9.8 Phased Implementation Plan of the Project in the Short-Term Plan

9.8.1 Extraction of a Project

A port expansion project has been extracted from the Short-Term Plan proposed in Sections 6.3 and 6.4. The project components are shown hereinafter.

9.8.2 Project Components of the Short-Term Plan

The main components of the project are listed as follows:

(1) Infra-structures

- Construction of breakwaters
  - Main breakwater north part: 1,220 m
  - Main breakwater east part: 570 m
  - Sub-breakwater: 620 m
  - West breakwater (extension): 300m
  - Total: 2,710m
- Creation of the New Access Channel
  - Width: 210 m
  - Water depths: 16.5 m
- Creation of basins
  - Water depths: 16 m
  - Diameter of turning circle: 760 m
- Land reclamation
  - Area: 25 ha
  - Revetments: 400 m
- Construction of berths
  - Container Berth: 540 m, 16 m (water depth)
  - Multi-purpose Berth: 680 m, 16 m (water depth)
- Construction of railway
  - Inner port tracks: 2,710 m
- Construction of access road
  - Inner port road (land): 2,860 m, 4 lanes
  - Flyover bridge (land): 1 unit
  - Access road (land): 900 m, 4 lanes
  - Inner port road (off-shore): 1,435 m, 4 lanes
  - Temporary road (off-shore) 315 m, 2 lanes
- Preparation of a basin for port service boats
  - Basin: 4 m (water depth)

- Berth length: 320 m

(2) Super-structures

- Installation of container gantry cranes
  - Number of units: 2
  - Out reach: 50 m (18 rows)
  - Back reach: 16m
  - Rail span: 30 m
- Construction of Storage facilities
  - Shed with floor area of 7,500 sq. m
  - Cold storage with floor area of 5,500 sq. m

(3) Cargo-handling Equipment

- Purchase of RTGs
  - Number of units: 4
  - Specification: 4 high 5 over type
  - Rail span: 23.47 m

9.8.3 Demarcation of Capital Investment

The supposed demarcation of the capital investment in the said project is as follows:

- Port infra-structures: SEINFRA(Ceara State Port Integration Company (CEARA PORTS))
- Railway sidings: CFN
- Access road: SEINFRA (DERT)
- Super-structures: SEINFRA(CEARA PORTOS), Private terminal operators as concessionaires/lessees
- Cargo-handling Equipment: Private terminal operators as concessionaires/ lessees/service providers

9.8.4 Financial Resources

The potential financial resources required for investment in the said project are supposed as those from the Federal Government, State Government, BNDES (National Bank of Social Economic Development), BNB (Northeast Bank of Brazil), and multi-lateral/bi-lateral financial institutes.

9.8.5 Phasing of the Short-Term Plan

The Short-Term Plan has been divided into two phased projects, viz. the Urgent Project and the Remain Project of the First Phase Project. The Urgent Project needs to be completed by the completion of the construction of a steel mill factory in CIPP scheduled in the year 2008.

9.8.6 Urgent Project

(1) Influence of CSC operations on Pier No1 Usage at Pecem Port

The Urgent Project of the Short-Term Plan needs to be completed by the commencement of the operations of Ceara Steel Company (hereinafter referred as CSC) at CIPP that is said to be scheduled in 2009. The construction works of its factory is scheduled in December of 2005. After the start of CSC's operations, Berth No.1 of Pier No.1 will be solely dedicated to receive iron-ore-pellets carriers due to the installation of trestles for belt conveyors beneath the existing ship unloader installed along the berth.

Berth No.2 of Pier 1 is planned to be dedicated to receive bulk carriers to transport steel products comprising mainly exported thick slabs to be manufactured by CSC at CIPP and partly imported steel rolls, etc. which will be destined to or originate from the industrial areas in the hinterland of Pecem Port. The amount of thick slabs from CIPP is expected to be 1.5 million tons when CSC is in full operation. By adding other steel products estimated over 200,000 tons, a gigantic amount of steel products (totalling in around 1.7 million tons) will saturate Berth No1; in other words, an additional berth for handling steel products is needed.

On the other hand, currently Berths No.1 and No.2 of Pier 1 are mainly used to receive container ships and, to a lesser degree, vessels for steel products. The number of container ships calling at the Port is getting larger and larger year by year showing an increase of 25% in container throughput and around 50% in the number of calling ships in 2005 from the preceding year. In addition, in June of 2005, cabotage container services covering the northern and southern Brazilian coast started. The Port has an auspice of berth congestion from 2005 as two vessels often berth simultaneously and off-shore waiting has already occurred.

As the start of the steel mill operations at CIPP that will commence by 2009 (45 months in total) new berths for both container ships enabling them to shift from Pier 1 and ships for steel products in addition to Berth No.2 of Pier 1 are equired.

(2) Construction of Pier 3

Taking account of the completion of the construction works of CSC's factory including the installation of belt conveyors on Pier No.1 that is said to be by the end of 2007 (24 months), the construction of Pier 3 is considered to be an only option to meet the requirement mentioned in Paragraph (1).

(3) Usage Plan of Pier 3

1) Remain Project of Short-Term Plan (2008 – 2011)

Pier 3 is planned to be used as a berth for handling containers in the Remain Project of Short-Term Plan from 2008 to 2009. From 2009 to 2011, the pier is planned to be used for steel products as well as for containers.

2) Second Phase Project (2012 - 2021)

Pier 3 is planned to be used for handling solely for handling general cargoes including steel products, bagged cement, fresh fruits etc. Handling containers in the First Phase Plan period has been planned to be shifted to the full-scale container terminal proposed in the Remain Project period of Short-Term Plan.

3) After Long-Term Plan (after 2022)

Pier 3 is planned to be used solely for handling general cargoes without any conversion in terms of berth use from the Remain Project of the Short-Term Plan.

(4) Facility Layout Plan of Pier 3 during the First Phase

As previously mentioned Pier 3 is planned to be used for container-handling during the first phase period. The dimensions of the pier which will be used for general-cargo handling are as follows:

Apron for forklift usage:	15m
Shed width:	50m
Shed truck side:	15m
Port road:	20m
Total:	100m

The basin slip width between Piers 2 and 3 is computed as 345m, which narrowly clears the required width of the LOA of potentially coming ships (see Table 9.2.1 in Section 9.2). There is a probability of receiving post-Panamax-typed container ships over 340m, and taking account of the berthing of petroleum tankers laden with typical dangerous cargo, it is advisable not to further narrow the basin slip width; in other words the pier should not be extended beyond 100m.

By using the width of 100m as a given condition, a sample facility layout is shown in Figure 9.8.1 assuming the usage of container gantry cranes and RTGs. According to the balance of the required total container storage capacity and the existing storage capacity on land yard within the Port as shown in Table 9.8.1, container storage on the Pier 3 is not necessarily required until 2012, and after 2012, the shortage can be balanced by the preparation of the full-scale container terminal, not by Pier 3. Available container storage capacity on Pier 3 by the adoption of RTG system has been estimated as 1,173 TEUs

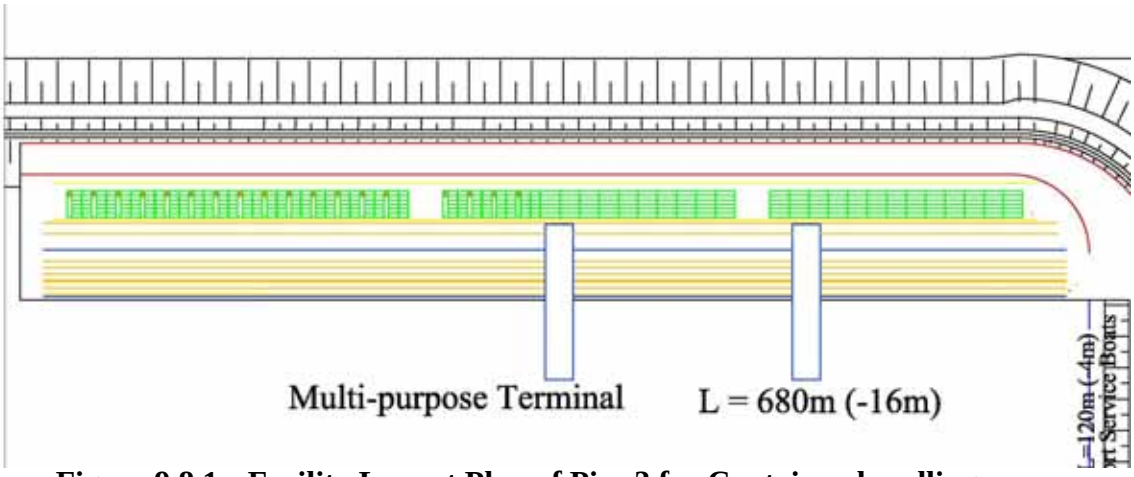


Figure 9.8.1 Facility Layout Plan of Pier 3 for Container-handling

Table 9.8.1 Annual Throughputs and Facilities Requirement at Pecem Port through the Years 2012 and 202

Year	Thick Slabs	Steel Prod.	Berth Requirement		CNT	Required	Existing	Shortage
	'000 tons	'000 tons	Berth No.2 (Steel Prod.)	Berth No.1 (Iron Pellets)	'000 TEUs	TEUs	TEUs	TEUs
2002		116			30			
2003		142			67			
2004		182			83			
2005		161			105			
2006		169			129			
2007		177			159			
2008		185			195	2,216	4,500	
2009	500	193	0.6	0.3	240	2,725	4,500	
2010	1,500	203	1.8	0.6	295	3,351	4,500	
2011	1,500	212	1.8	0.6	363	4,121	4,500	
2012	1,500	222	1.8	0.6	446	5,068	4,500	568
2013	1,500	226	1.8	0.6	473	5,368	4,500	868
2014	1,500	231	1.8	0.6	501	5,686	4,500	1,186
2015	1,500	235	1.8	0.6	531	6,023	4,500	1,523
2016	1,500	240	1.8	0.6	562	6,380	4,500	1,880
2017	2,250	245	2.7	0.8	595	6,758	4,500	2,258
2018	2,250	250	2.7	0.8	631	7,158	4,500	2,658
2019	2,250	255	2.7	0.8	668	7,582	4,500	3,082
2020	2,250	260	2.7	0.8	707	8,031	4,500	3,531
2021	2,250	265	2.7	0.8	749	8,507	4,500	4,007
2022	3,000	270	3.6	**1**	794	9,011	4,500	4,511

Notes (1) Saturation Year in Berth Occupancy
Notes (2) Stacking Capacity of Pier 3 CNT Yard::1,250 TEUs

(5) Project Components

The main components of the urgent project are listed as follows (see Figure 9.8.2):

- Construction of breakwaters
  - West breakwater (extension): 300m
- Land reclamation
  - Area: 7 ha
  - Revetment: 100 m
- Construction of berths
  - Multi-purpose Berth: 680 m, 16 m (water depth)
- Construction of access road
  - Inner port road (land): 2,860 m, 4 lanes
  - Flyover bridge (land): 1 unit
  - Access road (land): 900 m, 4 lanes
  - Inner port road (off-shore): 100 m, 4 lanes
  - Temporary road (off-shore) 315 m, 2 lanes

- Preparation of a basin for port service boats
  - Basin: 4 m (water depth)
  - Berth length: 120 m

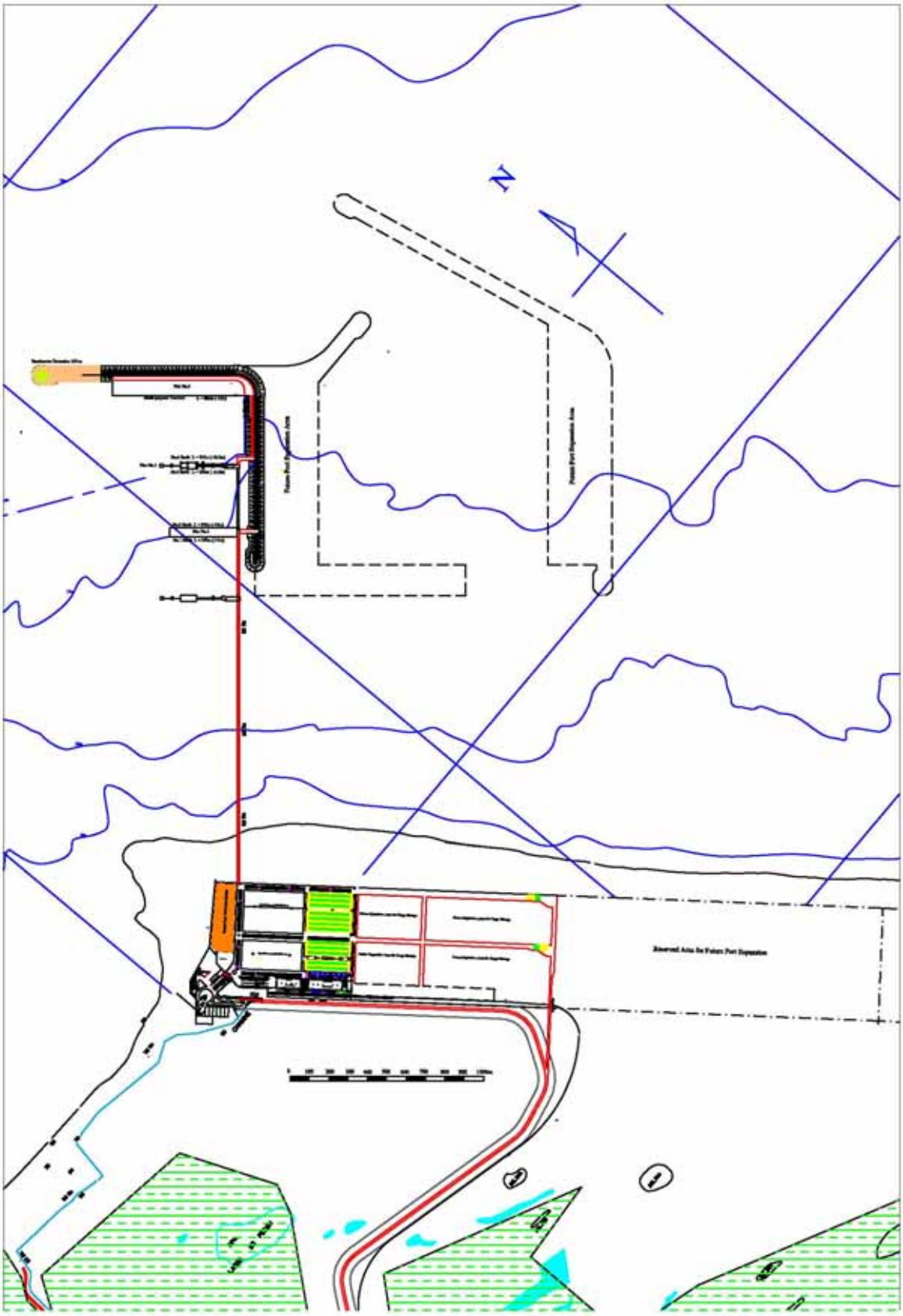


Figure 9.8.2 Facility Layout Plan of the Urgent Project

9.8.7 Implementation Schedule of the Short-Term Plan

The schedule of the Short-Term Plan consisting of the Urgent Project and the Remain Project of the First Phase Project in terms of implementation has been roughly drafted as follows:

(1) Urgent Project

1) 2006: Start of construction works
2) In mid 2008: Completion of construction works
3) In mid 2008: Start of terminal operations

(2) Remain Project of the First Phase

1) In mid 2008: Start of construction works
2) At the end of 2012: Completion of construction works
3) At the end of 2012: Start of terminal operations

Detailed construction program from the year 2006 through 2012 is mentioned in Section 9.7.2.

9.8.8 Required Considerations in Implementation of the Project

The following matters need to be considered in the implementation of the said project so as to ensure smooth implementation:

- Adequate linkage between the off-shore port facilities and the land port facilities connected by the access bridge so as to make the most of their potential capacities
- Reasonable demarcation of investment in railway yard between CFN and SEINFRA (CEARA PORTOS) through the coordination between them,
- Adequate coordination with the construction works of the steel mill in CIPP,
- Settlement of potentially generated conflicts of interests between the current or newly participating port users due to the emergence of the new off-shore port facilities,
- Attraction of Private Investment in the Project according to PPP (Public and Private Partner ship) principle,
- Promotion of so-called “port sales” so as to further advertise Pecem Port,
- Minimization of the potential negative social impact on the residential areas in the vicinity of the project site through the collaborative works with the Municipality

9.8.9 Possibility of Grain and LNG Handlings in the Stage of Short-Term Plan

(1) Grain Handling

Though in this study, a new grain berth has been proposed to be constructed in the second phase project in the Long-Term Development Plan with the target year of 2022, there is a possibility that the grain berth would be required in the stage of the Short-Term Plan with the target year of 2012 as a result of earlier completion of CFN’s railway project connecting Cerrado region extending the states of Piaui, Maranhao and Bahia and Pecem Port. If such is the case, the new grain berth could be constructed in

the stage of the Short-Term Plan at the site already proposed in the Long-Term Plan to the east of the existing port facilities. In this case, the main breakwater proposed in the Short-Term Plan needs to be extended.

(2) LNG Handling

A feasibility study on LNG gasification plant within CIPP equipped with a LNG berth is merely conducted by PETROBRAS and is scheduled to be completed in mid 2006. Thus, at this moment, there is still uncertainty regarding whether LNG would be supplied by land or by sea, or both, the degree of transportation by land and by sea, and required implementation schedule of the possible project. Currently, so-called Pier 0 is planned for a LNG berth in the south of the existing Pier 1. If the LNG berth is urgently required, to protect Pier 0, the west breakwater needs to be further extended from the proposed length of 300m. On the contrary, if required later, a LNG berth could be installed within the proposed new port area to the east of the existing port facilities. The possible sites are shown in Figure 9.8.3 for reference.

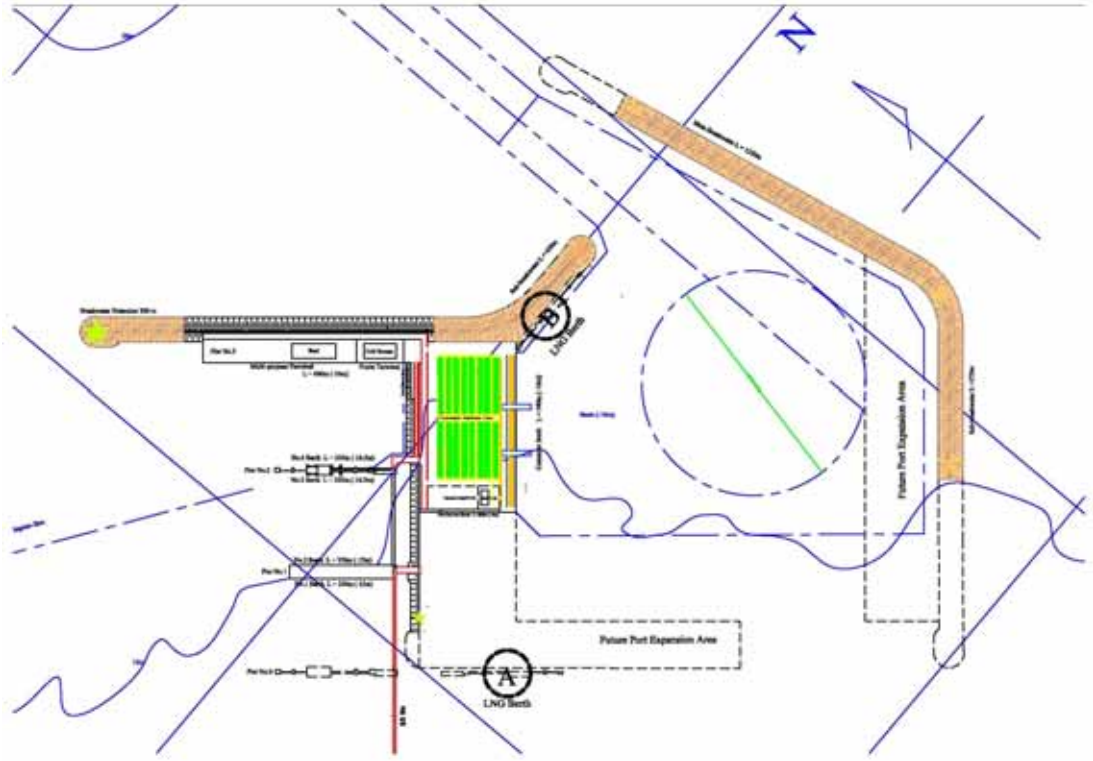


Figure 9.8.3 Possible Sites of a LNG Berth (A and B)

9.9 Economic Analysis

9.9.1 Purpose and Methodology of Economic Analysis

The purpose of this section is to appraise the economic feasibility of the Project from the viewpoint of the national economy. This chapter focuses on whether the benefits of the Projects exceed those that could be derived from other investment opportunities in Brazil. All benefits and costs in the economic analysis are evaluated using economic price. In this study, The Economic Internal Rate of Return (EIRR), Net Present Value (NPV) and the benefit / cost ratio (B/C ratio) based on a cost-benefit analysis is used to appraise the feasibility.

9.9.2 Prerequisites for the Economic Analysis

(1) Base Year

Costs and benefits estimated in the economic analysis are expressed in the price in the price as of some fixed year throughout the "Project Life" mentioned below. The year is called as "Base Year". In this analysis, the year 2006 was adopted as the "Base Year" since the costs of the Project were prepared on the bases of current price as of the same year.

(2) Project Life

30 years after completion of the construction was adopted as the "Project Life".

(3) Foreign Exchange Rate

The exchange rate adopted for this analysis is as follows US$1.00 =R$ 2.30.

(4) "With-the-project" Case and "Without-the-project" Case

A cost-benefit analysis was conducted on the difference between the "With-the-project" case in which an investment is made and the "Without-the-project" case in which no investment is made, that is; the benefits and costs arising from the investment for the Project were compared.

(5) Cargo Throughput

1) "With-the-project" Case

The cargo volumes that will be handled under the "With-the-project" case at the ports of Pecem are shown in Table 9.9.1 and Table 9.9.2.

Table 9.9.1 Conventional Cargo Volume (000 ton) as of 2012

Items	Cargo Volume	Ship Type	DWT
Thick slabs	1,500	Bulk Carrier	51,000
Steel Rolls	147	Bulk Carrier	45,000
Steel billets	75	Bulk Carrier	26,000
Bagged Cement	120	Multi-purpose Ship	32,000
Fresh Fruits	227	Reefer Ship	6,100
Cokes	120	Bulk Carrier	51,000

Table 9.9.2 Container Cargo Volume as of 2012

	Unit	Laden	Empty	Total
CNT Total	000 Box	174	86	261
CNT Total	'000 TEUs	299	148	447
Mainline	'000 TEUs	197	98	295
Feeder and Coaster	'000 TEUs	102	50	152

2) "Without-the-project" Case

In "Without-the-project" case, Pecem Port will not provide any port services for above mentioned cargos and Suape Port will be the only commercial port in North East Region of Brazil for the planned cargo transportation.

9.9.3 Economic Prices

(1) General

For the economic analysis, all prices must be expressed as economic prices. In general, the construction costs, the operation costs and the maintenance costs are estimated at market prices. So as to convert market prices in to economic prices, conversion factors are used.

(2) Standard Conversion Factor (SCF)

Import duties and export subsidies create a price difference between the domestic market and the international market. The Standard Conversion Factor (SCF) is applied to determine the economic prices of certain non-traded goods that cannot be valued at border prices. The SCF makes up for this price difference. The SCF is obtained by the following formula:

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

Where, M: Total value of imports of goods (CIF)
X: Total value of exports of goods (FOB)
Tm: Total value of import duties
Sx: Total value of export subsidies
Tx: Total value of export duties

In this report, the SCF at 2004 was adopted for the analysis. The SCF is 0.9809 (see Table 9.9.3)

Table 9.9.3 Standard Conversion Factor (SCF) of Brazil (2000 – 2004)

(Million USD)

Year		2,000	2,001	2,002	2,003	2,004
Total Import (CIF)	M	55,837	55,572	47,240	48,260	62,782
Total Export (FOB)	X	55,086	58,224	60,632	73,083	96,475
Total Import Duties	Tm	4,605	3,826	2,698	2,627	3,127
Total Export Duties	Tx	1	32	25	15	24
Total Export Subsidies	Sx	0	0	0	0	0
SCF		**96.01%**	**96.77%**	**97.58%**	**97.89%**	**98.09%**

(2) Conversion Factor for Labour

1) Conversion Factor for Skilled Labor (CFSL)

When computing CFSL, it is also assumed that the market mechanism is properly functioning, thus CFSL is assumed as 1.0

2) Conversion Factor for Unskilled Labor (CFUL)

Considering the current condition of Brazilian labour market for unskilled labour, CFUL is assumed as 70%.

(3) Value Added Tax (VAT)

VAT (17% in Brazil) has to be excluded in the economic analysis.

9.9.4 Benefit of the Project

(1) Benefit Items

As benefits to be brought about by the Project, the following items are identified:

- Saving in Container Land Transportation Costs
- Saving in Container Transhipment Costs
- Saving in Sea Transportation Costs
- Promotion of regional economic development
- Increase in job opportunity in the region

In this study, items from 1) to 3) are considered to be countable in monetary benefits, and were adopted in these cost benefit analysis. The Remaining items, 4) and 5) are mentioned qualitatively in this study.

(2) Estimated Benefits

1) Saving in Container Land Transportation Costs

Without this project, the container cargos that are planed to be handled at Pecem port have to be diverted to Suape port. The difference of land transportation costs will be the economic benefit of the project. The estimation was done with the same data and method as Table 6.9.4.

2) Saving in Container Transshipment Costs.

Without this project, the container cargos from / to Northern Region have to be

transhipped not at Pecem but at Suape, The difference of sea transportation costs constitutes the economic benefits. Estimated cost saving of transhipment is US$49 per TEU.

3) Saving in Sea Transportation Costs

Saving in sea transportation costs will be generated from deeper berths to be brought by investment at Pecem Port so as to receive larger vessels (see Table 9.9.4 and Table 9.9.5). If we consider recent tariff increase trend, this estimate of cost saving might be too conservative.

Table 9.9.4 Estimated Tariff Difference (per 1000 ton) from 15,000 DWT bulk carrier

Unit: USD

DWT	Mile	26,000	32,000	45,000	6.900	74,000
USA	3,683	4,245	6,561	11,578	11,993	13,584
Central America	4,217	4,856	7,504	13,242	13,724	15,571
Ukraine	5,880	6,745	10,425	18,396	19,096	21,778

Note: Prepared by the Study Team

Table 9.9.5 Saving in Sea Transportation Costs of Year 2012

Items	Typical Destination/Origin	Distance	DWT	Cargo Volume (1000 Ton)	Tariff Dif per 1000 Ton	Saving	Saving
		Mile		1000 Ton	USD	1000 USD	1000 R$
Thck Slabs	Central America	4,217	51,000	1,500	13,724	20,586	47,348
Steel Rolls	Ukline	5,880	45,000	147	18,396	2,704	6,220
Steel billets	Central America	4,217	26,000	75	4,856	364	838
Cement	USA	3,683	32,000	120	6,561	787	1,811
Cokes	USA	3,683	51,000	120	11,993	1,439	3,310
					Total	25,881	**59,526**

9.9.5 Costs of the Project

(1) Initial Investment Costs

In economic analysis, Project costs are generally divided into the two categories, viz. foreign portion (traded goods and services) and local portion (non-traded goods and services).

Local portion such as non-traded goods and services that is priced in local (domestic) market is converted into amount expressed in economic prices by multiplying conversion factors (SCF) as mentioned in Section 9.9.3.

Foreign portion such as traded goods and services that is priced in the international market is assumed to be expressed in economic prices as it is.

The project costs in the initial investment expressed in economic prices are summarized in Table 9.9.6 by cost component. The initial investment will be assumed to take seven years for construction.

Table 9.9.6 Investment Costs for Economic Analysis

(000 R$)

Year	2006	2007	2008	2009	2010	2011	2012	Total
Civil works	64,849	111,216	76,057	50,736	70,541	80,455	55,989	509,843
Consultant Fee	2,614	2,613	2,429	2,428	2,158	2,158	2,158	16,558
Civil Total	**67,464**	**113,829**	**78,486**	**53,164**	**72,699**	**82,613**	**58,147**	**526,401**
Machinery 20	0	0	37,400	0	0	0	0	37,400
Machinery 15	0	0	1,815	0	0	0	15,950	17,765
Machinery Total	**0**	**0**	**39,215**	**0**	**0**	**0**	**15,950**	**55,165**
Grand Total	**67,464**	**113,829**	**117,701**	**53,164**	**72,699**	**82,613**	**74,097**	**581,566**

Note: VAT is excluded. SCF is applied to the domestic costs and unskilled labor cost is adjusted too.

(2) Operation and Maintenance Costs

Cost items for management / operation and maintenance are listed below:

1) Maintenance Costs for Infrastructures

It is assumed to be 0.5 percent of initial investment costs of depreciable infrastructures.

2) Maintenance Costs for Equipments

It is assumed to be three percent of initial investment costs of equipment.

3) M Fuel and Utilities Costs

It is assumed to be five percent of initial investment cost of equipment.

4) Personel Costs

Estimated personnel costs are shown in Table 9.9.7. According to the 2004 financial report of CEARAPORTOS, the total direct and indirect personnel expenses are 4.17 times of the assumed salary scale. Therefore, this multiplier is applied to all personnel

5) Administrative Expenses

Administrative expenses are assumed to be 60% of personnel expenses.

(5) Renewal Investment Costs.

From the start of operations and through the project life, equipment that will be procured in the initial stage will be renewed when use life expires. Individual use lives are assumed referring to actual operational experience in the leading ports in the range of 15 to 20 years. The shorter ones (15 years) are Rubber Tire Mounted Gantry Cranes and Loading / Unloading Machines. Longer lives (20 years) were assumed in Quayside Gantry Cranes.

(6) Total Costs

Total project costs comprising those of initial investment, yearly management/ operations and maintenance and renewal of equipment from time to time during the project life are summarized in Table 9.9.8 together with benefits to be generated from the Project and the result of subsequent EIRR calculation mentioned in the subsequent Section 9.9.6.

9.9.6 Evaluation of the Projects

(1) Calculation of the EIRR (Base Case)

The economic internal rate of return (EIRR) based on a cost-benefit analysis was used to appraise the economic feasibility of the said Project. The EIRR is the discount rate that makes the costs and benefits of a project during the project life equal. The formula is as follows:

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

where, n: Period of economic calculation (project life)
i: Year
Bi: Benefits in the i-th year
Ci: Costs in the i-th year
r: Discount rate

The resulting EIRR of the Project is 22.48 % (see Table9.9.8).

(2) Sensitivity Analyses

In order to see if the Project is still feasible when some factors vary, the following cases were examined as sensitivity analyses:

Case A: The initial investment costs increase by 10%

Case B: The benefits decrease by 10%

Case C: The initial investment costs increase by 10% and the benefits decrease by 10% (Worst scenario)

The resulting EIRRs in Cases A, Case B and Case C in the above sensitivity analyses are 20.69 %, 20.21% and 18.57%, respectively.

(3) Benefits-Costs Ratio and Net Present Value

Assuming social discount rates of 9%, the respective Benefits-Costs ratios (B/C ratio) of the Project were computed. The resulting B/C ratios of 9% in the discount rate are 2.18.On the other hand, the resulting Net Present Value is 825 million in R$.

(4) Evaluation

The leading view is that the project is feasible if the EIRR exceeds the opportunity cost of capital. Considering the opportunity cost of capital in each country, it is generally considered that a project with an EIRR of more than 10% is economically justifiable for infrastructure or social service projects.

Apart from the precise definition of the opportunity cost in economics, however, it is not easy to practically find the opportunity cost in individual country, and hence, the yield on long-term credit adjusted from current price to real price by using deflator could be referred as substitute for the invisible opportunity cost.

Current interest rates on long-term credit in Brazil as of August 2005 are 13.75% in loans. Real interest rate excluding inflation is considered to be 6.85%. Thus, the opportunity cost of Brazil could be considered to be at most 8%. From the above, the figure of 10% as the EIRR criterion is considered to be reasonable on the safety side evaluation.

The resulting EIRR of the Project is 22.48% exceeds the above-mentioned criterion in the base case. In addition, even in sensitivity analyses, all of the cases exceed 12%. Thus, the Pecem Port Project is judged economically justifiable.

