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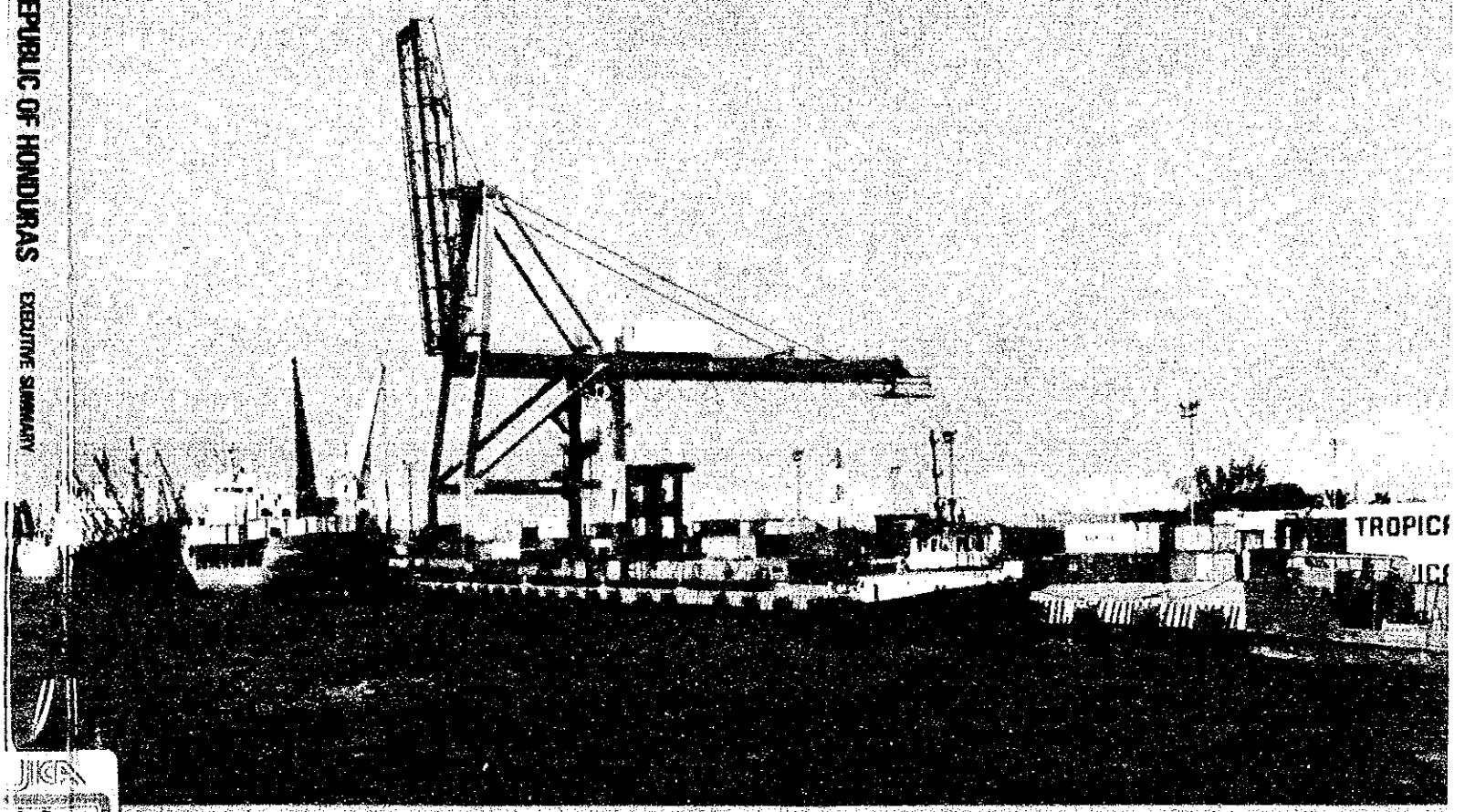
No. 52

NATIONAL PORT ENTERPRISE

FINAL REPORT

THE STUDY ON THE IMPROVEMENT OF THE PORTS IN THE REPUBLIC OF HONDURAS

EXECUTIVE SUMMARY



MARCH 1994

The Overseas Coastal Area Development Institute of Japan (OCDI)
NIPPON KOEI CO., LTD. (NK)

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FINAL REPORT THE STUDY ON THE IMPROVEMENT OF THE PORTS IN THE REPUBLIC OF HONDURAS EXECUTIVE SUMMARY

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
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EXCHANGE RATE

1 US Dollar = 5.85 Lempiras = 115 Yen

PREFACE

In response to a request from the Government of the Republic of Honduras, the Government of Japan decided to conduct a Study on the Improvement of the Ports in the Republic of Honduras and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Honduras a study team headed by Mr. Sagara Hideaki, Senior Executive Director of the Overseas Coastal Area Development Institute of Japan and composed of members from this institute and the company, Nippon Koei Co., Ltd, four times between January 1993 and March 1994.

The team held discussions with the officials concerned of the Government of Honduras, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the republic of Honduras for the close cooperation they extended to the team.

March 1994

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

March 1994

Mr. Kensuke Yanagiya
President
Japan International Cooperation Agency

Sir,

It is my great pleasure to submit the Final Report for the Study on the Improvement of Ports in the Republic of Honduras.

This report is the outcome of works between January 1993 and March 1994 including four field surveys during the period. The work was undertaken by the Overseas Coastal Area Development Institute of Japan (OCDI) and Nippon Koei Co., Ltd as per the contract with the Japan International Cooperation Agency (JICA).

Based on the findings of these surveys and utilizing data and information collected, and along the line of the scope of work which was agreed upon by the both governments, the report is formulated to cover following subjects;

(1) the development and management strategy of Honduran port sector with a target year of 2010,
(2) the urgent improvement,
(3) the masterplan of the Port od Cortes with a target year of 2010,
(4) the short term plan of the port with a target year of 2000, including a feasibility study and environmental assessment of the project.

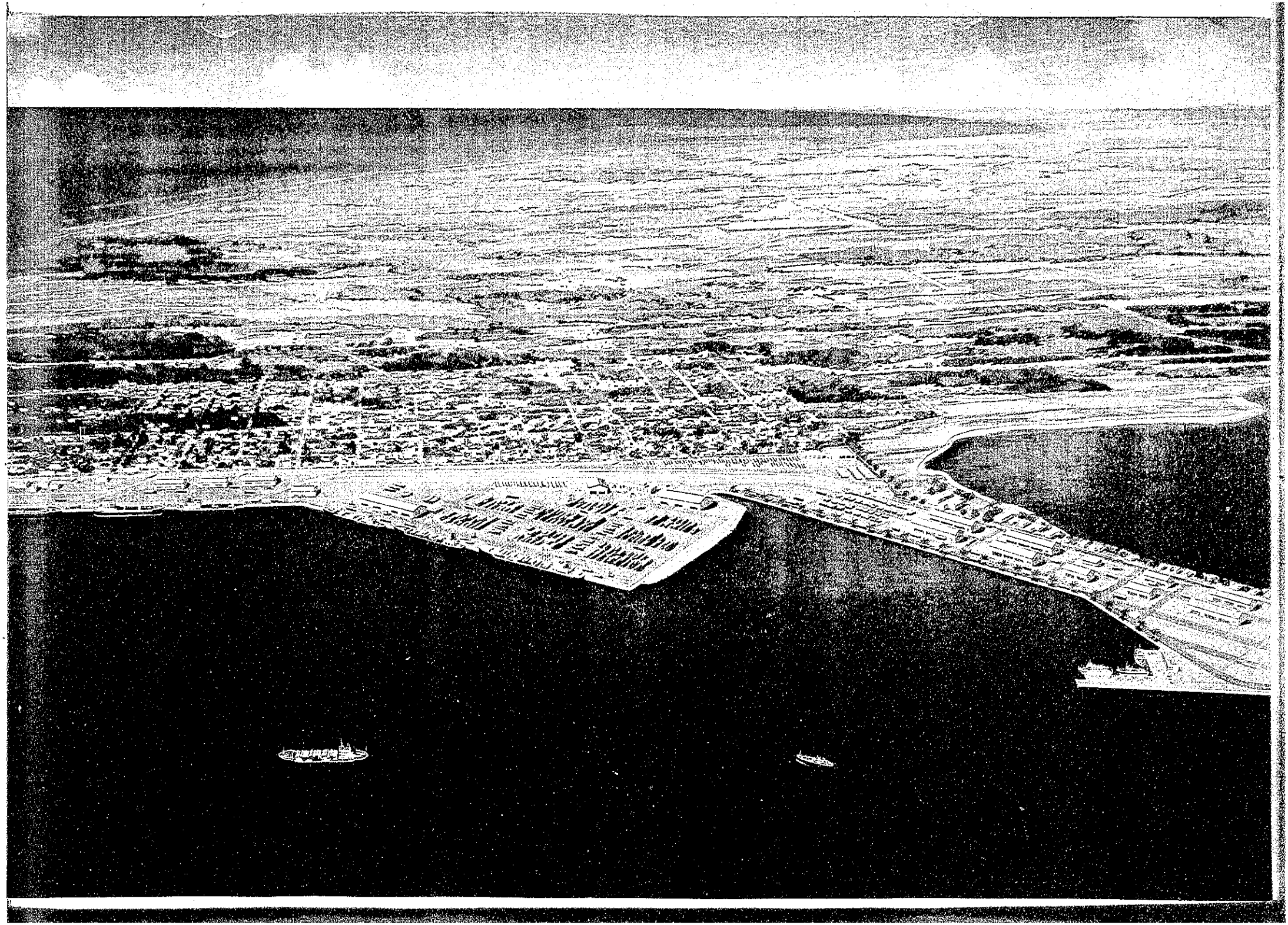
Since the study reveals that the development of Honduran port sector is vital for the success of the structural adjustment upon which Honduras is now embarking, and that the projects contained in the report is verified as feasible, I do hope that the projects, particularly those relating to container terminals will be implemented at early stage.

Now, I wish to stress that completion of the report is only possible with the cooperation and assistance by the personnel concerned from the government as well as the private sector. Our gratitude and appreciation should also be extended to the Japanese institutions which gave valuable advice and support for the study.

Yours faithfully,

Hideaki Sagara

Hideaki Sagara
Leader, Team for the Study
on the Improvement of the Ports
in the republic of Honduras



The Study on the Improvement of the Ports in the Republic of Honduras

Table of Contents

PART II Urgent Improvement Plans

PART III Masterplan of the Port of Cortes for the Year 2010

PART IV Short-Term Plan of the Port of Cortes in 2000

List of Tables and Figures

Tables

Figures

<Part I>

<Part II>

<Part III>

<Part IV>

INTRODUCTION

Introduction

1. This report is formulated for "the Study on the Improvement of the Ports in the Republic of Honduras", on the basis of a series of reports of the study, i.e. Inception Report, Progress Report, Interim Report I, Interim Report II and Draft Final Report which the study team submitted consecutively, and taking into consideration the views expressed by the counterparts of the study.

With the submission of this report, the study which has been carried out since January 1993 is completed.

2. The objectives of the study are;

- to formulate a nationwide port development and management strategy in Honduras,
- to formulate a master plan of a selected port for the period up to the year 2010,
- to conduct a feasibility study for the short-term development plan of the selected port for the period up to the year of 2000 within the framework of the master plan, and
- to formulate urgent improvement measures for the major ports.

The content of the report is along the line of the objectives, however, the order of items has been changed from the above objectives from above editorial points of view.

3. Honduran coastline stretches some 650 km along the Caribbean Sea and 65 km on the Pacific side. Since the rivers are only navigable for very small watercraft, port facilities are found along the coast. Ports with some facilities are as follows;
On Caribbean Sea-Puerto Cortes, Tela, La Ceiba, Trujillo, Castilla and Puerto Lempira
On the Bay Islands-Coxen Hall and some private ports
On the Gulf of Fonseca-San Lorenzo, Amapala

Among the above, the port of Cortes (Puerto Cortes) is the leading port with 77% of the total cargo throughput of the country, followed by Castilla. San Lorenzo is virtually the only port on the Pacific side, since Amapala is located on a remote island in the Gulf of Fonseca and seems not to play an important role in transport. Only these three namely Puerto Cortes, Castilla and San Lorenzo are furnished with modern facilities.

4. With the above observation in mind, the study team took up the following ports as the study ports for the nationwide development and management strategy;

Puerto Cortes, Tela, La Ceiba, Castilla, Puerto Lempira, San Lorenzo and Coxen Hole of the Roatan Island.

Puerto Cortes was selected as the study port in the master plan targeted for 2010 as well as in the short-term plan targeted for 2000 including feasibility analyses.

5. The study team began its work in January 1993 and finished in March 1994. During this period members of the team visited Honduras from February-April, June-July, September-October of 1993 and January of 1994, and they conducted interviews, site surveys and other data collection, as well as had discussions with the relevant personnel in Honduras concerning matters related to the study.

Their names and the responsibilities are listed below.

Name	Responsibility
Sagara Hideaki	Leader, Overall management and port policy
Fujita Ikuo	Acting leader, Port planning (2) and environment impact assessment
Amano Tomoo	Port planning (1) and port arrangement planning
Nagano Hiromichi	Demand forecast and economic analysis
Shimada Kenji	Management/operation and financial analysis
Aoyama Takahisa	Cargo handling system
Murai Noboru	Design of port facilities
Saigusa Fujio	Construction method and cost estimate
Suzuki Isamu	Natural condition (1)
Naito Katsumi	Natural condition (2)
Yamane Yuri	Interpreter
Kawamura Masayoshi	Interpreter

CONCLUSIONS AND RECOMMENDATIONS

Conclusion and Recommendations

During the study, the team made a number of observations in terms of construction, maintenance, operation and administration. While they are shown in detail in the main part of the report, substantive matters are briefly indicated in this part for the readers' convenience.

Conclusion

Port Development and Management Strategy

1. To bring the functions of Honduran port sector into full play, a wide range of investment is required in terms of the facilities and equipment of the ports of Cortes, Tela, La Ceiba, Castilla, Lempira, San Lorenzo and Coxen Hole (Roatan). The total amount of the investment required by year 2010 is between 800-1300 million Lps. Of this investment, a higher priority should be given to on-going or matured planning projects such as La Ceiba cabotage facilities, petroleum installations in San Lorenzo and Tela/Cortes and a pier in Coxen Hole.

2. For the management reform of port sector including inter alia, more pri-vate participation to the port operation, the Action Plan prepared by ENP Technical Working Group is a basis for future consideration on this matter. In this context, among the projects shown in paragraph 1 some of the investment will be more appropriate to be conducted by the private sector, or after the completion operation may be carried out with private participation.

3. In determining and implementing private participation in investment or operation, the 'human factor', which relates to the mindset of the people to be affected, and the impact of policy alteration on developing countries must be borne in mind to avoid backlash or negative consequences during the transition.

