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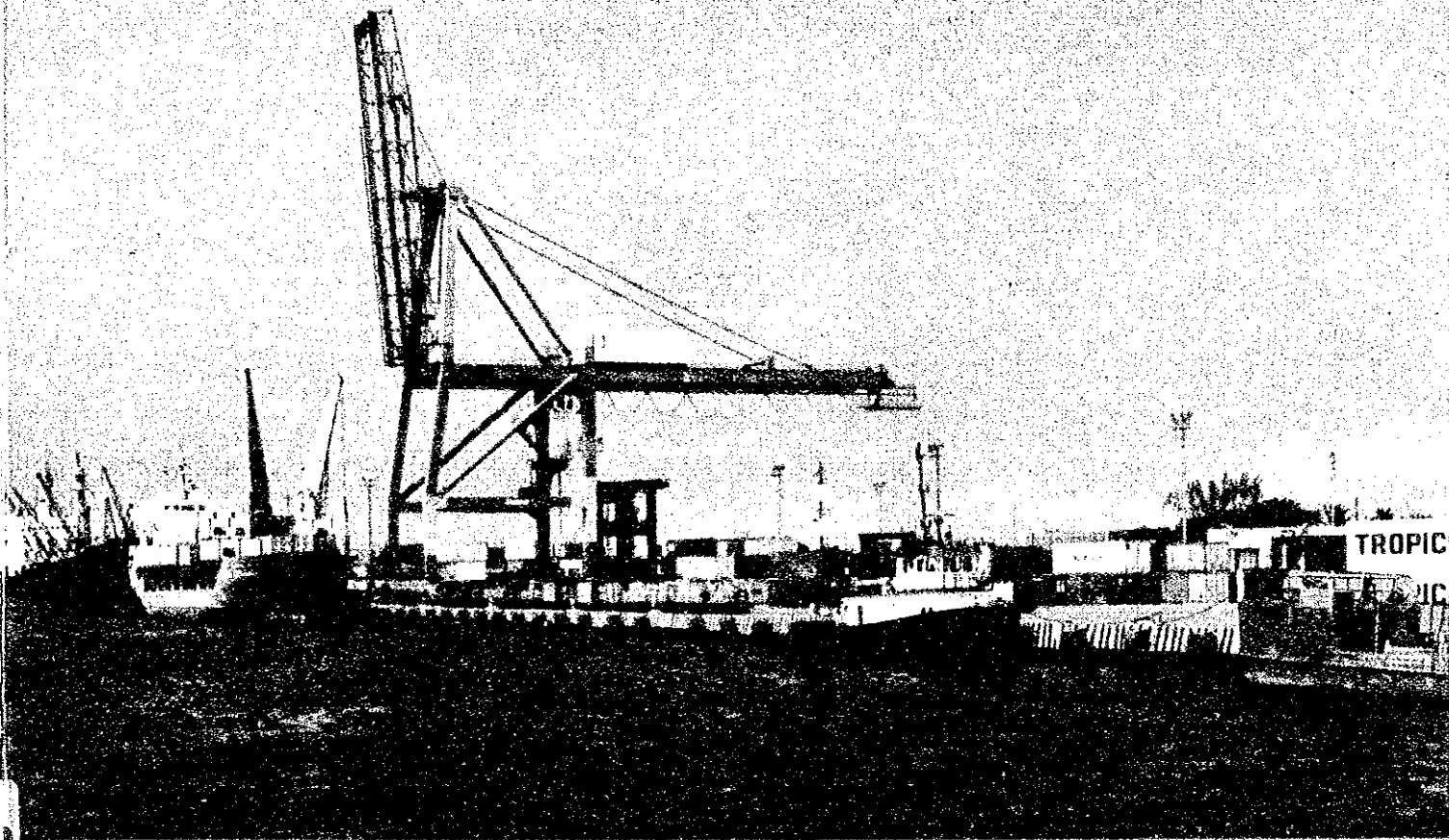
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NATIONAL PORT ENTERPRISE

FINAL REPORT

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

VOLUME II APPENDICES



MARCH 1994

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

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

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**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NATIONAL PORT ENTERPRISE**

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THE IMPROVEMENT OF THE PORTS IN
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1 US Dollar = 5.85 Lempiras = 115 Yen

ABREVIATIONS

AHCORENA	Asociación Hondureña de Compañías y Representantes Navieras
AID	Agencia Internacional de Desarrollo
BANTRAL	Banco Central de Honduras
BID	Banco Interamericano de Desarrollo
CAP	Comisión Administradora del Petróleo
CE	Comunidad Europea
CFS	Container Freight Station
CIF	Cost, Insurance and Freight
CNSSP	Comisión Nacional Supervisora de los Servicios Públicos
COCATRAM	Comisión Centroamericana del Transporte Marítimo
COHEP	Consejo Hondureño de la Empresa Privada
CONAMA	Comisión Nacional del Medio Ambiente y Desarrollo
CY	Container Yard
DBT	Dry Bulk Terminal
DGPS	Dirección General de Planificación Sectorial
DIMUNDE	División Municipal de Desarrollo
DWT	Deadweight Tons
EIRR	Economic Internal Rate of Return
ENEE	Empresa Nacional de Energía Eléctrica
ENP	Empresa Nacional Portuaria
FAO	Food and Agriculture Organization
FCL	Full Container Load
FCN	Ferrocarril Nacional de Honduras
FHIS	Fondo Hondureño de Inversión Social
FIDE	Fundación para la Inversión y el Desarrollo de las Exportaciones
FIRR	Financial Internal Rate of Return
FIV	Fondo de Inversiones de Venezuela
FOB	Free on Board
HONDUTEL	Empresa Hondureña de Telecomunicaciones
IDA	International Development Association
IDB	International Development Bank
IHCAFE	Instituto Hondureño del Café
IHMA	Instituto Hondureño de Mercadeo
IHT	Instituto Hondureño de Turismo
INVA	Instituto Nacional de la Vivienda
JICA	Japan International Cooperation Agency
KL	Kilolitro
LEGISMAR	Legislación Marítima
LCL	Less than Container Load

LO-LO	Lift-on Lift-off
LOA	Length Overall
MY	Marsharing Yard
NMM	Nivel Medio del Mar
OCDI	The Overseas Coastal Area Development Institute of Japan
OECE	Overseas Economic Cooperation Fund
OPEC	Organization of Petroleum Export Countries
PIB	Producto Interno Bruto
RIT	Régimen de Importación Temporal
RO-RO	Roll-on Roll-off
SANAA	Servicio Nacional de Acueductos y Alcantarillados
SECOPT	Secretaría de Comunicaciones, Obras Públicas y Transporte
SECPLAN	Secretaría de Planificación, Coordinación y Presupuesto
SFC	Standard Fruit Company
SIECA	Secretaría de Integración Económica Centroamericana
TB	Tonelada Bruta
TBR	Tonelada Bruta Registrada
TCC	Terminal de Contenedores
TEU	Twenty-Foot Equivalent Unit
TRR	Tela Railroad Company
TM	Toneladas Métricas
UNAH	Universidad Nacional Autónoma de Honduras
UNCTAD	United Nations Conference on Trade and Development
ZIP	Zona Industrial de Procesamiento

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

Table of Contents

VOLUME I MAIN REPORT

Introduction

Conclusions and Recommendations

PART I Port Development and Management Strategy

Chapter 1 Forecasting of Port Demand

1. 1	Major Industrial Branches	1
1. 2	Available Socioeconomic Data	9
1. 3	Socioeconomic Frame	11
1. 4	Methodology for Demand Forecast	15
1. 5	Hinterland of Each Port	21
1. 6	Macro Approach to Future Port Demand	24
1. 7	Port Demand at Each Port	28
1. 8	Micro Approach to Future Port Demand for the Port of Cortes	33
1. 9	Cargo-wise Port Demand for the Port of Cortes	53

Chapter 2 Port Sector in Future

2. 1	Basic Direction of Future Port Development	54
2. 2	Expected Roles and Functions of Each Port	55
2. 3	Forecast of Vessel Size	58
2. 4	Evaluation of Current Port Capacities and its Implication	63
2. 5	Required Berths and their Dimensions at Each Port in 2010	68
2. 6	Amount of Investment in Major Facilities by 2010	74
2. 7	Amount of Investment in Cargo Handling Equipment by 2010	80
2. 8	Investment Priority and Related Issues	86
2. 9	Private Sector Investment	88
2.10	Environmental Conservation Strategy in Port Sector	90

Chapter 3 Improvement of Port Activities

3. 1	Outline of the Issue to be Considered	93
3. 2	Measures to Improve Cargo Handling Operation	95
3. 3	Introduction of Computer in Port Activities	96
3. 4	Deployment and Training of Personnel	100
3. 5	ENP's Conducting of Regulatory Functions	101
3. 6	Restructuring the Tariff System	102

Chapter 4 Reformation of Port Sector Management

4. 1	Action Taken toward Reformation	107
4. 2	Observations on the Issues of Reformation	109
4. 3	Certain Issues included in the ENP Scheme	112
4. 4	Private Participation in the Facilities to Be Built	118
4. 5	Issues on Port-related Institutions	120

PART II Urgent Improvement Plans

Chapter 1 Items to be Improved

1. 1	Port Facilities	125
1. 2	Cargo Handling System including Equipment	128
1. 3	Port Operation	130
1. 4	Port Management	131

Chapter 2 Urgent Improvement Plan

2. 1	Criteria for Improvement Plan	133
2. 2	Urgent Improvement Plan	134
2. 3	Another Important Matter	137

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	Basic Procedure for Establishing the Masterplan	141
1. 2	Bottleneck in the Present Port Operation	142
1. 3	Planning Objectives for the Year 2010	145
1. 4	Requisites for the Masterplan	161
1. 5	Alternative of Port Layout	165
1. 6	Stage Plan for the Projects	199
1. 7	Rough Design of Port Facilities	206
1. 8	Implementation Plan	209
1. 9	Cost Estimate	211

Chapter 2 Port Management and Operation

2. 1	Port Management and Operation System	218
2. 2	Container Handling System	218
2. 3	Introduction of Shift System	223
2. 4	Introduction of Computer System for Container Terminal Operation	225
2. 5	Maintenance of Cargo Handling Equipment	227
2. 6	Personnel Training	229

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

Chapter 1 Port of Cortes in 2000

1. 1	Planning Targets for the Short-Term Plan	233
1. 2	Unit Cargo Terminal	235
1. 3	Domestic Terminal and By-pass Road	237
1. 4	Rough Design of Projected Port Facilities	241
1. 5	Implementation Plan	253
1. 6	Cost Estimate	259

Chapter 2 Port Management and Operation

2. 1	Management and Operation of the Projected Terminal	264
2. 2	Pricing	267

Chapter 3 Economic Analysis

3. 1	Purpose of the Economic Analysis	268
3. 2	Methodology of the Economic Analysis	268
3. 3	"Without" case and "With" case	270
3. 4	Prerequisites of the Economic Analysis	276
3. 5	Economic Prices	277
3. 6	Costs of the Project	279
3. 7	Benefits of the Project	281
3. 8	Evaluation and Conclusion	289

Chapter 4 Financial Analysis

4. 1	Purpose of the Financial Analysis	307
4. 2	Methodology of the Financial Analysis	307
4. 3	Prerequisites of the Financial Analysis	309
4. 4	Appraisal of the Project	313
4. 5	Sensitivity Analysis	314
4. 6	Conclusion	314

Chapter 5 Environmental Impact Assessment

5. 1	Qualitative Evaluation of selected Environmental Constituents (CEs)	327
5. 2	Methodologies for EIA	331
5. 3	Environmental Impact on Water Quality	335
5. 4	Other Related Matters	341

Chapter 6 Evaluation of Port of Cortes Short Term Plan

343

VOLUME II APPENDICES

PART I Present Conditions surrounding Honduran Ports

Chapter 1 Overview of the Honduran Port Sector and Related Matters

1. 1	Honduran Ports, their Geographical Aspects	1
1. 2	Socioeconomic Background of the Port Sector	4
1. 3	Policy Thrusts Pertaining to Port Development and Management	7
1. 4	Outline of Free Zone and Similar Arrangements	11

Chapter 2 Present Conditions of Honduran Ports

2. 1	Port Activities	15
2. 2	Transport Network in Honduras	24
2. 3	Port Facilities	28
2. 4	Administration and Operation	33
2. 5	Cargo Handling System	45
2. 6	Outline of Natural Conditions in Honduras	58
2. 7	Natural Conditions of the Port of Cortes	82
2. 8	Present Environmental Situation	114

PART II	Reference	121
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List of Tables and Figures

Volume I

<Part I>

Table 2-1-1	Roles of Each Honduran Port	58
Table 2-3-1	Rate of Vessel Size to Vessel Type	60
Table 2-3-2	Largest Vessels by Vessel Type at Major Honduran Ports in 1992	61
Table 2-3-3	Progress of Container Vessels	61
Table 2-4-1	Calling Vessel Size at the Port of Cortes	64
Table 2-4-2	Calling Vessel Size at the Port of Castilla and San Lorenzo	65
Table 2-4-3	Total Ship Berthing Time at Each Port	66
Table 2-4-4	Recommended Maximum Berth Occupancy	67
Table 2-4-5	Cargo Volume Handled at Each Port	68
Table 2-4-6	Calculated Wharf Length	68
Table 2-5-1	Future Cargo Volume at Each Port in 2010 (Scenario 1)	73
Table 2-5-2	Future Cargo Volume at Each Port in 2010 (Scenario 2)	73
Table 2-5-3	Necessary Berth Length at Each Port	73
Table 2-7-1	Renewal Investment for the Port of Cortes	83
Table 2-7-2	Renewal Investment at the Port of Castilla	84
Table 2-7-3	Renewal Investment at the Port of San Lorenzo	84
Table 2-7-4	Purchase Cost of New Cargo Handling Equipment	85
Table 2-9-1	Private Sector Investment	89
Table 2-10-1	Relationship between Environment Impact Element (Causal Factor) and Constituent of Environment (Affected Factor)	92
Table 4-1-1	Profile of Port Activities in Honduras	107
Table 4-2-1	Responsibility by Port Function	111

<Part II>

Table 1-1-1	Maintenance Budget for Port Facilities in 1993	126
Table 1-1-2	List of the Facilities which should be repaired	127
Table 2-2-1	List of Points of Issue	134
Table 2-2-2	Project List of the Urgent Improvement Plan	136

<Part III>

Table 1-3-1	Targeted Cargo Volume by Packing Type	145
Table 1-3-2	Calling Vessel Size at the Port of Cortes (1992)	146
Table 1-3-3	Yearly Change of Average Ship Size and No. of Ship Calls	148
Table 1-3-4	Objective Vessel Size and Cargo Volume per Vessel (1992)	149
Table 1-3-5	Base Number for Port Planning (1992)	152
Table 1-3-6	Base Number for Port Planning (2010)	153
Table 1-3-7	Base Number for Port Planning (2000)	154

Table 1-3-8	Indices of Unit Cargoes	157
Table 1-3-9	Areal Requirement for Unit Cargoes at Peak Time	158
Table 1-3-10	Traffic Volume by Packing Type (number / hour, ton/year)	160
Table 1-4-1	Break-down of Dry Bulk Cargoes	161
Table 1-4-2	Berth Requirement in Relation to Dry Bulk Cargoes (2010)	162
Table 1-4-3	Berth Requirement in Relation to Dry Bulk Cargoes (2000)	163
Table 1-4-4	Areal Shortage for Unit Cargoes in 2000 and 2010	163
Table 1-5-1	Berth Requirement for Each Case	165
Table 1-5-2	Sensitivity of Dry Bulk Terminal & Unit Terminal	170
Table 1-5-3	Brief Comparison of Each Alternative	173
Table 1-5-4	Merits and Demerits of Two CFS Systems	182
Table 1-5-5	Some Examples of Crane Type Unloader	193
Table 1-5-6	Examples of Pnuematic Type Terminal	195
Table 1-9-1	Basic Labor Cost per Day	214
Table 1-9-2	Unit Cost of Materials	214
Table 1-9-3	Rental Charge of Main Construction Machinery	215
Table 1-9-4	Main Facilities under Master Plan (A1-1, A1-2, A1-3, A2)	216
Table 2-2-1	Comparison of Handling Systems	222

<Part IV>

Table 1-1-1	Planning Target for the Short-Term Plan (2000)	233
Table 1-4-1	Surcharge on the Apron	244
Table 1-4-2	Index of Soil Characteristics	245
Table 1-4-3	Allowable Stresses of Materials	246
Table 1-4-4	Safety Factor	246
Table 1-4-5	Quantity of Main Materials (Net Volume)	251
Table 1-5-1	Facilities to be Constructed	253
Table 1-5-2	Main Construction Materials	255
Table 1-5-3	Working Efficiency	255
Table 1-6-1	Construction Cost for the Short-Term Plan	262
Table 1-6-2	Yearly Investments for Short-Term Plan	263
Table 3-3-1	Berth Conditions	270
Table 3-3-2	Cargo Handling Conditions	270
Table 3-3-3	Berth Conditions	271
Table 3-3-4	Cargo Handling Conditions	271
Table 3-3-5	Estimated Cargo Volume by Packing Type	272
Table 3-3-6	No. of Calling Vessels and Required Berthing Time (Without Case) .	291
Table 3-3-7	No. of Calling Vessels and Required Berthing Time (With Case)	291
Table 3-3-8	Adjusted Number of Calling Vessels and Required Berthing Time (Without Case)	292
Table 3-3-9	Cargo Flow for Other Ports (Without Case)	292
Table 3-3-10	Cargo Flow for Each Ports (Without Case)	293

Table 3-3-11	Cargo Flow for Each Ports (Without Case)	293
Table 3-5-1	Estimation for Conversion Factors	294
Table 3-6-1	Investment Cost in Economic Prices	295
Table 3-6-2	Total Costs in Economic Price	296
Table 3-7-1	Calculation for Waiting Time (Without Case)	297
Table 3-7-2	Calculation for Waiting Time (With Case)	297
Table 3-7-3	Estimation for Cost of Ships	298
Table 3-7-4	Calculation for Saving Ships' Staying Costs (With Case)	299
Table 3-7-5	Saving Interest of Cargo Cost	299
Table 3-7-6	Benefits from Saving of Labor Working Time	300
Table 3-7-7	Inland Transportation Cost for Container (for 20feets Containers)	301
Table 3-7-8	Estimation for Additional Land Transportation	302
Table 3-8-1	Calculation of EIRR for Short Term Plan	303
Table 3-8-2	Calculation of EIRR for Short Term Plan (Case A)	304
Table 3-8-3	Calculation of EIRR for Short Term Plan (Case B)	305
Table 3-8-4	Calculation of EIRR for Short Term Plan (Case C)	306
Table 4-3-1	Calculation of Harbour Dues	315
Table 4-3-2	Calculation of Berthage Charge	315
Table 4-3-3	Calculation of wharfage and Loading/Unloading Charge	315
Table 4-3-4	Number of Container (Export)	316
Table 4-3-5	Number of Container (Import)	316
Table 4-3-6	Calculation of Cargo Handling Charge (Export)	316
Table 4-3-7	Calculation of Cargo Handling Charge (Import)	317
Table 4-3-8	Replacement Investment Schedule	317
Table 4-3-9	Personnel and Administration Costs	318
Table 4-3-10	Maintenance Costs	318
Table 4-4-1	FIRR Calculation	319
Table 4-4-2	FIRR Calculation (Case A)	320
Table 4-4-3	FIRR Calculation (Case B)	321
Table 4-4-4	FIRR Calculation (Case C)	322
Table 4-4-5	Financial Statement [85%: foreign fund (3%), 15%: internal resources]	323
Table 4-4-6	Financial Statement [100%: foreign fund (8%)]	325
Table 5-2-1	Selection of a Suitable Assessment Method	331