Table 9.9.7 Estimated Personnel Costs

(1) Number of Staffs

	General Manager	Divisional Manager	Engineer	Staff	Operator	Total
R$/month	8,000	3,000	2,000	1,000	800	
Port Administration Body	1	5	8	31	0	45
Container Terminal	1	1	0	5	132	139
Multipurpose Terminal		1		2	15	18
Coke Terminal		1		2	15	18
Steel Terminal		1		2	15	18
Total	2	9	8	42	177	**238**

(2) Monthly Personnel Costs (including indirect and miscellaneous personnel costs)

(R$)

	General Manager	Divisional Manager	Engineer	Staff	Operator	Total
Port Administration Body	33,360	62,550	66,720	129,270	0	291,900
Container Terminal	33,360	12,510	0	20,850	440,352	507,072
Multipurpose Terminal	0	12,510	0	8,340	50,040	70,890
Coke Terminal	0	12,510	0	8,340	50,040	70,890
Steel Terminal	0	12,510	0	8,340	50,040	70,890
						1,011,642

Table 9.9.8 Economic Internal Rate of Return (EIRR) of Short Term Plan

(000 R$)

Year	Cost										Economic Benefit				Net Economic Benefit	Present Value at 9%		
	Investment			O&M						Total Cost	Container Land Transporta	Transshipment	Conventional Cargo	Total Economic Benefit		Total Cost	Total Benefit	Net Benefit
	Civil	Machinery 20	Machinery 15	Civil	Machinery 20	Machinery 15	Fuel	Admi	Personnel									
2,006	67,464	0	0							67,464	0	0	0	0	(67,464)	67,464	0	(67,464)
2,007	113,829	0	0							113,829	0	0	0	0	(113,829)	104,430	0	(104,430)
2,008	78,486	37,400	1,815							117,701	13,836	2,029	0	15,865	(101,836)	99,066	13,353	(85,713)
2,009	53,164	0	0	2,632	1,122	533	2,758	7,284	12,140	79,633	49,415	7,100	17,934	74,450	(5,184)	61,491	57,489	(4,003)
2,010	72,699	0	0	2,632	1,122	533	2,758	7,284	12,140	99,168	57,604	8,340	53,986	119,930	20,762	70,253	84,961	14,708
2,011	82,613	0	0	2,632	1,122	533	2,758	7,284	12,140	109,082	65,510	9,467	54,222	129,199	20,117	70,896	83,971	13,075
2,012	58,147	0	15,950	2,632	1,122	533	2,758	7,284	12,140	100,566	73,699	10,594	59,526	143,819	43,253	59,964	85,754	25,790
2,013				2,632	1,122	533	2,758	7,284	12,140	26,469	79,346	11,383	60,017	150,746	124,277	14,480	82,463	67,984
2,014				2,632	1,122	533	2,758	7,284	12,140	26,469	84,994	12,284	60,539	157,817	131,347	13,284	79,203	65,919
2,015				2,632	1,122	533	2,758	7,284	12,140	26,469	90,641	13,073	61,029	164,744	138,274	12,187	75,853	63,665
2,016				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	61,509	171,660	145,190	11,181	72,511	61,330
2,017				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	85,716	195,866	169,397	10,258	75,905	65,647
2,018				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	86,195	196,346	169,877	9,411	69,808	60,397
2,019				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	86,686	196,837	170,367	8,634	64,204	55,570
2,020				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	87,165	197,316	170,847	7,921	59,046	51,125
2,021				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	87,698	197,849	171,380	7,267	54,317	47,050
2,022				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	111,852	222,002	195,533	6,667	55,916	49,249
2,023				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	112,598	222,749	196,280	6,116	51,471	45,355
2,024				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	113,387	223,538	197,069	5,611	47,389	41,777
2,025				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	114,122	224,273	197,804	5,148	43,619	38,471
2,026				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	114,868	225,019	198,550	4,723	40,150	35,427
2,027			17,765	2,632	1,122	533	2,758	7,284	12,140	44,234	96,289	13,862	115,657	225,808	181,574	7,241	36,964	29,723
2,028				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	116,404	226,555	200,085	3,975	34,024	30,049
2,029				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	117,150	227,301	200,832	3,647	31,318	27,671
2,030				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	117,928	228,079	201,610	3,346	28,830	25,484
2,031				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	118,674	228,825	202,356	3,070	26,536	23,467
2,032		37,400		2,632	1,122	533	2,758	7,284	12,140	63,869	96,289	13,862	119,421	229,572	165,702	6,795	24,425	17,629
2,033				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	2,584	22,408	19,824
2,034				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	2,370	20,558	18,187
2,035				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	2,175	18,860	16,686
2,036				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,995	17,303	15,308
2,037				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,830	15,874	14,044
2,038				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,679	14,564	12,884
2,039				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,541	13,361	11,821
2,040				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,413	12,258	10,845
2,041				2,632	1,122	533	2,758	7,284	12,140	26,469	96,289	13,862	119,421	229,572	203,102	1,297	11,246	9,949
																701,409	1,525,912	824,503

B/C=	2.18
EIRR=	22.48%

9.10 Financial Analysis

9.10.1 Purposes and Methodology of Financial Analysis

The purpose of this section is to appraise the financial viability of the Project (an imaginary entity) from the viewpoint of capital investment whether it could yield sufficient returns. In this study, to measure the financial viability quantitatively, the Financial Internal Rate of Return (FIRR) on gross capital bases was calculated and compared with the current long term real (excluding inflation rate) interest rate whether FIRR could exceed the interest rate.

In addition to FIRR, other typical financial indices containing profitability, loan repayment capacity and operational efficiency and financial statements were required to assess so-called financial soundness from various financial points of views.

9.10.2 Prerequisites for the Financial Analysis

(1) Base Year

Incomes and expenses estimated in the financial analysis are expressed in the price as of some fixed year throughout the "Project Life" mentioned below. The year is called as "Base Year". In this analysis, the year 2006 was adopted as the "Base Year" since the costs of the Project were prepared on the bases of current price as of the same year.

(2) Project Life

30 years was adopted as the "Project Life".

(3) Financial Terms of Loans to be Raised for the Project

The Project contains both the infrastructures that will be prepared by public investment and port facilities that will be invested by private initiatives. Financial terms of loans to these two kinds of investment should be averaged for the financial evaluation of the project.

(4) Volume of Cargo and the Number of Calling Vessels at Pecem Port

1) The Volume of Cargo of Year 2012

. Yearly cargo throughput is shown in Table 9.10.1.

2) The Number of Calling Vessels of Year 2012

Conventional Cargo Ships	103
Container Ships	704

(5) Port Tariff

Port Tariff is estimated by Study Team based on the current tariff table (as of Aug. 2005) and common practice in port business.

1) Vessel Service Charge

- Mooring and Unmooring: R$ 1,050 per ship call

2) Wharfage

-Solid Bulk R$ 2.20 per ton
-Break Bulk R$ 1.68 per ton
-Liquid Bulk R$ 0.39 Per ton
-Laden Container R$ 27.12 per box
-Empty Container R$13.92 per box

3) Cargo-Handling Charge

-Solid Bulk R$ 13.20 per ton
-Break Bulk R$ 10.08 per ton
-Liquid Bulk R$ 2.34 per ton
-Laden Container R$ 252.88 per box
-Empty Container R$114.88 per box

9.10.3 Revenues

Revenues will be gained from providing port services to shippers and shipping lines. The amount of the revenues is estimated by multiplying the port tariff and the volume of cargo in terms of cargo handling charge or by calculating vessel service charge The estimated annual revenues are summarized in Table 9.10.1.

Table 9.10.1 Port Revenue Estimates of Year 2012

(000 R$)

Charge for Cargo	Cargo Volume		Wharfage	CHC	Total	Revenue
	(000 TEU)	(000 Box)	Per Box	Per Box	Per Box	
Laden Container	445	174	27.12	252.88	280.00	48,812
Empty Container	260	86	13.92	114.08	128.00	11,040
					Total	**59,852**

Charge for Cargo	Cargo Volume		Wharfage	CHC	Total	Revenue
		(000 ton)	Per ton	Per ton	Per ton	
Solid Bulk		2,069	2.20	13.20	15.40	31,863
Break Bulk		120	1.68	10.08	11.76	1,411
Liquid Bulk		0	0.39	2.34	2.73	0
					Total	**33,274**

Charge for Vessel	Ship Calls	Port Charge				Revenue
		R$				
Container	704	1050				739
Conventional	103	1050				108
					Total	**847**

Total Revenue	**93,974**

9.10.4 Expenses

(1) Expenses for Initial Investment

Expenses for the initial investment for the Project are summarized in Table 9.10.2 by cost component. The initial investment will be assumed to take seven years for construction.

Table 9.10.2 Investment Cost for Financial Analysis

(000 R$)

Year	2006	2007	2008	2009	2010	2011	2012	Total
Civil works	81,452	136,757	94,820	64,618	88,241	100,066	70,883	636,835
Consultant Fee	3,118	3,117	2,897	2,896	2,574	2,574	2,574	19,750
Civil Total	**84,570**	**139,874**	**97,717**	**67,513**	**90,815**	**102,640**	**73,457**	**656,585**
Machinery 20	0	0	43,758	0	0	0	0	43,758
Machinery 15	0	0	2,124	0	0	0	18,662	20,785
Machinery Total	**0**	**0**	**45,882**	**0**	**0**	**0**	**18,662**	**64,543**
Grand Total	**84,570**	**139,874**	**143,598**	**67,513**	**90,815**	**102,640**	**92,118**	**721,128**

Note: VAT (17%) is added.

(2) Management/Operations and Maintenance Expenses

Expenses items for management/operations and maintenance are listed below:

1) Maintenance for Infrastructures

It is assumed to be 0.5 percent of initial investment expenses of depreciable infrastructures.

2) Maintenance for Equipment

It is assumed to be three percent of initial investment expenses of equipment.

3) Fuel and Utilities

It is assumed to be five percent of initial investment expenses of equipment

4) Personnel Expenses

Personnel expenses estimated are shown in Table 9.9.7.

5) Renewal Investment

From the start of operations and through the project life, equipment that will be procured in the initial stage will be renewed when use life expires. Individual use lives are assumed referring to actual operational experience in the leading ports in the range of 15 to 20 years. The shorter ones (15 years) are Rubber Tire Mounted Gantry Cranes and Loading / Unloading Machines. Longer lives (20 years) were assumed in Quayside Gantry Cranes.

6) Total Expenses

Total project expenses comprising those of initial investment, yearly management/operations and maintenance and renewal of equipment from time to time during the project life are summarized in Table 9.10.3 together with benefits to be

generated from the Project and the result of subsequent FIRR calculation mentioned in the subsequent Section 9.10.5.

9.10.5 Evaluation of the Projects

(1) Viability of the Project

1) Calculation of the FIRR (Base Case)

The financial internal rate of return (FIRR) was used to appraise the financial viability of the said Project. The FIRR is the discount rate that makes net present values of cash inflow and outflow during the project life equal. The formula is as follows:

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

where, n: Project life
i: Year
Ii: Cash inflow in the i-th year
Oi: Cash outflow in the i-th year
r: Discount rate

The resulting FIRR of the Project is 11.37% (see Table 9.10.3).

2) Sensitivity Analyses

In order to see if the Project is still financially viable when some factors vary, the following cases were examined as sensitivity analyses:

Case A: The initial investment costs increase by 10%

Case B: The benefits decrease by 10%

Case C: The initial investment costs increase by 10% and the benefits decrease by 10% (Worst scenario)

The resulting FIRRs in Cases A and B in the above sensitivity analyses are 10.28%, 9.88% and 8.87%, respectively.

3) Evaluation

The resulting FIRR of the Project is 11.37% exceeds the real long term interest rate (excluding inflation rate) for private investment in current Brazil.

In addition, even in sensitivity analyses, all of the cases exceed substantially the real long term interest rate mentioned above. Thus, the Pecem Port Project is judged financially viable.

Table 9.10.3 Financial Internal Rate of Return (FIRR) of Short Term Plan

Year	Cost										Revenue	Net Income
	Investment			O&M						Total Cost		
	Civil	Machinery 20	Machinery 15	Civil	Machinery 20	Machinery 15	Fuel	Admi	Personnel			
2,006	84,570	0	0							84,570	0	(84,570)
2,007	139,874	0	0							139,874	0	(139,874)
2,008	97,717	43,758	2,124							143,598	11,445	(132,154)
2,009	67,513	0	0	3,283	1,313	624	3,227	7,284	12,140	95,384	49,448	(45,936)
2,010	90,815	0	0	3,283	1,313	624	3,227	7,284	12,140	118,685	73,641	(45,044)
2,011	102,640	0	0	3,283	1,313	624	3,227	7,284	12,140	130,510	80,400	(50,110)
2,012	73,457	0	18,662	3,283	1,313	624	3,227	7,284	12,140	119,989	93,973	(26,016)
2,013				3,283	1,313	624	3,227	7,284	12,140	27,870	99,112	71,242
2,014				3,283	1,313	624	3,227	7,284	12,140	27,870	104,251	76,381
2,015				3,283	1,313	624	3,227	7,284	12,140	27,870	109,391	81,520
2,016				3,283	1,313	624	3,227	7,284	12,140	27,870	114,530	86,660
2,017				3,283	1,313	624	3,227	7,284	12,140	27,870	126,545	98,675
2,018				3,283	1,313	624	3,227	7,284	12,140	27,870	126,994	99,123
2,019				3,283	1,313	624	3,227	7,284	12,140	27,870	127,442	99,572
2,020				3,283	1,313	624	3,227	7,284	12,140	27,870	127,891	100,020
2,021				3,283	1,313	624	3,227	7,284	12,140	27,870	128,339	100,469
2,022				3,283	1,313	624	3,227	7,284	12,140	27,870	138,409	110,539
2,023				3,283	1,313	624	3,227	7,284	12,140	27,870	139,088	111,217
2,024				3,283	1,313	624	3,227	7,284	12,140	27,870	139,766	111,896
2,025				3,283	1,313	624	3,227	7,284	12,140	27,870	140,445	112,574
2,026				3,283	1,313	624	3,227	7,284	12,140	27,870	141,123	113,253
2,027			20,785	3,283	1,313	624	3,227	7,284	12,140	48,655	141,802	93,147
2,028				3,283	1,313	624	3,227	7,284	12,140	27,870	142,480	114,610
2,029				3,283	1,313	624	3,227	7,284	12,140	27,870	143,159	115,289
2,030				3,283	1,313	624	3,227	7,284	12,140	27,870	143,838	115,967
2,031				3,283	1,313	624	3,227	7,284	12,140	27,870	144,516	116,646
2,032		43,758		3,283	1,313	624	3,227	7,284	12,140	71,628	145,195	73,566
2,033				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,034				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,035				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,036				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,037				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,038				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,039				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,040				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324
2,041				3,283	1,313	624	3,227	7,284	12,140	27,870	145,195	117,324

FIRR=	11.37%

CHAPTER 10 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS FOR SHORT-TERM DEVELOPMENT PLAN

10.1 General

The short-term development plan includes new large-scale construction projects. Several environmental licenses are necessary for the implementation of the plan. The different kinds of licensing and necessary processes to obtain legal permission are identified in this chapter.

Note that, among those, the Environmental Impact Assessment, which may be required by IBAMA for the port construction, is most important for the environmental and social considerations with respect to the implementation of the short-term development plan. A few items that may cause a certain magnitude of environmental and social impact are examined in this chapter, so that:

- It will help Ceara State government in the implementation of environmental and social considerations;
- The feasibility of the project has been examined in terms of environmental and social considerations.

This chapter comprises:

i. Environmental authorization;
ii. Examination of significant impact assessment;
iii. Consultation and Public Participation.

10.2 Environmental Authorization

10.2.1 Environmental Licensing Process for the Short-Term Development Plan

The environmental legislation concerning the process of licensing enterprises and/or activities which are potentially or effectively polluting is based on the Federal Law No. 6983/81, which establishes the National Environmental Policy. Its purpose and application mechanisms are regulated by Federal Decree No. 99,274/90 and altered by Federal Decree No. 3942/01.

The process of environmental licensing for installation of the offshore works of Pecém Port was implemented through SEMACE – the State Environmental Department (Superintendency of the Environment). At that time the entire legal procedure was formalized with SEMACE, which issued the Previous License and the License of Installation, according to the legislation current at the time, especially Federal Law No.6.938/81 and Resolutions of CONAMA – the National Environmental Council - No.001/86, No.006/86 and No.009/87. This licensing generated controversies concerning whose competence and accountability was involved, whether state or federal, because construction would happen within the area of the national territorial sea.

CONAMA Resolution No.237/97 was later published considering the need to establish criteria for the exercise of the licensing authority referred in Art. 10 of Federal Law No.6938/81. The cited resolution specifies all necessary procedures for environmental licensing, including competence and periods. It is important to point out that projects and activities will be licensed at only one competence level. It also

states that IBAMA is responsible for licensing projects and or activities with significant environmental impact in national or regional areas, and when those are located within territorial sea. IBAMA proceeded the licensing after considering the technical examination undertaken by an environmental organization from the state and/or municipal level. This law foresees that IBAMA, in its complementary competence, may delegate licensing to the competent state organization.

Therefore, port extension works shall be licensed by IBAMA.

(1) Types of license

The licencing authority, in the exercise of its competence and control, will issue the following licenses: Previous License (LP), License of Installation (LI) and License of Operation (LO). These licenses can be given separately or successively, in accordance with the type, characteristics and phase of the project or activity.

CONAMA Resolution No.237/97 (Art. 8th), states that IBAMA will give the following licenses, for the extension of Pecém Port.

"Installation License (LI) - authorizing the installation of the project or activity in accordance with specifications of the plans, programs and approved projects, including measures of environmental control and other conditions;

Operation License (LO) - authorizing the operation of the activity or enterprise, after verification of effective execution of conditions contained in former licenses, with the measures of environmental control and conditions determined for the operation."

In reference to the Operation License, it should be convenient to put together the processes concerning the existing port and the port enlargement, in order to receive one single license including the old and the new area.

(2) Processes of Environmental Licensing

The following sequence of actions is required:

<u>License of Installation</u>

a) Previous Consultation with IBAMA - agency of Ceará, for confirmation of the procedure for environmental licensing of the project.

b) Solicitation of the License of Installation by the entrepreneur, accompanied by pertinent documentation, with the proper publicity in newspapers of daily circulation and in the Official Daily of the Union.

c) Definition by IBAMA - Brasília, with the participation of the entrepreneur's representatives and the consultants group, of the environmental studies for the process of environmental licensing of the project of expansion of Pecém Port.

A Terms of Reference (TOR) will be defined for conduct of the environmental studies - Study of Environmental Impact (EIA) and associated Report of Environmental Impact (RIMA) for the process of licensing of installation of the extension of Pecém port.

The Study of Environmental Impact is a document, of technical-scientific and administrative nature, that has as the purpose of evaluating the environmental impacts generated by potentially polluting activities or enterprises, or that can cause

environmental degradation, and proposing attenuation measures and environmental control, trying to guarantee the sustainable use of natural resources.

The conclusive results of the EIA will be presented to IBAMA in the form of written documents denominated Study of Environmental Impact (EIA) and Environmental Impact Report (RIMA). They should be presented in an objective way and adapted to their understanding, illustrated by maps, charts, pictures, etc.

d) Elaboration of the Study of Environmental Impact (EIA) and its respective Report of Environmental Impact (RIMA). Both documents should be elaborated by a multidisciplinary and legally enabled technical group.

e) Publicity of the delivery of the environmental studies EIA – RIMA to IBAMA, Agency of Ceará, communicating to whom it may concern, that the EIA - RIMA are available for consultation and appreciation, during a period of at least 45 days, in both the documentation centre of IBAMA-CE and site www.ibama.gov.br. It could be requested, in this period of availability, that a public hearing be held, in accordance with the pertinent legislation.

f) Analysis of the documents EIA - RIMA by the technical personnel of IBAMA - Brasília, including the accomplishment of inspections of the area of Pecém port and of its influence area.

g) Accomplishment of public hearing, in accordance with the CONAMA Resolution 009/87. This action has the purpose of exposing to any interested people, the content of the environmental studies EIA -RIMA, eliminating doubts and hearing criticism and suggestions.

h) Publication by IBAMA – Brasília, of a conclusive technical appraisal and, if necessary, juridical appraisal of the environmental studies EIA – RIMA (process of installation licensing), with the value of the licensing rate and the cost table that generated it.

i) Approval of the License of Installation (with its conditions for the phase of Operation). The entrepreneur must publicize the application to obtain the Installation License for the works of expansion of Pecém port in newspapers of daily circulation and in the Official Journal of the Union.

Based on the Resolution of CONAMA No. 02/96, IBAMA may require the installation of a conservation unit by the entrepreneur. The amount of resources to be used in establishing the unit of conservation, or in the maintenance of a unit already existing, will have to be proportional to the environmental damage, based on the EIA – RIMA, and it cannot be less than 0.5% (half a percent) of the foreseen total cost for implementation of the project.

The environmental compensation for significant environmental impact is also discussed in Federal Law No.9985/2000, Art. 36, regulated by Federal Decree No.4340/2002.

License of Operation

a) Solicitation of the Operation License and appropriate documentation by the entrepreneur, with the proper publicity in newspapers of daily circulation and in the Official Journal of the Union.

b) Definition of the executive projects of attenuation measures and of the control plans and environmental monitoring necessary for the process of environmental licensing of the operation of Pecém port by IBAMA - Brasília, with the participation of both the entrepreneur's representatives and the consultant's team.

A Terms of Reference (TOR) will be defined in order to elaborate the projects - Environmental Basic Plan (PBA) for the process of licensing the operation of the port.

c) Elaboration of the Environmental Basic Plan (PBA), which should be conducted by a multidisciplinary and legally enabled technical group.

d) Analysis of the documents and of the projects presented, including the accomplishment of technical inspections of the area of Pecém port and its influence area by the technical personnel of IBAMA - Brasília.

e) Publication of the conclusive technical opinion and if necessary, the juridical opinion, about the projects (process of operation licensing), with the value of the licensing rate and the cost table that generated it, by IBAMA – Brasília.

f) Approval of the License of Operation. The entrepreneur must publicize the receipt of the License of Operation of Pecém port in newspapers of daily circulation and in the Official Daily of the Union.

10.2.2 Expected Content of the Environmental Study

The elaboration of the environmental studies EIA -RIMA will be oriented by the Terms of Reference (TOR) and follow the general guidelines and the technical activities, respectively, required in Art. 5th and 6th of the Resolution of CONAMA No.01/86 for the Study of Environmental Impact and Art. 9th of the same Resolution for the Environmental Impact Report.

The provision of the Terms of Reference by IBAMA – Brasília doesn't prevent the institute from requesting, at any moment, an analysis of the environmental studies EIA - RIMA, complementary if necessary, for better understanding of the project and its consequences.

(1) Methodological Approach

Environmental studies should be elaborated before the beginning of the works, through integrated, multidisciplinary and interdisciplinary analyses, starting from primary and secondary data.

The environmental prognosis should be elaborated considering the alternatives of execution and non-execution of the activity.

(2) Terms of Reference (TOR) for the EIA

1. IDENTIFICATION OF THE ENTREPRENEUR

Identification of the responsible individual or juridical person by the enterprise, characterizing: name, CPF (National Registration of Individual Persons) or CNPJ (Company Registration Number) and state registration, complete address, mail address, telephones, fax, e-mail; juridical nature.

Legal representative – full name, position or function, ID, CPF, address, telephones, e-mail.

Contact person - name, ID, CPF, address, telephones, e-mail.

Numbers of legal registrations.

2. IDENTIFICATION OF THE CONSULTING FIRM

Social name, CNPJ and state registration, complete address, mail address, telephones, fax, e-mail; juridical nature, ART (Registration of Technical Responsibility), federal technical registration, other legal registrations.

Legal representative

Contact person.

3. IDENTIFICATION OF THE ENTERPRISE

History of the enterprise

Objectives of the enterprise

Vindication of the enterprise

Geographical location

Financial backing

Existing and scheduled basic infrastructure

Plans and co-located projects

Government plans interrelated with the enterprise.

4. ENTERPRISE TECHNICAL DATA

Studies of basic conception

Basic conception of the enterprise

Technological and locational alternatives

Mineral materials

Safety measures and accident prevention

Discard and locality of deposition - description of the discard (dumps, solid residues and other solid residues generated in the place of work).

Physical-financial flow chart of the work

Labor to be used.

5. AREAS OF INFLUENCE OF THE PROJECT

The Environmental Study should define the limits of the areas of influence of the project. The geographical limits of the areas of direct and indirect influence of the enterprise should be defined.

Area of direct influence - areas subject to the direct impact of the installation and operation of the enterprise. Its delimitation should be a function of the social, economic, physical and biological characteristics of the systems to be impacted and of the characteristics of the enterprise.

Area of indirect influence - real or potential area threatened by the indirect impact of the installation and operation of the enterprise, embracing the natural ecosystems and the socioeconomic system that can be threatened by alterations occurring in the area of influence of the enterprise.

6. ENVIRONMENTAL DIAGNOSIS OF THE AREA OF INFLUENCE OF THE ENTERPRISE

The Environmental Diagnosis should portray the environmental quality of the area included in the studies, indicating the characteristics of the various factors that compose the environmental system, in order to allow understanding of the dynamic and existing interactions among the physical, biological and socioeconomic environments, including the susceptible variables suffering directly or indirectly from significant effects of the actions of the activity.

Each environmental factor - physical, biotic and socioeconomic, should be defined and characterized by an area of specific inclusion. Thus, the areas of direct and indirect influence affected by the works and proposed activities for each one of the sectors should be defined.

All the data with information researched during the diagnosis phase.

The characterization and environmental diagnosis should be based in the integrated analysis of the physical, biological and socioeconomic components.

6.1. Physical Environment

Climate

The description of the climate of the area of influence of the project should point out the atmospheric characteristics of the area, as well as define the climate type based on a series of data for rainfall, temperature, evaporation, air humidity, and heatstroke. Winds should be characterized in terms of seasonal direction and speed.

Oceanographic Parameters

Description of the main oceanographic parameters (geological, physical and chemical) and general hydrodynamics, characterizing: flows, waves, regime of tides, temperature of the water and other important data for the definition of the hydrodynamic behaviour of the area.

Depth Survey

Present the survey in order to show accurately, the morphology of the marine bottom. The survey should be accomplished from the beach to the depth necessary to cover the whole area of the works, with spaced profiles of 100 m. Data should be treated and presented in the form of depth and relief maps. Tables with echobathimetric georeferred registrations, based on the UTM system of coordinates should be enclosed.

Geology and Geomorphology

Description and analysis of the regional and local coastal geology and geomorphology.

Lithological and structural aspects of the area

Description of the coastal sedimentary dynamics, pointing out the sedimentation and erosion processes involved in the activity in the area of influence of the project.

Evolution of the Coastline

The position of the present coastline and its historical evolution should be determined, with a base in comparative studies of maps, charts, aerial photographic data, satellite images and/or other available sources of data. The result should be presented on a map.

Morphodynamics of the Beach Environment

Characterization of beach morphology, based on topographic precision levelling of beach profiles.

Determination of the position of the lines of maximum high tide and minimum low tide.

Descriptions of soils, surface water and ground water are obviously unnecessary. However, descriptions of the water resources (surface and subsurface) that might influence or be influenced by the port are necessary.

Hydrogeologic characterization of the area of influence of the study, identifying the aquifers and characterizing them with relation to the potential for exploration, reserves, quality, and availability of ground water.

6.2. Biological Environment

The studies of the biological environment should contemplate the terrestrial and aquatic ecosystems.

The characterization of the terrestrial biological environment should include the area of influence of the enterprise, identifying and describing the main ecosystems. In each ecosystem should be described the fauna and the flora and their interrelations.

A description and mapping of the vegetation cover of the influence area should be made considering: distribution of the natural phytophyisiography in its several stages of development. A map of vegetation zoning should be presented.

The studies of the marine biological environment should characterize the biota of the area of influence of the project, with emphasis on the areas of ecological value (reefs and coral banks of chorales, marine parks or other existing units of conservation in the neighboring areas). The species of commercial value, of scientific interest, that are rare, endemic or threatened with extinction, and vectors or receptors of diseases should be pointed out.

Description and characterization of the benthonic communities that colonize the several substrata found in the area.

Description and mapping of the aquatic ecosystems, considering the physio-ecological and ecotoxicological aspects.

6.3. Socioeconomic Environment

Characterization of the social environment in the area of the project

Characterization of the local population and its dynamics

Characterization of the social organization in the area, indicating the groups and/or existing institutions, leaders, community movements, forces and social tensions

Characterization of the main economic activities, job vacancies in the economic sector and the property situation in the area of influence

Verification of the community's dependence in relation to fishing, tourism and leisure activities in the project area

Characterization of the landscape in the area of influence and its implications on social, economic and cultural aspects

Characterization of the infrastructure in the influence area (public transportation, electric energy, telecommunications, sanitation, existence and type of treatment of solid residues, locality of final disposal, etc.)

Use and occupation of land, history of evolution of occupation and production of the area of influence, and data and maps of fishery and fishing areas

Natural, historical, archaeological, cultural and landscape patrimony. Identification, characterization and mapping of areas of scientific or historical interest, of cultural manifestations, of historical and/or archaeological sites, monuments and places of important scenic beauty or any other areas identified as patrimony of the population. The analysis should also be backed up by consultation with IPHAN (National Institute of Historical and Architectural Patrimony).

7. INTEGRATED ANALYSIS

After the sector diagnoses, an analysis should be undertaken to characterize the area of influence in a global way. The analysis should contain the interaction of the components in order to characterize the main interrelations of the physical, biotic and socioeconomic environment.

8. IDENTIFICATION AND EVALUATION OF THE ENVIRONMENTAL IMPACT

The identification and evaluation of the negative and positive impacts will fundamentally approach the alterations of the physical, biotic and socioeconomic environment resulting from the insertion of the enterprise during its installation and operation phases.

It is important to be aware that this item is decisive in the process of evaluation of Environmental Impact. Therefore, it should be elaborated so that the result allows an appreciation of the repercussions of the enterprise on the environment. It should be understood as a total overview.

The analysis of the impacts will complement its interaction and characteristics, considering, at least, the following evaluation attributes:

Character - beneficial or adverse,

Magnitude - small, medium or large,

Duration -short, medium, long,

Importance - not significant, moderate, significant,

Order - direct and indirect impact,

Temporality – temporary, permanent or recurrent,

Reversibility - reversible or irreversible,

Scale - local, regional or strategic.

9. MITIGATION MEASURES

Measures should be proposed to minimize or eliminate, maximize or increase potential, or compensate for the impact resulting from installation and operation of the enterprise.

Measures should be presented and classified according to:

* Their nature: preventive or corrective (in addition to the equipment for pollution control, evaluating the efficiency towards environmental quality and patterns of disposition of effluents, emissions and residues),

* Phase of the enterprise in which they should be adopted: installation, operation or in case of accidents,

* The environmental factor to which they are targeted: physical, biological or socio-economic,

* Period of permanence of their application: short, medium or long,

* Responsibility for their implementation: private, public or other.

Adverse impacts that cannot be avoided or mitigated should be mentioned.

10. PLANS OF CONTROL AND ENVIRONMENTAL MONITORING

* Indication and explanation of the parameters selected for the evaluation of impacts on each one of the considered environmental factors,

* Indication and explanation of the sampling net, including its dimensional and space distribution,

* Indication and explanation of the collection methods and analysis of samples,

* Indication and explanation of the periodicity of sampling for each parameter, according to the several environmental factors,

* Indication and explanation of the methods to be used in processing the information, in order to portray the picture of evolution of environmental impact caused by the enterprise.

Present plans of monitoring the quality of natural resources (oceanic parameters, air, aquatic biota, water) and environmental administration.

11. RISK ANALYSIS

12. ENVIRONMENTAL LEGAL BASE

Presentation of the pertinent environmental legislation, in the spheres of federal, state and municipal competence.

13. CONCLUSIONS AND RECOMMENDATIONS

* Evaluation of the prognosis of the study, in relation to the viability of the enterprise, as well as the possibility of non-execution of the enterprise,

* Modifications (environmental, social or economic) resulting from the adopted alternative,

* Cultural, social, economic and environmental benefits resulting from the installation and operation of the enterprise.

14 - TECHNICAL TEAM

15 - BIBLIOGRAPHY

16 - GLOSSARY

17 - ATTACHMENTS

Complete documentation mentioned in the study should be enclosed as an attachment to the final document.

All the plants and maps of the cartographic documentation should be signed by the respective technical responsible person.

Present photographic documentation.

(3) Environmental Impact Report (RIMA)

The RIMA should contain:

- Objectives and an explanation of the project, its relation and compatibility with the sector policies, plans and government programs,
- Description of the project and its technological and locational alternatives, specifying for each one of them, in the construction and operation phases, the influence area, raw material, labor, sources of energy, processes and operational techniques, probable effluents, emissions, residues and losses of energy, direct and indirect jobs to be generated,
- Synthesis of the results of studies of environmental diagnosis of the area of influence of the project,
- Description of the analyzed environmental impacts, considering the project, its alternatives, the time horizons for incidence of impacts and indicating methods, techniques and criteria adopted for their identification, quantification and interpretation,

- Characterization of the future environmental quality of the influence area, comparing the different situations of adoption of the project and its alternatives, as well as the hypothesis of its non accomplishment,
- Description of the expected effect of the mitigation measures foreseen in relation to the negative impacts, indicating those which cannot be avoided, and the expected degree of environmental alteration,
- Impact control and monitoring plans,
- Recommendations relative to the more favourable alternative (conclusions and comments of general order).

10.3 Examinations of Significant Impact Items

10.3.1 Selection of Significant Items

Significant items were selected from IEE items from the long-term development plan. The items were compared in terms of the magnitude of impact, examination cost, difficulty of examination and the relation with locals. As a result of the comparison that is shown in Table 10.3.1, shoreline, marine water quality and life quality were selected. Life quality includes some social items because their measures should be integrated. The impact and mitigation measures were examined for those significant items as shown in the following sections.

Table 10.3.1 Selection of Significant Items

Item	Magnitude of impact	Examination cost	Difficulty of examination	Relation with locals	Total
Geology and Geomorphology	1	2	2	1	6
Shoreline	3	2	3	2	**10**
Air Quality	1	2	2	2	7
Marine Water Quality	2	2	2	2	**8**
Noise and Vibration	2	1	1	2	6
Biodiversity	1	2	2	2	7
Solid Waste	1	1	1	2	5
Life Quality	2	1	2	3	**8**
Hazard	2	1	1	2	6

Note: 3 = High, 2 = Medium, 1 = Low

10.3.2 Shoreline

(1) Evaluation of Present Impact Caused by the Existing Port

In a numerical computation, 300,000 m^3/year of littoral transport (sand movement) has been estimated around the tip of Pecem. The rate of decrease of littoral transport is 13%/year for the case of the existing port, and 40,000 m^3/year has been accumulating. As a result, accumulation and retreat happens as illustrated in Figure 10.3.1. The sand accumulates around Pecem port and retreats around Pecem village.

The detailed coastal impact study and evaluation for the existing port are referred to in Chapter 6.5.3.

Figure 10.3.1 Impact Caused by the Present Port

(2) Analysis of the Port Expansion Project

The sand deposits due to the short-term development plan amount to about 150,000 m^3/year. The computation results show that a drift would occur from the north area of Pecem village to Colonia village during a ten year period as illustrated in Figure 10.3.2. However, those results are only computation results and that makes it difficult to predict the area of retreat, taking into account the conditions of dynamic equilibrium of the littoral drift when considering the influence of Pecem tip. In order to revise the scale and location of retreat, appropriate monitoring should be conducted.

The detailed coastal impact study and evaluation for the short-term development plan are referred to in Chapter 9.5.2.

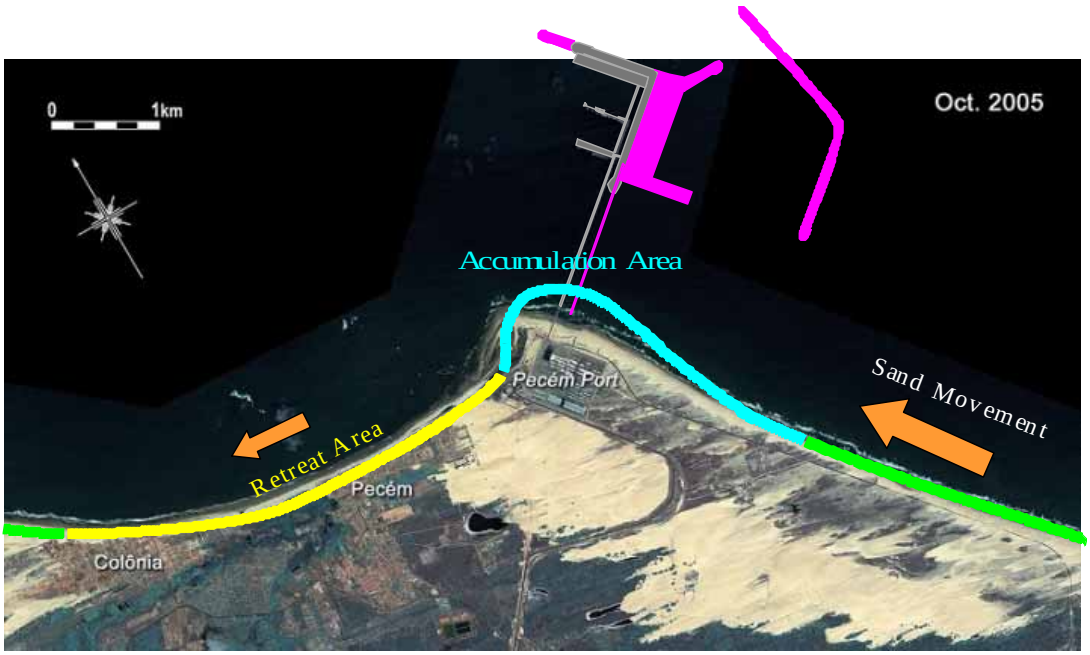


Figure 10.3.2 Impact Expected from the Expansion Project

(3) Future Shoreline Monitoring and Mitigation Plan

1) Monitoring

Shoreline change was estimated with numerical computation. However, the result from the computation may differ from the actual phenomenon. In order to understand the actual change of shoreline, monitoring is necessary. The monitoring should be conducted periodically with same method and conditions as written below.

