9 SUSTAINABLE SHIP MODERNIZATION SCHEME

FRAMEWORK OF BENEFICIAL FISCAL REGIMES FOR DOMESTIC SHIPPING

1. The historical and current government policy and financial incentives on domestic shipping development and programs and measures for shipping finance are summarized and grouped into 1) incentives in taxation, 2) public finance for domestic shipping and 3) public finance for development.

Incentives in Taxation

2. The development incentives in taxation have been provided continuously or with some interruption since 1970's. Incentives in taxation is still regarded as an important political tool for industrial development, its necessity is designated in DSDA (RA9295) for both domestic shipping and ship building industries. These are VAT exemption, net-operation loss carry-over and accelerated depreciation on fixed assets.

Public Finance for Domestic Shipping

3. In the beginning of 1980's, the World Bank tried to provide a loan to domestic shipping as an on-lending scheme, however, it was not utilized favourably. This fact has led to aggravation of the domestic shipping industry. Because it was implemented during the late stage of the Marcos Administration, the devaluation of Pesos was proceeding under the unstable political/ economic conditions. Accordingly the domestic shipping industry suspended the procurement of used ships from overseas.

4. The profit oriented business with obsolete fleet neglecting maritime safety has caused a number of large tragic accidents in the late 1980's. DSMP I started in 1995 with the replacement of obsolete fleet as a priority issue. This measure was effective in the modernization of domestic fleet and the improvement in safety, and was succeeded by DSMP II by expanding the scope from 1999.

5. DSMP II drawdown has been much slower due to the increase of overdue and application of tighter conditions for mortgage after the Asian financial crisis. Moreover, there are distorted conditions such as a concentration of lending to only several big shipping companies. When extending the DSMP II mobilization period, DBP explained several fund disbursement facilitation measures to JBIC in 2004 including creation of the MEC.

Public Finance for Development

6. The needs and political importance of more balanced development over the country are increasing. The PGMA's 10-Point Agenda incorporated such needs. Based on the regional development needs, DBP also has an intention to provide public finance for domestic shipping for this purpose and aggressively proposed new financing schemes with rather a holistic approach since 2002, as follows:

- In 2002, DBP launched the Sustainable Logistic Development Program (SLDP)
- In 2005, DBP requests the Infrastructure and Logistics Assistance Facility (ILAF) for a new application to JBIC

7. These financing measures for development are to involve more entities in concern compared to the provision of incentives in taxation or the sub-loan system of ODA to shipping companies, therefore, may encounter more difficulties during its implementation. The measures are gradually being materialized but still are just at the initialization stage.

FLEET PROCUREMENT AND MODERNIZATION PLAN

8. The domestic shipping industry has to continuously procure vessels for additional demand and replacement. The DSDP proposes one fleet procurement and modernization plan with the following planning criteria (refer to Table 9.1):

- To meet future traffic demand projected in Chapter 8
- To make a younger fleet profile gradually, vessels will be scrapped over 35 years in 2010 and over 30 years in 2015.
- To adopt the restriction policy on vessel importation of less than 500 GT, which is granted to MARINA by RA 9295.
- Other larger vessels procured will be 15 years old or less on the average (assumed to be 70% between 10-15 years and 30% between 5-10 years).

9. As a result, necessary tonnage and capital for the fleet procurement plan is indicated in Table 9.1. Table 9.2 shows the effect of fleet age reduction. Table 9.3 shows the entire domestic shipping fleet by type and size. The existing aging fleets particularly container vessels and Ropax / RoRo vessels would be much younger because many old vessels must be replaced by the criteria.

10. Scrap and Build Policy defines the government regulations and guidelines on scrapping age and buying age of domestic vessels. It aims to modernize the fleet by decreasing average age. The mechanism for its implementation are varied – for example: (i) strict mandatory age requirement legislation; (ii) fiscal incentive such as accelerated depreciation of vessels; (iii) stringent vessel maintenance requirement; (iv) financial incentives, such as low interest rates on new vessel purchase; (v) improvement of operating conditions for new vessels, such as improving port efficiency; and, (vi) others. However it is difficult to persuade shipowners since the current business environments are favourable in buying and assigning old second-hand vessels.

Table 9.1 Required Vessel Procurement and Investment Cost

	2005-2010	2011-2015	Total
Vessels for Procurement (000GT)	697	714	1,411
Investment Cost (Bil. P)	41	52	93

Table 9.2 Average Vessel Age by Vessel Type

Vessel Type	2004	2010	2015
Container	27	19	16
General Cargo	22	18	12
Passenger Ferry	16	15	12
Tanker	20	19	15
Passenger Cargo	25	20	11
Ropax / RoRo	29	15	12
Dry Bulk	21	14	14

Table 9.3 Entire Domestic Fleet Composition

Type	Size (GT)	2004	2010	2015
Container	0-3000	24	19	29
	3001-6000	66	56	30
	> 6000	23	61	100
	All	**113**	**137**	**159**
Conventional	0-275	51	49	47
	281-550	148	170	175
	551-4100	261	308	345
	> 4100	79	93	93
	All	**539**	**620**	**661**
Passenger Ferry	0-140	4	5	5
	141-800	21	25	28
	> 800	7	-	-
	All	**32**	**30**	**33**
Tanker	0-300	11	12	11
	301-800	38	39	36
	> 800	135	157	165
	All	**184**	**207**	**211**
Conventional Passenger/ Cargo	0-250	13	8	9
	250 - 500	13	3	-
	> 500	9	7	7
	All	**35**	**19**	**16**
RoRo/ RoPax	0-500	12	17	17
	501-1500	34	42	36
	1501-5000	105	91	98
	5001-10000	172	223	278
	> 10000	160	207	258
	All	**484**	**580**	**686**
Dry Bulk (barge)	0-350	13	12	11
	351-1600	66	79	84
	> 1600	18	19	17
	All	**97**	**109**	**112**
Total fleet (excl. WHV)		**1,485**	**1,702**	**1,878**

COMPARATIVE ANALYSIS OF SHIP PROCUREMENT ALTERNATIVE

Ship Procurement Alternatives subject to the Study

11. A shipping company determines the best method taking account of its business philosophy and financial capability, and the risk analysis on a particular ship procurement project. Then a company starts application and negotiation to a financial institution. To determine ship procurement method, the first important decision that a shipping company must make is to choose whether a ship is owned or not owned. There are several alternatives under each choice:

Ship owning（on balance）

- Ordinary finance based on collateral
- Project finance
- Ship co-ownership with the public sector
- Increase in company equity and issuance of CP in the capital markets
- Securitization of ship investment among investors

Non-ship owning (off balance)

- Lease finance
- Bare-boat charter
- Ship charter within a certain period (time charter)

12. Among those alternatives, "4) Increase in company equity and issuance of CP in the capital markets" and "5) Securitization of ship investment among investors" are not analyzed in this section since the Study focuses on public finance mobilization for sustainable domestic shipping development. In addition, the country accepts "7) Bare-boat charter" but not "8) Ship charter within a certain period" under the cabotage regime. Therefore, the remaining five (5) methods are subject to the Study for examining their adaptability to the Philippine domestic shipping and effective implementation.

