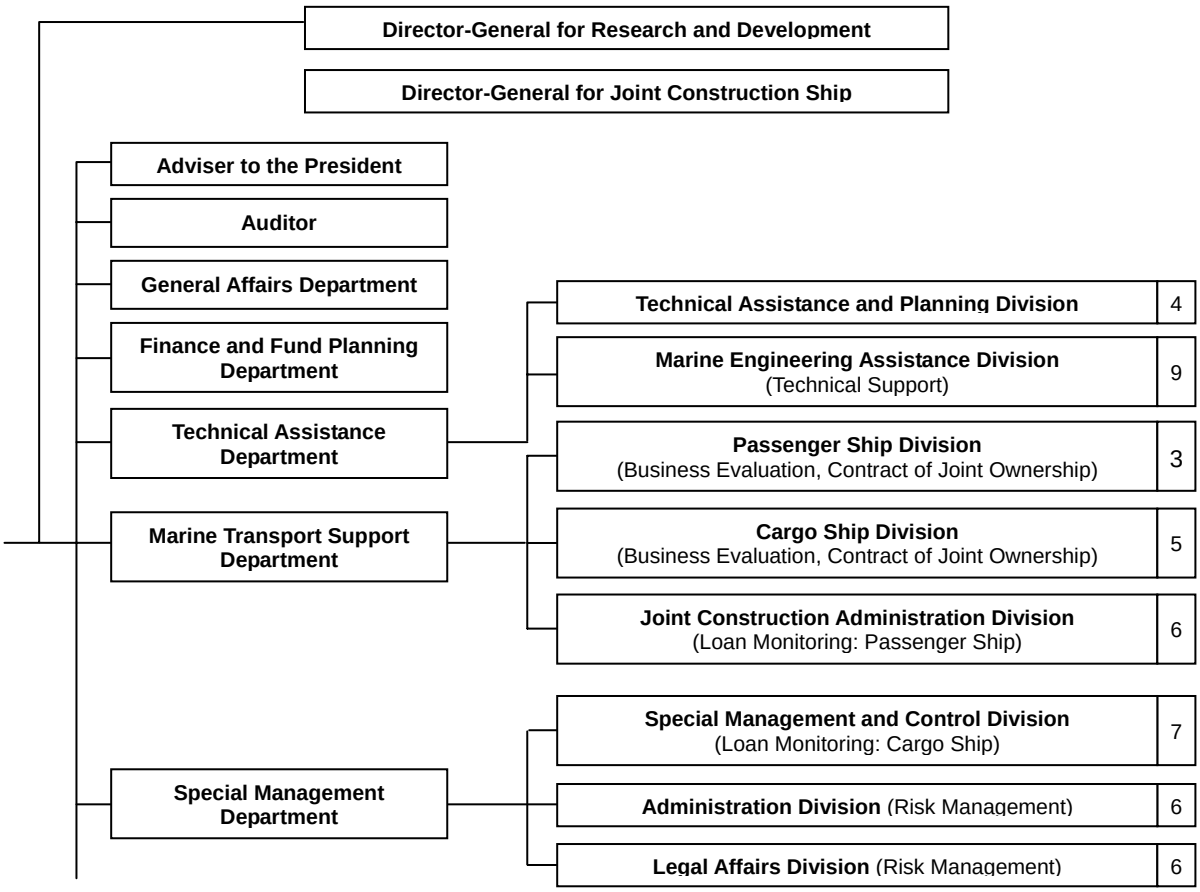
(3) Implication to NMEC

Current NMEC's organization with 11 officers and staff is shown in the figure below. There is not technical division or legal division, and it is not clear which section is responsible for credit monitoring. Although a small organization like this would be sufficient for the time being to keep the organization efficient and cost-effective, organizational development and relevant capacity building should be executed as its vessel procurement and credit delivery increase. (Refer to Figure 14.5.3)

PT PANN advised NMEC that maintaining good communications with the lessees on routine basis is the key to good credit monitoring.[2] To do this, however, NMEC must increase the number of staff as the number of lessees increases. The forerunner's experiences also show that technical assistance function is effective when NMEC deals with small to medium operators. In the beginning, such service may be contracted out to professional consultants. In the long run, however, it is advisable to educate and assign internal expert staff since technical knowledge concerning shipping management particularly ship and marine engineering will be able to be a competitive edge of NMEC to segregate itself from other financial institutions in terms of shipping risk management and ship asset preservation.

In conclusion, the Study recommends that NMEC become a professional ship finance institution with around 70 staff when NMEC holds more or less a similar fleet as PT. PANN, probably after 10 years time.

Figure 14.5.1. Organization of JRTT (Joint-Ship Owning Business Only)



Source: JRTT

[2] On 8 August 2005, JICA Study Team and NMEC jointly conducted a study tour to PT. PANN, Jakarta.

Figure 14.5.2. PT. PANN (National Shipping Development Corporation), Indonesia

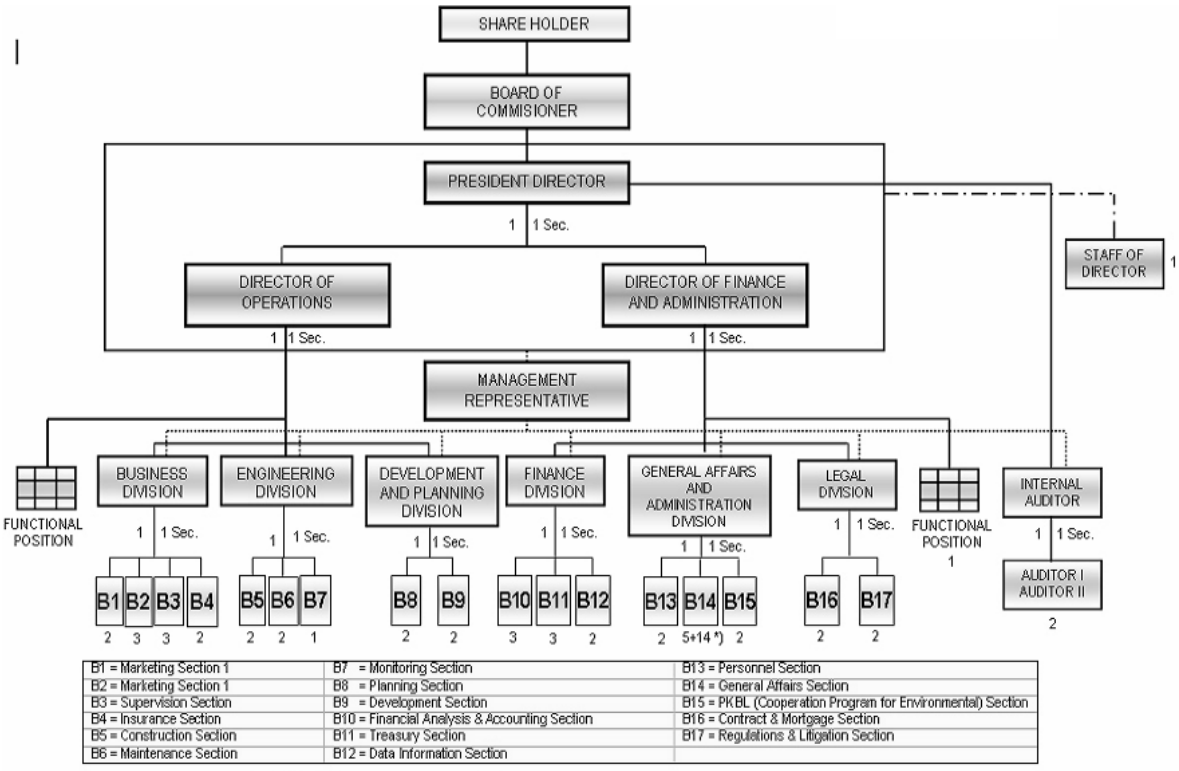
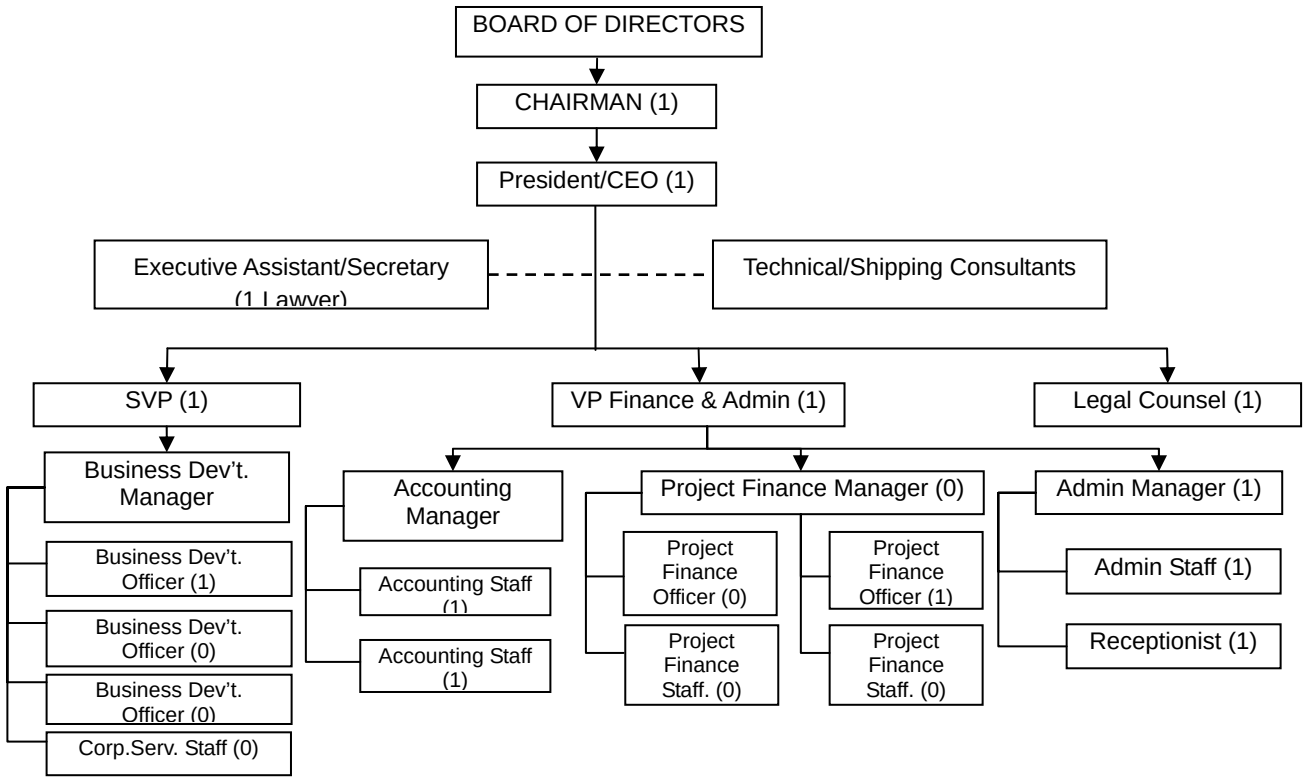


Figure 14.5.3. NDC Maritime Equity Corporation



Source: NMEC, as of August 2005

14.5.2 Financial Arrangements

(1) Borrowing Funds

NMEC will utilize funds from the Domestic Shipping Modernization Program II financed by Japan Bank for International Cooperation (JBIC) and organized and implemented by DBP. The program aims to provide long-term funds to the projects that will contribute to socio/economic development, service the transport needs between island provinces/municipalities and/or make the transport of passengers and cargo more efficient, reliable, safe and affordable.

DBP has not solved the underutilization issue in DSMP II fund. To urgently facilitate DSMP II disbursement, the Study proposes four (4) immediate actions to be taken by DBP in Section 5.3.3. They are shortly repeated: (i) intensification of marketing/ promotion activities toward regular clientele; (ii) utilization of NMEC ship leasing channel for small to medium operators; (iii) close coordination between DBP and MARINA; and, (iv) reinforcement of DSMP operation team including consultancy service to operationalize the new lending channel between DBP and NMEC. Therefore the actions of (ii) and (iv) must affect NMEC to use DSMP II fund at a wider scope.

Even after the end of loan mobilization date of DSMP II on January 7, 2007, revolving funds held by DBP in revolving fund account will be available for the time being. But it is not clear how long the revolving funds will be available to 2nd generation sub-loans, 3rd generation sub-loans, and even 4th generation sub-loans. Even if the funds are available, loan conditions, such as tenor and grace period on those sub-loans might differ, probably they will become shorter because balance of the revolving funds must decrease as DBP repays JBIC.

To meet supplemental and any unexpected financing needs, NMEC can tap loan funds extended by their parent company, NDC. According to NMEC, however, interest rate offered from NDC is normally higher than the market level, therefore borrowings from NDC should be considered as marginal and limited to short-term funding source. But it would be a quick and easy way to meet short-term financial needs as the lender is their parent company.

After a couple of years, NMEC could access to the financial markets with preferable conditions if ship leasing performance would be favourable. However only with receiving domestic bank funds, as a non-bank institution, NMEC will find it difficult to compete with universal banks in terms of interest rate.

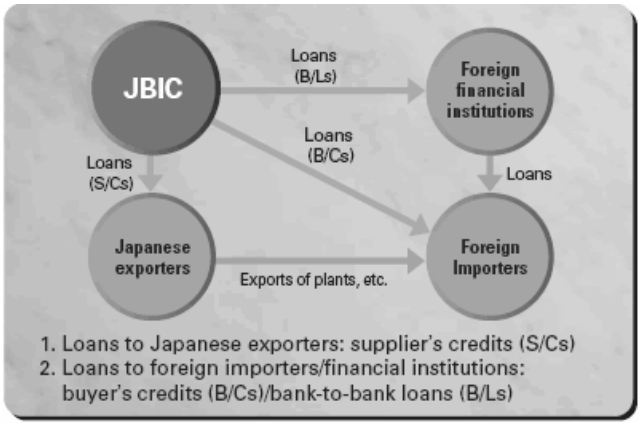
Therefore it is recommended to NMEC to mobilize other external public fund such as JBIC DSMP III, IBRD loan, KfW shipbuilding loan and other donor agencies after a couple of years from business commencement. The possibility of financing assistance to NMEC is analyzed by the said institutions as follows:

- JBIC has supported domestic shipping modernization in the last decade without bilateral industrial conditions such as obligation of shipbuilding in Japan. There is a great possibility to lend a further program loan such as DSMP III if the performance of DSMP II is adequately evaluated and further assistance need is clearly addressed with necessary scheme revision.
- JBIC has also an EXIM banking function. JBIC's export loans take the form of supplier's credits (S/Cs) extended to Japanese exporters, buyer's credits (B/Cs) extended to foreign importers in developing countries and bank-to-bank loans (B/Ls) extended to financial institutions in developing countries (refer to Figure 14.5.4). When NMEC supports a standardized and serial shipbuilding project in collaboration with a Japanese exporter, an export credit package may include ship

parts, materials, equipments and shipbuilding related technical services. The current JBIC's export credit rate of 1.99% yearly is effective for a loan over 8.5 years with the credit portion in a project accounting for 50-60% in principle.

- The World Bank Group can provide a variety of financial services such as IFC loan, equity participation, World Bank loan, and MIGA guarantee. Although no involvement was recorded in the domestic shipping sector in the last two decades, there is a possibility for the World Bank Group to support NMEC taking its PPP nature into account. For instance, the Philippine Infrastructure Corporation (PIC) under NDC intends to utilize the WBG resources.
- KfW may provide a shipbuilding loan to the Philippines as it has done in Indonesia. As long as Indonesia experienced, however, those vessels must be built in a German shipyard with some incentives such as low interest and shipbuilding training in Germany.

Figure 14.5.4. JBIC's Export Loans



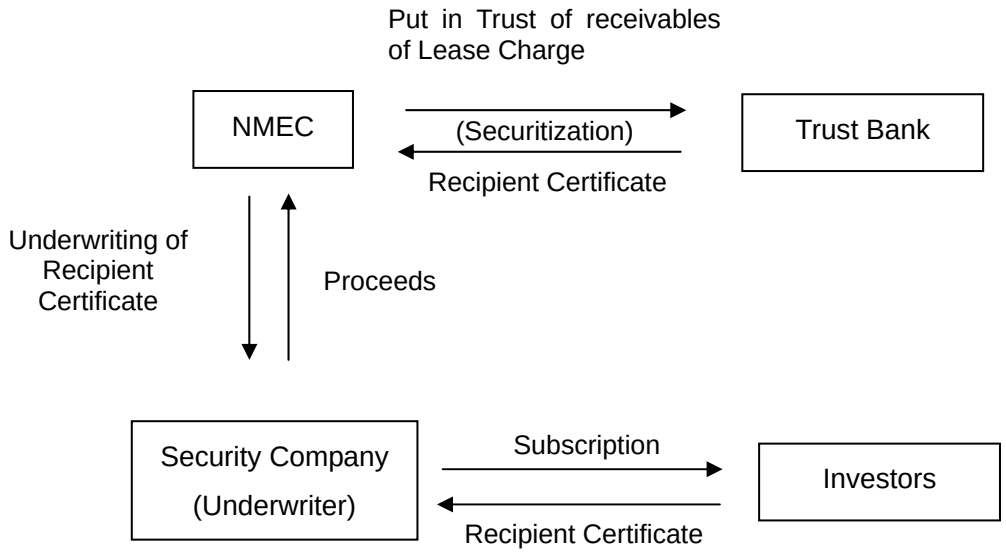
Source: JBIC homepage
www.jbic.go.jp

(2) Bond

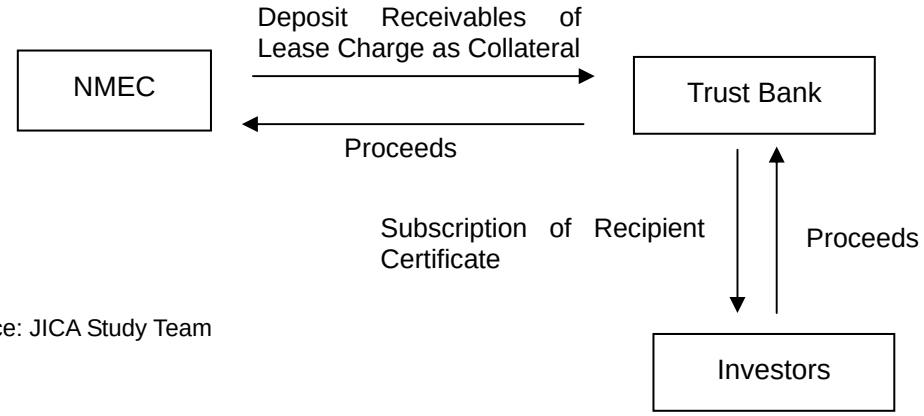
For complementing funding needs for business development in the long run as well as diversification of funding source, it is recommended that NMEC seek ways to floating their bonds or commercial paper (CP) in the domestic capital market with the backing of NDC. As already noted in Section 5.1.3 in the report, it is possible for some big companies to float bond and/or CP, and the 10 year bonds issued by NDC has been well subscribed in the market. Therefore, it will be highly possible that NMEC issue bond or CP with 5-10 year term with the backing, such as guarantee, of NDC.