<Part I>	
Fig. 2-3-1	Number of Large Container Vessels (more than 8001 GRT) at Honduran Ports 62
Fig. 2-3-2	Average Size of Full Container Vessels on International Routes around Central America 63
<Part II>	
Fig. 2-3-1	Present Traffic Flow in No.5 Terminal 138
Fig. 2-3-2	Improved Traffic Flow in No.5 Terminal 139
<Part III>	
Fig. 1-1-1	Procedure for Masterplan of the Port of Cortes 141
Fig. 1-3-1	Vessel Size of Distribution (Unit Cargo Total) 150
Fig. 1-3-2	Cargo Distribution In, Out (Unit Cargo Total) 150
Fig. 1-3-3	Vessel Size - Cargo Volume Relation (Unit Cargo Total) 151
Fig. 1-5-1	Alternatives 1-1, 1-2, 1-3 for Masterplan (2010) 175
Fig. 1-5-2	Alternative 2 for Masterplan (2010) 177
Fig. 1-5-3	Alternative 1-1 179
Fig. 1-5-4	Alternative 1-2 179
Fig. 1-5-5	Alternative 1-3 179
Fig. 1-5-6	Alternative 2 179
Fig. 1-5-7	Layout Plan of Alternative 1-1 180
Fig. 1-5-8	Layout Plan of Alternative 2 181
Fig. 1-5-9	Shares of Cargoes which go through CFS 184
Fig. 1-5-10	Level Luffing Unloader 191
Fig. 1-5-11	Pneumatic Type Unloader 191
Fig. 1-5-12	Location of Dry Bulk Terminal 194
Fig. 1-6-1	Cargo Volume - Terminal Capacity Relation in All 202
Fig. 1-6-2	Cargo Volume - Terminal Capacity Relation by Terminal Type 203
Fig. 1-6-3	Cargo Volume - Terminal Capacity Relation (in volume term) 204
Fig. 1-6-4	Cargo Volume - Terminal Capacity Relation (General Cargo Group in Cargo Volume Term) 204
Fig. 1-6-5	Cargo Volume - Terminal Capacity (Container, in Cargo Volume Term) 205
Fig. 1-7-1	Unit Cargo Terminal Berth 207
Fig. 1-7-2	Grain Terminal Berth 208
Fig. 1-7-3	Domestic Terminal Berth and Training Wall 208
Fig. 2-2-1	Basic Flow of Container (Import Container) 220
Fig. 2-2-2	Basic Flow of Container (Export Container) 221

<Part IV>

Fig. 1-1-1	Short-term Plan (2000)	.....
Fig. 1-2-1	Layout Plan of Unit Cargo Terminal for Short-term Plan	.....	236
Fig. 1-3-1	Short-term plan (2000)	.....	239
Fig. 1-4-1	Typical Cross Section (Scale 1:400)	.....	248
Fig. 1-5-1	Construction Schedule	.....	258
Fig. 3-2-1	The Procedure of the Economic Analysis	.....	269
Fig. 5-2-1	Method A; Impact Grasping Method	.....	332
Fig. 5-2-2	Method B; Impact Assessment Method	.....	332
Fig. 5-2-3	Method C; General Assessment Method	.....	333
Fig. 5-2-4	Method D; Comprehensive Assessment Method	.....	334
Fig. 5-3-1	Water Sampling Points	.....	336
Fig. 5-3-2	Settling Velocity - Diameter of Sand Pontile	.....	337

Volume II

<Part I>

Table 1-2-1	Volume of Foreign Trade by Mode	.....	4
Table 1-3-1	Jurisdiction over Public Utility	.....	7
Table 2-6-1	Ratio of Wave Height and Period in the Caribbean Sea throughout the Year	.....	64
Table 2-6-2	Wind Direction and Velocity (m/sec)	.....	67
Table 2-6-3	Maximum Monthly Temperature	.....	69
Table 2-6-4	Precipitation at Ports on the Caribbean Sea	.....	69
Table 2-6-5	Humidity of Ports on the Caribbean Sea	.....	70
Table 2-6-6	Tropical Cyclone Classification Criteria	.....	70
Table 2-6-7	Total and Average Number of Tropical Cyclones Occurring in Each Month	.....	71
Table 2-6-8	Maximum Wind Velocity of Hurricanes	.....	72
Table 2-6-9	Maximum 24-Hour Precipitation from 1950 to 1990	.....	73
Table 2-6-10	Wave Record in the Gulf of Fonseca	.....	78
Table 2-6-11	Wave Record	.....	80
Table 2-6-12	Monthly Wind Velocity	.....	80
Table 2-7-1	Currents at the Port of Cortes	.....	83
Table 2-7-2	Estimated Wave Height at the Port of Cortes	.....	84
Table 2-7-3	Wave Height ($H_{1/10}$) after Wave Diffraction	.....	88
Table 2-7-4	Wind Velocity at the Port of Cortes	.....	93
Table 2-7-5	Wind Speed (m/sec) at Cortes Station, 1992	.....	93
Table 2-7-6	Monthly High (Low) Temperature and Monthly Highest (Lowest) Temperature	.....	94
Table 2-7-7	Monthly Precipitation and Maximum 24-Hour Precipitation	.....	95

Table 2-8-1	Results of Water Quality Test 1 (Sep. 2, '92)	115
Table 2-8-2	Results of Water Quality Test 1 (Jan. 19, '93)	116
Table 2-8-3	Japanese Standards for Water Quality (sea area)	116
Table 2-8-4	Results of Coliform Test	117
Table 2-8-5	Results of Water Sampling Tests	118

<Part II>

Table 1-1-1	Export Statistics at Port ('82 - '92)	121
Table 1-1-2	Import Statistics at Port ('82 - '92)	122
Table 1-1-3	Agriculture and Forestry Production	123
Table 1-1-4	Cultivated Area of Agriculture and Forestry	124
Table 1-1-5	Marine Production	125
Table 1-1-6(a)	Export of Marine Products	125
Table 1-1-6(b)	Export of Shrimp at Port of Cortes	125
Table 1-1-7	Mining and Industrial Products	126
Table 1-1-8	Consumption of Petroleum	128
Table 1-1-9	Electric Consumption	128
Table 1-1-10	Capacity of Generation Plants	129
Table 1-1-11	Consumption of Petroleum for Generation	131
Table 1-1-12	Vehicle Statistics	132
Table 1-1-13	Per capita Consumption of Food Products for Residential Area in 1978	133
Table 1-1-14	Export Statistics ('82 - '92)	134
Table 1-2-1	Population Forecast of Honduras	135
Table 1-2-2	Forecast of Population for States and Cities	136
Table 1-2-3	Labor Force by Economic Sectors of Honduras	137
Table 1-2-4	GDP by Economic Sector (Current Price)	138
Table 1-2-5	GDP by Economic Sector (Constant Price 78)	139
Table 1-3-1	Estimation of GDP	140
Table 1-5-1	Hinterland of Each International Trade Port	148
Table 1-6-1	Macro Estimation for Import Cargo Volume through the Ports	149
Table 1-6-2	Estimated Import Volume of Petroleum through the Port	150
Table 1-6-3	Macro Estimation for Export Cargo Volume through the Ports	151
Table 1-7-1	Macro Forecast of Import Cargo Volume at Ports (Scenario 1)	154
Table 1-7-2	Macro Forecast of Import Cargo Volume at Ports (Scenario 2)	155
Table 1-7-3	Macro Forecast of Port Cargo Volume for Export (Scenario 1)	156
Table 1-7-4	Macro Forecast of Port Cargo Volume for Export (Scenario 2)	157
Table 1-7-5	Estimation of Domestic Cargo Volume at Each Port	158
Table 1-7-6	Macro Forecast of Port Cargo Volume (Scenario 1)	159
Table 1-7-7	Macro Forecast of Port Cargo Volume (Scenario 2)	160
Table 1-7-8	Macro Forecast of Cargo Volume by Package Type (Scenario 1)	161
Table 1-7-9	Macro Forecast of Cargo Volume by Package Type (Scenario 2)	162

Table 1-8-1	Estimation for Import Volume of Wheat	164
Table 1-8-2	Estimation for Import Other Foodstuffs through the Port of Cortes	165
Table 1-8-3	Estimation for Import Fertilizer Volume	166
Table 1-8-4	Estimation for Import Volume of Iron & Steel	167
Table 1-8-5	Estimation for Import Volume of Machine & Transport Equipment	168
Table 1-8-6	Estimation for Import Volume of Chemicals	169
Table 1-8-7	Forecast Number of Cars by Logistic Curve	170
Table 1-8-8	Estimation for Import Petroleum	171
Table 1-8-9	Estimation for Import Volume	172
Table 1-8-10	Estimation for Banana Production, Domestic Consumption and Export Volume	173
Table 1-8-11	Estimation for Production and Export Volume of Coffee	174
Table 1-8-12	Estimation for Production and Export Volume of Melon	175
Table 1-8-13	Estimation for Export Volume of Timber	176
Table 1-8-14	Estimation for Export Volume of Pineapple	177
Table 1-8-15	Estimation for Production and Export Volume of African Palm Oil	178
Table 1-8-16	Estimation for Export Volume of Sugar	179
Table 1-8-17	Estimation for Export Volume of Molasses	180
Table 1-8-18	Estimation for Production, Consumption and Export of Cement	181
Table 1-8-19	Estimation for Export Volume of Minerals	183
Table 1-8-20	Export Volume of Others	184
Table 1-9-1	Estimation for Import & Export Container Volume	196
Table 1-9-2	Estimation for Cargo Volume by Packing Type through the Port of Cortes	197
Table 1-9-3	Estimation for Import Cargo Volume by Packing Type through the Port of Cortes	198
Table 1-9-4	Estimation for Export Cargo Volume by Packing Type through the Port of Cortes	199
Table 2-1-1	Yearly Change of Cargo Volume at Honduran Ports	226
Table 2-1-2	Volume of each Cargo by Ports (1992)	227
Table 2-1-3	Rate of Empty Container	232
Table 2-1-4	Unit Weight Per TEU (Port of Cortes)	233
Table 2-1-5	Unit Weight Per TEU (Port of Castilla)	233
Table 2-1-6	Unit Weight Per TEU (Port of San Lorenzo)	233
Table 2-1-7	Average Cargo Volume Handled per Ship	239
Table 2-1-8	Number of Ocean Going Vessels Calling at Major Honduran Ports ..	240
Table 2-1-9	Estimated Domestic Cargo Volume	244
Table 2-2-1	Outline of Railroads in Honduras	246
Table 2-2-2	Distances between Major Ports and Major Cities	246

Table 2-2-3	International Container Shipping Routes around Honduras in 1990 ..	247
Table 2-2-4	Major Next Port and Previous Port of Calling Vessels at the Honduran Ports in the Caribbean Sea	249
Table 2-2-5	Major Next Port and Previous Port of Calling Vessels at the Honduras Ports in the Pacific Ocean	249
Table 2-3-1	Physical Characteristics of Port Cortes	250
Table 2-3-2	Physical Characteristics Building in Port Cortes	251
Table 2-3-3	Physical Characteristics of Port Facilities	252
Table 2-4-1	Personnel of ENP	265
Table 2-4-2	Accidents in ENP	265
Table 2-4-3	Income Statement of ENP	266
Table 2-4-4	Operating Expense and Administrative Expense	267
Table 2-4-5	Budget and Accounts of ENP	267
Table 2-4-6	Port Tariff	268
Table 2-4-7	Port Operating Hours by Each Function	270
Table 2-5-1	Cargo Handling Equipment by Port (1993)	271
Table 2-5-2	Condition of Container Handling Equipment at the Port of Cortes ...	272
Table 2-5-3	Condition of Cargo Handling Equipment at the Port of Castilla	275
Table 2-5-4	Condition of Cargo Handling Equipment at the Port of San Lorenzo	276
Table 2-5-5	Maintenance Workers for cargo Handling Equipment	277
Table 2-5-6	Warehouse by Port at ENP	277
Table 2-5-7	Open Storage Area and Tanks	279
Table 2-5-8	Number of Operator in ENP (1993)	284
Table 2-5-9	Average Turn Around Time for Each Vessel Type in the Port of Cortes	284
Table 2-5-10	Average Cargo Handling Volume for Each Vessel Type	284
Table 2-5-11	Productivity of Container Handling at the Port of Cortes	285

<Part I>

Fig. 1-1-1	Geographical Distribution of Major Ports	3
Fig. 2-5-9	Present General Cargo Flow at the Port of Cortes	51
Fig. 2-5-10	Present Liquid Bulk Cargo Flow at the Port of Cortes	52
Fig. 2-5-11	Present Dry Bulk Cargo Flow at the Port of Cortes	53
Fig. 2-5-12	Present Container Cargo Flow at the Port of Cortes	54
Fig. 2-6-1	Geologic Map of Caribbean Sea	59
Fig. 2-6-2	Tide Ranges in Caribbean Sea	60
Fig. 2-6-3	Typical Tide Curve in the Caribbean Sea	61
Fig. 2-6-4	Ocean Currents in the Caribbean Sea	63
Fig. 2-6-5	Observation Points of the Wave Height and its Period	65
Fig. 2-6-6	Wave Height vs Wave period Diagram (Occurrence Percentage is more than 3%)	65

Fig. 2-6-7	Observation Points of the Wind Direction and Velocity	66
Fig. 2-6-8	Track of Tropical Cyclones/Hurricanes (1886-1986)	71
Fig. 2-6-9	Track of Hurricane Fifi (18-19 Sept. 1974)	72
Fig. 2-6-10	Structure and Boundaries of the Caribbean Plate	74
Fig. 2-6-11	Location of Port of San Lorenzo	75
Fig. 2-6-12	Geologic Map of Pacific	77
Fig. 2-6-13	Locations of Current Observation Gulf of Fonseca	79
Fig. 2-7-1	Frequency of the Tidal Range	82
Fig. 2-7-2	Study Flow for Design Wave Height in Stormy Conditions	85
Fig. 2-7-3	Relation between Maximum Wind Velocity and Ceuter Pouion of Hurricanes' Vorter	86
Fig. 2-7-4	Field of Maximum Wind Velocity, Exceeded 35 m/s within Radius 100 km of Hurricane	87
Fig. 2-7-5	Wave Refraction and Diffraction	89
Fig. 2-7-6	Change Shorelines of the Punta Caballos	91
Fig. 2-7-7	Total Volume of Dredged Material	92
Fig. 2-7-8	Location Map of Bathymetric Survey	97
Fig. 2-7-9	Bathymetric Survey Map	98
Fig. 2-7-10	Location Map of Boring	100
Fig. 2-7-11	Soil Properties of B-1	103
Fig. 2-7-12	Soil Properties of B-2	105
Fig. 2-7-13	Soil Properties of B-3	107
Fig. 2-7-14	Comparison of the N-values	109
Fig. 2-7-15	Geological Cross Section	109
Fig. 2-7-16(a)	Ranges of Grain Size Accumulation Curves for Liquefiable Soils ...	112
Fig. 2-7-16(b)	Comparison of Grain Size	112
Fig. 2-7-17(a)	Limit of No Liquefaction	113
Fig. 2-7-17(b)	Comparison of N-value	113

<Part II>

Fig. 1-1-1	Volume of Export Commodities	130
Fig. 1-1-2	Volume of Import Commodities	130
Fig. 1-1-3	Consumption of Petroleum	131
Fig. 1-3-1	Population Forecast	141
Fig. 1-3-2	Population Forecast	141
Fig. 1-3-3	GDP(Constant price 78)	142
Fig. 1-3-4	Per Capita GDP by Scenario 1 (Constant 78)	142
Fig. 1-3-5	Total GDP	143
Fig. 1-3-6	Per Capita GDP	143
Fig. 1-5-1	Transportation Network in Honduras	144
Fig. 1-5-2	Transportation Network Model in 2000	145
Fig. 1-5-3	Transportation Network Model in 2010	146

Fig. 1-5-4	Geographical Hinterland for Port of Cortes, Port of Castilla and San Lorenzo	147
Fig. 1-6-1	Estimation for Import Cargo Volume	152
Fig. 1-6-2	Estimation for Import Petroleum by GDP	152
Fig. 1-6-3	Estimation for Export Cargo Volume	153
Fig. 1-7-1	Export Cargo Volume at Each Port	163
Fig. 1-7-2	Import Cargo Volume at Each Port	163
Fig. 1-8-1	Estimation for Import Wheat	182
Fig. 1-8-2	Estimation for Import Fertilizer	182
Fig. 1-8-3	Estimation for Import Iron & Steel	185
Fig. 1-8-4	Estimation for Import Machine	185
Fig. 1-8-5	Estimation for Import Volume of Chemicals	186
Fig. 1-8-6	Estimation for Import Volume of Chemicals at Cortes	186
Fig. 1-8-7	Estimation for Number of Cars	187
Fig. 1-8-8	Estimation for Import Volume of Gasoline	187
Fig. 1-8-9	Estimation for Import Petroleum Except Gas.	188
Fig. 1-8-10	Estimation for Import Volume of Other at Cortes	188
Fig. 1-8-11	Estimation for Production of Banana	189
Fig. 1-8-12	Estimation for Production of Coffee	189
Fig. 1-8-13	Estimation for Export Volume of Coffee	190
Fig. 1-8-14	Estimation for Production & Export of Melon	190
Fig. 1-8-15	Estimation for Production Volume of Timber	191
Fig. 1-8-16	Estimation for Export Volume of Timber	191
Fig. 1-8-17	Estimation for Export Volume of Timber at Cortes	192
Fig. 1-8-18	Estimation for Production of Pineapple	192
Fig. 1-8-19	Estimation for Export Volume of Cement	193
Fig. 1-8-20	Estimation for Production & Export of Minerals	193
Fig. 1-8-21	Estimation for Export Volume of Others	194
Fig. 1-8-22	Estimation for Import Cargo Volume at Cortes	194
Fig. 1-8-23	Estimation for Export Cargo Volume at Cortes	195
Fig. 1-4-1	Distribution of Zona Libre and Other Similar Zones	225
Fig. 2-1-1	Yearly Change of Port Cargoes (All Ports)	228
Fig. 2-1-2	Container/RO-RO Cargoes, Port of Cortes	229
Fig. 2-1-3	Rate of Container Cargo, Port of Cortes (Export)	229
Fig. 2-1-4	Rate of Container Cargo, Port of Cortes (Import)	229
Fig. 2-1-5	Container/RO-RO Cargoes, Port of Castilla	230
Fig. 2-1-6	Rate of Container Cargo, Port of Castilla (Export)	230
Fig. 2-1-7	Rate of Container Cargo, Port of Castilla (Import)	230
Fig. 2-1-8	Container/RO-RO Cargoes, Port of San Lorenzo	231
Fig. 2-1-9	Rate of Container Cargo, Port of San Lorenzo (Export)	231
Fig. 2-1-10	Rate of Container Cargo, Port of San Lorenzo (Import)	231
Fig. 2-1-11	Yearly Change, Number of Calling Ships	234