Comparative Analysis

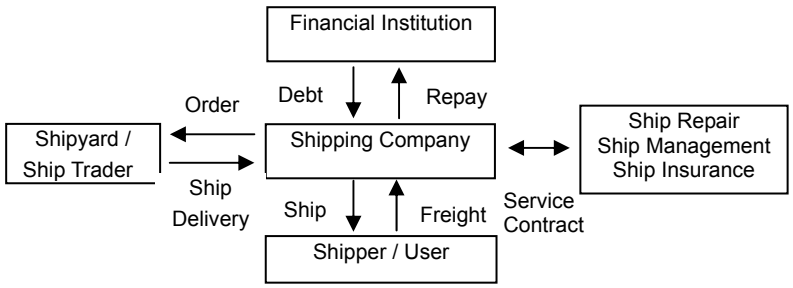
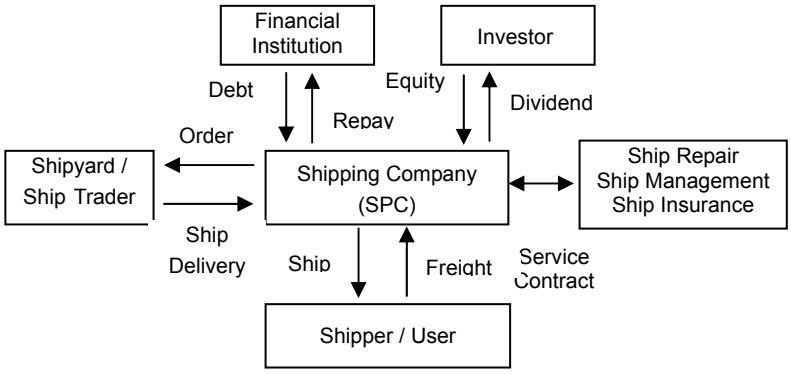
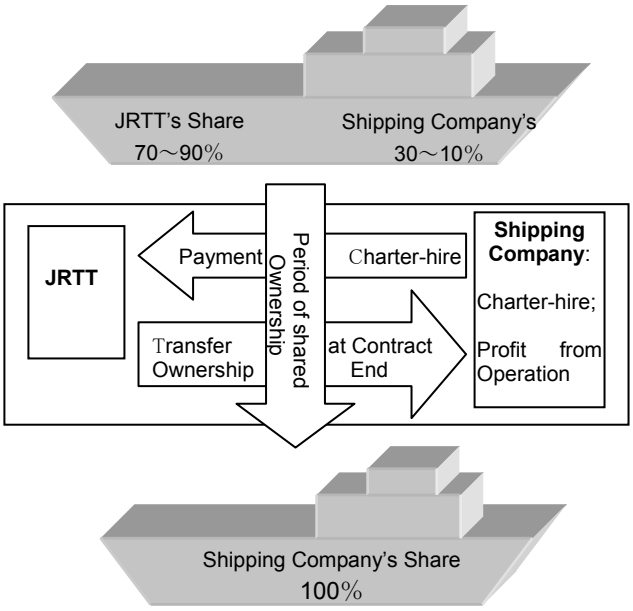
13. Ship procurement requires considerable amount of financial source, but the market price of the ships is variable with a wide range due to the market condition. The ship building industry is active in the recent years, while the unit price for the building is rather stable because of the competitive condition among ship builders. On the other hand, the unit price of used ships is soaring reflecting the unit price increases in scrap iron and scrap ships. The charter fee also rose in 2001 and once became stable, then again has been increasing.

14. It is said that it is modern and desirable management to use charter vessels instead of holding vessels since it can be flexible to the demand-supply condition in the market and can make business without heavy burden of initial investment. In the developing countries, however, freight charge increase due to the charter price increase is not easily accepted by the local industries: hence the rise in the charter price tends to cause a shortage in the total fleet. It is highly important to gradually promote the modernization and expansion of vessel fleet. It is most desirable from the national economic viewpoint to be able to economically procure the new preferable type of ships produced by local ship building industry.

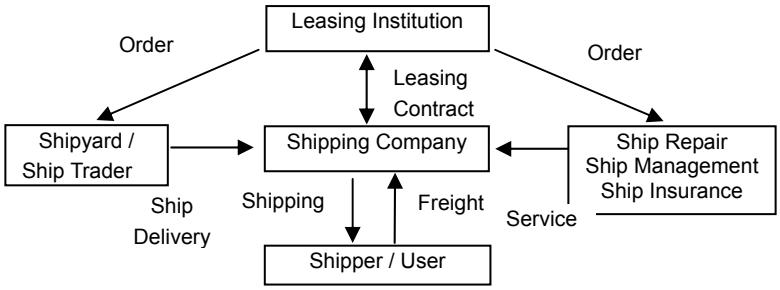
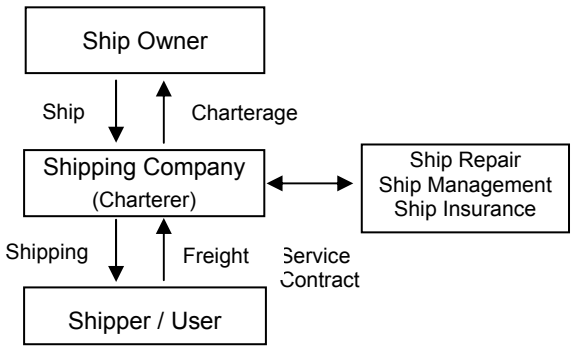
15. **The ordinary finance based on collateral** will continue to be a basic ship financing measure in the Philippines. It is necessary to make an institutional improvement for setting ships as a collateral and settlement of mortgage and for accepting ship-management as a common practice in order to upgrade the socio-economic value of ships as an asset.

16. **The project finance** should be introduced as a more sophisticated measure in the future. There are many issues of public-private cooperation in the domestic shipping in the Philippines, because of many fields to be developed and services to be improved. For this purpose, public financing scheme is important together with the supporting policy and infrastructure development in order to realize a sound cash-flow.

Figure 9.1 Outline of Ship Procurement Alternatives

Methodology	Finance Scheme
Ordinary Finance based on Collateral Under the DSMP II loan scheme, the DBP evaluates 50-60% of price of the financed vessel as hypothetic value through the following investigations: - Financial condition of a company - Track records of past loans - commercial profit of a financed vessel - Other collaterals	
Project Finance This has been rarely practiced in the DSMP. This is to finance based on the estimated cash flow of specific project. Therefore, it is recommended to establish the independent SPC for each project. Feasibility of a project will be improved if SPC could get more investors and make a long-term contract with shippers.	
Ship co-ownership with the Public Sector This scheme has contributed in the domestic fleet development in Japan. JRTT approves the new shipbuilding project proposed from shipping company and share the ownership of vessel with shipping company. Shipping company will pay to JRTT within the contract period. JRTT provides financial and technical supports to shipping companies such as in designing work, etc. In the Philippines, there is no mechanism to share equity and to provide technical support.	 JRTT's Share 70～90% Shipping Company's 30～10% JRTT Payment Charter-hire Period of shared Ownership Shipping Company: Charter-hire; Profit from Operation Transfer Ownership at Contract End Shipping Company's Share 100%

(Continued Table 9.1)

Lease Finance MEC will provide ship leasing service. It will encourage a new entry in shipping business. However, it is necessary to examine whether a lease scheme is appropriate for the applying company from the management viewpoints such as capacity on vessel investment, effect of depreciation, etc.	
Bare-boat Charter This scheme is well practices in the countries including Philippines which have not enough domestic vessels and funding sources. Through this scheme, It is possible to strengthen the national flag vessels economically and to provide job opportunities for the domestic seamen.	

17. **Lease finance scheme** is suitable for local shipping supported by LGU, since even small/medium shipping companies can start business without large initial investment. The scheme that public sector leases ships, is an effective measure when new shipping system is started with public-private partnership.

18. **The co-ownership with the public sector** comes from Japanese' experience since the late 1950s. In case of Philippines, it might not be effective and cause a moral hazard for the shipping company without due preparation in case of overdue and subsequently withdrawn of a co-owning ship.

19. **Bare-boat charter** is not preferable in consideration of the outflow of charter fees to overseas. It is however, the system rooted in the domestic shipping since 1975, and will be one of the ship procurement measures to be able to promptly meet the shipping market needs. In other words, the role of bare-boat charter would decrease as much as the domestic procurement measures are developed

REVISED SCHEME FOR PUBLIC SHIP FINANCE

20. Key risks of two-step loan from JBIC are as follows: currency exchange risk due to the devaluation of Peso to Yen and business risk particularly disability in credit recall. In the case of on-going DSMP II, DBP shoulders such business risk, while the exchange risk is shouldered by the Department of Finance.

21. Regarding program management, in case of DSMP I, there was a sort of steering committee for relevant government agencies including MARINA to supervise sub-loan projects. In the DSMP II, DBP does not need any discussions with corresponding departments of government or its line agencies for the matter of the loan execution for sub-projects. As a matter of fact, DSMP II has become more conservative than DSMP I, which resulted in the delay of loan execution and concentration of recipients.