Monitoring points: Every 100 m from 5 km east to 10 km west of Pecem port

Monitoring Frequency: Twice a year

Monitoring items: Measurements, photography*, satellite images.

*: Photographs must be taken at the same point, in the same direction and at the same tidal condition.

2) Mitigation

There are many mitigation measures to protect the shoreline. In this study, the following three measures were considered to be affordable and realistic: sand bypass, groin with sand bypassing, and revetment. Those measures were compared in Table 10.3.2 in terms of advantages and costs.

Table 10.3.2 Comparison of Measures

Item		Groin + Nourishment	Sand Bypassing	Revetment
Concept		Preservation of sandy beach due to Static equilibrium	Preservation of sandy beach due to dynamic equilibrium. Maintenance the same condition	Only protection of backland
Image				
Advantage		・Sandy beach can be preserved ・The maintenance cost for additional sand filling would be low	・Natural sandy beach can be preserved ・Natural landscape can be preserved	・The back land can be strongly protected
Disadvantage		・Initial cost is high ・Utilization and landscape would be degraded by the existence of groins ・New erosion would be cause at the down drift side from the last groin	・Periodical maintenance work is necessary ・If dump trucks are usded for transportation, new noise problems will occur	・Sandy beach will disappear ・After the sandy beach had disappeared waves would go over the area ・Access to the beach would be difficult
Cost	Initial	130,000 (R$/unit) * 20 (unit) = 2,600,000 (R$) Assumption (Rubble Type Groin, Length: 130m, Width: 2m, Slope 1:3)	Not estimated	500 (R$/m) * 5,000 (m) = 2,500,000 (R$) Assumption (Rubble Type, Slope 1:3, Crown Width 2m)
	Maintenance	1 (R$/m3) * 150,000 (m3) * 20% = 30,000 (R$/year)	1 (R$/m3) * 150,000 (m3) * 100% = 150,000 (R$/year)	Not estimated
	For 20 years	3,200,000 (R$)	3,000,000 (R$)	2,500,000 (R$)
Evaluation		**Appropriate**	**Best and appropriate**	**Possible**

According to the comparison of measures, sand bypassing was evaluated as the best and most appropriate option. Approximately 150,000 m^3 of sand is estimated to accumulate each year. The cause of the erosion is the change of the equilibrium situation of sand drift. The total sand quantity will not diminish, and only the balance

of sand drift is subject to change by the extension of the breakwater. Therefore, application of sand bypassing is appropriate.

The plan of sand bypassing is described below. This is illustrated by the image in Figure 10.3.3.

Sand Bypassing

Number of dump trucks: 5 trucks (7 m^3/truck)

Efficiency: 3 trips/hour ;5*7*3=105 m^3/hour, 8 hours/day;105*8=840 m^3/day

Number of days: 150,000/840=179 days

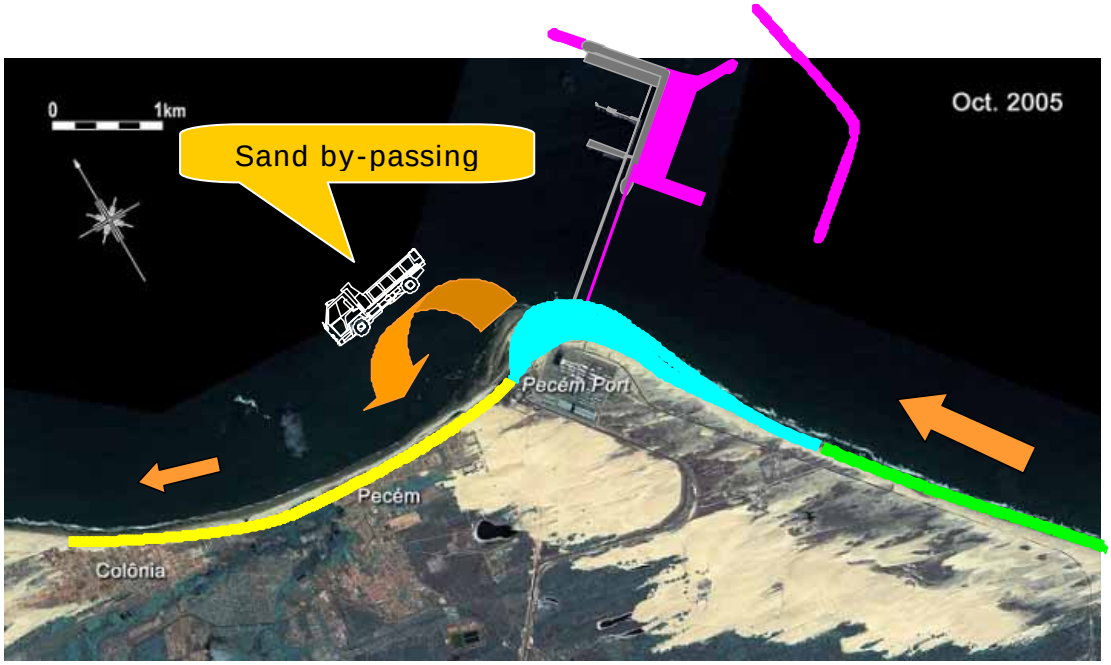


Figure 10.3.3 Illustration of Sand Bypassing

3) Institutional framework

IBAMA needs to direct SEINFRA to enforce adequate monitoring and mitigation measures with the issuing of a license. SEINFRA is obliged to secure the budget for the monitoring and mitigation measures.

(4) Feedback Plan

1) Model of feedback system

The model of the system is shown in Figure 10.3.1. A working group is necessary for the data collection, decision making, evaluation and feedback to the management adaptively.

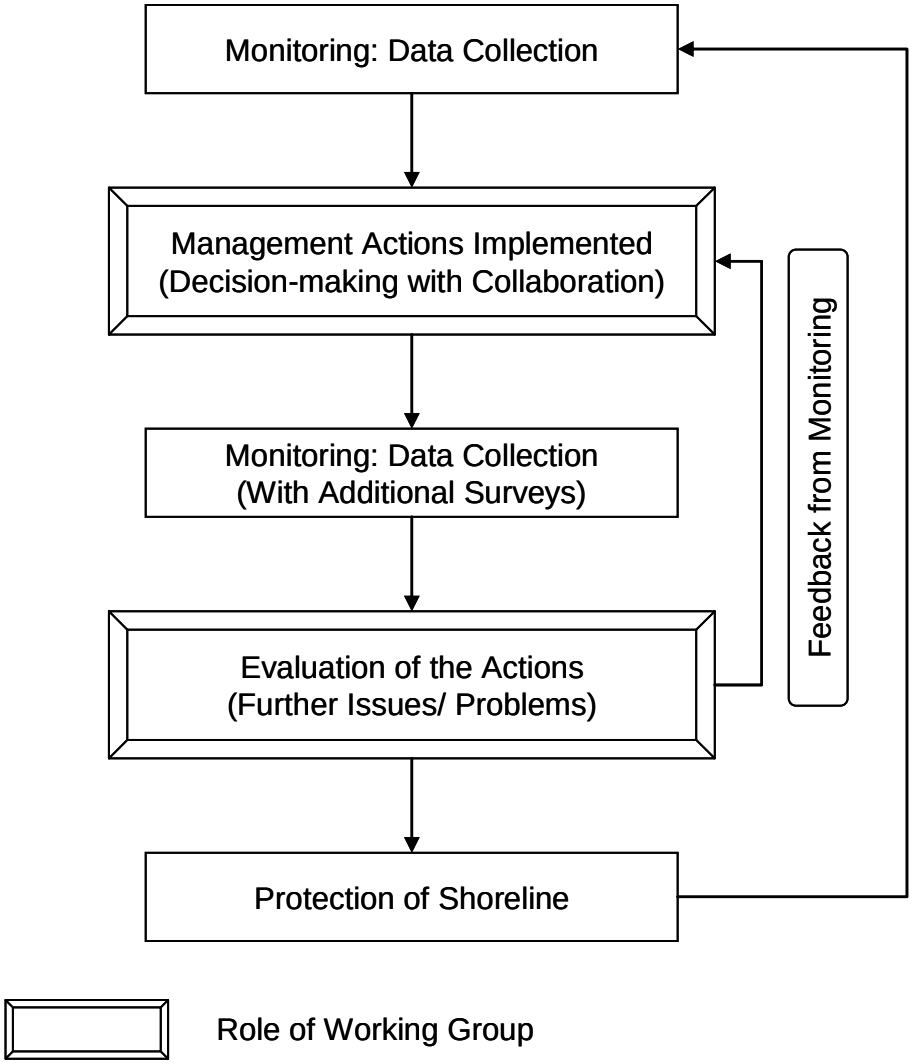


Figure 10.3.4 Model of Revised Monitoring System

The working group should comprise the following agencies. A discussion meeting should be held at least once every six months.

- SEINFRA
- CEARAPORTOS
- IBAMA
- SEMACE
- Universities (UFC, UECE)
- Monitoring institute
- Municipalities (Sao Goncalo do Amarante, Caucaia)
- Other relevant organizations

2) Decision making

Examination of measures to protect the shoreline shall be determined by the working group based on the monitoring result. The monitoring institute shall prepare the report in which the monitoring data is listed and analyzed. Then the report shall be presented to the members of the working group. Issues and measures shall be discussed in the meeting, which shall be held about once every six months. The decisions taken at the meeting should be executed. Therefore, the authorization right should be given to the working group.

3) Evaluation and feedback

Evaluation shall take place in the meeting of the working group. If the members find out that is necessary to modify some measures in order to protect the shoreline better, then those alterations should be applied. The feedback procedure and responsible organization shall be determined in the meeting. As this process must be examined scientifically, the specialists should participate in the meeting and the modified measures should be approved by the specialists. In order to secure the implementation, the minutes of meetings of the working group should be disclosed to the public.

10.3.3 Marine Water Quality

(1) Objective

The examination of marine water quality has the objective to maintain the water quality within limits accepted by legislation and to provide means to identify eventual contamination sources.

(2) Appraisal of Available Information

A scarcity of data has been observed regarding marine water quality in the surroundings of the Pecem port, mainly due to the absence of surveys, either systematic or not. Even the environmental assessment for construction of the port lacks information on this item. The detail data on the marine water quality come from spare samples collected by the CAGECE for monitoring the sewer outflows from the existing thermoelectric plant.

(3) Quality Survey

1) Methodology

The presented document contains the results obtained in the first sample collection at the Pecem port (Sept. 2005) as part of the requirements of Contract No. 86/2005. The main objective of the report was to characterize biotic and abiotic parameters in the area influenced by the effluent system from the thermoelectric plant, as established under the operation licence No. 393/2004 given by the IBAMA to the CAGECE.

a) Sampling points and frequency

The sampling points for water, plankton and sediment were established as 10 stations and a control station (at the exit of the thermoelectric industrial plant). The sampling stations are described in Figure 10.3.5 and Table 10.3.3.

Samples have been collected every two months. The first sampling result, which was collected in October, was provided for this report.

Figure 10.3.5 Sampling Points

Table 10.3.3 Sample Positioning

STATION	LATITUDE (S)	LONGITUDE (W)	DEPTH (M)	DATA	TIME
E – 1	38º 48' 35.4"	3º 32' 39.0"	50 cm	30/09	08:55
E – 2	38º 49' 15.0"	3º 32' 46.8"	50 cm	30/09	11:27
E - 3	38º 50' 03.6"	3º 32' 45.6"	50 cm	30/09	12:30
E - 4	38º 48' 25.8"	3º 32' 31.2"	10	28/09	15:00
E - 5	38º 49' 06.6"	3º 32' 04.8"	09	28/09	16:20
E - 6	38º 49' 48.6"	3º 31' 39.6"	13,5	28/09	17:00
E - 7	38º 47' 42.6"	3º 31' 48.6"	18	28/09	17:40
E - 8	38º 48' 29.4"	3º 31' 33.0"	16,7	29/09	06:35
E - 9	38º 49' 13.2"	3º 31' 09.0"	17	29/09	07:43
E -10	38º 47' 44.4"	3º 32' 57.0"	12	29/09	09:28
E -11	38º 51' 31.8"	3º 40' 30.0"	------	30/09	13:05

Source: CAGECE

b) Survey parameters

Environmental seawater conditions were evaluated from physical-chemical conditions of the water. Parameters were salinity, temperature, pH, chemical oxygen demand (COD), biochemical oxygen demand (BOD), total suspended solids, metals (As, Cd, Pb, Cu, Cr^{+6}, Cr total, Sn, Fe total, Hg, Ni, Ag, Se, and Zn), phenol index, cyanides, fluorides, sulphides, oil and grease.

2) Results and Evaluation

The first survey was conducted on Sept. 28th, 29th and 30th, 2005, and Oct. 1st, 2005.

a) Physical-chemical parameters

Temperature, salinity, pH, and dissolved oxygen (DO)

Temperature, salinity, pH, and DO are presented in Table 10.3.4. Temperature kept constant values, averaging around 21.7°C, both in vertical and spatial distribution. Least values were registered in superficial water layers of Stations 9 and 7.

Salinity ranged from 36.38 to 36.79 in Stations 8 and 7, values usually found for the Ceara coast.

The pH of samples in general had values above 7, characterizing the water mass as a low alkalinity, which favors development of sea species.

Dissolved oxygen revealed a vertical gradient of decreasing values with depth. The data shows four peak values higher than average (Stations 4, 6, 8 and 9 surface), contrasting with values found for stations located along the coastline (Stations 1, 2 and 3). It is also observed that plant effluent presents values within the range of seawater.

Table 10.3.4 Result of Temperature, Salinity, pH and DO

Station	Temperature (ºC)	Salinity (‰)	pH	Dissolved Oxygen (mg/L)
E - 1	27,25	36,48	8,31	4,36
E - 2	28,76	36,45	8,36	4,33
E - 3	29,14	36,46	8,42	4,36
E - 4 (Surface)	27,31	36,60	7,90	7,81
E - 4 (Middle)	27,45	36,56	8,13	5,75
E - 4 (Bottom)	27,45	36,58	8,18	5,73
E - 5 (Surface)	26,57	37,25	8,29	5,94
E - 5 (Middle)	27,43	36,57	8,29	5,79
E - 5 (Bottom)	27,44	36,57	8,30	5,74
E - 6 (Surface)	26,91	36,55	8,33	6,82
E - 6 (Middle)	27,41	36,49	8,33	6,19
E - 6 (Bottom)	27,42	36,49	8,32	6,00
E - 7 (Surface)	25,07	36,79	8,34	5,98
E - 7 (Middle)	27,17	36,41	8,34	5,82
E - 7 (Bottom)	27,16	36,41	8,34	5,79
E - 8 (Surface)	26,92	36,44	8,41	8,21
E - 8 (Middle)	27,09	36,38	8,35	6,10
E - 8 (Bottom)	27,07	36,38	8,33	5,96
E - 9 (Surface)	24,98	36,58	8,34	7,53
E - 9 (Middle)	26,93	36,41	8,33	5,85
E - 9 (Bottom)	27,13	36,39	8,32	5,74
E - 10 (Surface)	26,67	36,57	8,35	6,24
E - 10 (Middle)	27,22	36,51	8,32	5,77
E - 10 (Bottom)	27,21	36,51	8,31	5,67
E - 11	30,52	1,4	8,86	5,27

Source: CAGECE

Turbidity and suspended materials

Port basin water corresponding to the area directly influenced by plant effluent revealed a light extinction coefficient of 0.46 (low transparency water) at a depth of

3.0 m. This may be related to a series of environmental factors such as meteorological parameters and oceanographic parameters. Suspended solids are composed of organic material, silt and clay. Total suspended solids values ranged from 22.8 mg/L to 96.4 mg/L, with larger values in stations along the coastline, a function of sampling being done in the breaker zone.

Organic material, BOD and COD

Organic material, BOD and COD are presented in Table 10.3.5. The percent of organic material in sediment collected in marine substratum presents relatively low values, except in Stations 6, 7 and 10, where concentration surpassed the average value (1.42 %). The largest concentration was found in Station 7, associated with its location in relation to port construction, which makes the area protected from tides, waves, and currents.

Determinations of BOD showed a minimum value of 0.59 mg/L in Stations 8 and 9, and a maximum value of 3.0 mg/L, in Station 2. Sampling at the thermoelectric plant outlet (Station 11) showed a value around 4.75 mg/L for water from industrial effluent, still within the admissible value.

COD shows a limit value of 657.4 mg/L from Station 9 bottom and 46.8 mg/L in Station 7. The least concentration in Station 7 is associated to lesser water circulation in the area protected by the port.

Table 10.3.5 Organic material, BOD, COD and Oil and Grease Content

Station	Depth (m)	Organic Material (%)	BOD (mg/L)	COD (mg/L)	Oil and Grease (mg/L)
E - 1	50 cm	0,18	2,4	107,9	22,0
E - 2	50 cm	0,39	3,0	168,9	17,6
E - 3	50 cm	0,37	2,4	199,5	18,8
E - 4	10	0,96	2,4	199,5	13,6
E - 5	9	1,31	1,78	352,1	3,6
E - 6	13,5	2,56	2,97	229,9	14,8
E - 7 (Surface)	18	NR	2,97	321,7	22,0
E - 7 (Bottom)	----	4,80	1,19	46,8	24,0
E - 8 (Surface)	16,7	NR	1,19	260,5	8,8
E - 8 (Bottom)	----	1,44	0,59	168,9	10,8
E - 9 (Surface)	17	NR	0,59	107,9	8,0
E - 9 (Bottom)	----	0,37	2,38	657,4	22,4
E - 10	12	1,87	1,19	107,9	20,8
E - 11	----	NR	4,75	260,5	18,0
Acceptable level			5,20		

Source: CAGECE

Heavy metals

The results summarized in Table 10.3.6 present the average and the concentration range of trace metals of environmental interest measured in the influence area of the Pecem port. Results are compared to the average concentrations in oceanic water and maximum limits allowed by legislation.

Results shown in Table 10.3.6 strongly suggest analysis error, since concentrations are much greater than results found for oceanic water and even greater than in areas which are contaminated.

No evidence exists for significant sources of all the analyzed metals, indicating low probability that the results derive from artificial emissions. There is no basis for a detailed discussion of the results. New sampling and analysis should take place.

Table 10.3.6 Concentrations of Trace Metals

Unit: mg/L

Metal	Oceanic average[1,2,3]	CONAMA 357	Pecém surface (This study)
As	<0,001 – 0,1	0,001	<0,02 – 0,13
Hg	<0,0001	0,0002	<0,1 – 1,57
Se	0,001	0,01	<0,01 – 0,09
Cu	0,0003-0,001	0,005	0,012 – 0,037
Cr	<0,01 – 0,1	0,05	0,139 – 0,388
Sn	0,001	2*	1,739 – 2,683
Fe	0,001-0,003	0,3	0,518 – 0,079
Ni	0,007	0,025	0,475 – 0,542
Ag	0,0003	0,005	0,009 – 0,092
Pb	<0,001	0,01	0,044 – 0,756
Zn	0,005	0,09	0,421 – 0,065
Cd	<0,001	0,005	0,092 – 0,304

Source: CAGECE
Note: 1: Summerhayes & Thorpe, 1996, 2: Turekian, 1968,
3: Salomons & Forstner, 1984

Concentrations of major parameters and trace measurements in sediment, in the area influenced by the port, are presented in Table 10.3.7, and compared to concentration reported for other regions of the continental platform.

Metal concentrations in the area influenced by the port were lower than those found in the outer continental platform of the northeast and southeast of Brazil. All metals except Fe were also within the range of concentrations reported for sediments. This result is probably due to coarser sediment with a lesser metal absorption capacity being present closer to the coast.

Studies on the distribution of major parameters in sediment from the Brazilian continental platform suggest that the largest part of heavy metals present is associated with fine fractions of sediment, particularly clays. Therefore, low contents in silt and clay in the majority of samples collected in the area influenced by the Pecém port may present lower metal concentrations in relation to sediment of the continental platform of Brazil. Beyond this, clays of the Northeastern platform are mainly composed of kaolinite, as compared to sediments of the Southeastern platform dominated by smectite, with higher capacity of cationic exchange than kaolinite. This contributes even more to low concentrations of metals, due to a smaller relative adsorption surface in relation to smectite.

Table 10.3.7 Comparison between concentrations of trace elements in sediment from the area influenced by the Pecém Port and in sediment from other regions of the Brazilian continental platform

Unit:mg/kg

Metal	Inner Continental Platform[1,2,6]	Inner Continental Platform of Ceará[4,6]	Outer Continental Platform of SE Brazil[3,5]	Port of Pecém Terminal
Cr	76-84	3-39	14-15	0,018 - 0,245
Cu	19-29	3-42	3,4-6,3	<0,1
Ni	25-36	4-12	6,2-7,7	<0,10 – 1,72
Pb	17-38	16-47	5,5-6,7	0,77 – 2,45
Fe	6.100-16.400	2.520-8.550	5.800-6.900	11 - 82
Zn	78-147	99-270	24,5-28,9	<0,05 – 0,11
Cd	0,1-0,32	0,03-0,36	-	0,011 - 0,187
Se	<1,0	<1,0	<1,0	<0,01 - 0,19
Sn	<0,1	<0,1	<0,1	<0,1
Ag	<0,1	<0,1	<0,1	<0,1

Source: CAGECE
Note: 1: Lacerda *et al*. (2003); 2 : Carvalho *et al*. (1993a,c); 3 : Rezende *et al.* (2002); 4: Freire *et al*. (2003); 5 : Ovalle *et al*. (2000); 6 : Muller et al. (1999).

(4) Impact Assessment on Marine Water Quality

1) Existing impact

Marine water quality in the Pecem port tends to have deteriorated both chemically and biologically by the operation of Pecem port and the existing Pecem village. However, the deterioration level is thought to be slight according to the water quality survey results.

So far no significant cargo spills or accidents have occurred. However, the lack of a plan for management of ballast water may produce deterioration of water quality.

2) Expected impact from the short-term development plan

Expected impacts on marine water quality are quite variable. During construction, the main impact is the turbidity increasing, due to the movement and operation of equipment and movement of materials. During operation, there is a danger of outflows of oil from stranding of vessels or even the collision of vessels. Discharges of effluent from industries are also predicted to increase.

(5) Marine Water Quality Management Plan

1) Methods and procedures

A plan for marine water quality management can only be accomplished through good work practice, i.e. avoidance of contamination. In order to manage the marine water quality, the following activities are necessary.

- Operation manuals for each activity in the port and industrial area should be elaborated after the research.

- Water quality and biological monitoring data should be analyzed, and sources of contamination should be identified, in order to suggest adequate measures.

Specific management shall be carried out through the following monitoring and feedback plan.

(6) Marine Water Monitoring Plan

1) Methods and procedures

The chemical condition of sea water will be bimonthly evaluated through monitoring of physical-chemical conditions: salinity, transparency, temperature, acidity or pH, COD, BOD, total suspended solids, metals (As, Cd, Pb, Cu, Cr^{+6} and Cr total, Sn, Fe total, Hg, Ni, Ag, Se, and Zn), phenol index, cyanides, fluorides, sulphides, oils and greases, biotic components (zooplankton, phytoplankton, epifauna, benthos, ichthyofauna), and trace metals in sediments.

Sample collection

Sample collections in areas of the port will follow the present routine work. Seawater sampling, on each station, will be done at three different depths (surface, middle, and bottom) by means of Van Dorn Bottles.

Sediment will be collected according to the sampling net to be defined. Samples will be packed accordingly, will receive a standard protection level, and will be transported to the laboratory. Sampling points will be located by means of a geodetic GPS.

According to a specific analysis procedure, samples will be stored and transported in specific recipients.

Analysis methods

Environmental parameters selected for monitoring the influence of the port shall follow the routine work.

BOD, COD, metals, phenols, cyanides, fluorides, oils and greases shall be determined through procedures given by the U.S.EPA.

Metal determinations shall be done by atomic absorption spectrometry. In the case of Hg determination the cold vapour technique shall be used (Marins et al., 1998).

Spectrometric equipment shall be calibrated through the use of calibration curves built from standard solutions. All analysis batches shall be accompanied by parallel determinations against marine sediment standards NIST.

2) Institutional framework

SEINFRA or CEARAPORTOS should have responsibility to conduct the water quality monitoring. It costs approximately R$ 450,000 (annual). If a significant impact is detected, the working group should be structured in the same way as for the shoreline change. Then, the working group should carry out both evaluation and feedback to the operation of the port and surrounding industries.

(7) Ordinary Feedback Plan

1) Procedures on reporting

The monitoring institute shall collect and analyze reports of monitoring actions.

2) Procedures on evaluation

The monitoring institute shall evaluate reports of monitoring actions. On the basis of those evaluations, the monitoring institute shall produce semester reports, in which shall be reported:

- Interpretation of causes and sources of variations of monitored parameters,
- Evolution forecasts, and
- Suggested solutions for emerging situations.

3) Procedures on decision making

SEINFRA and CEARAPORTOS should pass on interpretations and suggestions to the environmental authorities, municipal authorities, the state attorney office and the federal attorney office. Then, if necessary, a working group should be structured.

SEINFRA and CEARAPORTOS, or the working group should discuss solutions and compensation with public audiences, in case water quality deterioration causes a serious problem.

10.3.4 Life Quality

(1) Introduction

The Pecem Industrial and Port complex Project aims to further catalyze and decentralize industrial development in the state. The port, strategically located on Brazil's 3500 km long northern coastline, where few sites lend themselves to the construction of a new port, serves as a regional distribution centre.

The quality of life in this area is predicted to change radically with the project including the Pecem port development plan. Therefore, the impact of the Pecem port development plan should be carefully assessed, and mitigation measures should be specifically described.

(2) Interview Survey

1) Objective

This research collected data about life conditions and issues related to the short-term development plan. The research supplied considerations for planning to improve the quality of life and for estimating the inhabitants' actions towards shoreline change.

2) Methodology

The diagnosis was accomplished through a qualitative approach. In addition, the theme was analyzed with the intention of assembling opinion and general data about the conditions of life in the Port's surroundings areas.

In order to inform the interviewees about the objectives of the interview and about the short-term development plan's content and its impact, a forty-minute presentation

preceded the interview. This presentation was conducted by SEINFRA. The presentation was distributed among residential and commercial audiences. Immediately following the end of the presentation, the interviews were carried out. Many of the expected interviewees disappeared during the process. Twelve interviews were carried out with interviewees comprising residents, merchants, and fishermen located along the coast between Pecém and Taíba.

3) Results

There is considerable potential for improving the quality of life within the community areas around Pecem port by providing them with better conditions, once the independence of the inhabitants is taken as a main goal. This includes their ability to run their own lives and develop their potential and talents to become productive individuals. Assessment of needs and priorities with the active participation of the community is important to obtain the commitment of the people.

Garbage is collected in all cases, while the main water source is a pipeline in 7 cases, followed by a public fountain for 3 and a well for 1, with a manual access for 2 and mechanical access for 9 respondents. They stated that the water is filtered in 9 cases, boiled and treated with minerals for 1 each respectively. The sewage disposal chosen is a septic tank for 8, and 1 each for open sky, public line and none.

Most (9) affirmed having some knowledge about the existing projects and only 2 stated that they had no knowledge about them. During their response, they mentioned the importance of SEINFRA's presentation as otherwise they would not have any idea about the expansion part of the projects. Only 3 don't believe in an improvement of local citizens quality of life at all, and the other 8 are confident that the Pecem Port Development Plan can benefit the locality. They expect the implementation to increase commerce, services, professionalism, education and the economy of the region in general, and more specifically they were anxious for it to provide more opportunities for workers, elevate the number of offers for job positions, increase tourism, beach visitors on weekends and bring youth better conditions for study and new programs.

They suggested the following matters for improvement: training and education programs, an advertising project for the beach, and a review of the infrastructure of the city, public safety, health care services, the services actually provided by the health center, urbanization, remodeling streets and avenues. One of the respondents though, stated a belief in an increase only related to commerce but not for inhabitants in general, like leisure conditions.

About the shoreline, only one respondent seemed not to be worried about the erosion consequences, due to the fact that she had been living all her life there and thought that now they have a better sea shore and beach. The other 10 worry about protecting their properties. Some have houses, others their commerce or both and all have the beach. They don't have any idea about how far the shoreline has moved since 10 years ago, although some said 4 meters, others 5 meters, but seven interviewees related how the approach from their properties had moved forward. Among the others, one was not sure about whether it had moved forward or upward and one didn't know at all. Only one believed it went upward.

Among the measures to be taken listed by the respondents were monitoring the changes frequently and building breakwaters. Only one respondent did not have any

suggestion, although all considered that it was a technical matter and so felt unable to answer more than that. Eight had opinions about the shoreline changes. They related to destruction of the beach so far, whether measures would be taken, that the beach would be better, and how much they are suffering with impacts so far (from real estate speculation to environmental concerns). The others didn't feel comfortable to give an opinion. Seven respondents didn't agree with resettlement, while only four did, in cases where it is necessary.

About the fishery, only one respondent works as a fisherman, and he fishes at the seashore three days a week, earning R$400 to 500. He doesn't agree with the changing of fishing places, as he thinks the conditions for developing the activity have got worse and are getting even worse still, diminishing the number of fish, lobster and shrimp that he can get. He observed that no fishing plan has been developed. The others do not fish, but also did not agree with the changes.

About tourism, all of the respondents were interested in the development of tourism along the seaside and also wanted to take part in activities listed, such as tours around the village and coast, restaurants and bars, hospitality, training personnel and any kind of activity that may bring development to the region.

The respondents stated difficulty with the questioning about the plan as long as they were not that familiar with it. Therefore, they feel the need to understand it better in order to respond better to questioning. Other comments related to issues like whether the involved people are really interested in the future of the community and their present situation, and what kind of constructions will take place during or even after the development of the expansion. What is the impact on the shoreline? They want to get to know the plan in more detail. They suggested informing the population, training them, restoring public areas, and building an information center for tourists.

Government representatives and the community should diagnose community problems and identify their potential as well as using the information as baseline data from which to assess progress with future surveys. Because of the survey of current information flows and needs, the community was able to express to the researchers their expectations for improvements that could be obtained from having access to programs that could really improve their quality of life.

(3) Social Impact Assessment

Social impact is alteration in the life of social groups, caused mostly by human productive activities. In the case of the study area, delimited by the coastal area between the districts of Caucaia and Sao Goncalo do Amarante, this impact has its origin in the activities of industry, fishery, port activities and tourism.

1) Industry

Industrial activity can produce a large number of environmental impacts due to the use of inflammable chemical products, explosives and poisons, to mention just some.

Industrialization was responsible for movement that directly affected Brazilian ecosystems. On one side the depletion of natural resources and on the other side air pollution and contamination of water and soils.

The main productive chains of the municipal districts of Caucaia and Sao Goncalo do Amarante that have already settled or will develop are as follows: agriculture,

petrochemical industry, livestock, textiles, clothing, shoes, grains, oils, fruit, electronics, metal-mechanics, chemistry, paper, steel and thermoelectric industries.

The main positive social impacts of industry are:

- Increase in the number of available jobs,
- Implantation of basic infrastructures in the districts,
- Increase of income generation,
- Increase of local population training by the government, and
- Increase of district income.

The main negative social impacts of industry are:

- Increase in the number of cases of diseases related to water contamination due to no sewerage treatment,
- Increase of the number of cases of breathing diseases caused by the emission of particles into the atmosphere, coming from all of the industrial operations, and
- Increase in the number of accidents caused by the circulation of trucks.

2) Port activities

The port enterprises and the development of industry bring a great potential for the generation of impacts.

The main positive social impacts of port activity are:

- Increase of the number of available jobs,
- Increase in the income generation.

The main negative social impacts of port activity are:

- Degradation of the fishing activity caused by oil spills,
- Food access loss from the suppression of coastal ecosystems,
- Loss of coastal areas of work and housing, and
- Alterations in the landscape.

3) Tourism

One of the sectors that frequently generates jobs and income in Ceara is tourism. Tourism has strong connections with other sectors of the economy in the state. Several sectors are linked to tourism, including construction, transport, alimentary products, communication and general services among several others.

A considerable part of the tourist demand is based on easy transportation to natural landscape areas during vacations, where exploration of the natural atmosphere, cultural information, leisure or sports are available.

The offer of quality tourist products is as important as natural conditions are. The coastal zone Ceara, and specifically Caucaia and Sao Gonalo do Amarante, is singularly rich in landscapes and climate comfort during the entire year. In addition to that there is the traditional local people receptivity and culture. That is one of the great patrimonies of the state presenting an enormous potential for attraction of tourist demand, mainly if the offer of products and services are compatible with the pattern demanded by the leisure and entertainment market.