Subjects to Be Required for Urgent Improvement

4. Seventeen subjects inclusive of relocation of the road penetrating through No.5 berth and asphalt tank which is in the vicinity of the residential area are identified as needing urgent improvement without substantial change of operation. Fifteen of them involve facility and operation in the port of Cortes (two of them are implemented by ENP), while two others are common to all ports for reducing labor accidents and furnishing statistics of domestic trade. Of the 15 items subject to improvement at Cortes, road and yard pavement, replacement of handling equipment and change of road and parking place require considerable funds (more than 12 million Lps), while others are at-tainable by changing relevant rules or other measures at less cost. ENP recognizes these problems and is working out for resolving some of the problems, such as paving of container yard No.11, commodity wise assortment in Cortes warehouses and relocation

of asphalt handling.

The Port of Cortes Master Plan for 2010

5. Investment in the port of Cortes should be given special attention because the port is the largest in Honduras with some 80% of its total cargo throughput. With this in mind, a master plan of the port targeted for the year 2010 is formulated based upon the projected port demand and selected among the several alternatives. The main contents are as follows:

(1) To catch up with the rapid change both in terms of volume and technology of maritime transport and to establish efficient and orderly operations in the port, following new basic installations are required by the year 2010;

- Unit cargo berths ..... three
- Dry bulk terminal ..... one
- Cold storage terminal ..... one
- Domestic cargo terminal .. to accommodate 25 vessels
- By-pass road ..... approximately 1380 m.

(2) For the unit cargo berths, the unit quay length is 185m taken into account the idea that a continuous berth can accommodate vessels the length of which is longer than the single quay length. The number of gantry crane is one per berth, assuming that Ro/Ro vessels and relatively small size vessels have a considerable share among calling vessels. When larger vessel calling two gantry cranes can work together. With these steps, the amount of investment can be reduced.

(3) Above installations are accompanied by certain equipment, and the cost is estimated at 429 million Lps altogether. However, some of the installations including one cold storage terminal and the dry bulk terminal, as well as handling equipment in unit cargo terminals will be funded by the private sector.

(4) According to a stage plan which is prepared based on the comparison of assumed cargo volume and projected capacity, by the year 2000 at least two unit cargo terminals, by-pass road and the domestic terminal should be completed.

Short-term Plan for 2000 and its Feasibility

6. On the basis of the 2010 master plan, a short-term development plan for the year 2000 is formulated, as follows:

(1) Unit cargo terminal

Two berths of the unit cargo terminal are proposed on the reclamation area at the eastern most part of the existing port. The following are the major installations;

i) two quays ...total length 370m, water depth -12m

ii) container base (1,505 slots) and reefer base (178 slots)
iii) container freight station ...5,000 sq.m
iv) maintenance shop, office building, cleaning house ...1,000m each
v) two gantry cranes ...lifting capacity 41 ton, with through rails, and
vi) handling equipment (straddle carriers, tractor heads, chassis, etc.).

(2) Domestic cargo terminal and by-pass road

One domestic terminal is proposed at the eastern end of Cortes Free Zone. Also, a by-pass road which runs between the reclamation area and the domestic terminal is proposed. The proposed domestic cargo terminal is an L-shaped quay with -4.5 m depth and 200 m length. The by-pass road is 1,380 m with three lanes.

7. With construction of the container terminal, all containers are handled in this terminal, including those of banana company. With these steps, No.5 berth which is now working for both container and general cargo, can become used exclusively for general cargo. Also, container stuffing/unstuffing in No.3 and 4 warehouse is discontinued and moved to the new CFS. These steps will increase cargo handling capacity and efficiency in terms of general cargo too.

8. The aggregated amount of the construction cost of the proposed installations is 288.5 million Lps including engineering service and physical contingency.

9. Feasibility of the project is examined in terms of national economy and financial viability of implementing organ(s).

(1) Economic Internal Rate of Return (EIRR) is 22%, and according to the sensitivity analysis the worst case (10% less in benefit and 10% plus in cost) shows an EIRR of over 18%. Since these figures exceeds the ordinary level of a developing country's opportunity cost of capital, this project is regarded as feasible.

(2) Financial Internal Rate of Return (FIRR) is nearly 23%, and the worst case of the sensitivity analysis (10% less in revenue and 10% plus of investment cost) shows more than 18%. Assuming that a large part of the investment is funded by assistance from an international financial institution or donor country, these figures are well beyond the anticipated average of the project's interest rate. The expected profitability and the calculated financial soundness also exceed the level line. The project can thus be judged financially viable.

10. According to the team's careful examination on environmental problems which might occur during the construction work and in the operation stage of projected facilities, it is asserted with considerably high probability that in each stage serious damage to the environment, including in particular impact to the water quality, especially

turbidity in the work area will not be generated.

11. With these points described in paragraphs 9 and 10 above in mind, and bearing in mind the fact that port development and operation consistent with trade and economic growth may bring leverage for the prosperity of the nation and the region including creation of employment opportunity through port activities, this project is not only feasible in terms of the national economy, financial aspects of implementing organ(s) and environmental impact, but also ensures that the port sector will contribute to the development of the area and the country. Further, if the reformation steps in terms of management and institutional matters are implemented, which are shown in 'Recommendations' listed below, the investment in the modern installations will be rewarded through the creation of a competitive and lucrative port at Puerto Cortes.

Recommendations

Port Development and Management Strategy

1. As the guidepost to execute tellingly ENP's responsibility which is prescribed in the ENP Decree, to coordinate the development of port activities throughout the country, a national port plan should be formulated and its periodical review should be institutionalized.

2. With the big difference of cargo throughput and revenue between ports in mind, cross subsidy concept should be maintained. On the other hand, in view of fairness and equity which should be the general principle of pricing, it is recommended that the spread of tariff between banana and ordinary cargo is reduced.

3. There are several management issues to be improved, and these issues are dealt with in recommendations on the Port of Cortes management (paragraph 11 and after).

4. As far as port activities are concerned, although the environmental impact is not salient, preparations to tackle environmental problems should be embarked on by ENP, of which first step includes; i) strengthening of monitoring port and surrounding environment in particular water quality, ii)fostering personnel knowledgeable on environmental issues, and iii) establishing of a control system on environmental matters.

5. ENP should work toward decentralization and private participation in the construction of facilities and activities of ports, which are high on the agenda of port reformation. Besides issues of the port of Cortes, La Ceiba cabo-tage terminal, Castilla port operation, oil receiving facilities in several ports are the main candidates.

6. It is the responsibility of SECOPT to establish a long term plan for transport infrastructure within the context of a national development program. With a view to fostering the capability to meet this end by transferring required knowhow, it is advised that SECOPT retain a long term consultant or asks a donor country to provide long-term experts.

7. To fix and enforce fair and competitive tariff without undue political intervention, the competence of CNSSP should be strengthened and the power to promulgate the decision should be provided for CNSSP.

8. Followings are recommended to advance administrative and financial performances of ENP;

- decision-making process should be expedited by delegating routine business to the Secretary General and by reducing the number of Board of Directors meetings, and
- monetary discipline should be improved by appropriating the annual budget for three month terms and reporting the execution to the Board of Directors.

Development Plan of the Port of Cortes

9. Although the project in relation to the port of Cortes can be claimed useful for the development of the country and the region and has been proved to be feasible both in terms of the national economy and of the finance of the body, without the relevant institutions' efforts in raising the funds, the project cannot be realized. These efforts include, in particular:

- It is envisaged that the major part of the fund comes from a donor country or international financial institution, and the aid-managing ministry should make an effort to provide refinancing with as low interest as possible.
- Since ENP will bear a part of the cost, particularly in the infant stage of the project, ENP's financial position should be fostered by abolishing/decreasing of its unprescribed financial contribution to the central government and by ceasing over-reduction of specific commodities (see paragraph 2).

10. Although the impact to the environment of the project is judged minimal, it is advisable to further mitigate the influence by reducing the speed of dredging or by enclosing the reclaimed area with a sluice, where necessary.

Future Management and Operation of The Port of Cortes

11. Keeping pace with the master plan for port development and having in mind the port management strategy, a number of items in terms of port management and operation should be improved or upgraded. Also, the port reformation which is now studied and partly implemented within the relevant organizations of the Honduran government places a high priority on enhancing operation circumstances in the port. The major subjects proposed for this purpose are shown in below paragraphs.

12. The shift system with respect to port labor will have an effect in reducing labor accidents caused by lengthy work hours and thus in advancing work efficiency. ENP has already consulted with the labor union, and is investigating the timing of the introduction of the shift system. The team feels this is sensible and early implementation is desired.

13. Training and promotion of personnel is one of the central points of an organ's management, and these subjects should be studied from various angles for future advancement. Some of the points are listed below:

(1) The curriculum adopted in TRAINMAR is same for both office workers and operational workers. However, since the purpose of the training is different for these professional categories, the curriculum should be so modified as to meet their work type.

(2) A system in which personnel can more easily take part in the training course should be invented with a view to raising morale and ability of port staff. Making training results a prerequisite for of promotion might be an idea for encouraging trainees.

(3) It is important to establish a promotion scheme which is transparent to these concerned by using personnel evaluation sheets.

14. For better port service, more extensive use of computers is recommended. Electronic data processing is useful for such administrative matters as accounting, statistics, berth utilization plan and planning of maintenance. However, among others, the computerization and data exchange brings about higher performances of container operation through optimum yard usage, adequate allotment of handling equipment, search of container location and so on. It is advisable that ENP and entities pertaining to the operation of the port build a computer network particularly for the terminal operation.

15. Well-programed maintenance and repair work raises the efficiency by reducing trouble during the work. A systematic procurement of spare parts and a planned disposal/replacement scheme should be adopted for this purpose.

16. Following the prevailing practice in the global maritime circle, container terminal should be operated by a qualified private entity. It is advisable for ENP that a lease/concession scheme is preferred to BOT or BOO scheme. In view of the relatively short time available for the inauguration of container berths, the preparation work, in particular, selection of the lessee and persuasion activities should be commenced at an early stage.

17. After privatisation steps including paragraph 16. above have been taken, ENP will be transformed into a more planning and coordination-oriented organ. It should therefore take the following responsibilities:

- General coordination and supervision in terms of development and operation are in the hands of ENP. It should keep a good relation with terminal operator and other private enterprises working in the port, and provide a rule concerning orderly usage of port facilities.
- Function of training particularly of port labor is well-suited for ENP since it carries on TRAINMAR.
- ENP should take initiative in forming a machinery with relevant private parties to keep up with users' request and to work for active port sales.

PART I

Port Development and Management Strategy

Chapter 1 Forecasting of Port Demand

1.1 General Description

1. Demand forecast is conducted to form the basis of planning of port development and appraisal of the plan, which are the principal objectives of Study, in terms of cargo throughput in the Honduran Ports.

2. There are two methods commonly used to forecast the future cargo volume. The first one is a macro forecast which is based on the assumption that the cargo volume handled at the port reflects the economic activity in the port's hinterland. The total cargo volume is estimated using the historical relation between cargo volume and macroeconomic indices such as GDP and population. The second method is a micro forecast, which estimates each commodity group individually based on related indices and forecasts demand and supply situation.

1.2 Macro-forecast

3. For the macro-forecast, population (including by department and cities, and labor force distribution by economic sector) and/or GDP are generally used as variables. Banco Central de Honduras provides the population statistics (see Table) and GDP which is 15,830 Lps at current price and 5,021 Lps. at 1978 constant price.

4. Banco Central also estimated the total population empty 2000 assuming an annual growth rate of 3.32% per year. Labor force of each economic sector up to 2000 is also estimated by Banco Central. After 2000 up to 2010, total population will be estimated by the study team with the increase rate of 2.50%. Labor force of each economic sector to the year 2010 is estimated by extrapolating the increase rate of the years between 1992 and 2000. The following is the result for total population. The size of the labor force will be 2,227 thousands in 2000 which is estimated by Banco Central. The total number of laborers in 2010 will be 3,525 thousand which is estimated by the Study Team using the above increase rate.

Population Forecast

	1992	2000	2010
Population	5,079,200	6,597,100	8,444,800
Male	2,521,700	3,275,300	4,192,600
Female	2,557,500	3,321,800	4,252,200
Density	45.3	58.9	75.3
Urban	2,119,200	3,056,400	4,285,300
Rural	2,960,000	3,540,700	4,159,500

5. Although Banco Central provides for GDP figure up to 1992, there does not exist any future estimation in terms of GDP. Under the situation the team submits two sets of projected GDP figure, viz. scenario 1 (low scenario) and Scenario 2 (high scenario).

6. The first one is practically on the basis of historical correlation between GDP and population with some modifications adopting correlation between sectoral labor force and production. The second approach is provided because the result of the first one is a bit pessimistic with per capita income of 2000 being down by a 2.2 point from the current level and that of 2010 only slightly above 1992 figure. In the second approach, per capita income in 2010 is presupposed adopting the Guatemalan 1990 per capita income, since the socio-economic features resemble those of Honduras.

7. The results are shown in the tables below.

GDP (Scenario 1)

	GDP	Rate	GDP/Capita	Rate	Population	Rate
1978	3,433		1,068		3,214	
1992	5,021	2.75%	989	-0.5%	5,079	3.32%
2000	6,377	3.28%	967	-0.2%	6,597	3.32%
2010	9,154	4.01%	1,084	1.1%	8,445	2.50%

GDP (Scenario 2)

	GDP	Rate	GDP/Capita	Rate	Population	Rate
1978	3,433		1,068		3,214	
1992	5,021	2.75%	989	-0.5%	5,079	3.32%
2000	7,850	5.75%	1,190	2.3%	6,597	3.32%
2010	12,667	4.90%	1,500	2.3%	8,445	2.50%

8. Based on the above-mentioned two sets of GDP scenarios, the future cargo volume are calculated separately in terms of import, export and domestic, as shown in below tables.

Import Cargo (Unit:Thousand MT)

	Scenario 1	Scenario 2
1992	1,953	1,953
2000	2,582	3,176
2010	3,740	5,259

Export Cargo (Unit:Thousand MT)

	Scenario 1	Scenario 2
1992	1,754	1,754
2000	2,107	2,349
2010	2,580	3,199

Domestic Cargo by port (Unit: Thousand MT)

	1992	2000	2010
Port of Cortes	48	70	110
La Ceiba	30	46	51
Port of Castilla	16	36	67
Total	94	152	228

Note: Based on interviews with ENP, Marina Mercante National and on-site investigations.

Petroleum Import (Unit: Thousand MT)

	1992		2000		2010	
Scenario	1	2	1	2	1	2
Port of Cortes	596	596	577	722	860	1,232
Port of Tela	203	203	231	289	344	493
Port of San Lorenzo	9	9	346	433	516	739
Total	807	807	1,153	1,444	1,720	2,464

Note: Petroleum is the largest cargo item and its handling practice is different form other items, and thus the import volume is estimated using projected GDP and information from the industry

9. Above estimations are divided into each port to project facilities required for future. For the calculation, followings are assumed based on the interviews and past records:

(1) Import petroleum volume of each port has already been estimated individually for the planning by private sectors.

(2) The port of Cortes will handle 73% of Export cargo volume, 50% of import petroleum and 80% of other import cargo volume.

(3) The ports of Tela and La Ceiba will not handle export cargo in future.