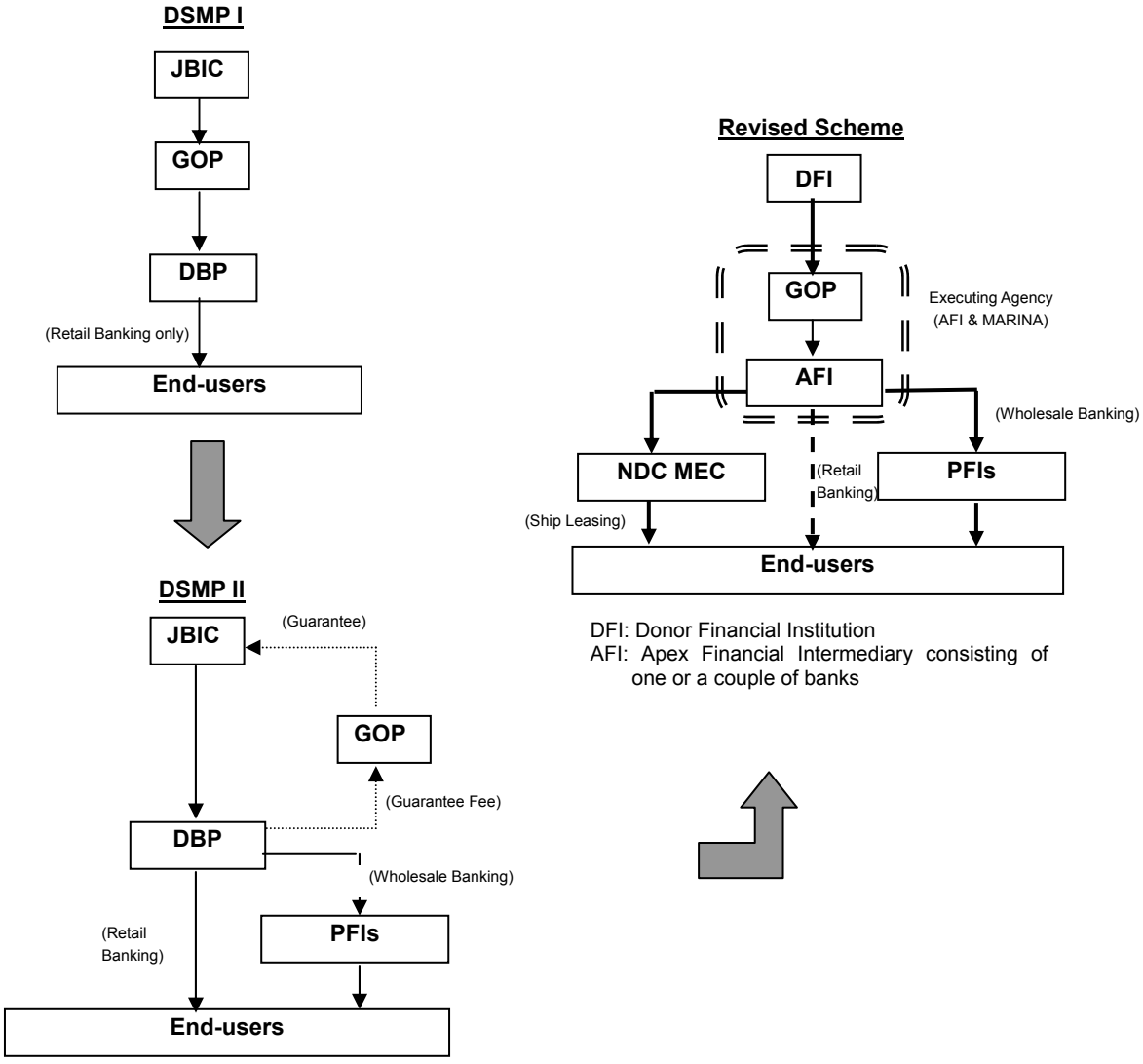
22. This study has confirmed that it is highly necessary to enhance the public financing schemes for domestic shipping in the Philippines until 2015. The following improvement measures are recommended for continuing on-lending schemes to private sectors or LGU by using DSMP scheme or financial resources from similar financial assistance agencies.

- The financing scheme should be shifted from ordinary finance based on collateral to project finance and lease finance.
- In order to keep sound financial condition

of the sub-projects and increase the development effects yielded by investment, not only AFI but also government agencies including the corresponding department for policymaking should take part in the execution body. The development effects should not be irregularly reviewed by sub-project basis, but should be periodically reviewed by the department directly concerned with policy making from the viewpoints of the policy objectives and overall development effects as a project.

- AFI and MARINA will be in charge of the daily tasks of the execution agency.
- It should be examined that not only DBP as before but also other several banks such as NDC etc. will be responsible as the AFI.
- In the case of NDC, it is difficult to expect to provide retail banking service since NDC has no branch unlike DBP operating 77 branches over the country although it can legally work as a Government Financial Institution.
- NDC-MEC should be fostered as the implementation body of lease finance by not only accumulating expertise of lease business but also upgrading the capabilities for shipping business management and technical aspects.

Figure 9.2 Proposed Public Finance Scheme (in case of ODA fund utilization)



SHIP LEASING THROUGH NDC MEC

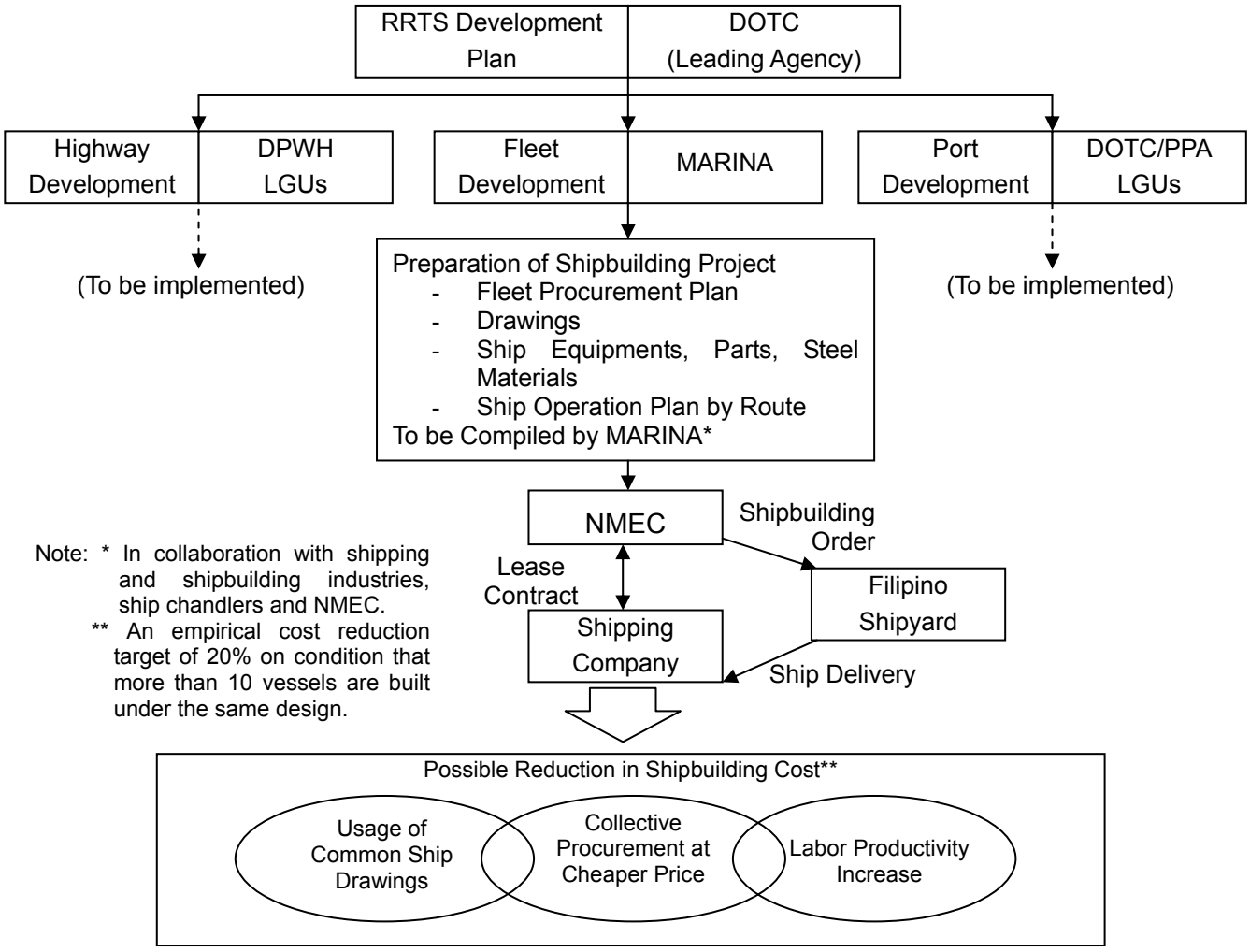
23. NDC registered MEC in March 2005 to act as an alternative ship finance particularly to address one issue of DBP-DSMP underutilization, i.e., strict real estate mortgage (REM) requirement. With the lease finance provided through NMEC as additional and effective means to enhance credit absorptive capacity of the domestic shipping sector, no collateral requirement to the prospective proponents will be extended.

24. The Study defines the alternative ship finance scheme which requires no collateral requirement with providing essential technical services to ship construction/acquisition and its operation and maintenance. Unlike the previous DBP-DSMP financial services, theoretically NMEC has a wide variety of tools to support small to medium shipping operators. The scope of business may start from its core function: ship leasing to extending to technical support to shipbuilding and procurement, ship management , ship loan guarantee, tentative ship operation after foreclosure.

25. NMEC is a suitable organization to be an implementation body of a Government initiated shipbuilding project. NMEC can order, own and lease such project vessels. When a standardized and serial shipbuilding method is applied, the project must benefit shipping companies who can operate new ships at reasonable leasing fees because the method can bring about considerable cost reduction through reduction in ship design fee, equipments and parts procurement cost and labor cost.