With the accumulation of lease receivables, securitization of lease receivables, that is asset backed security, or ABS, would become one of potential funding means for NMEC. As ABS is already commonly accepted and well subscribed in the Philippine capital market, ABS of NMEC lease receivables with guarantee of NDC would also be well subscribed in the market. When the securitization of financial receivables on lease charge has become more common means of asset management and investment activity in the Philippine financial market, it might be possible for NMEC to put their lease receivables in securitization process even without the guarantee of NDC, so that NMEC does not have to hold lease receivables in their Balance Sheet until the end of lease contracts and can diversify their funding sources. The figure below shows a possible simplified mechanism of securitization of NMEC lease receivables.

Figure 14.5.5. Proposed Mechanism of Securitization of NMEC Asset-Backed Security



or simplified mechanism



Source: JICA Study Team

(3) Equity

For strengthening of overall financial capability and long-term business development, equity base should be strengthened accordingly. Except NDC, who is parent and sole owner of NMEC, potential investors to NMEC would come from the private sector such as commercial banks (both foreign and local) and other financial institutions including other lease finance companies and insurance companies (both foreign and local) as well as from the public sector particularly International Finance Corporation (IFC) and other international financing organizations.

(4) Insurance

Vessel insurances, specifically Hull & Machinery and Protection & Indemnity Insurance, will have to be in effect for the duration of the lease. Insurance premium is born by the lessee. NMEC keeps the insurance policy during the lease contract, duly endorsed in favour of NMEC.

It is well known that insurance premium that a lessee as “insurance contractor” pays at the time of contract and insurance money that a lessee as “assured party” receives from an insurance company against an insurance claim varies in accordance with contents and conditions of contract or situation of an incident. It is also generally known that insurance money to be received depends on how an “assured party” claims logically and in their favour. Therefore, it is critically important for NMEC as a legal owner of ship to bring up a section or officers responsible of and experienced in insurance claim procedure. It will surely bring a lot of benefits to the lessees of ship who are supposed to pay insurance premium and receive insurance money to pay the cost of the damage of ship to NMEC. In other words, reduced or cheap insurance premium and reasonably evaluated insurance money will contribute to raise NMEC’s credit.

(5) Security Deposit

In accordance with the requirement of generally accepted accounting principles in the Philippines, more than 90% of the value of the lease object is to be collected as lease charge during the contract. The Philippine accounting standard does not regard the lease finance company as having taken any business risks if they receive 10% Security Deposit and collect 90% of the value as lease charge during the contract. So, under those conditions, leasing company is not allowed to depreciate the lease object.

Although NMEC takes a security deposit of 10% after contract closing and before 1st payment to the supplier, deposit arrangement varies among different ship leasing institutions. PT. PANN in Indonesia retains the security deposit from the lessee for the amount equal to 4 months lease charge, which is roughly 4% against the 8-years (96 months) lease finance. Generally in Japan, ship leasing companies require freight revenue to be assigned to them in their bank accounts without deposit requirement in principle.

For NMEC leasing, 10% security deposit is understood to be a sufficient level provided that overdue incidents and those overdue periods are minimized by frequent operation monitoring and ship condition survey as PT. PANN practices. NMEC can appropriate the deposit for their loss and/or expenses in case the lessee fail to pay their obligations including lease charge and other expenses. Assignment of freight revenue like Japan is also recommended when the leased ship, like tanker, has a long-term transport service contract.

14.6 Financial Performance Perspectives

14.6.1 Financial Analysis

Regarding the NMEC’s ship leasing business, a cash flow analysis is undertaken to examine the financial profitability based on the NMEC Fleet Procurement Plan 2006-2015 proposed in Section 14.5.2 (3).

(1) ASSUMPTIONS FOR FINANCIAL ANALYSIS

1) Source of Fund

As a source of fund, the following four sources are assumed:

- Own fund: Initial equity of NMEC is assumed as 200 million peso;
- Borrowings from NDC and domestic financial institutions;
- JBIC sub-loan is assumed to be provided from DBP with the following conditions:

an interest rate of 7.5% p.a. and a repayment period of 10 years with grace period of 2 years; and,

- Lessee's equity portion for 10% of the procurement cost is deposited at NMEC as security deposit after the signing of the lease contract, as mentioned in 2) below. The deposit is a part of the fund for the investment made by NMEC.

2) Lease Condition

Ship lease-purchase condition is assumed as follows.

- Lease Period: 10yrs
- Security Deposit received from the lessee: 10% of Procurement Cost (residual value of the asset at the end of the term) (See footnote regarding the percentage of the security deposit.)[3]
- Interest Rate: 10% p.a.

3) Organization of NMEC

The staff members are assumed as follows:

- Number of Staff: 20 persons in the beginning year (assumed as 2006)
- Technical engineering service will be done by outsourcing for the time being, however, will be gradually covered by permanent staff.
- Number of Staff will increase to 70 persons including technical staff in 2015

Accordingly the operation cost of NMEC at the first year will be estimated as follows.

Table 14.6.1. Annual Operation Cost in the First Year

(million pesos)

Enumeration Cost	9.5
Office Cost	2.4
Technical eng Service	5.0
Legal Advisor	1.2
Total Operation Cost	18.1

4) Other conditions

- Inflation Rate: assumed as 5.3% which is average rate during the recent five years.
- Administration and overhead cost will increase in accordance with growth of staff.
- All the vessel operating cost including insurance fee, maintenance cost etc. will be born by the lessee (or vessel operator).

(2) Lease Charge

Monthly lease charge is calculated by the following formula:

$L = i \times (1 + i)^n / ((1 + i)^n - 1) \times Pv$

[3] PT. PANN (Indonesia) retains the security deposit from the lessee for the amount equal to 4 months lease charge, which is roughly 4% against the 8-years (96 months) lease finance. Therefore, 10% security deposit to NMEC is understood to be sufficient level. NMEC can appropriate the deposit for their loss and/or expenses in case the lessee fail to pay their obligations including lease charge and other expenses.

Where L: Monthly Lease Charge
i: Monthly Interest Rate
n: Lease Period in Month
Pv: Procurement Cost of Vessel

In case of 10% interest rate and 10 years lease period, the monthly lease charge is calculated to be approximately 1.3% of vessel procurement cost.

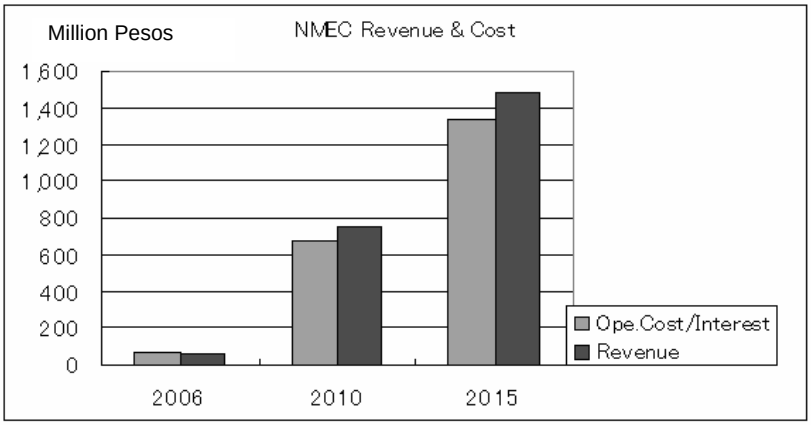
(3) Operation Cost of NMEC

The operation cost of NMEC consists of the remuneration cost, office and facilities cost, outsourcing costs for technical service and legal advises. At the first operation year (2006), the costs are estimated as 9.5 million peso, 2.4 million peso and 6.2 million peso respectively. Allowance for uncollectible lease charge is assumed at 1% of the total lease amount each year.

(4) Revenue and Cost

The operation revenue and cost for the leasing business of NMEC are estimated as shown in Fig 14.6.1. Although the revenue will be lower than the total cost in the first year due to the interest cost of long-term loan, revenue will exceed cost from the second year.

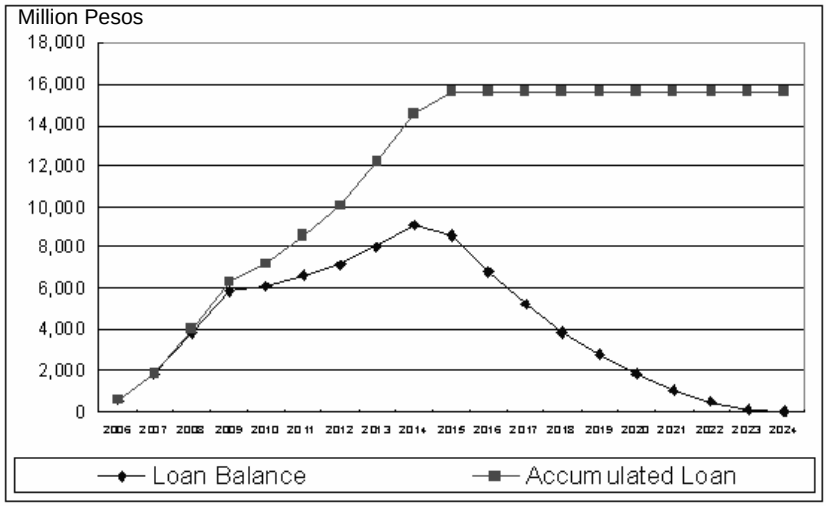
Figure 14.6.1. Operation Revenue and Cost of NMEC



(5) Cash Flow Analysis

The operation revenue and cost flows are examined for the period from 2006 to 2020. Revenue reaches maximum in 2015, then gradually decreases because this analysis is based on the vessel purchase/lease plan for only 10 years till 2015. Details of cash flow analysis is provided in Figure 14.6.2.

Figure 14.6.2. Total Accumulated Loan and Loan Balance



The total accumulated loan during the 10years will be 15.3 billion pesos, while the loan balance will have the maximum of about 9.0 billion pesos in 2014 because of progress of repayment. Table 14.6.2 shows the financial evaluation indicators, which are summarized as follows:

- Fare-box Ratio is sufficiently high, if the staff assumed above can manage large number of leasing project.
- During the coming 15 years, any shortage of cash in hand will not occur therefore, short term loan will not be necessary for operation.
- Although FIRR is not so high, stable profitability is expected as long as the lease charge is paid from operators without delay.

Table 14.6.2. Financial Evaluation Indicator[4]

FIRR	10.1%
DSCR (1st Year)	167.0%
DSCR (Min)	87.0%
FBR (1st Year)	511.0%
FBR (Min)	511.0%

14.6.2 Sensitivity Analysis

As sensitivity analyses, the following two factors are examined: (1) profit margin, and (2) fleet share of NMEC's lease vessels.

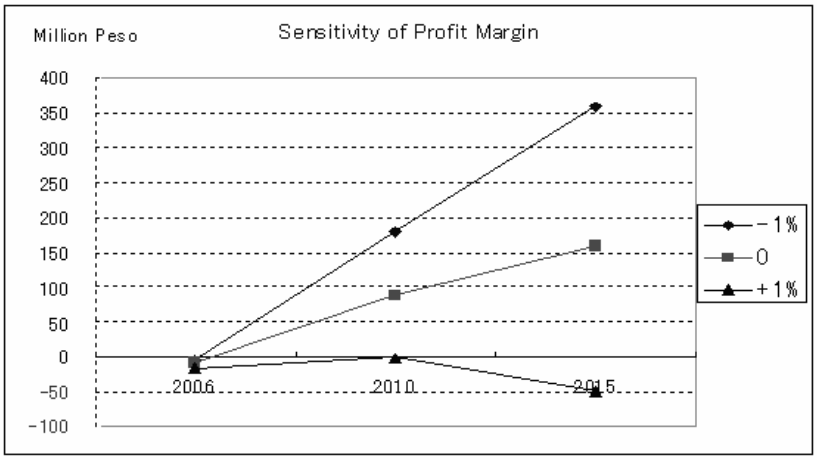
(1) Profit Margin

In the above financial analysis, the interest rate of the source fund is assumed as 7.5%, and that for vessel lease is assumed as 10%. Accordingly the profit margin of 2.5% is assumed for NMEC. The sensitivity of the profit margin is examined by adding ±1.0 %, which is assuming the 1% higher or lower interest rate of source fund.

[4] Debt Service Coverage Ratio (DSCR): Repayment / Operating Revenue
Fair-box Ratio (FBR): Revenue / Current Expense

In case of the additional profit margin of +1%, the lease revenue exceeds the operation cost in the first year (2006) and grows more and more in the future. On the other hand, in case of less profit margin of – 1%, the lease revenue will never exceed the operation cost and the operation deficit will be accumulated as shown in Figure below.

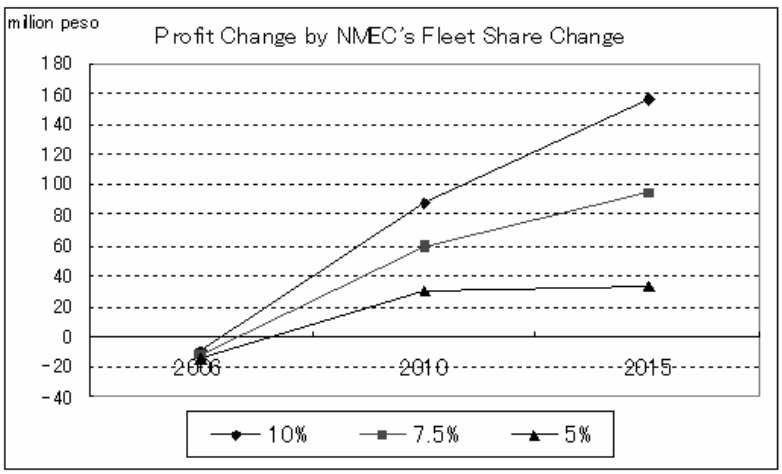
Figure 14.6.3. Sensitivity of NMEC's Profit Margin



(2) Share of NMEC Lease Vessels

The financial analysis in the previous section is assuming that the total leased vessels of NMEC will be 10% of total domestic shipping fleet in terms of gross tonnage. If the share decreases to 7.5% and 5% of total fleet requirement, the operation profit will drop to about 80% and 55% of the 10% case (Base Case), respectively. It is also noted that the operation is expected have a deficit only for the first year in any case while it will turn out to be profitable in annual basis from the second year. The minimum volume to maintain the NMEC business to be operational with positive cashflow will be around 0.8% of the total fleet requirement, i.e., 15,000 gross ton or 1.4 billion pesos for the purchase/lease up to 2015. In this case, the number of staff will not increase as assumed above.

Figure 14.6.4. Sensitivity of NMEC Fleet Share



14.6.3 Analysis Summary

As stated above, NMEC has shown assuredly high potential to contribute to the promotion of RRTS and the modernization of domestic shipping industry. As a result of the financial analysis, the operation is financially viable under the assumed terms and conditions.

In order to make their operation sound and sustainable as a vessel leasing corporation, the following conditions will be required.

- The profit margin of 2.5% assumed above will be kept in the future as well.
- The vessels purchase/lease will be continuously repeated as much as the fund is available.
- The total fleet to be purchased/leased will be at least 1% of the total domestic requirement, and set a target share of 10% by the year 2015.
- The delay of lease charge collection and sudden interruption of fulfillment of the contracted responsibilities by the lessee are not expected in the above analysis. Those should be avoided by any means within the range of deposit confiscation.
- For effective appraisal and credit monitoring, NMEC has to have a sufficient capability, including the outsourcing of staff, for the assessment of both financial and technical conditions of shipping company (lessee), appraisal of rate of return and cashflow of each investment, and capability of ship management of their own or under outsourcing contract.