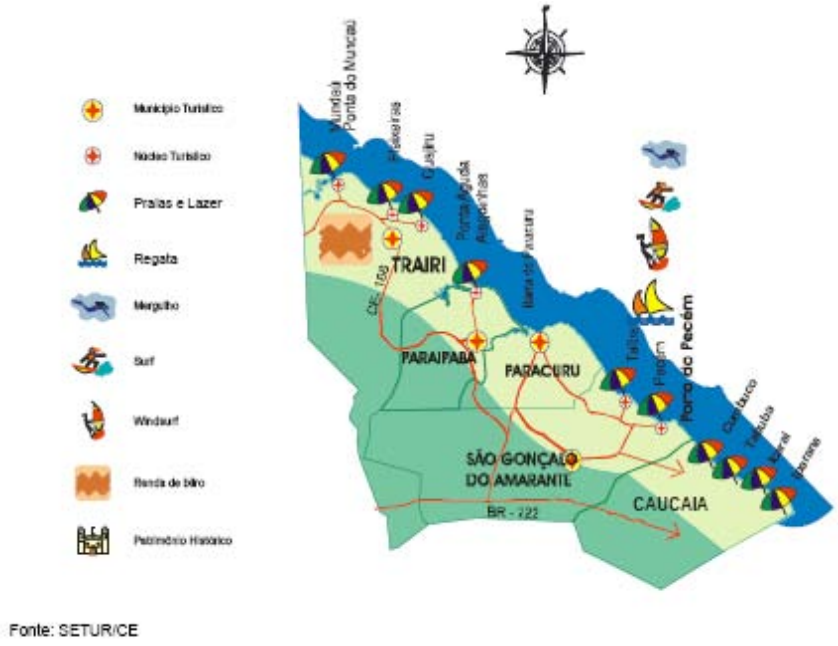
In 1979, the first Tourism Integrated Development Plan of Ceara described some potential tourist districts as Caucaia and Sao goncalo do Amarante among others, although it also described the absence of equipment and infrastructure in these coastal districts. It was verified that these districts possess strong natural appeal, scenic beauty and road access which needs to be supplemented by the construction of summer vacation residences that serve as support by providing lodging.

A most significant point is that, besides the proximity of Fortaleza, the tourists' main gateway to the coastal zone, the area of influence of the CIPP is within the itinerary areas of tourist appeal, as shown in Figure 10.3.6.

Fonte: SETUR/CE

Figure 10.3.6 West Coast Tourist Route, State of Ceara

More specifically, several places with a strong attraction are located inside the area of influence of the CIPP (Figure 10.3.7).



Fonte: SETUR/CE

Figure 10.3.7 Tourist Attractions in the Area of Influence

The positive social impacts of tourist activity are:

- Increase of available jobs,
- Implantation of basic infrastructure in the districts,
- Increase of income generation,
- Improvement of the wave conditions from Pecem to Cologne, and
- Increase of the district income.

The negative social impacts of tourist activity are:

- Breakdown of family unity,
- Increase of drug use,
- Increase of prostitution,
- Increase of crime,
- Loss of local culture.

(4) Quality of Life Improvement Planning

The experience of municipal management in Sao goncalo do Amarante, and more specifically in Pecem and surrounding areas, can only be understood when analyzed within its legal-institutional and political context. The Brazilian municipalities, while already enjoying a considerable amount of autonomy, gained even more autonomy with the new constitution of 1988 and complementing that, new responsibilities. In addition to this, the constitution introduced new concepts like the social function of property, which, although not defined in a sufficiently clear way, allows for the

implementation of new urban instruments by the municipality, linking the land use to social welfare.

Several programs to improve life quality were carried out in the region in order to consolidate the development of its inhabitants. Pecem has proven, from the period when the Port started functioning until recently, to know how to use this autonomy in order to increase the democratic content of city management and to increase the access of citizens to the results of this management, consequently improving their quality of life. The elaboration of a new plan for that matter, attempts to give a character of continuity during this second stage when an expansion of the Port is imperative. The new context, which must be related to a new program with a strong compromise in terms of fighting against social exclusion, increasing the democratic content of local management, stimulating community participation and income redistribution, etc. has set the tone of this local government.

The improvement plan must draw on the strategic objectives of the short-term development plan for the related community and outlines the steps that will be taken by the associations like the GTP to improve their benefits to the inhabitants' life quality. Across the city they have been given an opportunity to help identify the Council's improvement activities and to contribute to plans as well. This reflects the commitment to ensuring that local organizations work in partnership to deliver results that meet the real needs of the inhabitants of Pecem.

1) Mitigation measures

Mitigation measures are, in some situations, priorities from the local people.

The life quality improvement plan should embody the following items to be effective:

- Education,
- Environmental protection,
- Health,
- Infrastructure,
- Commerce and industry,
- Public safety, and
- Workforce and income.

a) Education

Training and capacity development are critical in preparing the community to recreate and enhance their economic activities following changes in the local community. The most important training courses are:

- Tourism,
- Technology,
- Business administration, and
- Environmental management.

The maintenance of local culture is important to empower local organizations and associations and leadership in order to keep the local culture intact.

- Improvement of fundamental and intermediary schools
- Technical training
- Environmental education

b) Environmental protection

This type of urban development in related areas, as it is all over the world, is a result of environmental damage, like flooding, erosion, disease and pollution. There are many corrective measures required and some of them have been started by the municipal government through upgrading programs, recuperation of degraded areas and environmental education.

c) Health

Some actions suggested are:

- Systematic campaigns of infant immunization,
- Recovery of the undernourished,
- Training of health agents,
- Family health programs,
- Construction and reforms of health centres,
- Drug use and unwanted pregnancy avoidance programs,
- Abuse and sexual exploitation of children and adolescents avoidance programs.

d) Commerce and services

The development goal is to significantly reduce the levels of poverty and extreme poverty among communities in the region. Its general objective is to improve the social and economic conditions of community inhabitants through environmentally sustainable social and economic development, which is also gender equitable. Specifically, it seeks to:

- Strengthen the human and capital resource base of the beneficiary population and empower the members of beneficiary social and economic organizations,
- Improve the labor skills of young men and women,
- Create and consolidate economic agricultural and non-agricultural business organizations that are market-oriented, competitive and sustainable,
- Improve the social and productive infrastructure, and
- Reduce gender inequities and improve the economic capacity of women.

It focuses on:

- Human and social capital development. This component will strengthen the capacities of community organizations to participate in local, micro-regional and municipal social and economic development processes, and provide training programs for project beneficiaries and service-providers, and labor skills training for young men and women. A social and cultural investment could be included in this component for the implementation of projects designed and managed by social and cultural organizations.

- Productive and market development. Through this component, this section will seek to improve the income-generating capacities of the target population by transforming their subsistence economic activities into market-oriented, profitable agricultural and non-agricultural businesses, tourism, services in general and production of goods, which are also environmentally-friendly.

e) Public safety

Housing policy must start once the existence of slum areas is recognized. This policy proposes the upgrading of these areas, giving a guarantee to land access and community participation. The interventions can be aimed at the access to infrastructure and urban services, concentrating on the implementation of basic infrastructure including pavements and drainage.

The interventions in the initial periods may be more concentrated on maintaining the maximum number of families and on upgrading the areas. Thus, instead of concluding the upgrading in concentrated areas, it is reasonable to opt for a gradual approach over many years. Spreading resources meant attending more families and emergency situations.

Over the years, since the land became increasingly expensive, the density of occupation in the slums increased, many environmental risk areas continued to be occupied and many families, excluded as they were from the formal real estate market, came to live in precarious rental housing units. In order to be able to proceed with the upgrading activities, it is necessary to invest considerable amounts in land, public works or even the relocation of families living in environmental risk areas.

The public works and the improvements related to the respective interventions are realized directly by the municipality, either through the contracting of construction firms, through mutual self help groups, through a combination of construction firms, municipal management and mutual self help groups or finally through outright self management by the community itself. The ultimate mix of implementation that will be chosen is related to the complexity of the works to be implemented and with the level of organization of the community.

f) Workforce and income

The employment rates are improved by stimulating local economic development, giving incentives to job creation and improving the quality of the existing jobs.

The productive areas suggested are:

- Agriculture,

- Industry,
- Animal husbandry,
- Fishing,
- Port activities, and
- Tourism.

2) Monitoring and evaluation

Monitoring and evaluation are important since difficulties confronted and successes gained in the implementation of projects can be measured. It is essential that the adaptations adhere to the culture of a given place in order for the monitoring to be satisfactory.

In the evaluation, the non-visible results of the programs also have to be considered. That is, one needs to be attuned to the real modifications and improvements obtained in the quality of life of the involved individuals as focused on by the short term plan.

The technical aspects contained in the indicators often relate to what happens between the lines in a technical way. Therefore, it is always necessary to identify the improvements in the personal field within their environment (emotional, cultural and social aspects). Therefore, the evaluation and monitoring of the component items of the life quality improvement plan must use specific indicators, which could be:

Education

- Literacy rate
- Education rate
- Number of years of education

Environmental protection

- Education programs for communities in general
- Applying international standards
- Sustainable development plan

Health

- Infant mortality
- Life expectation

Infrastructure

- Covering of basic sanitation (water, sewerage and garbage collection)
- Covering logistical aspects (transportation, security, roads and avenues)

Commerce and services

- Gross domestic product

- Trade balance
- Tourist demands
- Social expenses (education, health)

Public safety

- Effective policing, corrections, liquor and other protective and regulatory programs
- Integration of services
- Community participation
- Risk management and self-regulation

Workforce and income

- Employment rate
- Unemployment rate
- Distribution of income according to the population level of education and class
- Workers participation in the production for their own consumption

The evaluation and monitoring of the social programs should happen with indicators. The process should involve GTPs as much as the local associations, committees and local residents interested in the improvement of the quality of life of the population.

3) Feedback and decision making

The feed back process must occur through community participation and consultation while local people have an opportunity to comment on governmental plans regarding impact on the communities of areas such as education, environmental protection, health, public safety, infrastructure, commerce, public safety, work force and income.

Community members must be free to comment to the government agencies on the plans and situations, and raise questions and concerns.

It is suggested that the decision making group prepares reports regularly, at a frequency to be decided, and presents these reports and results during public meetings.

The issues in the report should be relevant to all the community and should embody productive activities such as: industry, fishing, port activities and tourism along with all other socio-economic matters.

It is important to suggest the development of projects to monitor existing programs. The structure of developed programs must be in agreement with the strategic plan as the social, economic and environmental programs developed need to be efficient. There has been a lack of larger supporting structures, when considering the resource limitation of the area and also the social economic reality.

Decision making group structure:

The suggestion for the decision-making group structure is as follows.

- Government agencies
  - Secretariat of Transportation,
  - Secretariat of Energy,
  - Secretariat of Communications,
  - General office of the Government – SEGOV,
  - General office of the Infrastructure – SEINFRA,
  - General office of Planning and Coordination – SEPLAN,
  - General office of Finance – SEFAZ,
  - General office of Work and Social Action (SETAS),
  - General office of Tourism – SETUR,
  - General office of Science and Technology – SECITECE,
  - General office of Public Safety and Defense of the Citizenship – SSPDC,
  - General office of Rural Development – SDR,
  - General office of Economical Development – SDE,
  - Representative of the Legislative Assembly of the State – AL,
  - District of Caucaia,
  - District of São G. of Amarante,
  - Centre of Management Training – SEBRAE.
- Social actors:
  - Local community,
  - NGOs,
  - GTP – Group of Participatory Work,
  - Specific groups,
  - Consultation with Women: Women of varying age groups articulated their concerns openly at the Pecem activities, posing questions and requests to institution representatives and holding written placards expressing their communities' concerns and frustrations.
- Stakeholders:
  - Counterparts,
  - Investors,
  - Universities.

10.4 Consultation and Public Participation

10.4.1 Information Disclosure

Information about the project had been disclosed through the web page.

The reports of the JICA Study Team (progress report and interim report) were also disclosed at SEPLAN, SEINFRA and CEARAPORTOS. The final report shall also be disclosed on the web page and at the above offices.

10.4.2 Stakeholders Meetings

The stakeholders meetings were held for the short-term plan as shown in Table 10.4.1 on the 5th, 12th and 23rd of January, 2006. The meetings were held for several stakeholders separately at Mucuripe Port and for the Participatory Group of Work – GTP, because their interests and understandings were different, and it was difficult to gather the different stakeholders. The main topics were the necessity and benefits of the Pecem port development, economy and its environmental and social considerations. As was predicted, the people in Mucuripe port expressed negative opinions about the Pecem port extension. On the other hand, the people in Pecem got a good understanding and gave constructive opinions. The JICA Study Team has reflected their opinions in the study, and has recommended continuous discussions to the counterpart organizations.

The minutes of stakeholders meetings are contained in Appendix 10.1.

Table 10.4.1 Stakeholders Meetings

No.	Date	Place	Topics
1	5th January 2006	Mucuripe port	Necessity of port development in Ceara
2	12th January 2006	GTP (Pecem)	Life quality and shoreline change

1st meeting at Mucuripe port

2nd meeting with the GTP

APPENDIX

Appendix 2.1 Statistics of Social Economic Activities

A2.1.1 Major Import and Export Commodities

(1) Export

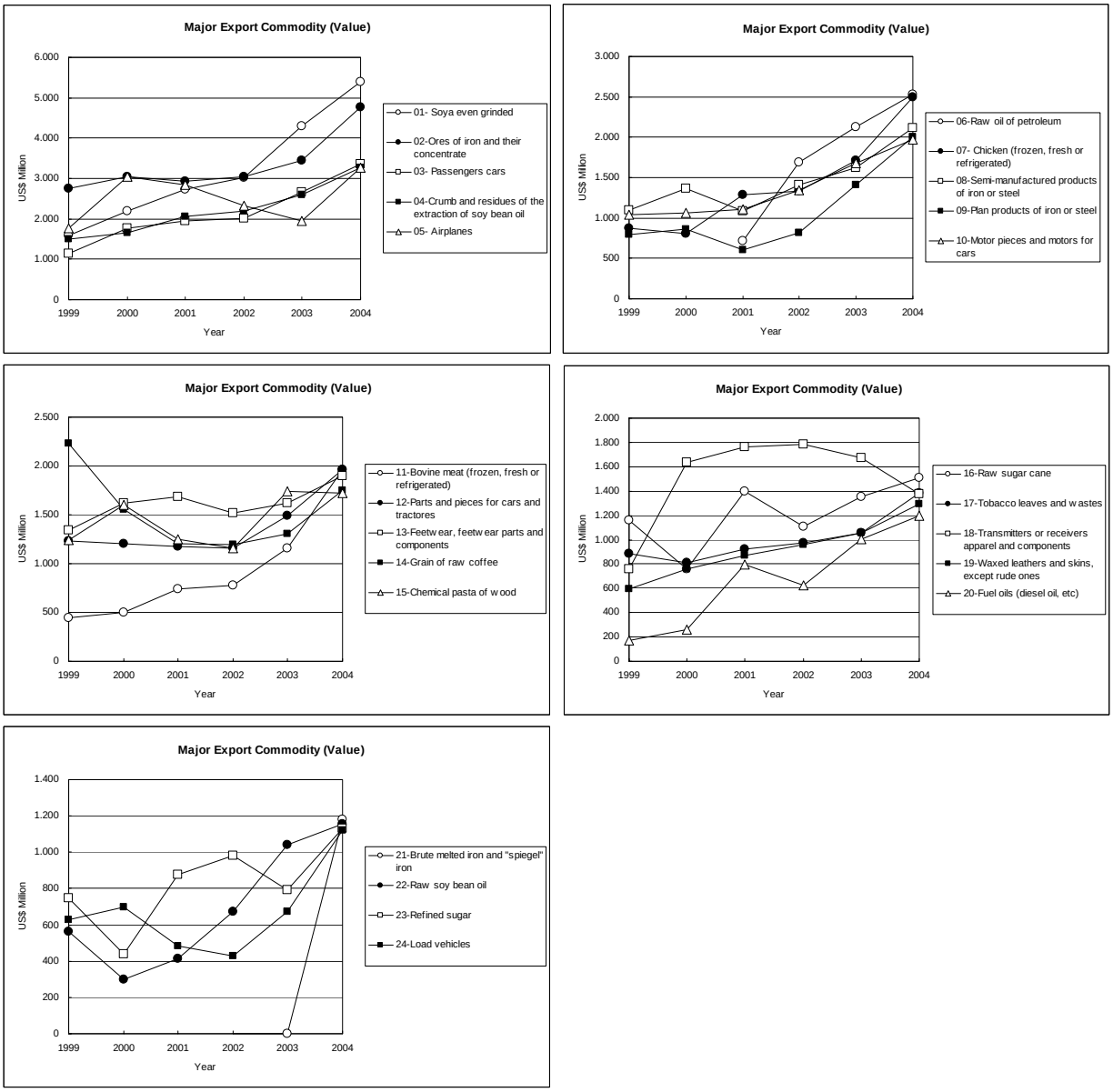


Fig. A.2-1 Major Export Commodities

(2) Import

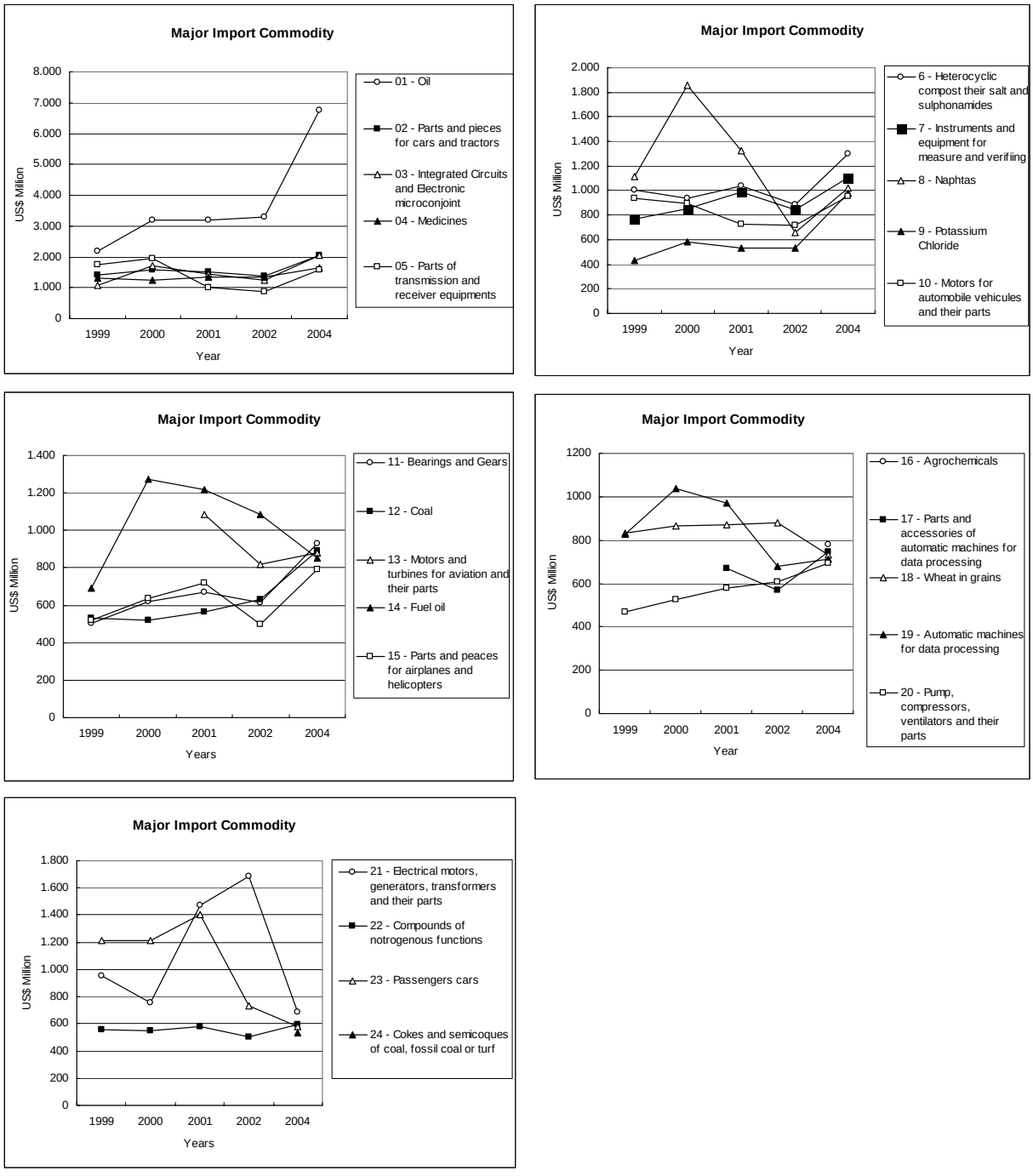


Fig. A.2-2 Major Import Commodities

A2.1.2 Trade Counterpart

(1) Export

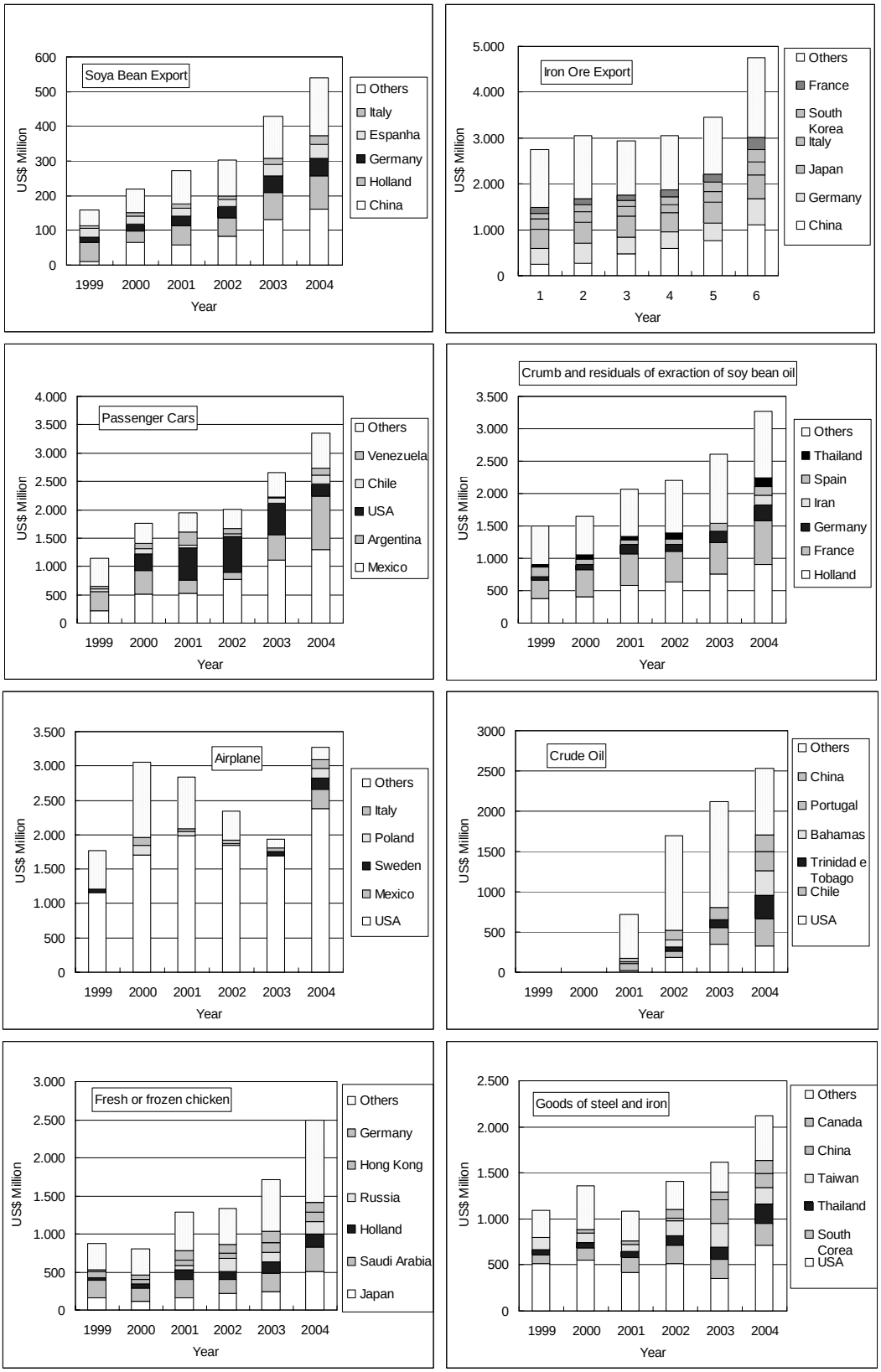


Fig. A.2-3 Brazilian export by commodity and country

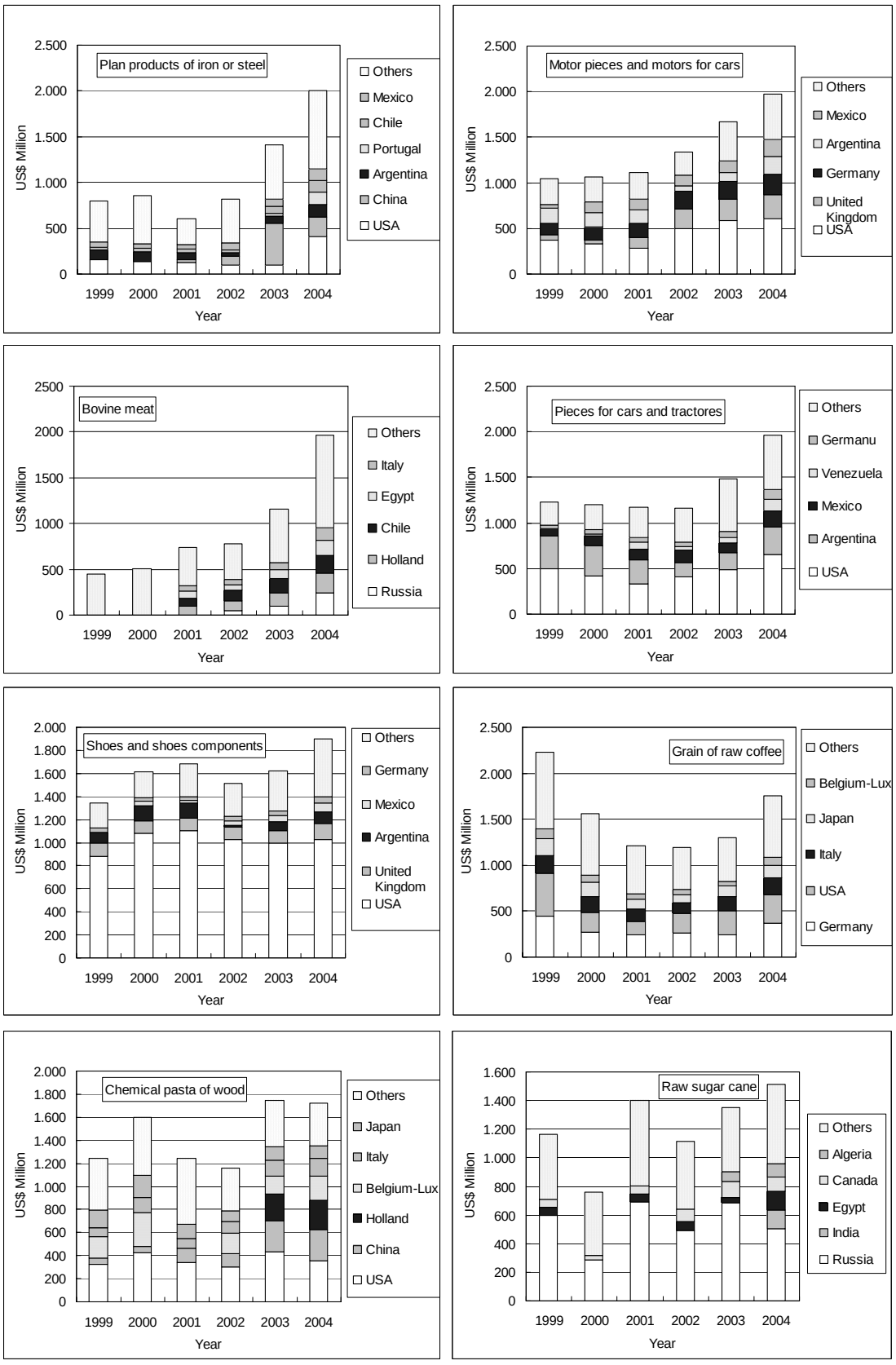


Fig. A.2-3 Brazilian export by commodity and country (cont.)

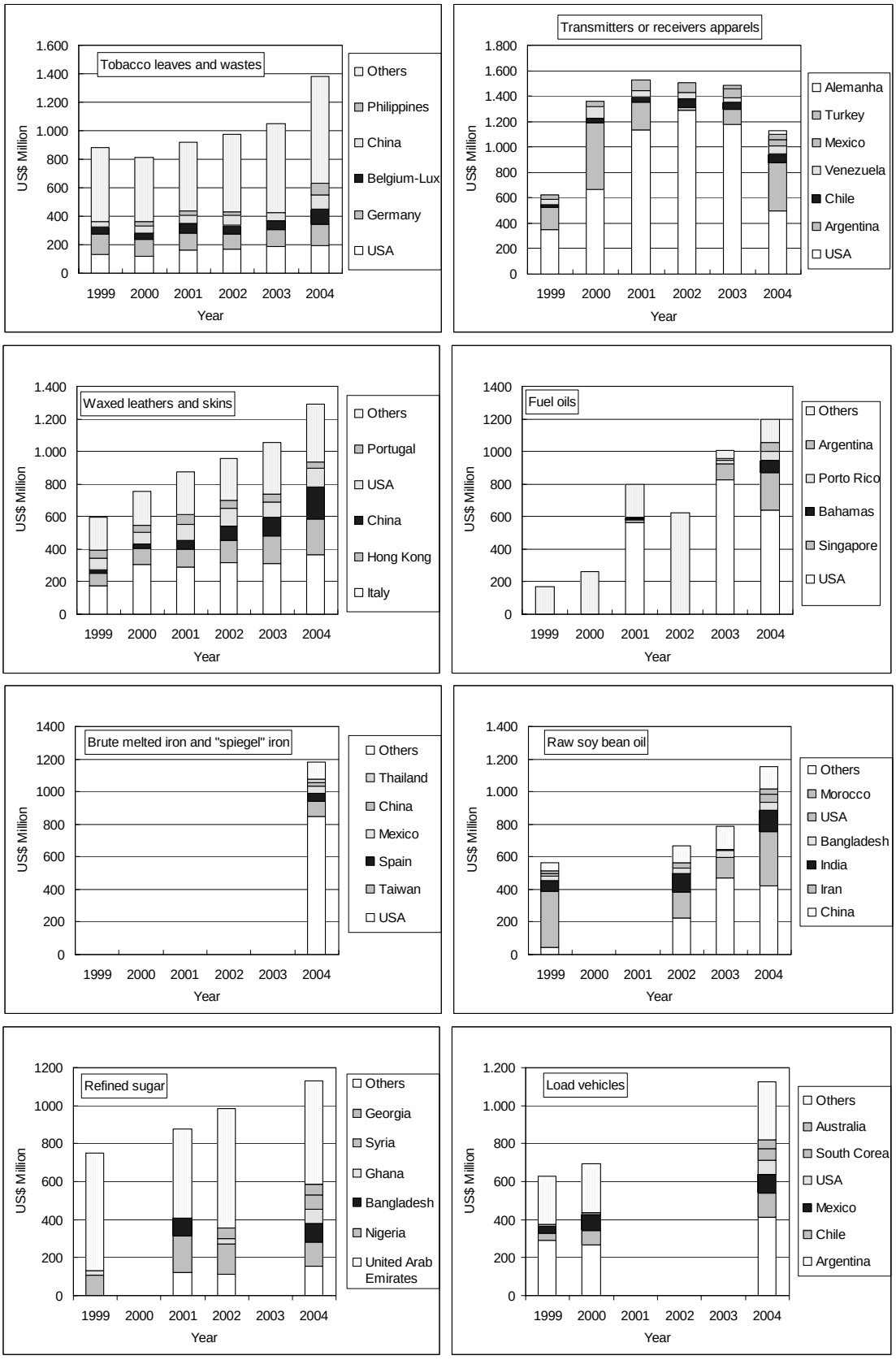


Fig. A.2-3 Brazilian export by commodity and country (cont.)