26. The Study proposes to apply the standardized and serial shipbuilding method in the country specifically for trunkline Ropax fleet and RRTS RoRo fleet. The implementation mechanism for building RRTS RoRo vessels is depicted below.

Figure 9. 3 Proposed Implementation Scheme for A NMEC Shipbuilding Project (in the case of RRTS RoRo vessels)



INNOVATIVE FINANCING WITH EMPOWERING LOCAL SHIPPING

Consolidation Method

27. Although M&A is a typical industrial restructuring method, it seldom happens in underdeveloped and low demand industrial segments. To address a fragmental and small unit issue in domestic shipping, the alternative is then to pool and integrate the small shipping companies.

28. Pooling and integration of small companies through a larger integrated corporation and a cooperative have been tried, but generally this legal mechanism has failed in the past. A combination of trust and asset pooling makes use of the trust mechanism to simplify the pooling and integration of the ships, port services, cargo facilities, marketing, and land transport links operated by a number of companies, big and small. Individualism can be preserved and the relation with asset installment (mostly new investment) and earnings can be clearly gauged based on a defined and fixed Trust Agreement and its Business Plan.

Applicable Areas

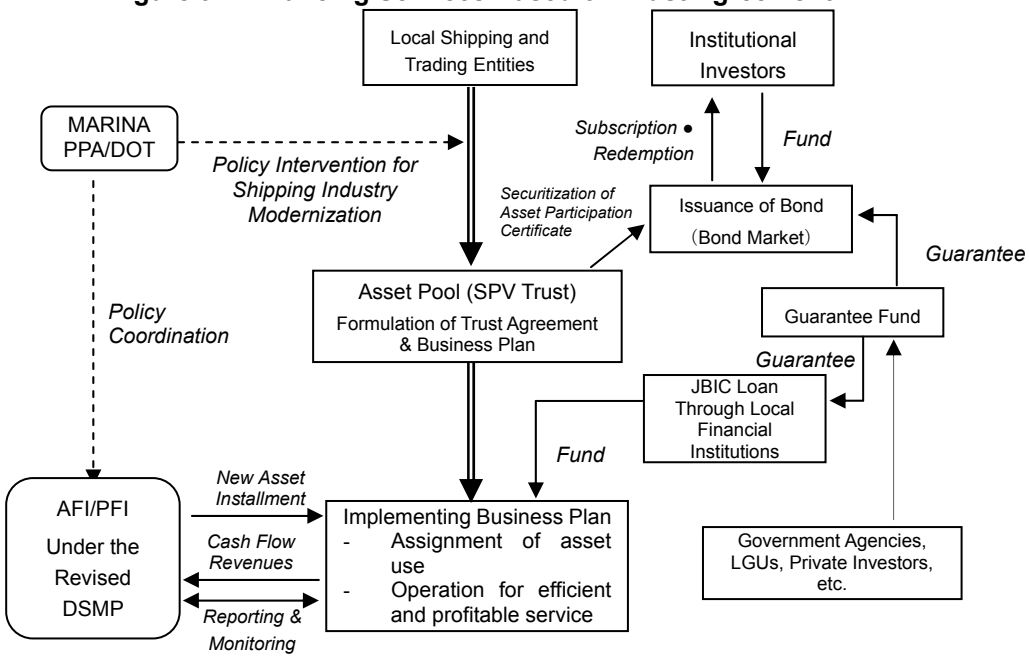
29. The Study has identified possible trust arrangements to meet shipping modernization needs. Some examples are as follows:

- Feedering operations: When they change their traditional services to modern ones such as short-haul RoRo service, individual motor banca operators' efforts may be limited. In such a case, possible pooling assets are small modern ships and part of local port facilities.
- Area-wise common facilities such as bunkering: Small to medium operators are suffering from higher oil fuel costs than large operators because they don't have exclusive bunkering facilities at homeports. Putting bunkering and other necessary assets into a pool, they may compete with large operators on those cost items.
- Dry bulk shipping: Currently most of sizable cargoes are bagged and transported in a container or on conventional general cargo vessels of several hundred tons each. Dry bulk shipping requires a large bulk ship of several thousand tons and exclusive terminal facilities at both port ends. Therefore, those facilities are possible pooling assets among conventional cargo operators.

Proposed Trust and Pooling System

30. The trust is established with a Trustee Bank, and is governed by a board of trustees. Under the revised public ship finance scheme, an AFI or one PFI will act as a Trustee Bank. The Business Plan will determine the players in a most acceptable configuration. The Asset Pool is contemplated to have adequate values to back up securities to be issued.

Figure 9.4 Financing Services Based on Trust Agreement



10 DEVELOPMENT OF NEW GENERATION TRUNK LINER ROPAX VESSELS

INTRODUCTION

1. Liner shipping services takes an essential role in domestic trade of the country. Particularly, maritime traffic demand on trunk liner routes are mainly served by RoRo type cargo-passenger vessels so-called "Ropax". Ropax will still play an essential role in trunk liner shipping routes for both of passengers and cargoes.

2. The existing Ropax vessels assigned to trunk liner routes are all second-hand and more than 95% of them are imported from Japan. Those existing Ropax vessels are already very old with an average age of 31 years and are aging year after year. The demand for Ropax service particularly cargoes will continue to increase. Therefore, they should be properly modernized and expanded. However, the supply of second hand vessels from Japan is not enough to provide necessary demand in the Philippines. Therefore, new source of Ropax vessels shall be examined.

3. Dominant commodities for Ropax are containerized general cargoes. The prevalence of container handling using forklifts supports its operations, because low container-handling productivity does not translate into shorter turnaround time for a vessel that is constrained by the day-of-the-week schedule operation. In addition, it is very dangerous that container handling and passenger boarding/unloading is not segregated spatially.

4. In order to modernize vessels and to increase efficiency of the trunk liner Ropax operation, the objectives of the pilot project are set as follows. Although, the pilot project is focusing on Manila-Cebu route, the results will serve as reference for the development of other trunk liner routes:

- Strengthening of trunk liner Ropax services, particularly focusing on Manila-Cebu Route, by new generation Ropax vessels and improved operational efficiency
- Development of standard new Ropax vessels to be built in domestic shipyards.
- Development of dedicated Ropax terminal at Manila and Cebu ports.
- Examination of a possible public ship finance system

5. Components of the pilot project are summarized in Table 10.1.

Figure 10.1 Existing RoPax Service in Manila-Cebu Route


Typical Ropax vessel


Boarding passengers


Handling by forklift


Loading/unloading by tractor

EXISTING LINER ROPAX SERVICE AND DEMAND IN MANILA-CEBU ROUTE

6. Ropax Operation: Currently, there are 3 operators providing liner shipping services by Ropax vessels (Aboitiz, Sulpicio and Gothong). There are weekly 14 trips from Manila to Cebu and 10 trips from Cebu to Manila. The distance between Manila and Cebu is 392 N.M. and average transit time is about 20-23 hours due to varying navigation speed of 17-20 knots. Berthing time at port mainly for container handling varies depending on the operators and it takes at least 5-6 hours even for vessels operating as shuttle service. Therefore, maximum is 3 round trips per week at present.

7. Assigned Ropax Vessels: There are 10 Ropax vessels assigned to Manila-Cebu route. They were built in 1970's and 1980's and the average age is 25 years old. Due to old age and poor management of vessel, operational safety is a concern. Vessel size in terms of GT varies widely from 8,000 GT to 23,000 GT, average is 14,000 GT. Average capacity of container and passenger is 170 TEUs and 2,380 pax,

respectively. Capacity of passenger is very big and it seems to fit with the peak season demand.

8. Fare: Average one-way trip fare for passenger is about P1500 (without aircon). The cheapest published freight rate of "Pier to pier" service is about P33,000/TEU for one-way. Freight rate of "Door-to-Door" is higher, about P40,000/TEU. Gothong offers very low rates (P800/pax, P18,000/TEU) compared to other operators to get more regular clients because they entered this route only recently.

9. Traffic Demand: The total maritime traffic demand between Manila and Cebu is estimated about 2.78 million MT of various cargoes and 415,000 passengers in 2005. Of which 1.35 million MT or 90,000TEUs of containerized cargoes and 415,000 passengers are transported by Ropax service. Average daily traffic of containerized cargoes and passengers is 3,750 MT or 250TEU and 1,150 passengers, respectively. Ropax shares 65% in container shipping and remaining is transported by dedicated container vessels (RoRo and LoLo type).

10. Load Factor: based on the above supply capacity and traffic demand, average load factors (demand/supply capacity) of cargo and passengers are estimated at 53% and 18%, respectively. By direction, container's load factors are 64% in Manila-Cebu link and 38% in Cebu-Manila link. Passenger load factor is very low because capacity is set to meet the increased demand in peak-season such as school holidays in April-June and Christmas and New Year season in December and January.