(4) The port of Tela will handle 20% of import petroleum.

(5) The port of La Ceiba will handled only domestic cargo.

(6) Port of Castilla will handle 23% of export cargo and 15% of import cargo except petroleum.

(7) Port of San Lorenzo will handle 4% of export cargo, 30% of import petroleum and 5% of other import cargo.

Import Cargo by Port (Unit : Thousand MT)

	1992	2000		2010	
Scenario		1	2	1	2
Port of Cortes	1,530	1,720	2,108	2,476	3,468
Port of Tela	206	231	289	344	493
Port of La Ceiba	3	0	0	0	0
Port of Castilla	154	214	260	303	419
Port of San Lorenzo	60	417	520	617	876
Total	1,953	2,582	3,176	3,740	5,259

Export Cargo by Port (Unit: Thousand MT)

	1992	2000		2010	
Scenario		1	2	1	2
Port of Cortes	1,279	1,533	1,710	1,877	2,328
Port of Tela	16	0	0	0	0
Port of La Ceiba	3	0	0	0	0
Port of Castilla	386	487	543	596	739
Port of San Lorenzo	60	87	97	106	132
Total	1,953	2,107	2,349	2,580	3,199

Total Cargo by Port (Unit: Thousand MT)

	1992	2000		2010	
Scenario		1	2	1	2
Port of Cortes	2,857	3,310	3,887	4,463	5,906
Port of Castilla	557	733	839	967	1,226
Port of San Lorenzo	130	504	617	723	1,011

Note: Including domestic cargo

10. The result of calculation in terms of import, export, domestic trade and total throughput are summarized in the Table 1-9-3.

11. The estimated cargo volume at port is classified into packing type, namely liquid bulk cargo, dry bulk cargo, unit cargo and general cargo. Based on the statistics and interviews, very rough shares of major cargoes are estimated as follows.

Total Cargo by Packing Type (Unit: Thousand MT)

	Port of Cortes		Port of Castilla		Port of San Lorenzo	
Scenario	1	2	1	2	1	2
General cargo	459	657	177	196	57	62
Liquid cargo	954	1,384	40	60	526	759
Dry bulk	750	1,000	60	80	20	30
Unit cargo	2,300	2,900	690	890	120	160
Total	4,463	5,906	967	1,226	723	1,011

1.3 Micro-forecast (Cargo-wise Approach) for the port of Cortes

12. For the port of Cortes, forecast of cargo throughput is conducted by following major commodities.

Import: wheat, other foodstuffs (flour, beans, rice, corn, crushed soybean, rejected banana etc.), fertilizer, iron and steel, machine and transport equipment, chemicals), other commodities (weight of containers, transit cargo, conducted and drinks etc.) petroleum (gasoline and others)

Export: banana, coffee, melon, timber, pineapple, African palm oil, sugar molasses, cement, minerals, others (weight of containers, textile, meat, plantain, transit cargo)

13. The resultant figures are shown in the Table 1-9-4.

14. The above cargo volume are classified into packing type, viz. unit cargo, general, caroag, dry bulk cargo and liquid bilk cargo, as shown below.

Cargo Volume by packing Type (Unit: Thousand MT)

	Liquid bulk	Dry bulk	Unit cargo	General cargo	Total
In 1992	646	353	1,301	509	2,809
In 2000	653	703	1,841	443	3,630
In 2010	1,001	958	2,515	595	5,069

15. Eventually, for the Cortes there are three sets of cargo forecast. In Section 1.3 of PART III, these figures are evaluated to decide which forecast is adopted for the work of Cortes.

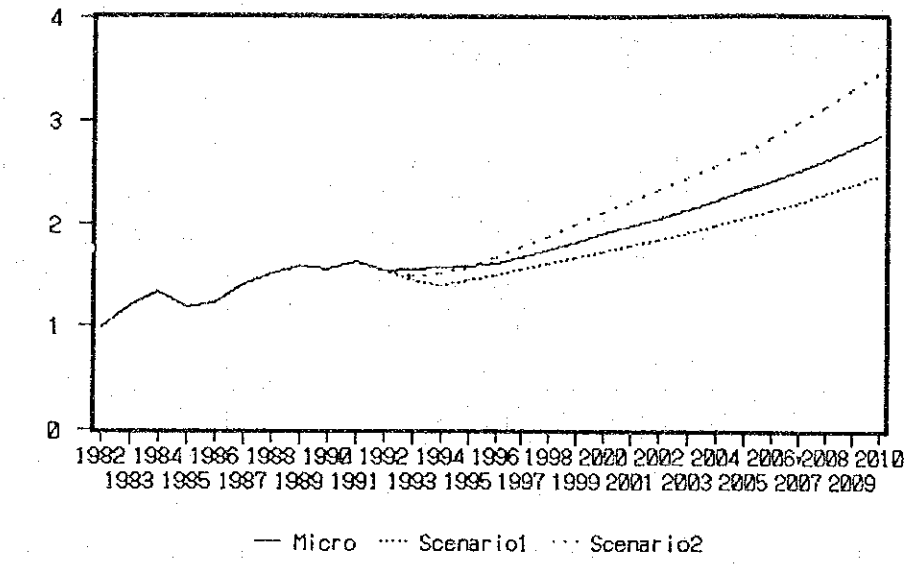


Fig. 1-8-22 Estimation for Import Cargo Volume of at Cortes
(Unit: Million MT)

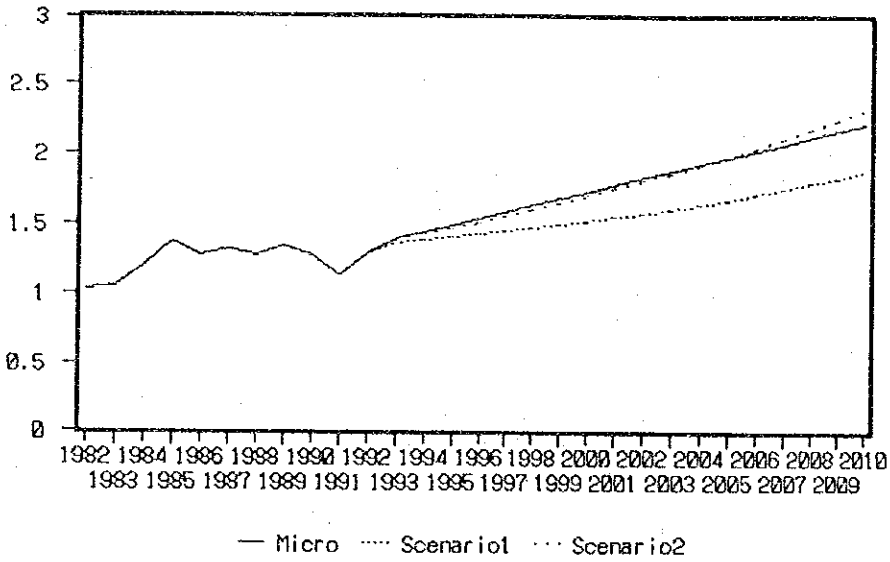


Fig. 1-8-23 Estimation for Export Cargo Volume at Cortes
(Unit: Million MT)

Table 1-9-3 Estimation for Import Cargo Volume by Packing Type through the Port of Cortes

Packing Type	Liquid Bulk Cargo		Total	Dry Bulk Cargo			Total	Container Cargo					Total	General Cargo			Total	Grand Total
Comodity	Petroleu	Chemical		Wheat	Fertiliz	Other Foodstuffs		Iron & Steel	Transpor & Machine	Chemical	Other Foodstuffs	Others		Iron & Steel	Transpor & Machine	Others		
Unit	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	
1974																		
1975																		
1976																		
1977																		
1978																		
1979																		
1980																		
1981																		
1982	517,718	15,837	533,555	84,441	18,382	18,478	121,301	11,525	3,023	15,837	27,718	151,184	209,286	17,287	4,534	100,790	122,611	986,753
1983	602,717	21,935	624,652	81,079	35,126	31,860	148,065	17,135	3,997	21,935	47,790	197,643	288,501	24,361	5,682	97,347	127,389	1,188,607
1984	685,780	21,395	707,175	106,277	63,112	21,152	190,541	21,710	5,528	21,395	31,729	234,903	315,264	29,216	7,439	74,180	110,835	1,323,815
1985	600,047	19,322	619,369	112,670	30,154	18,128	160,952	17,209	5,734	19,322	27,191	217,633	287,090	21,894	7,294	80,495	109,683	1,177,093
1986	569,517	18,720	588,237	108,319	71,285	31,314	210,918	11,471	5,007	18,720	46,971	223,014	305,183	13,777	6,013	95,578	115,368	1,219,705
1987	652,934	20,766	673,700	118,289	51,857	43,953	214,099	14,406	6,429	20,766	65,929	256,979	364,509	16,307	7,278	120,931	144,516	1,396,824
1988	760,660	16,929	777,589	103,217	38,701	54,340	196,258	24,841	7,901	16,929	81,511	236,849	368,031	26,461	8,417	122,501	157,378	1,499,257
1989	821,583	20,411	841,994	122,307	53,353	44,956	220,616	19,019	6,798	20,411	67,434	263,850	377,513	19,028	6,802	107,778	133,599	1,573,722
1990	763,762	23,108	786,870	93,941	79,161	53,382	226,484	24,014	5,558	23,108	80,073	236,622	369,376	22,520	5,212	133,100	160,831	1,543,561
1991	652,654	19,959	672,613	160,647	87,370	183,980	431,997	22,204	7,950	19,959	32,467	358,491	441,071	16,079	5,757	63,263	85,099	1,630,780
1992	596,147	24,690	620,837	106,542	88,833	43,272	238,647	29,286	11,977	24,690	59,756	408,934	534,643	23,962	9,799	102,233	135,994	1,530,120
1993	562,789	22,151	584,939	130,240	113,615	61,137	304,992	26,520	9,912	22,151	91,705	436,233	586,522	21,466	8,023	40,191	69,680	1,546,133
1994	544,180	22,531	566,711	135,061	117,968	63,167	316,196	28,048	10,419	22,531	94,751	457,313	613,062	22,457	8,342	40,182	70,982	1,566,950
1995	522,537	22,931	545,469	140,044	122,416	65,266	327,726	29,663	10,954	22,931	97,900	479,333	640,781	23,493	8,676	40,334	72,503	1,586,479
1996	497,579	23,353	520,932	145,191	126,960	67,434	339,586	31,371	11,520	23,353	101,151	502,251	669,646	24,575	9,024	40,750	74,350	1,604,513
1997	521,157	23,796	544,953	150,509	131,604	69,674	351,787	33,178	12,118	23,796	104,511	526,036	699,640	25,705	9,389	41,533	76,627	1,673,007
1998	545,802	24,263	570,065	156,007	136,348	71,990	364,346	35,091	12,752	24,263	107,985	550,686	730,777	26,887	9,770	42,770	79,428	1,744,616
1999	571,517	24,756	596,273	161,685	141,196	74,381	377,263	37,117	13,422	24,756	111,572	576,212	763,079	28,123	10,169	44,523	82,816	1,819,430
2000	598,331	25,275	623,606	167,551	146,149	76,852	390,552	39,263	14,131	25,275	115,278	602,665	796,613	29,416	10,587	46,834	86,837	1,897,608
2001	626,383	25,823	652,206	172,112	151,210	78,773	402,096	41,537	14,883	25,823	118,160	630,414	830,817	30,770	11,025	49,428	91,223	1,976,341
2002	655,487	26,401	681,888	176,788	156,381	80,743	413,911	43,949	15,679	26,401	121,114	659,273	866,416	32,187	11,483	52,589	96,259	2,058,475
2003	685,648	27,011	712,659	181,580	161,665	82,761	426,006	46,506	16,524	27,011	124,141	689,356	903,539	33,672	11,964	56,312	101,948	2,144,152
2004	716,871	27,656	744,526	186,492	167,063	84,830	438,385	49,220	17,420	27,656	127,245	720,783	942,324	35,227	12,467	60,593	108,288	2,233,523
2005	749,158	28,337	777,495	191,526	172,579	86,951	451,056	52,181	18,370	28,337	130,426	753,685	982,918	36,858	12,996	65,423	115,277	2,326,746
2006	782,513	29,057	811,570	196,687	178,215	89,124	464,027	55,160	19,379	29,057	133,686	788,194	1,025,476	38,568	13,550	70,800	122,918	2,423,990
2007	816,940	29,818	846,758	201,977	183,974	91,352	477,303	58,410	20,451	29,818	137,028	824,450	1,070,157	40,362	14,132	76,725	131,219	2,525,437
2008	852,444	30,624	883,068	207,399	189,858	93,636	490,892	61,864	21,589	30,624	140,454	862,598	1,117,128	42,244	14,742	83,206	140,193	2,631,281
2009	889,030	31,477	920,507	212,956	195,870	95,977	504,802	65,536	22,799	31,477	143,965	902,784	1,166,561	44,220	15,383	90,256	149,860	2,741,729
2010	927,200	32,380	959,579	218,652	202,012	98,376	519,040	69,442	24,086	32,380	147,584	945,164	1,218,635	46,294	16,057	97,894	160,245	2,857,500

Source : ENP, Banco Central, Estimated by The Study Team

Table 1-9-4 Estimation for Export Cargo Volume by Packing Type through the Port of Cortes