14.7 Summary of Fostering Program

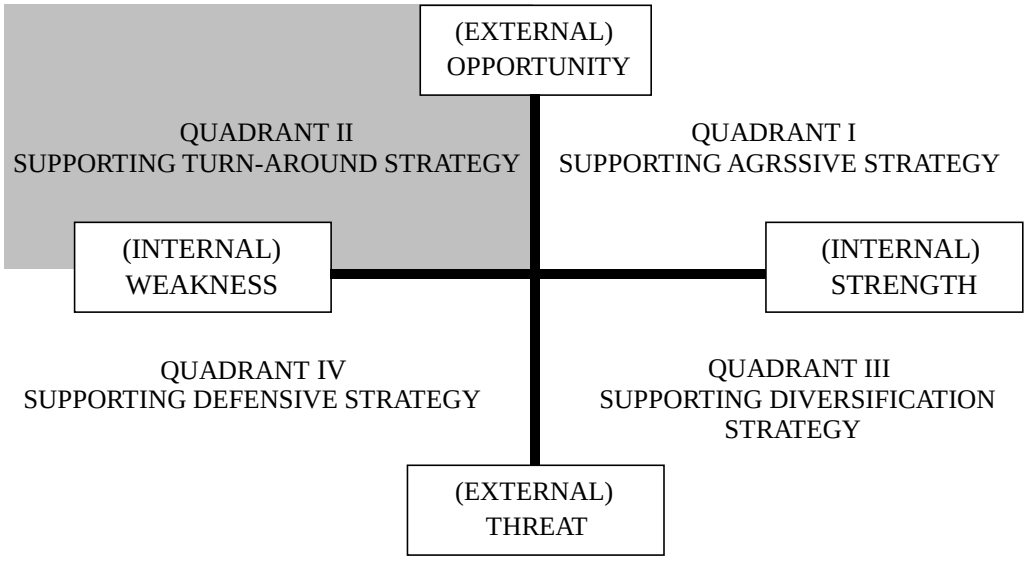
14.7.1 SWOT Analysis

(1) Method

A business organization tries to avail of their resources - human resources, tangible and intangible assets, financial resources, information and knowledge –for their effective and sustainable business development. In the planning phase of business development or review and monitoring phase of performance results, it is effective and even crucial to know one's own strengths and weaknesses. For this purpose, SWOT analysis is often used to effectively clarify and organize ones Strengths and Weaknesses as well as Opportunities and Threats internally and externally. By utilizing the result of SWOT analysis, planning process of future development would proceed much easier and efficiently. (Refer to Figure 14.7.1)

Clearly contents and purpose of SWOT analysis vary depending on the visions and targets that managing directors have presently in their minds to an organization at issue. Therefore, it should be understood that this SWOT analysis on NMEC has been carried out for NMEC to challenge to become more expanded in scope and experienced as well as to be a as self-sufficient leasing company in domestic shipping business in the country, rather than to try to maintain their past and/or present business volume or share in the financial sector.

Figure 14.7.1. Framework of the SWOT Analysis



QUADRANT I describes a desirable situation in which strength and opportunity is very dominant. Under such circumstances, the desirable action is to support the growth-oriented strategy.
QUADRANT II shows a situation whereby the organization suffers from some weaknesses in running its business but the organization still have chances to capture business opportunity in the market. In this case, the best strategy is to minimize internal problems so as to gain better share in the occurring market opportunity.
QUADRANT III depicts a situation in which an organization has internal strength but has some serious external threats. The perceived good strategy is to use the strength in order to gain a long-term opportunity by diversifying its market or product.
QUADRANT IV describes an unwanted situation whereby the organization faces both many external threats and internal weaknesses. Under such conditions, the organization better apply a defensive strategy to survive the non-lucrative situation.

(2) Analysis

The Study conducted the SWOT analysis based on the discussions with NMEC and related agencies in the sector like DBP, MARINA, PISA, JBIC, and also with shipping companies as NMEC's potential customers, held during the entire period and at various occasions of the DSDP study.

1) Internal Strength

- NMEC is going to practice alternative ship finance scheme which is characterized as no collateral requirement and more involvement in financed ship from construction/procurement to operation phases. It is considered the most attractive point to explain why many applicants have expressed strong interest even before official launching.
- From the beginning, NMEC can tap DSMP II fund into its leasing ships in partnership with DBP.

2) Internal Weaknesses

- No business experience in ship finance and lack of expertise to provide professional services
- So far no fund raising except DBP which expressed interest by providing a non-recourse financing for the procurement of RORO vessels on missionary routes.

NMEC needs to expand the DBP's channel and/or develop other sources to serve as more stable and profitable ship financing segments.

3) External Opportunities

- There are strong vessel modernization and procurement needs in the domestic shipping sector.
- NMEC has capacity building opportunities on general ship finance and even alternative ship finance through cooperation with JRTT in Japan and PT. PANN in Indonesia.
- The Government has recently made more supportive policies to domestic shipping and shipbuilding such as RA 9295, RRTS and IPP. Such initiatives can improve the NMEC's business environments.
- NDC, the parent company of NMEC, has the mission to venture in a portfolio of socially relevant and commercially viable investments that would significantly contribute to the government priorities. There is a growing need to expand its PPP approach in development with addressing the critical government finance. Thus NDC and its subsidiaries such as PIC and NMEC will become focal institutions in the near future. The move is good for them to mobilize external sources.

4) External Threats

- There remain numerous negative factors to affect ship investment. Representatively they are poor ship management and inspection practices, poor port services and threats of maritime accidents and security.
- Expanding mismatch between operators' needs and the availability of second-hand vessels.
- Advanced foreign shipyards like in Japan are busy with long order lists while domestic shipyards have limited capabilities and experiences to deliver new tonnage to domestic operators.

(3) Conclusion

By considering the above analyses, it is obvious that NMEC has all the S-W-O-T elements. Due to its very new corporate profile, the inexperience issue is inevitable for the time being. Therefore it must be some time before NMEC starts to demonstrate internal strength. On the other hand, the external opportunities seem stronger than the external threats because the former has already addressed the latter. However NMEC can't solve the threats alone.

This SWOT analysis recommends NMEC to take the Quadrant II "Supporting Turnaround Strategy" as shown in Figure 14.7.1. In the coming several years, NMEC will put priority on capacity building to act as the full-fledged alternative ship finance institution around 2010 and make efforts on gradually increasing funding channels. It is also important for NMEC to mitigate external threats by developing favourable ship finance environments. However those institutional and industrial development issues is a responsibility of MARINA. Therefore it is essential for NMEC to work with MARINA as its financial arm like in a standardized shipbuilding project.

14.7.2 Development Milestones 2006-2015

With summarizing the previous sections including the result of SWOT analysis, the Study prepared a map of development milestones as illustrated in Figure 14.7.2 in order to concretize NMEC's future business development strategy. The NMEC development milestones have been compiled with the following six (6) perspectives: (1) vessel procurement (development and management of customer base), (2) operation process and know-how, (3) organization and human resources, (4) external

resources, (5) fund raising (finance) and (6) corporate cash flow.

1) Vessel procurement: 61 vessels or 189,000 GT will be procured year by year. More emphasis is put on liner fleets particularly short-distance RORO and middle to long distance ROPAX since greater public involvement is required to modernize and introduce those shipping systems.
2) Operation: The core operation area is finance leasing with adequate project feasibility assessment. To enhance leading-edge know-how as an exclusive ship finance institution, ship management expertise will be internally acquired for a certain period for marine insurance, ship repair and maintenance and crewing.
3) Organization and human resources: The corporate organization will grow as it acquires 5-7 vessels every year. New divisions will be added such as technical and fund raising in order to be a sustainable organization. Staff training will be necessary when expanding its service coverage.
4) External resources: Technical and legal consultants will be hired on a contract basis to offset insufficient capability for the time being.
5) Fund raising (finance): In addition to DSMP-II, other domestic and international sources will be mobilized to this unique NMEC ship leasing business. Bond issuance and equity increase will be also considered.
6) Corporate cash flow: Until the year 2015, NMEC will invest Peso 17.4 billion into vessels. To ensure stable corporate business management, cash surplus must be achieved every year. As results, an accumulated cash surplus of Peso 2.5 billion will be expected at the end of 2015.

Figure 14.7.2. Development Milestones for NMEC Business Operation

Component / Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total/Remarks
Vessel Procurement												(unit/GT)
- Short-distance RORO		3	2	4	4	4	4	4	4	4	4	37/41,400
- Middle to Long-distance Ropax			1	1	1		1	1	1	1		7/88,000
- Other Type		2	2	1	2	1	1	2	1	2	2	16/64,000
Operation (Service)												
- Finance Leasing												
- Ship Management												
(1) Insurance Brokerage		(training)										
(2) Technical (Refer note below)			(outsourcing)									
(3) Manning												
- One-Stop Window Service				(training)								
Organization												
- No. of Officer & Staff	10	20	20	30	40	50	50	60	60	70	70	
- Technical Division	None (Contract out)	(outsourcing)		5	5	5	5	6	6	7	7	
- Legal Division			(training)		2	2	2	3	3	3	5	
External Resource Procure												
- Technical Consultant												
- Legal Advice												
Fund Raising												
- DSMP II Loan thru DBP		(Primary Loan)		(Revolving Fund)								
- Domestic Borrowings (NDC and Banks)												
- DSMP III and Other International Borrowings												
- Bond Floating backed by NDC												
- ABS Floating backed by NDC												
- Equity Incrase												

Profit and Loss Statement		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1. Operating Revenue		56	163	387	639	729	850	982	1,203	1,440	1,477	
1) Lease Revenue		56	146	362	597	658	761	883	1,090	1,308	1,318	
2) Interest		0	16	25	43	70	89	99	112	133	159	7%
2. Operating Expense		19	25	31	38	44	53	63	76	91	108	
1) Operating Cost		19	24	28	33	38	45	53	63	75	89	
2) Allowance for Uncollectivable Lease		0	1	3	5	6	8	10	13	17	20	1%
3. Operating Profit		37	138	356	602	684	797	918	1,127	1,349	1,369	
4. Other Expenses		47	125	313	524	601	702	809	990	1,186	1,214	
1) Financial Cost												
- Interest for Long Term		47	125	313	524	601	702	809	990	1,186	1,214	
5. Net Profit before Tax		(10)	13	44	78	83	95	110	136	163	155	
6. Income Tax		0	4	14	25	27	30	35	44	52	50	32%
7. Net Profit after Tax		(10)	9	30	53	57	65	74	93	111	105	
8. Retained Earnings		(10)	9	30	53	57	65	74	93	111	105	

Cash Flow Statement		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1. Source of Funds		926	1,279	3,114	3,781	2,030	2,857	3,505	5,135	5,992	4,105	
1) Net Profit before Tax		(10)	13	44	78	83	95	110	136	163	155	
2) Lease Amortization		41	113	288	503	626	799	1,012	1,321	1,685	1,955	
3) Long Term Loan		625	1,038	2,504	2,880	1,188	1,767	2,145	3,310	3,729	1,795	
4) Paid Up Equity		200										
5) Deposit		69	115	278	320	132	196	238	368	414	199	
2. Application of Funds		695	1,157	2,856	3,389	1,763	2,716	3,309	4,848	5,612	3,883	
1) Capital Expenditure		695	1,153	2,782	3,200	1,321	1,963	2,383	3,678	4,143	1,994	
2) Repayment of Short Loan		0	0	0	0	0	0	0	0	0	0	
3) Repayment of Long Loan		0	0	60	164	416	723	891	1,126	1,416	1,839	
4) Income Tax		0	4	14	25	27	30	35	44	52	50	
5) Dividents		0	0	0	0	0	0	0	0	0	0	
3. Cash Surplus (Single Yr)		231	122	258	392	267	141	196	287	380	221	
4. Cash Surplus (Accuml.)		231	353	611	1,003	1,270	1,411	1,607	1,894	2,274	2,496	

(Note)
Technical staff comprising ship design, construction, supervision, repair and maintenance
Monetary values in million pesos.

15. CONCLUSIONS AND RECOMMENDATIONS

15. CONCLUSIONS AND RECOMMENDATIONS

15.1 Conclusions

The Study commenced in the memorial year of 2004 for domestic shipping development since the PGMA 10-Point Agenda pledged to develop the nationwide RORO-highway network and RA9295, so-called the Domestic Shipping Development Act, was enacted where MARINA is the competent authority. In the next year of 2005, the Maritime Equity Corporation of the Philippines under NDC, a long awaited institution among the administration and industry, was created. As there is a growing concern on domestic shipping development among relevant agencies, and central and local business organizations, it is well timed to have conducted the Study to draw a sector development framework.

The Study has analyzed the Philippine domestic shipping sector in a comprehensive way. The sector performance assessed by the Study, however, shows many of development issues despite the recent political enthusiasm. Aging fleets are a representative phenomenon, as typically indicated by the average age of trunkline Ropax fleet of 31 years. The Study has revealed that there are still improvement areas in fleet quality preservation such as ship management practices by the shipowner, periodical and ad hoc surveys and inspections by the classification society and the maritime administration although MARINA's continuous efforts are appreciated. In the feedering service, wooden-hull fleet is still dominant even though islanders and their economies desire for safe and stable shipping.

The JBIC's ship finance facility: DSMP has a history of 10 years. The Phase I contributed to domestic fleet modernization and ship safety enhancement to some extent in the late 1990s. The Phase II widened its coverage to port facilities and maritime education facilities as an overall maritime transport support program. As results, through the early 2000s Phase II has been underutilized with loan concentration on large operators. There has been an expanding mismatch between vessel needs among operators and available second-hand vessels in the market abroad, particularly Japan. Therefore the 10 years' DSMP experience shows an incremental need to manage public ship finance like DSMP under a new mechanism rather than as an indication of a decline in finance needs.

It is understandable in the Philippines that domestic shipping will remain indispensable for supporting inter-island and coastwise social and economic activities. The Study estimates demand to increase during the projection period 2003-2015: from 48 million tons to 70 million tons for cargo and from 32 million to 53 million passengers. The fleet requirement will also expand from 1.5 million GT to 1.9 million GT during the same period with consideration of a certain level of modernization. In order to meet such growing traffic and fleet demand, the domestic shipping sector needs a drastic paradigm shift in its development framework with addressing the present sluggish and in some areas declining situations. In outlining a paradigm shift based on the Study results, it must deal with many elements of the sector to be modernized as follows:

Shipping Industry – to get rid of a deep dependency on second-hand vessels. There is a strong need to improve ship investment capability. Shipping business management should be modernized. Enlargement of business scale through mergers and controlling of a logistics chain is quite effective.

Ship Management – to build a system to guarantee ship asset value: All technical experts' capability should be reinforced and strengthened, including improved services from operator's technical division, fostering of ship management company,

unification of domestic classification societies, and retraining of class surveyors and MARINA/PCG ship inspectors.

Shipbuilding Industry – to develop domestic shipbuilding capability. Since the existing capability is very low in constructing domestic vessels, the industry should call for domestic and foreign investment with seeking for technical cooperation with particularly advanced foreign shipbuilders. MARINA should map out a standardized and serial shipbuilding project for domestic operators and coordinate its implementation among relevant agencies including funding.

Inter-island Liner Service – to attract private investment in accordance with a shipping networking and service provision plan to be prepared by MARINA. The trunkline liner network will consist of Ropax and container vessels with clear role demarcation in the market. For instance, Ropax shipping will provide fast and seamless services to passengers and vehicles while container shipping will offer economic services to unitized cargo. In the short-distance routes, RRTS will extend its network while wooden-hulled vessel operation will be gradually phased out.

Non-liner Service – to provide more efficient and scale of economy services. There will be an increasing need to design the entire stretch of a logistics chain and assign the most suitable vessel. Dry bulk shipping will be introduced in that way. Old single-hulled tankers will be replaced with double-hulled vessels progressively.

Ports – to ensure efficient ship operation and investment in modernized vessels: In this connection. the Study has identified port development needs for domestic shipping operation such as installing quayside container cranes at 10 major ports, building dedicated Ropax terminals at Manila South Harbor and Cebu, portside grain terminals at both Mindanao ports and Luzon ports and RORO terminals at local ports.

Logistics – to introduce efficient supply chain management by commodity as well as corridor. The Study has identified 16 cold chain corridors and major bulk haulage corridors where shipping is centered in the logistics chain. Since logistics consists of six (6) operational sections (transportation, storage, loading and unloading, packaging, processing and information), government development initiatives including financial support must cover all the elements to enable efficient supply chain management.

15.2 Recommendations

The Study has formulated the Domestic Shipping Development Plan (DSDP) towards the year 2015. The DSDP consists of a domestic shipping development framework and five (5) small feasibility studies to realize some priority development projects. The domestic shipping development framework has planning areas including maritime transport development planning, shipping industry and SBSR industry development planning, legal and other institutional analysis, engineering analysis of domestic vessels and ports, and ship finance planning. The five (5) small feasibility studies encompass (i) trunkline Ropax fleet and (ii) RRTS for new liner system development, (iii) corn bulk shipping and (iv) fish processing and cold chain for efficient supply chain management and (v) the practice of an alternative ship finance scheme by NDC-MEC.

In terms of the relation between RA 9295 and its IRR and the DSDP, the DSDP shares three objectives of RA 9295, namely (1) bridging islands by domestic shipping, (2) encouraging the dispersal of industry and economic development, and (3) ensuring the growth of exports by providing domestic sea linkages. In-depth analysis has been made and necessary policies and strategies have been elaborated to pave the way to realizing the DSDP objectives. Therefore it is recommended that MARINA as the competent authority utilize the DSDP as a planning document to technically support RA 9295 and its IRR.

There are 57 project proposals in the Study which can be divided into four (4) projects natures: policy and institution (10 projects), service and infrastructure (22 projects), industry and human resource (17 projects), and ship finance (8 projects). Their profiling, evaluation and prioritization, development goal and achievement indicators for evaluation are described in Appendix 10 and summarized in Table 15.2.1.

Each project has distinct significance while it requires peculiar arrangement for effective implementation. At the end, the success of domestic shipping development can be measured by sufficient and modern domestic fleets with sustainable and competitive shipping services. To enable such fleet development and service provision, the shipping and other maritime industries should be strengthened by prividing support in terms of adequate incentives and regulations. The ship finance sector should support those industrial efforts with necessary institutional improvement. To enjoy such synergy effects at the optimum level, it is recommended that all the proposed projects be orderly implemented during the timeframe 2006-2015.