Table 10.1 Pilot Project Components

Component	Item	Existing	Proposed
1. Introduction of New-generation ROPAX Vessel for the operation of Manila-Cebu Route	Frequency	12 trips a week (80% working ratio due to some canceled voyages)	2 trips a day (90% working ratio - no cancels except weather reason and periodical maintenance)
	Transit Time / Navigation Speed	20-23 hours 17-20 knots	19-20 hours 20-21 knots
	Cargo Handling time	5-25 hours	4-5 hours
	Operation	50-96 hours/round trip	48 hours/round trip
	Vessel Assigned	Second hand Various size/design 10 vessels (of which 2 vessels for shuttle service)	Brand New Standard size/design 4 vessels (all shuttle service)
	Capacity of Assigned Vessels	Vary by vessel 2,380 Pax (Ave.) 174 TEUs (Ave.)	1,000 Pax 170 TEUs 50 rolling vehicles
2. Development of Designated Ropax Terminals at Manila and Cebu Port	Terminal Operation	Individual operation at designated port area	Common terminal facility dedicated for Ropax operation with passenger boarding bridge like air port

Table 10.2 Existing and Traffic Demand for Ropax Service in Manila-Cebu Route

	Unit	Yearly Traffic			Average Daily Traffic	
		2005	2015	2005/2015	2005	2015
Cargo	MT	1,350,000	2,240,000	1.7	3,750	6,200
(Container)	TEU	90,000	149,000	1.7	250	410
Passenger	pax	415,000	240,00	0.6	1,150	670

PROPOSED PLANS FOR PILOT PROJECTS

Proposed Liner Ropax Service and Operation in Manila-Cebu Route

11. Competitive Modes: In order to improve the competitiveness of Ropax service, it is essential to reinforce the advantageous differences of services with other modes.

12. In container shipping, Ropax service has many advantages than the dedicated container vessels such as in shorter transit time, prompt operation and frequency, though the freight rates of container vessels are slightly cheaper. The results of shipper interview also show that frequency and prompt operation are the prime reason why they use Ropax service. On the other hand, in passenger transport, most of RRTS services are inferior to Ropax service under the anticipated transport conditions between Manila and Cebu. According to the interview with Ropax passengers, Ropax transit time and fare is more or less assessed as satisfactory level.

Table 10.3 Comparison of Ropax Service with Other Competitive Modes

	Mode	Transport Time	Fare
Cargo (Container)	Ropax Vessel	20 h (20knot)	P25,000-30,000/TEU
	Container Vessel	33h (12knot)	P20,000-30,000/TEU
Passenger	Ropax Vessel	20 h (20knot)	P1500/pax
	RRTS (Bus)	29h (Western route) 23h (Central Route)	P1700/pax N.A. (no service yet)

13. Ropax Operation Plan:

- Frequency: Liner operation is essential feature of Ropax service. Since the two daily departures from each port of Manila and Cebu are already attractive for the passengers and shippers, this level of frequency will be strictly ensured.
- Operation Cycle: In order to maximize the utilization ratio of vessel and to minimize the number of necessary vessels, transit time and berthing time shall be reduced. Therefore, it is proposed to implement a 48-hour operation cycle for a round trip. For this, navigation speed will increase to 21 knots to reduce the transit time to 19 hours. This requires only 4 new vessels to maintain daily 2 departures (morning and afternoon) from each port.
- Vessel Capacity: In order to meet with the existing and future demand efficiently, appropriate capacity size of new Ropax vessel capacities for container and passenger are determined to be 170TEUs and 1,000 passengers in considering the proposed service level and operational system, and anticipated load factors.
- Load Factor: Load factors as performance indicators of the proposed new Ropax vessels and its operation will be increased to 67% for container (94% in Manila-Cebu link and 40% in Cebu-Manila link) and 18% for passenger.

Proposed Standard Design for New Generation Ropax Vessel

14. The new generation standard Ropax vessels suitable for Manila-Cebu route are preliminary designed in considering new building in local shipyards. The following are the basic design concept proposed:

- Enough spaces for Container Chassis: At least 4.2m clear height for deck throughout
- Efficient and Smooth Loading/Unloading: No pillars in cargo hold
- Sufficient Deck Strength of Cargo Hold: Suitable reinforcement for transverse strength
- Energy Saving Engines and Moderate Service Speed: Daily regular service for the customer's convenience.
- Safety Construction/Equipment under the Regulations: SOLAS/MARINA regulation for Safety.

15. In considering other trunk liner Ropax routes, three sizes of standard Ropax vessels are examined. Among three vessels, the medium size Ropax vessel is proposed as the most suitable vessel to ply the Manila-Cebu Route. The principal particulars of the proposed vessels were examined and summarized as shown in the table below.

Figure 10.2 Sample Drawings Medium Size Vessel for Manila-Cebu Route

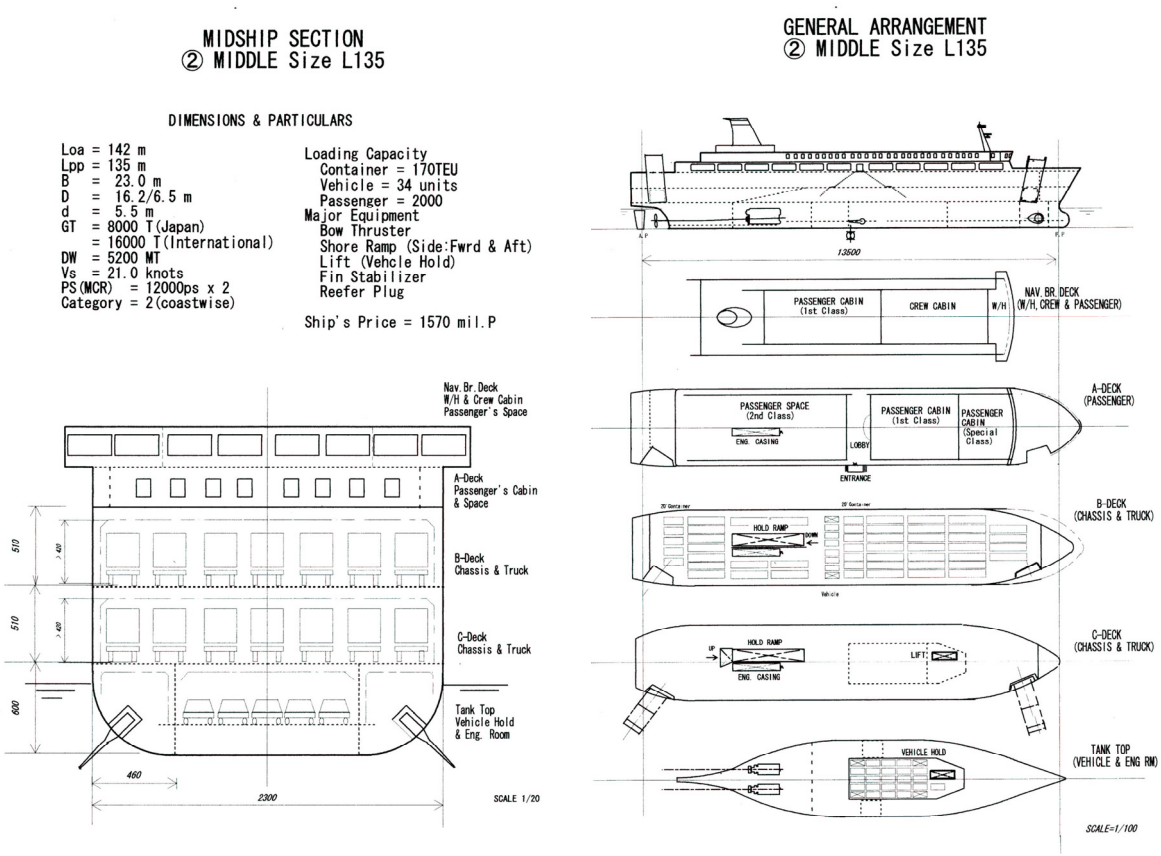


Table 10.4 Principle Particular of Ropax Vessels

	Unit	Medium Size (for Manila-Cebu Route)	Large Size	Small Size
Length	Meter	142	185	126
Draft (scant.)	Meter	6.0	6.5	5.5
Gross Tonnage	Ton	16,000	30,000	11,000
Main Engine	PS x Set	11,000 x 2	16,000 x 2	9,000 x 2
Service Speed	Knot	21	22	20
Capacity	TEU	170	300	80
	Vehicle	34	75	65
	Pax	1000	1500	800
Price	Million Pesos	1,570	2,330	1,260

Proposed Dedicated Ropax Terminal at Manila and Cebu Ports

16. Future Traffic Demand: Future traffic demand for all Ropax services at Ports of Manila and Cebu was estimated. The results are shown in the table below. Future demand will increase at both of Manila and Cebu Ports. Particularly, demand at Cebu port is significant due to the increase of small Ropax operation serving in short-haul routes connecting within the Visayas Area.