Fig. 2-1-12	Yearly Change, Calling Ship by Type (Cortes)	235
Fig. 2-1-13	Calling Vessel Size, Reefer (all)(Cortes)	235
Fig. 2-1-14	Calling Vessel Size, Container (Cortes)	236
Fig. 2-1-15	Calling Ship Size, RO-RO Vessel (Cortes)	236
Fig. 2-1-16	Calling Vessel Size, Conventional Vessel (Cortes)	237
Fig. 2-1-17	Calling Vessel Size, Solid Bulk (Cortes)	237
Fig. 2-1-18	Calling Vessel Size, Oil Tanker (Cortes)	238
Fig. 2-1-19	Average Cargo Volume per Ship (Cortes)	239
Fig. 2-1-20	Number of Ocean Going Vessels at Major Honduras Ports (except Cortes)	240
Fig. 2-1-21	Number of Ocean Going Vessels by Length at Tela & La Ceiba in 1992	241
Fig. 2-1-22	Number of Ocean Going Vessels by Size at Tela and La Ceiba in 1992	241
Fig. 2-1-23	Number of Calling Vessels by Type at the Port of Castilla	242
Fig. 2-1-24	Number of Ocean Going Vessels by Size at the Port of Castilla	242
Fig. 2-1-25	Number of Calling Container Vessels by Size at the Port of Castilla	243
Fig. 2-1-26	Number of Ocean Going Vessels at the Port of San Lorenzo	243
Fig. 2-1-27	Number of Domestic Trade Ships	244
Fig. 2-2-1	Land Transport Network with Major Cities	245
Fig. 2-2-2	Image of the International Container Routes Around Central America	248
Fig. 2-3-1	Plan of Port Cortes	253
Fig. 2-3-2	Typical Cross Section of Wharf No.5	255
Fig. 2-3-3	Plan of Port Tela	256
Fig. 2-3-4	Plan of Port La Ceiba	257
Fig. 2-3-5	Plan of New Port La Ceiba	258
Fig. 2-3-6	Plan of Port Castilla	259
Fig. 2-3-7	Plan of Port San Lorenzo	260
Fig. 2-3-8	Plan of Port Amapala	261
Fig. 2-3-9	Roatan Island	262
Fig. 2-4-1	Organization of ENP	263
Fig. 2-4-2	Organization of Superintendent of Puerto Cortes - Tela	264
Fig. 2-4-3	Operating and Administrative Expense	270
Fig. 2-4-4	Expense and Number of Personnel and Cargo Volume	270
Fig. 2-5-1	Relation between Age of Crane and Working Hour	273
Fig. 2-5-2	Relation of Crane Working Hour and Direct Maintenance Cost	273
Fig. 2-5-3	Relation between Age of Forklifts and Working Hour	274
Fig. 2-5-4	Relation of Forklifts Working Hour and Direct Maintenance Cost	274
Fig. 2-5-5	Warehouses at the Port of Cortes	278
Fig. 2-5-6	Yards at the Port of Cortes	280

Fig. 2-5-7	Plan of Container Yard	281
Fig. 2-5-8	Warehouses and Yards at the Port of San Lorenzo	283
Fig. 2-8-1	Coliform Test Points	286
Fig. 2-8-2	Water Sampling Points	287

PART I

Present Conditions Surrounding
Honduran Ports

Chapter 1 Overview of the Honduran Port Sector and Related Matters

1.1 Honduran ports, their Geographical Aspects

1. Honduras is located in Central America and has a land area of 112,088 square kilometers. The population counts slightly more than five (5) million and population density is 39.6 inhabitants per square kilometer. The climate of Honduras is characterized by the tropical sun and seasonal heavy rain from June to October. The national land is mountainous. Mountains occupy 65% of the total land area. The north region of the Sierra Madre Mountains is characterized by plenty of rain and fertile land. On the contrary, the south region has rather little precipitation.

2. In terms of international connection, Honduras borders Nicaragua on the east and south east end, El Salvador to the south west and Guatemala to the west. Through the Ocean, Honduras has many more connections with other countries. Through the Caribbean Sea, Honduras has connections with many Caribbean countries, including the Gulf coast of the United States and Mexico. Although the coast-line is rather short, Honduras has a big advantage of having access to the countries situated on the Pacific rim, including the rapidly developing South East and East Asian countries.

3. In the north region, especially in Sula Vally and Aguan Vally, large scale fruit plantations have been developed. The products from these area, namely bananas, palm oils and pineapples are the main exports of Honduras. The dry weather in the south region is suitable for melon and water-melon.

4. The coast-line counts some 650 km on the Caribbean side and 65 km on the Pacific side. The coastal area from the border of Guatemala to Trujillo is well developed. In this region, many free zones and industrial parks have started or are about to start operations. They are comprised mostly of light industry such as apparels, textiles and furniture. There is a group of islands in the Caribbean Sea called the Bay Islands. Major features are Utila, Roatan and Guanaja, from west to east. They are famous for their coral reef and beautiful scenery which attract many tourists from around the world. From Trujillo all the way to the Nicaraguan border, population is sparse and natural conditions and its ancient beauty are still preserved. Honduran Pacific coast constitutes a part of Fonseca Bay into which lots of rivers flow and the bay forms a large scale mangrove tree ecosystem.

5. Along the coast of Honduras, primitive fishing has been taking place. Recently, efforts have been made to modernize the industry. Along the Fonseca Bay, shrimp breeding has started and has reached the export stage. On the Caribbean coast, technical aids from foreign countries are being introduced to modernize the industry.

6. Honduran ports are distributed nationwide under the said situation. Along the Caribbean coast, there are four major ports. From the west, they are the ports of Cortes, Tela, La Ceiba and Castilla. There are some other minor ports along the coast from Trujillo to the Nicaraguan border. They bear functions of regional importance. The port of Lempira is the most important one in this regard. On the Pacific coast, there is, practically speaking, one (1) port, San Lorenzo. There is another port on Tigre Island named the port of Amapala which has only limited importance in terms of hinterland. On the Bay Islands, there are several ports which are privately owned and operated. Those ports mainly serve for the domestic transportation to the main land with supplement role of international trade to USA and other destinations.

7. Port of Cortes is the biggest port in Honduras. The port is situated on the major transport trunk line in Honduras which connects Tegucigalpa and San Pedro Sula. The volume of cargo handled at the port represents more than 70% of all the cargo volume handled in Honduran ports. The headquarters of ENP is situated inside the port of Cortes. The ports of Castilla and San Lorenzo are modern ports and serve for international trade. The ports together with the port of Cortes formulate the major sea gates in Honduras. The ports of Tela and La Ceiba are used mainly for domestic transport, although at Tela, Petro Tela imports a considerably large volume of oil products from Mexico and Venezuela. La Ceiba is one of the three core ports for domestic trade. The other two are ports of Cortes and Castilla.

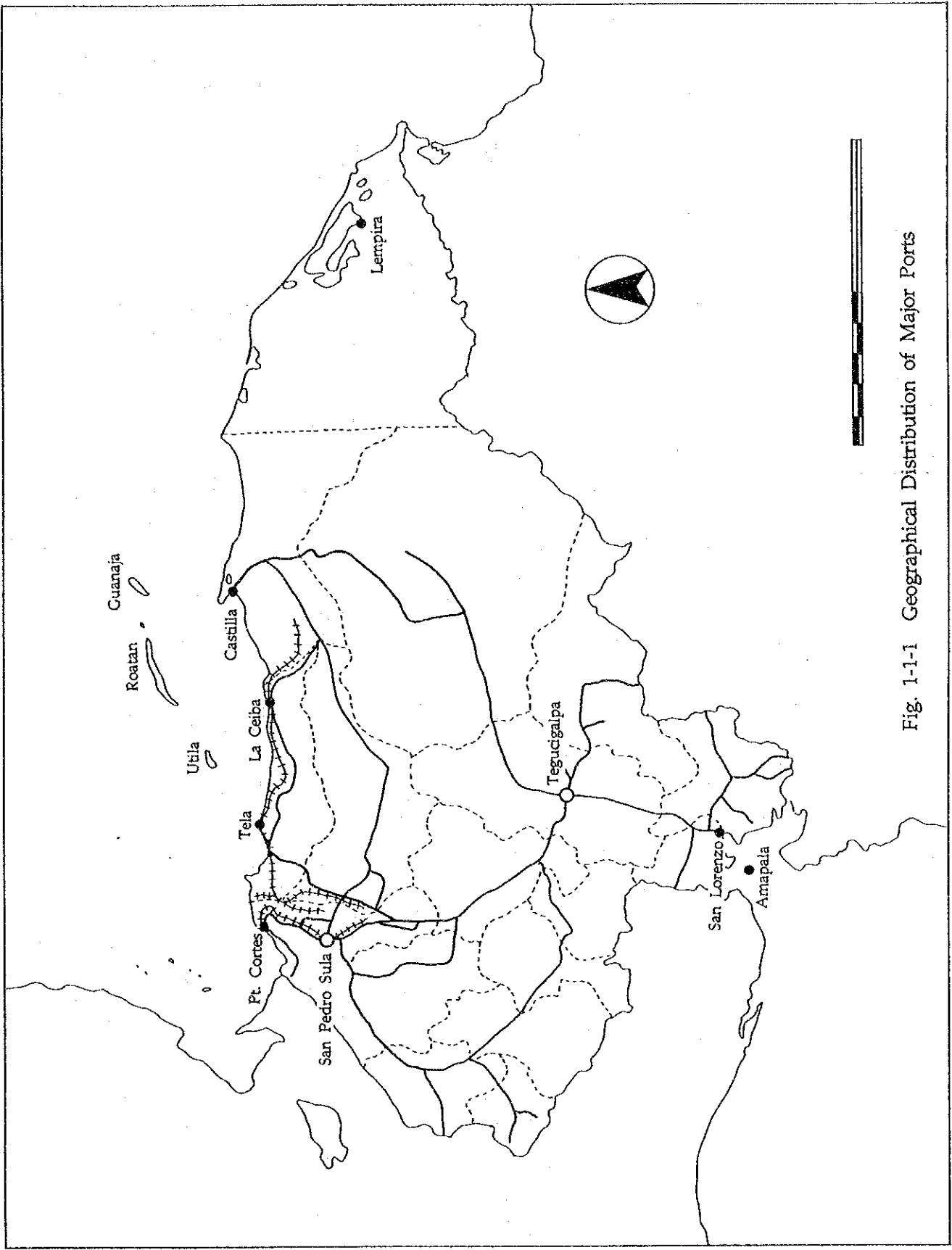


Fig. 1-1-1 Geographical Distribution of Major Ports

1.2 Socioeconomic Background of the Port Sector

8. Although ports have a common function throughout the world, that is, connecting water transport to land transport, or vice versa, the main features vary country by country, or more precisely port by port according to the nature of trade which a port is preponderantly engaging. Generally speaking, future course of port development is dictated by such features.

9. The most significant feature of Honduran ports is that the ports have intensified their activities mainly in regards to overseas cargo trade. Although it is common throughout the world that ports primarily serve for export and/or import trade, this aspect is more remarkable in Honduras.

10. Table 1-2-1 shows modal split of the foreign trade (except specific cargo shape) in terms of volume. In 1991, 90% of import cargo and 96% of export cargo were passing through Honduran sea ports. These figures are stable year by year with small change. Presumably, the roads connecting the northern part of Nicaragua and Honduras are in bad condition and the significant role of sea trade will continue in the future.

Table 1-2-1 Volume of Foreign Trade by Mode

Unit: Thousand lempiras

	1990	%	1991	%	1992 Jan.-Aug.	%
Import						
Sea	1,309.8	91.4	1,457.9	89.8	766.8	80.5
Air & Post	13.7	0.9	15.2	0.9	105.8	11.4
Land	110.0	7.7	150.5	9.3	80.0	8.4
Total	1,433.5	-	1,623.5	-	952.6	-
Export						
Sea	1,951.4	92.1	2,511.3	95.6	1,161.9	91.7
Air	68.8	3.2	13.1	0.5	11.9	0.9
Land	98.5	4.7	103.5	3.9	93.7	7.4
Total	2,188.6	-	2,627.9	-	1,267.5	-

Source: SECPLAN

11. One of the major medium-term agenda items to overcome the recent predicament of Honduras is to promote economic growth based upon a rapid increase of export products in which the country is competitive, such as banana, coffee, shrimp, timber. Port functions to strengthen the export competitiveness or to constrain the export growth depending upon its capacity and behavior.

12. Congestion in port, relatively high level of port dues and charges, inefficient cargo handling, cumbersome clearance procedures, and inadequate access to port area; all these things impede export promotion. Comparing the performance of one port with another is very difficult, however, each port operator with assistance of relevant organizations should work to improve and raise the quality of service it provides.

13. For many years, technology concerning maritime transport has dramatically progressed and, accordingly the ocean trade pattern has been changed. Particularly, following the rapid growth of intermodal transport by container, numbers of calling ports of trunk route have decreased and the outport has turned into a spoke of the hub port. Since port facilities and equipment as well as prosperity of the port and of its hinterland town are to some extent different in hub and spoke ports and they also vary according to the feature of trade, ports are competing to attract as many customers as possible, partly due to national prestige.

14. For the moment, the Honduran ports do not serve a great udiue tourists from abroad despite their favorable location in the Caribbean Sea. Only a Russian cruiser from Miami calls the Port of Cortes once a week and stays 24 hours. However, the country is rich in tourist resources, and the present government is trying to encourage tourism which would surely contribute to the generation of the foreign currency and to job creation.

15. As there are no statistics on domestic maritime transport, accurate status of cabotage both in terms of modal split of domestic cargo transport and share in ports' throughput are not known, however, it is the team's impression that cabotage, particularly those serving islands along the Caribbean coast and the isolated swamps of eastern part such as Lempira are active. And these vessels, although they are small crafts --100 GRT. at largest-- are carrying items ranging from electric devices to foodstuffs and drinking water to these areas. The team observed in the Port of Cortes ten small freighters bound for the areas even during its short visit to the port.1/

1/ A LEGISMAR report notes that cabotage of the country mainly plying from Puerto Cortes and La Ceiba to las Islas de la Bahia and la Mosquitia region is carrying about 50,000 tons cargo annually (Also see Table 1-2-9).

16. The second significant feature of the Honduran ports is its "Gulliver in the Liliput" aspect. The Port of Cortes handles an overwhelmingly large share of nationwide port cargo while other's throughput is less than small. In 1991, 77.8% of total cargo, 75% of total containers and 77.7% of vessels calling Honduras are served in the Port of Cortes. This is understandable because the Port is virtually the single gate of Tegucigalpa/San Pedro Sula/Cortes Corridor, where populations and industries of the country are centered. Population of six (6) departments in the Corridor^{2/} is some 2,325 thousand, 52% of total population (1988 Census). Castilla and San Lorenzo are furnished with fairly modernized facilities, but they are said to be under-utilized. This aspect should be taken into account when exploring future development and functional allocation of each port.

^{2/} Department of Atlantida, Comayagua, Cortes, Francisco Morazan, Islas de la Bahia and Yoro.

1.3 Policy Thrusts Pertaining to Port Development and Management

17. The present government has adopted a stabilization and structural adjustment program since 1990 to overcome the country's economic crisis and to set a basis for future economic development. To achieve the program, various measures have been formed and implemented. Here, some of the policy thrusts which may affect future port development and management will be briefly described, while the detailed consideration vis-a-vis port matters will be dealt with at later stage.

1.3.1 Participation of Private Sector

18. The major objective of the stabilization and adjustment policies is to curb financial and trade imbalances and to produce a sound basis for stimulating private investment and obtaining market opportunities and competitiveness. The active participation of the private sector is deemed to support these objectives, because the private sector is assumed to perform more efficiently and more purposefully and is expected to be the driving force in vitalizing the economy.

19. In Honduras, as in many countries, public utilities are governed by various kinds of entities. Table 1-3-1 shows this aspect; as can be seen, however, parastatal management is predominant.

Table 1-3-1 Jurisdiction over Public Utility

Governing Body	Central		Local	
	Government	Parastatal	Government	Private
Road	x			
Port		x		
Railways		x		
Electricity		x		
Gas				x*
Water Supply		x		
Waste Disposal			x	
Airport	x			
Airlines				x
Telecommunication		x		
Post	x			

*Supply by gas cylinder only.

Source: ENP

20. Some of the above public utilities which have been run by the public sector are planned to be transferred to the private sector, reducing governmental agencies' role in some fields. Telecommunication, which is administrated by HONDUTEL, a parastatal entity, is now on the bidding blocks, and in the transport sector, some portion of road maintenance, and of port and air-port operation is planned to be transferred to private firms.

1.3.2 Strengthening of Local Governments

21. Government centralization and paternalism is said to have limited the local governments' capability to deal with economic, administrative and legal problems of the community. In October, 1990, the Honduran government enacted the Law of Municipality to encourage local governments to participate in development of the region, to shift a part of responsibilities now undertaken by agencies of the central government to local authorities, and to promote the democratic process providing heads of local government with election autonomy.

22. The Law of Municipalities delegates independent powers to the municipal corporations which are the council system of the municipality and the members are elected by the residents' free voting. The law also delegates various responsibilities to municipalities, among others, for drafting plans of the region's development, preservation of the natural resources within their jurisdiction and regulating economic and social activities.

23. The Law provides Municipalities with the power to receive a loans from domestic and foreign financial institutions under the public credit law. However, to prevent over-borrowing, municipalities cannot make a loan or issue a bond in which repayment exceeds 20% of the municipality's ordinary income.

24. The government also intends to support local governments in the process of improving their organizational structures to improve their service, and to provide them with planning, implementation and management programs.

1.3.3 Infrastructure Policy

25. Given the need to sustain export growth, the government has proposed many projects to improve infrastructure, including transport infrastructure in particular. However, due to a worsening foreign currency position and global recession, the level of public investment has been declining, thus the implementation of projects has been delayed, particularly those financed by foreign resources.