Packing Type / Commodity	Liquid Bulk Cargo			Total	Dry Bulk Cargo			Total	Container Cargo					Total	General Cargo			Total	Grand Total
	Petroleo	Af. Palm	Molasses		Cement	Bulk Minerals	Sugar		Banana	Coffee	Melon	Pineapple	Others		Banana	Timber	Others		
Unit	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT
1974																			
1975																			
1976																			
1977																			
1978																			
1979																			
1980																			
1981																			
1982	0	0	36,164	36,164	10,769	66,803	67,626	145,198	256,339	55,558		466	177,942	490,305	170,893	147,037	36,446	354,376	1,026,043
1983	18,973	0	37,597	56,570	0	101,957	80,992	182,949	268,724	74,163		1,142	192,445	536,473	132,356	122,062	26,242	280,661	1,056,653
1984	31,733	0	30,678	62,411	2	126,777	77,386	204,165	424,882	68,513		1,118	203,662	698,175	106,221	182,125	27,772	236,118	1,200,969
1985	38,355	0	22,745	61,100	4,725	139,166	87,386	231,277	449,128	72,868		1,777	235,011	758,783	192,483	98,565	29,046	320,095	1,371,255
1986	18,747	3,450	25,241	47,438	24,134	71,791	67,142	163,067	461,129	79,614		1,262	224,567	766,572	162,018	111,143	27,756	300,917	1,277,994
1987	15,911	8,696	19,000	43,607	61,022	38,032	76,023	175,077	445,903	86,915		6,626	235,141	774,585	191,101	96,939	35,136	323,176	1,316,445
1988	42,371	1,000	11,100	54,471	108,920	79,519	51,078	240,517	379,333	76,376		4,775	222,897	683,381	178,510	79,435	33,306	291,251	1,269,620
1989	35,190	0	10,575	45,765	210,563	88,042	20,763	319,368	480,385	88,045		2,678	246,787	737,895	126,437	67,851	36,876	231,164	1,334,190
1990	25,116	0	13,861	38,977	105,742	66,530	21,861	194,133	333,260	102,776		4,132	250,329	690,497	241,326	59,811	47,682	348,819	1,272,426
1991	6,899	0	6,337	13,236	36,492	82,333	15,437	134,262	325,148	84,013	47,256	4,937	240,322	701,676	182,896	56,604	45,776	285,276	1,134,450
1992		2,038	23,546	25,584	29,167	72,325	12,820	114,312	291,158	106,822	57,691	7,863	302,660	766,194	238,220	81,472	53,411	373,103	1,278,193
1993		2,753	22,438	25,192	20,848	116,978	40,670	178,496	366,767	101,084	72,891	8,689	308,913	858,344	244,512	58,835	27,117	330,464	1,392,496
1994		2,999	22,721	25,720	42,259	117,525	38,736	198,519	370,691	103,523	84,369	8,759	317,591	884,932	244,225	56,167	30,325	330,718	1,439,898
1995		3,259	23,010	26,270	63,810	118,139	36,698	218,447	374,657	106,015	96,034	8,818	326,616	912,139	243,919	53,867	33,807	331,593	1,488,450
1996		3,537	23,306	26,842	84,817	118,685	34,556	238,058	378,670	108,562	107,499	8,863	335,950	939,544	243,594	51,882	37,636	333,112	1,537,556
1997		3,832	23,607	27,439	105,796	119,231	32,302	257,330	382,725	111,164	118,403	8,897	345,559	966,748	243,249	58,170	41,985	335,304	1,586,821
1998		4,145	23,915	28,060	126,474	119,846	29,932	276,252	386,823	113,823	128,453	8,917	355,426	993,442	242,882	48,693	46,621	338,195	1,635,949
1999		4,477	24,230	28,708	146,723	120,392	27,442	294,556	390,965	116,540	137,453	8,923	365,541	1,019,422	242,493	47,418	51,894	341,805	1,684,490
2000		4,830	24,552	29,383	166,442	120,938	24,826	312,206	395,149	119,315	145,305	8,916	375,916	1,044,602	242,081	46,319	57,744	346,144	1,732,334
2001		5,463	24,881	30,344	185,506	121,511	23,786	330,802	400,273	122,151	152,004	9,234	386,753	1,070,416	242,188	45,371	64,023	351,582	1,783,144
2002		6,137	25,217	31,354	203,775	122,879	22,716	348,670	405,499	125,049	157,609	9,556	397,921	1,095,633	242,292	44,553	70,918	357,763	1,833,321
2003		6,854	25,560	32,414	221,098	122,650	21,616	365,364	410,629	128,010	162,222	9,681	409,463	1,120,406	242,394	43,848	78,446	364,687	1,882,871
2004		7,615	25,911	33,526	237,304	123,224	20,485	381,012	416,265	131,035	165,970	10,210	421,430	1,144,911	242,492	43,239	86,621	372,353	1,931,882
2005		8,425	26,269	34,694	252,212	123,800	19,321	395,332	421,610	134,126	168,981	10,543	433,873	1,169,334	242,587	42,714	95,462	380,763	1,980,124
2006		9,285	26,635	35,920	265,618	124,372	18,124	408,114	427,467	137,284	171,380	10,879	446,845	1,193,855	242,678	42,261	104,989	389,928	2,027,818
2007		10,197	27,010	37,207	277,301	124,947	16,894	419,141	433,237	140,511	173,277	11,218	460,402	1,218,645	242,763	41,870	115,228	399,861	2,074,855
2008		11,165	27,392	38,557	287,017	125,525	15,628	428,170	439,124	143,809	174,770	11,561	474,596	1,243,859	242,843	41,533	126,288	410,584	2,121,171
2009		12,192	27,782	39,975	294,581	126,099	14,327	434,926	445,138	147,177	175,938	11,907	489,484	1,269,637	242,917	41,243	137,965	422,125	2,166,663
2010		13,280	28,181	41,462	299,461	126,676	12,988	439,125	451,257	150,620	176,851	12,257	505,122	1,296,106	242,985	40,992	150,542	434,518	2,211,212

Source : ENP, Banco Central, Estimated by The Study Team

Chapter 2 Port Sector in Future

16. The basic factor for the port strategy is to realize better port service, especially in Honduras, to support the promotion of export through providing better port service.

17. Also following factors should be considered;
   a. How to ensure a sound management of the ENP.
   b. From the view point of national land development planning, the balanced deployment of port function is important.
   c. Ports and port related industries can provide job opportunities.
   d. Environmental consideration is getting more and more important.

2.1 Expected Roles and Functions of Each Port

18. With the accumulation of industrial as well as trade functions at its hinterland, the port of Cortes will remain at its leading position, acting as the main gate of the entire country to overseas. The port of Cortes needs to modernize itself to keep its competitive position. Further investment in port facilities and equipment is required. Improvement and reformation of port management is also required for fulfiling the responsiblity.

19. The port of San Lorenzo has strategic importance in Honduras because the port actually is the only port which can be utilized for the international trade in the Pacific Ocean, and the port gives the shortest access to the capitcl area where the largest population in Honduras lives. From the point of import of heavy or large cargoes, the port has the biggest advantage. From this point of view, the port of San Lorenzo is expected to be the gate to Tegucigalpa, especially for bulky cargoes, as well as local areas including Cholteca.

20. Port of Castilla is regarded as a gateway of the region as well as a core of regional development. The development of the eastern part of Honduras will be supported mainly by the port of Castilla. The necessary functions at the port will be loading of agricultural products including fruits and discharging of various necessities for agriculture such as fertilizer, pesticides and machines.

21. The future of port of Tela has two possibilities; a private port for Petro Tela and a pier for touristic use. The solution should be sought through discussion and negotiation among peoples concerned.

22. The most probable role expected to the port of La Ceiba is the logistic base to the Bay Islands. The more the island attract tourists, the more the role of the logistic base

increase. There might be a necessity of a regular ferry line between La Ceiba and French Harbor, Roatan.

23. There is very limited road access in Lempira, thus the water transportation through the port of lempira is very important to the region. For the development of this area, the port of Lempira should act very important role as a logistic base. The development of the port itself gives large impact on the region.

24. Port of Amapala is a life line for the limited number of people living in the island. There is a potential of development for touristic purpose, however, without the development of infrastructure such as airport, the realization of such development is not easy.

25. Bay Islands have large potential of touristic development and also of industrial development such as fishing. Thus, the trade between the Islands and the main land will be strengthened. The increase of international trade is also foreseen in the future. The ports should be developed from this point of view.

26. Table 2-1-1 summarizes roles of each port. In the table, the first column gives the names of the ports and the second column and thereafter give the expected roles to port. In the table, ** means strong necessity and * means fair necessity. Blanks indicate that the role is not expected for the objective port.

Table 2-1-1 Roles of each Honduran port

Ports	Int'nal(A)	Int'nal(B)	Cabotage	Tourism	Rgnl
Cortes	**	**	**	*	*
San Lorenzo	**	**			*
Castilla	**		**	*	**
Tela		**		**	
La Ceiba		**			
Lempira		**	*	**	
Amapala				*	**
Roatan	*		**	**	

Remarks: 1) Int'nal(A) means international trade of various goods and commodities.
2) Int'nal(B) means international trade of specific goods such as petroleum.
3) Rgnl means regional development

2.2 Forecast of Vessel Size

27. Table 2-3-1 shows the classification of vessel sizes by type calling major Honduran ports of Cortes, Tela, La Ceiba, Castilla and San Lorenzo. According to the table, the share of large vessel has remained fairly stable in conventional break bulk vessels and lumber carriers(more than 8,001 tons). For the liquid bulk vessels (except oil tankers), reefer container vessels and ordinary container vessels(including ro/ro vessels), it is noted that vessels of larger size tends to increase while large dry bulk carriers show a declining tendency.

28. In this Study, all of the berths in major Honduran Ports, except No.2 berth at Cortes, are regarded as multipurpose berths. Thus, the forecast of vessel size is carried out for the largest calling vessel among all types at each major port in 1992.

29. According to port statistics, the largest calling vessels in 1992 at Ports of Tela, La Ceiba and Castilla are liquid bulk carriers. At ports of Cortes and San Lorenzo, container(including Ro/Ro vessels) vessels are the largest.

30. Although liquid tankers are the largest calling vessels at ports of Tela, La Ceiba and Castilla, liquid bulk tanker does not need to be moored at the quay wall. In addition, the size of oil tanker in near future has been forecasted by the oil companies. For the port of Tela, the size of new jetty and largest calling vessels have already been decided by Petrotela. In this study, the port of La Ceiba is assumed to function as a domestic port and the size of liquid bulk carriers will be small. For Port of Castilla, since oil companies do not have a plan to handle the oil products, oil carriers need not be included in the Study.

31. At the port of Cortes, Castilla and San Lorenzo, the container vessel (including Ro/Ro vessel) is the largest vessel for the design purpose of the future port facilities, and accordingly, the maximum dimensions are derived from the forecast of the future calling container(including Ro/Ro vessel) vessel size.

32. Fig.2-3-1 shows the number of large(more than 8,001 GRT) container vessels (including Ro/Ro vessels) calling major Honduran ports from 1989 to 1992, and indicates that the number (including Ro/Ro vessels) has increased. From Fig.2-3-2, the average size of full container vessels on international routes around Central America also tends to increase.

33. Container vessels can be classified into four generations(see Table 2-3-3). At present, the size of the large container vessels calling Honduran ports represents first or second generation container vessels. Considering the tendency of the number of large container

Table 2-3-1 Rate of Vessel Size to Vessel Type

(Unit:Percent)

Year	G.R.T. (ton)	Conventional break bulk	Ro/Ro	Dry Bulk	Liquid Bulk		Lumber	Refrigerating vessels		Container & Ro/Ro
					Oil Tanker	Others	Carryer	Container	Conventional	
1989	- 3000	44.5	8.5	32.8	9.0	17.4	60.8	0.0	30.2	19.6
	3001-8000	13.5	76.4	45.9	23.9	78.3	19.6	10.5	23.8	47.5
	8001-15000	38.6	8.0	9.8	35.8	0.0	19.6	89.5	46.0	23.2
	15001-	3.4	7.0	11.5	31.3	4.3	0.0	0.0	0.0	9.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1990	- 3000	46.1	39.0	29.4	17.2	20.0	60.5	0.0	27.5	39.1
	3001-8000	19.2	38.6	45.1	17.2	76.7	31.6	21.8	38.2	27.0
	8001-15000	31.6	5.4	17.6	28.1	0.0	7.9	78.2	34.3	17.1
	15001-	3.0	16.9	7.8	37.5	3.3	0.0	0.0	0.0	16.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	- 3000	30.9	23.6	27.3	11.5	19.2	60.6	0.4	22.2	34.0
	3001-8000	27.8	39.1	54.5	13.5	80.8	12.1	9.4	35.5	31.6
	8001-15000	38.6	5.3	18.2	25.0	0.0	21.2	71.1	42.3	10.7
	15001-	2.7	32.0	0.0	50.0	0.0	6.1	19.2	0.0	23.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1992	- 3000	32.8	4.6	29.8	23.9	20.5	73.5	0.0	26.6	23.9
	3001-8000	24.1	45.6	53.2	16.4	61.5	8.8	0.3	29.6	38.8
	8001-15000	40.2	5.8	10.6	14.9	7.7	17.6	74.6	43.8	11.3
	15001-	2.9	44.0	6.4	44.8	10.3	0.0	25.1	0.0	26.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Souce:Data from ENP

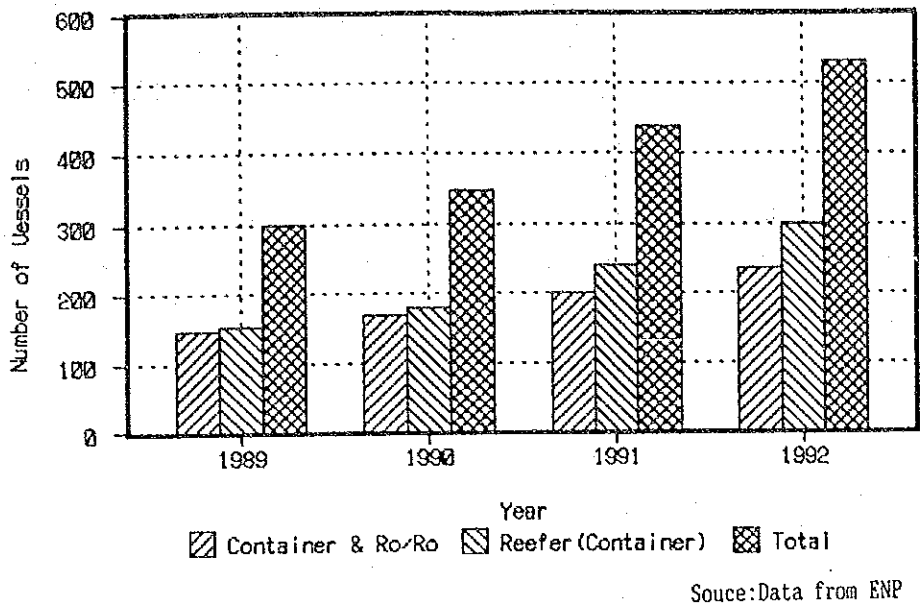


Fig. 2-3-1 Number of Large Container Vessels (more than 8001 GRT)at Honduran Ports

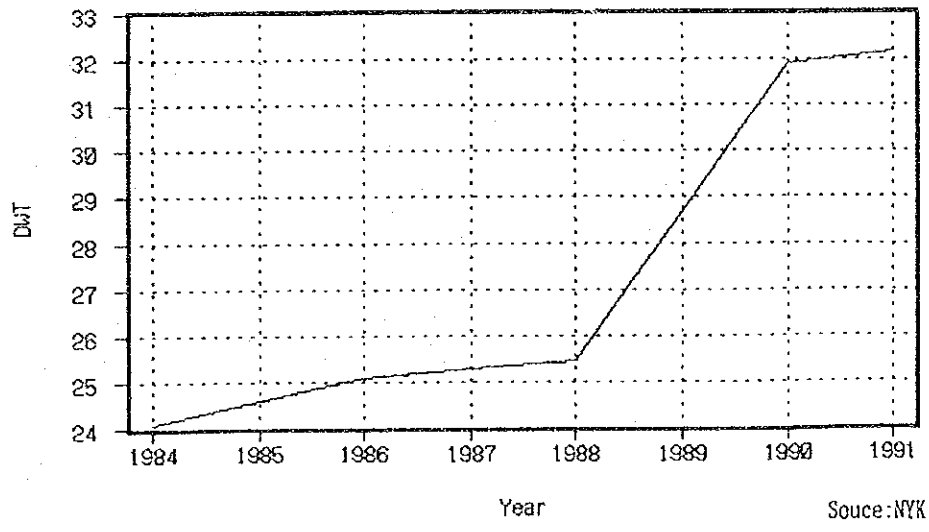


Fig. 2-3-2 Average Size of Full Container Vessels on International Routes around Central America

vessels calling Honduran ports and the average size of container vessels on the international routes around Central America, the third generation container vessels, of which capacity is about 2,000 TEUs, will call Honduran ports in the planning period of this project.