(2) Import

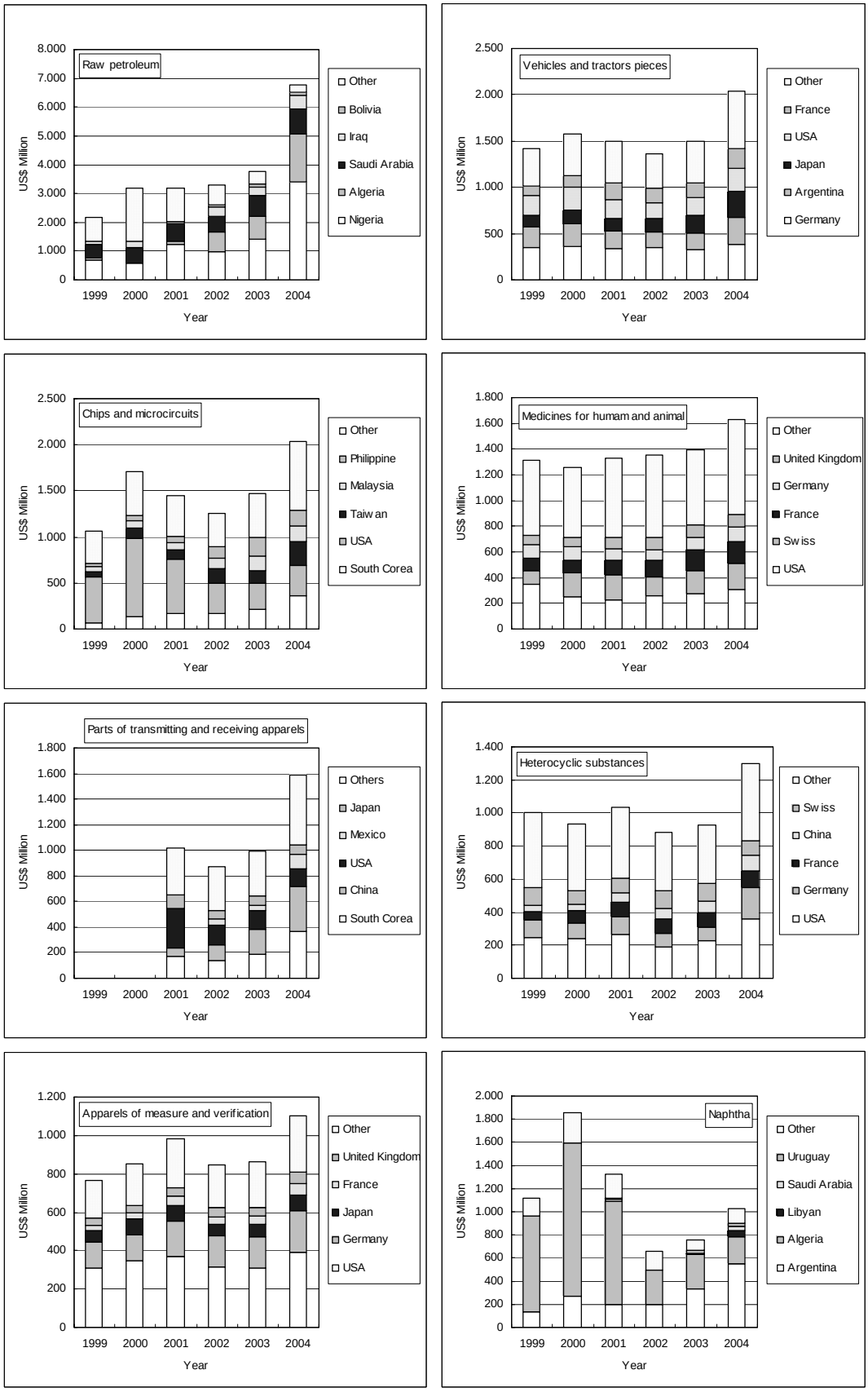


Fig. A.2-4 Brazilian import by commodity and country

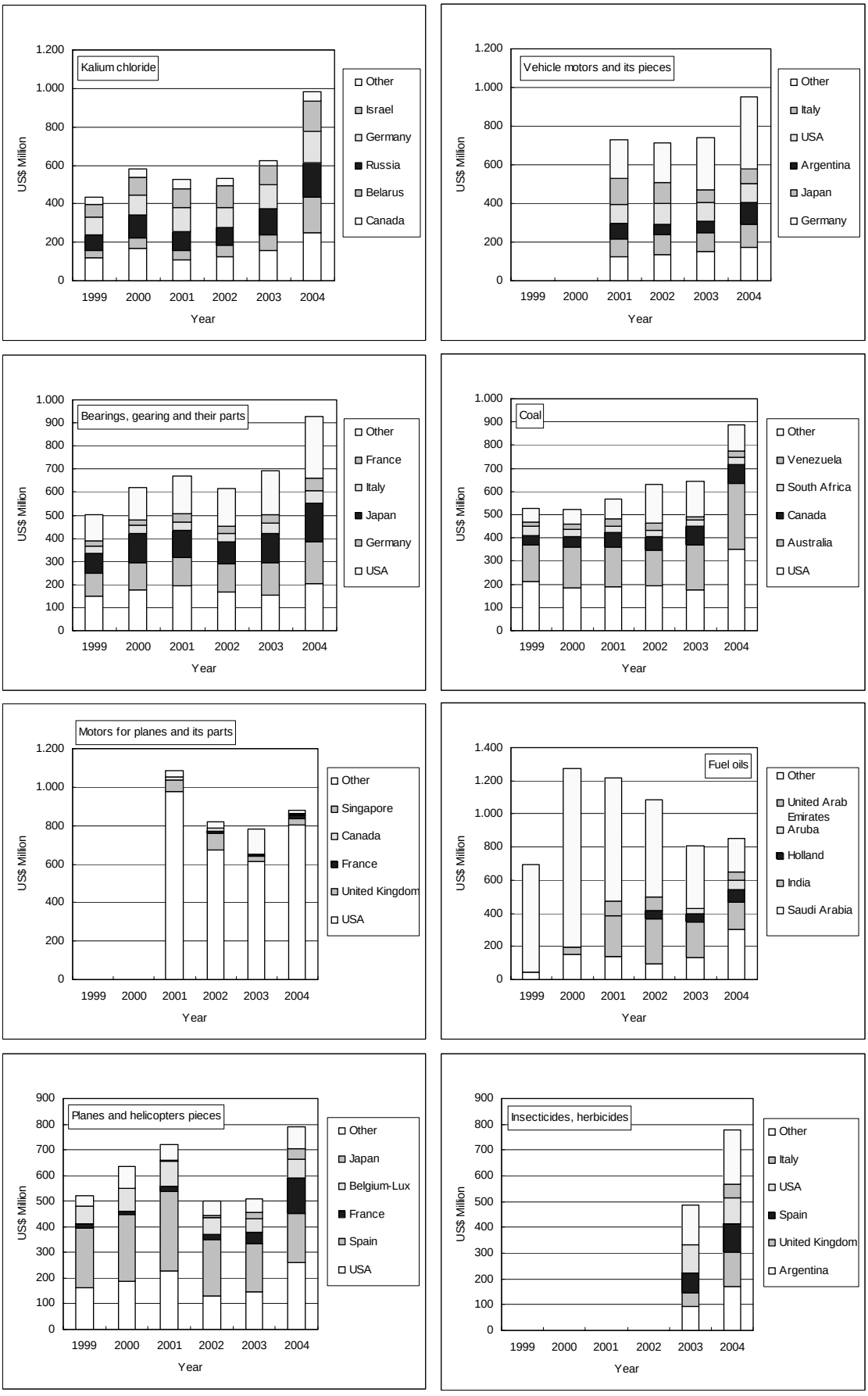


Fig. A.2-4 Brazilian import by commodity and country (cont.)

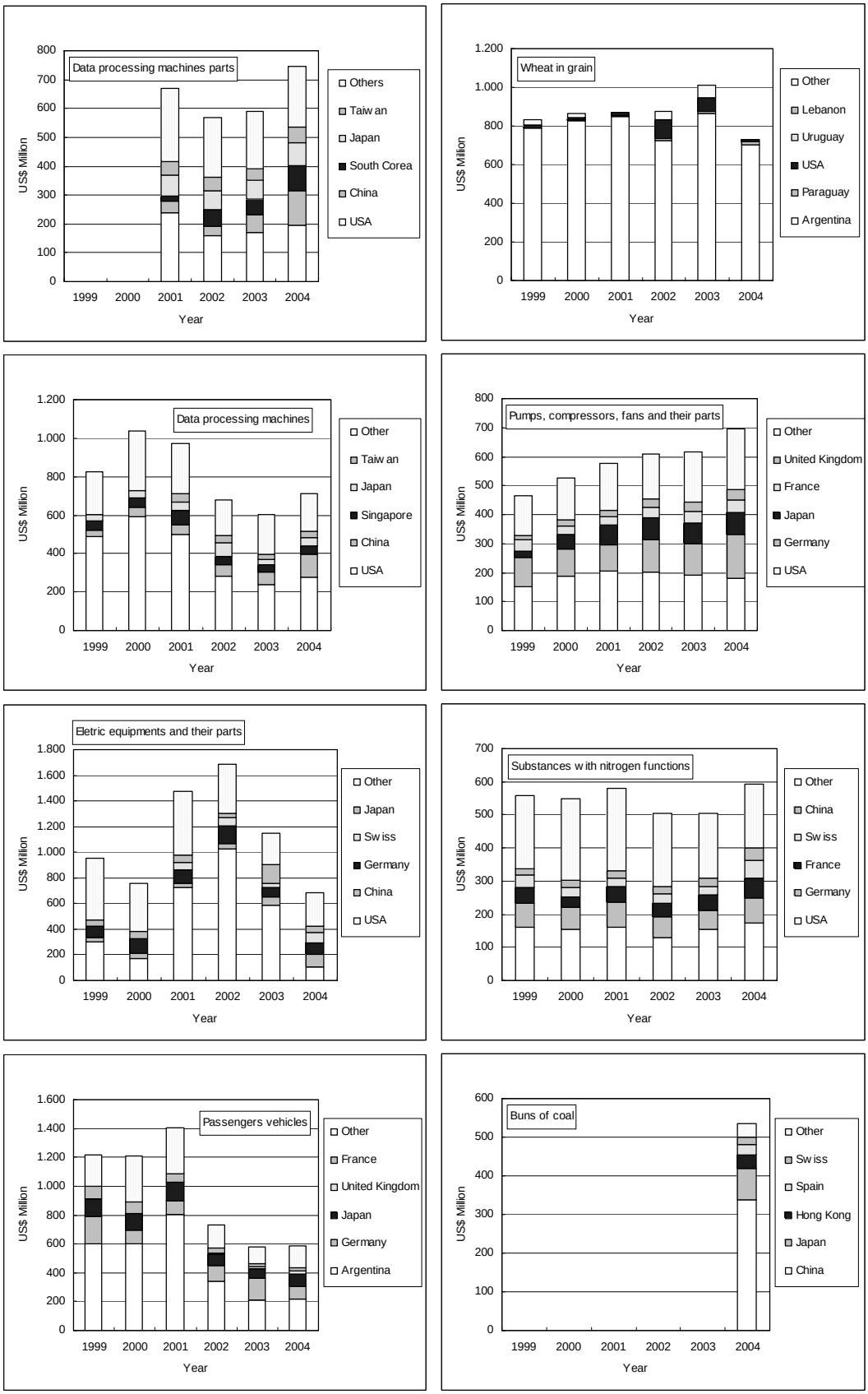


Fig. A.2-4 Brazilian import by commodity and country (cont.)

A2.1.3 Cargo Movement

(1) Mucuripe

IMPORT LONG COURSE - GENERAL CARGO

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
AÇO LAMINADO (LAMINATED STEEL)			5.700	4.934		3.409					
ALGODÃO EM PLUMA (COTTON IN FEATHER)	84.474	56.471	120.335	135.177	97.460	113.050	80.897	0	19.438	16.648	13.688
ARROZ (RICE)	67.607	16.002	18.467	17.034	40.628	10.517	33.818	12.706	4.081	5.952	8.024
AUTOMÓVEL (AUTOMOBILE)	1.185	3.139									
BOBINA DE FERRO OU AÇO (REEL OF IRON OR STEEL)				5.127	29.120	85.156	79.336	56.210	0	0	4.522
BOBINAS DE ALUMINIO (REELS OF ALUMINUM)							7.591				1.190
BOBINAS DE PAPEL (REELS OF PAPER)	0	2.056		8.255	13.430	10.586	8.583				6.574
BOBINAS DIVERSAS (SEVERAL REELS)					10.439	3.500					
CARGA FRIGORIFICADA (LOAD FRIGORIFICADA)	5.508	2.778									
CARGAS DIVERSAS (SEVERAL LOADS)			2.151								
CASTANHA DE CAJU (CASHEW NUT)	4.562	2.016				4.047					
CASTANHA DE CAJU IN NATURA (CASHEW NUT IN NATURA)						5.600	4.282				
CHAPAS DE AÇO (STEEL PLATES)	0	2.371	4.742	5.129	6.338						
CIMENTO (CEMENT)	13.850	45.149	67.106	35.129	0						
CLORETO DE POLIVINIL (CHLORIDE OF POLIVINIL)								262			
FARINHA DE TRIGO (WHEAT FLOUR)				26.534	15.941	8.725	4.584	2.438			1.849
FEIJÃO (BEAN)	4.297	31.416	2.474	0	4.848	24.261	0				
FIOS E FIBRAS DE POLIESTER (THREADS AND FIBERS OF POLYESTER)	0	2.861	3.526	10.323		6.554	7.391	2.319	1.690	1.519	8.539
FIOS SINTÉTICOS (SYNTHETIC THREADS)	8.135	4.000									
LEITE EM PÓ (POWDERED MILK)			13.498								
LINGUOTES FERRO/AÇO COMUM (LINGUOTES COMMON IRON / STEEL)					3.276						
MÁQUINAS INDUSTRIAIS/AP. ELETRÔNICOS (INDUSTRIAL ELETRONIC MACHINES)	8.278	6.500									
MASSAS DIVERSAS (SEVERAL PASTA)											1.520
MATERIAL PLÁSTICO DIVERSOS (SEVERAL PLASTIC MATERIAL)			2.634								
MERCADORIA EM GERAL (MERCHANDISE IN GENERAL)					4.776		5.181				
MERCADORIA EM TRANSITO (MERCHANDISE IN TRAFFIC)							10.271				
MILHO DE PIPOCA (POPCORN)											2.555
PAPEL P/ IMPRESSÃO JORNAL (NEWSPAPER PAPER FOR IMPRESSION)	13.154	8.067	10.155	6.021	3.219	0	8.946	2.992	6.660	9.741	5.519
PEÇAS DE REPOSIÇÃO (PIECES OF REPLACEMENT)				8.207							
PEÇAS PARA MOTOS (PIECES FOR MOTORCYCLES)								430	1.496	1.276	1.243
PNEUS (TIRES)			2.293	3.523							
POLIETILENO/POLIPROPILENO (POLYETHYLENE/POLYPROPYLENE)							6.304	5.463	9.656	10.169	9.268
POLPA DE COCO CONGELADA (FROZEN PULP OF COCONUT)					5.755	4.880					
PRODUTOS ALIMENTÍCIOS (NUTRITIOUS PRODUCTS)								570			
Produtos diversos (Outros) (Several products)	28.758	50.262	50.263	79.166	66.876	56.171	63.514	51.959	80.062	53.046	27.865
PRODUTOS QUIMICOS (CHEMICAL PRODUCTS)				3.759	4.756	7.305	7.309	13.489	10.408	12.328	11.915
RAÇÕES DIVERSAS (SEVERAL RATIONS)								2.111	3.361	6.949	4.435
REFRIGERANTE (SOFT DRINK)		2.708	6.430	3.210							
RESINAS SINTÉTICAS (SYNTHETIC RESINS)		3.282	3.034								
STC. F.A.K. (MERC. DIVS)					11.602	7.791	5.375	1.611			
TECIDOS (FABRICS)						4.267	6.860	768			3.675
VIDROS FLOTADOS INCOLOR (GLASSES COLORLESS FLOTADOS)					4.452				1.949	2.709	2.317
Sub Total	239.808	239.078	312.808	351.528	322.916	355.819	340.242	153.329	138.801	120.337	114.698

Table A.2-1 Commodities of Mucuripe Port

IMPORT CABOTAGE - GENERAL CARGO

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALGODÃO EM PLUMA (COTTON IN FEATHER)				1.879							
ALUMINIO E SUAS LIGAS (ALUMINUM AND THEIR LEAGUES)								1.467			
ARROZ (RICE)	6.146	7.848	35.071	63.479	76.746	84.295	108.150	90.159	149.295	129.521	138.043
ARTIGO DE CARÃMICA/PORCELANAS (ARTICLE OF CARAMIC / PORCELAINS)							1.304				
ARTIGOS DIVERSOS (SEVERAL GOODS)		301									
AZULEJOS, LADRILHOS, GUARNIÇ. (TILES)					385						
BATATAS FRITAS (FRIED POTATO)		2									
BICARBONATO DE SÓDIO (BICARBONATE OF SODIUM)			41								
BOBINAS DE AÇO (REELS OF STEEL)									6.007	10.123	
BOBINAS DE PAPEL (REELS OF PAPER)			3.417	11.213	11.455	16.569	22.243	12.860	18.811	15.552	7.660
BOTIJÃO VAZIO (EMPTY GAS BOTTLES)								1.298			
CARGAS DIVERSAS (SEVERAL LOADS)			218			2.756					
CHAPAS DE AÇO (STEEL PLATES)											7.436
CONSERVAS (CONSERVES)											1.495
CONTAINERS CHEIOS (FULL CONTAINERS)				3.355							
DERIVADOS DE PETRÓLEO (DERIVED OF PETROLEUM)					590						
FEIJÃO (BEAN)	5.771	152									
FERRO VELHO - SUCATA (SCRAP IRON)				1.945	2.016			2.337			
FOSFATO BICALCICO (PHOSPHATE BICALCIUM)		212	580	622	844						
FRANGO CONGELADO/FRIGORIF (FROZEN CHICKEN)					560	3.129	1.367				
GRANALHA DE AÇO (GRANULATED STEEL)								678			
LÂMPADAS DIVERSAS (SEVERAL LAMPS)		9									
LEITE EM PÓ (POWDERED MILK)											1.615
MÁQUINAS E EQUIPAMENTOS (MACHINES AND EQUIPMENTS)		19		1.200							
MÁQUINAS INDUSTRIAIS/AP. ELETRÔNICOS (INDUSTRIAL ELECTRONIC MACHINES)		115									
MARGARINA VEGETAL (VEGETABLE MARGARINE)								853			
MATERIAL DE LIMPEZA (MATERIAL OF CLEANING)											1.783
MELOGEL (MELOGEL)		378									
MERCADORIA EM GERAL (MERCHANDISE IN GENERAL)						2.881	1.616				
MERCADORIA EM TRÂNSITO (MERCHANDISE IN TRAFFIC)			3.876	320		4.768					
MERCADORIAS DIVERSAS (SEVERAL GOODS)		61	68		515	1.206					
MICROFLUID PVC (MICROFLUID PVC)					643						
MOTOCICLETAS (MOTORCYCLES)			90								
MOTOCOMPRESSORES HERMETICO (HERMETIC MOTOCOMPRESSORS)							889				
ÓLEO DE SOJA REFINADO (REFINED OIL OF SOY)			188	2.265							
ÓLEO LUBRIFICANTE (LUBRICATING OIL)											2.985
OPERACAO DE TRANSBORDO (OPERATION OF CHANGE)						9.363	31.352				
PALMITO (PALM HEART)			126								
PAPEL DIVERSOS (SEVERAL PAPER)				253							1.909
PAPEL KRAFT LINER (KRAFT LINER PAPER)			3.778		4.594	3.015	3.270	3.173	2.510	16.638	25.455

Table A.2-1 Commodities of Mucuripe Port (cont.)

IMPORT CABOTAGE - GENERAL CARGO (CONT.)

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
PAPEL MIOLO (PAPER INSIDE)			820					272			
PEÇAS DE REPOSIÇÃO (PIECES OF REPLACEMENT)		545									
PIMENTA DO REINO (BLACK PEPPER)			121								
PISO ARTIFICIAL DE GRANITO (ARTIFICIAL FLOOR OF GRANITE)				365							
PISO CERÂMICO (CERAMIC FLOOR)				1.774	8.340	8.975	3.609	2.601	4.865	3.414	3.437
POLI ETILENO/POLIPROPILENO (POLYETHYLENE/POLYPROPYLENE)		301			7.069	11.556	12.027	8.426	15.995	10.419	11.544
PRE FORMAS DE CRISTAIS (PRE FORMS OF CRYSTALS)			1.402	815							
PREFORMA INCOLOR (COLORLESS PREFORMA)				242					1.550	3.851	8.690
PRODUTOS ALIMENTICIOS (NUTRITIOUS PRODUCTS)		218					2.001				2.440
PRODUTOS DE HIGIENE (PRODUCTS OF HYGIENE)								541			2.084
PRODUTOS DE LIMPEZA (PRODUCTS OF CLEANING)								2.499			4.100
Produtos diversos (Outros) (Several products)	248	2	127	1.508	3.100	12.549	17.158	14.838	38.834	36.864	16.535
PRODUTOS QUÍMICOS (CHEMICAL PRODUCTS)		217				958	1.570	1.445			1.373
RESINAS SINTETICAS (SYNTHETIC RESINS)							1.076				
SABÃO (SOAP)								932			
STC. F.A.K. (MERC. DIVS)					972	1.301	1.303				
SUCATA DE FERRO (SCRAP IRON)									3.241	14.948	19.551
TELHAS (TILES)					432	1.376					
TINTAS (PAINT)			54			836					1.657
TRILHOS (RAILS)							2.305				
TUBOS DE AÇO (STEEL PIPES)					1.274						
Sub Total	14.159	12.375	51.973	93.232	121.533	167.532	213.240	146.381	243.110	243.333	261.796

Table A.2-1 Commodities of Mucuripe Port (cont.)

EXPORT LONG COURSE - GENERAL CARGO

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALGODÃO EM PLUMA (COTTON IN FEATHER)											1.038
ARTIGOS DE FERRO E AÇO (GOODS OF IRON AND STEEL)		2.453									
BANANA (BANANA)					2.412		6.702				
BOBINAS DE AÇO (REELS OF STEEL)											3.324
BOBINAS DE PAPEL (REELS OF PAPER)											4.251
BOTIJÃO VAZIO (EMPTY GAS BOTTLE)		2.716									
CALÇADOS (SHOES)				3.521	7.660	5.991	7.731	5.988	4.775	4.393	4.221
CAMARAO (SHRIMP)						1.732	6.090	6.983	12.111	21.351	22.935
CARBONATO DE CÁLCIO (CARBONATE OF CALCIUM)				2.346							1.775
CASCOS BOVINOS (BOVINE SKULLS)											1.026
CASTANHA DE CAJU (CASHEW NUT)	23.952	32.753	39.029	39.146	34.686	26.311	35.751	17.510	14.724	18.763	16.811
CERA DE CARNAUBA (BRAZIL WAX)	10.876	10.036	11.445	13.591	13.905	14.067	12.585	8.662	11.349	9.930	9.876
COURO BOVINO ACABADO (PROCESSED BOVINE LEATHER)									2.094	3.618	2.482
COURO BOVINO CURTIDO (TANNED BOVINE LEATHER)		6.254	6.966	4.352	6.207	4.042	7.229	3.588			
COURO BOVINO SEMI-ACABADO (SEMI-PROCESSED LEATHER BOVINE)											1.291
DOCES/CARAMELOS DIVERSOS (SWEET / SEVERAL CARAMELS)	6.317	5.495	4.592	5.196	6.732	6.787	4.382	5.841			
FERRO SILICIO (IRON SILICON)		2.034	7.868	9.079	6.878	7.373	7.285	0	3.122	4.477	5.034
FIOS DE ALGODAO (THREADS OF COTTON)		5.794	6.317	3.090	2.445	5.227	7.111	5.080	12.503	20.793	9.016
FIOS DE POLIESTER (THREADS OF POLYESTER)					2.086	1.785					
FOGÕES (STOVES)						1.979					1.760

Table A.2-1 Commodities of Mucuripe Port (cont.)

EXPORT LONG COURSE - GENERAL CARGO (CONT.)

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
FRUTAS DIVERSAS N/ ESPECIF (SEVERAL FRUITS)	6.952	1.882									
GRANITO OU PEDRA (GRANITE OR STONE)			1.863	11.006	3.756		7.887	3.197		2.536	22.118
INDICO 100% ALGODÃO (INDICO MADE OF COTTON : A KIND OF TEXTILE)			3.507	4.058	4.264	2.214					
INDICO BLUE (BLUE INDICO: A KIND OF TEXTILE)			1.507								
LAGOSTA (LOBSTER)			1.728	1.467							
LEITE EM PÓ (POWDERED MILK)			2.620								
LÍQUIDO DE CASCA DE CASTANHA (LIQUID OF PEEL OF CHESTNUT)											2.335
MANGA (MANGO)		1.921	1.721		1.702	9.026	8.713	15.793	2.617	7.064	3.662
MANUFATURADO DE TEXTEIS (MANUFACTURED TEXTILE)	16.463	6.281									
MEL DE ABELHA (HONEY OF BEE)											2.688
MELÃO (MELON)		3.077	3.744	1.895				9.956			1.483
MERCADORIA EM TRANSITO (MERCHANDISE IN TRAFFIC)							7.544				
MICA OU MALACACHETA (MICA)			1.722								1.714
MICROFLUID PVC (MICROFLUID PVC)								1.194			
ÓLEO DE CASTANHA DE CAJÚ (OIL OF CHESTNUT OF CAJU)											3.069
ÓLEO VEGETAL NÃO ESPECIF. (NOT ESPECIFIED VEGETABLE OIL)	611	2.302									
OPERACAO DE TRANSBORDO (OPERATION OF CHANGE)							2.483				
PALMITO (PALM HEART)				2.737	2.419						
PELE COURO DIV. CURT. PRE (SEVERAL TANNED SKIN LEATHER)	10.212	4.905									
Produtos diversos (Outros) (Several products)	35.890	23.731	20.600	18.010	17.235	25.277	39.498	32.232	47.621	49.234	29.356
PRODUTOS SIDERÚRGICOS (METALLURGICAL PRODUCTS)	14.754	1.861									
QUARTIZITO MOURISCO (MOORISH QUARTIZITO)						1.608		2.097	3.822	5.298	8.837
RASPAS DE COURO DIVERSAS (SEVERAL SHAVINGS OF LEATHER)											6.790
SAL (SALT)								784			
SISAL OU AGAVE (SISAL)			1.696	1.418	1.979						
SUCOS DIVERSOS (SEVERAL JUICES)											3.409
TAMBOR DE FREIO (BRAKE DRUM)						3.178	5.421		6.913	3.735	2.754
TECIDOS (FABRICS)				2.701	4.673	6.357	9.602	8.776	10.220	8.132	6.453
UVAS (GRAPES)								857	162	1.137	2.902
VERGALHÕES (SQUARE IRON BARS)											12.382
Sub Total	128.021	115.490	118.921	125.610	121.037	124.953	178.014	130.540	134.035	162.464	196.796

EXPORT CABOTAGE - GENERAL CARGO

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ALIMENTOS DIVERSOS (SEVERAL FOODS)					67						
ARROZ (RICE)					203			218			
ARTIGOS DE ALUMINIO (GOODS OF ALUMINUM)							1.829				
ARTIGOS DE FERRO E ACO (GOODS OF IRON AND STEEL)					107	1.550	1.517	3.375	3.299	3.841	2.378
BARRA FERRO/AÇO FIO MAQ. (IRON/STEEL BARS MACHINE THREAD)						298					
BISCOITOS (COOKIES)				16	644	957	2.238				1.563
BOTIJÃO VAZIO (EMPTY GAS BOTTLES)					67	327		362			
CALÇADO (SHOES)					93		1.346	816	1.490	3.226	5.131
CANTONEIRAS DE ALUMÍNIO (CORNER SHELVES OF ALUMINUM)						1.477	2.009				
CARBONATO DE CÁLCIO (CARBONATE OF CALCIUM)		88				304			28	3.692	4.259

Table A.2-1 Commodities of Mucuripe Port (cont.)

EXPORT CABOTAGE - GENERAL CARGO (CONT)

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CERÂMICA SOB DIVERSAS FORMAS (SEVERAL FORMS OF CERAMICS)					153	363					
CERÂMICO DIVERSOS (SEVERAL CERAMICS)								1.213			
CERVEJA E CHOPP (BEER AND CHOPP)									0	4.690	4.353
CHAPAS DE ACO (STEEL PLATES)						977	1.122				
FARINHA DE TRIGO (WHEAT FLOUR)				108	3.386	4.916	16.831	2.783	10.432	4.850	13.190
FIOS DE ALGODÃO (THREADS OF COTTON)				15	327		605				
FOGÕES (STOVES)								154			
GESSO (GYPSUM)					510	243		279			5.083
LEITE DE CÔCO (COCONUT MILK)											1.587
MASSAS DIVERSAS (SEVERAL PASTA)						797	769	1.888			3.030
MATERIAL DE CONSTRUÇÃO (MATERIAL OF CONSTRUCTION)								1.864	3.223	3.499	
MERCADORIA EM TRANSITO (MERCHANDISE IN TRAFFIC)	172		526	370		5.914	1.544				
OPERACAO DE TRANDBORDO (OPERATION OF CHANGE)						24.187	25.820				
ÓXIDO DE CÁLCIO (OXIDE OF CALCIUM)						508					
PISO CERÂMICO (CERAMIC FLOOR)					334						
POLPA DE MADEIRA (PULP OF WOOD)								3.073			
PREFORMA INCOLOR (COLORLESS PREFORM)							1.360	1.602			
Produtos diversos (Outros) (Several products)	640				531	1.651	7.767	5.131	54.997	37.375	24.506
PRODUTOS QUÍMICOS (CHEMICAL PRODUCTS)											1.178
REFRIGERANTES (SOFT DRINKS)					876				235	2.101	3.768
SAL (SALT)				903	1.814	0	27.463	51.053	142.121	243.546	265.773
SUCATA DE FERRO (SCRAP IRON)											2.000
SUCOS DIVERSOS (SEVERAL JUICES)					163		1.120	1.290	1.605	2.089	3.292
SUPERCAL (LIME)											2.899
TAMBOR DE FREIO (BRAKE DRUM)								138			
TECIDOS (FABRICS)											2.548
TINTAS (PAINTS)						220					
TUBOS DE ACO (STELL PIPES)					39.161		797				
Sub Total	2.806	2.083	2.522	3.409	50.434	46.688	96.137	77.239	219.432	310.912	348.542

Table A.2-1 Commodities of Mucuripe Port (cont.)

IMPORT LONG COURSE - SOLID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CARVAO ENERGETICO (ENERGY COAL)							15.717				
COQUE DE PETRÓLEO (BUN OF PETROLEUM)					31.630	80.924	95.063	46.888	80.540	80.984	62.161
FARELO DE ALGODÃO (TORTA) (CRUMB OF COTTON - PULP)				5.404	2.936	2.962					
FARELO DE GIRASOL (CRUMB OF GIRASOL)							1.501		791		
FARELO DE SOJA (CRUMB OF SOY)					3.950						
FARELO DE TRIGO (BRAN)			945	1.005							
LECITINA DE SOJA (LECYTHIN OF SOY)			4.352	19.977							
MALTE (MALT)									4.010	13.000	26.850
MILHO (CORN)	184.741	201.518	48.220	62.305	281.742	119.320	269.172				
Produtos diversos (Outros) (Several products)		9.604									
TORTA DE CAROCO DE ALGODAO (PULP OF COTTON SEED)		5.211	14.798	4.080		23					
TRIGO (WHEAT)	531.649	649.360	667.374	620.399	750.842	770.866	825.377	384.360	843.176	688.799	655.081
Total	716390	865693	735689	713170	1071100	974095	1206830	431247,4	928517	782783	744092

IMPORT CABOTAGE - SOLID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
COQUE DE PETROLEO (BUN OF PETROLEUM)							10.179				29.677
FARELO DE SOJA (CRUMB OF SOY)	17.749	21.171									
LECITINA DE SOJA (LECYTHIN OF SOY)			9.939								
MILHO (CORN)	4.508	24.001	50.121							18.063	
OUTROS (OTHER)	5.001										
TRIGO (WHEAT)	10.471			23.048	14848					24.517	66.606
Total	37729	45172	60060	23048	14848	0	10179	0	0	42580	96283

EXPORT LONG COURSE - SOLID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
FERRO SILÍCIO (IRON SILICON)	5.134	2.048									
Total	5.134	2.048	0	0	0	0	0	0	0	0	0

Table A.2-1 Commodities of Mucuripe Port (cont.)

IMPORT LONG COURSE - LIQUID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ÁLCOOL ANIDRO (ALCOHOL ANIDRE)		3.422	12.379								
ÁLCOOL HIDRATADO (MOISTURIZED ALCOHOL)	43.021	18.274									
BACHAQUERO (BACHAQUERO)								130.968			
GÁS LIQUEFEITO DE PRETÓLEO (LIQUEFIED GAS OF PRETOLEUM)	30.394	26.225	35.488	128.498	82.344	40.334	80.612	10.302	15.491	13.936	10.602
GASOLEO PESADO (HEAVY DIESEL OIL)							1.182				
GASOLINA ADITIVADA (PREMIUM GASOLINE)				12.308				22.310	39.411		
GASOLINA COMUM (REGULAR GASOLINE)	7.884	80.351	91.803	50.282	6.452	7.515	17.040				
OLEO CAROÇO DE ALGODÃO (OIL OF COTTON SEED)										2.700	
OLEO COMBUSTIVEL (FUEL OIL)			11.647	12.547	9.658		3.978				
OLEO DE DENDÊ (PALM OIL)										10.459	14.279
OLEO DE SOJA (OIL OF SOY)			1.486	1.769				2.995	10.488	13.808	
OLEO DIESEL (DIESEL OIL)	343.895	294.268	537.875	345.697	394.548	290.514	348.117	100.245	207.966		
ÓLEO LUBRIFICANTE (LUBRICATING OIL)								40	116		
ÓLEO VEGETAL NÃO ESPECIF. (NOT ESPECIFIED VEGETABLE OIL)		1.999									
OPERAÇÃO DE TRANSBORDO (OPERATION OF CHANGE)					17.084						
PETRÓLEO CRU (RAW PETROLEUM)	266.657	230.234	108.415	259.325	245.349	317.396	304.618	26.231,36	257.758	26.735	25.555
Produtos diversos (Outros) (Several products)	20.373		21								
QAV1 (QAV1)				6.187	4.145	10.222	11.116				
QUEROSENE COMUM (COMMON KEROSENE OIL)	8.536	4.942	17.748	1.890	2.394	1.899	2.065				
QUEROSENE DE AVIACAO (KEROSENE OIL OF AVIATION)	54.507	41.226	39.470	58.302	50.967	33.556	50.681	35.572,53	68.428	7.687	
Total	775.267	700.941	856.332	876.805	812.941	701.436	819.409	328.665	599.658	75.325	50.436

IMPORT CABOTAGE - LIQUID

(IN TONS)

COMMODITY	1.994	1.995	1996	1997	1.998	1.999	2.000	2001	2002	2003	2004
ÁLCOOL ANIDRO (ALCOHOL ANIDRE)		6.199	13.218	23.668							
ÁLCOOL HIDRATADO (MOISTURIZED ALCOHOL)	21.538	53.095	40.769	45.334	6.415						
GAS LIQUEFEITO DE PETRÓLEO (LIQUEFIED GAS OF PETROLEUM)	152.777	211.604	196.364	135.008	147.435	168.893	135.823	98.453	148.040	108.262	110.623
GASÓLEO PESADO (HEAVY DIESEL OIL)		4.383	3.677	18.524		3.021					
GASOLINA A (GASOLINE A)										113.780	112.813
GASOLINA ADITIVADA (PREMIUM GASOLINE)				18.014	36.037	26.163	24.949	30.937	9.945	32.732	
GASOLINA COMUM (REGULAR GASOLINE)	217.270	203.249	208.344	225.947	245.344	261.789	267.636	81.717	239.046	124.055	148.033
LUBRIFICANTE (LUBRICATING)							6.502	23			
MF-380-CST (MF-380-CST)					7.191	4.789	2.667				19.824
OLEO COMBUSTIVEL (FUEL OIL)	63.138	73.406	67.983	106.186	98.837	57.248	40.645	45.643	62.094	6.042	10.530
ÓLEO DIESEL (DIESEL OIL)	259.974	383.280	209.487	248.917	166.397	250.023	187.190	183.823	381.353	199.648	5.083
ÓLEO DIESEL B (DIESEL OIL B)										139.331	274.017
ÓLEO DIESEL D (DIESEL OIL D)										123.482	194.198
ÓLEO LUBRIFICANTE (LUBRICATING OIL)								451	1.299		
OUTROS (OTHER)	22.162	7.500									
PETROLEO CRU (RAW PETROLEUM)			116.045	6.287	99.842		3.859	6.619,28	65.043	143.998	101048
Produtos diversos (Outros) (Several products)				6.017	1.707	1.541	2.110				
QAV1 (QAV1)					10.134	8.554	11.349				
QUEROSENE COMUM (COMMON KEROSENE OIL)	9.288	1.577	2.597			2.279					
QUEROSENE DE AVIAÇÃO (KEROSENE OIL OF AVIATION)	24.947	30.382	35.029	14.673	9.314	29.644	10.930	10.171,96	19.567	82.839	91.408
Total	771.094	974.675	893.513	848.575	828.653	813.944	693.660	457.837	926.387	1.074.169	1.067.577

Table A.2-1 Commodities of Mucuripe Port (cont.)