26. In recent years' investment programs, expenditure for on-going projects has prevailed, while only a small amount has been allocated to new projects, mainly small works financed with domestic funds. The government is well aware of the situation, and SECPLAN started to reorganize and strengthen planning and project management of public investment. Also, it announced that a mid-term public investment plan will be developed corresponding with the economic framework.

27. Despite the above general circumstances, some projects which affect future port management are in progress. Highway construction from San Pedro Sula to Puerto Cortes and Tela (El Progreso) will be completed within this year. A port for cabotage vessels off La Ceiba is also under construction.

1.3.4 Environmental Issue

28. Honduras is one of the most geologically and biologically diverse countries in the world. The territory hosts remarkable samples of the most important ecological resources; ie. coral reefs of Islas de la Bahia, which ranked third in the world due to their extension and beauty, the Platano River biosphere declared by UNESCO as a patrimony of humanity, and mangrove trees eco-system of Bahia de Fonseca which ranks fourth in the world for its extension and biological diversity.

29. Nevertheless, recent analyses revealed that environmental resources are rapidly deteriorating, which lowers the sustained improvements in terms of the national economy and the living standard to an impermissible level. A Honduran government's paper enumerates examples of deterioration of environmental resources; soil deterioration, deforestation, water quality and quantity reduction, deteriorated coastal resources, wildlife extermination, etc.

30. The wide-spread environmental decay is caused by complex human activities to which many interest interrelate. Reflecting this, environmental legislation is dispersed among many laws, regulations and ordinances, eg. 37 laws and 420 articles relate to the environment. The institutional structures, both private and public are also complicated, and each organization is only partially responsible for environmental issues.

31. Given these circumstances, a strategy to streamline the complex instruments and to submit a concrete guideline of relevant areas in a coordinated manner is needed for formulating a sustainable development process compatible with environmental protection.

32. Honduran government has already been taking action toward the above goals, which, among others, include:

- July 1990, Comision Nacional del Medio Ambiente y Desarrollo (CONAMA) is

created as a permanent institution to counsel and promote formulation and application of national policies for adequate control of natural resources and protection and management of environmental quality. The commission, headed by the President of the country, is formed by the SECPLAN, the Ministry of Natural Resources, the Head of Armed Forces, the Consejo Hondureno de la Empresa Privada (COHEP), a representative of workers and farmers organizations, a representative of higher educational organizations and a representative of non-governmental organizations. All public sector institutions collaborate with the commission.

- To obtain and manage the funds of both domestic and national resources utilized for environmental protection, the government promoted the establishment of the Honduran Environment and Development Foundation (Fundacion VIDA), which is a non-governmental and non-profit making entity.

- The General Law for the Environment was submitted to the National Congress. The Bill contains the juridical regulations for the control of the management of environment and the definition for its instrumental framework.

1.4 Outline of Free Zone and Similar Arrangements

33. Honduran government has been making efforts to promote exportation of Honduran products. The major export has long been traditional Honduran products such as banana, coffee, minerals, shrimp, and fish. Recently, from about five (5) years ago (1987), Honduran government has tried to diversify its export goods. The effort to promote non-traditional goods exportation is supported by various promotional set-ups. Among these, Zona Libre (Free Trade Zone), ZIP (Zona Industrial de Procesamiento; Industrial Process Zone) and RIT (Regimen de Importacion Temporal; Temporary Importation Regime) should be regarded as the most important measures. Practically, the difference among Zona Libre, ZIP and RIT is very small. Fig.1-4-1 shows the distribution of Zona Libres (the arabic numbers), ZIPs (capital letters) and RITs (small letters). Some ZIPs are located inside or very close to the Zone Libre of Choloma and do not appear on the figure.

34. Curently, six (6) Zona Libres are designated. They are; Puerto Cortes, La Ceiba, Omoa, Choloma, Tela and Amapala. While overall statistics on Zona Libres are not available, the following analyses are based on interviews with personnel of relevant organizations, site observations and the limited data.

35. All Zona Libres are under the jurisdiction of ENP although the lands of the Zona Libres except the port of Cortes and La Ceiba do not belong to ENP. The Zona Libre of the port of Cortes has 14 factories, each of which has an area of about 1,875 sq.m, a large warehouse of 7,500 sq.m and two small buildings, and still have 47,000 sqm open area for future construction. As of 1992, 21 enterprises are conducting business, of which seven (7) are American companies, six (6) Korean, six (6) Honduran, one Singaporean and one from Hong Kong. Major products are garments and textiles with a small volume of other items. In 1992, total volume of export is some 21 thousand tons and import is 19 thousand tons. The number of employees in the Zone sums up to about 13,000. One of the problems accompanying the Zona Libre operation is that the region can not provide sufficient accommodations for the workers. This might hinder the future growth of Zona Libre in the port of Cortes.

36. Zona Libre in La Ceiba consists of three areas and each area is occupied by a different enterprise. One of the Zona Libres in La Ceiba which the Study Team visited is an American garment company. The factory occupies two (2) buildings, 2,200 sq.m each, and employs some 100 workers. Major products are workers' uniforms (trousers and shirts) with a production volume of 170 dozen per day and 90 dozen per day each. Materials are imported through the port of Castilla and the products are exported through the port of Cortes. The volume of import and export are two containers per month. The management of the factory claimed that the productivity at the factory has overwhelmed the factories in the US. The two other enterprises operating at Zona Libre

in La Ceiba have 250 employees (Korean company; possibly increased to 1,000 employees) and 500 employees (American Company). Honduran Government, now, is urging ENP to sell out the Zona Libres to the private sector. Actually ENP has tried to sell Zona Libre of La Ceiba on March 8th, but this has not materialized.

37. Zona Libre at Tela is a small one, where an American firm is making garments. The number of worker is 25 and the number of machines is 26, however, the targeted number of machines is 250. Materials are imported through the port of Cortes and the products are exported either from the San Pedro Sula Airport or the port of Cortes.

38. There are seven (7) ZIPs in Honduras as of 1991. They are; Bufalo Industrial Park(capital A on Fig. 1-4-1), San Miguel Industrial Park, Villanueva Industrial Park(capital B on the figure), Continental Industrial Park(capital D), ZIP Choloma, Chip (Choloma Industrial Park) and Inhdelva Industrial Park. Among them, ZIP Choloma, Chip and Inhdelva Industrial Park are located inside the Zone Libre. Major production of ZIPs are garments and textiles. On the figure, some planned ZIPs are also listed. They are El Progreso (a), Comayagua (b) and Cofradia (c).

39. There are 28 RITs in Tegucigalpa and San Pedro Sula. RIT is designated by company basis and each company needs to prepare a document for tax exemption for each importation.

40. Future perspective of these areas depends on various factors. According to an interview with ENP personnel, the Ministry of Economy is hesitant, at the moment, to increase a the number of new factories in the port of Cortes. However, it should be noted that considerable number of foreign investors have shown an interest in Honduras and several enterprises which have already invested in Honduras have plans to expand their activities.

41. According to an interview at the Chamber of Commerce and Industry in Cortes, FIDE (Foundation for Investment and Development of Exports) and Asociacion Hondurena de Maquiladores, 28 new ZIPs are designated and wait for factory constructions. Major portions are located in the North region, however, some factories are expected at Comayagua (Korean company), Santa Barbara and Copan. The following are some examples of new investment currently projected:

- a. Two (2) factories are planned at El Progreso (ZIP).
- b. Two (2) factories are under construction at Comayagua (ZIP).
- c. Electronic parts factory is projected at Cofradia (ZIP).
- d. Electronic parts factory for cars will begin production from November or December (The annual volume of import/export is expected to be around 120

containers each).

42. As far as foreign investment is concerned, Honduras is said to be one of the rear runners among Central American countries, is far behind Dominican Republic and Costa Rica. A very rough sketch tells us that Costa Rica, with half the population of Honduras, exports double the volume of garments of Honduras. This may indicate the future possible path of the same sector of Honduras.

[References]

1. Statement of Honduras to Consultative Group Meeting for Honduras, Paris, Dec. 5, 1990 presented by the Minister of Planning, Coordination and Budget.
2. Report of the S/W Mission for the Study on the Improvement of the Ports in the Republic of Honduras 1992
-original:Japanese
3. IDA Program for the Reform of Port Sector March 31, 1992
4. La Administracion Maritima de Honduras y Perspectivas de su Desarrollo Proyecto LEGISMAR 1992
5. La Gaceta.

Chapter 2 Present Conditions of Honduran Ports

2.1 Port Activities

2.1.1 Cargo Volume

(1) Yearly Change by Cargo Items

43. Table 2-1-1 shows the cargo volume by ports for the past 10 years. From this Table, total port cargo increased by 32% over the period from 1982 to 1992, that is from 2.8 million tons to 3.7 million tons. The annual increase rate is calculated as 2.82%. It is noted that the increase of import cargo is remarkable, while the export is rather stagnant. The volume of import increased by 74.6% over the same period of time, that is 1.1 million tons in 1982 to 1.9 million tons in 1992. The annual increase rate is calculated as 5.73%. On the contrary, the volume of export recorded only a 3.9% increase over the same period of time, from 1.6 million tons to 1.7 million tons.

44. The port of Cortes is the leading port of Honduras, both in terms of the scale of the port as well as the volume of cargo handled. The port has, in her hinterland, San Pedro Sula, the commercial center in Honduras where almost all commercial functions gather. In 1992, the port handled 2.8 million tons of cargo, 76% of total port cargo volume handled in Honduras. Export cargo volume occupies 73%, 1.3 million tons and import cargo is 78%, 1.5 million tons of total throughput.

Major exports in 1992 consists of banana (529 thousand tons), coffee (107 thousand tons), wood (81 thousand tons), mining products (72 thousand tons) and melon (58 thousand tons).

Major imports include; oil products (596 thousand tons), wheat (107 thousand tons), other foodstuff (103 thousand tons), fertilizer (89 thousand tons), steel and iron (53 thousand tons), chemical products (49 thousand tons) and machine and transport equipment (22 thousand tons).

45. The yearly change of major cargo volumes are observed as follows; For export, the banana export fluctuated in the range of 400 thousand and 650 thousand tons, however, it has maintained a rather stable volume of around 550 thousand tons in the past five (5) years. Coffee has experienced an up-trend in the recorded period of time. The volume of coffee export exceeded the level of 100 thousand tons both in the years 1990 and 1992. Timber, on the contrary, shows a down-trend. In 1991, the volume hit bottom with a volume of 56 thousand tons. In 1992, the volume recovered to 81 thousand tons. Cement export recorded its peak volume in 1989 when the volume was 210 thousand tons, however, since then, the volume has gradually decreased to 30 thousand tons in 1992. Bulk minerals also show a fluctuation, however, the volume has

been rather stable for the past five (5) years. Melon is the newcomer in the port. The export of melon started in 1991 and its volume increased to almost 60 thousand tons in 1992.

46. For import, petroleum and derivatives occupy the largest share among other items. It recorded a maximum import volume of 820 thousand tons in 1989, then the volume steadily declined to little less than 600 thousand tons in 1992. Wheat and other foodstuff show a similar trend. They hit a maximum import volume in 1991, 160 thousand tons and 216 thousand tons, respectively, then the volumes declined to 106 thousand tons and 103 thousand tons in 1992. Fertilizer shows an up-trend from 1988 onward. The volume in 1992 is almost 90 thousand tons. Import volume of iron and steel fluctuated between the range of 25 thousand tons and 55 thousand tons. In 1992, the volume recorded 53 thousand tons and it is the maximum volume over the recorded period of time. The volume of machinery and transport equipment has been stable around the level of 10 thousand tons, however, in 1992, the volume suddenly doubled to 22 thousand tons. Volume of domestic transit appears to be on a strong up-trend. The volume in 1992 reached 200 thousand tons.

47. The port of Tela is experiencing a drastic change in its cargo items, although the total volume is rather stable, maintaining a level of 200 thousand tons. The volume of export sharply declined to 15 thousand tons in 1992 from around 200 thousand in 1982. The reason for this decline is that the banana export has decreased. However, the increase in the import cargo volume compensates for the decrease in export. The increase in import volume is mainly due to the initiation of petroleum importation by Petro Tela from the year 1991. The port facility burnt down in 1991 and ENP is considering private participation for the port renewal.

48. The port of La Ceiba is suffering a sharp decline in cargo volume. The volume handled in 1982 was recorded at almost 400 thousand tons, while the volume handled in 1992 was only 5 thousand tons. The main reason is that SFC has switched their banana export to the port of Castilla. The failure of railway connection to the port of La Ceiba from the banana plantations including Aguan Vally precipitated the switch.

49. The port of Castilla is acquiring more and more cargoes. The port began its operation in 1985 and the cargo volume was only 40 thousand tons. In 1992, the volume increased to 540 thousand tons. Fruit exports occupy more than half of the total volume. Many other items also relate to fruit plantations. It is also noted that cargo volume of 60 thousand tons for domestic transit appears in the statistics.

50. The port of San Lorenzo has maintained a rather stable level of cargo volume of little over 100 thousand tons, except for the years 1989 and 1991. The volumes of export

and import are balanced in recent years. The main export cargo has been timber, however, a large decline has been witnessed in recent years. On the contrary, imports of iron and steel, and machinery and transportation equipment are increasing. From May 1993, Petro Sur is said to begin the import of petroleum. The planned volume is 267 thousand tons in 1993, 570 thousand tons in 1994 and 660 thousand tons in 1995.

(2) Trading Partner of Honduras

51. The main cargo items for foreign trade in Honduras are banana, fruits, coffee, timber and mineral products for export and oil products, wheat, foodstuff, fertilizer and iron & steel for import.

52. The main markets of Honduran products are, in short, the U.S. Gulf, U.S. East Coast, Caribbean countries and Europe. The main feature of the current trade in Honduras is that the trade with the Gulf Coast region and the East coast of the U.S., Caribbean countries and European countries is conducted through the port of Caribbean coast of Honduras. On the contrary, the trade with the West Coast of the U.S. and Asian countries are conducted through the port on the Pacific side.

53. The major trading partners for banana are the United States of America and European countries. The export volume of banana has fluctuated in the range of 800 thousand tons to 940 thousand tons in recent years. For coffee, the major trading partners are the USA, Germany and Japan. The export volume of coffee has had a tendency to increase leisurely with a little fluctuation. The main importers of wood are European countries, Caribbean countries, and Japan. The export volume of wood from 1982 to 1992 shows a tendency to decrease. The major importers of mineral products are the United Kingdom, the Netherlands and Belgium. The export volume of mineral products has fluctuated in the range of 38 thousand to 88 thousand between 1986 and 1992. Cement export has suffered a decline in recent years. The export target of Honduran cement will be Caribbean countries as well as Central American countries. The export of garments and textiles which are mainly produced in Zona Libre and are promising cargoes of future Honduran trade are exported mainly to the U.S. East Coast and the U.S. South.

54. The import volume of oil products reached 807 thousand tons in 1992. The import volume of oil products has tended to increase steadily. The oil products are imported from Aruba Island in the Caribbean sea and from Houston in USA. The major origins of iron and steel import are the Far East countries. The import volume of iron and steel has fluctuated in the range of 30 thousand tons to 95 thousand tons from 1982 to 1992. Another important item is automobile and transport equipment, although the volume is not very large. The origin of these cargoes is the Far East. The import volume of wheat

has fluctuated between 90 thousand tons and 161 thousand tons since 1984. The majority comes from the US Gulf (all three flour mills in Honduras are located in San Pedro Sula).

(3) Container and RO-RO Cargoes

55. There are three ports which handle container cargoes. They are the ports of Cortes, Castilla and San Lorenzo. (At Roatan Island, they handle a small volume of containers, however, they are all private ports and there are no statistics. Therefore the ports in Roatan are not included in this Section.)

56. Container cargoes handled in Honduran ports have been increasing in volume, in the same way, they have been expanding their share of the total port cargo volume. Fig. 2-1-1 shows the annual change of total cargo volume, total cargo volume except petroleum, and container cargo including RO-RO cargo. In 1982, the volume of container cargoes was about 500 thousand tons, while it doubled to one (1) million tons in 1992. The share of container cargoes gradually increased from 20% in 1982 to 30% in 1992. If we look at the share in the cargoes excluding petroleum, the share has increased from 30% in 1982 to almost 45 % in 1992.

57. Fig.2-1-2 shows the change of container cargoes at the port of Cortes and Fig.2-1-3 and Fig.2-1-4 show the rate of containerization at the port. The port of Cortes has been handling containers mainly for banana export. In 1982, the volume of container export was 390 thousand tons which occupies a little less than 40% of total cargo volume. Since then, the volume has increased gradually. In 1992, the volume of export container was 580 thousand tons. The rate of container increased from the range of 30-40% in 1982 and 1983, to the range of 40-50% in the years beginning from 1984 and the rate has been stable till 1992.

58. The volume of import containers has increased gradually. In 1982, the volume was 110 thousand tons and it increased to 350 thousand tons in 1992. The containerization rate has long been stagnant for the import at the range of 10-15%. However, in the past two years, the containerization has developed remarkably and the rate exceeded 20% in 1992.

59. At the port of Castilla, where container handling begun in 1987, the volume of containers has dramatically increased (See Fig.2-1-5). In 1987, total volume of containers handled was 180 thousand tons. In 1992, the volume increased to the level of 300 thousand tons. The rate of containerization (Fig.2-1-6 and Fig.2-1-7) has been high for export from the very beginning. The containerization rate has constantly been around 70% for export. The rate has steadily increased for import containers, from 8% in 1987 to 40% in 1992.

60. At the port of San Lorenzo, container traffic has also developed in recent years as seen in Fig. 2-1-8. While the total port activities have been stagnant at the port, container cargoes alone have shown remarkable progress. Before 1986, there was no container traffic at the port. In 1987, the first container was recorded. Since then, container cargoes have increased and recorded 30 thousand tons in 1992. The rate of containerization has also developed, reaching more than 20% in 1992.(Fig.2-1-9 and Fig.2-1-10)

61. Rate of empty containers (Table 2-1-3) shows a great difference between the import containers and export containers. In 1982, the rate of empty containers was almost 70% for import and about 15% for export at the port of Cortes. The tendency has gradually changed and the difference between import and export has been getting smaller. In 1992, the ratio of empty containers is little more than 40% for import and more than 20 % for export. For the ports of Castilla and San Lorenzo, trend of empty containers shows a dramatic contrast. At the port of Castilla, the rate of empty container for import was very high, although it has decreased gradually. In 1987, the rate of empty containers occupied almost 100%. For the past few years, however, the rate has been stagnant at the level of 70%. On the contrary, the rate of empty containers for export has been minimal, less than 5% during all recorded years. At the port of San Lorenzo, the rate of empty container was very large for export cargo, however, the rate has been lowered for the past two years. On the contrary, the rate has been very low for the import cargo, however, it suddenly increased to more than 60% in 1992.