Table 15.2.1 Summary of the DSDP Projects

Project Code/Name	Development Goal	Estimated Cost (P Mil.)	Implementing Body	Schedule	Priority
Project Nature: Policy and Institution					
A11 / Resumption of Dialogue between the Operators and the Shippers	To balance the concerns of shippers and ship operators (competitive rates and viable shipping operations)	1.2	MARINA	2006-2015	A
A12 / Enhancement of MARINA's Fare Monitoring Capability	To enhance capability of MARINA to assess competitiveness of domestic shipping in a free market	15	MARINA	2008-2009	B
A13 / Updated and Streamlined Requirements and Procedures	Better delivery of services through a streamlined bureaucracy.	Negligible	MARINA	2007-2008	B
A14 / Relaxed Regulatory Regime	To encourage entry into routes and services and lower rates and improve level of services.	Negligible	MARINA	2006-2015	B
A21 / Devolution of Regulatory Powers	To involve LGUs in the development of local domestic shipping	3.2	MARINA and DILG	2006-2015	B
A22 / Municipal Infrastructure Support including Continued	To provide sea access to coastal and island communities	P 360 M for Package E of	DOTC and PPA	2007-2010	A

Project Code/Name	Development Goal	Estimated Cost (P Mil.)	Implementing Body	Schedule	Priority
Implementation of the NFPDP II		NFPDP II			
A31 / Categorization of Sea Areas	To connect category of sea area to meteorological conditions.	Negligible	MARINA	2006-2007	B
A32 / Rationalization of Area of Operations of Wooden-hulled Vessels	To rationalize area of operations of WHVs within protected and partly protected areas only	Negligible	MARINA	2006-2007	B
A33 / Institutionalizing Security Measures for Domestic Shipping and Ports	To make travel and trading in domestic shipping routes safer and more secured	US$ 450,000 (ADB Grant)	DOTC – PPA, CPA and MARINA	2006-2010	A
A34 / Designation of an Admiralty Court	To hasten adjudication of maritime incidents	Negligible	Department of Justice	No later than 2010	B
Project Nature: Service and Infrastructure					
B11 / Differentiation of Ropax and Container Service at Trunkline	Establish competition among operators and to offer diversified services for shippers	Negligible	MARINA	2006-2010	A
B12 / Implementation of the Trunkline ROPAX Pilot Project on the Manila – Cebu Route	Enhancement of shipping service between Manila and Cebu	6,280 for Initial Fleet	Participating Shipping Operators	2007-2009	A
B13 / Replacement of Aging ROPAX with a New-generation ROPAX on the others than the Manila-Cebu route	Provide more efficient vessels, with reduced downtime – to ensure sustainability of connections	N.A.	Participating shipping operators	2010-2015	B
B21 / Implementation of the Corn Bulk Shipping Pilot Project (Gen San – Luzon)	Enhance the competitiveness of SOCKSARGEN corn in Luzon	1,424	Inter-agency task force including MARINA, DA and DTI	2007-2008	A
B22 / Establishment of Consolidation System and Facilities for Bulk Handling	Enhance the quality of grain products and set the conditions for large-scale bulk transport	6,5000 (DBP-SLDP)	Participating product consumer/ producer	2006-2015	A
B23 / Further introduction of Large Scale Bulk Shipping Service on possible Long-distance Routes	Reduce the cost of logistics	N.A.	Participating shipping operators	2009- 2015	B
B31 / Improvement of Investment Condition for Tanker Renewal	Protection of the environment against oil spills	10,400	Participating petroleum companies	2006-2007	B
B32 / Development of Legal Framework for Tanker Modernization	Protection of the environment against oil spills	Negligible	MARINA	2006-2007	B
B33 / Promotion of Domestic Tanker Building	To develop domestic capability on tanker building, and thereby less reliance on imported vessels	N.A.	MARINA	2008-2015	B
B41 / Examination of Viability of the Cold-chain Corridor Development Projects	To reduce wastage and enhance food quality	50	DA and/or DTI	2006-2007	A
B42 / Implementation of the Cold Chain Pilot Project for Panay Fish	To enhance the livelihood of Panay fisher folks	633	LGU	2006-2007	A
B43 / Expand Cold Chain Facilities and Infrastructure	To reduce wastage and enhance food quality	16,000 (DBP-SLDP)	Participating logistics providers	2008-2015	B

Project Code/Name	Development Goal	Estimated Cost (P Mil.)	Implementing Body	Schedule	Priority
B51 / Establish Infra and Financial Support for RoRo to Replace Wooden Hull Operation	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	3,129 (up to 2015)	MARINA	2007-2015	B
B52 / Setting of Clear Directive regarding Phase Out Plan and Strictly Enforce Phase Out Regulations	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	0.5	MARINA	2006-2007	A
B53 / Guidelines Preparation in Safe Wooden Hull Vessel Operation and Establishment of an Enforcement Mechanism	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	3.0	MARINA	2006-2007	A
B54 / Establishment of Safety Nets to Cushion Displaced Wooden Hulled Operators and Crews	To mitigate the social disbenefits of banca boat replacement	N.A.	LGU	2008-2015	B
B61 / Establish Institutional and Developmental Plan for RRTS	To improve market accessibility of the countryside, thus promoting countryside development	120	RRTS Inter-agency Task Force led by DOTC	2006-2007	A
B62 / Implementation of the RRTS Pilot Project between Bicol and Cebu	To promote development in the Bicol Region and particularly Masbate Province	Ports – 89 Vessels – 1,344	RRTS Inter-Agency Task Force led by DOTC	2007-2008	A
B63 / Fostering of RoRo Operators and Port Operators	To improve market accessibility of the countryside, thus promoting countryside development	7,500 (DBP-SLDP)	NMEC	2008-2015	B
B64 / Delivery of New RORO Vessels	To improve vessel productivity and to develop self-sufficiency in ves09sel supply	N.A.	Participating shipyards	2008-2015	B
B71 / Improvement of Major Domestic Shipping Ports	To reduce transport cost by reducing required port time	N.A.	Port authorities	2006-2015	A
B72 / Development of RORO Terminals	To enhance accessibility and to enhance integration between neighboring islands	N.A.	Port authorities	2008-2015	B
Project Nature: Industry and Human Resource					
C11 / Further Development of e-MARINA	To upgrade the MARINA website in a more interactive way with improving market information	0.8	MARINA	2007 (Operation alization)	A
C12 / Establishment of a MARINA Training Center	To provide various maritime training opportunities especially for management personnel	N.A.	MARINA	2006-2010	A
C13 / Promotion of Shipping Industry Restructuring	To collect and disseminate successful shipping industry restructuring efforts	6.0	MARINA	2011-2015	B
C21 / Enactment of a Ship Management Incentive Act	To institutionalize professional ship management services for paving the way to a strong maritime country	Negligible	MARINA for drafting works	Around 2010	B
C22 / Reorganization of Domestic Classification Societies	To form a single and non-profitable organization	Negligible	MARINA	2006	A
C23 / Provision of Ship Management Training Program	To foster competent superintendents, class surveyors and ship inspectors	16	MARINA	2006-2008	A
C24 / Publication of Surveyor's Guidelines and Checklists	To guard and standardize surveyors' service in quality	3	MARINA	2006-2007	B
C25 / Sharing of Ship Inspection and Accident Inquiry Database	To maintain seaworthy fleets by related parties based on a commonly developed and shared database	0.2	MARINA	2007-2008	B
C26 / Preparation of a New NSM Manual	To enhance safe management on small domestic vessels with a simplified and	3	MARINA	2006-2007	B

Project Code/Name	Development Goal	Estimated Cost (P Mil.)	Implementing Body	Schedule	Priority
	practical NSM manual				
C27 / Establishment of a Publicly-owned Ship Equipment Procurement Company	To collectively and economically procure ship equipment, materials and spare parts for the SBSR industry	100 (For initially paid equity as a GOCC)	DTI	2006-2007	A
C31 / Facilitation of Investment in Shipyards	To increase shipbuilding capability to meet domestic shipping needs particularly small vessels	10,192	Domestic Shipbuilders	2006-2015	A
C32 / Upgrade and Modernization of Shipbuilding Technology	To deliver competitive vessels in quality against foreign mode ones	16	Domestic Shipbuilders	2007-2009 (training program)	A
C41 / Provision of Efficient Ship Repairing Service	To provide fast and reasonable ship repairing service at an internationally competitive level		Domestic ship repair yards		A
C42 / Receipt Acquisition of More Ship-repairing Orders from Foreign Vessels	To offer integrated ship repairing and management services in association with robust SBSR ancillary industries	N.A.	Domestic ship repair yards	2010-2015	B
C43 / Conduct of a Study on the Development of SBSR Ancillary Industries	To foster adequate SBSR ancillary services to ensure the competitive domestic SBSR industry	30	MARINA	Around 2010	B
C51 / Conduct of Periodical Statistical Surveys to Gauge Logistics Costs and Services	To analyze accurate logistics costs and services for assessment on customers' satisfaction and international competitiveness	15	DOTC	2008-2015	B
C52 / Conduct of an IT Development and Utilization Study for Nationwide Supply Chain Management	To Formulate SCM development plan based on coordinated transport and IT development	56	DOTC	Around 2010	B
Project Nature: Ship Finance					
D1 / Implementation of Fleet Procurement and Modernization Plan	To develop modem and sufficient domestic fleet	93,902	Shipowners	2006-2015	A
D2 / Promotion of Alternative Ship Finance Methods (i.e., ship leasing and project finance)	To meet various ship finance needs with alternative ship finance methods rather than conventional collateral-based finance	N.A.	NMEC, DBP	2006-2015	A
D3 / Revision of the Public Ship Finance Scheme	To revise the DSMP II scheme as a shipping policy oriented financial facility with two channels (sub loan and ship leasing)	10,691	Qualified GFI	2008-2012 (fund mobilization)	A
D4 / Implementation of the NMEC Fostering Program	To foster NMEC as a practitioner of the alternative ship finance institution with owning a 10% domestic fleet.	17,032	NMEC	2006-2015	A
D5 / Practice of Standardized and Serial Shipbuilding Projects	To deliver the most suitable domestic vessels with competitive prices	N.A.	MARINA	2008-2015	A
D6 / Practice of Innovative Financing with Empowering Local Shipping	To consolidate small shipping companies to a legal entity (e.g., trust agreement) by area and/or by shipping type so as to increase investment capacity	2.0	MARINA	2011-2015	B
D7 / Relaxed REM Requirement in Ship Finance	To treat ship collateral as likely real estate collateral as long as ship asset value is institutionally guaranteed	Negligible	MARINA	2008-2009	B
D8 / Facilitation of DSMP II Disbursement	To urgently finance domestic ships and maritime related facilities to be procured by eligible borrowers	3,900	DBP	2006-2007	A

Note: The projects boldly framed are composed of the DSDP flagship project components.

The DSDP estimates that 930 billion pesos are needed to develop the domestic fleet until the year 2015 in order to meet traffic demand with a gradual shift towards younger fleet age profile including new ships for small ship segments. As an important pillar of ship finance for domestic operators, public ship finance will be expanded together with improvement of its operation. In the next decade, external financial source such as JBIC-DSMP will be equally important as it was in the last decade.

It is urgently recommended to DBP to pace up DSMP II disbursement until its termination of fund mobilization from JBIC in January 2007, by taking four (4) immediate actions: (i) intensification of marketing/ promotion activities toward regular clientele; (ii) utilization of NMEC ship leasing channel for small to medium operators; (iii) close coordination between DBP and MARINA; and (iv) reinforcement of DSMP operation team including consultancy service to operationalize the new lending channel between DBP and NMEC.

In regard to operation improvement in public ship finance, the DSDP recommends to introduce new financing methods such as project loan finance and lease finance in addition to conventional finance based on collateral. Project finance considers the project itself must be the sole and sufficient mortgage with projecting a satisfactory cashflow for debt services of principal and interest. To make an accurate cashflow projection in shipping business, cargo owners' decision and cargo transactions in the markets should be mostly incorporated into the project in advance. On the other hand, lease finance is advantageous to small to medium shipping operators due to no real estate collateral requirement. It is also attractive when even a large shipping operator decides to challenge a new market or a new ship procurement, particularly costly new shipbuilding because only a limited deposit is required at project inception.

To realize the synergy effects of major players in the sector, the study has forged three (3) new approaches Philippine domestic shipping development. There are:

1) **Shipping-cum-shipbuilding:** Individual shipyards' efforts to get shipbuilding orders and invest docks and equipment may take a long time. To address present predicament in tonnage development, more close coordination is necessary between the shipping and shipbuilding industries. Standardized and serial shipbuilding is an attractive way to deliver suitably designed vessels for domestic service in a short time with a reasonable price.

2) **Alternative ship finance institution:** Although the Philippines has a ten-year experience of public finance, it has not practiced an alternative ship finance scheme unlike Japan and Indonesia. In principle, this new scheme requires no collateral and provides financial and technical assistance services from ship construction / procurement to operation phases. It is particularly good for small to medium shipping companies. In practice a publicly-owned and dedicated ship finance institution must be established. The DSDP expects NMEC to take this strategic role, by applying a lease finance method.

3) **Integrated logistics corridor development:** Competitiveness in shipping service cannot be enhanced without adequate inter-modal connections and other externalities while socially subsistence service may be provided with minimal external conditions. In this sense, integrated logistics corridor development can offer dynamic solutions to provide competitive service, create domestic trade and eventually reduce regional disparity. The Study has identified such applicable areas like bulk haulage and cold chain. It recommends that a project finance method be applied to the project which can control an entire logistics chain with involvement of public and private sectors.

15.3 MARINA Implementation Steps

Most of shipping activities are profit making. Therefore, rationalization and modernization of market mechanism is of great importance. In the case of Philippine domestic shipping, the Study has additionally identified essential government intervention areas to redirect, restructure and strengthen the sector as a whole. Today, RA 9295 empowers MARINA to make it happen by a set of investment incentives and control measures such as a mandatory fleet retirement program and restriction on imported vessels. Taking those measures adequately, MARINA is expected to achieve RA 9295 objectives.

MARINA is fundamentally a regulatory body. which administers shipping, SBSR and seafaring industries. To enable sustainable ship modernization, however, it is strongly felt that MARINA take a more active role to show a new direction rather than conventional undertakings such as procurement of second-hand vessel and its conversion.

It is not possible for MARINA to act as a stand-alone organization to realize the DSDP. It must coordinate with relevant government agencies. The DSDP framework lists DOTC, port authorities, PCG, DILG and LGUs, DOF, Department of Justice DTI, DA, DBP and NMEC as co-partners implementation responsibilities.

The DSDP framework is composed of various planning elements. For implementation, an authorization process within MARINA must come first, by incorporating some of them into MARINA's documents in a form of a 5-year development plan and others. Although internal efforts must be paid to all the authorized development plans, some of them could be implemented in a more dynamic and accelerated way when external sources would be utilized. In the Study, the latter are categorized as DSDP flagship projects which are described per component as follows:

1) **Capacity building on shipping and shipyard management**: MARINA envisions its training center. In regard to capacity building, the Study gives priority to providing shipping management related training programs such as ship management and shipyard business management. Some excellent expatriate lecturers are prerequisite to prepare and operate the programs. Well-designed teaching materials are helpful for participants to acquire practical knowledge. MARINA may request a donor agency to dispatch expatriate lecturers and jointly produce teaching materials.

2) **New liner system development with new shipbuilding:** The Study has drawn two scenarios to graduate from the current deep dependence on imported second-hand vessels in line with new liner system development such as trunkline Ropax and RRTS. MARINA will coordinate shipping operators, shipbuilders and a ship finance institution to build new vessels at an affordable price and technically satisfactory level. Coordinated port facility improvement is also important to ensure efficient ship operation. The Study suggests that the revised public ship finance be utilized for those pilot projects.

   In regard to project schedule, construction works will start from 2008 while planning and detailed design works will have been completed before 2008 in coordination with the preparation progress of the revised public ship finance scheme.

3) **Revised public finance scheme:** The Study recommends revising the current public ship finance scheme (DBP-DSMP) to promoting policy-led development projects and extending services to SME operators. To implement the revised scheme, it is necessary to obtain a new ODA fund. An Apex Financial Intermediary (AFI) is primarily responsible for project preparation. Since the revised scheme acts as a financial arm of shipping development policies, MARINA will collaborate on preparation and, during fund disbursement. MARINA will hold close consultation

with AFI particularly about MARINA's initiated shipping projects.

4) **Practice of the alternative ship finance:** NMEC is also expected to act as a core institution under the revised public ship finance scheme as well as a practitioner of the alternative ship finance method. Therefore, MARINA should be given the role as regulatory and technical advisor to NMEC, and both institutions should hold close coordination. To ensure smooth coordination, the Study suggests MARINA to second an official to NMEC.

5) **Integrated logistics corridors:** More development efforts should be paid to integrated logistics corridors for dry bulk haulage and cold chain. Since it is an effective approach in addressing the Millennium Development Goals, various donor support programs will be extended[1]. It is an opportunity for the domestic shipping sector to coordinate with its inter-connected logistics and transport providers. Therefore MARINA is recommended to give its advocacy for a shipping-centered logistics development and coordinate with relevant government agencies to promote logistics development projects to be submitted to such donor programs.

Finally, it is also recommended that MARINA do post-evaluation of the DSDP on the target year of 2015 and an intermediate year of 2010, using quantitative performance parameters such as domestic shipping fleet tonnage, share of domestically built tonnage, ship age profile by ship type, the number of routes where wooden-hull boats are replaced with modern RORO vessels, and so on.

[1] JBIC ILAF is to be implemented as part of the 27th Yen Loan Package and ADB technical assistance for intermodal transport program formulation is underway (as of November 2005).

Figure 15.1 MARINA IMPLEMENTATION STEPS FOR DSDP FLAGSHIP PROJECTS

		2006	2007	2008	2009	2010	Coordination with Other Government Agencies
Policy Interventions Empowered by RA 9295		Effective Implementation of Investment Facilitation Measures, Mandatory Fleet Retirement Program and Restriction on Imported Vessels					
DSDP Management		Inclusion of DSDP components into MARINA documents (e.g., 5-year plan)	Improvement of DSDP Management Capability through e-MARINA			Intermediate Post-evaluation of the DSDP framework and flagship projects	(Within MARINA)
DSDP Flagship Projects	Capacity Building on Shipping and Shipyard Management	Training Program for Ship-management					PCG
				Training Program for Shipyard Management			
	New Liner System Development with New Shipbuilding						DOTC, Port Authorities, DBP, NMEC, etc.
	(A) Trunkline Ropax System on Manila – Cebu Route	Ship Planning	Ship D/D	Ship Construction		Ship in Service	
		Terminal Planning	Terminal D/D	Terminal Construction		In Operation	
	(B) Collective Fleet Procurement for RRTS Development	Overall RRTS Development Plan (DOTC)	RRTS Fleet Procurement Plan (incl. Ship D/D)	Standardized and Serial Shipbuilding at Selected Shipyards			
					Ship in Service on the RRTS Network		
	Revised Public Finance Scheme	Conduct of F/S and Preparation of I/P	Signing of L/A and Selection of PMC	Preparatory Works	Fund Disbursement		DOF, Qualified GFI
	Practice of Alternative Ship Finance	Giving Regulatory and Technical Advice to NMEC and Holding Close Coordination under the Revised Public Ship Finance					NMEC
	Integrated Logistics Corridors	Coordinating of Shipping and Intermodal Transport Providers particularly for Applying DSMP and ILAF funds					DBP, DA, DTI

APPENDICES

APPENDIX 5 (APPENDIX TO CHAPTER 10)

Appendix 5.1- Summary of the Discussions on Shipbuilding

The roundtable discussion on shipbuilding focused on the feasibility of replacing our existing fleet with locally made vessels. This is in lieu of the existing condition of the market for second vessels especially the Japanese market.