EXPORT LONG COURSE - LIQUID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
LUBRIFICANTE (LUBRICATING)										8.304	
OLEO DE CASTANHA DE CAJÚ (OIL OF CHESTNUT OF CAJÚ)		11.641	23.565	22.129	21.435	15.077	21.251	11.414	17.284	12.080	17.801
ÓLEO DE OITICICA (OIL OF OITICICA)		230		320							
OLEO LUBRIFICANTE (LUBRICATING OIL)						3.386	4.439				
ÓLEO VEGETAL NÃ ESPECIF. (NOT ESPECIFIED VEGETABLE OIL)	19.571	5.715									
OPERAÇÃO DE TRANSBORDO (OPERATION OF CHANGE)					28.733						
OUTROS (OTHER)									53.430	2.805	
Total	19571	17586	23565	22449	50168	18463	25690	11413,55	70.714	23189	17801

EXPORT CABOTAGE - LIQUID

(IN TONS)

COMMODITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ASFALTO (ASPHALT)					721						
DERIVADOS DE PETRÓLEO (DERIVED OF PETROLEUM)	52.141	7.084							8.641		
GÁS LIQUEFEITO DE PETRÓLEO (LIQUEFIED GAS OF PETROLEUM)					1.523					2.161	
GASOLEO PESADO (HEAVY DIESEL OIL)		1.819	12.143	15.155	22.679	12.612	1.105				
GASOLINA COMUM (COMMON GASOLINE)					8.725						7.449
ISOVOLT (ISOVOLT)											887
LIBRIFICANTE (LIBRIFICANTE)					2.170	6.236	9.950	6.394		43.677	
LUBRIFICANTE NH10 (LUBRICANT NH10)											1.016
LUBRIFICANTE NH140 (LUBRICANT NH140)											9.419
LUBRIFICANTE NH20 (LUBRICANT NH20)											10.528
MERCADORIA EM TRÂNSITO (MERCHANDISE IN TRAFFIC)				17							
MF-380-CST (MF-380-CST)						8.119	14.439				
NAFTA (NAPHTHA)		3.140			1.182						
ÓLEO COMBUSTIVEL (FUEL OIL)						18.947				5.564	7.767
ÓLEO DIESEL D (DIESEL OIL D)											7.611
OLEO LUBRIFICANTE (LUBRICATING OIL)						14.238	15.084	5.210	15.008		19.237
OPERACAO DE TRANSBORDO (OPERATION OF CHANGE)	31.000	29.269	6.517	63.170		29.973					
PETROLEO CRU (RAW PETROLEUM)			986	1.043	2.210		5.616				
PETRÓLEO SEGREGADO (SEGREGATED PETROLEUM)		3.450									
Produtos diversos (Outros) (Several products)				3.168					49.268		
QUEROSENE DE AVIACAO (KEROSENE OIL OF AVIATION)			5.560	3.288			8.790				
SEGREGADO DE PETROLEO (SEGREGATED OF PETROLEUM)			14.088	2.200					21.529	3.042	
Total	83141	44762	39294	88041	39210	90125	54984	11604,78	94.445	54444	63914

Table A.2-1 Commodities of Mucuripe Port (cont.)

(2) Pecem

EXPORT

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
BANANA	BANANA	15.003,05	51.484,67	54.229,03	120.716,75
MANGA	MANGO	22.700,22	32.653,59	43.401,03	98.754,84
MELAO	MELON	6.041,24	43.866,10	47.928,40	97.835,74
CASTANHA DE CAJU	CASHEW NUT	12.357,82	24.220,77	33.431,87	70.010,46
CAMARAO	SHRIMP	10.317,19	21.301,40	18.375,88	49.994,47
DERIVADO PETROLEO	DERIVED PETROLEUM	48.981,05			48.981,05
VERGALHOES	SQUARE BARS OF IRON		31.013,42	17.799,14	48.812,56
GRANITO	GRANITE	2.883,21	14.791,71	21.850,71	39.525,63
TARUGOS	PINS			32.233,90	32.233,90
CALCADOS	SHOES	6.507,09	11.055,47	11.505,14	29.067,70
TAMBOR DE FREIOS	BRAKE DRUMS	3.743,72	10.385,50	9.419,42	23.548,64
BALA	CANDY	3.646,19	8.543,92	10.358,73	22.548,84
TECIDOS DE ALGODAO	FABRICS OF COTTON	1.944,51	2.381,85	12.719,56	17.045,92
UVA	GRAPE	517,99	6.564,20	6.561,89	13.644,08
ABACAXI ( )	PINEAPPLE		16,80	11.751,75	11.768,55
CERA DE CARNAUBA	BRAZIL WAX	2.644,52	3.576,75	4.552,93	10.774,20
TEXTEIS	TEXTILE	3.895,76	5.750,90	408,60	10.055,26
FIO DE ALGODAO	THREAD OF COTTON	1.645,07	3.930,56	3.500,98	9.076,61
COUROS	LEATHERS	483,69	3.301,74	5.018,65	8.804,08
TOALHAS	TOWELS	634,40	5.675,60	2.407,67	8.717,67
MAMAO	PAPAYA	140,39	4.451,76	3.600,62	8.192,77
MEL	HONEY	1.739,83	3.076,34	1.767,30	6.583,47
MELANCIA	WATERMELON	167,86	2.297,84	3.947,74	6.413,44
BARRA CHATA	FLAT BARS			5.429,10	5.429,10
FERRO DE SILICIO	IRON OF SILICON	1.509,00	2.891,26	908,00	5.308,26
CHAPA DE GRANITO	GRANITE PLATE	527,20	1.104,56	3.382,95	5.014,71
PEIXES	FISHES	539,98	4.233,69	226,03	4.999,70
SAL	SALT	627,78	3.507,99	796,12	4.931,89
LATAS DE GUARANA 350ML	CANS OF GUARANA 350ML		148,54	4.702,90	4.851,44
ALGODAO	COTTON	26,30	3.601,54	1.031,41	4.659,25
RASPAS BOVINAS	BOVINE SHAVINGS		748,09	3.828,68	4.576,77
CANTONEIRA	CORNER SHELF		147,54	4.087,89	4.235,43
SUCOS	JUICES	226,86	1.020,02	2.908,54	4.155,42
QUARTZO	QUARTZ	347,27	1.573,35	1.392,95	3.313,57
BOBINAS DE PAPEL	REELS OF PAPER	121,85	1.048,30	1.896,25	3.066,40
LAGOSTA	LOBSTER	549,92	846,42	1.533,07	2.929,41
VESTUARIO	CLOTHES	619,04	942,59	1.305,69	2.867,32
ALUMINIO	ALUMINUM			2.821,67	2.821,67
GESSO	PLASTER	368,00	498,00	1.588,40	2.454,40
PIMENTA	PEPPER	263,22	1.325,80	679,72	2.268,74
FERRO ACO E LIGAS	IRON STEEL AND LEAGUES	24,00	2.190,57		2.214,57
FOGAO	STOVE	133,77	791,99	1.188,99	2.114,75
REDE DE ALGODAO	NET OF COTTON	298,82	746,04	834,22	1.879,08
TOALHAS DE BANHO	BATH TOWELS	599,59	215,02	1.063,92	1.878,53
CHAPAS DE ACO	STEEL PLATES		1.809,84	46,59	1.856,43
INHAMES	YAMS	562,06	456,25	836,00	1.854,31
RESIDUO DE PLASTICO	RESIDUE OF PLASTIC		72,00	1.718,64	1.790,64
CORDA	CHORD	12,74	834,49	917,40	1.764,63
SAL GROSSO	THICK SALT	1.755,00			1.755,00
FILME DE POLIESTER	FILM OF POLYESTER	248,65	1.073,04	364,65	1.686,34
MOVEIS	FURNITURE	69,46	410,51	1.187,64	1.667,61
MARGARINA	MARGARINE			1.619,16	1.619,16
APARAS DE BORRACHA	SHAVING OF RUBBER	26,00	570,00	950,24	1.546,24
ACEROLA	ACEROLA	213,76	381,57	905,08	1.500,41
LIMA	LIMA	22,50	675,04	765,84	1.463,38
MADEIRA	WOOD		1.084,87	370,35	1.455,22
FARINHA DE TRIGO	WHEAT FLOUR		129,60	1.209,52	1.339,12
MAQUINAS DE COSTURA	SEWING MACHINE		1.003,89	284,57	1.288,46
PAPEL	PAPER	25,24	52,99	1.100,08	1.178,31
CERVEJA	BEER	22,50	230,74	920,04	1.173,28
NECTAR DE FRUTAS	NECTAR OF FRUITS	41,34	146,57	969,08	1.156,99
DIVERSOS	SEVERAL GOODS		78,25	1.074,03	1.152,28
CARNE	MEAT	25,09	1.038,21	20,56	1.083,86
LAMINAS	LAMINAS		88,67	919,60	1.008,27
BOBINAS PAPEL POROSO	REELS POROUS PAPER		147,19	859,30	1.006,49
SAL REFINADO	REFINED SALT	978,12			978,12
POLPA DE FRUTAS	PULP OF FRUITS	26,64	16,99	862,57	906,20
CARGA GERAL	GENERAL LOAD	681,38	222,29		903,67
ROLHAS METALICAS LITOGRAFADAS	LITHOGRAPHED METALLIC CORKS	104,40	230,52	499,57	834,49
POLPA DE ACEROLA	PULP OF ACEROLA	600,28	97,12	133,05	830,45
TAMPA PRATA	SILVER COVER		246,90	572,33	819,23
LIMAO	LEMON	363,90	250,81	93,74	708,45
CAFÉ	COFFEE	5,69	242,38	386,20	634,27
CERAMICAS DIVERSAS	SEVERAL CERAMIC	166,60	189,28	274,99	630,87
MANTEIGA	BUTTER		80,00	547,01	627,01
MARMORE	MARBLE	66,85	422,57	133,02	622,44
ATUM	TUNA	74,81	498,23		573,04
OXIDO DE MAGNESIO	MAGNESIUM OXIDE		338,00	130,20	468,20
BORRACHA	RUBBER	212,90	69,49	174,00	456,39
CAPAS COURO	LAYERS LEATHER	13,29	190,26	252,32	455,87
TINTAS	PAINTS		16,01	439,28	455,29
PROD INDUSTRIALIZ	INDUSTRIALIZED PRODUCTS	14,84	421,22	15,60	451,66
LISTA TELEFONICA	PHONE GUIDE	379,50			379,50
LADRILHOS	TILES			375,80	375,80
BISCOITO	COOKIE		21,86	339,19	361,05
MINERIOS DIVS	SEVERAL ORES	352,00			352,00
PEDRAS DIVS	SEVERAL STONES	262,14		88,13	350,27
RESINA	RESIN	349,00			349,00
PRODUTOS QUIMICOS	CHEMICAL PRODUCTS	153,00	107,39	82,81	343,20
PAINEL/SUPORTE MAD	WOOD PANELS/SUPPORT			341,22	341,22

Table A.2-2 Commodities of Pecem Port

EXPORT (CONT.)

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
CAMISETAS DE ALGODAO	SHIRTS OF COTTON	22,94	170,01	142,34	335,29
FRUTAS SECAS	DRY FRUITS	314,27	3,48	2,48	320,23
ROCHA FOSFATICA	PHOSPHATIC STONE	309,00			309,00
OLEO VEGETAL	VEGETABLE OIL		303,40		303,40
FRUTAS IN NATURA	FRUITS IN NATURA	16,47	267,20	1,35	285,02
GUIA TELEFONICA	PHONE GUIDE	278,18			278,18
CALCARIO	SHOES		189,69	84,72	274,41
PÁS P/ROT.GER. EOLICO	WIND GENERATORS PIECES		161,13	108,77	269,90
CONGELADOS (TODOS)	FROZEN (ALL)	39,66	204,17	25,93	269,76
KIT C/ PEÇAS E REPOSIÇÃO	PIECES AND REPLACEMENT KIT	24,65	171,41	57,85	253,91
COPO DE VIDRO	GLASS CUP	231,63	18,88		250,51
BATERIAS (ACUMULADORES)	BATTERIES	88,49	133,71	23,70	245,90
MACARRAO	PASTA			234,45	234,45
PENIS BOVINO	BOVINE PENISES	12,20	75,34	142,34	229,88
LAMINADO PLASTICO P/PISO	LAMINATED PLASTIC P / FLOOR	6,51		221,71	228,22
CELULOSE	CELLULOSE	25,49	99,30	101,89	226,68
CAIXAS DE PAPELAO	BOXES OF CARDBOARD		57,99	163,60	221,59
ADESIVO	ADHESIVE	17,89	63,58	139,40	220,87
EQUIP. INDUSTRIAL	INDUSTRIAL EQUIPMENTS	166,64	50,06		216,70
MAQUINARIOS	MACHINES		158,38	45,80	204,18
LEITE DE COCO	COCONUT MILK	17,28	24,88	161,66	203,82
VIDROS	GLASSES	173,50	27,66		201,16
CHAPAS	PLATES	19,56	19,50	161,11	200,17
SUCO DE ACEROLA	JUICE OF ACEROLA	83,70	25,90	86,69	196,29
PALMITO	PALM HEART	8,83	6,24	175,93	191,00
SORO FISIOLÓGICO	PHYSIOLOGIC SERUM			187,75	187,75
NECTAR DE MANGA	NECTAR OF MANGO	16,47	28,45	142,30	187,22
FIO TEXTIL	TEXTILE THREAD			185,96	185,96
MEDIRORES DE ENERGIA	ENERGY METERS	66,04	71,53	45,18	182,75
COCO	COCONUT			179,67	179,67
CHAPA DE MARMORE	MARBLE PLATE		148,46	28,05	176,51
ARTESANATO	HANDICRAFT	99,19	16,21	59,94	175,34
FARINHA DE CASCO/CHIFRE	FLOUR OF HORN	48,50	23,55	101,99	174,04
MICA	MICA			147,79	147,79
CADEIRA DE MADEIRA	CHAIR OF WOOD			147,46	147,46
CERA	WAX	121,13	25,28		146,41
PROD DE HIGIENE	PRODUCTS OF HYGIENE		5,70	139,15	144,85
MADEIRA/MANUF	WOOD / MANUFACTURE		134,42		134,42
ABOBORA	PUMPKIN	23,76	61,59	47,87	133,22
CONTAINER VAZIO	EMPTY CONTAINER	9,98	93,41	26,21	129,60
CHA	TEA		126,53		126,53
MASSA PRE-COZIDA	PRE-COOKED MASS			125,19	125,19
BAGAGEM	BAGGAGE		16,00	108,34	124,34
POLIPROPILENO	POLYPROPYLENE		102,91	20,29	123,20
AGUARDENTE DE CANA	LIQUOR OF CANE	30,81	46,21	44,66	121,68
PERA	PEAR		95,24	24,80	120,04
FRUTAS	FRUITS	24,90	60,40	34,38	119,68
PECAS DIVERSAS	SEVERAL PIECES	59,31	44,14	15,00	118,45
FOLHAS METALICAS LITOGRAFADAS COCA COLA PVC	LITHOGRAPHED METALLIC LEAVES PVC		11,20	102,15	113,35
CAFE SOLUVEL	SOLUBLE COFFEE	60,67	12,15	39,13	111,95
CARBOMIL MICROFLUID	CARBOMIL MICROFLUID		110,00		110,00
POLIESTER	POLYESTER	18,66	11,28	79,06	109,00
CARNE SECA	DRIED MEAT	54,67	53,37		108,04
PECAS INDUSTRIAIS	INDUSTRIAL PIECES	20,93	73,11	5,99	100,03
EQUIP. DIVERSOS	SEVERAL EQUIPMENTS			97,86	97,86
CARVAO VEGETAL	VEGETABLE COAL		95,90		95,90
COCO RALADO	GRATED COCONUT			94,87	94,87
FILME POLIETILENO	FILM POLYETHYLENE		94,71		94,71
LEVEDURA CERVEJA	BEER YEAST	70,00	22,50		92,50
METAIS	METALS		43,77	46,99	90,76
PIPPER	CANDY	87,05			87,05
FIO DE POLIESTER	THREAD OF POLYESTER	19,40	10,69	55,54	85,63
POLIETILENO DIVS	SEVERAL POLYETHYLENE	79,09			79,09
PLASTICOS	PLASTICS		72,00	5,21	77,21
BOLSAS	BAGS			76,93	76,93
RUTINA	RUTIN		54,30	18,03	72,33
BOMBAS CENTRIFUGAS	CENTRIFUGE PUMPS	47,69	24,50		72,19
GENEROS ALIMENTICIO	NUTRITIOUS GOODS	23,47	21,37	23,90	68,74
GERADOR-GENSET	GENERATOR-GENSET	36,86	30,43		67,29
CAMISETA POLIETILENO	SHIRT OF POLYETHYLENE	8,48	51,61		60,09
ARAME DE ACO	WIRE OF STEEL			59,11	59,11
CASCA DE IPE	PEEL OF IPE			58,05	58,05
ROUPA FEITA	CLOTHES	5,22	52,06		57,28
REFRIGERADORES	REFRIGERATORS	4,25	4,21	48,76	57,22
ACESSÓRIOS P/CALÇADOS	SHOES ACCESSORIES		57,05		57,05
TANQUE	TANK			52,86	52,86
LATEX CENTRIFUGADO	CENTRIFUGED LATEX			51,91	51,91
GARRAFA VAZIA	EMPTY BOTTLE	24,03	15,59	11,93	51,55
MUDANÇA PESSOAL	PERSONAL CHANGE	5,60	27,59	16,00	49,19
ELETRO DOMESTICOS	HOUSEHOLD APPLIANCES		24,15	24,36	48,51
REDES PLASTICAS	PLASTIC NETS		48,50		48,50
CARBONATO DE SODIO	CARBONATE OF SODIUM		48,00		48,00
POLVO	OCTOPUS		46,46		46,46
EMBALAGEM	PACKING		13,75	31,60	45,35
PISOS CERAMICOS	CERAMIC FLOORS		24,00	21,00	45,00
AUTOMOVEIS	AUTOMOBILES			43,71	43,71
PRODUTOS ALIMENTICIOS	NUTRITIOUS PRODUCTS			41,97	41,97
ARTIGO DE DECORACAO	ARTICLE OF DECORATION			41,00	41,00
FARINHA DE MANDIOCA	MANIOC FLOUR	15,00		26,00	41,00
AERADORES	AERADORES		5,76	33,53	39,29

Table A.2-2 Commodities of Pecem Port (cont.)

EXPORT (CONT.)

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
MOTOCICLETAS	MOTORCYCLES		38,68		38,68
PELES DE CARNEIRO	SKINS OF SHEEP		0,88	37,36	38,24
LIQUIDIFICADOR	BLENDERS	12,70	3,73	21,81	38,24
PECAS P/ MOVEIS	FURNITURE PIECES		27,47	10,32	37,79
SILICATO DE MAGNESIO	MAGNESIUM SILICATE	21,00	16,30		37,30
MOTORES	MOTORS			36,99	36,99
CALÇA FEMININA	FEMININE PANTS			34,95	34,95
CADEIRAS EM PVC	CHAIRS IN PVC		34,73		34,73
FIBRA DE BAGAÇO DE ACEROLA	FIBER OF PULP OF ACEROLA		4,64	29,89	34,53
CABIDE DE PLASTICO	HANGER OF PLASTIC	2,56	26,63	4,92	34,11
GRANALHA DE ACO	GRANULATED STEEL			33,80	33,80
TRANSFORMADOR TRIFASICO	TRIPHASE TRANSFORMER	5,79		26,28	32,07
BORRACHA DE BUTILA	BUTYL RUBBER		16,10	15,28	31,38
FERRAGENS	IRONWARE	11,99	19,06		31,05
CAFE EM GRAO	COFFEE IN GRAIN	6,68	24,22		30,90
ABACATES	AVOCADOS		26,59		26,59
CADEIRA DE ALUMINIO	CARBONATE OF ALUMINUM		26,32		26,32
LEGUMES CONGELADOS	FROZEN VEGETABLES	26,19			26,19
FEIJAO	BEAN			26,00	26,00
FERMENTO EM PO	POWDERED FERMENT		26,00		26,00
ARDOSIA	SLATE			25,70	25,70
VAZIO	EMPTY			25,30	25,30
BOBINAS DE AÇO REV. ZINCO/ALUMINIO	REELS OF STEEL COVERED WITH ZINC/ALUMINUM			24,86	24,86
FLORES SECAS	DRY FLOWERS		6,44	18,00	24,44
CABORNATO DE CALCIO	CABORNATO OF CALCIUM		24,00		24,00
CARANGUEJO	CRABS	12,00	11,69		23,69
LEVEDURA INATIVA SECA	DRY INACTIVE YEAST		22,50		22,50
LAMINA DE MADEIRA	WOOD LAMINAS		22,12		22,12
SUCATA	SCRAP IRON	22,08			22,08
PO DE CHIFRE	POWDER OF HORN	22,00			22,00
ALGAS MARINHAS	SEA ALGAE	21,93			21,93
CEBOLA	ONION	21,60			21,60
MISCELANEOS	SEVERAL GOODS	21,15			21,15
MINERIO DE FERRO	IRON ORE	21,00			21,00
SUPORTE DE MADEIRA SET/REDE	WOOD SUPPORT OF NETS		20,41		20,41
BEBIDAS	DRINKS			20,08	20,08
PERU	TURKEY		20,00		20,00
SARDINHA	SARDINE		20,00		20,00
ACO	STEEL	19,96			19,96
MANGUEIRA FLEXIVEL	FLEXIBLE HOSE			19,20	19,20
PALMA REFINADA	REFINED PALM			19,05	19,05
FIBRA DE BAGAÇO DE ACEROLA DESIDRATADA	FIBER OF PULP OF DEHYDRATED ACEROLA	1,85	4,39	12,49	18,73
COSMETICOS	COSMETIC		18,70		18,70
POSTE DE CONCRETO/CIMENTO	POST OF CONCRETE / CEMENT			18,35	18,35
PORTAS MADEIRA	DOORS OF WOOD		18,03		18,03
particula de fricção polifen	particle of friction polifen			18,00	18,00
MEIAS FEMININA	FEMININE STOCKINGS		17,29		17,29
DOCES	CANDY			17,28	17,28
MAQ/AP ELET/ACES	ELETRIC EQUIPMENTS	0,93	15,80		16,73
FIO DE SEDA	THREAD OF SILK	16,66			16,66
APARELHOS ELETRICOS	ELECTRIC APPARELS		16,50		16,50
SUPORTE METALICO DE REDE	METALLIC SUPPORT OF NET		15,94		15,94
CASA PRE-FABRICADA	PREFABRICATED HOUSE			15,88	15,88
GELAGUA	GELAGUA		7,21	8,64	15,85
FARINHA DE PEIXE	FLOUR OF FISH		15,14		15,14
CONTAINER REMOCAO VAZIO	REMOTION EMPTY CONTAINER			14,40	14,40
COLCHOES	MATTRESSES		14,28		14,28
EQUIP. DE REFRIGERACAO	COOLING EQUIPMENT	5,40	7,70		13,10
OLEO DE BABACU	OIL OF BABASSU	12,96			12,96
CONFECCAO	READY-MADE ARTICLES	12,45			12,45
MATERIAL DE RESTAURANTE	MATERIAL OF RESTAURANT		11,76		11,76
CERA DE ABELHA	BEESWAX	11,50			11,50
ACIDOS OUTROS	OTHER ACIDS		10,00		10,00
MATA BICHEIRA	FURUNCLE ELIMINATING SUBSTANCES	5,73		3,78	9,51
EDREDOM	COMFORTER		7,53	1,92	9,45
CARNE EM CONSERVA	CANNED MEAT	4,00	5,00		9,00
PROD FARMACEUTICOS	PHARMACEUTICAL PRODUCTS		8,40		8,40
MAT PRIMA	RAW MATERIAL		7,53		7,53
CAIXAS DE FIBRA	BOXES OF FIBER		7,29		7,29
GUARANA EM PO	POWDERED GUARANA	6,20			6,20
CAMERAS	CAMERAS		6,19		6,19
COMPUTADORES	COMPUTERS			6,19	6,19
VENTILADORES	FANS			5,85	5,85
MATERIAL ESCOLAR	SCHOOL MATERIAL	5,73			5,73
CABO ELETRICO	ELECTRIC CABLE	5,34			5,34
BORRACHA SINTETICA	SYNTHETIC RUBBER		5,20		5,20
CHIFRE DE BOI	BOVINE HORNS	5,00			5,00
RASPA DE COCO	SHAVING OF COCONUT			4,98	4,98
FITAS DE FIBRAS SINTETICAS	RIBBONS OF SYNTHETIC FIBERS			4,35	4,35
QUERCETINA	QUERCETINA			4,00	4,00
MATERIAL ELETRICO	ELECTRIC MATERIAL		3,02		3,02
MAQUINA DE CORTAR PAPEL	PAPER CUTTING MACHINE	3,00			3,00
OLEO DIESEL	DIESEL OIL		1,82		1,82
TOTAL		**163.884,77**	**337.022,31**	**426.823,84**	**927.730,92**

Table A.2-2 Commodities of Pecem Port (cont.)

IMPORT

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
OLEO DIESEL	DIESEL OIL			295.417,53	295.417,53
DERIVADO PETROLEO	DERIVED PETROLEUM	48.981,05	143.849,17	764,79	193.595,01
BOBINA DE ACO	REEL OF STEEL	44.748,49	60.173,45	19.425,72	124.347,66
BOBINA DE ACO FRIO	REEL OF COLD STEEL	14.603,62	10.610,26	53.238,25	78.452,13
ALGODAO	COTTON		33.230,63	30.594,69	63.825,32
BOBINA DE ACO QUENTE	REEL OF HOT STEEL	19.052,59	15.635,65	17.316,70	52.004,94
ARROZ	RICE	17.191,72	9.200,80	10.757,78	37.150,30
PRODUTOS QUIMICOS	CHEMICAL PRODUCTS	3.141,86	12.017,96	18.019,07	33.178,89
FIO MAQUINA	THREAD MACHINE			18.376,77	18.376,77
BOBINA DE AÇO GALVANIZADO	REEL OF GALVANIZED STEEL	541,46	7.989,56	6.192,01	14.723,03
TEXTEIS	TEXTILE	11.133,32	1.916,55	470,97	13.520,84
ACO	STEEL		10.328,08		10.328,08
CHAPA DE ACO	STEEL PLATE	446,88	5.140,17	2.050,10	7.637,15
TRIGO	WHEAT		4.333,04	3.075,89	7.408,93
EMBALAGEM	PACKING	918,03	823,94	4.061,79	5.803,76
CONTAINER VAZIO	EMPTY CONTAINER	1.105,25	4.139,79	474,49	5.719,53
BOBINA DE AÇO GALVANIZ. QUENTE	REEL OF HOT GALVANIZED STEEL			4.912,01	4.912,01
MAQUINARIOS	MACHINES	345,61	2.390,00	2.091,52	4.827,13
DIVERSOS	SEVERAL GOODS	595,58	209,23	3.857,74	4.662,55
BOBINA DE ARAME	REEL OF WIRE		3.928,05		3.928,05
GERADOR-GENSET	GENERATOR-GENSET	3.012,68	680,12	59,37	3.752,17
PEIXES	FISHES	274,18	3.224,12	45,00	3.543,30
PECAS DE BICICLETA	BICYCLE PARTS/PIECES	100,00	172,02	3.164,45	3.436,47
BOBINAS DE PAPEL	REELS OF PAPER	2.024,72	1.022,65		3.047,37
POLPA DE CELULOSE	PULP OF CELLULOSE	2.706,70			2.706,70
PROD DE HIGIENE	PRODUCTS OF HYGIENE	401,67	75,32	2.125,99	2.602,98
ELETRO DOMESTICOS	HOUSEHOUD APPLIANCES		502,29	2.072,45	2.574,74
FARINHA DE PEIXE	FLOUR OF FISH		992,45	1.542,27	2.534,72
EQUIP. INDUSTRIAL	INDUSTRIAL EQUIPMENTS	528,89	1.626,84	18,73	2.174,46
CARGA GERAL	GENERAL LOAD	80,40	1.872,06	213,23	2.165,69
POLIPROPILENO	POLYPROPYLENE	800,00	405,71	827,81	2.033,52
RAÇAO PARA CAMARÃO	RATION FOR SHRIMP	1.666,17	157,07	73,49	1.896,73
FARINHA DE TRIGO	WHEAT FLOUR	836,58	417,10	605,03	1.858,71
ALUMINIO	ALUMINUM	511,64	420,34	773,99	1.705,97
CHAPAS DE ACO	STEEL PLATES		499,93	1.116,63	1.616,56
EQUIPAMENTOS TERMO ELETRICA	ELECTRIC PLANT EQUIPMENTS	889,67	687,14		1.576,81
POLIESTER	POLYESTER	557,20	348,21	659,85	1.565,26
EQUIP. DIVERSOS	SEVERAL EQUIPMENTS	1.010,40	196,90	283,93	1.491,23
METAIS	METALS		1.345,85		1.345,85
VIDROS	GLASSES	27,17	821,77	435,69	1.284,63
CEREAIS	CEREALS		1.247,00		1.247,00
RESINA	RESIN	1.024,44	145,98	51,60	1.222,02
CARNE	MEAT	53,72	1.126,96	20,56	1.201,24
OLEO LUBRIFICANTE	LUBRICATING OIL	273,44	534,38	275,03	1.082,85
PROD INDUSTRIALIZ	INDUSTRIALIZED PRODUCTS	385,13	565,21	67,72	1.018,06
POLIETILENO DIVS	SEVERAL POLYETHYLENE	243,34	443,19	232,59	919,12
MARMORE	MARBLE	30,82	227,37	593,50	851,69
PECAS DIVERSAS	SEVERAL PIECES	33,17	233,59	520,74	787,50
AMIDO DE MILHO	STARCH OF CORN	340,70	419,20	23,98	783,88
RACAO ANIMAL	ANIMAL RATION	475,51	279,11		754,62
SILICIO METALICO	METALLIC SILICON		508,17	202,49	710,66
PECAS AUTOMOTIVAS	AUTOMOTIVE PARTS/PIECES		411,07	246,81	657,88
INSET/FUNGICIDAS	INSETICIDE/FUNGICIDE	404,33		250,97	655,30
BATATAS CONGELADAS	FROZEN POTATOES	129,86	393,08	110,26	633,20
FIBRA SINTETICA	SYNTHETIC FIBER	59,44	471,13	11,82	542,39
MACARRAO	PASTA			518,56	518,56
BANANA	BANANA		493,47		493,47
FIO TERM.	THREAD TERM.		461,47	25,56	487,03
PISOS CERAMICOS	CERAMIC FLOORS	294,83	105,93	79,33	480,09
MELAO	MELON		443,98		443,98
PAINEL	PANEL	50,24	23,28	357,62	431,14
ATUM	TUNA		422,00		422,00
AZEITE DE OLIVA	OLIVE OIL OF OLIVE		52,03	367,38	419,41
PRODUTO TEXTIL	TEXTILE PRODUCT	8,62		410,28	418,90
PAPEL	PAPER		406,05		406,05
CONGELADOS (TODOS)	FROZEN (ALL)		204,17	167,94	372,11
BORRACHA SINTETICA	SYNTHETIC RUBBER		321,00	46,70	367,70
PNEUS RECAUCHUTADOS	RECAPPED TIRES	330,44		31,63	362,07
ACIDOS OUTROS	OTHER ACIDS	361,20			361,20
PRODUTOS ALIMENTICIOS	NUTRITIOUS PRODUCTS		35,28	321,28	356,56
MATERIAL DE LIMPEZA	MATERIAL OF CLEANING		354,12		354,12
BOLSAS	BAGS		312,82	39,68	352,50
OLEO VEGETAL	VEGETABLE OIL	15,09	319,55		334,64
PRODUTOS ALIMENTICIOS	NUTRITIOUS PRODUCTS	330,75			330,75
PNEUS NOVOS	NEW TIRES		158,40	127,67	286,07
RESIDUO DE PLASTICO	RESIDUE OF PLASTIC		224,40	59,66	284,06
CAMARAO	SHRIMP	63,30	175,43	37,62	276,35
FERRO A VAPOR	STEAM IRON			259,40	259,40
EQUIP. INFORMATICA	COMPUTER EQUIPMENTS		215,61	38,00	253,61
FIO DE POLIESTER	THREAD OF POLYESTER	121,57		131,94	253,51
BOBINAS DE AÇO REV. ZINCO/ALUMINIO	REELS OF STEEL COVERED WITH ZINC/ALUMINUM			246,90	246,90
FRUTAS IN NATURA	FRUITS IN NATURA		244,78		244,78
COUROS	LEATHERS	46,61	41,60	154,63	242,84
RESINA SINTETICA	SYNTHETIC RESINS	131,99	65,65	34,62	232,26
MOTORES	MOTOR	9,60	22,10	197,64	229,34
FEIJAO	BEAN		220,00		220,00
COPO DE VIDRO	CUP OF GLASS			219,63	219,63
SILICATO DE MAGNESIO	SILICATE OF MAGNESIUM	219,40			219,40
PECAS P/ELEVADOR	ELEVATOR PARTS		216,60		216,60
FIBRA DE ALGODÃO	FIBER OF COTTON	159,66	37,22	19,64	216,52

Table A.2-2 Commodities of Pecem Port (cont.)

IMPORT (CONT.)