62. Average weight of a container is calculated using port statistics. Table 2-1-4, Table 2-1-5 and Table 2-1-6 list the results of the calculations. The Table indicates the followings:

- a. Average weight for export containers exceeds the import containers at all three (3) ports.
- b. Another tendency is that the average weight has been decreasing for the ports of Cortes and Castilla.
- c. In 1992, average weights are around 7 ton/TEU for import container at the ports of Cortes and Castilla, and around 8.5 ton/TEU for export containers. On the contrary, average weight of a container at the port of San Lorenzo is rather large, especially export containers.

(4) Domestic Sea Transport

63. There are no appropriate statistics for the volume of domestic sea trade. Table 2-1-9 shows the number of ship calls and the cargo volume calculated on the basis of the data provided by ENP as well as Team's interviews. The cargo volumes are converted by multiplying the constant value (average cargo tonnage per ship) with the number of calling ships. For the port of Cortes, the average cargo volume is estimated to be 120 tons, for La Ceiba 50 tons and for Castilla 80 tons.

64. According to Table 2-1-9, the cargo volume is estimated to be 47,000 MT at the port of Cortes, 30,000 MT at La Ceiba and 23,000 MT at Castilla in 1992, respectively. A remarkable increase in calling ships has been at the port of Castilla. On the contrary, the port of La Ceiba is suffering from a decline in cargo volume. One of the possible reasons is that there is no protection at the port of La Ceiba and the rough sea conditions may make small ships hesitant.

2.1.2 Characteristics of Calling Ships at Honduran Ports

65. In (1) and (2) below, only ocean going vessels are described using the data provided by ENP, and (3) summarizes the rough sketch of domestic trade based upon the Team's interview.

(1) Port of Cortes

66. Fig.2-1-11 shows the yearly change in the number of calling ships at each Honduran port. The port of Cortes overwhelms the other ports. The number is far beyond the total of the other ports. The port has attracted about one thousand ships a year for the years from 1982 to 1989, however, after 1990, the number of calling ships increased and reached around 1.2 thousand ships in 1992. The port of Castilla has shown a remarkable increase and has received around 200 ships a year in these six (6) years. On the contrary, ship calls to the port of La Ceiba decreased to almost zero from 200 in 1982. The port of Tela also experienced a decline. The port of San Lorenzo has been receiving a stable number of ships at around 100.

67. Fig.2-1-12 shows the number of calling ships by cargo types at the port of Cortes. Special attention should be paid to the number of container ships. The number has rapidly increased for the past two years and in 1992, the number reached 500. On the contrary, the number of conventional ships has decreased to 100 in 1992 from 200 in 1990. The number of RO-RO ships has increased since 1990, in spite of experiencing a small stagnancy in 1992.

68. The figures shown in Fig.2-1-13 to Fig.2-1-18 are compiled for the analyses of the change concerning ship size by types (The record is available only for the past four (4) years). From Fig.2-1-13, it is observed that the number of refrigerated vessels (conventional and container) has steadily increased for the past four (4) years. The number has increased to 350 in 1992 from 260 in 1989. It is also noted that the number of large ships has increased. Since 1991, ships greater than 15,000 GRT started to appear and increased their share.

69. Fig.2-1-14 shows the yearly change in the number of calling container ships. The number of container ships remarkably increased to more than 350 in 1992 from less than 200 in 1989. The number of ships of every class has increased except the 8,001 -15,000 tons class.

70. From Fig.2-1-15, the distribution of ship size of RO-RO vessels tends to have two peaks, namely, 3,001 - 8,000 tons class and over 15,001 tons class. The number of calling RO-RO ships increased from 1989 to 1991, however, a sudden drop occurred in 1992.

71. It is noted, from Fig.2-1-16, that the number of conventional ships has experienced a constant decline. The number was almost 220 in 1989. In 1992, it dropped to almost half of that level. Every class is suffering a decline.

72. Fig.2-1-17 shows the number of solid bulk ship calling. The number fluctuates in the range of 30 to 50. The number of small ships with a capacity of 3,000 tons or less has been stable. On the contrary, the number of middle class ships with a capacity between 3,000 and 8,000 tons largely fluctuated. Ships with the capacity of 8001 to 15000 tons first appeared in 1991 and tend to increase.

73. The number of oil tankers shows, in Fig.2-1-18, a rather stable trend except 1991. The number of calls is in the range of 60-70 a year. The major trends of ship size are: i) gradual decrease of 8,001 - 15,000 tons class and ii) gradual increase of over 15,001 tons class. In 1992, large size ships of 15,001 GRT or bigger represented almost half of the total number of calling ships.

74. Fig.2-1-19 and Table 2-1-8 show the calculation results of average cargo volume per ship by types. The biggest cargo volume per ship was recorded by oil tanker. It carried almost 10,000 tons which is by import only. Then dry bulk cargo follows with a volume of about 7,000 tons of which 60% is import and the rest is export. Banana reefer and banana LO-LO show a difference in volume of import and export. Although the volume of each is at the level of two thousand tons, Banana reefer ship carries export almost exclusively (banana) while banana LO-LO has acquired a certain volume of import cargoes. Each container and RO-RO vessel carries around 1,500 tons of cargoes of which

55% of cargo is export and 45 % is import.

(2) Other Honduran Ports

75. Besides the port of Cortes, the major Honduran ports are Tela, La Ceiba, Castilla and French Harbor in the Roatan Island on the Caribbean coast and San Lorenzo and Amapala on the Pacific coast. There are no large calling vessels at Amapala for lack of adequate berthing facilities. Therefore, Amapala is not included in this section.

76. Table 2-1-8 and Fig.2-1-20 show the number of calling vessels at the major Honduran ports from 1982 to 1992 except French Harbor, where cargo handling facilities and equipment are operated by private companies and the statistical data of calling vessels is not available. From the interview with the Mayor of Roatan and his staff, the number of foreign trade vessels calling at French Harbor is estimated at about ten vessels per month. The size of these calling vessels is approximately 2,000 GRT to 3,000 GRT.

77. The size of calling vessels at the Honduran ports except Cortes is growing year by year. In 1992, the ratio of the number of calling vessels over 8,000 GRT was approximately 50 per cent of the total number of calling ocean vessels in Honduran ports. In 1989, it was approximately 44 per cent. Therefore, the ratio of the large calling vessels has increased approximately six (6) per cent between 1989 and 1992.

78. The number of calling vessels at Tela and La Ceiba have been diminishing year by year. At Tela, the number of calling vessels has diminished since 1989 except oil carriers. The total number of calling vessels in 1992 is 28 vessels which is about 26 per cent of the number of calling vessels in 1989. In 1992, 21 vessels called at La Ceiba, while the number was 186 in 1982. The length overall (LOA) and the gross registered tonnage (GRT) of the calling vessels at Tela and La Ceiba in 1992 is shown in Fig.2-1-21 and Fig.2-1-22.

79. At the port of Castilla, the number of calling vessels has been increasing since 1987 except 1991. The reason is that the container vessels for bananas and the refrigerated vessels increased in number dramatically, and keep increasing. According to Fig.2-1-23, the numbers of container vessels and refrigerated vessels increased rapidly from 1987 and 1989 respectively. The number of conventional break bulk vessels has been increasing leisurely. As for lumber vessels, the number of calling vessels has decreased since 1989. In 1992, lumber vessels did not call at the port of Castilla. From Fig.2-1-24 and Fig.2-1-25, the size of calling vessels tends to increase. In 1992, the rate of large container vessels (more than 8001 GRT) is approximately 99 per cent of the total number of the calling container vessels.

80. The number of calling vessels at the port of San Lorenzo has fluctuated in the range of 90 vessels to 130 vessels. The tendencies of major types of the calling vessels are as follows:

a) Conventional break bulk vessels and lumber vessels: From 1986, the number tends to decrease.

b) Ro/Ro vessels: The number has increased since 1984.

c) Container vessels: The number increased remarkably in 1992.

The main reason for the above tendencies seems to be the change of the packing style from break bulk cargo to container cargo.

81. The calling ship size at San Lorenzo has tended to increase gradually. The share of large vessels (more than 8001 GT) of the total number of vessels is approximately 77 per cent in 1992. In 1989, it was about 66 per cent. Fig.2-1-26 shows the trend of the number of calling vessels at the port of San Lorenzo from 1989 to 1992.

(3) Domestic Trade Vessels

82. According to the information of Marina Mercante Nacional, there are only 33 domestic trade ships in Honduras. Fig.2-1-27 shows the number of domestic trade ships calling in major Honduran ports from 1986 to 1992. According to Fig.2-1-27, the number of domestic trade ships reached a peak in 1989.

83. At the port of La Ceiba, the number of calling domestic trade ships which recorded the maximum number among the other ports has decreased since 1989. From information of ENP, the average capacity of the domestic trade ships at La Ceiba ranges from 40 tons to 70 tons.

84. The number of calling domestic trade ships at the port of Cortes has been almost constant since 1988. From the information of the Port Captain at Cortes, the average tonnage of the domestic trade vessels at Cortes is about 110 GT.

85. At the port of Castilla, the number of calling domestic ships tends to increase gradually with small fluctuation. The number in 1991 is about 2.3 times the number in 1986.

2.2 Transport Network in Honduras

2.2.1 Inland Transport Network and Access to Ports

86. Inland transport network in Honduras is mainly formed by roads. Road network covers the whole country except the eastern region where rivers are utilized for local transportation purposes and the development of new roads in this region seems to remain at a limited level because a pretty high environmental concern in this region is observed in Honduras. Fig.2-2-1 shows distribution of major roads as well as railroads in Honduras.

87. Railroad network was developed for banana transportation purpose, which directly connects the major Caribbean ports (ports of Cortes, Tela and La Ceiba) to banana plantations. Major trunk lines are owned by Honduran National Railway Company, (FCH), and some of the lines are leased out to the banana company. The main routes run in Sula Valley, along the coast between Tela and La Ceiba and from Aguan Valley to La Ceiba. An outline of the railroad network is given in Table 2-2-1. Among the railroad lines, the line which connects La Ceiba to Aguan Valley is out of service and this is one of the reasons why major banana handling moved to Castilla. Some of the lines distributing in Sula Vally are operated by Tela Railroad Company and are used for banana transportation. Besides banana, rail carries solid bulk cargoes such as timber, wheat and fertilizer. Number of passengers carried by rail remains minimal. Currently, privatization of rail sector is being discussed and the results of the discussion will soon come out. The future of the rail sector is very difficult to predict, however, efficiency of the sector may be improved due to the drastic streamlining and cargo volume, especially bulky cargoes, carried by rail might increase at the port of Cortes.

88. Each of the major Honduran ports, Cortes, Tela, La Ceiba, Castilla and San Lorenzo have access to trunk line of roads. The road network in Honduras consists of two (2) portions, the main frame and other local major roads. The main frame is composed of the North-South Corridor and the East-West Corridor. The North-South Corridor connects, from south to north, the port of San Lorenzo, Tegucigalpa, Comayagua, Siguatepeque, San Pedro Sula and the port of Cortes. The East-West Corridor constitutes a part of the Pan American Motorway which connects main cities of El Salvador as well as Nicaragua and runs to the city of Cholteca and very close to the port of San Lorenzo.

89. Inland transport network forms a part of the whole transport chain including sea transport. Inland transport network is one of the very important factors in evaluating competitiveness as well as the hinterland of ports. The railroad network is utilized only for limited purposes and for limited ports (the port of Cortes). Therefore, the port of Cortes has a certain advantage in terms of inland transport. The road distribution favors

the ports of Cortes and San Lorenzo because the ports are located on the North South trunk line which goes through the most developed area in Honduras including Tegucigalpa and San Pedro Sula. The port of San Lorenzo has another advantage in its proximity to the Pan American Motorway although the port as well as the region does not take full advantage of this.

90. Table 2-2-2 summarizes the distance between major ports and the major Honduran cities. This Table gives a clear picture that the port of Cortes is the nearest port to San Pedro Sula, the commercial center of Honduras, and the port of San Lorenzo has the shortest distance to Tegucigalpa, the Capital and most populated area of Honduras.

91. The majority of the trunk road network is paved, although some parts are still unpaved. Honduran government is making big efforts to improve the road network and the Study Team observed many road improvement works being conducted during the site survey. The road between San Pedro Sula and the Port of Cortes was being widened to four (4) lanes of paved concrete from two (2) lanes. The completion of the work is expected late this year, and will reduce the time between San Pedro Sula and the port of Cortes to 40 minutes from current service time of one (1) hour and half or more. The road between San Pedro Sula and La Ceiba through Tela is now under repavement, but there is a paved modern road from La Ceiba all the way down to Castilla. The road from Tegucigalpa to San Lorenzo is also paved and in good condition.

92. Conditions of access to trunk roads from major ports are observed as follows;

a. At the ports of Castilla and San Lorenzo, there is no problem observed concerning access between ports and trunk road.

b. On the contrary, at the ports of Cortes, Tela and La Ceiba, main road runs through the city center and port traffic goes directly through the town. This will cause serious problems in future. Especially, at the port of Cortes, large trucks are observed parking in the town which has already attracted the attention of municipality people. Furthermore, on the day or day before the arrival of RO-RO vessels, a great number of large trucks gathers around port gate No.11 causing trouble for general traffic (The municipality has a plan to construct new a ring road which connects gates three and eleven through the avenue 8 or 9).

2.2.2 Sea Transportation Net Work

93. In port planning, the sea transport network to which the objective ports belong should be considered. Therefore, in this Study, sea transport network should be analyzed from the following view points:

- a. International trade routes of container vessels which call or may call at Central America. (The latter covers many routes including Caribbean and the Gulf region, as well as Ocean routes which pass through the Panama Canal)
- b. International routes of the calling vessels at the major Honduran ports.

(1) International Container Routes around Central America in 1990

94. The international container routes around Honduras in 1990 can be classified into 73 routes as in Table 2-2-3 (Source: Containerization International 1992). In the table, the numbers in the TEU column are calculated by summing up all the ship's capacity running in the route. Fig.2-2-2 depicts the image of the international container routes around Central America.

95. In the table, about 50 per cent of the total capacity has relation with the East Coast of North America. Thus, it is obvious that the East Coast of North America is the main Origin as well as Destination of international container routes.

96. Among the routes on which vessels call at relevant ports of Central America, about 77 per cent have a relation with the East Coast of North America and/or the US Gulf. About 100 vessels are in service on the said routes.

(2) International Sea Routes to/from Honduran ports

97. The next port and the previous port for Honduran ports are analyzed by vessel type and are shown in Table 2-2-4 for the ports on the Caribbean Coast and in Table 2-2-5 for the port of San Lorenzo. In the tables, only major next ports and previous ports are listed.

98. The next ports and the previous ports of conventional break bulk vessels for the ports on Caribbean Coast are scattered, however, the majority are to/from the southern part of North America including the Gulf. On the contrary, the previous ports for the port of San Lorenzo are mainly Far East Asia with small portion of West Coast and East Coast of South America. The predominant or the port of San Lorenzo is Kobe. Others are found on the West Coast of Central America.

99. Most of the refrigerated banana vessels are to/from Europe, while LO-LO banana vessels to/from the U.S. Gulf and U.S. East Coast.

100. The previous ports of container vessels for the ports on the Caribbean Coast are mainly a the U.S. Gulf with a small portion in Europe and Caribbean countries. The next ports are the south part of U.S. including the Gulf. The previous ports and the next

ports for RO-RO vessel are concentrated to among a limited number of U.S. ports (mainly Miami). For the port of San Lorenzo, though, there is no division between container vessels and RO-RO vessels, thus the previous ports are scattered, while the next ports are rather concentrated such as Kobe with 44% and ports on the Central American Coast.

2.3 Port Facilities

2.3.1 Port of Cortes

101. The Port of Cortes, the biggest port in Honduras, is located in the Bay of Cortes. This is a natural harbor, well protected and readily accessible to ocean going vessels. The approach channel, which faces Punta Caballos, is 1,200 m long by 450 m wide and about 12 m deep. It is identified by channel buoy markers. The harbor provides anchorage with depths of up to 16 m and the tidal variation amounts to about 0.3 m. Because of the above conditions and the wide entrance to the bay, the tidal currents are usually less than one knot.

ENP has operated the port since 1966.

102. The Port of Cortes now has several mooring facilities. From west to east, there are:
- 1) T-type Dolphin No. 1 with a narrow finger pier which is owned and operated by the Texaco Refinery,
 - 2) Pier and Mooring Dolphin No. 1-A that serves the sugar and molasses exporters, and
 - 3) Marginal wharves with a total length of 1,140 m for general cargoes and containers.

The marginal wharves are divided in three: No. 3, 4, and 5 (See Fig. 2-3-1). Wharf No. 2, with a length of 293 m, is located between Pier 1-A and Wharf No. 3, and has been out of service since 1986. It was built in 1919, and collapsed because of the poor foundation conditions and deterioration of the materials due to superannuation. Water depths alongside Wharves No. 3, 4, and 5 are between 8 and 11 m.

103. The major installations on these wharves are: Four gantry-conveyor loaders for bananas on Wharf No. 3, one container crane on Wharf No. 5, and four large warehouses behind Wharves No. 3 and 4.

The physical characteristics of the main port facilities are summarized in Table 2-3-1. The structure type of these wharves is the so-called open-deck style with concrete decks on concrete piles. A typical cross section of Wharf No. 5 is shown in Fig. 2-3-2.

104. The area behind these wharves is limited. The port border runs almost parallel to the pier head lines. The average distance between the pier head line and the port border is 150 m. Access to the port areas is by rail or road. The rail road tracks lie parallel to the pier head lines, connecting the west end, the Chiquita Storage-yard, and the east end, the Free-Zone. The road is paved up to the west end of Wharf No. 3, and

is in good condition. The road from there to the Chiquita Storage-yard is not paved and is in poor condition. The traffic in the port is congested in several places because the routes for transferring containers and general cargoes cross each other. There is no control of or rules for the traffic in the port. The facilities are in fair condition except for damaged fenders and so on.

105. The warehouse and shed are summarized in Table 2-3-2. The total area is 17,400 sq.m. and total capacity is 105,000 cu.m.. Containerization has developed rapidly in the Port of Cortes, and there are about 85,000 sq.m. of public container yards in the port area (details are described in Chapter 2.5). In the eastern part of the port area, there is a container yard of the United Fruit Company (Dole) which is about 18,000 sq.m. in area.

106. ENP has a plan to extend the length of Wharf No. 5 by 123 m. The construction is expected to be finished by June 1994. Its structure type is the same as that of Wharf No. 5, and containers and RO/RO cargoes will be handled at the wharf.

2.3.2 Other Ports

Tela

107. The port of Tela is located on the North Coast of Honduras, about 57 km east of Cortes. The port was developed by the Tela Railroad Company (TRR) as a major banana export center, and the existing pier was built in 1914 for such purpose.

ENP started operating the port in the beginning of 1974.