It was established that there would be a shortage of second hand vessels from Japan in the next few years. This is primarily based on the analysis made by the Study Team. Further, given that there will be increasing demand for vessels particularly Ropax vessels, there is, indeed, a market for shipbuilders in the country.

The participants in the roundtable discussion, representative of both the private sector, as well as concerned government agencies, agreed that cost is a primary variable in ship building. Specifically, from a client's point of view, the primary question would be: "how would the cost of locally built brand new vessels compare to the price of imported second hand vessels?" Hence, it is important to be able to keep the cost at par with second hand imported vessels.

Vessel design and specifications are important factors of considerations for the cost of building new ships locally. Having a single industry-wide design would enable the shipbuilders to lower the cost. Further, this would also entail less difficulty in maintenance and engine design and maintenance.

Having a single industry design would also enable other government agencies such as the Philippine Ports Authority (PPA) to be more efficient in their functions. As in the case of the PPA, a single industry-wide vessel design would help it have the appropriate port design.

In line with this, the JICA Study Team proposed several types of ship designs. The designs range from the small ropax appropriate for the short haul, as well as, large vessel designs suited for the major trunk liner routes such as Manila – Cebu. Participants from the shipbuilding industry were asked to give their rough estimate of the cost of construction of the said designs.

The proposed shipbuilding were focused on the RoRo / Ropax Vessels since these are projected to have the most significant increase in future requirements. Also given the demand characteristic of both freight and passenger movement, the development of the ropax vessel is the most suited compared to developing pure cargo and/or pure passenger vessels.

APPENDIX 6 (APPENDIX TO CHAPTER 11)

Appendix 6.1 Historical Growth of Motor Vehicle Registration by Region, 2001-2004

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS
LAND TRANSPORTATION OFFICE
NUMBER OF MOTOR VEHICLES REGISTERED BY REGION, 2001 - 2004

REGION	2001	2002	2003	2004	% Inc. 03-04	Ave. Inc., % p.a., 01-04
REGION I	210,135	224,177	227,258	243,478	7.14%	5.03%
REGION II	130,762	140,288	149,594	167,180	11.76%	8.53%
REGION III	477,106	497,994	514,567	579,284	12.58%	6.68%
NCR	1,255,140	1,390,579	1,389,808	1,505,409	8.32%	6.25%
REGION IV	525,394	560,362	556,507	614,402	10.40%	5.36%
REGION V	102,492	111,298	120,279	139,243	15.77%	10.75%
REGION VI	225,056	241,527	240,401	261,541	8.79%	5.14%
REGION VII	329,414	362,975	393,879	470,222	19.38%	12.60%
REGION VIII	72,636	81,752	87,960	102,487	16.52%	12.16%
REGION IX	98,392	108,668	115,561	133,633	15.64%	10.74%
REGION X	89,217	103,077	119,259	126,176	5.80%	12.25%
REGION XI	195,244	184,638	150,303	175,694	16.89%	-3.46%
REGION XII	64,511	85,199	130,957	140,975	7.65%	29.77%
CAR	50,605	52,798	51,308	52,300	1.93%	1.10%
CARAGA	39,758	42,341	44,631	48,569	8.82%	6.90%
TOTAL	3,865,862	4,187,673	4,292,272	4,760,593	10.91%	7.19%
Source: DOTC - LTO						

Appendix 6.2 MOTOR VEHICLE REGISTRATION IN REGION V, 2001 - 2004

DISTRICT OFFICE	2001	2002	2003	2004
DAET	10,987	12,312	13,077	17,753
GOA EXT.	3,445	4,002	5,872	5,955
GUINOBATAN	9,832	11,188	12,194	14,264
IRIGA CITY	12,845	14,599	14,576	16,967
IROSIN EXT.	1,967	2,782	3,733	3,396
LEGASPI CITY	15,440	15,519	17,586	18,558
MASBATE	6,989	7,543	8,226	8,242
NAGA CITY	17,628	20,383	20,101	25,343
RAGAY EXT.	1,248	1,689	2,264	2,173
SORSOGON	8,747	8,711	8,834	11,908
STA. ELENA E	1,138	270	1,084	1,060
TABACO	6,237	6,786	7,628	8,245
VIRAC	5,989	5,514	5,104	5,379
TOTAL	102,492	111,298	120,279	139,243

Appendix 6.3 MOTOR VEHICLE REGISTRATION IN REGION VI, 2001 - 2004

DISTRICT OFFICE	2001	2002	2003	2004
ANTIQUE	8,386	9,988	10,253	11,445
BACOLOD CITY	47,987	48,164	42,860	43,210
BAROTAC EXT.	4,955	6,419	6,400	10,286
CADIZ CITY	10,801	10,496	9,488	9,865
CALINOG	4,599	5,437	6,533	7,565
DUMALAG EXT.			542	2,715
GUIMARAS	6,578	6,765	6,855	4,501
GUIMBAL EXT.	3,480	4,495	5,933	6,275
HIMAMAYLAN (B)	8,929	9,599	9,782	10,597
ILOILO CITY	57,896	55,566	49,331	49,410
KALIBO	19,825	25,194	24,056	27,670
PASSI EXT.	4,270	5,324	6,491	6,267
PONTEVERDE E	9,034	9,714	10,637	11,155
ROXAS CITY	21,694	24,823	25,138	29,930
SAN CARLOS CITY	7,786	11,185	12,860	16,608
SILAY EXT.	8,836	8,358	13,242	14,042
TOTAL	225,056	241,527	240,401	261,541

Appendix 6.4 MOTOR VEHICLE REGISTRATION IN REGION VII, 2001 - 2004

DISTRICT OFFICE	2001	2002	2003	2004
BAIS CITY	15,247	15,823	18,906	21,228
BANTAYAN M U	730	550		
BAYAWAN EXT.			2,613	6,446
BAYAWAN M U	3,367	3,992	2,328	
BOGO M U	2,612	1,383		
CANLAON-G MU	1,013	717		
CARCAR	16,366	14,980	12,143	11,307
CEBU CITY	93,549	96,269	76,893	143,213
CEBU CITY EXT.	10,526	9,021	7,336	9,301
DANAO CITY	25,072	33,120	36,262	49,572
DUMAGUETE CITY	31,958	34,192	38,786	39,134
JAGNA EXT.	10,226	11,337	14,951	15,785
LAPU-LAPU EXT.	39,227	35,187	29,521	36,331
MANDAUE CITY	37,820	33,595	32,135	23,264
MEDELLIN EXT.			6,227	8,814
SIQUIJOR	4,288	4,744	5,288	5,655
TAGBILARAN CITY	27,519	31,028	32,603	34,512
TALIBON EXT.	1,738	2,674	3,357	4,145
TALISAY M U	3,691	29,468	69,988	56,561
TOLEDO CITY	4,465	4,895	4,542	4,954
TOTAL	329,414	362,975	393,879	470,222

Appendix 6.5 POINT SYSTEM CRITERIA FOR THE SELECTION OF PILOT PROJECT

The selection criteria discussed in section 12.3.2 is applied to SRNH missionary routes connecting Southern Albay and Sorsogon areas to the islands of Masbate, Panay and Cebu. The following point system criteria were used in selecting the pilot RRTS:

CRITERIA	POINTS
I. Port Hinterland	max. 25pts.
a) Proximity of Port to Major Economic Centers-	15 pts.
Point-score of major economic (Ectr.):	
Top 3 Regional Center (Mla. Cebu & Davao)	20 pts.
Other Regional Centers	10 pts.
Provincial Capital	5 pts.
Cities	4 pts.
Municipalities	
1st Class Municipalities	3 pts.
2 nd Class Municipalities	2 pts.
Others	1 pt.
Score = Sum ($Ectr._n / t_n^2$) ,where t =travel time to Eco. Center n= no. of eco. Centers	
b) Road Connection to hinterland	10pts.
Conrete road/good condition	10 pts.
90% concrete road/good condition	8 pts.
80% concrete road/good condition	6 pts.
70% concrete road/good condition	4 pts.
Earth road/bad condition, Conc.roads with caved-in foundations-	2 pts.
II. Development Potential and Relevance to National and Regional Development	max. 20pts.
a) Formation of RoRo Network	8pts.
Trunklines	8 pts.
Pan-Philippine Highway, Strong Republic Nautical Highway, Central Nautical Highway	
Major Feeder routes to trunklines	6 pts.
Secondary Feeder routes to trunklines	4 pts.
Tertiary Feeder routes to Trunklines	2 pts.
b) Future traffic potential	12pts.
More than 100,000 m.t	12 pts.
50,001 to 100,000 m.t	10 pts.
30,001 to 50,000 m.t	8 pts.
20,001 to 30,000 m.t	6 pts.
10,001 to 20,000 m.t	4 pts.
Less than 10,000 m.t	2 pts.
III. Vehicles in Hinterland	max.10pts.
a) Motor Vehicle Registration (MVR) in hinterland	10pts.
Point-score of MVR in influence area (MVR a_n):	
0 to 5,000	1 pt.
5,001 to 10,000	2 pts.
10,001 to 15,000	3 pts.
15,001 to 20,000	4 pts.
20,001 to 25,000	5 pts.
25,001 to 50,000	6 pts.
More than 50,000	10 pts.
Score = Sum (MVR a_n / t_n^2),where t =travel time to influence area (a) n= no. of influence area	
IV. Technical Considerations	max. 20pts.
a) Technical conditions	12pts.
Protected with adequate depth at Berthing and anchorage areas -	12 pts.

Protected with adequate depth at either Berthing or anchorage area and further Dredging needed for either berthing or Anchorage area	8 pts.
Partly protected w/ adequqte depth at either Berthing or anchorage area & further dred'g Needed for either berth'g or anchorage area	6 pts.
Not protected w/ adequate depth; Partly protected & shallow	4 pts.
Not protected & Shallow; Within marine protected area	2 pts.
b) Preliminary cost estimate	8pts.
Low Investment Cost	8
Medium Investment	4
High Investment Cost	2 pts.
V. Infrastructure Support Requirements	max. 20pts.
a) Existence of port facilities	12pts.
Port w/ existing RoRo facilities & adequate	12 pts.
Port w/ existing RoRo facilities but inadequate/ Deteriorated port /support facilities	10 pts.
Port w/ existing Pier but w/out RoRo Ramp	10 pts.
Port w/ facilities for conventional vessel Service but inadequate/substandard	8 pts.
Port with Banca Landing Facilities	4 pts.
Port without Port Facilities	0
b) Availability of utility & support requirement	8 pts.
(1) Back-up area; (2) Water Supply; (3) Electricity; (4) telephone/communication & (5) Fuel/oil stations.	
All of the above	8 pts.
4 of the above	6 pts.
3 of the above	4 pts.
2 of the above	2 pts.
VI. LGU Support	max. 5pts.
LGU priority and support for implementation	5pts.
High priority	5 pts.
Medium	3 pts.
Low priority	1 pt.
Overall Total Score	max.100pts.

Appendix 6.6 MINUTES OF THE MEETING WITH THE STRONG REPUBLIC NAUTICAL HIGHWAY TWG

FS ON THE RRTS PILOT PROJECT
FS Presentation for the SRNH Technical Working Group
September 8, 2005
Department of Transportation and Communications
16th Floor Columbia Tower, Ortigas Avenue, Mandaluyong City

(1) HIGHLIGHTS OF THE OPEN FORUM/DISCUSSION PROPER

A. Issues Raised

1) On the issue of traffic demand used in the computation of the EIRR.

- It was noted that the computed EIRR could still go up if other potential sources of demand will be considered.
- It was also taken into consideration that only the option of procuring second hand vessels is used in the computation as clarified by one of the participant.
- An issue was also raised on the matter that second hand vessels coming from Japan are scarce. Ms. Lilian Javier said that Japan is only one of the sources of second hand vessels.

2) Question on the implementation of the project (e.g. port and road improvement)

- It was mentioned that the implementing entity shall be the national government. The technical working group headed by Dir. Patdu has raised the issue and has said that in the meantime, the PPA shall be in charge for such implementation.
- On the case for roads, the DPWH shall be in charge for those considered as national roads, otherwise LGUs has sole responsibility to rehabilitate roads within their jurisdiction. However, there is an issue on prioritization of concerned LGUs (e.g. market, other infra projects).

3) A comment to include population projection and increasing tourism traffic along selected corridors (Cebu-Bohol-Camiguin corridor) and inclusion of tourism friendly facilities in the study.

- The population projection was considered in the projection for demand. However, the demand for increased tourism traffic will be taken into consideration. On the inclusion of facilities that will cater/support the tourism aspect of the project was not taken much into consideration since it is far beyond the scope of the study which primary targets to satisfy the minimum basic need to set off the central nautical into operation.

4) On the criteria for selecting Pilar Port

- Ms. Manatad informed the body that the port could support shallow draft vessels. In fact, the biggest ship that calls at Pilar Port has a draft of 2m. With regard to the Balud Port Site, DBP commented that the more appropriate site would be Mandaon.
- Moreover, Mr. Espada of the JICA Study Team explained that the team was preempted by NEDA-V from selecting the San Antonio Port in Pilar because of its proximity to Donsol where the "Butanding" (whale shark) thrives.
- In addition, Ms. Manatad said that the Study Team did considered Mandaon and actually visited the site. Mandaon is very shallow aside from the fact that the existing cargo and pax traffic between Mandaon and Panay is quite low compared to the existing demand between Panay and Balud.

5) The issue raised by DBP inquiring where the LGUs will get their fund to support the project.

- Ms. Malou Manatad said that the PPA has said that they have fund allocation for port project implementation.

6) Request of Dir. Patdu for the JICA Team to present in the Cebu RDC Meeting on October 7 and to prepare a short discussion paper to be submitted to the TWG.

- Mr. Patdu requested the team to prepare a short presentation emphasizing on the Masbate/Cataingan to Cuba Cebu Mandaue corridor based on the result of the study to be presented in the Cebu RDC meeting. Similarly, a discussion paper was also requested by to be submitted to the TWG.

7) On the question raised on port prioritization to be included in the Central Nautical Highway and that of shifting from main port priority to the other.

- There has been many discussion and questions raised why priorities has been given to Pilar, Masbate and Cataingan over the other ports within close range. The study team had set-up several criteria, and on the process had tried to rank ports according to the set criteria.

8) On the inquiry of LTFRB whether the Team had considered in the cost of the development the necessary support facilities for vehicles, passengers and tourists.

- Ms. Manatad informed the body that the team provided vehicle parking area for vehicles such as buses and a PTB for the passengers. However, only the minimum basic requirements to make the port operational by 208 are considered by the Study team taking into consideration the budget constraint of the national government.

APPENDIX 7 (APPENDIX TO CHAPTER 12)

Appendix 7.1 Government Policy for Improvement of Corn Production and Related Industries and Recommendations by Stakeholders

(1) PHILMAIZE

The corn sector through PhilMaize, a federation of corn growers, is working closely with DA to utilize other sources of funds to complement the regular budget of GMA Corn, particularly Corn-ACEF and proceeds of 2001 PL480-Corn (Public Law 480 Fund) importation of DA. The following are recent concerns and recommendations raised by the federation:

1) Concerns Raised by Poultry and Livestock

Livestock (hog) and poultry sectors claim that P8.00/kg is not competitive as alternatives cost below P6.50/kg (Indian Wheat). The most they can give as premium to local yellow corn is P0.50/kg. They propose to buy corn up to P7.00/kg only delivered in Luzon basis. In effect, they demand local corn below P6.00/kg in Mindanao, a price level no longer sustainable by the corn farmers.

Livestock and poultry raisers also claim that they are under pressure to compete against imported meat. Pork has only 30% in-quota protection and poultry 40%, compared to the 35% on corn. They blame the high tariff on corn as the main reason of their poor competitiveness. They demand to deny the corn farmers tariff protection, while maintaining the high tariff rates on their pork and poultry.

The respective tariff protections given to the livestock and poultry raisers are not adequate. It was recommended that they should demand higher tariff on their produce who are satisfied with the 35% protection. Landed cost of imported corn even if tariff is reduced to 25% in-quota is more than P7.84/kg ex-Manila or Subic port, having a cost parity with the local corn industry. At these cost of corn, there is no serious threat of dissolution of the livestock sector.

The volume of in-quota pork and poultry importation has been relatively insignificant to actually have influence on domestic prices of pork and poultry. Please refer to the attached report on MAV utilization of selected sensitive commodities. On the other hand, the volume of corn and corn substitutes importation comprised a significant market share to the point that local prices of corn is no longer dictated by seasonal availability, but by the landed costs of the imported competition.

Undeniably, the access to commercial feeds and technology by the backyard hog raisers has a more significant influence in the domestic pork market. Backyard raisers have increased their efficiency to narrow the gap with the commercial raisers. Volatility of pork prices may be attributed to the actions of the backyard raisers. In the months of May-June, liquidation of stock is very pronounced as backyard raisers need to raise money for their children's education. This phenomenon is an example of the major dilemma of the commercial raisers.

For the poultry raisers, the dumping of leg quarters from the USA is the major problem. American consumers demand only chicken breast, while Filipino consumers love leg quarters. American and Filipino consumers complement each other to the detriment of the poultry industry, hence the corn industry as well. Obviously, the consumers need to compromise their taste for cheap American chicken leg quarters with higher

duty to protect both the poultry and corn sectors.