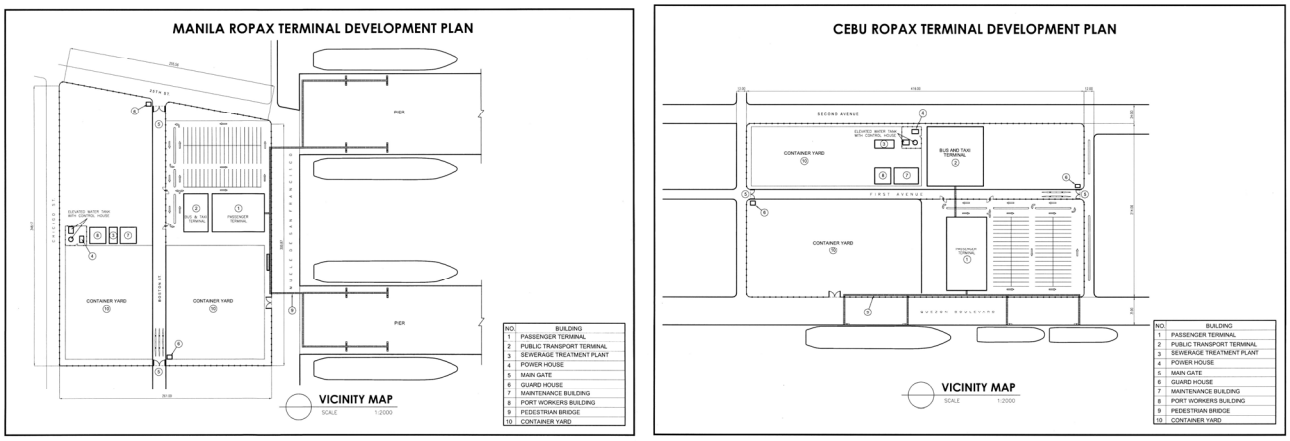
Table 10.5 Estimated Ropax Traffic Demand at Manila and Cebu Ports

	Year	Manila Port		Cebu Port	
		Yearly	Daily Ave.	Yearly	Daily Ave.
Port Calls	2003	4,369	12	5,038	14
	2015	5,854	16	8,818	24
	2030	8,052	22	11,658	32
Cargo (TEU)	2003	360,300	1,000	348,700	970
	2015	583,600	1,620	835,800	2,320
	2030	913,894	2,540	1,391,400	3,860
Passenger	2003	1,292,000	3,600	4,253,000	11,800
	2015	1,375,000	3,800	7,751,000	21,500
	2030	1,547,752	4,300	9,676,400	26,800

17. Plan for Dedicated Ropax Terminals: Concepts of the terminal design are as follows:

- Provision of common and dedicated terminals for all Ropax operations at Manila and Cebu like airport, including berth, passenger terminal building, container yard, parking etc. Said terminals shall have a sufficient capacity of each facility to meet with the future traffic demand of vessels, passengers and containers.
- Separation of passenger boarding and alighting from that of container cargoes by providing passenger with boarding bridge for safety considerations.
- Provision of fast and efficient operation of container loading and unloading to minimize the berthing time of Ropax vessels.
- Provision of sufficient parking space for the rolling vehicles which is estimated to increase in the future under the RRTS concept.

Figure 10.3 Conceptual Design of Ropax Terminal at Manila and Cebu Ports



EVALUATION OF THE PILOT PROJECTS

18. Framework and Schedule of the pilot projects are shown in the figure below. Each project components are evaluated as follows:

- Introduction of new Ropax vessels in Manila-Cebu route is economically and financially feasible under the given conditions such as estimated ship cost, ship operation cost, transport costs and fare revenues. The results show that EIRR is 15.6% and FIRR is 16.2%. Particularly, utilization of lease purchase scheme by NMEC is significantly effective with high ROE of the operators.
- Development of dedicated Ropax terminals is financially feasible for Cebu but not for Manila under the given conditions such as construction costs, operation costs and revenues. However, the proposed terminal in Manila will be profitable, if the terminal fee for passengers or cargo handling fee is slightly increased.

Figure 10.4 Framework and Schedule of the Pilot Project

Item		Present 2005	2006	2007	2008	2009	2010	2015	----	2020	----	2025	----	2030
Development of New Ropax Vessels			4 vessels											
			Prep.	D/D	Construction		Start service			In Service				
									1 vessel					
									Construction			In Service		
													1 vessel	
													Construction	In Servi
Development of Ropax Terminals (Manila & Cebu)			Prep.	D/D	Construction		Start service			In Service				
Service														
- Frequency	trip/week	24	24	24	24	28	28	28	----	35	----	35	----	42
- Working Ratio	%	80	80	80	80	90	90	90	----	90	----	90	----	90
Operation														
- Navigation Speed	knot	17-20	17-20	17-20	17-20	20-21	20-21	20-21	----	20-21	----	20-21	----	20-21
- Navigation Time	hour/trip	20-23	20-23	20-23	20-23	19-20	19-20	19-20	----	19-20	----	19-20	----	19-20
- Cargo Handling Time	hour/port	5-25				4-5	4-5	4-5	----	4-5	----	4-5	----	4-5
- Cycle hours	hour/RT	50-96				48	48	48	----	48	----	48	----	48
- No. of vessels assigned		10				4	4	4	----	5	----	5	----	6
- No. of new vessels assigned		0	0	0	0	4	4	4	----	5	----	5	----	6
Demand														
- Passenger	'000pax/yr	415						240	----		----		----	129
- Containerizable Cargo	'000MT/yr	1,350						2,240	----		----		----	3,370
	'000TEU/yr	90						149	----		----		----	225
Performance - Load Factor														
- Passneger (both direction)	%	17.5						18.3	----		----		----	6.6
- Container (both direction)	%	53.0						67.0	----		----		----	67.2
(MNL-CEB)	%	63.6						93.8	----		----		----	94.1
(CEB-MNL)	%	38.2						40.2	----		----		----	40.3

NECESSARY IMPLEMENTATION MODALITIES

19. In order to support the smooth and certain implementation of the pilot projects, it is recommended that the following arrangements and efforts are to be enforced properly:

- Role of MARINA: In the implementation of the project, MARINA, as the agency in charge of maritime industry development, should be a coordinator among stakeholders such as Ropax operators, PPA and CPA etc. It is necessary to coordinate on the following matters: scheduling of partnership operation among Ropax operators, development of the dedicated Ropax terminal in Manila and Cebu, transfer of Ropax operation from the existing port areas to new terminal, and technical and financial supports for domestic ship building industry.
- Development of New Generation Ropax Vessel: There should be financial and technical supports from government and private sector to domestic shipyards, since they have a poor actual performance of new shipbuilding. The fields of support will be improvement of facilities, procurement of materials and equipment and technical capacity.
- The construction cost of new Ropax vessels is expensive for the shipping operators. As it is shown in the financial analysis in the previous section, it is recommended to have the Ropax vessels through JBIC sub-loan or NMEC's lease-purchase scheme to make the operation profitable. Therefore, NMEC in coordination with MARINA will have a function to contribute for the development of trunk liner Ropax service as well as for the modernization of domestic shipping fleets.
- Increase of Load Factor: In order to increase operation profitability of new Ropax vessels, it is recommended that the effort to increase the load factor, especially cargo demand on Cebu-Manila link, will be made by Ropax operators.
- Development of Ropax Terminals: It is recommended that the proposed Ropax terminals at Manila and Cebu will be constructed by PPA and CPA by utilizing ODA fund source, sine the investment capital is huge. Then it could be operated under public and private partnership arrangement. Therefore, the terminal plan will be properly incorporated in the master plan of the port.

11 ROAD ROLL-ON/ROLL-OFF TERMINAL SYSTEM (RRTS) PILOT PROJECT

INTRODUCTION

Objectives of the Pilot Project

1. The main objective of the Pilot Project is to develop a short-distance RoRo service for the selected routes from the identified 18 missionary routes. However, it must be clarified at the outset that the Pilot Project is not constrained by the specific ports in the identified missionary routes, but more on the hinterlands of the routes.

2. The study took a holistic outlook on the development of the project, looking at the development of the RoRo service with ports and port facilities and the design and shipbuilding of appropriate RoRo vessel for the service based on the demand forecast. Therefore, the study considered the actual physical characteristics, e.g., bathymetric, road access, etc., of the selected sites. The study also looked at the development of the pilot project as it relates to the total national logistic chain. It is also assumed that DSMP II fund would be available for the pilot project through NDC-MEC under ship leasing service.