34. Based on the above, the maximum sized vessels calling Honduran ports during the planning period of this project can be assumed to be of the following dimensions:

DWT: 40,000
LOA: 230 m
Draught: 12 m

Table 2-3-3 Progress of Container Vessels

Generation	First Generation	Second Generation	Third Generation	Fourth Generation
Container Vessel	Mainly converted ships with on-bord cranes. Up to about 15,000DWT.	Purpose-built ships 700-1,500 TEU capacity. 15,000DWT - 35,000DWT	Purpose-built ships over 2,000 TEU Capacity. 35,000DWT - 45,000DWT	Purpose-built ships over 3000 TEU Capacity. 45,000-DWT-55,000-DWT

2.3 Evaluation of Current Port Capacities and its Implication

35. There are several on-going or planned port projects in Honduras, which are as follows;

1) Reconstruction of the pier at the port of Tela
2) Wharf No. 2 of the port of Cortes are mentioned as an possible construction site of a dry bulk terminal.
3) Construction of new terminal mainly for domestic shipping at La Ceiba (under construction).
4) Installation of petroleum import facilities at San Lorenzo (private initiative by Petro Sur), and

5) Construction of new port at Coxen Hole, Roatan Island.

Aside from the above, a new jetty with cargo handling equipment at Lempira for domestic shipping is necessary to realize the port strategy described in paragraph 22.

36. For future development of the port of Cortes, the following points may be the obstacles;

1) Areal limitation
2) The capacity limitation of road access to/from the port

The following points are also observed in the port;

1) Although wharves No.4 and No.5 are counted as two berths, the wharves are at times unable to accommodate two large vessels simultaneously because of insufficient length. From the port statistics, it is foreseen that the situation will often happen.
2) Some of the reefer container vessels and solid bulk vessels which berth at wharf No.4 can not enter the port with full draught. The enlargement of the vessels of these types envisaged in the future may require the deepening of the berth.
3) Wharf No.1 may be a little shallow to accommodate oil tankers.

37. On the other hand, for the ports of Castilla and San Lorenzo, the berth dimensions are considered to be sufficient to accommodate most of the calling vessels.

38. For the moment, there is no wharf exclusively used for domestic shipping except the port of Trujillo. However, domestic facilities are under construction near La Ceiba and Roatan.

39. Table 2-4-3 shows the ship berthing time at each port. From the tables, it is noted that the ports of Cortes and Castilla are operating at their full capacities and the port of San Lorenzo has a little extra capacity.

Table 2-4-3 Total Ship Berthing Time at each Port

Ports	Berth No.	Total berth time(h)	Occupancy rate(%)	Recommended Max. rate(%)
Cortes	5*	29,680	68	65
Castilla	1	4,553	52	40
San Lorenzo	2	3,191	36	50
La Ceiba	-	355	4	
Tela	-	1,449	16	

note: * excluding liquid cargo terminal.

Source: ENP, modified by the Study Team. Recommended Max. Berth Occupancy Rate is from UNCTAD. Costs for ship are assumed to be 4 times of the port costs.

40. The port capacity are also evaluated by using standard cargo volume handled per unit quay length. For break bulk cargo, 1,000 tons per one meter is commonly used. From the port statistics, 1,500 tons per meter is assumed for dry bulk cargoes and 4,500 tons per meter is adopted for unit cargoes (container and RO-RO cargoes). In Table 2-4-6, the required berth lengths are calculated. For the port of Cortes, 1,038m of berth length is needed while the actual berth length is 849m. Here, the berth length is a little less than it should be. For the port of Castilla, 191m for total berth length is needed while the actual length is 150m. The port of San Lorenzo still has considerable receiving capacity.

41. Assuming the above, it can be said that the ports of Cortes and Castilla are operating over their full capacities. It should also be borne in mind that wharf No. 3 of the port of Cortes was constructed in 1955, and by the year 2010 it will become superannuated.

Table 2-4-6 Calculated Wharf Length

	General	Dry bulk	Unit Total	Actual	
Cortes	530m	209m	299m	1,038m	849m
Castilla	83m	12m	96m	191m	150m
San Lorenzo	76m	12m	7m	95m	295m

(Conversion 1,000t/m 1,500t/m 4,500t/m)

2.4 Required Berths and their Dimensions at Each Port in 2010

42. Berth length and water depth requirements for 2010 are roughly estimated for the major three ports, by applying the standard cargo volumes per unit berth length to the projected cargo volume under Scenario 1 and 2 of Capter 1, as shown in Table 2-5-3.

Table 2-5-3 Necessary Berth Length at Each Port (unit:m)

	Present	In 2010	General	Dry bulk	Unit
Cortes	849	1,411-1,873	400-550	500-667	511-656
Castilla	150	313- 455	120-180	40- 73	153-202
San Lorenzo	295	90- 135	50 -70	27	27- 38

43. The maximum vessel size calling Honduran ports is expected to be 40,000 GRT. Taking into consideration the frequency of ship calls of this vessel, it is reasonable to use this vessel type only for planning of the port of Cortes.

44. For the port of Cortes, the cargo volume reaches a certain level at which may require terminals for exclusive use, say, unit cargoes terminal and dry bulk terminal. The domestic cargo volume handled at the ports of Cortes and Castilla will reach the level of 100 thousand ton, which may require additional length of wharves at the ports.

45. The following is a summary of the investment required for Honduran ports by the year of 2010. In the following list, a new terminal exclusively for unitized cargo at the port of Cortes is proposed to cope with the limited land area.

1. Port of Cortes
   1) International Terminal
      [Scenario 1]: pessimistic scenario
      UT x 1 + DBT x 1, or
      UT x 1 + GT x 2

      [Scenario 2]: optimistic scenario
      UT x 2 + GT x 1 + DBT x 1
      UT x 2 + GT x 3

UT indicates a unit cargo terminal, GT a multi purpose terminal and DBT a exclusive-use dry bulk terminal.

2) Domestic terminal

3) Access road to/from the port

2. Port of Tela

1) Jetty for oil and/or passenger

* Handling of oil products might be transferred to the vicinity of pier No.1 (Texaco Berth), Cortes. Cost calculation in this Chapter is, therefore, tentative.

3. Port of La ceiba

1) Domestic terminal

4. Port of Castilla

1) International terminal

[Scenario 1]: pessimistic scenario

GT x 1

[Scenario 2]: optimistic scenario

GT x 2

2) Domestic terminal

5. Port of Lempira

1) Domestic terminal

6. Port of Coxen Hole, Roatan

1) New terminal for international as well as domestic use

46. Aside from the above major facilities to be invested, there are several facilities whice are required to manage future increase of cargo and vessel size, such as container yards, warehouse, anchoring basin, etc. Calculation of the investment amounts in the next section includes these items.

2.5 Amount of Investment in Major Facilities by 2010

2.5.1 Preconditions

47. In this section, amount of investment in major port facilities by 2010 is roughly estimated. Preconditions of estimation are as follows:

1) The costs of civil works are estimated based on past similar projects in Honduras. The reference data obtained from ENP are as follows:

   Cortes: Apron Widening Project of wharf No.3 in 1984
   Construction Project of wharf No. 5 in 1975
   Extension Project of wharf No.5 in 1993

   La Ceiba:New Port under construction
   Roatan :New Jetty under planning

2) Prices of the above projects have been converted to 1993 price based on price indices promulgated by the Central Bank of Honduras. Price of civil works are calculated as follows:

   1993/1975=3
   1993/1984=2

3) Rents, and compensation for land and for fishing activities are excluded.

4) Inflation factor is excluded from the estimation.

5) Exchange rate of U.S.$ against Honduran Lempira (Lp) is 1 US$=5.85Lps.

6) The following ratios of utilities for each facility are adopted:

Facilities	Utilities
Wharf/Dolphin	4%
Dredging/Reclamation	0%
Container Yard	6%
Yard/Road	4%
C.F.S/Warehouse	8%

7) Engineering and site survey fees are estimated at 5% of the total cost.

8) Physical contingency is excluded from the estimation.

9) As for La Ceiba and Roatan, the new ports are under construction and their costs are based on the costs of construction under progress.

2.5.2 Dimensions of Facilities and their Unit Costs

48. Dimensions of the facilities and buildings to be constructed and their unit costs are as follows:

[New Facilities]

unit:1,000Lps

1) Cortes	
a. Unit Cargo Wharf (12m deep, 250m long)	95,034
b. Dry Bulk Terminal	28,175
Loading Dolphin	
(10m deep, 73m long)	
Trestles (150m long, 12m wide)	
c. Multi Purpose Terminal (10m deep, 185m long)	57,269
d. Domestic Terminal (4.5m deep, 200m long)	15,257
2) Tela (New jetty for oil)*	
Loading Platform with Two Mooring Dolphins	
(12m deep, 100m long)	25,774
Trestle (680m long, 12m wide)	18,360
* tentative	
3) La Ceiba (Under construction)	48,000
Wharf (6m deep, 207m long)	
Two Breakwaters (900m long)	
Dredging (575,000 cu.m)	
4) Castilla	
Multi Purpose Wharf (10m deep, 185m long)	41,766
Domestic Wharf (4.5m deep, 100m long)	4,887
5) Lempira	2,444
Jetty (4.5m deep, 50m long)	
6) Roatan (Under planning)	15,000
Jetty (11m deep, 90m long)	

[Buildings and yards]

1) Cortes

a. Container Freight Station (40m long, 100m wide)	8,000
b. Container Yard (40,000 sq.m)	5,200
c. Warehouse (30m x 160)	8,640

[Others]

1) Cortes

a. Domestic Cargo terminal	15,257
b. By-Pass Road	8,233
c. Port Road (in Urgent Improvement Plan)	486
d. Dredging of Wharf No.4	351

2.5.3 Total Investment by 2010

49. Summing up the amount of each facilities, investment at each port is summarized as follows (in thousand Lempiras):

a. Cortes	Scenario 1	Case 1	161,000
		Case 2	256,000
	Scenario 2	Case 1	322,000
		Case 2	419,000
b. Tela			49,000
c. La Ceiba			48,000
d. Castilla	Scenario 1		51,000
	Scenario 2		97,000
e. Lempira			3,000
f. Roatan			15,000

2.6 Amount of Investment in Cargo Handling Equipment by 2010

50. In this section, equipment and its capacity required for basic port works is calculated roughly. They are divided into two categories: renewal of present equipment and installation of new equipment as shown below:

1) Renewal of equipment

On the basis of the inventory carried out by the Team with the help of ENP, cargo handling equipment which requires renewal in identified, as shown in Table 2-7-1, 2-7-2 and 2-7-3.

2) Installation and/or purchase of new cargo handling equipment

Following are equipment to be installed on the new basic facilities:

[Port of Cortes]

a. Unit cargo terminal:
   Two gantry cranes, 5 straddle carriers, 15 trailer heads
b. Dolphin for solid bulk cargoes:
   A crane with accessary equipment
c. Multi purpose terminal(per one berth):
   Forklifts 4t x 4, 7t x 2
d. Domestic terminal:
   Forklift 4t x 2

[Port of Tela]

a. Petroleum pier:
   Pipe line system

[La Ceiba]

a. Domestic terminal:
   Mobile crane 50t x 1, Forklifts 2t x 1, 4t x 1

[Castilla]

a. Multi purpose terminal(per one berth):
   Cranes 35 t x 1, Trailer heads x 5
b. Domestic terminal:
   Forklift 4t x

[Lempira]

a. Domestic jetty:
   Mobile crane 25t x 1, forklift 2t x 1

[Roatan]

a. T-type jetty

Mobile crane 25t x 1, forklifts 2t x 1, 4t x 1

51. Total amount of investment by the year 2010 is calculated separately for the renewal of present equipment and the purchase of new cargo handling equipment based upon the following premises:

1) For the renewal of present fleet of cargo handling equipment, it is assumed that the life span for cranes including gantry, is 15 years, and those that for other equipment 8 years.

2) Among the machines which have already exceeded their service lives, half of them are replaced in 1994.

3) Equipment prices are expressed in 1993 constant price.

4) Since the schedule for purchase of new cargo handling equipment has not been drawn by this time, replacement of these equipment is not considered in this report.

5) The price of each item of equipment is based on interviews with Japanese makers and converted to Lempiras from yen (conversion rate is assumed as 18.8 yen per lempira).

52. The followings are the result of calculation and it is noted that for renewal purposes, some 240 million Lps will be required and for purchasing new equipment, some 150 - 325 million Lps will be required (this includes various costs including daily maintenance). In total, by the year 2010, Honduran port sector needs some 470 - 680 million Lps for cargo handling equipment.

1) Renewal Investment (in thousand Lps)

Cortes :193,040
Castilla : 14,230
San Lorenzo: 29,320
Total :236,590 (rounded 240,000)

2) New Investment (in thousand Lps)

Cortes :127,000 - 297,520
Tela : 8,200
La Ceiba : 4,220

Table 2-7-1 Renewal Investment

[Port of Cortes]

		Present		Reinvestment					
		No.	Year	No.	Year			Time	Quantity
Large Crane									
	Gantry Crane	1	1978	1	1994	2009		2	2
For Container									
	Toplifter	1	1992	1	2000	2008		2	2
	Straddle carrier	1	1984	1	1994	2002	2010	3	3
	Tractor head	7	1992	7	2000	2008		2	14
	Tractor head	2	1990	2	1998	2006		2	4
	Tractor head	4	1984	2	1994	2002	2010	3	6
	Tractor head	3	1980	2	1994	2002	2010	3	6
	Tractor head	9	1978	4	1994	2002	2010	3	12
	Chassis	35	-	35	1994	2002	2010	3	105
Other Cranes									
	Mobile crane 125t	1	1979	1	1994	2009		2	2
	Mobile crane 22t	1	1990	1	2005			1	1
	Mobile crane 40t	1	1979	1	1994	2009		2	2
	Mobile crane 25t	1	1969	0				2	0
	Mobile crane 15t	2	1974	1	1994	2009		2	2
Others									
	Forklift 1.5t	1	1970	0				0	0
	Forklift 1.5t	4	1977	2	1994	2002	2010	3	6
	Forklift 1.5t	3	1980	2	1994	2002	2010	3	6
	Forklift 1.5t	7	1990	7	1998	2006		2	14
	Forklift 2.0t	1	1977	0				0	0
	Forklift 3.0t	2	1980	1	1994	2002	2010	3	3
	Forklift 3.0t	6	1990	6	1998	2006		2	12
	Forklift 4.0t	4	1980	2	1994	2002	2010	3	6
	Forklift 4.0t	2	1985	1	1994	2002	2010	3	3
	Forklift 4.0t	11	1985	6	1994	2002	2010	3	18
	Forklift 7.5t	1	1969	0				0	0
	Forklift 7.5t	1	1975	1	1994	2002	2010	3	3
	Forklift 7.5t	2	1980	1	1994	2002	2010	3	3
	Forklift 7.5t	2	1984	1	1994	2002	2010	3	3
	Forklift 7.5t	2	1990	2	1998	2006		2	4