Both poultry and livestock now are claiming that the unabated smuggling of frozen meat and wanton distribution of legal import permits have caused downfall of local meat prices. There is already a risk of dissolution of both sectors. In the meantime, discussions on tariff changes on corn substitutes are expected to be vigorously challenged.

At any rate, the livestock sector resorted to the importation of corn substitutes with low tariff rates. They have taken the opportunity to exploit further the inconsistency of the tariff policy by compelling Bureau of Customs to ignore the classification of wheat used for feeds (H.S. 1001.90 10) which has 7% duty, and consider wheat as food/milling grade (H.S. 1001.90 90) with only 3% duty.

Government should come up with a win-win strategy to maintain the viability of the Livestock and corn sectors. (Livestock sector includes the poultry, hogs and feedmilling industries). The importation of corn and corn substitute should be complementary to the national inventory of corn, not dissolution. Tariff is the only leveling factor to attain a cost parity to sustain both sectors.

2）Agricultural and Fisheries Modernization Act (AFMA)

R.A. 8435 Agricultural and Fisheries Modernization Act of 1997 is the main safety net program to transcend the agriculture to the era of global trade environment. Also came in late, AFMA has not delivered its promise. Fiscal deficit constrained the government from providing the much needed budget to comply with the provisions of AFMA. On the first year of AFMA implementation, the government was supposed to provide PhP20 billion and PhP17 billion on the succeeding six years on top of the regular funds. The necessary amendments are being undertaken simultaneously in the Congress and Senate.

The private sector also has not taken advantage of the fiscal incentives granted under AFMA. Economic and political situation of the country since AFMA implementation did not give the right environment for investments. Hopefully the situation improves soon; however, AFMA may no longer in effect.

There is also the added confusion brought about by the controversial interpretation of Section 109 of AFMA, which deals with the duty free importation of agricultural inputs. There was a gray area in import yellow corn tariff free and the livestock raisers went ahead and imported feed grains. DA clarified the issue and filed the necessary case against the duty free importation. The Court of Appeals already rendered decision in favor of the corn farmers and DA. As per PhiMaize, it is necessary to amend AFMA:

- Specify that the AFMA funds should be on top of regular funds;
- Extend the effectivity of AFMA to 2010
- Define clearly agricultural inputs with duty free status to exclude corn and corn substitutes and their derivatives used for feeds

3）Agricultural Competitiveness Enhancement Fund (ACEF)

R.A. 8176 Agricultural Tariffication Act in itself has a safety net program to soften the impact of the law on the affected sectors by creating ACEF. The principle is that the tariff generated from the importation of sensitive commodities with in-quota tariffs would go to the sector affected to improve its competitiveness. However, this principle has long been forgotten and now widely misunderstood. The corn sector has not benefited from ACEF. The requirements are too stiff for a common farmer or cooperative to comply. Worse, the government has not properly promoted ACEF to the intended beneficiaries. It is necessary to amend Tariffication Act/ACEF:

- Specify that ACEF should go to the sector affected by the MAV commodity imported
- Extend the effectivity of MAV/ACEF system to 2010

In the case of MAV corn, about P1.23 billion has been generated since 1995-2001. First importation of corn under MAV arrived in 1997. However, it was only in 1999 that DA was able to establish a special account for ACEF (Account 183), a bureaucratic oversight corrected by former DA Sec. Angara. Approximated value of MAV corn tariff generated from 1999-2001 is about P900 million.

Reporting of the MAV contribution to ACEF is very poor. There is a big discrepancy between what the MAV Secretariat claims, and what is being claimed by Bureau of Customs and Bureau of Treasury. This only shows the level of commitment of the government to agriculture. While the government is serious in its commitment to liberalize, its treatment to its obligation to provide mitigating mechanism for the farmers is not.

PhilMaize is proposing a better system to utilize ACEF to the intended beneficiaries. This involves a special clearing house for corn projects to handle Corn-ACEF promotions and to ensure a higher efficiency of utilization. Details of the proposal are in a separate position paper to be submitted to DA.

4) The Public Law 480 Fund (PL480)

PL480 is commodity loan program of the USA. It is a system of providing long term credit with liberal repayment schedule (30 years to pay with 5 years grace period) in exchange for trade policy changes to accommodate American agricultural products. In principle, the corn farmers oppose export subsidies, which can come in the form of export credits. PL480 falls under this category. It should be a coherent policy of the government to oppose agricultural export subsidies in WTO. There should be a consistent policy towards this issue.

Generally, there is no problem with PL480 if the commodity involved is not produced locally in significant volume. However, as the government needs to raise funds through borrowings abroad, there maybe a need to compromise this principle. Corn farmers are amenable to a compromise as long as the following conditions are met:

- Government recognizes and resolves the ethical issues;
- Government averts any negative effects to the farmers especially the conflict with the local harvest season;
- Tariff policies are not undermined;
- Farmers are properly consulted and given part of the decision process; and
- Utilization of the proceeds of the loan program directly benefits the farmers.

2001 Pl480-Corn importation caused unnecessary injury to the corn farmers. To resolve this issue, the PL480-Corn proceeds should go to meaningful developmental projects for the corn industry. Perhaps, the proceeds can be used for input/production credit program to complement with the infrastructure and mechanization program of GMA-Corn and ACEF-Corn. This way, funds generated from the 2001 PL480-Corn forms part of the safety net program for the corn industry.

5) Safety Nets

While the government was quick to draw in implementing the WTO commitments, safety nets were not in place until much later. While Republic Act 8178 Agricultural Tariffication Act became effective in April 1996, which liberalized importation of

sensitive commodities including corn, the government has not set priorities in maintaining the operations of Trade Remedies Office.

Trade remedy is a core function of the government, particularly the Department of Agriculture. It is the mandate of DA to protect the interest of the small farmers (not just agriculture in general). It is more crucial now for DA to have the capability to exercise the 3 remedy measures:

- RA 8751 Countervailing Act (Sep. 1999)
- RA 8752 Anti-Dumping Act (Sep. 1999)
- RA 8800 Safeguard Measures Act (Aug. 2000)

On May 11, 2002 PhilMaize submitted formal petition to the Department of Agriculture to invoke remedy measures against wheat from India. The tariff policy is not consistent in protecting the corn farmers from imported corn substitute. The poultry and livestock industries have been exploiting this inconsistency and aggressively imported Indian wheat from almost nil 3 years ago to more than 600,000mt last year. This year, Indian wheat importation is expected to increase by 50%.

Apparently, DA is in a quandary trying to implement remedy measures in favor of the poor corn farmers:

- DA obviously does not get the cooperation of Bureau of Customs to obtain crucial data and information on Indian wheat importation.
- DA only recently revived Trade Remedies Office
- DA has not updated the crucial trigger prices of sensitive commodities.
- DA has not updated the crucial trigger volumes of sensitive commodities.
- Serious opposition from commercial livestock and poultry raisers.

6) Use of Alternative and Renewable Resources

Compressed Natural Gas (CNG) and the use of biomass fuel should be developed. Earlier pronouncement of the President on the use of CNG at 50% discount over diesel is a welcome development. CNG can be widely used as fuel for grain driers. Biomass heaters have been proven to efficiently dry grains as well. These fuel sources should be promoted and given preferential treatment from DENR.

7) Credit Policy

The corn sector also acknowledges the initiative of the government of further liberalizing agricultural credit policies by making sure that agricultural land can be used as collateral. It is also important to repeal certain Central Bank directives that discriminate agriculture, particularly the limit of valuation up to 60% only on developments over agricultural lands.

(2) LIVESTOCK INDUSTRY

Relation of corn to the livestock industry is the shift of corn-for-food to corn-for-feeds in the last two decades. Corn is one of the major feed crops that is functionally related to the livestock sector in the Philippines. Studies have shown that the inventory of livestock greatly affects the demand for corn. Corn accounts for 35% of total hog feed formulation and 30% for poultry feed formulation[1]. Production of pork has expanded at a rate of 3% per annum from 1971 to 1989. Poultry grew at an

[1] Research Report 101 of the International Food Policy Research Institute on *Pricing Behavior in Philippine Corn Markets: Implications for Market Efficiency,* Meyra Sebello Mendoze and Mark Rosegrant, 1995.

annual rate of 5% in the same time frame.

Demand for corn is foreseen to expand in the coming decade. Growth in the demand for feed crops is connected with the increase in meat, poultry, eggs and related products' production. Based on a study recently done on the Status and Prospects of Feed Crops in the Philippines[1], the estimated supply and demand projections from 2003 to 2015 indicate that following the recent status of demand and domestic production, there will be large deficits by 2015 for corn, rice and soybean. These deficits are either to be met by raising imports or improving the efficiency of production. The latter was noted to be the best option since other Southeast Asian countries are expected to have high feed demand as well, which could possibly contribute to the volatility of feed crop prices in the world market.

Chicken at the Beginning of the year by Region

Poultry Inventory	2003	2004	2005
Philippines	129,515	122,010,448	136,003,409
Metro Manila	299,577	0	500,315
CAR	1,890,840	1,966,862	1,804,440
Region 1 (Ilocos)	6,789,211	6,759,483	7,213,910
Region II (Cagayan Valley)	8,452,317	7,863,528	7,601,184
Region III (Central Luzon)	23,054,192	18,699,728	27,076,253
Region IV-A (CALABARZON)	17,444,621	18,145,093	19,084,934
Region IV-B (MIMAROPA)	7,441,049	3,339,570	3,420,882
Region V (Bicol)	7,818,949	7,071,386	7,596,318
Region VI (Western Visayas)	13,530,664	12,826,462	13,461,521
Region VII (Central Visayas)	10,351,747	10,997,037	10,239,588
Region VIII (Eastern Visayas)	3,807,697	3,642,477	4,222,213
Region IX (Zamboanga)	4,918,624	4,981,837	5,099,767
Region X (Northern Mindanao)	8,285,839	7,526,154	9,382,635
Region XI (Davao)	5,231,815	5,113,075	6,102,806
Region XII (SOCKSSARGEN)	9,024,904	8,759,397	8,834,073
CARAGA	2,243,258	2,239,620	2,474,697
ARMM	2,036,022	2,060,239	1,907,873

* no. of chickens counted in January of each year
Source: BAS

[1] A study conducted under UNESCAP-CAPSA, posted on PALAWIJA News.

Hogs Inventory	2002	2003	2004	2005
Philippines	11,652,700	12,364,300	12,561,690	12,139,690
Metro Manila	0	0	0	0
CAR	294,500	306,230	299,270	268,890
Region 1 (Ilocos)	474,880	521,740	533,780	507,140
Region II (Cagayan Valley)	642,530	767,200	805,910	713,780
Region III (Central Luzon)	1,738,760	1,867,600	1,862,810	1,666,910
Region IV-A (CALABARZON)	1,418,010	1,566,220	1,571,630	1,542,830
Region IV-B (MIMAROPA)	376,000	387,330	420,910	394,240
Region V (Bicol)	705,850	687,050	674,620	680,460
Region VI (Western Visayas)	1,000,760	1,037,830	1,088,550	1,152,080
Region VII (Central Visayas)	862,330	869,080	927,100	916,890
Region VIII (Eastern Visayas)	713,590	719,350	762,560	745,730
Region IX (Zamboanga)	711,680	800,810	802,370	713,720
Region X (Northern Mindanao)	754,780	801,540	806,930	768,860
Region XI (Davao)	844,990	887,320	873,270	898,160
Region XII (SOCCSKSARGEN)	677,920	683,920	674,080	662,880
CARAGA	386,710	408,170	398,960	409,050
ARMM	49,410	60,910	58,940	58,010

* no. of hogs counted in January of each year
Source: BAS

Appendix 7.2 SUMMARY OF THE DISCUSSIONS ON F/S ON CORN LOGISTICS

The roundtable discussion on the Feasibility Study on Corn Logistics from Southern Mindanao to Luzon was held last July 28, 2005. It was aimed at presenting the results of the said feasibility study. The presentations of which were made by a member of the JICA Study Team and by PADISCOR Inc.

The said logistics study was anchored on production and was primarily conducted by the JICA Study Team. However, since the assigned team member is not a mechanization expert, the feasibility study relied on the expertise of PADISCOR regarding post-harvest mechanization. With their proposed farming technology, they claim that farmer yield more harvest.

However, there are certain problems raised in the discussion regarding post-harvest mechanization. It was said that mechanization of harvesting might pose ownership problems. This is especially true for small independent farmers who do not want to co-mingle their produce. Hence, in spite of the fact that mechanization offers the opportunity for higher yield, it is not commonly practiced. It was commented that there could be an institutional solution to implement post-harvest mechanization. This is in the form of warehouse receipt system which in concept is pooling the use of the facility. Appropriate levels of mechanization should also be set. Big tractors, with more than 1000 hp are costly with 50% of cost going to fuel, are not suitable for small farmers.

Another important point which was stressed during the discussions is the importance of bulk. However, it was also said that the key factor is quality, and not the quantity of production. The quality of corn, for instance, is dictated by aflatoxin levels. It was mentioned Luzon corn has lower aflotoxin since it is harvested dried (mature). On the other hand, corn in Mindanao is harvested prematurely. It is, however, argued that Mindanao corn is harvested immediately because they plant early. In fact, some even do 3 croppings a year.

The availability of credit facilities for farmers was also tackled. It was noted that farmers cannot afford modern processing to acquire bank loans. A representative of the Development Bank of the Philippines (DBP) stressed the most capable to acquire loans are traders and local government units. He added that the DBP is now talking with LGUs informing them that they can now borrow without collaterals. Further, he added that key players must appreciate bulk operations.

APPENDIX 8 (APPENDIX TO CHAPTER 13)

Appendix 8.1 Summary of the Discussions on Cold Chain for Fisheries in Panay Island

Different stakeholders of the development of cold chain facilities were gathered on August 5, 2005 to have a roundtable discussion. The main presentation was delivered by Mr. Isamu Koike, member of the JICA Study Team. The presentation was focused on the feasibility study on the Development of Cold Chain for Fisheries in Panay Island. As important stakeholders, representatives from concerned local government units (LGUs), as well as financial institutions such as the Development Bank of the Philippines (DBP) were in attendance.

The feasibility study focused on a 10-year program which will make available other models to cater to other products apart from fish. In order for the program to materialize, what is important is the site where supposed cold chain facilities will be located. In terms of funding sources for the projects, the DBP has programs for supporting similar projects by finding and utilizing funds from Japan. The pre-requisite to avail of the said funds is the feasibility of the project.

Another scheme which could be utilized for the project to materialize is the Build-Operate-Transfer (BOT) scheme. However, for a BOT Scheme to be successful, a participatory planning process should be used. Consideration should also be given to good design and sharing of responsibilities amongst stakeholders.

With regards to the demand-side, it was said that the private sector is now shifting preference to frozen meat rather than conventional fresh product. Further, it was also raised that there is already a similar cold chain facility in operation in Batangas. The representative of Dumangas added that is such a facility will materialize in their LGU, it could be a source of additional income.

Another issue raised is whether or not the shipping sector, especially those providing RoRo service, could support the demand should the project push through. It was stressed that there is currently enough service to support the demand. A representative of one shipping company indicated that RoRo Service is currently operating at only 30% load factor. Further, there are scheduled RoRo trips allotted for buses and fish products. The trips allotted to the latter are those usually in the early morning schedule.

There are also other sub-programs which could be implemented in order to support the development of the cold chain. These include LGU level programs such as the “one town, one product” policy and a good organizational plan. This would enable economies of scale to be achieved and hence lower the prices.

APPENDIX 9 (APPENDIX TO CHAPTER 14)

Appendix 9.1 Summary of the Discussions on the Fostering Program of the NMEC

The National Maritime Equity Corporation (NMEC) is a relatively new player in the Philippine domestic maritime industry. It began its operation in May 2005. The NMEC was formed through the advocacy of the Development Bank of the Philippines (DBP) through the board of the NDC. It acts as a financial institutions engaged in leasing to operators of vessels.

A few months into its operation, the NMEC has approximately 50% of its manpower in place. For its other functions, such as the technical aspect of its operations, it still resorts to outsourcing. Its major source of funds is the DBP. However, it also seeks other sources of funds, especially when concerning RoRo vessels. To date, it is fast tracking its capabilities in terms of maritime insurance issues, ship management, finance leasing program, as well as when it comes to credit judgment. It was also mentioned during the discussion that the credit manual policy of NMEC has already been drafted albeit still subject to the approval of its board.

In terms of function and purpose, it is highly comparable to PT PANN of Indonesia. However, there is still no point of comparison between the two in terms of achievements and accomplishments. This is so because whereas NMEC has been in operation since May 2005, PT PANN has been operating for over 30 years.

Several issues regarding the operation and role of NMEC were discussed during the discussion. The primary consideration to attain a leasing agreement with NMEC is the viability of the route where the leased vessel is planned to ply. This is given more weight in the evaluation of applications rather than the class of the vessel. Further, NMEC aims to keep processing of loans and credit evaluation to not more than 30 days. The lease-to-own scheme is often implemented. The terms of the lease usually is computed as 25 years minus the age of the vessels, with a maximum of 15 years. However, in the case of brand new vessels, the terms might even be increased to twenty years.

It was also mentioned that currently the indicative interest rate of DBP is 10.7%. However, NMEC have the privilege of being given preferential interest rate by the DBP. Further, NMEC plans to apply for a 1 billion omnibus credit line from the DBP. This will be exclusively for the procurement of RoRo vessels.

Financing preference is given to those who plan to operate on missionary routes. In fact if the vessel to be leased is to operate in a missionary route, NMEC protects its operation by not granting any loan to a potential competitor for 3 years.

However, a critical question was asked during the discussions: If financing is for missionary route, then who will apply?

The discussions also tackled other financing issues such as those concerning the DBP. The DBP is a major financing institution offering loans to shipping operators. Compared to the NMEC which offers leasing of vessels, the DBP offers loans which can be utilized to upgrade existing fleet. The DBP even offers loans to LGUs and the PPA for port development.