Pilot Project Corridor

3. RRTS is a network of terminals all over the country regardless of the distance covered and linked by RoRo vessels. RRTS is one of the components of the Sustainable Logistics Development Program (SLDP) that aims to facilitate seamless travel at least cost with one time payment.

4. The Bicol-Masbate-Cebu corridor fundamentally comprises the Central Nautical Highway. At present, this corridor is one of the missing links in the National Nautical Highway System identified in the MTPDP (2004-2010). The pilot study will therefore focus its scope on this corridor. In addition, it was deemed worthwhile to include in the analysis the Masbate-Panay corridor and was included in the scope of the pilot study. The pilot project corridors are considered as missionary routes, since there is no RoRo operation at present.

Selection of the Ports

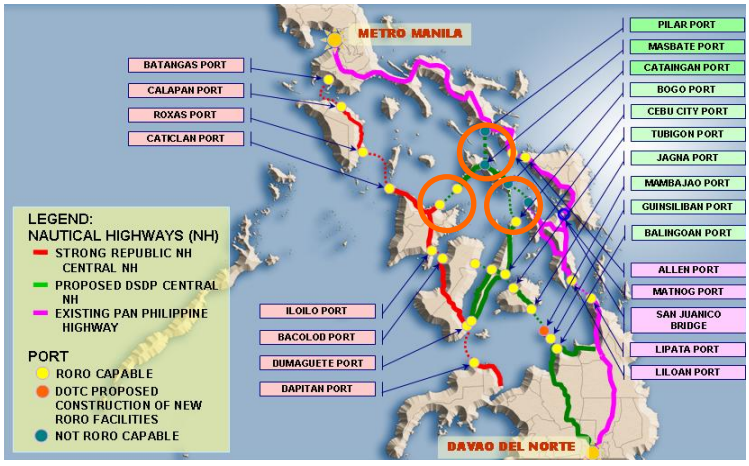
5. In the corridors, there are several ports which can be used for the new RoRo operation. Therefore, specific ports for each corridor were selected through multi-criteria method considering port hinterland and its development potential, vehicle population, infrastructure conditions, LGU support, etc.

- Pilar (Sorsogon, Luzon Island) - Masbate (Masbate Island)
- Cataingan (Masbate Island) - Bogo (Cebu Island)
- Balud (Masbate Island) – Roxas City (Panay Island)

Coverage of the Projects

6. By pilot project route, development requirements of port facilities, access road and vessel operation are examined and economic analysis is conducted. In addition to this, financial analysis for the operation of RoRo vessel is also conducted since the RoRo operation is expected to be operated by private shipping operators.

Figure 11.1 Major RRTS Corridors and Pilot Project Routes



PROPOSED RRTS PILOT PROJECT

Traffic Demand Analysis

7. RRTS will provide efficient, high speed and safe shipping service. For the estimation of traffic demand for newly introduced RoRo service, it is assumed that RoRo service will share the particular part of total shipping demand of the corridor, if the use of RRTS will reduce both of transport cost and travel time compared to the existing liner shipping service. Future traffic demand of each corridor for RRTS was estimated using growth rates of nation-wide maritime demand by corridor or by O-D pair.

- Pilar-Masbate route: In this corridor, there are three types of shipping service composed of passenger service by fast craft and passenger-cargo services by wooden-hull banca and steel-hull small vessel. Of which services of banca boat and steel-hull small vessel will be alternatives of the proposed RoRo service.
- Cataingan-Bogo route: Currently there is no existing liner shipping service connecting between two ports. However, there are three liner routes served by steel-hull conventional passenger-cargo vessels connecting between Metro Cebu and other municipalities in Masbate Island. Those services will be the alternatives of the proposed RoRo service.
- Balud-Roxas City route: Including Balud-Roxas City route, currently there are three liner shipping routes for passenger and cargoes connecting between Masbate Island and Panay Island. Those three routes are all served by wooden-hull bancas. Those services will be the alternatives of the proposed RoRo service
- In addition, some part of the existing demand between Bicol and Cebu is considered to convert to RRTS such as Pilar-Masbate and Cataingan-Bogo routes.

Table 11.1 Estimated Traffic Demand by Pilot Route

(Traffic volume per week for both directions)

		2004	2008	2010	2015	2025	2030
Masbate City - Pilar	Cargo (MT)	1,548	2,004	2,233	2,854	6,009	4,642
	Passenger	5,250	7,173	8,153	10,729	16,063	19,171
Cataingan - Bogo	Cargo (MT)	1,613	2,331	2,691	3,729	5,294	6,169
	Passenger	2,850	3,055	3,157	3,382	3,690	3,759
Balud - Roxas	Cargo (MT)	345	406	437	508	646	715
	Passenger	875	1,084	1,188	1,419	1,881	2,112

Proposed RoRo Operation

8. Based on the estimated demand, RoRo operation plan for each pilot project route was examined as shown in the table below. In planning two types of RoRo vessels are examined and selected in comparison of transport cost. As a result, Type 1 vessel will be assigned to the routes of Pilar-Masbate and Cataingan-Bogo and Type 2 vessel to Balud-Roxas route. The number of required vessels for each route is estimated based on the required frequency to serve the demand on each project year. In the route of Pilar-Masbate and Balud-Roxas, one vessel can make two round trips a day, while in Cataingan-Bogo route only one round trip a day.



Table 11.2 RoRo Operation Plan by Route (Opening Year)

Item	Unit	Pilar-Masbate	Cataingan-Bogo	Balud-Roxas
Assigned Vessel Type		Type1	Type 1	Type 2
Gross tonage	GT	1400	1400	1000
Pax cap	pax	300	300	250
Cargo cap	trucks	12	12	6
Vessel Speed	knots	12	12	12
Pax Demand (2-way)	pax/week	7173	3055	1084
Cargo Demand (2-way)	MT/week	2004	2331	406
Req'd Freq to Serve Demand	trips/week	19	16	8
Distance	n. mile	27	53	30
Round trip time	hr	6.5	10.8	7.0
Operating hrs/day	hr	16	16	16
Theoretical vessel requirement	units	1.4	2.4	0.6
Operational vessel requirement	units	2	2	1
Total cost	mill. Peso	104	122	44
Pax Load Factor	%	45%	58%	32%
Pax Load Factor	%	39%	67%	32%

Proposed RoRo Vessel

9. Based on the demand characteristics of the pilot project routes, 2 types of small RoRo vessel for RRTS are designed. As shown in the operation plan, Type1 RoRo vessel (large type with carrying capacity of 300 passengers and 12 large trucks) will be assigned to the routes of Pilar-Masbate and Cataingan-Bogo. Type 2 (smaller type with carrying capacity of 250 passengers and 6 large trucks) will be for Balud-Roxas City route.

10. In considering that the proposed RoRo vessels will be constructed at local shipyards, ease of construction and reduction of cost were particularly considered. The differences of the design between two vessel types are only length. Therefore, same design will be applied for major vessel sections such as engine room. In order to assure necessary navigation speed and steering power, two sets of engine and propeller will be equipped. Also movable partition wall between spaces for cargo and passenger will be adopted to correspond to the change of traffic demand.

11. Construction cost of the larger RoRo vessel with 1,400 GT is estimated about P224 million. This is based by employing continuous serial construction of the standard vessel design, it will reduce the construction cost by 20%.

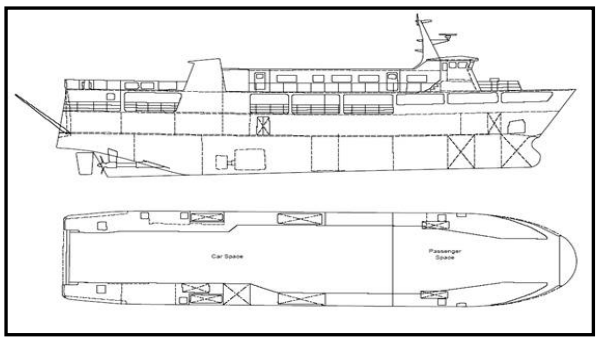
12. Among the selected six ports for the development of three pilot project corridors, Masbate Port and Roxas Port need no improvement to serve for RoRo operation. The development plans for the remaining four ports of Pilar, Cataingan, Bogo and Balud have been prepared. The scope of development works varies by port as shown in the table below.

Table 11.3 Principal Particular of RoRo Vessel

Particular	Type 1	Type 2
GT	1,400	1000
Length (m)	56	45
Breadth (m)	11.8	11.8
Depth (m)	4.0	4.0
Draft (m)	2.6	2.6
Speed (knot)	12	12
Pax Capacity	300 pax	250 pax
Cargo Capacity	12 trucks	6 trucks
Vessel Price*	P 224 mil.	P 176 mil.