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
PECAS DE MOTOR	MOTOR PARTS/PIECES		15,75	195,71	211,46
MUDANCA	CHANGE	83,20	17,07	110,41	210,68
TECIDOS DE ALGODAO	FABRICS OF COTTON	34,87	118,36	42,07	195,30
FIO TEXTIL	TEXTILE THREAD	192,36			192,36
SUCATA	SCRAP IRON	186,58			186,58
MAQUINAS INDUSTRIAIS	INDUSTRIAL MACHINES			185,65	185,65
LAMPADAS	LAMPS	35,79	33,47	113,37	182,63
LEITE EM PO	POWDERED MILK			182,05	182,05
CLORETO DE LITIO	CHLORIDE OF LITIUM	1,31		167,94	169,25
LIVROS	BOOKS	27,22	104,30	37,20	168,72
SACOLAS PLASTICAS	PLASTIC BAGS		20,72	147,68	168,40
EQUIP. ELETRONICO	ELECTRONIC EQUIPMENTS		19,97	148,25	168,22
BEBIDAS	DRINKS		44,56	114,47	159,03
OLEO DE PEIXE	OIL OF FISH		26,56	125,08	151,64
CARVAO VEGETAL	VEGETABLE COAL		95,90	55,72	151,62
CHA	TEA	18,09	126,53		144,62
FERRO ACO E LIGAS	IRON, STEEL AND LEAGUES	80,95	61,76		142,71
CALCADOS	SHOES	66,51	21,13	50,41	138,05
FERTILIZANTE	FERTILIZING			136,12	136,12
FIBRAS VEGETAIS	VEGETABLE FIBERS	134,85			134,85
ARTIGO DE DECORACAO	ARTICLE OF DECORATION		43,04	88,68	131,72
TINTAS	PAINTS	16,80	82,62	32,22	131,64
OLEO DE GIRASSOL	SUNFLOWER OIL	52,87	51,88	26,44	131,19
ALUMINATO DE MAGNESIO	ALUMINATO OF MAGNESIUM		130,90		130,90
MOTOCICLETAS	MOTORCYCLES		52,02	75,31	127,33
GOMA DE MASCAR	CHEWING GUM	85,36	41,62		126,98
BAGAGEM	BAGGAGE		66,26	59,24	125,50
PYROFOSFATO	PYROFOSFATO	123,06			123,06
PERA	PEAR		95,24	24,80	120,04
BATATA PRE-FRITA	FRIED POTATOS	118,28			118,28
UREIA	UREA		41,00	71,90	112,90
BORRACHA	RUBBER		111,15		111,15
LINGOTES FERRO/ACO	INGOTS OF IRON / STEEL		110,31		110,31
MUDANÇA PESSOAL	PERSONAL CHANGE		29,38	80,58	109,96
ALPISTE	CANARY GRASS	104,20			104,20
SARDINHA	SARDINE		74,32	28,35	102,67
PEROXIDO HIDROGENIO	PEROXIDE HIDROGEN	99,88			99,88
CARNE EM CONSERVA	CANNED MEAT	22,00		77,61	99,61
CAFETEIRA ELÉTRICA	ELECTRIC COFFEE MACHINE			92,59	92,59
EQUIP. ELETRICO	ELECTRIC EQUIPMENTS		30,83	55,03	85,86
GOMA BASE AMATISTA	GUM BASE AMATISTA		83,07		83,07
GRANITO	GRANITE			81,46	81,46
CERAMICAS DIVERSAS	SEVERAL CERAMIC	25,32	54,93		80,25
CLORETO DE POTASSIO	CHLORIDE OF POTASSIUM	80,00			80,00
MANTEIGA	BUTTER		80,00		80,00
TOMATE EM CONSERVA	TOMATO IN CONSERVE		41,68	38,26	79,94
MOTOR ELÉTRICO UNIVERSAL	UNIVERSAL ELECTRIC MOTOR			79,20	79,20
FIBRAS ARTIFICIAIS	ARTIFICIAL FIBERS		78,39		78,39
PECAS INDUSTRIAIS	INDUSTRIAL PARTS/PIECES		78,03		78,03
TAMBOR DE FREIOS	BRAKE DRUMS	78,01			78,01
MAT PRIMA	RAW MATERIAL		41,85	36,16	78,01
BALA	CANDY		73,85		73,85
ESTRUTURA METALICA	METALLIC STRUCTURES	73,27			73,27
VALVULA	VALVE			71,90	71,90
FIBRAS TEXTEIS	TEXTILE FIBERS	68,38			68,38
FITAS DE FIBRAS SINTETICAS	RIBBONS OF SYNTHETIC FIBERS		66,99		66,99
AERADORES	AERATORS	62,42			62,42
OLEO DE GERGELIM	OIL OF SESAME		31,13	30,35	61,48
CASTANHA DE CAJU	CASHEW NUT	41,48	19,54		61,02
SOLVENTES	SOLVENT	1,98	30,12	25,98	58,08
MAT PLASTICOS	PLASTIC MATERIAL	56,62			56,62
ENZIMA	ENZYME	43,24	12,78		56,02
SAL	SALT		54,10		54,10
MARGARINA	MARGARINE		52,39		52,39
SULFATO DE SODIO	SULFATE OF SODIUM	52,00			52,00
CHAPA DE MARMORE	PLATES OF MARBLE	50,70			50,70
CERA	WAX	9,80	40,75		50,55
SACO VAZIO	EMPTY SACK		49,23		49,23
PEDRAS DIVS	SEVERAL STONES		48,00		48,00
PROD FARMACEUTICOS	PRODUCTS FARMACÊUTICOS		27,66	19,96	47,62
APARELHOS ELETRICOS	ELECTRIC APPARELS	0,35		44,06	44,41
MICA	MICA			44,00	44,00
PLASTICOS	PLASTIC			43,32	43,32
FRANGO CONGELADO	FROZEN CHICKEN	25,00	18,00		43,00
PNEUS/AROS USADOS	USED TIRES/RINGS			42,73	42,73
MASSA PRE-COZIDA	PRE-COOKED MASS		5,59	36,16	41,75
CAIXAS DE PAPELAO	BOXES OF CARDBOARD			41,64	41,64
BATERIAS (ACUMULADORES)	BATTERIES	40,25			40,25
MADEIRA/MANUF	WOOD / MANUFACTURE		40,00		40,00
EQUIP. DE REFRIGERACAO	COOLING EQUIPMENTS	24,57	15,40		39,97
MINI RADIO	SMALL RADIOS		15,49	23,66	39,15
CARTAO KRAFET	CARDS	38,39			38,39
FERRAMENTAS DIVS	SEVERAL TOOLS		38,18		38,18
CONTEINER GERADOR	GENERATOR CONTAINER			35,00	35,00
FIO DE ALGODAO	THREAD OF COTTON		22,76	9,92	32,68
ARTIGOS INFANTIS	INFANTILE GOODS			31,21	31,21
ARTIGO DE USO DOMESTICO	ARTICLE OF DOMESTIC USE	7,43	3,80	19,55	30,78
MAQUINAS DE LAVAR INDUSTRIAL	INDUSTRIAL WASHING MACHINE			30,69	30,69
MOVEIS	FURNITURE		2,33	24,81	27,14
ABACATES	AVOCADOS		26,59		26,59

Table A.2-2 Commodities of Pecem Port (cont.)

IMPORT (CONT.)

(IN TONS)

COMMODITY (PORTUGUESE)	COMMODITY (ENGLISH)	2002	2003	2004	TOTAL
CONSERVAS	CONSERVES		26,46		26,46
CABO ELETRICO	ELECTRIC CABLE			26,15	26,15
KIT C/ PEÇAS E REPOSIÇÃO	PIECES AND REPLACEMENT KITS			25,58	25,58
ROLO DE PINTURA	ROLL OF PAINTING		25,13		25,13
FERRAGENS	IRONWARE		24,19		24,19
LAGOSTA	LOBSTER		1,56	22,57	24,13
EQUIP. HOSPITALAR	HOSPITALAR EQUIPMENTS	7,03		16,51	23,54
MINERIOS DIVS	SEVERAL ORES	23,48			23,48
INSTRUMENTO MUSICAL	MUSICAL INSTRUMENTS			22,52	22,52
CHAPAS	PLATES		10,79	11,34	22,13
POLPA DE BATATA	PULP OF POTATO		21,89		21,89
SACOS POLIETILENO	SACKS OF POLYETHYLENE			21,65	21,65
ACIDO FOSFORICO	PHOSPHORIC ACID		21,42		21,42
FRUTAS	FRUITS		21,41		21,41
AZEITONAS	OLIVES			21,10	21,10
POLPA DE TOMATE	PULP OF TOMATO			20,85	20,85
LUBRIFICANTE	LUBRICATING			20,37	20,37
PROD. DE INFORMATICA	COMPUTER PRODUCTS		20,25		20,25
MAMAO	PAPAYA		20,17		20,17
PERU	TURKEY		20,00		20,00
POLPA DE FRUTAS	PULP OF FRUITS			19,58	19,58
ARTIGOS DE LIVRARIA	GOODS OF BOOKSTORE	19,05			19,05
VINHO	WINE		18,86		18,86
COSMETICOS	COSMETIC		18,70		18,70
EQUIP. AGRICOLAS	AGRICULTURAL EQUIPMENTS		18,42		18,42
FIOS SINTETICOS	SYNTHETIC THREADS	17,58			17,58
MAQ/AP ELET/ACES	ELETRIC MACHINES			16,75	16,75
LATEX CENTRIFUGADO	CENTRIFUGED LATEX	16,40			16,40
GENEROS ALIMENTICIO	NUTRITIOUS GOODS	5,36	10,91		16,27
PECAS P/ COMPUTADORES	COMPUTERS PIECES		15,92		15,92
FITAS DE ACO	RIBBONS OF STEEL		15,90		15,90
VESTUARIO	CLOTHING			14,99	14,99
AGUARDENTE DE CANA	LIQUOR OF CANE		14,40		14,40
ALCOOL	ALCOHOL		14,11		14,11
CALCARIO	CALCAREOUS			13,91	13,91
ARTIGOS DE PLASTICO	GOODS OF PLASTIC			13,81	13,81
CORANTES	PIGMENTS		10,44	3,21	13,65
CAIXAS DE FIBRA	BOXES OF FIBER	13,35			13,35
RELOGIOS	CLOCKS		13,25		13,25
ADESIVO	ADHESIVE			12,97	12,97
MATERIAL ELETRICO	ELECTRIC MATERIAL		12,50		12,50
MATERIAL DE RESTAURANTE	MATERIAL OF RESTAURANT		11,76		11,76
PORTAS E JANELAS DE ALUMINIO	DOORS AND WINDOWS OF ALUMINUM		11,58		11,58
CANETAS	PENS		11,35		11,35
GARRAFA VAZIA	EMPTY BOTTLE		11,35		11,35
ONIBUS	BUS		11,35		11,35
FIO ACRILICO	ACRYLIC THREAD		10,88		10,88
CONJUNTO DE ASPIRADORES TEXTEIS	GROUP OF TEXTILE VACUUM CLEANERS	10,69			10,69
REDE DE PESCA	NET OF FISHING		10,27		10,27
PASTA DE AVELÃ	PASTE OF HAZELNUT			9,90	9,90
PECAS P/ CAMINHAO	TRUCK PIECES	9,60			9,60
FITAS DIVERSAS	SEVERAL RIBBONS		9,51		9,51
TEAR PARA TECIDOS	SEWING LOOM	9,50			9,50
PALMITO	PALM HEART		9,26		9,26
MANUF DIVS	MANUF DIVS		8,82		8,82
REDE DE ALGODAO	NET OF COTTON			8,80	8,80
BONÉ	CAP	8,68			8,68
OBJETOS PESSOAIS	PERSONAL OBJECTS		4,60	3,63	8,23
TORRADEIRA	TOASTER			8,13	8,13
POLIURETANO	POLYURETANE	8,00			8,00
REDES PLASTICAS	PLASTIC NETS	8,00			8,00
MAQUINAS DE COSTURA	SEWING MACHINE		5,70	2,15	7,85
MANGUEIRA FLEXIVEL	FLEXIBLE HOSE		7,75		7,75
ARTIGOS DE USO PESSOAL	GOODS OF PERSONAL USE		7,45		7,45
BOMBA HIDRAULICA	HYDRAULIC PUMP	6,68			6,68
KIT VEICULOS A GAZ	GAS KIT TO VEHICLES	5,96			5,96
PECAS P/ BARCO	BOAT PIECES	5,67			5,67
EQUIP. TELECOMUNICACAO	TELECOMMUNICATION EQUIPMENTS		5,31		5,31
COMPUTADORES	COMPUTERS	5,00			5,00
BARRIS	BARRELS	4,40			4,40
ARAME DE ACO	WIRE OF STEEL		3,84		3,84
CAIXA P/ PEIXE	BOX P / FISH		3,75		3,75
TECIDO FIBRA TÊXTIL SINT/FILTRO	FABRIC OF TEXTILE SYNTHETIC FIBER			3,19	3,19
SUPORTE DE MADEIRA SET/REDE	SUPPORT OF WOOD FOR NET			2,55	2,55
CORDA	CHORD			0,83	0,83
TAMPAS DE BORRACHA BROMO	COVERS OF RUBBER BROME		0,83		0,83
PARTES DE FILTRO PARA DEPURAR AGUA	PARTS OF FILTER TO WATER PURIFICATION		0,57		0,57
FILMES	FILMS	0,18			0,18
TOTAL		**186.278,67**	**357.308,41**	**515.019,00**	**1.058.606,08**

Table A.2-2 Commodities of Pecem Port (cont.)

A2.1.4 Port Infrastructure

Table A.2-3 Port Infrastructure

Name of the Port	Establishment	Administration	City, State-Code	Port Dimentions				Cargo Movement	
				Total Area	Quay Depth	Quay Length	Storage Area	Number of Berths	Main Export goods	Main Goods Imported
North Region										
Macapá	1980	Companhia Docas do Pará	Macapá - AMAPA			260m		3	Dry Bulk : pinus bark	fertilizers
Port of Manaus	1899	Navigation Society, Port and watertransport of Amazonas	Manaus - AMAZONAS	34.000m²	25m-45m	1.097m		10	Factory products, metal/steel products, electronic apparatus and petroleum	Factory products, electronic apparatus, Machinery, vehicles and spare parts, Food products , papper, iron, steel, petroleum and fertilizers
Port of Vila do Conde	1985	Port Company of Pará	Barcarena - PARA			419m		4	alumina, kaolin and Fuel oil	coke, tar, caustic soda, aluminum, brick
Belém	1897	Port Company of Pará	Belém - PARA	22.864m²	2.5m-9.2m	1.295m			vegetables, petroleum products, alcohol, bauxite calcium oxide, veichles and cellulose	wheat, wood, Rolled paper, cement, machinery spare parts, petroleum products, chemical products
Northeast Region										
Port of Itaqui	1960	EMAP- Empresa Maranhense de Administração Portuária	São Luis - MALRANHAO	170.000m²	9m-21.5m	1.616m		7	iron ore, manganese ore, pig-iron, silicon, petroleum products, aluminium	petroleum products, fertilizers, wheat, coal/coke
Port of Pecém	2001	Compnay of integrated Port of Ceara, Ceará Portos	São Gonçalo do Amarante-CEARA	75.000m²		600m	600m	2		
Port of Fortaleza	1920	Port Company of Ceará	Fortaleza - CEARA	35.072m²	10m	1.260m		6	Petroleum and products, steel pipes, flour and salt	wheat, corn, petroleum coke, soya bran, cotton plume, rice, steel coil/plate, flour, rolled paper
Port of Areia Branca	February 3 1970	Companhia Docas do Rio Grande do Norte	Areia Branca - Rio Grande do Norte		7-15m	564m			sal	
PORT OF NATAL	1922	Companhia Docas do Rio Grande do Norte	Natal - Rio Grande do Norte		11.5m	540m		3		
Port of Cabedelo	1905	Companhia Docas da Paraíba	Cabedelo - PARAIBA	13.667m²	6m-9m	602m		6	alcohol, sugar, bentonita, sisal, string and container	coke, vegetal oil, corn, bentonita, wool/cotton and clinquer
Port of Recife	1909	Recife Port Administration, Port Company of Rio Grande do Norte	Recife - PERNAMBUCO	48.070m²	8m-10m	2.960m		16	sugar, granite and container	wheat, fertilizers, corn, barley, journal paper and containers
Port of Suape	1978	Governo do estado de Pernambuco	Municipio de Ipojuca - PERNAMBUCO		14m	891m		4	Petroleum products and alcohol	Petroleum Products, lead in ingot, tires, flour of wheat, electric and electronic materials
Port of Maceio	1933	Companhia Docas do Rio Grande do Norte	Maceió - ALAGOAS	2.800m²	7-10m	400m		3	sugar, alcohol , petroleum, rice, equipments, corn , rubber and caustic soda	fertilizers, wheat, diesel oil , corn, cotton, brimstone
BARRA DOS COQUEIROS		Empresa Administradora de Portos de Sergipe - SERGIPORTOS	Muninicipio de Barra dos Coqueiros - SERGIPE	26.300m2	9.5-10.9m	331 m		2		Pertoleum
Salvador	1913	Companhia das Docas do Estado da Bahia	Salvador - BAHIA	46.996m²	7m-10m	2.092m		11	copper concentrate 31.259t, sisal, Food products, paper products, chemical products, granite, cacoa, aluminium	pipes, paper, equipmentst, copper concentrated, vehicles, chemical productst, wheat,
Aratu	1975	Companhia das Docas do Estado da Bahia	Candeias - BAHIA			250m		6		
Port of Ilhéus	1919	Companhia das Docas do Estado da Bahia	Ilhéus - BAHIA		10m	433m		3	soya, cacoa, chemical products, sisal, graphite, tobacco, furs, copper, paper products, equipments	wheat, almonds, foil of steel

Table A.2-3 Port Infrastucture (Continuation)

Name of the Port	Establishment	Administration	City, State-Code	Port Dimentions				Cargo Movement	
				Total Area	Quay Depth	Quay Length	Storage Area	Number of Berths	Main Export goods	Main Goods Imported
Southeast Region										
Barra do Riacho	1995	PORTOCEL	Caminho de Barra do Riacho - ESPIRITO SANTOS	385.000m2	10.3m	430m		2	cellulose. wood in logs and others loads	hydrogen peroxide. salt and others loads
Vitória	1940	Companhia Docas do Espirito Santo	Vitória - ESPIRITO SANTOS		2.4-10m		776m	4		cotton. coal. vehicles. fertilizers. malt. marble/granite. car parts. metal/steel products. wheat and bauxite
Forno	1972	Companhia Municipal de Administração Portuária (Comap) do município de Arraial do Cabo	Arraial do Cabo - Rio de JANEIRO		11m	300m			salt. diesel oil	salt
Niterói	1925	Companhia Docas do Rio de Janeiro	Niterói - Rio de JANEIRO	3.300m2	3-6m	431m		3	wheat	wheat
Sepetiba	1982	Companhia Docas do Rio de Janeiro	Itaguaí - Rio de JANEIRO		12-15m	1.670m	177.000m2	7	Dry Bulk. ore of iron	Solid granary. metallurgic coal. coke and alumina
Rio de Janeiro	1910	Companhia Docas do Rio de Janeiro	Rio de Janeiro - Rio de JANEIRO	137.536m2	6m-12m	7.343m		40	vehicles. petroleum products	
Angra dos Reis	1932	Angraporto Consortium	Ângra dos Reis - Rio de JANEIRO	21.040m²	10m	400m		2	oil and by-products	crude oil
São Sebastião	1934	Administração do Porto de São Sebastião	São Sebastião - SAO PAULO	48.000m²	8.2m	362m		4	vehicles. Petroleum and products	sodium. sulphate. pellets of lead. steel wire and rolle. machines. Petroleum products
Santos	1888	Companhia Docas do Estado de São Paulo	Santos - SAO PAULO	221.186m2	5m-14m	11.042m		64	soya beans. coal. sugar. fuel oil. processed food. coffee beans. meat. fruits. wood. paper. vehicle spare parts. textiles. tyres	coal. ore. fertilizers. sulfur and cchemical products
South Region										
Antonina	1996	State Port Authority. Portos de Paranaguá / Antonina	Antonia- PARANA	8.000m²	6m	60m				
Paranaguá	1933	State Port Authority. Portos de Paranaguá e Antonina	Paranaguá - PARANA	71.500 m²	8m-13m	2.616m		16	sugar. corn . soya. fuel oil. vegetable oils. water for vessels. chemical products. cotton. coffee. paper products. pottenes. frozen food . wood and paper	cotton. paper products. rice. fertilizers. vegetable oils. petroleum products. chemical products . alcohol. wheat and ore
São Francisco do Sul		State government of Santa Catarina	São Francisco do Sul - SANTA CATARINA	36.000m²	8m-10m	750m		4	soy. sawn wood. parts for vehicles. chicken congealed. paving-tiles. manufactur products. paper. wrooden leather. plates. tobacco	
Itajaí	1966	Watertransport Administrator. Docas Catarinense	Itajaí - SANTA CATARINA		12m	740m		4	sugar. paper. engines. chicken. tobacco. vegetal resin. cool meat. textiles	chemical. wheat. cotton. tiles. polipropileno. paper and oils
Imbituba	1919	Private Company. Companhia Docas de Imbituba	Imbituba - SANTA CATARINA	39.300m²	9.5m	577m		4	sugar. frozen food . tobacco pottery. shoes. fumitures	fertilizers. sodium sulphate . coke corn. asbestos. soya proteins. rice
Estrela - RS	1975	Port Administration of Estrela. Vinculada à Companhia Docas do Estado de Sao Paulo	Estrela - Rio Grande do Sul			585m		6	Soya beans	
Alegre	1911	Superintendent of Portos and water transport of Rio Grande do Sul	Porto Alegre - Rio Grande do Sul		4m-6m	7.874m		33	soya beans . paper and paper products.iron and steel coils . machines and equipment. Petroleum Products	wheat. different sulphates. phosphated fertilizersr. potassic fertilizers. journal paper. nitrogened fertilizers. urea. full container. empty container. naphtha. crude oil. fuel. propylene and ethylene
Pelotas		do	Pelotas - Rio Grande do Sul		6m	500m		3	Solod grannery . clinquer. rice and limestone	
Rio Grande	1872	do	Rio Grande - Rio Grande do Sul		4m-14m	3629.5m			soya beans . fertilizers. corn . sawn timber. rice. wheat. chemical products. alcohol. salt	fertilizers. rice. corn. phosphoric acid. chemical and chemical products

A2.1.5 Port Facilities

PORTS - DETAILED INFORMATION								
PORT	Access		Quay				Storage Area	
	Depth(m)	Width(m)	Description	Berths	Lenght (m)	Depth (m)	Open storage (m_2)	Warehouse (m_2)
Manaus	35	500	Roadway	5	253	25-45	41.223	16.232
			Torres	5	268	25-45		
			Paredão		276	2-12		
			Malcher		300	1-11		
Macapá	10	500	Cais A	1	60	10	19.500	3.570
			Cais B	2	200	10		
Vila do Conde	9	3.200	Granéis sólidos e carga geral	2	292	?	13.000	7.500
			Granél Líquido	2	127	?		
Belém	6	90			1.295		12.000	24.800
Itaqui	23	1.800		7	1.616	9-21,5	42.000	10.500
Pecém	16			2	600			380.000
Mucuripe	10	80-100		5	1.050	3-10	213.497	30.000
				1	210	3-5		
Areia Branca	11	400-1000	Ponte		398	15	15.000	
			Barcaças		166	7		
Natal	10	100-120		3	540	11,5		3.600
Cabedelo	8,5	120	Envolvimento	3	602 (total)	6-9	18.500	17.000
			Aplicação	2		6-9		
			Fechamento	1		6-9		
Recife	10,5	260	Trecho 1	2	2960 (total)	8,5-10		1.782
			Trecho 2	5		10,3	50.600	15.000
			Trecho 3	8		8-10	5.785	14.910
			Trecho 4	1		8	1.400	1.642
Suape	14	580		2	162	14		
					386	14,5		
				2	343	15,5		
Maceió	10	80		3	400	7-10	-	12.400
Barra dos Coqueiros	11	120		2	331	9,5-10,9		26.300
Salvador	18	200		11	2.092	7-10	7.234	26.400
								9.800
Aratu	18	180		6	250		475.000 t (capacity)	
Ilhéus	10	200		3	432	10	20.500	16.000
Pirapora	There is no detailed information about this port							
Barra do Riacho	10,3	159		2	430	10,3		28.000
Vitória	11	120		4	776	2,4-10	30.900	8.000
Forno	12	70			200	11	18.200	
					100	11		
Niterói	12	150		3	431	3-6	3.584	3.300
Rio de Janeiro	20	1150	Total		7.343	6-12		
			Pier Mauá	5	883	7-10		
			Cais da Gamboa	20	3.150	7-10	16.000	60.000
			Cais de São Cristóvão	6	1.525	6-8,5	23.000	12.100
			Cais do Caju / Terminal Roll-on-Roll-off	5	1.001	6-12	69.200	21.000
			Terminais de contêineres	4	784	11,5-12		
							11.027	65.367
Sepetiba	13,5	200	Cais de Multiuso	3	810	14,5	177.000	
			Pier de Carvão	4	540	12-15	1.500.000t (capacity)	
			Pier de Minérios		320		200.000	
Angra dos Reis	12	150 - 160		2	400m	10	150.000	5.475
São Sebastião	18	500		4	362	8,2	58.500	2.531
	25	300						
Santos	13	130			11.042	5-13,5	124.049	516.761
Antonina								
Paranaguá	12	150		16	2.616	8-13	91.250	65.560
São Francisco do Sul	10	150		4	750	8-10	80.000	34.410
Itajaí	8	100		4	740	12	38.000	15.800
Imbituba	open inlet	open inlet		4	577	9,5	60.225	4.425
Laguna	6	80			300	5	392	1.600
Estrela	-	-		6	585			
			Mauá	16	3.240	4-5,5	2.180	20.178
			Navegantes	12	3.268	6	58.445	40.200
			Marcílio Dias	5	1.366	4-5	-	-
Cachoeira do Sul								
Pelotas	6	80		3	500	6	-	27.000 t (capacity)
Rio Grande	8,5	150			3.829	4-14		

Table A.2-4 Port Facilities in Ports of Brazil

Appendix 2.2 Current Situation of Pecem Port and Other Ports in Northeast Region

A2.2.1 Pecem Port

(1) Existing Port Facilities

1) Pier 1 (for handling solid bulk, break-bulk and containers cargoes)

Infrastructures

- Specification
- Length (363 x 2 berths) 726.0m
- Width 45.0m
- Maximum bearing capacity 10 tons/m^2
- Cargo handling capacity (Berth-1) 100 tons
  (Berth-2) 158 tons
- Water Depth 15.0m
- Access channel water depth 15.5m~18.0m
- No1 (Inner) (Southwest): Cargo type: Bulk cargo: Raw materials for CIPP
- Maximum vessel size: Panamax type of up to 65,000 DWT
- No2: (Outer) (Northeast): Cargo type: Break-bulk cargo and containers
  Maximum vessel size: Cape size type of up to 65,000 DWT.

Equipment

No1 (Internal): One (1) unit of rail-mounted gantry type un-loader (lifting capacity 35/45tons) of rope trolley type with a grab bucket (clam shell type), with nominal capacity of 1,250 tons per hour for mineral bulk ore cargo.

No2 (External): One (1) unit of rail-mounted level luffing type crane (lifting capacity 35 tons)

Two (2) units of tyre-mounted mobile harbour cranes (Model HMK300) for handling 20'/40' containers, average cycle times in discharging and loading are about 3.5 minutes and 4.0 minutes, respectively.

Table A.2-5 Quay Side Equipment

Kind of Crane	Capacity	Unit	Manufacture	Year
Mobile Harbour Crane	100 tons	2 Units	Gottward (HMK-300)	2003
Mineral Ore Un-loader	35/45 tons	1 Unit	ZPMC of China	2000
Level Luffing Crane	35 tons	1 Unit	ZPMC of China	2000

2) Pier 2 (for handling liquid bulk cargo)

Infrastructures

- Berth length (300m x 2 berths) 414m
- Berthing area With No-4 dolphin 775m^2
  With No-8 dolphin 500m^2
- Maximum water depth 16.50m
- Access Bridge: Width: 40.40m - 10.35m
  Length 1,440m^2
- Beam for supporting pipelines: Width: 6.2m
- Loading arm length: 17.0m
- Fire resistance in compliance with IMO rule 1 Set

Two (2) docking berths, outer (No.4) and inner (No.3): capacity of 25.0 million/year at each berth with berth occupancy rate of 87%

The outer berth permits the operation of vessels of up to 175,000 ton/berth (Afra Max type); the inner berth able to handle vessels in the range 9,000 DWT (domestic size carrier) up to 100,000 DWT(medium size tanker)/berth.

Installations on the operation platform and pipe-line have enough capacity for motionless both incoming and outgoing products, making possible simultaneous operations with both mooring berths;

Equipment

No.3 (Inner);	Gasoline / alcohol of one (1) set	(12”)
	Diesel oil / kerosene of one (1) set	(12”)
	Fuel oil of one (1) set	(10”)
	Liquid Petroleum Gas one (1) set	(8”)
No.4 (Outer)	Gasoline / alcohol of one (1) set	(12”)
	Diesel oil / kerosene one (1) set	(12”)
	Fuel oil one (1) set	(10”)

3) Open Yard and Warehouse

The open yard mainly used for container stacking and marshalling and partly for storing general cargo has a surface area of 300,000m^2 (600m x 500m) in total. Two (2) million square meters of land is reserved for future expansion.

Two (2) warehouse with 10,000m² (import cargo) and 6,250m² (export) for general cargo, respectively, are prepared to receive and release cargoes stuffed and un-stuffed there.

Equipment

Equipment used at the open yard and warehouses w is shown in Table A.2-6.

Table A.2-6 C.Y and Warehouse Equipment

Kind of Equipment	Unit	Capacity	Manufacture	Year
Reach Stacker	5 Units	70 tons	Ferrari	2001~2005
Top Loader	1 Unit	39 tons	Milan	1987
Top Loader	2 Units	33 tons	Milan/Hyster	19987~1988
Fork Lift Truck	1 Unit	15 tons	Milan	2002
Fork Lift Truck	1 Unit	12 tons	Milan	2002
Small Fork Lift Truck	4 Units	4 tons	Hyster	1991~1997
Small Fork Lift Truck	6 Units	2.5 tons	Hyster	1993~2001
Tractor Head/Chassis	It arranges vessel operation and if necessary by yard operation			

Source: CEARAPORTOS

4) Gate Facility

- Receiving lane3 Lanes
- Delivery lane 3 Lanes
- Weighting Bridge (capacity 80 tons): 2 units

5) Security System

The securities monitoring system corresponding are compliance with ISPS code.

A2.2.2 Leading Container Terminal Companies in the Latin America Area

The management if stevedoring has undergone a revolution in recent years, as countries have privatized port operations, and stevedoring companies have merged or made acquisitions in the development of the international stevedoring industry. This development has taken several forms, some of which overlap:

(1) Horizontal expansion-This involves the movement of one stevedore into another port through acquisition. Examples are acquisition of concessions at ports in East Asia, South America, the elsewhere by Hutchison Ports, PSA Corporation and SSA Terminals.

(2) Inward investment-As stevedoring has expanded from national or port boundaries to international dimension, investment across continents has become come commonplace.

(3) Vertical expansion-Such investment includes the downstream diversification of shipping lines into terminal management, for example by AP Moller terminals.

(4) Stevedore mergers-Many container stevedore companies now operating at major ports, such as Europe's and Latin America's ports, are the product of mergers. Typically, such mergers have been defensive moves to compete with the increasingly scale of rival stevedoring companies and to combine resources to generate investment on the scale needed to meet the cargo handling requirements of increasingly large shipping line alliances, in terms of vessel size, throughput volumes and consignment size.

(5) Joint ventures between shipping lines and stevedores, such as (Eurogate /ECT) in Delta Terminal in Rotterdam, Altenwerder Container Terminal in Hamburg (Hapag Lloyd / HHLA=ACT), Korea International Terminals in Kwangyang, South Korea (Huchison / Hanjin=HBCT**).**

Table A.2-7 Advancement of Stevedoring Co., South American and Caribbean Port

Stevedore	Country	Port	Terminal	Berth Length	Capacity/An
APM Terminals	Jamaica	Kingston	KTO	1,209m	1,20m/TEU
	Argentina	Buenos Aires	Terminal-N0-4	795m	0.40m/TEU
Huchison Ports	Bahama	Freeport	Freeport TML	1,033m	1.10m/TEU
	Mexico	Veracrus	ICAVE	507m	0.75m/TEU
	Argentina	Buenos Aires	Terminal-No-5	855m	0.45m/TEU
	Panama	Cristobal	Panama Ports	455m	0.30m/TUE
		Balboa	Panama Ports	350m	0.45m/TEU
P & O Ports	Argentina	Buenos Aires	Terminal-1&2	815m	0.45m/TEU
Evergreen	Panama	Colon/Cristobal	CCT	612m	0.50m/TEU
CSX World	Dominica	Rio Haina	R'HainaTerml	451m	0.20m/TEU
	Venezuela	Puerto Cabello	HL Boulton	n/a	0.50m/TEU
SSA	Panama	Colon/Cristobal	MIT	1,240m	2.00m/TEU
TCB	Cuba	Havana	TCH	300m	0.30m/TEU
	Brazil	Paranagua	TCP	485m	0.30m/TEU
HHLA	Argentina	Buenos Aires	Exolgan SA	750m	n/a
	Venezuela	Puerto Cabello	n/a	n/a	0.35m/TEU
ICTSI	Brazil	Suape	Tecon Suape	660m	0.35m/TEU

Source: Containerization International

A2.2.3 Competition International Container Port of Shareholding and Committed Planning of Surrounding Container Ports

The port where "Leading Mega container Terminal Operator" that plays an active port in the world has advanced to a South American East coast and Caribbean area is as follows Table A.2-8

Table A.2-8 Leading Mega Terminal Operators Shareholding

Terminal company	Name of Port Terminal	Ratio of Shareholding
Huchison Ports Holding	Bahama Freeport Buenos Aires (BACTSSA) Panama (Cristobal) Panama (Balboa)	95 % share hold 100% share hold 82% share hold 82% share hold
APM Terminals co.,	Buenos Aires (Terminal-4) Kingston Container Terminal Venezuela (Puerto Cabello)	70% share hold JV by Amalgament Steve Operating concession
P & O Ports	Buenos Aires (Rio de Plata)	53% share hold
Evergreen Terminals	Colon Container Terminal	Owned by operated
SSA	MIT (Manzanillo of Panama)	80% share hold
HHLA	Buenos Aires (Exolgan)	JV ITL and DEG
CSX World Terminals	Venezuela Puerto Cabello Dominica Caucedo (Caucedo)	JV by HL Boulton & Co., JV Caucedo Development
TCB Container Terminal	Brazil Paranagua Terminal Terminal de Havana	21% share hold JV Cuban Government

Source: Drewry Shipping Report and JICA Study Team

International Stevedoring Company Advancement on South America and Caribbean ports.

An abundance of container handling capacity has now been built and continues to appear in Brazil and Argentina, with the result that, in its present economic plight, Argentina now has potentially disastrous overcapacity. Meanwhile, plan to deepen the harbours at the two major regional ports, Santos and Buenos Aires – which would enable them to handle larger vessels – have been put off due to lack of public finance to carry out the necessary dredging.

In Brazil infrastructural improvement to the country's container ports are gradually following from the recent privatization of container stevedoring operations at a number of ports.

In Argentina, the principal port at Buenos Aires now offers five container terminals. Four container terminals at Puerto Nuevo include:

Terminals Rio de la Plata (TRP), majority owned and operated by P&O Ports;

The Buenos Aires Container Terminal Services South America (BACT-SSA), formerly operated by ICTSI, now owned operated by the Hutchison Ports;

Terminals Portuarias Argentina (TPA) which is majority owned by ATA, an Argentina company, with minority holdings by the US company, Mi-Jack, and the International Finance corporation. Efforts to merge this heavily indebted terminal with TRP remain unsuccessful due to objections by a new terminal operator at Zarate to changes which were made to the lease arrangement to make the transaction legal.