APPENDIX 10 (APPENDIX TO CHAPTER 15)

Appendix 10.1 Project Evaluation and Monitoring

For overall evaluation and future monitoring of the proposed projects in the Study, they have been described and assessed on three templates as follows:

- Form 1 – Project Profiling including project code/name, project nature, estimated cost, major implementing body, necessary coordination and remarks.

- Form 2 – Project prioritization and Implementation including planning criteria (policy initiatives (Note 1), practices of new approaches (Note 2), economic criteria (B/C Judgment, distribution of effects, immediate effects), other implementation criteria (urgency, government capability, involvement of the private sector and financial availability), priority assessment and implementation timing.

  Note 1: Recent government policy initiatives are considered such as SRNH/RRTS and RA 9295 or so-called the Domestic Shipping Development Act (DSDA)

  Note 2: The Study suggest three (3) new approaches to domestic shipping development. They are (i) integrated logistics corridor development or IL, (ii) shipping cum shipbuilding development or SS, and (iii) alternative ship finance institution or AF.

- Form 3 – Project Monitoring and Post Evaluation including project priority, development goal, achievement indicators and post evaluation (target years of 2007, 2010 and 2015)

PROJECT EVALUATION AND MONITORING FORM 1 - PROJECT PROFILING

(1-1)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
A11 / Resumption of Dialogue between the Operators and the Shippers	Policy / Institution	1.2 for annual regional consultation meeting	MARINA	Involvement of shipping associations and shippers' associations	Relevant Project: A12
A12 / Enhancement of MARINA's Fare Monitoring Capability	Policy / Institution	15 Review of the "Interisland Shipping Rate Rationalization Study" (1991) and conduct of a new fare monitoring structure study	MARINA	Cooperation of ship operators in timely submission of data. Setting up of IT system in MARINA for processing and analyses of data	Could be part of the proposed e-MARINA
A13 / Updated and Streamlined Requirements and Procedures	Policy / Institution	Negligible	MARINA	Continuous updating (codification) of regulations to take into account new issuances and regulations.	MARINA reorganization (EO 366) would require updating of procedures and flowcharts
A14 / Relaxed Regulatory Regime	Policy / Institution	Negligible	MARINA	Continuing coordination with ship operators to liberalize regulatory regime and encourage new investments.	
A21 / Devolution of Regulatory Powers	Policy / Institution	3.2 (For guideline publication: 1.0 and 11 regional workshops: 2.2)	MARINA and Department of the Interior and Local Government (DILG)	MARINA to issue Guidelines and provide training to LGUs on issuance of franchise: -eco-financial evaluation -technical evaluation -safety regulations	
A22 / Municipal Infrastructure Support including Continued Implementation of the NFPDP II	Policy / Institution	P 360 M for Package E of NFPDP II Continuing allocation for municipal ports	DOTC and Philippine Ports Authority	Allocation of funds for NFPDP II – Package E and annual allocation of funds for municipal ports	Administrative Order No. 123 designated DOTC as the Lead Agency in the implementation of the RORO System. DOTC Dept. Order No. 2005-33 directed PPA as the Secretariat for the Inter-Agency Group.
A31 / Categorization of Sea Areas	Policy / Institution	Negligible	MARINA	Coordination with PCG and ship operators to set limits on definition of "protected", "partially protected" waters. MARINA, thereafter to issue MC or FSA clarifying MC - 197	

(1-2)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
A32 / Rationalization of Area of Operations of Wooden-hulled Vessels	Policy / Institution	Negligible	MARINA	Coordination with wooden hulled ship operators for the amendment of MC 190 and rationalizing area of operations of WHS.	Relevant Project: A31, B51, B52, B53 and B54.
A33 / Institutionalizing Security Measures for Domestic Shipping and Ports	Policy / Institution	Estimated amount of ADB grant = US$ 450,000	DOTC – OTS, PPA CPA and MARINA	Coordination between and among DOTC-OTS, ship operators, PPA, CPA and other port operators.	DOTC is procuring a Regional Technical Assistance (RETA) from ADB.
A34 / Designation of an Admiralty Court	Policy / Institution	Negligible	Department of Justice	DOJ to issue a Circular designating a specific court/s (RTC) as Admiralty Court/s.	JICA Expert on Maritime Incident Adjudication to make official recommendations before end of 2005.
B11 / Differentiation of Ropax and Container Service at Trunkline	Service / Infrastructure	Negligible	MARINA	Cooperation with port service providers and participating shipping operators	
B12 / Implementation of the Trunkline ROPAX Pilot Project on the Manila – Cebu Route	Service / Infrastructure	6,280 for Initial Fleet Investment	Participating Shipping Operators	MARINA's coordination among operators, shipyards and a finncial institutions. Coordinated terminal development is also required.	DSDP FS was done.
B13 / Replacement of Aging ROPAX with a New-generation ROPAX on the others than the Manila-Cebu route	Service / Infrastructure	N.A.	Participating shipping operators	MARINA's coordination among operators, shipyards and financial institutions	50 mid/long distance Ropax to be procured up to 2015
B21/ Implementation of the Corn Bulk Shipping Pilot Project (Gen San – Luzon)	Service / Infrastructure	1,424 for all components of Pilot Project	Inter-agency task force including MARINA, DA and DTI	Coordination with financial institutions	DSDP FS was done
B22 / Establishment of Consolidation System and Facilities for Bulk Handling	Service / Infrastructure	6,500 (DBP-SLDP)	Participating product consumer/ producer	DA or DTI's coordination with LGUs, producers, traders and financial institutions	
B23 / Further introduction of Large Scale Bulk Shipping Service on Possible Long-distance Routes	Service / Infrastructure	N.A.	Participating shipping operators	MARINA's coordination among shipping operators, product consumers/ producers, as well, as DA and DTI. Involvement of financial institutions is likewise required.	Relevant Project: B22

(1-3)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
B31 / Improvement of Investment Condition for Tanker Renewal	Service / Infrastructure	10,400 (52 units)	Participating petroleum companies	MARINA's coordination of petroleum companies, ship operators and financial institutions	52 tankers to be procured up to 2015
B32 /Development of Legal Framework for Tanker Modernization	Service/ Infrastructure	Negligible	MARINA	Coordination with tanker operators	IMO Phase-out Schedule on Single-hull tanker until 2010
B33 / Promotion of Domestic Tanker Building	Service / Infrastructure	N.A.	MARINA	MARINA's coordination of shipping operator's, shipyards, as well, as financial institutions	Relevant Project: D5
B41 / Examination of Viability of the Cold-chain Corridor Development Projects	Service / Infrastructure	50 (Incase of external technical assistance)	DA and/or DTI		DSDP identifies 16 maritime-based corridors
B42 / Implementation of the Cold Chain Pilot Project for Panay Fish	Service / Infrastructure	Core investment – 363 Cold store support – 248 Transport support – 22	LGU	Coordination with private cold store operators and fish producers, as well as, financial institutions	
B43 / Expand Cold Chain Facilities and Infrastructure	Service / Infrastructure	16,000 (DBP-SLDP)	Participating logistics providers	DA/DTI's coordination of various logistics providers as well as financial institutions	
B51 / Establish Infra and Financial Support for RoRo to Replace Wooden Hull Operation	Service / Infrastructure	3,129 (up to 2015)	MARINA	Coordination with port authorities, LGUs and shipping operators as well as financial institutions	Related Project: B62 and B64
B52 / Setting of Clear Directive regarding Phase Out Plan and Strictly Enforce Phase Out Regulations	Service / Infrastructure	0.5 (for a detail WHV fleet and route database)	MARINA	Coordination with LGUs is desirable	Requires development of database
B53 / Guidelines Preparation in Safe Wooden Hull Vessel Operation and Establishment of an Enforcement Mechanism	Service / Infrastructure	3.0 (for guideline dissemination and training)	MARINA	Coordination with LGUs is desirable	Relevant Project: A32
B54 / Establishment of Safety Nets to Cushion Displaced Wooden Hulled Operators and Crews	Service / Infrastructure	N.A.	LGU	MARINA's coordination as per schedule of program	

(1-4)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
B61 / Establish Institutional and Developmental Plan for RRTS	Service / Infrastructure	120 (Study) 3 (Counterpart fund for donor assistance)	RRTS Inter-agency Task Force led by DOTC		Requires at least 84 Short Haul RoRo vessels to be procured up to 2015
B62 / Implementation of the RRTS Pilot Project between Bicol and Cebu	Service / Infrastructure	Ports – 89 Vessels – 1,344 (up to 2015	RRTS Inter-Agency Task Force led by DOTC	Coordination with LGUs and participating shipping operators	DSDP FS was done
B63 / Fostering of RoRo operators and Port operators	Service / Infrastructure	7,500 (DBP-SLDP)	NMEC	MARINA's coordination with NMEC and DBP as well as the RRTS Task Force	Related Project: B51
B64 / Delivery of New RORO Vessels	Service / Infrastructure	N.A.	Participating shipyards	MARINA's coordination with ship investors, shipyards and financial institutions	Requires new tonnage of 57,000 GT of <500 GT short haul RoRo up to 2015
B71 / Improvement of Major Domestic Shipping Ports	Service / Infrastructure	N.A.	Port authorities	DOTC / MARINAs coordination between port authorities and ship operators	DSDP identifies 10 critical major ports for container shipping
B72 / Development of RORO Terminals	Service / Infrastructure	N.A.	Port authorities	DOTC / MARINAs coordination between port authorities and ship operators	
C11 / Further Development of e-MARINA	Industry / Human Resource	0.8	MARINA	Contracting out for software development and website upgrading / Increase in no. of MARINA internal system engineers and improvement of their capability	Relevant Project: C52
C12 / Establishment of a MARINA Training Center	Industry / Human Resource	To be determined after the completion of overall conceptualization by MARINA	MARINA	Involvement of other government agencies such as PCG and shipping and SBSR industries for needs identification.	Relevant Project: C23
C13 / Promotion of Shipping Industry Restructuring	Industry / Human Resource	6.0 5 for preparation 1 for 5 regional workshops	MARINA	Involvement of maritime academies and international organizations such as ASEAN to prepare "Best Practices and Possible Tools" Convening of regional workshops for dissemination	Relevant Projects: B21, B41, B62, D6

(1-5)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
C21 / Enactment of a Ship Management Incentive Act	Industry / Human Resource	Negligible	MARINA for drafting works	Fostering of ship management companies and competent superintendents Lobbying activities towards lawmakers	Relevant Project: C23
C22 / Reorganization of Domestic Classification Societies	Industry / Human Resource	Negligible	MARINA	Involvement of 8 domestic classification societies Provision of capacity building opportunities and other incentives	Relevant Project: C23, C24, C25
C23 / Provision of Ship Management Training Program	Industry / Human Resource	16 (for all) 0.5 (as counterpart fund to donor assistance)	MARINA	Assignment of an experienced lecturer with developing teaching materials Possibly seeking for external assistance	Relevant Project: C12, C21, C22
C24 / Publication of Surveyor's Guidelines and Checklists	Industry / Human Resource	3 (In case of hiring an expatriate consultant individually)	MARINA	Involvement of PCG, PRS under a project team Possibly integrated implementation within C23	Relevant Project: C22, C23, C26
C25 / Sharing of Ship Inspection and Accident Inquiry Database	Industry / Human Resource	0.2 (For initial database system only)	MARINA	Involvement of PCG, shipping companies The database will be periodically updated with new ship inspection records and maritime accident inquiry reports	Relevant Project: C22, C24
C26 / Preparation of a New NSM Manual	Industry / Human Resource	3 (In case of hiring an expatriate consultant individually)	MARINA	Involvement of various shipping associations Possibly integrated implementation within C23	Relevant Project: C23, C24
C27 / Establishment of a Publicly-owned Ship Equipment Procurement Company	Industry / Human Resource	100 (For initially paid equity as a GOCC)	DTI	Policy advocacy by MARINA Request by the SBSR industry	Relevant Project: C33, C41, D5
C31 / Facilitation of Investment in Shipyards	Industry / Human Resource	10,192 (For domestically building all vessels less than 1,000 GT by 2015)	Domestic Shipbuilders	Facilitation of foreign investment Mobilization of development fund such as DSMP Promotion of shipyard estates like MIP	Relevant Project: C32, C33, D3, D5

(1-6)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
C32 / Upgrade and Modernization of Shipbuilding Technology	Industry / Human Resource	16 for training program by donor assistance Unknown for private partnership	Domestic Shipbuilders	Technology transfer in line with increasing investment and through joint shipbuilding projects with foreign builders Training opportunities to be provided by MARINA including external technical assistance	Relevant Project: C12, C33, D5
C41 / Provision of Efficient Ship Repairing Service	Industry / Human Resource	16 for the same training program in C32 Unknown for private undertakings	Domestic ship repair yards	Provision of management training opportunity by MARINA	Relevant Project: C12, C27
C42 / Receipt of More Ship-repairing Orders from Foreign Vessels	Industry / Human Resource	N.A.	Domestic ship repair yards	Liberalization of the immigration and customs regulations on foreign vessels by MARINA's advocacy	Relevant Project: C27, C21
C43 / Conduct of a Study on the Development of SBSR Ancillary Industries	Industry / Human Resource	30 (for all) 1 (as counterpart fund to donor assistance)	MARINA	Possibly seeking for external assistance such as a foreign shipbuilders' association	Relevant Project: C27, C32, C41
C51 / Conduct of Periodical Statistical Surveys to Gauge Logistics Costs and Services	Industry / Human Resource	15 (for initial database building and statistical survey system development)	DOTC	Involvement of transport service providers and shippers Possibly seeking for external assistance and inclusion into the SCM study: C52	Relevant Project: A11, A12, C52
C52 / Conduct of an IT Development and Utilization Study for Nationwide Supply Chain Management	Industry / Human Resource	56 (for all) 5 (as counterpart fund to donor assistance)	DOTC	Involvement of MARINA, PPA, ATO, LTO and other domestic transport and trade administration offices Possibly seeking for external assistance	
D1 / Implementation of Fleet Procurement and Modernization Plan	Ship Finance	93,902 (during the period 2006-2015)	Shipowners	Provision of favorable ship investment environments Strengthening of public ship finance Practice of alternative ship finance methods	
D2 / Promotion of Alternative Ship Finance Methods (i.e., ship leasing and project finance)	Ship Finance	N.A.	NMEC, DBP	Mobilization of long-term and low-interest development fund under the supervision of DOF	

(1-7)

Project Code / Name	Project Nature	Estimated Project Cost (in Million Pesos)	Major Implementing Body	Necessary Coordination	Remarks
D3 / Revision of the Public Ship Finance Scheme	Ship Finance	10,691 (For initial mobilization between 2008 and 2012)	Qualified GFI	Possible two-step-loan application to JBIC More close coordination with MARINA in project management	
D4 / Implementation of the NMEC Fostering Program	Ship Finance	17,032 (During the period 2006 – 2015)	NMEC	Initially tapping DSMP II fund from DBP while diversifying fund sources later on MARINA's regulatory and technical advice on NMEC's financing vessels	Relevant Projects: D2, D5
D5 / Practice of Standardized and Serial Shipbuilding Projects	Ship Finance	Depending on a project package	MARINA	Coordination with shipping and shipbuilding industries Utilization of public fund and public financing organization (i.e., NMEC)	Relevant Projects: B12, B32, B63, D3, D4
D6 / Practice of Innovative Financing with Empowering Local Shipping	Ship Finance	2.0 Only for guideline preparation and its explanatory meetings	MARINA	Preparation of guidelines on asset pooling and maritime trust Coordination with financial guarantee institution (i.e., DTI – SBGFC) Involvement of local shipping operators through MARINA regional offices	Relevant Projects: C13
D7 / Relaxed REM Requirement in Ship Finance	Ship Finance	Negligible	MARINA	Revision of the BSP's "Manual of Regulation for Banks" as developing a stricter regime on ship registration, classification and inspection and in collaboration with DBP	
D8 / Facilitation of DSMP II Disbursement	Ship Finance	3,900 (Excluding the first batch of NMEC sub-loan)	DBP	Coordination with MARINA and utilization of NMEC ship leasing channel	Termination of fund mobilization in January 2007

PROJECT EVALUATION/MONITORING FORM 2 – PROJECT PRIORITIZATION AND IMPLEMENTATION

(2-1)

Project Code / Name	Planning Criteria		Economic Criteria			Other Implementation Criteria				Prioritization	
	Policy Initiatives	Practice of New Approaches	B/C Judgment	Distribution of Effects	Immediate Effects	Urgency	Government Capability	Involvement of Private Sector	Financial Availability	Priority	Timing
A11 / Resumption of Dialogue between the Operators and the Shippers		✓ (IL)	S	L	M	M	M	L	L	A	2006-2015
A12 / Enhancement of MARINA's Fare Monitoring Capability			S	L	M	M	S	L	S	B	2008-2009
A13 / Updated and Streamlined Requirements and Procedures			S	L	M	M	S	M	-	B	2007-2008
A14 / Relaxed Regulatory Regime			S	L	M	M	L	M	-	B	2006-2015
A21 / Devolution of Regulatory Powers			S	L	M	M	M	S	M	B	2006-2015
A22 / Municipal Infrastructure Support including Continued Implementation of the NFPDP II	✓ (RRTS)		L	M	M	M	S	L	M	B	2007-2010
A31 / Categorization of Sea Areas			S	L	M	M	M	M	-	B	2006-2007
A32 / Rationalization of Area of Operations of Wooden-hulled Vessels			S	L	M	M	M	L	-	B	2006-2007
A33/ Institutionalizing Security Measures for Domestic Shipping and Ports			S	L	M	M	M	L	L	A	2006-2010
A34 / Designation of an Admiralty Court			S	M	S	M	S	M	-	B	No later than 2010
B11 / Differentiation of Ropax and Container Service at Trunkline			M	L	L	M	S	L	-	A	2006-2010
B12 / Implementation of the Trunkline ROPAX Pilot Project on the Manila – Cebu Route		✓ (SS)	EIRR= 15.6%	M	L	L	M	L	M	A	2007-2009
B13 / Replacement of Aging ROPAX with a New-generation ROPAX on the others than the Manila-Cebu route		✓ (SS)	M	M	L	M	M	L	S	B	2010-2015

(2-2)