Table 2-7-2 Renewal Investment

[Castilla]

	Present		Reinvestment					
	No.	Year	No.	Year			Time	Quantity
Wheel loader	1	1985	1	1994	2002	2010	3	3
Tractor head	1	1980	1	1994	2002	2010	3	3
Chassis	4	1985	4	1994	2002	2010	3	12
Chassis	1	1983	1	1994	2002	2010	3	3
Mobile crane 20t	1	1985	1	2000			1	1
Mobile crane 35t	1	1985	1	2000			1	1
Forklift 3.5t	1	1980	1	1994	2002	2010	3	3
Forklift 4.0t	2	1985	2	1994	2002	2010	3	6

Table 2-7-3 Renewal Investment

[San Lorenzo]

	Present		Reinvestment					
	No.	Year	No.	Year			Time	Quantity
Tracter head	2	1978	2	1994	2002	2010	3	6
Chassis	5	1978	5	1994	2002	2010	3	15
Top-lifter 40t	1	1984	1	1994	2002	2010	3	3
Forklift 3.0t	3	1978	3	1994	2002	2010	3	9
Forklift 4.0t	2	1985	2	1994	2002	2010	3	6
Forklift 7.5t	1	1978	1	1994	2002	2010	3	3
Mobile crane 30t	1	1973	1	1994	2009		2	2
Wheel loader 4t	1	1982	1	1994	2002	2010	3	3
Wheel loader 4t	1	1990	1	1998	2006		2	2

Castilla : 5,870 - 11,470
Lempira : 1,750
Roatan : 2,020
Total :149,060 - 325,180 (rounded 150,000 - 325,000)

3) Grand Total(assuming 20% for other costs)
:470 - 680 million Lps

[Scenario 1] (in thousand Lps)

Port	Option	Renewal	New Purchase	Total Investment
Cortes	Case 1	193,040	173,040	366,080
	Case 2	193,040	127,000	320,040
Castilla		14,230	5,870	20,100

[Scenario 2]

Port	Option	Renewal	New Purchase	Total Investment
Cortes	Case 1	193,040	297,520	490,560
	Case 2	193,040	251,480	444,520
Castilla		14,230	11,500	25,730

2.7 Total Amount of Investment and Related Issues

53. Overall investment required for Honduran port sector is summarized as follows:

unit:1,000Lps

	Major Facilities	Equipment	Total
a. Cortes	161,000-256,000	439,296-384,048	600,300-640,000
	322,000-419,000	588,672-533,424	910,700-952,400
b. Tela	49,000	9,840	58,800

c. La Ceiba	48,000	5,064	53,100
d. Castilla	51,000- 97,000	24,120- 25,730	75,100-122,700
e. Lempira	3,000	2,100	5,100
f. Roatan	15,000	2,424	17,400

note: The upper row for Cortes and Castilla indicates Scenario 1 and the lower row for Scenario 2. The costs of equipment include 20% extra.

54. The sum of the nationwide port investment count from 740 million Lps at minimum to 1,126 million Lps at maximum. These figures inevitably give impression that they are too large judging from sizes of the revenue of ENP and the country's economy. In this context, the priority should be given to on-going project such as cabotage facilities in La Ceiba and the Roatan and matured planning ones such as petroleum installations in Tela/Cortes and San Lorenzo. Replacement of outdated equipment should also be considered with high priority.

55. Some of the investment may be more appropriate and attainable if they are constructed and operated by the private sector. According to the Team's preliminary estimation, 20%-50% of the investment could be borne by the private sector. Consideration in this respect for individual project will be done at the later stage.

2.8 Environmental Conservation Strategy in Port Sector

56. Present environmental situation in and around Honduran ports is in fairly good condition except the following matters;

1) The results of the water quality test indicate that some part of the Bay of Cortes is somewhat anomalous possibly because contaminated water from hinterland is discharged into the Bay without any treatment and accidental spilling is sometimes occurs during cargo handling operation.

2) Large-scale modification of natural condition by cabotage port construction work near La Ceiba may cause the following phenomena;

   a. Change of river bed and accompanied amplification of the possibility of flood caused by the exploitation of rocks and stones for construction use.

b. Increased littoral drift along the new port construction site and change of coast line.

In 10 to 20 years, however, people's attitude in Honduras will probably be more environment-conscious and environmental conservation strategy in port sector should take this possible change of people's attitude into account.

57. The basic idea toward environmental conservation strategy in relation to port should be as follows;

1) To prevent pollution and bad effect by the port activities to surrounding area including water area. The possibility of pollution will increase with the increase of cargo volume and with the intensified demand for speedy cargo handling. Typical causes of pollution and bad effect are:

   a. Increase of possibility of spilling of fertilizers, oil and others.

   b. Increase of traffic congestion, which causes accidents.

2) To systematize EIA(Environmental Impact Assessment) on port induced effect by port project and its counter-measure

58. Although the environmental issue in Honduras is at its inceptive stage, the basic direction to tackle the issue should be well prepared. Environmental issues cover a wide scope and the preparation of an environmental strategy should be comprehensive, covering technical know-how and institutional frame. The following is some basic elements to realize this end.

1) Clear understanding of what is happening/will happen.
   a. Clear sketch of the nature of the phenomenon.
   b. Identification of the area where the phenomenon takes place.
   c. Severity level of the phenomenon.
   d. Identification of the cause of the phenomenon.

2) Adoption of appropriate methodology to understand the phenomenon.
   The methodology should be able to reproduce the phenomenon. At the same time, it should clearly depict the cause and the result of the phenomenon. The methodology can be utilized to forecast the future environment as well.

3) Possible countermeasure to prevent or mitigate the effect.
   When planning a port development project, careful consideration should be

given to the possible effects which may happen at port construction stage as well as operational stage. If degradation of environment is forecasted, countermeasure should be taken to prevent the environmental burden or to mitigate the effect

4) Process to acquire social consensus.
Results of environmental analysis sometimes remains at a qualitative level. Therefore, the evaluation of the project is rather comparative and the decision should be made through social consensus.

5) Strengthening coordination with other organizations concerned
Environmental issues cover a wide scope including geographic extension, thus, the countermeasures to the issues should be examined and carried out through coordinated efforts of relate organizations. In the context of port activities, the municipality and port captain are the most important co-workers.

6) Initiation of necessary preparation for MARPOL '73
The government of Honduras is planning to ratify the Treaty, which requires the Honduran ports to receive oil residue from vessels. Honduras needs to have these new facilities at ports in future.

59. Table 2-10-1 can give the relation between Environmental Impact Element (Caused Factor) and Constituent of Environment (Affected Factor). This table provides a rough guideline to forecast possible environmental effect by a port and its activities.

60. The first concrete steps toward environmental consideration in Honduran port sector are;

1) To strengthen monitoring function of ENP
ENP has both administrative function as well as operational function. For the monitoring purpose, the administrative function should be highlighted and appointment of a personnel to environmental patrol is worth investigating.

2) To keep monitoring surrounding environment including water quality
As mentioned above, the clear understanding of what is happening is crucial for environmental issues. To this end, background information should be constantly studied.

3) To foster personnel competent for environment matters
Currently, there are no personnel in ENP with relevant knowledge of

environment in ENP. He/she is not necessarily an environmental specialist but should have basic knowledge.

4) To establish a control system on environmental matters
It may be prudent to apply the penal tariff to polluters, of which clause already exists in the tariff code.

Table 2-10-1 Relationship between Environment Impact Element (Causal Factor) and Constituent of Environment (Affected Factor)

Environment impact element \ Constituent of environment		Air Quality	Water Quality, Water Bottom Material Quality	Noise, Vibration	Offen-sive Odor	Land Form	Water and Current	Animals and Plants	Land scape	Cultural Assets
Existence	Port Facilities		○			○	○	○	○	○
	Land		○			○	○	○	○	○
Utilization	Channels, anchorages and Basins	○						○		○
	Mooring Facilities	○						○		○
	Timber Handling Facilities	○	○		○			○		○
	Port Traffic Facilities	○		○				○		○
	Storage Facilities, Handling Facilities	○	○	○	○			○		○
	Facilities for Port-related enterprise	○		○				○		○
	Industrial Estate	○	○	○	○	○		○		○
Construction	Work type	○	○	○	○			○		○

Chapter 3 Improvement of Port Activities

3.1 Port Management and Operation - Points to be Considered

61. One of the remarkable features of future Honduran port sector is that the cargo volume through Honduran ports will increase dramatically while cargo unitization and specialization of cargo handling will progress. Cargoes, by nature, look for the optimum transport route and ,in future, international competition for cargoes will increase with neighboring countries. Keeping pace with these trends, the port will be required, more and more, to provide efficient and economic services. Efficient operation and management in ports should be pursued in the international context, especially in the ports for international trade.

62. This forces a change in cargo handling practice, especially at the port of Cortes. The countermeasure to these trends should be not to simply increase the number of personnel but to increase the productivity through the introduction of new cargo handling practice as well as the deployment of competent operators. One of the effective tools to improve the efficiency of management and operation of ENP is the introduction of computer, especially to container terminal operation. The computerization of container handling is vital for efficient terminal operation and it is commonly said that when the volume of containers handled at a port surpasses 50 thousand TEU, the terminal can not be operated efficiently without a computer. This point will be studied in depth in 2.4 of Part III.

63. To improve the quality of services, a fair promotion scheme and an extensive training/education program for port people should be highlighted. The objectives of these programs are to foster competent personnel at the managerial level as well as workers level.

64. A new system which enables efficient and flexible cargo handling operation should be realized in the port of Cortes. For the moment there is no shift of gangs except forklift operator currently and a gang assigned to a ship (hatch) continues to work until the handling is complete. This may decrease productivity while increasing the possibility of accidents. An appropriate gang shift system should be introduced not only to exclusive terminals but to general cargo terminal. This issue is in depth in 2.3 of Part III.

65. Maintenance of equipment, especially those for handling cargo is vital for efficient and flexible cargo handling operation. For this end, preventive maintenance system should be improved and flexible allotment of various cargo handling machines should be realized as well. Fostering competent mechanics in modern cargo handling machines

is another important issue. This point will be discussed in depth in 2.4 and 2.5 of Part III.

66. To realize the maximum use of each cargo handling machine and the economy of cargo handling practice, flexible assignment of machines should be pursued. Balanced use of machines could expand their life span and minimize the expenditure for machines.

67. The pricing policy is rising in importance in relation to competitiveness of a port, financial soundness of the organ and incentive to the national/regional economy. This subject involves not only establishing a tariff which recovers the cost, but also such issues as improvement of pricing procedure and whether cross-subsidy scheme and incentive to major cargo should be maintained. Furthermore, with the private participation to the port operation, issues on new pricing scheme is inevitably involved. The team suggested several points in 3.3 of this Part and 2.2 of Part IV.

68. Under the existing law, ENP has a function for coordinating the nationwide port development of port activities, and with the progress of port reformation which ENP is now undertaking, this function will become more important in terms of overall task of the organ (this issue is dealt in next section and 4.2 of this Part). In this respect, The national port plan is very important and can be utilized as the guideline for port development as well as management of the ENP. Currently, a national port plan which shows the basic direction of development, management and operation of all ports is not prepared in Honduras. Although port plan exists for some individual ports, the plans are not evaluated in the scope of the social and economic significance for the entire nation. The port people in Honduras should be well aware of the importance of the national port plan together with the individual port plan, and an institutional process to establish and revise these plans should be established.

69. The limited area and inadequate location of facilities in the port of Cortes hinder the efficient flow of cargoes as well as port traffic. The fundamental solution will be to expand the land area, however, the port borders a built-up area of the city and the expansion to the landward direction is, thus, impossible. The possible direction of expansion is to the seaward direction and the utilization of reclaimed land adjacent to the south of the port. An intermediate solution before the expansion might be to introduce traffic regulations inside the port area. Anything which may hinder smooth flow of port traffic should be restricted and removed. Traffic signs on port roads and zoning of terminal could help the port traffic flow more smoothly. The team made some suggestions on this point in 2.1 of Part II.

70. In studying above issues, it should be borne in mind that matters relating to port administration and management including their institution vary from country to country, and even in same country differs from time to time. This point is also discussed in 4.1 of this Part in the context of privatization.

3.2 ENP's Conducting of Regulatory Functions

71. Under the existing law, ENP has a responsibility to give its opinion on major port development works whoever may be conducting them. In other words, ENP should be and is being consulted by the entities within and outside the area where ENP has the jurisdiction.

72. In order to pursue the above objective, ENP's judgments should be based upon the masterplan of the ports which should be formulated for all the Honduran port and be reviewed periodically according to the socio-economical change.

73. Since water area is very important in terms of supplying future port expansion, ENP's regulatory function should be extended toward the area. Particularly in the port of Cortes, the land area is terribly strained, and ENP should be get involved in the possible permanent change in the water area such as reclamation, building of rigs, and so on. While executing the ENP's function, coordinating action with other organs pertaining to port matters, to wit. customs, quarantine and port captain is very important.

3.3 Restructuring of Tariff System

74. In Honduras, ENP Act provides that various port prices are so formulated that the revenue sufficiently covers the expense of management, operation, maintenance and depreciation cost, and it may gain resources for renewal of equipment and future expansion of the port. While deciding tariff, competitiveness vis-a-vis the neighboring ports and simple tariff structure should also be borne in mind. Some issues are discussed in following paragraphs.

Pricing procedure

75. Although creation of an independent organ (CNSSP) to examine the four parastatal entities is a significant step toward establishing a reasonable tariff system, the actual behavior is somehow criticized. Criticism is focusing upon two points: The first one is that although the Commission has 6 staffs from various backgrounds it does not have

sufficient knowledge and information to verify if the tariff is reasonable in light of current economic circumstances and the entity's management situation.

The second one relates to the Commission's power. Commission's enforcing power is of a half-measure nature, and under the present arrangement decisions should be sent to the President and/or the Congress for the final decision, who may be swayed or influenced by political maneuvering. Banana tariff in the port of Castilla reveals this defect.

76. With a view to establishing a fair and competitive tariff of parastatal entities, it is important that decision-making organ should avoid getting involved in a politics. Nevertheless, it is not easy to keep independence of fare evaluation not only in Honduras but also in every country. Under the circumstance where political and administrative system in any country has its own background, perhaps the only workable suggestion is that a legislation is enacted to give the Commission the power for promulgating the pricing and to put the Congress and the President under obligation to observe the Commission's evaluation.

Cross subsidy and promotional rate

77. The ENP's tariff has a cross subsidy nature, and with some exception, the tariff is fixed at the same level through all the ports and same cargoes and vessels are charged the same rate. At present, however, an argument that tariff should be fixed port by port based on their own accounting schemes becomes dominant following the belief on competition and market.

78. The team is of opinion that in the environment of developing countries where many ports which cannot support by themselves and also are not nurtured by public money exist, it is inevitable that lucrative ports in the country should support the ports serving for scant trade. In Honduras, the earning of the port of Cortes bears the other ports, be it newly constructed port or be it port in remote areas.