108. The 472 m long pier is perpendicular to the shore (Fig. 2-3-3), and is made of timber supported by wood piles. The crown height is 3.60 m above MSL, and the water depth is about 10.5 m at the top of the pier and 8.5 m in the middle. The spray zone of the wood piles is covered by concrete jackets.

109. The wood deck and wood pile members are old and, in addition, the top of the pier was partly destroyed by fire in March 1992. Three pipelines run across the deck and some palm oil is leaking from them. In general, the pier is in a deteriorated condition. A summary of the physical characteristics is given in Table 2-3-3.

La Ceiba

110. The Port of La Ceiba is located on the North Coast of Honduras, about 65 km from Tela. It is an open port without any protection from storm winds and the sea.

La Ceiba is the third biggest city in Honduras in terms of population, and most of the commercial activities in the area depend on the banana plantations which are located along the coastal plain, south and east of the city and valley. The existing pier was built in September 1970, and ENP started to operate it in 1974. During a storm in 1989, the pier was damaged by a ship but it was repaired in 1990.

111. A plan of the port is shown in Fig. 2-3-4. The large finger pier, constructed normal to the shore, has a length of 227 m and a crown height of 3.20 m above MSL. The maximum depth is about 10 m. It is made of timber supported by wood piles with concrete jackets, and the fender of the pier is of the Raykin fender buffer type, which consists of a series of connected sandwiches made of steel plates cemented to layers of rubber. The fender may not absorb the maximum possible amount of energy due to corrosion of the steel.

The physical characteristics of the pier are summarized in Table 2-3-3.

112. ENP is constructing a new port for domestic cargo, known as the New Port of La Ceiba, which is located at "Barra Boca Vieja" (Boca Vieja Mouth) about 3.5 km east of La Ceiba. The construction work of the new port consists of a 400-m long east-breakwater, a 500-m long west-breakwater, about a 250-m long wharf, and approximately 740,000 cu.m. of dredging down to 5 to 6 m below MSL. A plan of the new port is given in Fig. 2-3-5. By January 1993, over 38% of the breakwater works, 21% of the wharf works, and 35% of the dredging works were completed.

113. The new port is located on a long sandy shore, and may be subjected to strong winds and high waves. Therefore, it is recommended that ENP investigate the change of the shore line and take countermeasures against littoral drift.

Castilla

114. The Port of Castilla is the second largest port in terms of cargo volume after Cortes. The Port of Castilla lies on the north side of the well sheltered Bay of Trujillo, opposite the old city of Trujillo. The distance between the port and the city is about 17 km. It has been relatively inactive since 1938 when the banana export activities of the Trujillo Railroad Company, a subsidiary of the United Fruits Company, a subsidiary of the United Fruits, were discontinued. Before its abandonment, the Port was one of the busiest banana export center of Central America.

115. A pier 230 m long and 22 m wide, built by the Trujillo Railroad Company in 1923, is in ruins today. ENP started to operate the Port of Trujillo, and constructed the existing port in 1984. Ships have direct access to the Bay, where there is ample

anchoring space with a water depth exceeding 30 m.

A concrete open deck wharf, sitting on concrete piles, was built in 1985. The wharf is 150 m long and 38 m wide. A plan and physical characteristics of the pier are shown in Fig. 2-3-6, and Table 2-3-3, respectively.

116. The wharf is in good condition, but the hung-wood fenders are rotten and have been damaged by impacts from ships. Two bollards are missing. In general, the entire Castilla Wharf is in fair condition.

117. The Port of Trujillo, located near the center of Trujillo and operated by the municipal office of Trujillo, handles mainly domestic cargoes.

There is a concrete jetty 4.7 m wide and 54 m long. The crown height and depth of the jetty are 2.0 m above and about 2.5 m below MSL, respectively. The jetty is in good condition.

San Lorenzo

118. The Port of San Lorenzo is located in the Bay of Fonseca about 19 km from the city of Nacaome.

ENP constructed the port and started its operation in 1979.

The port is located in the inner recess of the Gulf of Fonseca, 24 km from the entrance along the channel center line. Because of this, ships heading for the port have to make a rather long journey and they are thus hesitant to enter the Port of San Lorenzo.

119. The T-type wharf is 295 m long, 38/25 m wide and built on concrete piles. The approach trestle of the pier is 160 m long and 15 m wide, and has the same structure as that of the pier.

The wharf is in good condition. A plan and physical characteristics are shown in Fig. 2-3-7 and Table 2-3-3, respectively.

Amapala

120. Amapala Port is located on the small island named "Isla del Tigre" (Spanish) and the nearest port Coyolito is on the opposite side.

The port of Amapala was constructed and has been operated by ENP since 1974.

121. The port has a small jetty about 20 m long covered by rubble. The water depth is about 1.5 m. The port is used for small boats for loading and unloading of passengers and cargoes.

A plan and physical characteristics are shown in Fig. 2-3-8 and Table 2-3-3, respectively.

Roatan Island

122. Roatan Island is located in "Islas de la Bahia", about 32 km north of La Ceiba. It has an area of 133.6 sq.km., and the distance from the east extreme to the west extreme is 68 km; from the north extreme to the south extreme is 6.4 km. (See Fig. 2-3-9) The population of the island is 22,000.

123. As the northern coast is affected by winds and waves, there are no important harbors on this coast. On the other hand, on the southern coast, there are three main ports: Oak Ridge, French Harbor, and Coxen Hole (Roatan City). Cargoes such as food, drink, oil, and fishing equipment are handled through these three ports.

124. The wharves in these ports belong to private companies; there are no public wharves except a small pier located in Coxen Hole. This pier has a length of 32.5 m but the last 10 m are destroyed. The pier's width is 4.8 m with a crown height of 1.3 m and a depth of about 3 m. Vessels cannot anchor at this pier. At the foot of the pier, there is a small area where some offices are located such as the Immigration Office, Customs Office, and Port Captain Office. Physical characteristics are shown in Table 2-3-3. ENP has a plan to develop a new commercial port in Coxen Hole.

2.4 Administration and Operation

2.4.1 Port Related Institutions

125. In Honduras, the organization which owns, maintains and operates major port facilities and equipment in principal ports is Empresa Nacional Portuaria (ENP), which is a parastatal autonomous institution. ENP was created in October 1965 by Legislative Decree No. 40 and it started its operation in 1966 after receiving the assets and liabilities of Puerto Cortes from the state, followed by those of Tela, La Ceiba, Trujillo and Amapala in 1974.

126. The objective of ENP is national economic development through providing adequate and efficient services and installations in ports, and to achieve this objective, it has a large scope of functions and responsibilities over port matters, among others:

- 1) To execute construction works of facilities and procurement of equipment
- 2) To administer, promote and utilize services, facilities and equipment of ports under its own responsibility,
- 3) To coordinate the development of port activities in the country,
- 4) To advise the government with respect to port policy, or to represent the government in negotiation or execution of other activities in terms of ports in the country,
- 5) To represent the government in any entities of the port services in which the State shall participate.

127. Within the above framework, ENP is vested with a wide range of power to carry out port activities from berthing and stevedoring through port police and fire-fighting. However, as will be shown in the next section and Part II, Chapter 4, some activities are actually carried out by other institutions including the private sector.

128. The day to day business of ENP is carried out by the Empresa's organs (Gerencia) including Superintendencia in four ports (Puerto Cortes, La Ceiba, Castilla and San Lorenzo) under the Gerente General.

Gerente General who administers the Empresa is designated by the Board of Directors of ENP. The Board of Directors also designated an Auditoria Interna who is responsible for production of the statement of accounts to the Contraloria General under the Congress through the Board of Directors.

Appointment, dismissal and transferring of high ranking officials including superintendente of four ports is the authority of Gerente General.

129. The Board of Directors (Consejo Directivo) that govern the Empresa includes Minister of Economy who is the ex-officio chairman of the Board, Minister of

Communications, Public Works and Transport (SECOPT), Minister of Natural Resources, and Minister of Planning Coordination and Budget (SECPLAN) and also a representative of the Chamber of Commerce and Industry, a representative of an influential labor union and of national shipowner and shipping agents. The Gerente General of ENP is a non-voting member and acts as the secretary of the Board. Decisions are made by a majority of affirmative votes, but in any case, more than four affirmative votes are required for the decision. Board meetings are normally held once or twice a month, and the member agencies avail the opportunity to intervene in Empresa's important decisions, and thus their interests may be adjusted.

130. SECOPT is the umbrella organ of ENP and also of several parastatal bodies, ie. HONDUTEL, FNC, and ENEE. SECOPT is not the Board Chairman Agency, the reason of which is not known. ENP's budget and planning should be submitted to the Direccion de Planificacion Sectorial (DGPS, Sectorial Planning Department) after the Board decision, which is in turn transferred to Tesoreria General de Instituciones Descentralizadas (Treasury of Decentralized Institutions, an autonomous organ, but controlled by la Direccion General de Presupuesto of the Secretaria de Hacienda y Credito Publico Budget Department of the Ministry of Finance). After approval of these two institutions, the budget draft is sent to the President for signature. Final decisions are made by the Congress by September 15 of each year.

131. In June 1992, the Comision Nacional Supervisora de los Servicios Publicos (National Commission of Public Utilities Supervision) was created to judge the pricing of some of the parastatal organs. The Secretary of SECOPT is the ex-officio chairman of the Commission. The other members are Secretaries of Finance, Economy and Commerce, two representatives from National Congress, two representatives from Consejo Hondureno de la Empresa Privada (COHEP, National Honduran Council of Private Enterprises), a representative from the Honduran Labor Confederation, a representative from the General Labor Center, and a representative from a Community Group which is organized in Honduras and legitimately established.

The Commission has its own technical secretariat which is independent from any government agency.

132. The main duty of the Commission is to approve, reject or modify tariffs or prices of four parastatal entities; ENEE, el Servicio Nacional de Acueductos y Alcantarillados (SANAA), HONDUTEL and ENP. The first ordeal for Commission came from ENP which requested an increased tariff for banana. Monopolistic banana companies enjoyed a special tariff which is 50% lower than ordinary goods in La Ceiba and Cortes and provisional 75% in Castilla. Later on ENP tried to reduce the discount rate of Castilla to the level of other ports (50%) in three-year terms, and the Commission approved the ENP's request. Nevertheless banana companies, while accepting the first year's increase,

have suspended the second and the third year's increase.

133. The Commission is criticized on the ground that it does not have sufficient knowledge and information to verify if the pricing is reasonable in terms of the current economic circumstances and management situation of the entity.

134. Although Direccion General de Transporte of SECOPT has the power to enforce provisions of the Inland Transport Law and has responsibilities to coordinate, guide, regulate and execute the plans for achieving the objectives of the general transport policy, its influence is not exerted other than through the Board of Directors.

135. ENP is financially contributing to the central government and to the municipalities in which ports are located. The contribution to the central government partially covers the construction cost of berths for cabotage in La Ceiba and Roatan. The contribution is required during the course of budget consideration by the government or congress without any legal basis. The contributions to the municipalities are prescribed by law as each 4% of its operating revenue and total amount is about 2.8 million lempiras.

136. While ENP has the power to assign berth or anchorage to a vessel entering the port, the Port Captains grant permission to vessels entering or leaving the port. The Port Captain is under the jurisdiction of the Direccion General of Marina Mercante, which has also a function of ships' registry (Honduras is one of the flag of convenience states) and peculiarly is a part of the Navy Force. The Port Captain has the jurisdiction to police the water area of ports, while ENP has the jurisdiction to police on shore. Port Captain forms a committee to receive clearance documents of vessels together with Customs Administrator, Port Health and Quarantine Immigration.

2.4.2 Organization of ENP

(1) Organization

137. The organization chart of ENP is shown in Fig.2-4-1. The head office of ENP is located in Puerto Cortes, and in Tegucigalpa there is a liaison office which keeps in contact with the central government. The organization of ENP consists of five divisions in headquarters and five superintendents of Puerto Cortes, La Ceiba, Castilla, San Lorenzo and Free Zone. Tela and Amapala are included in Puerto Cortes and San Lorenzo respectively. The main functions of each division are as follows:

- 1) Human Resource Division : working regulations, salary, employee training, labor union, medical treatment and public welfare
- 2) Technical Division : maintenance of facilities, dredging and supervision of civil work
- 3) Accounting Division : accounting and administration of property
- 4) Planning Division : preliminary study of development plan, statistics, contact point to central Government and preparation of budget
- 5) General Service Division : preparation of supportive equipment and goods including procurement of cars for general use other than direct port operation and gasolines, document management and coordination of tender

138. The organization chart of Superintendent of Puerto Cortes is shown in Fig. 2-4-2. The main functions of each department are shown below.

- 1) Department of Maintenance : maintenance of equipment
- 2) Department of Service Programming : plan and program of customer service improvement
- 3) Department of Port Police : police inside port area
- 4) Department of Operations : allotment of berth, cargo handling equipment and warehouse except container
- 5) Department of Container Terminal : container operation
- 6) Department of Collection : making bill of port charges
- 7) Department of Security : inspection of facilities

139. Superintendents of the other ports basically comprise administration, operation, maintenance and police except the superintendent of La Ceiba which has no maintenance section. Their main functions are management of facilities and collection of port charges. Superintendent of Free zone comprises administration, maintenance and vigilance.

(2) Personnel

140. The number of ENP employees are shown below.

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Permanent	1,008	1,008	986	1,112	1,145	1,092	1,079	1,078	1,077
Temporary 1	40	350	432	79	122	227	160	150	
Temporary 2	500	190	203	195	68	42	40	50	
Total	1,548	1,548	1,621	1,386	1,355	1,361	1,279	1,278	

Temporary 1 means monthly workers for management and operation work and temporary 2 means weekly workers for cargo handling. As container cargoes have increased in recent years, temporary 2 has decreased. Total Number of permanent employees showed a sudden increase in 1988. It was caused by changing the status of temporary workers to permanent workers. In 1993, the number of employees decreased by 12 and 13 in the superintendents of La Ceiba and San Lorenzo respectively. It was due to the reduction of work.

141. Of the total number of ENP employees (1,077 in 1993), 372 employees (34%) are working in the central office. Number of employees in each superintendent are as follows:

Puerto Cortes-Tela	482(45%)	La Ceiba	23(2%)
Puerto Castilla	72(7%)	San Lorenzo	85(8%)
Free Zone	43(4%)		

Central office was reorganized three years ago and divided into the present five divisions.

142. The number of employees listed in the budgetary document is given for each division and superintendent in Table 2-4-1. Total number of ENP employees which is laid down by the budget is 1,097 in 1993, an increase of 20% since 1984.

143. The average monthly wages of permanent employees in the last seven years are as follows;

	1986	1987	1988	1989	1990	1991	1992
Actual	1,506	1,707	1,551	1,731	2,028	2,461	2,837
Growth Rate(%)	13.35	-9.18	11.61	17.17	21.37	15.27	
In Budget	1,095	1,168	1,142	1,185	1,277	1,435	1,664

The growth rates except 1988 exceed 10%. In 1991, the growth rate exceeded 20%. It is caused by wage revision. The actual average monthly wages have always exceeded budgetary wage.

144. There is no regular recruitment of employees. The vacant posts will be filled by temporary workers. By law, the retiring age for general workers is 65, for the managerial workers it is 60 for male and 55 for female. About 10 employees retire from the office every year.

(3) Working Conditions

145. The main rules concerning labor conditions are as follows;

- 1) REGLAMENTO INTERNO DE TRABAJO, which stipulates working conditions of employees.
- 2) CONDICIONES DE TRABAJO CELEBRADO ENTRE LA ENP Y EL SINDICATO DE TRABAJADORES, which is an agreement on working conditions between ENP and the labor union.
- 3) ESTATUTO EMPLEADOS DE CONFIANZA, which sets payroll and regulations between ENP and managerial class.
- 4) REGLAMENTO ESPECIAL DE HIGIENE Y SEGURIDAD, which deals with health and safety of employees.
- 5) REGLAMENTO DE ESCALAFON, which regulates promotion, recruitment and list of employees.

146. According to the above laws, working hours are as follows;

Monday - Thursday	7:00 - 16:00
Friday	7:00 - 15:00
Lunch time	12:00 - 12:30
Holiday	Saturday, Sunday and National holiday

The agreement concerning working conditions was revised in November in 1991. Before revising, working hours were 7:00 - 12:00 and 14:00 - 17:00 on weekdays and Saturday(8:00 - 12:00) was not a holiday.

147. Concerning the overtime work allowance, payment increases by 30% of basic hourly salary from 16:00 to 19:00, 80% from 19:00 to 24:00 and 105% from 24:00 to 6:00. If employees work on holidays, they will get twice as much as ordinary payment. Wages are paid every two weeks. Police section has a three shift system: 8:00 - 16:00, 16:00 - 24:00 and 24:00 - 8:00.

148. For massive equipment, such as forklift, tractor head and mobile crane, a special

license for operator is required. ENP subsidizes half of costs for obtaining the license.

149. There is a labor union, namely "SITRAENP"(Sindicato de Trabajadores de la ENP), established in February 1967. Permanent employees except managerial class are free to join the labor union and about 90% of all employees are members of the labor union. In ENP, the Human Resource Division is in charge of labor issues. Meetings between the Division and the labor union are held 30 or 40 times a year. If the negotiations break off, they are referred to the Board of Directors for a decision. SITRAENP is run with union dues collected from union members and there is no contribution or donation from any other organization. The main issues in the meetings are salary, recruitment and transfer of employees and so on. There is a organization named "CTH"(Coperativa de Trabajadores de Honduras) which unifies labor unions of the public corporations including ENP.

(4) Labor Accidents

150. The number of accidents during work and the amount covered by insurance are shown in Table 2-4-2. In 1992, number of labor accidents refunded by insurance was 54, of which about 85% occurred in Puerto Cortes. On the other hand, number of accidents which were not eligible for the insurance counts 555 and expenditure is 224 thousand Lps. The above does not include labor accidents of private companies' workers. Since 1990, both number and costs of insurance claims have decreased. The most frequent accidents involve being hit by cargo handling equipment. The main causes of these accidents are said to be carelessness of employees and general disregard for safety procedures.

(5) Training System

151. The Trainmar Project which was initiated in 1988, is, in short, the training center of ENP. Trainmar Project is an affiliate of the training center network which was established by UNCTAD some 10 years ago. More than 50 advanced and developing countries participate in this training center network. Training programs every six months are decided by the coordinators of the United Nations and Central American Countries. Training programs are divided into three courses which are given by the following organizations.