Project Code / Name	Planning Criteria		Economic Criteria			Other Implementation Criteria				Prioritization	
	Policy Initiatives	Practice of New Approaches	B/C Judgment	Distribution of Effects	Immediate Effects	Urgency	Government Capability	Involvement of Private Sector	Financial Availability	Priority	Timing
B21 / Implementation of the Corn Bulk Shipping Pilot Project (Gen San – Luzon)		✓ (IL)	IRR= 22.4%	M	L	M	S	L	L	A	2007-2008
B22 / Establishment of Consolidation System and Facilities for Bulk Handling		✓ (IL)	M	L	M	M	S	L	L	A	2006-2015
B23 / Further introduction of Large Scale Bulk Shipping Service on Possible Long-distance Routes			S	M	M	S	S	L	M	B	2009-2015
B31 / Improvement of Investment Condition for Tanker Renewal			M	S	S	M	S	M	M	B	2006-2007
B32 / Development of Legal Framework of Tanker Modernization			L	S	M	L	L	S	-	B	2006-2007
B33 / Promotion of Domestic Tanker Building		✓ (SS)	L	S	M	M	S	L	M	B	2008-2015
B41 / Examination of Viability of the Cold-chain Corridor Development Projects		✓ (IL)	M	L	S	L	M	S	M	A	2006-2007
B42 / Implementation of the Cold Chain Pilot Project for Panay Fish		✓ (IL)	FIRR (Before Tax) = 15%	S	L	M	S	L	L	A	2006-2007
B43 / Expand Cold Chain Facilities and Infrastructure		✓ (IL)	M	L	M	M	S	L	L	B	2008-2015
B51 / Establish Infra and Financial Support for RoRo to Replace Wooden Hull Operation	✓ (RRTS)		M	M	M	L	S	L	M	B	2007-2015
B52 / Setting of Clear Directive regarding Phase Out Plan and Strictly Enforce Phase Out Regulations			L	L	L	L	M	S	L	A	2006-2007

(2-3)

Project Code / Name	Planning Criteria		Economic Criteria			Other Implementation Criteria				Prioritization	
	Policy Initiatives	Practice of New Approaches	B/C Judgment	Distribution of Effects	Immediate Effects	Urgency	Government Capability	Involvement of Private Sector	Financial Availability	Priority	Timing
B53 / Guidelines Preparation in Safe Wooden Hull Vessel Operation and Establishment of an Enforcement Mechanism			L	L	L	L	M	S	L	A	2006-2007
B54 / Establishment of Safety Nets to Cushion Displaced Wooden Hulled Operators and Crews			M	M	M	S	M	S	M	B	2008-2015
B61 / Establishment of Institutional and Developmental Plan for RRTS	✓ (RRTS)		M	L	S	L	M	M	M	A	2006-2007
B62 / Implementation of the RRTS Pilot Project between Bicol and Cebu	✓ (RRTS)	✓ (SS)	EIRR = 15.5% and 17.4%	M	L	L	M	L	M	A	2007-2008
B63 / Fostering of RoRo Operators and Port Operators	✓ (RRTS)		M	M	M	M	M	S	M	B	2008-2015
B64 / Delivery of New RORO Vessels	✓ (RRTS)	✓ (SS)	M	M	L	M	S	L	M	B	2008-2015
B71 / Improvement of Major Domestic Shipping Ports			L	L	L	L	M	S	M	A	2006-2015
B72 / Development of RORO Terminals	✓ (RRTS)		L	L	M	L	M	S	M	B	2008-2015
C11 / Further Development of e-MARINA			L	L	S	M	M	L	M	A	2007 (Operationalization)
C12 / Establishment of a MARINA Training Center			L	M	M	L	M	L	M	A	2006-2010
C13 / Promotion of Shipping Industry Restructuring			M	M	S	S	S	M	M	B	2011-2015
C21 / Enactment of a Ship Management Incentive Act			M	M	S	M	S	M	-	B	Around 2010

(2-4)

Project Code / Name	Planning Criteria		Economic Criteria			Other Implementation Criteria				Prioritization	
	Policy Initiatives	Practice of New Approaches	B/C Judgment	Distribution of Effects	Immediate Effects	Urgency	Government Capability	Involvement of Private Sector	Financial Availability	Priority	Timing
C22 / Reorganization of Domestic Classification Societies			M	L	M	L	L	M	-	A	2006
C23 / Provision of Ship Management Training Program			L	M	L	L	M	L	M	A	2006-2008
C24 / Publication of Surveyor's Guidelines and Checklists			M	M	M	L	M	S	M	B	2006-2007
C25 / Sharing of Ship Inspection and Accident Inquiry Database			M	M	M	L	L	S	M	B	2007-2008
C26 / Preparation of a New NSM Manual			M	M	M	M	M	L	M	B	2006-2007
C27 / Establishment of a Publicly-owned Ship Equipment Procurement Company	✓ (DSDA)		M	M	M	L	M	L	L	A	2006-2007
C31 / Facilitation of Investment in Shipyards	✓ (DSDA)		L	L	M	M	M	L	M	A	2006-2015
C32 / Upgrade and Modernization of Shipbuilding Technology			L	L	M	M	M	L	M	A	2008-2010 (training program)
C41 / Provision of Efficient Ship Repairing Service			L	L	M	M	M	L	M	A	2008-2010 (training program)
C42 / Receipt of More Ship-repairing Orders from Foreign Vessels			S	S	M	S	M	M	M	B	2010-2015
C43 / Conduct of a Study on the Development of SBSR Ancillary Industries			M	M	M	S	S	L	M	B	Around 2010
C51 / Conduct of Periodical Statistical Surveys to Gauge Logistics Costs and Services			M	L	M	M	M	L	M	B	2008-2015

(2-5)

Project Code / Name	Planning Criteria		Economic Criteria			Other Implementation Criteria				Prioritization	
	Policy Initiatives	Practice of New Approaches	B/C Judgment	Distribution of Effects	Immediate Effects	Urgency	Government Capability	Involvement of Private Sector	Financial Availability	Priority	Timing
C52 / Conduct of an IT Development and Utilization Study for Nationwide Supply Chain Management		✓ (IL)	M	L	S	M	M	M	M	B	Around 2010
D1 / Implementation of Fleet Procurement and Modernization Plan	✓ (DSDA)		L	L	L	L	S	L	M	A	2006-2015
D2 / Promotion of Alternative Ship Finance Methods (i.e., ship leasing and project finance)		✓ (AF)	L	M	L	M	M	L	L	A	2006-2015
D3 / Revision of the Public Ship Finance Scheme			L	M	L	M	L	M	L	A	2008-2012 (fund mobilization only)
D4 / Implementation of the NMEC Fostering Program		✓ (AF)	L	M	L	M	L	M	L	A	2006-2015
D5 / Practice of Standardized and Serial Shipbuilding Projects		✓ (SS)	L	M	M	M	M	M	M	A	2008-2015
D6 / Practice of Innovative Financing with Empowering Local Shipping			L	M	M	L	M	M	M	B	2011-2015
D7 / Relaxed REM Requirement in Ship Finance			S	M	L	L	L	S	-	B	2008-2009
D8 / Facilitation of DSMP II Disbursement			L	M	L	L	L	M	L	A	2006-2007

PROJECT EVALUATION/MONITORING FORM 3 – PROJECT MONITORING AND POST EVALUATION

(3-1)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
A11 / Resumption of Dialogue between the Operators and the Shippers	A	To balance the concerns of shippers and ship operators (competitive rates and viable shipping operations)	Resumption of dialogue since 1996 No. of consultation meetings			
A12 / Enhancement of MARINA's Fare Monitoring Capability	B	To enhance capability of MARINA to assess competitiveness of domestic shipping in a free market	Publication of annual fare monitoring and assessment reports			
A13 / Updated and Streamlined Requirements and Procedures	B	Better delivery of services through a streamlined bureaucracy.	Reduced number of days to act on applications			
A14 / Relaxed Regulatory Regime	B	To encourage entry into routes and services and lower rates and improve level of services.	Number of operators and routes being served.			
A21 / Devolution of Regulatory Powers	B	To involve LGUs in the development of local domestic shipping	Number of LGUs			
A22 / Municipal Infrastructure Support including Continued Implementation of the NFPDP II	A	To provide sea access to coastal and island communities	Number of operating ports particularly accommodating RoRo vessels			
A31 / Categorization of Sea Areas	B	To connect category of sea area to meteorological conditions.	Issuance of MC			

(3-2)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
A32 / Rationalization of Area of Operations of Wooden-hulled Vessels	B	To rationalize area of operations of WHVs within protected and partly protected areas only	Issuance of MC			
A33 / Institutionalizing Security Measures for Domestic Shipping and Ports	A	To make travel and trading in domestic shipping routes safer and more secured	Lesser number of security incidents in domestic shipping			
A34 / Designation of an Admiralty Court	B	To hasten adjudication of maritime incidents	Designation of Admiralty Court/s			
B11 / Differentiation of Ropax and Container Service at Trunkline	A	Establish competition among operators and to offer diversified services for shippers	Difference in freight rate Difference in sailing and berthing time			
B12 / Implementation of the Trunkline ROPAX Pilot Project on the Manila – Cebu Route	A	Enhancement of shipping service between Manila and Cebu	Fast and frequent service occupancy			
B13 / Replacement of Aging ROPAX with a New-generation ROPAX on the others than the Manila-Cebu route	B	Provide more efficient vessels, with reduced downtime – to ensure sustainability of connections	Ropax ave. age (27.9 years as of 2004)			
B21/ Implementation of the Corn Bulk Shipping Pilot Project (Gen San – Luzon)	A	Enhance the competitiveness of SOCKSARGEN corn in Luzon	Landed price differential vs. Luzon corn = 10% Corn quality at Luzon: Luzon > Mindanao			

(3-3)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
B22 / Establishment of Consolidation System and Facilities for Bulk Handling	A	Enhance the quality of grain products and set the conditions for large-scale bulk transport	Number of consolidation centers with post-harvest facility (nearly none as of 2005)			
B23 / Further introduction of Large Scale Bulk Shipping Service on Possible Long-distance Routes	B	Reduce the cost of logistics	No of dry bulk carriers and serving routes (no service as of 2005)			
B31 / Improve Investment Condition for Tanker Renewal	B	Protection of the environment against oil spills	Tanker ave. age (20.7 years as of 2004)			
B32 / Development of Legal Framework for Tanker Modernization	B	Protection of the environment against oil spills	Issuance of MC No of oil spill accidents			
B33 / Promotion of Domestic Tanker Building	B	To develop domestic capability on tanker building, and thereby less reliance on imported vessels	Domestic tanker building (1,032 GT/yr; 1999-2003)			
B41 / Examination of Viability of the Cold-chain Corridor Development Projects	A	To pave the way for nationwide cold chain network through PPP	No. of inter-island cold chain corridors			
B42 / Implementation of the Cold Chain Pilot Project for Panay Fish	A	To enhance the livelihood of Panay fisher folks	Shipment share of frozen products (1% as of 2005)			

(3-4)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
B43 / Expand Cold Chain Facilities and Infrastructure	B	To reduce wastage and enhance food quality	% of perishable goods transported via cold chain (in maritime transport = 20%)			
B51 / Establish Infra and Financial Support for RoRo to Replace Wooden Hull Operation	B	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	Number of new RoRo services developed to replace banca boats			
B52 / Setting of Clear Directive regarding Phase Out Plan and Strictly Enforce Phase Out Regulations	A	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	No. of routes, LGUs to participate in the phase-out program			
B53 / Guidelines Preparation in Safe Wooden Hull Vessel Operation and Establishment of an Enforcement Mechanism	A	To enhance safety and cost effectiveness of some maritime corridors still being served by wooden hulled vessels	Guideline preparation No. of LGUs to participate in technical training			
B54 / Establishment of Safety Nets to Cushion Displaced Wooden Hulled Operators and Crews	B	To mitigate the social disbenefits of banca boat replacement	No. of LGUs to extend job transfer support			
B61 / Establish Institutional and Developmental Plan for RRTS	A	To improve market accessibility of the countryside, thus promoting countryside development	Preparation of the overall development plan and some implementation plans of priority missionary routes			
B62 / Implementation of the RRTS Pilot Project between Bicol and Cebu	A	To promote development in the Bicol Region and particularly Masbate Province	Number of RoRo service routes and their frequency (no route as of 2005)			

(3-5)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
B63 / Fostering of RoRo operators and Port operators	B	To improve market accessibility of the countryside, thus promoting countryside development	No. of RoRo operator No. of private RoRo port operators			
B64 / Delivery of New RORO Vessels	B	To improve vessel productivity and to develop self-sufficiency in vessel supply	Number of locally built RoRo vessel (nearly none as of 2005)			
B71 / Improvement of Major Domestic Shipping Ports	A	To reduce transport cost by reducing required port time	No. of ports equipped with quayside cranes (4 ports as of 2005) No. of ports with dedicated Ropax terminals (none)			
B72 / Development of RORO Terminals	B	To enhance accessibility and to enhance integration between neighboring islands	% of serviced corridors (17/36 or 47% as of 2005)			
C11 / Further Development of e-MARINA	A	To upgrade the MARINA website in a more interactive way with improving market information	Increased interactive contents and wider linkage between the shipping companies and the shippers/users			
C12 / Establishment of a MARINA Training Center	A	To provide various maritime training opportunities especially for management personnel	No. of training programs No. of participants			
C13 / Promotion of Shipping Industry Restructuring	B	To collect and disseminate successful shipping industry restructuring efforts	Collection of successful practices No. of publication copies and regional workshop participants			

(3-6)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
C21 / Enactment of a Ship Management Incentive Act	B	To institutionalize professional ship management services for paving the way to a strong maritime country	Availability of ship management related institutional framework No. of professional ship management companies			
C22 / Reorganization of Domestic Classification Societies	A	To form a single and non-profitable organization	No. of domestic classification societies			
C23 / Provision of Ship Management Training Program	A	To foster competent superintendents, class surveyors and ship inspectors	No. of participants who finished the training program			
C24 / Publication of Surveyor's Guidelines and Checklists	B	To guard and standardize surveyors' service in quality	Availability of printed material No. of copies distributed			
C25 / Sharing of Ship Inspection and Accident Inquiry Database	B	To maintain seaworthy fleets by related parties based on a commonly developed and shared database	A shared ship safety database among MARINA, PCCT and others			
C26 / Preparation of a New NSM Manual	B	To enhance safe management on small domestic vessels with a simplified and practical NSM manual	No. of NSM-Code Company certificates (104 as of 2004) and vessel certification (198 as of 2004)			
C27 / Establishment of a Publicly-owned Ship Equipment Procurement Company	A	To collectively and economically procure ship equipment, materials and spare parts for the SBSR industry	Establishment of a proposed company and its business scale			
C31 / Facilitation of Investment in Shipyards	A	To increase shipbuilding capability to meet domestic shipping needs particularly small vessels	Domestic shipbuilding capability (6,000 GT yearly as of 2003)			

(3-7)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
C32 / Upgrade and Modernization of Shipbuilding Technology	A	To deliver competitive vessels in quality against foreign mode ones	No. of participants ship projects with advanced foreign shipyards No. of participants in shipyard management training program			
C41 / Provision of Efficient Ship Repairing Service	A	To provide fast and reasonable ship repairing service at an internationally competitive level	No. of regular ducking and maintenance days No. of participants in shipyard management training program			
C42 / Receipt of More Ship-repairing Orders from Foreign Vessels	B	To offer integrated ship repairing and management services in association with robust SBSR ancillary industries	No. of foreign flagged vessels dry-docked and repaired			
C43 / Conduct of a Study on the Development of SBSR Ancillary Industries	B	To foster adequate SBSR ancillary services to ensure the competitive domestic SBSR industry	Domestic procurement rate of SBSR related materials, parts and equipment (currently almost none)			
C51 / Conduct of Periodical Statistical Surveys to Gauge Logistics Costs and Services	B	To analyze accurate logistics costs and services for assessment on customers' satisfaction and international competitiveness	Publication of logistics statistical survey results			
C52 / Conduct of an IT Development and Utilization Study for Nationwide Supply Chain Management	B	To Formulate SCM development plan based on coordinated transport and IT development	Identification and implementation of public and private investment in SCM			
D1 / Implementation of Fleet Procurement and Modernization Plan	A	To develop modem and sufficient domestic fleet	Domestic fleet tonnage (1,485 thousand GT, as of 2004) Average domestic fleet age (24 years)			
D2 / Promotion of Alternative Ship Finance Methods (i.e., ship leasing and project finance)	A	To meet various ship finance needs with alternative ship finance methods rather than conventional collateral-based finance	No. of ship leasing projects (No practice by 2004) No. of project finance practices in fleet investment			
D3 / Revision of the Public Ship Finance Scheme	A	To revise the DSMP II scheme as a shipping policy oriented financial facility with two channels (sub loan and ship leasing)	Implementation of the revised scheme Disbursement and arrears rates			

(3-8)

Project Code / Name	Priority	Development Goal	Achievement Indicator	Post Evaluation		
				2007	2010	2015
D4 / Implementation of the NMEC Fostering Program	A	To foster NMEC as a practitioner of the alternative ship finance institution with owning a 10% domestic fleet.	NMEC holding tonnage and its share in overall domestic fleet (NMEC founded in 2005)			
D5 / Practice of Standardized and Serial Shipbuilding Projects	A	To deliver the most suitable domestic vessels with competitive prices	No. of projects with building tonnage (no practice so far)			
D6 / Practice of Innovative Financing with Empowering Local Shipping	B	To consolidate small shipping companies to a legal entity (e.g., trust agreement) by area and/or by shipping type so as to increase investment capacity	No. of consolidated shipping business plans and practices (no practice so far) Investment amounts under the above			
D7 / Relaxed REM Requirement in Ship Finance	B	To treat ship collateral as likely real estate collateral as long as ship asset value is institutionally guaranteed	Revision of the related BSP regulation			
D8 / Facilitation of DSMP II Disbursement	A	To urgently finance domestic ships and maritime related facilities to be procured by eligible borrowers	Disbursement rate (51% as of September 2005)			