In light of this situation, the team advocate at this moment the retention of cross subsidy scheme.

79. Among several promotional tariff rate, the most remarkable is the rate reduction for banana export. This favorable rate may be advocated from the point of view of: (1) promotion of banana export which is prime importance for Honduras for raising foreign currency, and (2) discount for scale contract.

80. However, since the burden of the reduced revenue is after all falling upon the general users, this reduction may be criticized as running counter to fairness and equity which are the general principle of pricing. And from the point of view of scale

discount, 75% of spread which is now applied in the port of Castilla seems too much. Even 50% of spread in other ports might be deemed unfair by other client, because banana exporters acquire this favorable rate through the strong bargaining power brought forth by their monopolistic status. It is, therefore, advisable to reduce the spread with ordinary cargoes.

81. The cabotage vessels are treated favorably, because these vessels have no specific facility and anchor at vacant space. Also the shipowners are protected because of weak financial position and of their service to the resident in isles or remote areas. But in future when cabotage berths are constructed like La Ceiba and Cortes, new tariff will be required for recovering the huge construction cost.

Chapter 4 Reformation of Port Sector Management

4.1 Observation on the Issues on the Reformation

82. Although the Honduran ports are in general under the jurisdiction of ENP, a parastatal body, certain business activities of the port are being carried out by many kinds of organs. This fact shows that a port, particularly ones beyond a certain scale like Puerto Cortes, is a complex in which various activities ranging from fundamental services to ancillary ones, and from money-making one to non-profitable services exist. On the other hand, there exist small scale ports eg. in remote areas where it is hard to restore the costs, nevertheless, such ports may be required with a view to support the life of habitants in the region. These characteristics will dictate manners and forms of the port reformation.

83. In the port sector, like other sectors in the country, reform of management, in particular movement toward extension of private participation has been planned and implemented. This scheme forms a part of the Project of Transport Sector Rehabilitation in Honduras which is financed by IDA.
In conformity with the above policy, ENP prepared a document for consideration, which consists of A. the Scheme of the action plan, B. Legal framework and C. Harmonized labor relationship for realizing privatization. This document appears in Volume II, Appendices.

84. The primary tool of the reformation is increasing of private participation in public services, and this policy also in line with the global trend towards privatization which began in the early '80s. The objectives of the port privatization is as follows;

(1) by discharging the enterprises from over-intervention by the government and exposing them to the market competition, the business efficiency and quality of services are expected to be upgraded,
(2) by allowing the private sector to invest state enterprises, additional resources are obtained, and
(3) fund raised by the assets of state-owned enterprises improve the government financial position.

85. While much has been talked about advantages and necessity of privatization, world's port authorities try to pursue realistic approach appropriate to position which they are facing. And, looking at the examples of successful restructuring of port management, the organization succeeded by fostering an environment in which executives and staffs work together on their own initiative toward the creation of a meaningful management.

86. Based upon the facts experienced by the world's ports when introducing a new scheme, following two points should be borne in mind:

(1) Any reformation policy, however theoretically right, may not be workable, if the persons who are responsible for realizing the policy feel hesitant in the light of their experience as professionals or if it runs counter to their cultural heritage. This aspect may be called 'human factor'.

(2) When formulating a new policy for developing countries, particularly replacing of existing one, prudent approach may be desirable. Industrialized countries are more capable of absorbing the ill effects of the reformation, since their economy, their industry, their administration and their community have enough strength to endure the impact or to rescue those affected. In case of developing countries, however, where their economy is vulnerable, their industry fragile, their administration suffering from flaws and their community already hampered by many problems, damage caused by the impact of policy alteration will be so great that it would take years to cure even with immediate policy revision.

4.2 Institutional Matters

Monopoly

87. In developing countries, single authority has long been the norm mainly in accordance with the World Bank's advice. In recent years, however, it has been suggested that port management should be fragmented and decentralized leaving responsibilities to private sector and/or local government. Theoretical background of the criticism is that it tends to restrict competition between ports, and the monopolistic management by a single port authority presses the client in terms of operation and of tariff fixing by taking advantage of its high bargaining power. However, the reality is that ENP's bargaining position is not stronger than those of major exporters have. The evidence of ENP's lesser position lies in its huge discount for banana export.

88. In Honduras, one port has prevailing scale with several small ports. Small ports do not earn enough revenue for supporting the management, and if ENP were divided into a multitude of port authorities, the cost would increase to such an extent that small ports could not bear them. By one authority governing several ports, common administrative cost will be minimized. Retention of the single port authority scheme is therefore recommended.

Policy-making Procedure

89. The Board of Directors' meetings are held more than once a month. There may be a few too many meetings and this might cause delay of action. It is advisable to reduce the number of meetings by limiting the terms of reference of the Board to really important matters, viz. budget and account, appointment of very high ranking personnel, acquisition and removal of assets over certain amount, important pricing, formulation of masterplan, approval of important rules and regulations and so on.

90. ENP is financially contributing to the central government though it is not prescribed by law. This measures is legally inadequate, and from the management point of view quite undesirable, since it presses ENP financially and ENP is placed in a difficult position to formulate even short or intermediate term management program. Furthermore, the port of Cortes is now about to embark upon the work for evolving its capacity. Some portion of the cost is inevitably funded by ENP's own resources, which will require for strengthening its financial portion. This practice should be either abolished totally or limited to a fixed rate or fixed amount.

Planning and Coordination

91. A World Bank paper pointed out that for the development of transport infrastructure Honduras lacks systems for formulating plan for investments based on the national economic prospects and strategies and a capability for prioritizing projects within the context of a national development program.
SECOPT is required to carry out this task with cooperation of SECPLAN. However, it is not easy to have SECOPT restructured to meet this end with limited number of qualified human resources and relatively low salary level of civil service. The paper recommended as a tentative measure to retain long-term consultants to train the professional staff in preparation of pluri-annual investment programs. An alternative is to ask a donor country to provide long-term experts at their expense to advise preparation of transport infrastructure planning and to transfer know-how of this matter.

92. ENP should also be transformed from a more business-oriented body to a more planning and coordination-oriented organ. ENP's organizational structure should accordingly change expanding department(s) for planning and coordination. However, restricted human resources will make this change difficult.
Hiring consultants with managerial knowledge is one solution, but this has yet to be done. It is also recommendable that ENP ask through the government a donor country to provide long-term experts with experience of various fields of port authority's work including coordination of various interests in port and port-related environmental issues.

4.3 Some Issues on Private Participation

93. ENP has already enumerated several items to be considered for privatization. In this section, major items except port of Cortes is taken up.

(1) La Ceiba facilities under construction

94. For the facilities now under construction at the Boca Vieja Mouth, it is originally intended that they are utilized for cabotage mainly to the Bay Islands and are operated by an entity composed of ENP, the municipality and La Ceiba Chamber of Commerce. Later on there comes an idea that the facilities be sold out to a private sector(not realized). However, the team support the original idea on the ground that the costly purchase price may have possible buyers faltered or may induce the private sector utilizing other purposes.

(2) Works in the port of Castilla

95. In Castilla, while ENP owns and operates a certain amount of cargo handling equipment (mainly for containers), Standard Fruits Co. also works using their own equipment. Repair and maintenance are done at their own shop. It is the team's observation that Standard Fruits works more extensively and actively than ENP in terms of cargo handling and shop. Fruits are treated very favorably for assignment of berth and labor arrangement. Under these circumstances, cargo handling, and repair and maintenance of handling equipment could be transferred to Standard Fruits Co.. Also those facilities suggested by the team to be built in future should be leased to the Company.

PART II

Urgent Improvement Plans

Chapter 1 Urgent Improvement Plan

1. Table 2-2-1 shows the list of issues which require countermeasures to improve port services as well as working conditions. These issues were identified based on the site surveys as well as interviews with various appropriate person. The inspections of the Study Team were conducted mainly in February, March and June in 1993. Some of them were already appropriately treated by ENP and thus indicated in the table.

2. The issues cover a very wide area including facilities, equipment, operational practices and managerial matters. Some issues require a long period of time to improve and others need a large amount of money. These issues are more appropriate in the long term masterplan or strategy. Aside from these issues there are several points which require urgent steps to improve the situation.

3. The above subjects could be categorized into several groups by their natures. These are:

1) Issues concerning the condition of facility. This is mainly described in this Chapter.
2) Issues which mainly derive from the areal limitation, especially in the port of Cortes. The true solution is to rearrange or expand the port area and should be found in the scope of the masterplan.
3) Issues on everyday practices of port operation.
4) Issues which relate to other institutions including municipality. Any solution of these issues is only possible in cooperation with the institutions concerned.
5) Others.

4. Taking into consideration the above-mentioned, the urgent improvement plan should include the following items:

1) Issues which hinder port activities or which are anticipated to become bottle-necks in near future.
2) Facilities and equipment which accompany no large investment and which are easily improved.
3) Port operation and management which require no fundamental change of institution, but only small change of operational procedure or working method.
4) Countermeasures without involving too much cost to a nuisance in the surrounding areas caused by port activities/facilities.

5. According to the table, No.1, No.2, No.3, No.6, No.7, No.8 and No.10 are regarding as maintenance or repair, No.9, No.11, No.14 and No.15 require large investment and

they are now under construction, No.28 and No.29 issues require fundamental change of institution and No.20 issue is not urgent because the capacity of cargo handling equipment at Port of San Lorenzo has allowance at present. All these subjects are not appropriate for inclusion in the urgent improvement plan.

6. All remaining subjects require urgent improvement. These are shown in the table by the mark "*". Among the 17 projects, two concern pavement, while nine projects relate to cargo handling and four to port operation and management. In these projects, issues number 5, 19 and 23, which are understood as high priority projects by ENP, have been completed or are now under construction.

Table 2-2-1 List of Points of Issue

	No.	Field	Port	Content of issue	Content of Project	Cost (1000LP)
	1	Facility	Cortes	Damage at junction in the middle of wharf No.3.	To be repaired.	
	2			Damage at junction of wharf No.4.	To be repaired.	
	3			Damage of slab, from the 1000 foot mark to the end of wharf No.5.	To be repaired.	
*	4			No pavement of road from warehouse No.2 to Chiquita storage yard.	To be paved.	2,000
*	⑤			No pavement of Container yard No.11.	To be paved.	2,425
	6			Damages of the guard-rail of railroad.	To be repaired.	
	7			Damage of fenders on wharves No.3 and No.5.	To be repaired.	
	8			Loss of several steelcovers for water supply valves.	To be installed.	
	9		La Ceiba	Corrosion of Raykin fenders at persent wharf.	New port is under construction.	47,774
	10		Castilla	Damage of fenders on the wharf.	To be repaired.	1,842
	11		Roatan	Collapse of wooden pier.	New pire is under construction.	11,772
*	12	Cargo handling	Cortes	No transmitssion of the information for cargo handling to operators of cargo handling equipment.	To give the information to the operaters.	
*	13			No transfer point between straddle carrier and trailers.	To determin the transfer point.	
	14			No parking space for trucks and trailers result in traffic jams	To prepare the parking space in the port area.	159
	15			Inefficient gate function at No.11 gate.	Enhancement of gate function at No.11 gate.	

*	16			No replacement plan of container handling equipment.	To make the maintenance and the replacement plan of cargo handling equipments. To purchase ten tractor heads.	7,000
*	17			No traffic guide/sings in port area.	To install traffic guide/signs.	
*	18			Low warking ratio for expensive equipment.	To establish and observe the basick rule on cargo handling.	
*	⑲		Castilla	No large capacity crane at Port of Castilla.	To be purchased a large capacity crane.	
	20		San Lorenzo	Shortage of large capacity crane and prime mover at the port of San Lorenzo.	To install two large capacity cranes and several prime movers.	
*	21		All main Honduran ports	Difficulty of replacing parts of some equipment.	To use a statistical approach in replacing the parts.	
*	22		All main Honduran ports	Necessary to train operaters of cargo handling equipment according to increase of cargo volume	To train the operaters.	
*	㉓	Operation	Cortes	No shift system in container handling.	To start investigation on the introduction of a shift system	
*	24			No. classification of warehouses.	To classify the warehouses by cargo commodity	
*	25			No CFS at Port of Cortes.	To establish a CFS at Port of Cortes.	25,400
*	26			No control tower in the container yard.	To establish a control tower for over-all container flow inside the port area.	
*	27			No long-term national plan for port development.	To make a over-all long-term national plan for Honduran ports and to make master plan for individual port.	
	28			Improper personnel development.	To arrange the number of personnel for optimum deployment.	
	29			Concentration of responsibility of port operation.	To divide responsibility for the management and operation of container handling among several people.	
*	30			No countermeasure for all labor accidents in the port area.	To record all accidents including those of private companies. To creat a position responsible for the safety in port area.	
*	31			No statistics of domestic sea trade.	To compile statistics of domestic sea trade.	

Chapter 2 Another Important Matter

2.1 Port Road

7. The port road which penetrates through the terminal No.5 of the port of Cortes hinders the cargo handling operation as well as smooth traffic flow. One of the possible solutions is to relocate the road to the edge of the terminal.

8. Fig. 2-3-1 shows the present situation of port traffic and cargo handling movement at the No. 5 terminal. In the figure, white arrows indicate the flow of the general traffic, black arrows unit cargo traffic and thin arrows the movement of straddle carriers. The road traffic congestion is remarkable. There is a basic heavy face-to-face traffic with frequent inter-crossing of straddle carriers. Obstacles at the quay side in the form of remaining wagons, abandoned chassises and other temporary storing materials was another problem observed during the cargo handling operation. This also curbs the efficiency of the cargo handling operation as well as threatens safety.

9. Fig. 2-3-2 is a proposal for the improvement of the situation. The idea is to relocate the road to the northern tip of the terminal along the rail and to let the general port traffic flow on this route. In this way, the unit cargo terminal is insulated and free and efficient cargo handling operation will be secured.

10. Along with the relocation work, the flow of unit cargo traffic should be regulated. Every trailer should be run counter-clock wise except the eastern-most part of the terminal where traffic goes clock-wise to avoid mingling with the Ro-Ro cargo movement.

11. The relocation of the road results in the loss of 130 slots. The rough estimated cost for the project is around 500 thousands Lps.

2.2 Asphalt Handling

12. Although the volume of asphalt import has been limited and will not be a major import item at the port of Cortes, this petroleum product is handled at the Wharf No.3 and stored in tanks which are located be behind warehouse No.1 and No.2., and very close to a residential zone.

13. ENP is beginning to talk to the municipality, the owner of the tanks, to relocate them to an area far removed from the residential zone. One of the tanks is reported to have gone up in flames and there is no doubt a danger of such kind. From the port as well as city planning point of view, the relocation of the tanks is justified and the ENP's plan is laudable.

14. The new location for the tanks should be close to the liquid cargo terminal, Pier 1 and Pier 1-A, and through this relocation, the people living close to the present tank site can enjoy a better living environment and the port will see its operation improved.