- 1) Training Maritima(TRAINMAR) : Concerning port management
- 2) Organizacion Internacional del Trabajo(OIT, International Labor Organization)
: Concerning training of port labor
- 3) Organizacion Maritima Internacional(OMI, International Maritime Organization)
: Concerning marine transportation

152. The term of the training is different depending on the theme, however, it generally ranges from one week to one month. The number of persons to be accepted is about 15 in each training program. All employees of ENP can participate in the training program. Depending on the training course, persons of other governmental organizations and private shipping companies are eligible. At present, there are four instructors involved in the Trainmar Project who give lectures, however, in future it is planned to invite lecturers from outside such as professors of university. The expenditure to carry out the training programs is as follows;

	the first half (Jan.-June)	the latter half (July-Dec.)
1990	99,935 Lps.	152,225 Lps.
1991	154,758	161,057
1992	205,345	186,576
1993	232,168	

153. There is no career development system such as transfer of personnel between divisions of ENP, other public corporations and governmental organizations. There are some programs for persons in managerial posts to visit port authorities of other countries and develop their ability.

2.4.3 Financial Position of ENP

154. ENP is financially independent from Central Government getting no subsidy. Conversely, ENP contributes to Central Government and Congress. Contribution to Central Government was started from 1976. It occupied 10% of total expense in 1991 and became a burden on ENP. Moreover, contribution to Congress was started from 1991. The same obligation is adopted to Hondutel and ENEE which get profits every year as ENP. For FCN, this contribution is not adopted. ENP is obliged by law to contribute 4% of part of operation income to municipalities where ports are located. "DIMUNDE" is the section in municipality of Cortes which receives this contribution and utilizes the money for developing infrastructure such as roads and drainage. Eight per cent of this "4% contribution" is exclusively used to construct infrastructure of Amapala.

155. The net income after tax of ENP is shown below.

(Thousand Lempiras)

Year	1983	1984	1985	1986	1987
	11,430	22,602	20,263	-14,532	-8,652
Year	1988	1989	1990	1991	1992
	13,511	10,926	11,863	28,553	25,991

ENP has made profits except in 1986 and 1987. In 1991 in particular, income from free zone service increased as a result of new investment made by a Korean enterprise and the change in the exchange rate, allowing ENP to make profits of about 29 million Lps. Income Statement for the past seven years is listed in Table 2-4-3.

156. The working ratio and operating ratio of port operation are shown in Table 2-4-3. Working Ratio means the proportion of Operation Expense Versus Operating Income, and Operating Ratio means the proportion of Operation Expense excluding Depreciation versus Operating Income. Concerning the working ratio, though it kept a level of less than 60% until 1990, the value increased from 1989 and in 1992 the working ratio reached almost 70%. It was mainly caused by increase of personnel expense. Concerning operating ratio, the tendency is similar to the working ratio, and was 82% in 1992.

157. Operation expense is divided into two parts, one is operation costs and the other is administrative costs. These costs except depreciation are shown in Table 2-4-4 and Fig 2-4-3. From 1989, it is noted that the growth rate of administrative costs is much faster compared to that of operating costs. In 1986 the ratio between operating costs and administrative costs was 1:2 and in 1991 it changed to 1:2.5. The ratio of personnel expense in administrative costs occupied more than 80%.

158. Personnel expense and number of personnel including temporary workers are shown below.

	1986	1987	1988	1989	1990	1991	1992
Expense (,000)	22,275	24,652	25,234	26,150	29,181	35,493	40,538
Number	1,548	1,621	1,386	1,335	1,361	1,279	1,278

Comparing personnel expense and number of personnel, personnel expense grows much faster than number of personnel. (See Fig.2-4-4) High increase of personnel expense in 1991 was caused by a wage revision.

2.4.4 Budget of ENP

159. The fiscal year is from January to December. The outline of budget-making procedure of ENP is as follows;

- 1) Personnel from the Planning Division inspect the port situation and hear from each superintendent in June. Then they prepare the next year's budget plan based on this information. (one month for information collection and budget-making respectively)
- 2) The plan is submitted to the General Manager.

- 3) Then the plan is forwarded to the Ministry of Finance and SECPLAN through the Board of Directors. (one month)
- 4) After necessary amendment, the Planning Division again propose the draft budget to the National Congress through the General Manager and the Board of Directors. (at least prior to 15th of September)
- 5) Approval of the Congress

160. The budget of ENP in recent six years is shown in Table 2-4-5. From 1991, the scale of the budget has expanded. This is because the exchange rate has changed to 5.4 Lps. from 2 Lps. against the US dollar. The budget in 1993 has not been finalized yet, however, it will be 1.6 times as large as that in 1992.

2.4.5 Tariff

161. ENP has a tariff table which is used at all ports in Honduras. In the past, it was paid in lempiras, however, the payment system has changed and now it is paid in dollars for ship service and part of container handling. Port tariff is shown in Table 2-4-6. Concerning charges of container handling, there is no difference between 20ft and 40ft container. The charge of land use is not included in the tariff table and it is decided by the contract between ENP and user. For ships over 300 GRT, it is compulsory to use pilot and tug. The charge of their use is included in harbor dues.

2.4.6 Port Management

(1) Management of Ship Entering and Departure

162. The working hours of the main port services are shown in Table 2-4-7.

163. Entering ships have to submit entering notice to ENP in advance. The notice, basically, has to be submitted three days before ship entry, however, the final acceptance is one day before. In the entering notice, entering date, type of vessel, cargo volume and other relevant matters have to be mentioned. The rule for berth allotment is generally "first come, first serve". At the port of Puerto Cortes, that rule is similarly applied, however, regular passenger ships and ships for dangerous objects and perishable goods such as fruits and fresh vegetables are given priority at the ports.

164. Concerning the procedure of customs clearance and quarantine, in case of import, after berthing port captain and persons from custom, quarantine, sanitary and immigration come on board and check. It takes about one hour on average. In case of export, they check only by documents.

165. Documents needed for customs clearance are import/export certification issued by Ministry of Finance, crew list and supply list. Customs office belongs to Ministry of Finance and there are 80 personnel in Puerto Cortes. At the other ports, there are some personnel at the customs offices.

166. Documents needed for quarantine are import/export certification issued by Ministry of Natural Resources, fumigation certification and sanitary certification. Quarantine belongs to Ministry of Natural Resources and there are five quarantine officers in Puerto Cortes. At the other ports, there are one or two quarantine officers.

167. In the entering notice, departure time does not have to be mentioned. Depending on progress of cargo handling, shipping agent informs ENP. Then, port tariff has to be paid in advance and liquidated after departure.

168. Concerning domestic trade ships, ENP collects only 10 Lps. for the 8 hours berthing from each ship. There is no control on these ships. They enter and berth without notice at any vacant berth. The staff of Department of Operations removes them before ocean going vessels enter.

169. Pilot and tug are compulsory for ships of 300 GRT or greater. At present, there is one pilot boat (44ft, 165HP) and two tug boats (75ft, 750HP). ENP has a plan to add one tug and two pilot boats.

(2) Cargo Handling

170. In the port of Cortes, cargo handling works are basically demarcated between ENP and private companies. Works inside ships and loading/unloading are done by private companies and other works are conducted by ENP. Work on wharf is generally done by ENP. Though ENP prepares supervisor and operators, stevedores are hired separately. Stevedores continue to work until cargo handling is finished. The shift system usually introduced in many ports does not exist in the port of Cortes. There are two licenses required for working in port area. One is stevedoring license which is effective in all ports and the other is customs license which is effective in each superintendent. Shipping agents have to pay 1,000 Lps. to ENP for these licenses. There is an association of shipping agents which consists of 14 shipping agents. The works of the agents are stevedoring, document preparation for customs clearance, planning of container handling and so on. The association itself possesses chassises, forklifts and other cargo handling equipment. The charge of stevedoring is established by each shipping agent. There is no unified charge in the association. ENP does not show an interest in establishing a stevedoring charge.

171. The port of Tela has been hardly used since the edge of the berth was burnt down. At present only oil is handled. Cargo handling is done by private companies and ENP only conducts management of the berth. Cargo handling in the port of La Ceiba is in a similar situation. In the port of Castilla, bananas, the main cargo in this port, are handled by a private company. The other cargoes are handled using a system similar to the port of Cortes. The cargo handling at the port of San Lorenzo is also similar to the port of Cortes.

(3) Computer System

172. Computer Center belongs to Planning Division. In 1970 the computers were introduced to the accounting section for the first time, and computer system has been introduced since 1983. Since then, keeping pace with the increase of information, the computer system has up-graded. At present, main computer is IBM AS/400 Model-35 with 2.5 giga-bite capacity and 24 mega-bite memory. The six terminal computers in 1984 were increased to 20 in 1989 and 15 more terminal computers were added in 1992. Totally, there are 35 terminal computers and they are connected with main computer on line. There are 12 printers. Concerning software, CASE (Computer Aided Software Engineer) is used. The main usage of computers is accounting, with some other usages such as payroll, inventory, statistics. There are 11 employees in the Computer Center including one system engineer, two system analysts, one programmer and two operators.

2.5 Cargo Handling System

2.5.1 Present Situation of Cargo Handling System

173. Among the six major Honduran ports, four ports are worth mentioning in terms of the cargo handling system: The ports of Cortes, Ceiba, La Castilla and San Lorenzo. There is no cargo handling equipment at the port of Amapala. They are handling a small amount of cargoes by hand. At the port of Tela, banana had been handled till 1992. However, a fire destroyed a part of the mooring facility in March 1992, and banana has not been handled since. At present, only liquid bulk cargo, such as petroleum and palm oil, is handled at the port. Rail-way line on the jetty is not used either. Therefore, the ports of Amapala and Tela are not included in this Chapter.

174. At the ports of Cortes, Castilla and San Lorenzo, cargoes are handled mechanically. In the port of La Ceiba, on the contrary, cargoes are handled almost exclusively by hand. There are two (2) derrick cranes on the pier which belong to Standard Fruits Co., however, the cranes currently are not in service. Cargoes are carried by five or six workers using rails installed on the quay. Then, cargoes are lifted by hand and loaded to ships through a wooden chute. The only machine used is a 1.5 ton forklift in the warehouse.

175. At the port of Cortes, cargo handling can be divided into three (3) categories by cargo types: container, dry bulk cargo and general cargo. (Liquid bulk cargoes are handled at the exclusive terminals and excluded from this chapter.)

For container handling, gantry crane is used when available, except TRR and SFH which use their ship gears. ENP assigns five (5) prime movers and chassises for Lo-Lo vessels. Some private trailers are working together with the ENP equipment in order to transport directly to/from consignees/consignors. When there are two vessels or more carrying containers, ship gears are used. There is only one straddle carrier which is in good working condition. (ENP purchased two more straddle carriers in 1993 and they are now in operation.) When multiple container handling operations take place simultaneously, one straddle carrier and one toplifter is available. And this sometimes causes a long line of trucks waiting for containers and a long waiting time of gantry crane. ENP assigns seven prime movers for a Ro/Ro vessel. However, some other private prime movers work for direct transportation to/from consignees/consignors.

TRR and SFC have their own leased container yards in the port. At their yards, they have their container handling equipment, toplifters for TRR and a transfer crane for SFC.

176. In case of dry bulk cargo, almost all cargoes, such as wheat and fertilizer, are transported directly to/from outside of the port by trucks or rail wagons. For some cargoes including grain, agents prepare their own unloading equipment (pneumatic grain

unloader). For other cargoes including fertilizer and zinc powder, they use ship gear with their own bucket. 125 ton crane with bucket is also used for dry bulk cargoes.

177. In case of general cargoes, ship gear is almost exclusively used for loading/unloading. Usually four or five forklifts of 3-4 ton capacity are arranged to transport these cargoes to the gate of warehouse and then smaller forklifts of 1.5 ton capacity are used to bring these cargoes into the warehouse.

178. At the port of Castilla, main function of ENP, in terms of cargo handling, is as lender of equipment and operators. They do not even arrange equipment and the number of equipment and operator is limited. The largest portion of cargo handling is managed by the greatest user of the port, SFH. They make arrangements for ships calling at the port. The company has a container yard, various cargo handling equipment and maintenance shop.

179. At the port of San Lorenzo, they use ship's gear when loading or unloading cargoes to/from vessels including container. ENP arrange one (1) or two (2) prime movers and a toplifter at the yard for container cargo handling. Here, ENP has a monopoly in cargo handling operation. There is no private participation (as of April, 1993).

Inventory of equipment and its working condition

180. Cargo handling equipment by port (Cortes, Castilla and San Lorenzo) is shown in Table 2-5-1.

The port of Cortes has the biggest inventory of cargo handling equipment. Major equipment consists of one gantry crane, three straddle carriers, seven mobile cranes, 53 forklifts, 27 prime movers, 40 chassises and three scales.

At the port of Castilla, there are four mobile cranes, four forklifts, two wheel loaders, one toplifter, one prime mover and six chassises. At the port of San Lorenzo, there are three cranes, seven forklifts, two wheel loaders, one toplifter, two prime movers and five chassises.

181. The Study Team has obtained various data and information about the working condition of equipment. One piece of data provided by ENP is the list of working records of forklifts and mobile cranes. These are the only two (2) pieces of equipment in which we can trace their activity through a tachometer. None of the rest have their working records. Another item provided by ENP is the cost for maintenance of, again, forklifts and mobile cranes. There is no other data which shows directly the working conditions of equipment. Therefore, following analysis is based on the above mentioned data as well as Team's observation and interviews with appropriate ENP personnel.

182. The working conditions of container handling equipment in the port of Cortes are shown in Table 2-5-2. The gantry crane is in fair condition, however, it sometimes breaks down. In 1992, it broke down four (4) times and each break-down required five to seven days for repair. (The crane was left broken for more than two (2) weeks as of March 24.) From the port statistics provided by ENP and some calculations, we assume the total operation time of gantry crane as about 2,200 hours in the year 1992. The other major point to be mentioned is that only one of the three straddle carriers is in good working condition.

183. Figure-2-5-1 shows the relation between age of crane and working hour and Figure-2-5-2 shows the working hour - maintenance cost (costs for personnel, parts and other direct expenses) relation. From figure-2-5-1, cranes of 40 ton and 125 ton were most frequently used in 1992. When considering the age, the crane of 25 ton is very well utilized. The general tendency of the graph indicates that there is no relation between the age of the machine and working hours. From the figure 2-5-2, it is noted that direct maintenance cost (costs for personnel, parts and other direct expenses) is proportional to working hour. The more the crane works, the higher the direct maintenance cost. And there is no clear correlation between maintenance cost and the age of equipment.

The interview results back up the above analysis. Two cranes (50 ton and 22 ton) out of seven (7) are said to be in poor condition although these two cranes were purchased rather recently among the seven cranes. 22 ton crane is under repair as of late March. On the contrary, 125 ton crane and two 15 ton cranes are in very good working condition.

184. Figure 2-5-3 shows the relation between age of forklifts and working hours and Figure 2-5-4 shows the relation between working hours and direct maintenance cost(costs for personnel, parts and other direct expense). From Figure 2-5-3, it is noted that although forklifts of 1.5 ton are used more often than others, general tendency of the usage of forklifts largely varies from one to another while the ages of the machines are 12 years old or less. However, machines of ages older than 17 are scarcely used. After closely looking at Figure 2-5-4, it is noted that the maintenance costs for forklifts of 1.5 ton and 3 ton are very low while the costs scatter over a rather wide range for the forklifts of 4 ton and 7.5 ton. One of the possible reasons of low maintenance cost for 1.5 ton forklift, besides the age of the machine, is that all 1.5 ton forklifts are working in the warehouse in principle.

185. There are three scales at the port of Cortes. Two scales are in good working condition. They are the scales at the gates of No.3 and No.11. The one at the east side of Yard No.10. is out of order and ENP has no intention to repair it. The frequency of use of these scales is low because ENP is checking the quantity and numbers of cargoes by manifest only.

186. At the port of Castilla, the analysis is conducted only by data provided by ENP and the Team's short observation. According to the data provided by ENP (Table 2-5-3), it is noted that; one chassis is not in good working condition and one of the 1.5 ton forklifts is working poorly. Very large part of handling cargoes at the port is container cargoes of SFC. The others include a small amount of dry bulk cargoes (such as fertilizer) and general cargoes. Therefore, the ratio of container cargo handling is very high.

187. At the port of San Lorenzo, the analysis is also based on the limited data and observation. Table 2-5-4 shows the conditions of cargo handling equipment at the port of San Lorenzo. There are 20 pieces of cargo handling equipment. This number is the second largest in ENP next to Cortes. Volume of cargoes handled ranks fourth among major Honduran ports. This means that there is no other private operator at the port. ENP is a monopoly in terms of cargo handling at the port. All the machines for container handling including toplifter and two prime movers are working satisfactorily. However, two cranes (5ton, 30ton) out of three are working poorly. Only one 30 ton crane is working well. One 3 ton forklift is working poorly.

Maintenance

188. Maintenance workers for cargo handling equipment by port is shown in Table 2-5-5. Port of Cortes has the biggest inventory of equipment and employs the largest number of workers. Basic philosophy of maintenance system is almost same from port to port, "inside port maintenance", thus, only Port of Cortes is described in this report.

189. Maintenance and repair of cargo handling equipment is divided into two departments; DME (Department of Maintenance) for general cargo handling equipment and TCC (Container Terminal) for container cargo handling equipment. DME has 36 workers including mechanics, welders and lubricators. TCC has 14 workers for maintenance. The only check which is conducted regularly is the change of lubricant. Basically, the troubles are found by operator and reported to DME through the supervisor and supervisor orders repair to DME. Repair record is furnished by check card of each handling equipment under DME. Also, periodical inspection date is recorded in this check card. DME controll cargo handling equipment by this check card.

Facilities (Warehouse and open yard)

190. Table 2-5-6 lists warehouses by port. Location of warehouses at the port of Cortes is shown in Fig.2-5-5. There are nine warehouses at the port of Cortes. Among these warehouses, No.1 warehouse (4,811.57sq.m), No.3 warehouse (3,201.7sq.m) and No.4 warehouse (4,988.23sq.m) are generally used for imported general cargoes except dangerous cargoes. There is no rule of cargo assignment to specific warehouse. West side of

No.1 warehouse is used by Department of Supply which belongs to General Service Division of ENP. The problem of Warehouse No.3 is the congestion at the front area of the gates. At wharf No.3 bananas and general cargo are handled and rail wagons and trailers occupy the area for considerable periods of time. This makes the usage of the warehouse rather difficult. Therefore, No.3 warehouse is not used very much. No.2 warehouse (2,224.47 sq.m) is for dry bulk cargoes such as fertilizer etc., in bags. There are some other small rooms such as TRR port office and cargo handling tools storeroom (422.79 sq.m), Coffee Warehouse (422.79 sq.m) next to Warehouse No.3, Auction Warehouse (Remate de Bodega: 485.16sq.m), Fyffes Port Office and storeroom (376.93 sq.m) and Dangerous Cargo Warehouse (436.6sq.m). The last is used for toxic, inflammable and corrosive cargoes.