Note: * - Reduced by 20% through the proposed shipbuilding project considering serial construction.

Figure 11.2 General Arrangement Plan



Proposed Port Development

13. In the ports of Pilar and Cataingan, RoRo ramp will be newly developed. The dredging work to assure an entry of RoRo vessels will be necessary at the port of Pilar and Balud. Expansion of back-up area to accommodate passenger vehicles and trucks will be needed at all ports except Pilar. Other facilities such as related buildings, utilities, perimeter fence and gate, navigation aids and breasting dolphins are

to be developed in accordance with the existing conditions of each port.

14. The total investment cost for port development was estimated at P152 million. The cost for each port is as follows: Pilar port – P59 million, Cataingan Port – P42 million, Bogo Port - P27 million and Balud - P24 million.

Proposed Road Development

15. Access roads which are necessary for the completion of the RRTS pilot project routes are also examined and necessary investment for the improvement was estimated. As a result, in the Balud-Roxas City route, the access road with length of 20km from Poblacion to Balud (Calumpang) Port and 20km segment from Poblacion to Masbate has to be paved. The cost for paving is estimated about P536 million.

The access roads for other pilot project routes are already paved. There will be a minimum investment for improvement related to the RRTS development.

Figure 11.3 Development Plans for the Ports of Pilar, Cataingan, Bogo and Balud

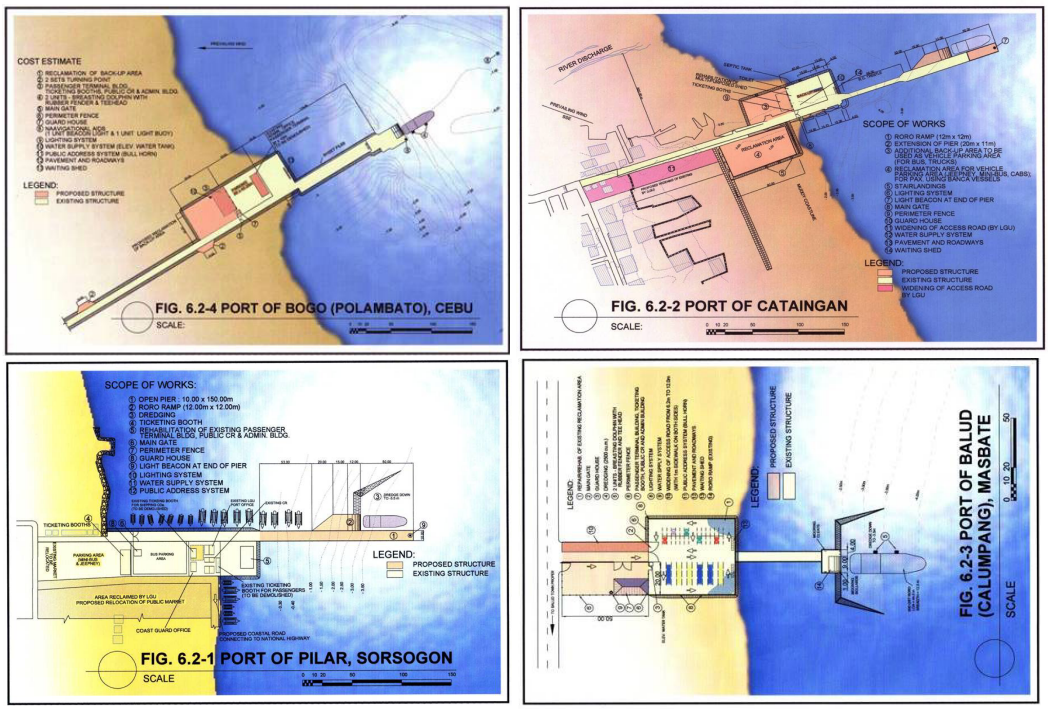


Table 11.4 Scope of Port Development Plan

PORT	RoRo Ramp & Open Pier	Dredging	Reclamation	Buildings	Utilities	Perimeter Fence & Gate	Nav. Aids, Breasting Dolphins
Pilar	RoRo Ramp: 12m X 12 m Open Pier: 150 lin m	(-)3.5 m 1600m^3		Ticket booth: 165m^2 Rehab PTB 286 m^2 Guard House: 5.07m^2	Water Supply, Lighting and Public Address System	Perimeter Fence: 1220 lin meter Main Gate	Light Beacon
Cataingan	RoRo Ramp: 12m X 12 m Open Pier: 11m x 20m		Back-up Area for VPA: 1462m^2 Back-up Area for banca Users: 3069m^2 Stairlandings	Guard House: 5.07m^2 Waiting Shed: 11.25m^2	Water Supply, Lighting and Public Address System	Perimeter Fence: 30 lin meter Main Gate	Relocation of light beacon from Reclamation Area to end of pier extension
Bogo (Polambato)			Back-up Area : 2000m^2 Turning Fts: 2 sets	PTB: 558 m^2 Guard House: 5.07m^2 Waiting Shed: 11.25m^2	Water Supply, Lighting and Public Address System	Perimeter Fence: 46 lin meter Main Gate	Light Beacon, Light Buoy & 2 units B. Dolphins
Balud		(-)3.5 m 1600m^3	Widening of Access Road; Repair of Damaged reclamation Area; Reclamation of Back-up Area	PTB: 558 m^2 Guard House: 5.07m^2 Waiting Shed: 11.25m^2	Water Supply, Lighting and Public Address System	Perimeter Fence: 65 lin meter Main Gate	2 units B. Dolphins

EVALUATION OF PILOT PROJECT

Economic Effect of the RRTS Development

16. Economic viability was examined by comparison of cost for ports, RoRo vessels and access roads and development benefits of RRTS such as savings of transport cost and travel time and reduction of maritime accidents compared to existing services such as banca boat, etc.

17. The introduction of RoRo vessel has large benefit to the national economy because the running cost of banca boats is high due to limited capacity which results in multiple trips, despite fixed operating cost is lower compared to RoRo vessel. Therefore, RoRo vessel has also large benefit in terms of transport cost savings.

18. As the result, for the routes of Pilar-Masbate and Cataingan-Bogo showed sufficient EIRR more than 15% even if new RoRo vessel is introduced. These two pilot projects will be feasible from the viewpoint of national economy. On the other hand, the RoRo operation in Balud-Roxas City is not viable because the project cost is very high compare to the benefit due to low demand on this route at this moment.

Financial Evaluation

19. The financial analysis was made for new RoRo vessel operation in two pilot routes of Pilar-Masbate and Cataingan-Bogo since Balud-Roxas City route was not economically feasible. However, it should not be construed that the deployment of new RoRo vessel in these routes is an imposition. This financial analysis using new RoRo vessel is premised on (1) finding an appropriate vessel for the route in the second hand-vessel market would be difficult and would be time-consuming to wait fro the availability of the said vessel; (2) to provide a conservative analysis; and (3) to examine the applicability of a new vessel once the demand and other considerations are conformed. As a result, under the assumed conditions for the analysis, new RoRo vessel operations on two routes show more or less 15% of FIRR (17.2% and 13.0%, respectively). The ROE is enough high at 11.4% and 19.4% for two routes, respectively when NMEC lease scheme is applied.

Table 11.5 Results of Financial Analysis

	Pilar-Masbate		Cataingan-Bogo	
	FIRR	ROE	FIRR	ROE
Commercial Loan	17.2%	0.2%	13.0%	4.2%
JBIC Sub-loan		5.9%		15.7%
MEC Lease-purchase		11.4%		19.4%

CONCLUSION AND RECOMMENDATION

20. In this Study, three pilot routes comprising the northern part of the Central Nautical Highway were examined. Those are missionary routes with no RoRo service. It was found that the routes of Pilar-Masbate and Cataingan-Bogo will be economically and financially feasible if coordinated development of new RoRo operation, port and access road are implemented.

21. In the procurement of new RoRo vessels, NDC-MEC lease-purchase scheme is essential condition in order to make the business of the private operators profitable by applying low initial investment and reduction of vessel cost through mass construction and package deal of vessel materials and equipment.

22. The study also concluded that route-based approach is effective for the development of RRTS, not port-based or vessel-based approach. Therefore, it is suggested that the government will take the following procedures; 1) at first a route-based feasibility study is conducted, 2) development plan including demand forecast, development and management of port and access road, operation franchise, LGU's supports, etc in coordination of related agencies, and 3) solicit for private RoRo operators.

23. In addition, the following arrangements and actions are recommended; (1) closer coordination between concerned agencies, (2) national government to provide funding for nationwide RoRo development, (3) assistance for the selection of ports within the prioritized routes, (4) development of missionary routes through the overall development of the total domestic shipping sub-sector, and (5) Promotion of standardized and serial shipbuilding for short-distance RoRo vessels