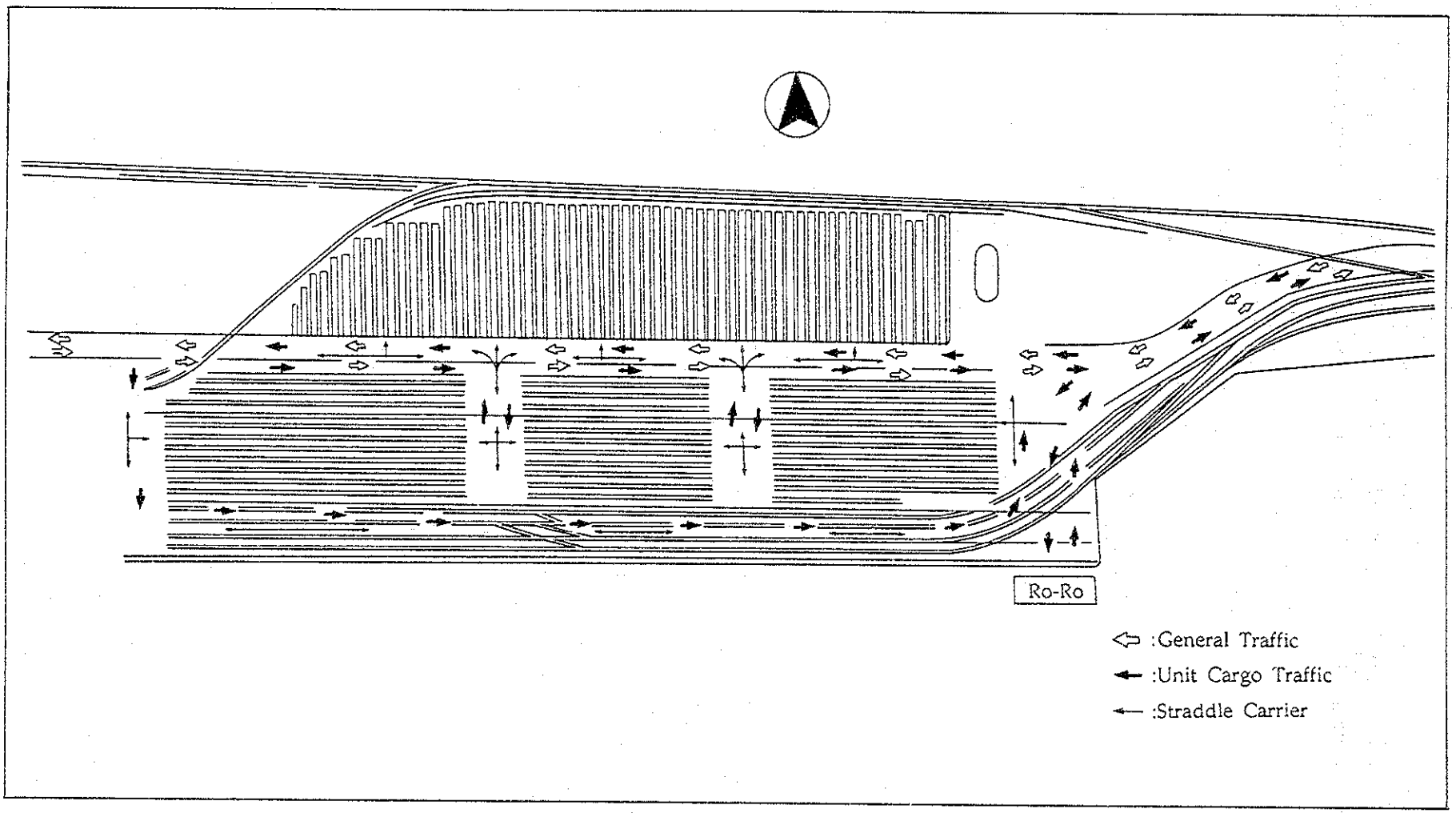


Fig. 2-3-1 Present Traffic Flow in No.5 Terminal

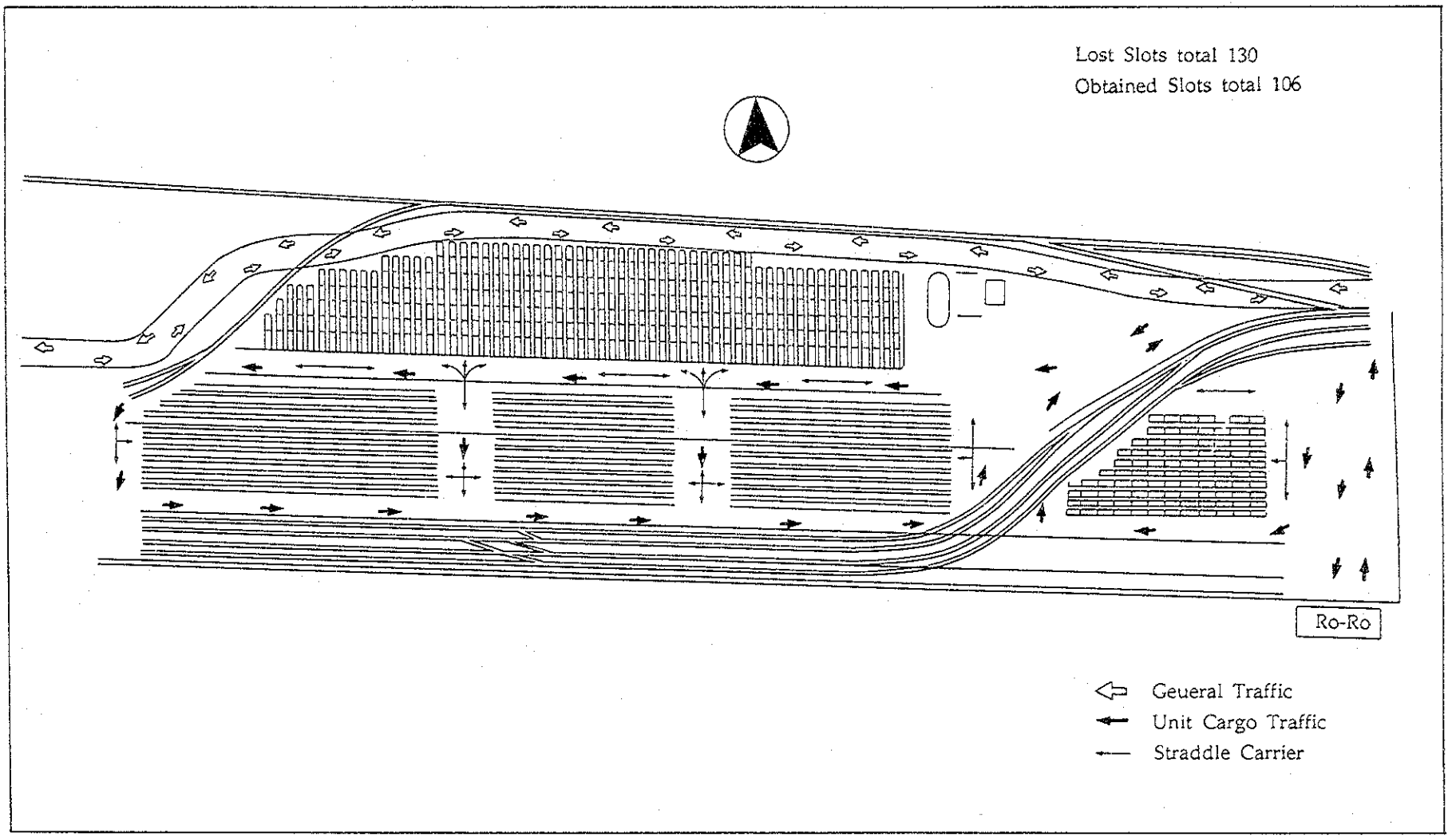


Fig. 2-3-2 Improved Traffic Flow in No.5 Terminal

PART III

Masterplan of the Port of Cortes for the Year 2010

Chapter 1 Long Term Plan for the Development of the Port of Cortes

1.1 Procedure for Establishing the Masterplan

1. Masterplan of the port of Cortes is established through the work procedure shown in Fig. 1-1-1.

2. Among the items shown in the Figure, Cargo Volume is given in Section 1.2 and 1.3, PART I. Ship size and necessary port facilities are roughly obtained in Section 2.3, 2.5 and 2.6, PART I.

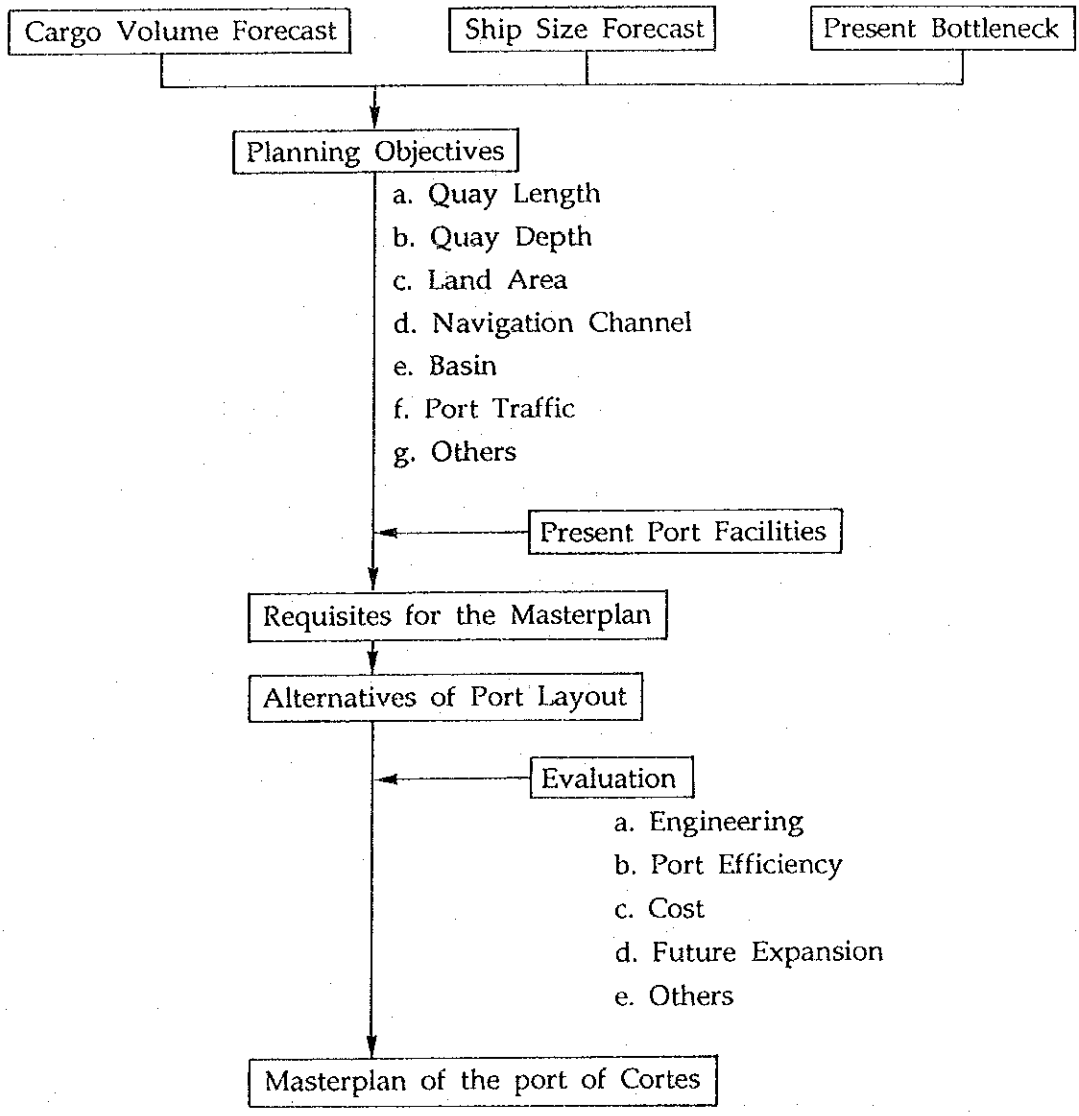


Fig. 1-1-1 Procedure for Masterplan of the Port of Cortes

1.2 Bottleneck in the Present Port Operation

1.2.1 Characteristics of the Present Port Facilities

3. The present situation of the port is characterized as follows;

1) Unit Cargoes

The port has a modern container terminal with container handling equipment including gantry crane and straddle carriers. However, the terminal has several problems such as;

a. Areal limitation ---> The area behind the quay is narrow and many containers and RO-RO cargoes are obliged to transfer to a distant storage yard.

b. Multiple use -------> The terminal is utilized for general cargo as well as occasional dry bulk cargoes to compensate for the shortage of total quay length. Fruit containers, however, are handled together with general cargo at Quays No.3 and No.4 using ship gear. The terminal is not an exclusive unit cargo terminal, but multi purpose terminal.

c. Port traffic ----------> Port traffic connecting gate 11 and quays No.3 and No.4 goes through the container handling yard which brings safety as well as efficiency problems.

d. Fruit containers----> Fruit containers are handled at quays No.3 and No. 4 by ship gears. All of the containers are go-down containers which means they directly go out to and come from the outside container yard.

2) General Cargoes

General cargoes are handled at quays No.3 and No.4 (sometimes quay No.5). The quays are considered to have sufficient water depths for the moment. Problems related to these terminals are;

a. Fruit container ----> Fruit containers are handled at the quays No.3 and No.4. The cargo necessitates quick cargo handling practice which puts a heavy burden on port traffic.

b. Dry bulk cargo ---> There is no exclusive-use dry bulk terminal in the port. The cargo is handled at quays No. 3, No.4 and No.5. The cargo handling takes long time and occupies a quay for quite a long duration.

3) Dry Bulk Cargoes

As stated above, dry bulk cargo occupies quays for a long period of time. In the port development history, bulk cargoes are usually segregated from general cargoes as the first priority. For the port of Cortes, it is worth considering the construction of an exclusive-use dry bulk terminal. The port already has exclusive liquid cargo terminals.

4) Domestic Cargoes

There is no special quay for domestic cargo vessels. Domestic vessels anchor in a niche among the ocean going vessels and conduct their cargo handling. This not only accelerates congestion in the port but also causes some problems. In future, domestic shipping is expected to increase and segregation of domestic vessels from ocean-going vessels would be crucial for smooth port traffic as well as efficient port activities.

5) Non-utilized Water Front Line

While the port facilities are located along the north coast of the Cortes Bay, there is a non-utilized water front line between Pier 1-A and Quay No.3

6) Areal Limitation

---> port area is long and narrow which forces port traffic to merge into single narrow port road.
Proximity to the town of Puerto Cortes does not allow for expansion of port area in the landward direction.

1.2.2 Other Port Related Matters and their Implications

4. Fruit Companies have their own container storage yards next to the port and some shipping companies have their own van pools around the port. These two factors bring a rather short container staying time inside the port.

5. There are some storage places for dry bulk cargoes around the port.

6. Oil Company has its own oil terminal next to Pier 1-A.

7. Practically, there is only one access road to/from the hinterland and parking space