191. Table 2-5-7 shows open storage areas and tanks. Location of yards at the port of Cortes is shown in Fig. 2-5-6. The most remarkable characteristic is the prevalence of containers at almost every available position. Yard No.1 (10,511.29sq.m) which is located at the south side of No.2 warehouse and unpaved is used mainly for the storage of some buckets for dry bulk cargo handling. In front of No.1 warehouse is Yard No.2(6,020sq.m) which has a roof. Stuffing /unstuffing of LCL (Less than Container Load) is handled in this yard. Yard No.3(3,524.1sq.m) behind (north side) Warehouse No.3 and Yard No.4(5,240.66sq.m), located south side of operation department office building, are also occupied by containers. Yard No.5(5,299.3sq.m) located in front of the port of Cortes building is used for car parking and crane parking. Yard No.6(3,400.74sq.m) and No.7 (5,193.85sq.m) located around gate No.6 are used by mechanic shop, ENP main office building and Technical Division building. Yard No.8(4,586.4sq.m) located at the north side of Warehouse No.4 are used for some containers and general cargoes (such as rolled wire and small plant). Yard No.9 which is next to Yard No.7 is used for big construction machineries.

192. Container Yard (24,471.29sq.m) is located behind No.5 berth. The capacity of the yard is 856 slots, of which 54 are for reefer containers. There is no CFS. Yards No.10(14,000sq.m, 282 slots for dry, 60 slots for reefer), No.10 1/2 (which is located between school and flour warehouse, 68 slots) and No. 11 (44,000sq.m, 389 slots for Ro/Ro) are called triangle places and used for container stacking as well as storage of container with chassis. Half of Yard No.11 was still empty during the Team's observation period. TRR and SFC have their own container yard in the port area. Capacities of these container yards are 364 slots (40 feet) for TRR and 214 slots(which are 128 container, 28 reefer and dry 58) for SFC. Container yard plan is shown in Fig. 2-5-7.

193. There is a warehouse at the port of La Ceiba. This warehouse has an area of approximately 270 sq.m which is not used for port of La Ceiba trade.

194. At the port of Castilla, there are two timber warehouses just behind the berth, named 5A and 5B. The area of each warehouse is 2,977.92sq.m. The usage of these warehouses is very limited nowadays. There are two palm oil tanks, two asphalt tanks, two diesel oil tanks and two gasoline tanks at the east side of the port area. There is a container yard, mechanic shop and office of SFH in this port. Container yard has 9,000sq.m area and transfer crane.

195. At the port of San Lorenzo, there is a timber yard with roof (1,204.08sq.m), general cargo warehouse (2,408.16sq.m) and cotton warehouse (1,806.12sq.m). The major purpose of the general cargo warehouse was to store imported cargoes, however, the warehouse is almost empty at the time of the Team's visit. Cotton Warehouse was also empty because of the decreased volume of cotton export. There was small amount of timber at the timber yard. There is a 27,246sq.m open timber yard and a 7,378sq.m general cargo yard in this port. These yards are not paved. There is no facility for container cargoes. Stuffing of coffee into containers is conducted on the road which is located on the west side of the general cargo yard. Container is stocked in front of general cargo warehouse and cotton warehouse. Timber yard is almost empty. Molasses tank (3,785cu.m) is located on the north side of timber yard with roof. Arrangement of warehouses and yards at the port of San Lorenzo is shown in Fig. 2-5-8.

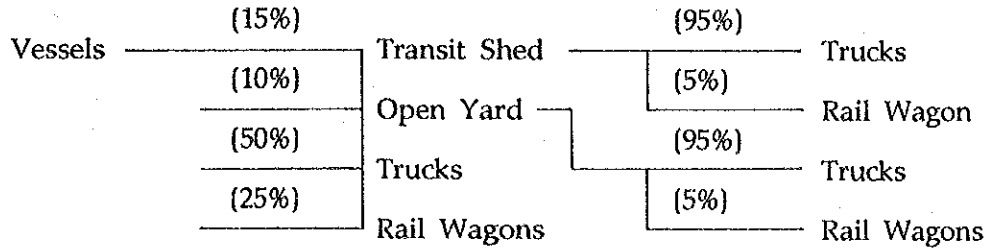
Cargo flow in the port

196. Cargo flows in the port provide a basis for evaluating the capacity of port facilities. The following numbers are provided by ENP. The distinct feature is that a small portion of the cargoes are transported through warehouse or open storage inside the port.

197. Flow of general cargoes is shown in Fig. 2-5-9. In case of import general cargo, 15% of cargoes are stored through the warehouse and 10% of cargoes are stored through the open storage. Other cargoes are directly moved to the outside by truck (50%) and rail wagons (25%). Cargoes through the open storage are carried by truck(95%) and rail wagon(5%). Cargoes through the warehouse are also carried by truck(95%) and rail wagon(5%). In case of export general cargo, a very small amount of cargo goes through the warehouse(1%) and through the open storage(8%). Winery per cent of general cargo are carried into vessel directly by truck. This is the reason that trailers and rail wagons crowd on the apron when bananas are loaded.

General Cargo

(1) Discharging (Handling Ratio)



(2) Loading

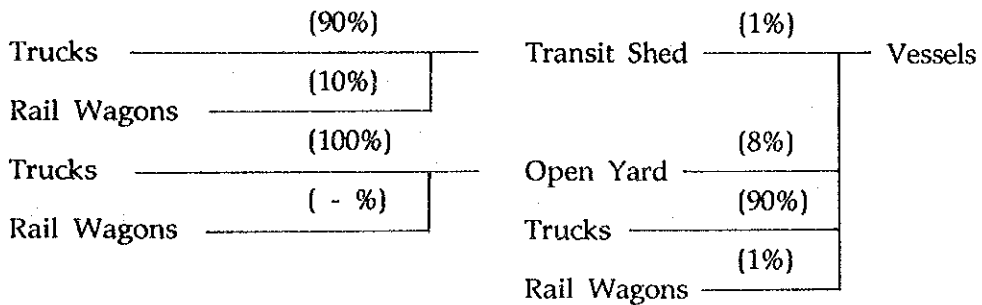
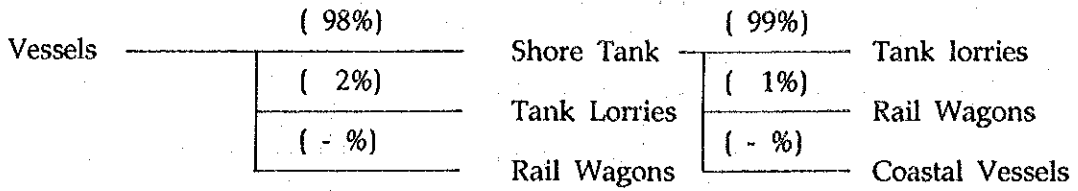


Fig. 2-5-9 Present General Cargo Flow at the Port of Cortes

198. In case of liquid bulk cargo, import liquid bulk cargo such as chemical products and detergent (except petroleum products) is put into the tank(98%). After the tank, the cargoes are carried out by tank lorry(99%). Another 1% is carried by rail wagons out. Ninety-eight of liquid bulk cargoes are exported through the tank. Another 1% cargoes is carried by tank lorry into tanker directly. Flow of liquid bulk cargo is shown in Fig.2-5-10.

Liquid Cargo in Bulk

(1) Discharging (Handling Ratio)



(2) Loading

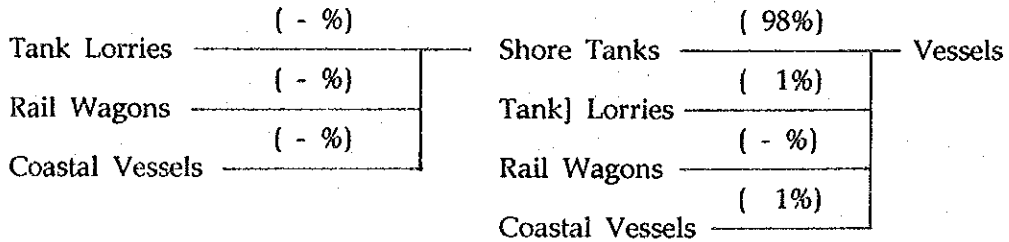


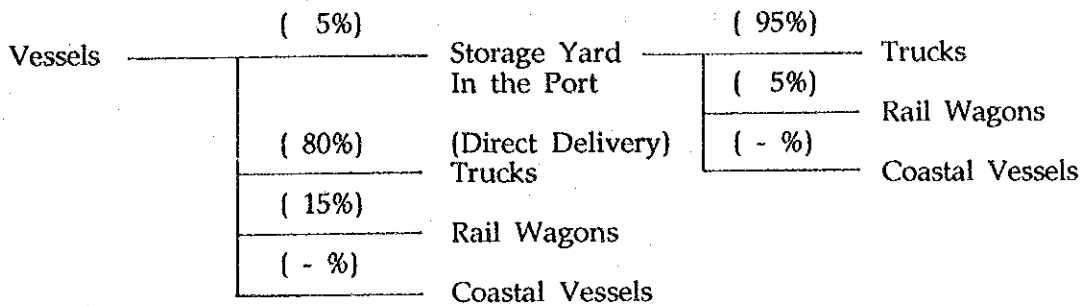
Fig. 2-5-10 Present Liquid Bulk Cargo Flow at the Port of Cortes

Source:ENP

199. In case of dry bulk cargo, large portion of import dry bulk cargoes are fertilizer and grain. 80% of these cargoes are transported directly to the outside by truck and 15% are transported by rail wagons. Only 5% of these cargoes are carried into warehouse (No.2). Dry bulk cargo through the warehouse are carried out by truck(95%) and rail wagons (5%) While 40% of export dry bulk cargo are carried into warehouse or yard by truck(70%) or rail wagon(30%). Another 60% is carried directly to the quay-side. Flow of dry bulk cargo is shown in Fig.2-5-11.

Dry Bulk Cargo

(1) Discharging (Handling Ratio)



(2) Loading

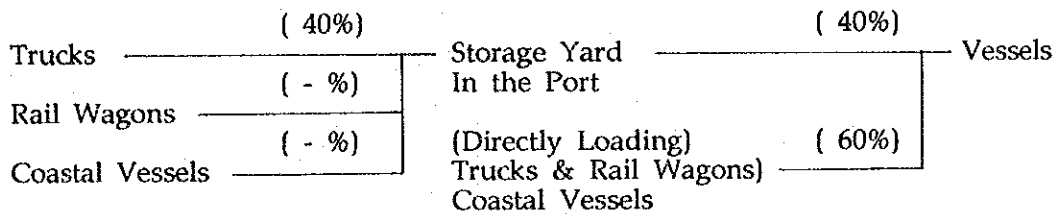
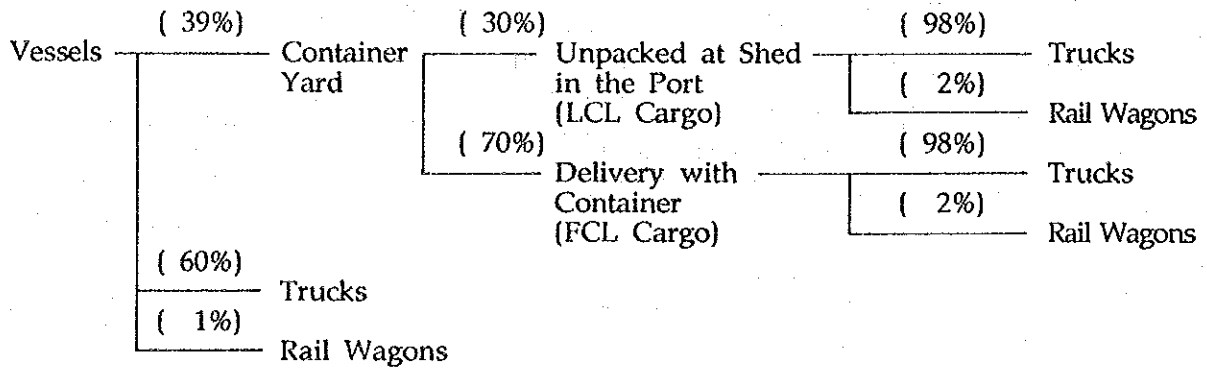


Fig. 2-5-11 Present Dry Bulk Cargo Flow at the Port of Cortes

200. In case of container cargo, 60% of import containers and 1% of containers are carried out by truck and the other by rail wagon directly. Seventy percent of container which are stocked in the port are carried out by truck(98%) and rail wagon(2%). And the other 30% of containers which are unstuffed in the port are carried out by truck(98%) and rail wagon(2%). Of containers, which are transported by truck, and 1% of container, which are transported by rail wagon, are carried into vessel directly. Write out when number begins a Sentence of containers, which are carried into container yard, and 24% of containers, which are stuffed in the port, are carried in the port by trucks. Flow of container cargo is shown in Fig.2-5-12.

Container

(1) Dischaging (Handling)



(2) Loading

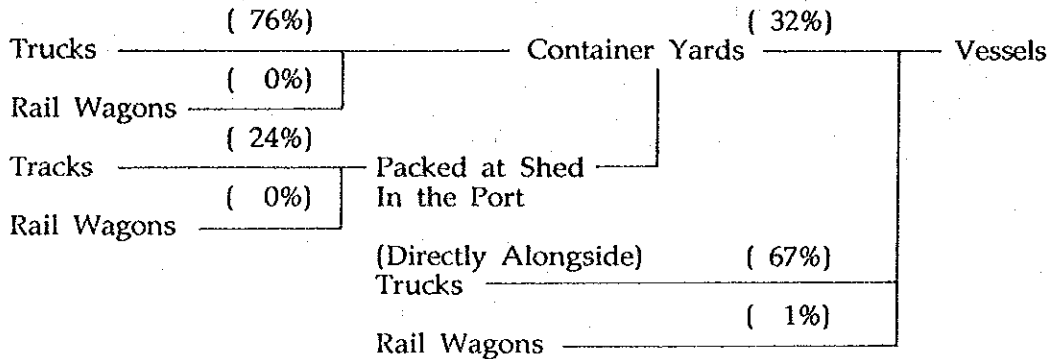


Fig. 2-5-12 Present Container Cargo Flow at the Port of Cortes

201. Containers are directly loaded/unloaded from/to chassises by the gantry crane or ship gear. The yard operation is conducted mainly by a straddle carrier with supplemental use of top-lifters. Some containers are transported directly to/from the Yard No.11 or the outside of the port, including Ro/Ro container. The vessels owned and operated by TRR use ship gear and the fleet of container handling equipment for vessels of TRR is owned by TRR except for one ENP prime mover. Container handling equipment used for vessels of SFH is entirely ENP owned. Containers are transported directly to their container yard.

202. There is no central control system at the container yard. A planner gives an instruction to each operator under the gantry crane. There seems to be no fixed rule of container traffic in the container yard. Prime movers go arbitrarily. Moreover, there is a port road running between container stacking areas and general port traffic

frequently crosses the path of the straddle carrier and prime mover.

Procedure of cargo handling operation

203. In case of general cargo and dry bulk cargo, consignee/ consignor or their agents have to notify Operation Department of ship arrival time 72 hours in advance. Then, Cargo Handling Section, Maritime Service Section and Warehouse Section have a meeting one day prior to ship arrival. Maritime Service Section assigns the berth, Warehouse Section allocates the warehouse and Cargo Handling Section arranges cargo handling equipment.

204. Cargo Handling Section consists of eight forklift operators and eight crane operators. So called "Por Llamada" operators work under one week contracts with ENP. Extra operators will be contracted out when the volume of cargo becomes very large. Number of operators for cargo handling equipment is shown in Table 2-5-8.

205. One gang consists of several workers. Some work quay side and others work in warehouses. There is one supervisor, two checkers, four helpers, and five forklift operators for quay side operation. Two forklift operators and two arrangers take care of cargoes in the warehouse. There is no shift of gang. The gang continues to work until all the cargoes are loaded/unloaded except forklift operators work has 12 hour shifts. Sometimes the work lasts very long (one full day or more, they say) , which could lower the productivity of workers and in turn increase the possibility of safety problems.

206. In case of export, cargoes should be carried in port 12 hours before the ship's arrival time. Bananas, melons, watermelons and other fruits are carried directly to the port from the outside by trucks or rail wagons. TRR handles their fruits by banana conveyor installed at Wharf No.3. In case of sawn timber, it is directly carried in to the quay side by rail wagons, however, it sometimes is stocked in the rail yard in front of No.10 and 11 yard.

207. In case of container, TCC and maritime service section have a meeting to determine berth allocation, through which TCC arranges cargo handling equipment and their operators.

208. TCC has two gantry crane operators, four straddle carrier operators and 11 prime mover operators. Gang of container handling consists of the following members;

Ro/Ro

1 Planner
1 Controller
1 Checker
7 Prime Mover operators
Total:10 Workers

Lo/Lo

1 Planner
1 Controller
2 Checkers (Import/Export)
2 Crane operators
4 Straddle carrier operators
2 helpers
8 Prime mover operators
Total:20 Workers

2.5.2 Productivity of Cargo Handling

Turn around time of vessel

209. Table 2-5-9 shows the average turn around time for each vessel type in the port of Cortes. Data used in the Table is based on 1992 port statistics provided by ENP. Dry bulk cargo carrier has the longest turn-around time. Average staying time of these vessels is 166.3 hours (6.9 days). On the contrary, unit cargo vessels including fruit container, container and Ro/Ro vessels show the shortest turn around time; 16.3 hours (0.7 days). While liquid bulk cargo (petroleum) has shortest waiting time of 2.5 hours, dry bulk has the longest waiting time of 34.0 (almost 1.5 full days).

Efficiency of cargo handling

210. Table 2-5-10 shows the average cargo handling volume for each vessel type. Efficiency of cargo handling depends on many factors. Therefore simple comparison with another port is not appropriate. The best way to evaluate the efficiency is to observe its change over a considerable period of time, hopefully five (5) years or more. At the moment, the data obtained is only for 1992 and the following analysis is conducted based on the 1992 data only. Petroleum is handled at more than 300 tons per hour. The efficiency of the cargo depends on the capacity of installation. The efficiencies of other cargoes depend on the productivity of cargo handling operation. Container and RO-RO shows good efficiency among the cargoes, however, there seems to be room to improve the efficiency in handling these cargoes.

211. Table 2-5-11 shows observation results of container handling productivity conducted by the Team. From the Table, average productivity of container handling is 24.74 box per hour by net production. This number is thought to be a good value if the current port situation is taken into account. The efforts made by ENP as well as private companies should be praised. Among the containers, productivities of banana companies show better results although they use ship gear for container handling and their container yard is far from the quay side. The key element which makes their productivity high is their systemized container operation. They understand the locations of containers on board as well as at the yard and arrange an appropriate number of container carriages between the quay and the yard. The efficiency of the gantry crane which is operated by ENP was measured two (2) times. The first measurement shows 22.7 box per hour (net production). The detailed observation of this measurement indicates that half of container stocked is behind gantry crane and ready to be carried by truck. The second measurement gives 14 box per hour. In this case, each container was transported to/from the container yard thus gantry crane sometimes is obliged to wait for truck.