Table A.2-9 Latin America and Caribbean Ports: Committed and Planed Container Port Investment

Country	Project Site	Quay Length	Annual Capa'm/year	Completion by end year
Brazil				
Santos	Rio Cubatao: 2nd berth	150	0.10	2005
	Tecon Quay extension	250	0.20	2006
	Tecondo: Quay extension	400	0.25	2006
Paranagua	Container berth & 2 Q.Canes Quay extension & 3rd /4th QC	166	0.25	2005
Itajai	Quay extension	250	0.20	2005
Salvador	Tecon Terminal 2 QSGC	400 Equipnet	0.30	2006
Suape	Container Terminal Extension	660	0.20	2006
	-More Crane	Equipment	0.10	2006
	-More Crane	Equipment	0.10	2008
Imbituba	Container Terminal	550	0.30	2006
Sepetiba	Container Terminal	270	0.20	2004
Uruguay				
Montevidio	2ud Quay side Crane	Equipment	0.05	2005
Venezula				
La guala	Container Terminal	n/a	0.30	2006
Cartage	Manga Terminal Wxpansion	180	0.21	2005
	New Berth		0.29	2006
	Quay Crane		0.05	2006
Panama				
MIT	New Berth	400	0.50	2006
Colon Container T	Third Berth	350	0.25	2007
	Fourth Berth	350	0.25	2010
Balboa	Terminal Expansion	270	0.45	2006

Source: Ocean Shipping Consultant Report

A2.2.4 Neighbouring Ports in the Northeast Region

1) Port of Itaqui (State of Maranhao)

Outline

Terminal Operator: Porto of Itaqui and Terminals

①Port Facilities

Berth Length (Total 6 Berths and length 1,677m)

Table A.2-10 Specification of Berth

Berth No.	Length (m)	Depth (m)	Main Handling Cargo
No-101	239	9.0	General cargo & Repair
No-102	239	10.5	Machinery and Iron Products
No-103	239	14.0	Dry Bulk Cargo
No-104	200	14.0	Copper Concentrate in Bulk
No-105	280	18.0	Iron Ore and Soya Beans
No-106	480	19.0	Liquid Bulk Cargo

Employee Training Facility:

②Cargo Throughput 2004:

Table A.2-11 Cargo Throughput by Pier

Itaqui Port	ALUMAR	Rio Doce	Total
7.70 Million tons	1.15 Million tons	25.0 Million tons	33.85 Million tons

③Number of Vessel Calling per Annual:

Table A.2-12 Annual Number of Calling Vessel

2001	2002	2003	2004
434 vessel	418 vessels	405 vessels	*500 vessels

④Equipment

- Iron Ore and Soya Beans:

  Covered over head belt conveyer 1 set
- Efficiency =Iron Ore: 4,000 tons/hour
- =Soya Beans 1,200 tons/hour
- Copper Concentrate:

  Covered over head belt conveyer 1 set
- Efficiency = In bulk: 500/600 tons/hour
- Gantry Type Loader:

  Connected by over head belt conveyer 1 Unit

⑤Grain Storage Facilities:

- Silo Capacity: 27,200tons
- Silo = 4 Bins and 12 Bins: 2 Sets
- Warehouse: 1 Ridge
- Liquid Bulk Storage Tank: 210,000 ㎥ 50Tanks

⑥Working Schedule: Annual working Day 363 days

No working day: Jan 1st (New years Days) and Dec, 25th (Christmas Day)

⑦Cargo Operation Working Hour: 24 hours through day

⑧Future Expansion Projects (Port of Itaqui):

Berth Expansion Plan

- Location: End of Berth No-101 and 108
- Berth No-1 South end for 100m expansion, depth 10.0m (Berth No-100 and 72,000 ㎡ yard area)
- Berth No-3~4 Back area reclamation 7.5 ha for new silo development
- Berth No-6 North West end for 400m expansion, depth 19.0m (Berth No-108)
- Location: Berth 102 and 103 Back yard

  -Stage No-1: Capacity 45,000 tons x 2 Silos = 90,000 tons

  -Stage No-2: Capacity 60,000 tons x 2 Silos = 120,000 tons

  -Stage No-3: Capacity 60,000 tons x 3 Silos = 180,000 tons

2) Madeira Pier (State of Maranhao)

Outline

Terminal Operator: Vale de Rio DOCE Company (CVRD)

①Facilities: Berth Length (Jetty Type with Dolphin)

- Depth: 21.5m
- Jetty with dolphin bollard capacity max vessel: 365,000 DWT
- Pier No-1 Loader with covered Belt conveyer: 16,000tons/hour
- Pier N0-3 Loader with covered Belt conveyer: 8,000tons/hour
- Grain Silo: 25,000tons

②Cargo Throughput and Number of Calling Vessel

Table A.2-13 Annual Cargo throughput & Calling Vessel

Year	Iron ore	Manganese	Iron Pellets	Total	No of Vessel
2002	45,965,087	618,610	275,151	46,858,848	418
2003	47,027,033	678,177	1,571,797	49,277,007	405
2004	47,149,124	1,339,314	4,827,070	53,315,508	n/a

3) Alumar Pier (State of Maranhao)

Outline

Terminal Operator: ALUMAR

①Facilities: Berth Length and wide: 252m / 19.6m

- Depth (Berth) 10.5,m
- Access Channel 21.5m
- Cargo Un-loader Clamshell Type 1,200/ton/hour.

Jetty with dolphin bollard capacity maximum vessels handy type (80,000DWT)
Gantry type un-loader with covered belt conveyer (Capacity N/A) 1set.

②Cargo Throughput and Number of Calling Vessel:

Table A.2-14 Cargo throughput by Commodity & Calling Vessel

Year	Coal/ Coke	Soda	Aluminum	Bauxite	No of Vessel
2002	386,397	204,830	621,057	2,876,979	133
2003	284,158	185,890	660,393	3,342,183	142

4) Port of Salvador (State of Bahia)

Outline

Terminal Operator: Wilson, Sons Container Terminal (TECON Terminal)

①Port Facilities:

Table A.2-15 Specification of Berth

Commercial Berth	No-201 ~ 204,	n/a
New Quay	No-205 ~ 208,	n/a
Ten Meters Quay(Container berth)	No-300 and 610,	Length 420m
Conventional Berth	No-611	Length 220m
RO/RO Berth	No-612	n/a

②Average Cargo Handling Productivity and Number of Vessels:

Table A.2-16 Cargo Handling Productivity by Berth

Berthing Ratio	2000	2001	2002	2003	2004
Rate of Berth Occupation	25%	23%	26%	32%	n/a
Av. Berthing per vessel/day	1.44	1.09	1.13	1.22	n/a
Average Cargo Handling Volume and Productivity per Year					
Break Bulk Cargo (tons)	88	92	96	101	n/a
Container (Boxes)	14.0	15.3	25.0	26.0	n/a

③Number of Annual Calling Vessels of Salvador port:

Table A.2-17 Annual Number of Calling Vessels

2002	2003	2004	2005
881 vessels	1,113 vessels	1,167 vessels	n/a

④Wilson, Sons Container Terminal (TECON Terminal):

Property of Facility: Long Term Leased from State Government
Terminal Operator: TECON Salvador

⑤Container Terminal: 10 meters berth No-300 and 610

a). Facilities;

- Total Area: 74,000 ㎡
- Berth Length (2 Berths): 420.0 m
- Depth: 10.00 m
- Storage Capacity: 2,200 TEUs
  - Warehouse (CFS) Capacity: 4,000 ㎡
  - Gate Facilities (In/Out): 2 Lanes
  - Reefer Container Plug: 324 Outlets
- Weighting Bridge (60 tons): 1 Unit
- Employee Training Facility: n/a

b). Maintenance of Channel and Quay side Wall:

- Responsibility of maintenance of channel = Port authority

c). Equipment

- Quay side Gantry Crane (Panamax Type): 2 Units
- RMGs (Long span type): 2 Units
- Reach Stacker (Capacity 42 tons): 7 Units
- Fork Lift Truck: 3 Units
- Tractor Head:
- Computer System (Hard ware = DELL windows)
  (Soft ware = Self development software)

⑥ Vessel Calling per Month of TECON Terminal (Average): 50 Vessels/Month

- 15 Shipping lines are conclude agreement (including domestic container service lines

⑦Number of Annual Container Throughput:

Table A.2-18 Container Throughput & Productivity

ITEMS	1999	2002	2003	2004
Throughput	54,000 Boxes	134,664 TEUs	144,092TEUs	120,000 Boxes
Productivity	11 Boxes/Hr	18 Boxes/Hr	23 Boxes/Hr	25 Boxes/Hr
Steel Products	n/r	n/r	n/r	250t/shift

Productivity rate per vessel

⑧Laden Container Average Dwelling in Container Yard

- Import Container 10 ~15 Days
- Export Container 3 ~ 5 Days

⑨Terminal Staff Standard Working Schedule:

Administration Staff Monday~ Friday, From 08:00 to 18:00

Table A.2-19 Stevedoring Labors Working Shift Plan

Working Mode	1st Shift	2nd Shift	3rd Shift	4th Shift
Vessel Operation	01:00~07:00	07:00~13:00	13:00~19:00	19:00~01:00
Gate Operation	01:00~07:00	07:00~13:00	13:00~19:00	19:00~01:00
CSF Operation	If necessary 24 hours service			

⑩Container Gang Composition:

Table A.2-20 Standard Labors Arrangement

Kind of Occupation	Number Staff	Remarks
Supervisor	1 man	Administration Staff
Gantry Crane Operator	1 unit/driver	
Yard Equipment Driver	1 unit/driver	
Tractor Head Driver	4 units/men	Operate between apron/yard
Lashing/Unlashing Labor	8 men	On vessel and Pier
Tally Clerk	1 man	Checking Box No, and Seal

⑪Vessel Operation:

Vessel operation labours (e.g. Signal man, Lashing labour, and Crane Operator) =Union members

Yard operation labours (e.g. Yard Crane Operator, Tractor Drive, and Extra yard labours) = Terminal employment members

⑫Future Expansion Plan:

New reclamation of Berth No-611, North end of the surface , total area 400m x 375m =150,000 ㎡, and depth –14.0m.

5) Port of Aratu (State of Bahia)

Outline

Terminal Operator: PETROBRAS and CODEBA

①Port Facilities:

Entrance Access Channel:

- Length 2 miles
- Width 180.0m

- Depth 18.0m.

Table A.2-21 Dry Bulk Cargo Handling Facilities (2004)

Berth No.	Length	Depth	Max Capacity	Cargo Style
Berth No-101,	230.00m	10.40m	100,000t/Berth	Solid bulk
Berth No-102	186.00m	9.60m	100,000t/Berth	Solid bulk
Berth No-103	200.00m	9.00m	n/a	Solid bulk

Table A.2-22 Liquid Bulk Cargo Handling Facilities (2004)

Berth No.	Length	Depth	Max Capacity	Cargo Style
Berth No-201	210.00m	15.00m	25,000tons/Berth	Liquid bulk
Berth No-202	210.00m	10.60m	35,000tons/Berth	Liquid bulk
Berth No-203	70.00m	7.40m	n/a	Liquid bulk

- Dry Bulk Cargo Warehouse (50m x 200m=10,000 m²)Capacity: 40,000tons
- Open Stock Yard Capacity: 31,179 m²

②Cargo Handling Equipment :

- Pier No-1=1 unit of Bulk cargo un-loader capacity 25 tons1 set of Belt conveyer system, capacity 970 tons/hr and Silo capacity 600 tons
- Pier No-2 =Liquid Bulk cargo loading arm, length 25m and capacity 16 tons

③Distance of Urban District (By road traffic):

- Aratu Port to Salvador (Urban area) 50 km
- Aratu Port to Polo Petr (Industrial area) 30 km
- Aratu Port to Cia (Industrial area) 27 km

④Annual Cargo Throughput and Number of Vessel Berthing (2004):

Table A.2-23 Annual Cargo throughput & Vessel Berthed

Berth No,	Nr, of Calling Vessel	Cargo throughput	Sub Total
Berth No-101,	50 Vessels	1,081,336t	Dry Bulk Cargo 2,135,235 tons
Berth No-102	43 Vessels	446,924t	
Berth No-103	49 Vessel	606,975t	
Berth No-201	164 Vessels	885,088t	Liquid Bilk Cargo 4,557,325tons
Berth No-202	193 Vessels	1,403,569t	
Berth No-203	357 Vessels	2,268,668t	
Total	856 Vessels	6,692,560t	

⑤ Number of Annual Calling Vessel:

Table A.2-24 Number of Annual Calling Vessel

2001	2002	2003	2004
531 vessels	552 vessels	607 vessels	856 vessel

6) Port of Recife (State of Pernambuco)

Terminal Operator: Adinistracao do Porto do Recife:

Outline

①Port Facilities:

- Berth No-01 and No-09, Handling for Wheat and Corm
- Berth No-01 Length / Depth 10.0m with capacity: 25,000 tons Silo
- Berth No-09 Length / Depth 9.0m with capacity: 23,500 tons
- Berth No-04 Length / Depth 11.0m with capacity: 22,000 tons Silo
- Berth No-00, Handling for Sugar
- Berth No-00 Length / Depth 10.0m with 200,000tons storage space
- Container yard (Pavement): 75,000 ㎡
- Container Storage Capacity: 10,000 units
- Employee Training Facility: n/a
- General Cargo Warehouse: 51,400 ㎡

Table A.2-25 Warehouse Capacity:

Site	Dimension	Area (㎡)	Site	Dimension	Area (㎡)
01	90.0m x 19.8m	1,789.20	05	150.0m x 50.0m	5,507.00
03	140.7m x 20.3m	2,861.5	06	150.0m x 50.0m	7,507.00
07	105.7m x 19.5m	2,055.86	08	95.5m x 19.4	1,847.9
09	105.6m x 19.6m	2,069.7	10	100.9m x 19.6m	1,976.6
11	100.3m x 19.6m	1,966.9	13	85.7m x 19.5m	1,666.5
14	85.3m x 19.5m	1,658.0	15	85.6m x 19.2m	1,643.7
16	150.3m x 24.3m	3,656.0	17	185.4m x 38.7m	7,1175.4
18	150.0m x 40.0m	6,004.5	Total Space: 51,385.83 ㎡		

- General Cargo Warehouse 51,400 ㎡
- Sugar Warehouse Capacity: 180,000 tons

  (Receiving ability 500tons / Loading for vessel ability 1,000tons/hour)
- Grain Silo Capacity

  Silo Capacity (For Malt): 22,500 tons

  Silo Capacity (For Grain): 25,000 tons
- Liquid Tank Capacity

  Petroleum Storage Tank (Planning): 60,000 tons

②Equipment:

- Quay side Gantry Crane (Capacity 30 tons): 1 Unit
- Transfer Crane (RTGs) 1 Unit
- Reach Stacker (Capacity 40 tons) 1 Units
- Heavy duty Fork Lift (Capacity 37 tons) 2 Units

- Tractor and Trailer (156 Hp) 3 Sets

③Annual Cargo and Container throughput:

Table A.2-26 Annual Cargo Throughput (From 2000 to 2004)

Transport	Mode	2000	2001	2002	2003	2004
Foreign Cargo	Import	396,258	468,327	475,739	756,566	545,069
	Export	386,623	634,202	551,341	539,043	905,562
Domestic Cargo	I/Bound	315,874	252,656	40,340	402,620	128,865
	O/Bound	68,225	93,664	32,397	173,721	26,938
Mercosul Cargo	Import	1,188,612	617,595	429,595	512,250	609,931
	Export	1,141	12,404	94	10,305	10,634
Ground Total		2,356,723	2,079,001	1,529,506	2,394,505	2,226,999

Source: Port of Recife S.A. Brochure

Table A.2-27 Annual Container Throughput (From 2000 ~ 2004) by TEU

Kind of Vessel	Mode	2000	2001	2002	2003	2004
Foreign Container	Import	324	1,781	542	12,750	853
	Export	7	230	60	5,773	96
Domestic Container	I/Bound	9,658	10,416	1,331	15,099	2,011
	O/Bound	12,677	15,078	2,347	21,289	2,729
Mercosul Container	Import	4,427	3,706	1,224	2,052	122
	Export	156	40	8	175	17
Ground Total		27,249	31,251	5,512	57,138	5,828

Including empty container

Source: Port of Recife S.A. Brochure

④ Number of Vessel Calling:

Table A.2-28 Number of Annual Calling Vessel by Service Route

Kind of Route Service	2000	2001	2002	2003	2004
Domestic Vessel	188	147	120	152	250
Foreign Vessel	177	191	162	257	191
Mercosul Vessel	91	55	38	52	41
Total Calling Vessel	456	393	320	461	482

7) Port of Suape (State of Pernambuco)

Outline

Terminal Operator: TECON SUAPE

①Port Facilities:

- Access Channel: (390m wide) 16.5m depth
- Container Berth Length (2 Berths): 660m
- Depth: 15.5m
- Container Yard (including planning area): 280,000 ㎡
- Container Yard Capacity: 1,232 TEUs
- Empty Container Yard: 34,000 ㎡

  (Direct access to the main Highway and Railroad of the region)
- Reefer Container Plug: 520 Points

- Access channel (Outer) 18.0m
  (Inner) 16.0m
- Employee Training Facility: n/a

②Equipment:

- Quay side Gantry Crane (Panamax Type Capacity 40tons) 2 Units
- Yard Crane (RTGs Capacity 35 tons) 2 Units
- Reach Stacker (Capacity 45 tons) 5 Units
- Top Lifter (Capacity 35 tons) 4 Units
- Side Loader for Empty container 3 Units
- Fork Lift Truck (Capacity 7.5~2.5tons) 2 Units
- Weight Bridge (Capacity 60tons) 1 set

③Annual Cargo and Container Throughput:

Table A.2-29 Annual Cargo Throughput

King of Cargo	2002	2003	2004	2005
Container (TEUs)	108,955	58,893	125,624	:20% Increase
Dry Bulk Cargo	0	0	0	0
Liquid bulk Cargo	2,986,668	2,265,452	2,273,041	n/a
Miscellaneous	n/a	n/a	n/a	n/a

④Number of Annual Calling Vessel:

Table: A.2-30 Annual Calling Vessel

2001	2002	2003	2004	2005
621 vessels	732 vessel	448 vessels	n/a	n/a

⑤Information and Communication System:

Container Terminal System, integrated to SPARCS/NAVIS software for yard and vessel operation control and planning.

⑥Standard Working Schedule:

- Office Administration Staff Mon ~ Fri 08:00 ~ 17:00
- Vessel Operation Mon ~ Sun Through 24 hours operation
- Gate Operation Mon ~ Sun 08:00 ~ 23:00

⑦Future Expansion of Container Handling Equipment (end of 2005):

- Quay side Gantry Crane (Post Panamax type 60 tons) 2 Units
- RTGs (Capacity 40 tons77’ span) 2 Units

8) Port of Frotaleza (Mucuripe) = (State of Ceara)

Outline

Terminal Operator: Termrco Co,

Access channel are length of approximately 1,200m and 100m in width.

① Port Facilities:

Table A.2-31 Specification of Berth

Berth No.	Length	Depth	Remarks
Berth No - 1	106m	5.00m	Coastal small ships
Berth No-2	150m	7.00m	Coastal ships
Berth No-3	170m	10.00m	Container and General cargo Dry Bulk Cargo. Max size: Up to 8.3m depending on the tide.
Berth No-4	530m	10.00m	
Berth No-5	160m	10.00m	
Jetty inner berth	90m	11.00m	Liquid Bulk Cargo Berth /Maximum Capacity 34,000/54,000dwt
Jetty outer berth	90m	12.00m	
Anchor Berth	300m dia	10~11m	2 x Maneuverable Area
Total berth length	1,054m		

Source: Port of Mucuripe Brochure

Employee Training Facility: n/a

② Cargo Storage Facilities:

Table A.2-32 Cargo Storage Facility

Facility	Specification	Remarks
Warehouse (5 Ridges)	30,000 ㎡	G, Cargo x 2 /Bulk Cargo x 3
Container Yard	110,000 ㎡	Capacity 4,000TEUs
Open Storage Yard		n/a
Grain Silo (2 site)	118,3500 tons	Wheat 80,000 + 38,350
Liquid Bulk	215,000m3	9 Storage Tank

Source: Port of Mucuripe Brochure

③Cargo Handling Equipment:

- Quay side bulk cargo un-loader 1 set
- Traveling suction tower (capacity 120 t/hour) 2 Tubes
- Pipe line 865m
- Mobile Carne (capacity 50 tons) 1 unit
- Reach Stacker (capacity 35 tons) 1 unit
- Heavy duty fork lift truck or top lifter (capacity 30tons) 1 unit
  (capacity 7/5tons) 3 units
- Small capacity fork lift truck (various capacity) 20 units

④Annual Calling Vessels:

Table A.2-33 Number of Annual Number of Calling Vessels

2001	2002	2003	2004
643 vessels	631 vessels	538 vessels	

Source: Port of Mucuripe Brochure

⑤Annual Container Handling of Mucuripe port: (2000 ~ 2004):

Table A.2-34 Annual Container Throughput

Year	Domestic Box	Foreign Box	Total Throughput
2000	25,900	43,130	69,030
2001	29,453	55,136	84,589
2002	39,097	33,404	72,50l
2003	39,807	34,049	73,856
2004	23,374	50,755	74,129

Source: Port of Mucuripe Brochure

⑥Standard Working Operation Schedule:

Table A.2-35 Stevedoring Labors Working Schedule

Kind of Occupation		Monday ~ Friday	Saturday	Sunday/ Holiday
Office (Administration)		08:00 ~ 17:00	Close	Close
Vessel operation	1st Shift	07:00~17:00	If overtime working on requisite by shipping lines any time available.	
	2ud Shift	19:00~23:00		
	3rd Shift	00:00~04:00		
Gate operation		Through open the Gate (If request by customers 24 hours open)		

Source: Port of Mucuripe Brochure

No Working Days: Dec 25th Christmas Day and Jan 1st New Years Day.

A2.2.5 Tariff Rate of Main Items

Comparison of Ports Container and Cargo Handling Charges

Table A.2-36 Tariff Comparison of Container Handling Charge of Surrounding Ports (unit: R$)

Category/Port	Pecem (10 Days Period)		Salvador (Per day)		Itaqui (Per day)	
	Laden Container	Empty Container	Laden Container	Empty Container	Laden Container	Empty Container
Wharf-age	14.33 /box	5.87 /box	18.04/box	5.05/box	13.21 /box	7.61/box
Facility Charge	27.12/box	13.92/box	20.78/box	18.29/box	15.21/box	7.61/box
Additional Charge	n/a	n/a	n/a	n/a	n/a	n/a
Storage	*41.35/Period*	*6.20/Period*	*8.00/day*	*1.80/day*	*13.20/box/day*	*7.61/box/day*
Conversion/5 days	----	-----	8.00 x 5 days	1.80 x 5days	13.20 x 5 days	7.61 x 5 days
Incentive	(10 Days Free)	(10 Days Free)	???	???	???	???
Total/day	**41.45**	**19.79**	**56.92**	**27.10**	**43.41**	**27.22**
Ratio%	**100**	**100**	**137.32**	**137.01**	**104.73**	**137.54**
Category/Port	**Mucuripe (10 days/Period)**		**Recife (15 days / Period)**		**Suape (10daus/Period)**	
	Laden Container	Empty Container	Laden Container	Empty Container	Laden Container	Empty Container
Wharf-age	18.36/box	9.18/box	(imp)15.00/box (exp) 10.00/box	4.44 /box	8.18 /box	2.45 /box
Facility Charge	36.46/box	18.23/box	(imp) 15.00/box (exp) 10.00/box	11.80/box	17.35/box	5.20/box
Additional Charge	1.64/box	1.64/box	n/a	n/a	2.06/box	0.61/box
Storage	*19.84/Period*	*1.20/Period*	*20.00/Period*	*8.00/Period*	*20.55/box/Period*	*6.14/box/Period*
Conversion/5 days	----	-----	1.33 x 5days	0.53 x 5days	2.06 x 5days	6.2 x 5days
Incentive	???	???	???	???	???	???
Total/day	**53.82**	**29.05**	**50.00**	**31.24**	**48.14**	**14.40**
Ratio%	**129.84**	**146.79**	**120.63**	**157.86**	**116.14**	**72.76**

Source: by Port Tariff Books

Table A.2-37 Tariff Comparison of Break Bulk Cargo Handling Charge of Surrounding Ports (unit: R$)=No-1

Category/Port	Pecem Port	Recife Port	Suape
Wharf-age (Used for Port and Harbour Facility Charge)			
General Cargo (in / out)	1.68/ton	0.15/ton	0.69/ton
Solid Dry Bulk Cargo	2.20/ton	0.15/ton	0.61/box
Liquid Bulk Cargo	0.39/ton	0.15/ton	0.61/ton
Laden Container	27.12/box	Imp, 15.0/box/Exp, 10.00/box	17.35 /box
Empty Container	13.92/box	4.44/box	5.20 /box
Used Cargo Handling Facility Charge	**(Receiving/Releasing Charge)**		
General Cargo (in / out)	1.20/ton	2.60/ton	1.47/ton
Solid Dry Bulk Cargo	1.10/ton	2.05/ton	2.59/ton
Liquid Bulk Cargo	-----	2.15/ton	1.24/ton
Laden Container	14.33/box	Imp, 15.0/boxExp,10.00/box	8.18/box
Empty Container	5.87/box	11.80/box	2.45/box
Storage Charge (Calculation Period)=(10 days Period)		**(15 days /Period)**	**(10days period)**
Open yard (Gen'l Cargo)	1.01/ton/Period	1.00/ton/Period	0.30/ton/10 day
Covered Area (Gen'l Cargo)	1.47/ton/Period	1.20/ton	0.50/ton/10 day
Liquid Bulk Cargo	-----	-----	-----
Laden Container	4.14/box/day	1.00/box/day	2.06/box/day
Empty Container	0.62/box/day	0.53/box/day	0.6.1/box/day

Source: by Port Tariff Books

Table A.2-38 Tariff Comparison of Break Bulk Cargo Handling Charge of Surrounding Ports (unit: R$) =No-2

Category/Port	Mucuripe Port	Salvador Port	Itaqi Port
Wharf-age (Used for Port and Harbour Facility Charge)			
General Cargo (in/out)	2.02/ton	1.75/ton	1.55/ton
Solid Bulk Cargo	2.02/ton	1.75/ton	1.55/ton
Liquid Bulk Cargo	1.48/ton	1.75/ton	1.55/ton
Laden Container	36.46/box	18.04/box	15.21/box
Empty Container	18.23/box	5.05/box	7.61/box
Used Terminal Facility Charge			
General Cargo (in/out)	1.41/ton	2.25/ton	1.51/ton
Solid Bulk Cargo	1.41/ton	2.25/ton (Pier II Aratu)	1.51/ton
Liquid Bulk Cargo	4.38/ton	1.92/ton (Pier II Aratu)	3.92/ton
Laden Container	18.36/box	38.92/box	13.20/box
Empty Container	9.18/box	20.05/box	7.61/box
Storage Fee (Calculation Period)	**(10 days period)**	**(Per day)**	**(Monthly)**
Open Yard (General Cargo)	3.29/ton	0.25/ton	-----
Covered Yard (General Cargo)	4.08/ton	0.50/ton	0.81/ton
Solid Bulk Cargo	-----	-----	-----
Liquid Bulk Cargo	-----	------	0.17/ton (by pipe line)
Laden Container	6.11/box/day	8.00/box/day	15.00/box/day
Empty Container	2.02/box/day	1.80/box/day	12.00/box/day

Source: by Port Tariff Books

Appendix 3.2 Monthly Frequency Distribution for Wave Height and period, and Wave Height and Wave Direction

Jan

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5				0.6%	0.8%	0.1%				1.5%
5-6				0.6%	4.7%	1.9%	0.1%			7.3%
6-7			0.4%	1.1%	2.9%	2.9%	0.5%			7.7%
7-8			1.2%	6.0%	3.2%	2.0%	0.7%	0.1%		13.1%
8-9				4.8%	2.3%		0.1%			7.3%
9-10			0.8%	5.5%	8.4%	2.0%	0.2%			17.0%
10-11			0.1%	1.3%	4.3%	0.8%	0.1%			6.7%
11-12			0.1%	1.3%	3.7%	0.6%				5.7%
12-13			0.2%	1.6%	1.5%	0.6%				4.0%
13-14			0.1%	2.8%	3.7%	0.2%				6.9%
14-15				3.6%	4.4%	1.4%	0.2%			9.7%
15-				4.3%	6.8%	1.8%	0.2%			13.1%
Total			2.9%	33.5%	47.0%	14.3%	2.2%	0.1%	0.0%	100.0%

Jan

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N			0.0%	0.1%						0.1%
NNE			0.7%	4.8%	7.7%	1.3%				14.5%
NE			1.6%	20.4%	24.8%	5.2%	0.8%			52.8%
ENE			0.6%	6.1%	6.4%	1.9%	0.1%			15.1%
E				1.9%	5.3%	3.6%	1.1%	0.1%		11.9%
ESE				0.2%	2.7%	2.3%	0.2%			5.5%
SE										
SSE										
S										
Total			2.9%	33.5%	47.0%	14.3%	2.2%	0.1%		100.0%

Feb

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5				0.8%	1.1%	0.1%				2.0%
5-6			0.1%	2.4%	6.2%	3.0%	0.1%			11.8%
6-7			0.2%	1.5%	2.7%	2.4%	0.6%			7.5%
7-8			0.4%	3.6%	3.8%	2.0%	0.2%			10.0%
8-9			0.8%	4.2%	4.0%	0.2%				9.3%
9-10			1.8%	10.2%	11.1%	1.7%				24.7%
10-11			0.4%	3.0%	1.7%	0.5%				5.5%
11-12			0.1%	3.9%	3.4%	0.5%				8.0%
12-13			0.1%	1.8%	2.9%	1.5%	0.1%			6.4%
13-14			0.5%	2.0%	2.6%	0.7%	0.1%			5.9%
14-15			0.0%	1.3%	2.5%	0.2%	0.1%			4.2%
15-			0.4%	1.1%	2.0%	0.7%	0.5%	0.1%		4.8%
Total			4.8%	35.8%	44.0%	13.6%	1.8%	0.1%		100.0%

Feb

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N				0.2%		10.1%	1.0%			11.3%
NNE			0.4%	7.6%	7.3%	3.4%	0.8%			19.5%
NE			3.4%	19.3%	23.5%			0.1%		46.4%
ENE			0.8%	4.3%	3.4%					8.6%
E			0.1%	2.9%	5.6%					8.6%
ESE				1.5%	4.2%					5.7%
SE										
SSE										
S										
Total			4.4%	27.9%	36.7%	0.0%	0.0%	0.1%	0.0%	100.0%

Mar

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5			0.1%	1.5%	0.2%	0.2%				2.0%
5-6				2.1%	4.5%	1.3%	0.3%			8.3%
6-7			0.5%	2.6%	3.7%	1.8%	0.3%			9.0%
7-8			1.9%	9.5%	4.7%	0.8%				17.0%
8-9			1.6%	5.9%	1.9%	0.1%				9.5%
9-10			1.2%	3.9%	1.3%	0.1%				6.6%
10-11			0.4%	1.5%	0.6%	0.0%				2.5%
11-12			1.3%	5.9%	2.2%	0.4%				9.8%
12-13			0.2%	3.8%	2.9%	0.1%				7.1%
13-14			0.2%	2.5%	3.4%	1.4%				7.6%
14-15			0.1%	3.7%	4.0%	1.2%	0.6%			9.7%
15-			0.2%	4.0%	4.9%	1.6%	0.1%	0.1%		11.0%
Total			7.8%	47.1%	34.6%	9.1%	1.3%	0.1%		100.0%

Mar

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N						0.1%				0.1%
NNE			0.6%	8.4%	6.6%	1.6%	0.4%			17.6%
NE			3.9%	27.9%	16.3%	2.9%	0.3%			51.3%
ENE			3.0%	6.7%	4.2%	0.9%		0.1%		14.9%
E			0.2%	3.0%	5.5%	1.8%	0.3%			10.8%
ESE				1.1%	2.1%	1.7%	0.3%			5.3%
SE										
SSE										
Total			7.8%	47.1%	34.6%	9.1%	1.3%	0.1%		100.0%

Apr

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5			0.3%	1.5%	1.0%	0.2%				3.0%
5-6			0.1%	2.6%	6.4%	2.5%	0.8%			12.4%
6-7	0.1%	0.1%	1.0%	1.7%	3.9%	2.8%	0.3%	0.1%		10.0%
7-8		0.1%	3.7%	8.2%	4.4%	1.0%	0.2%			17.6%
8-9			2.1%	4.7%	2.6%	0.3%				9.7%
9-10	0.1%		1.4%	5.5%	3.0%	1.7%	0.1%			11.7%
10-11		0.1%	0.5%	1.7%	0.9%	0.5%				3.7%
11-12	0.1%		1.8%	3.3%	1.0%	0.1%				6.3%

Apr

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE	0.1%		2.4%	4.3%	1.8%	0.5%				9.2%
NE	0.2%	0.3%	9.8%	23.9%	11.4%	3.2%	0.3%			49.0%
ENE			2.5%	8.5%	5.8%	1.0%				17.8%
E			0.2%	2.6%	7.0%	3.0%	0.6%	0.1%		13.5%
ESE			0.1%	2.3%	4.5%	3.0%	0.6%			10.4%
SE										
SSE										
S										
Total	0.3%	0.3%	15.0%	41.7%	30.6%	10.6%	1.5%	0.1%	0.0%	100.0%

May

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4			0.1%		0.1%					0.2%
4-5			1.8%	4.2%	2.9%	0.2%				9.1%
5-6			1.4%	11.0%	13.7%	3.3%	0.7%			30.2%
6-7			0.3%	1.7%	7.8%	3.8%	1.2%			14.8%
7-8			2.7%	6.1%	2.6%	0.7%	0.5%			12.5%
8-9		0.1%	2.0%	6.5%	2.7%	0.4%				11.7%
9-10		0.1%	1.7%	6.6%	1.7%					10.1%
10-11			0.3%	0.6%	0.4%					1.2%
11-12		0.3%	1.2%	1.9%	0.1%					3.5%
12-13		0.3%	0.8%	1.5%	0.4%					2.9%
13-14			1.2%	1.5%						2.7%
14-15			0.2%	0.5%	0.2%					0.8%
15-			0.1%		0.1%					0.2%
Total		0.7%	13.7%	42.2%	32.6%	8.4%	2.4%			100.0%

May

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE		0.1%	1.7%	2.1%	0.1%					4.0%
NE		0.4%	6.1%	13.6%	3.6%					23.7%
ENE		0.3%	2.7%	9.2%	4.2%	0.5%				16.9%
E			1.9%	8.5%	9.5%	2.2%	0.7%			22.8%
ESE			1.4%	8.7%	15.1%	5.7%	1.7%			32.6%
SE					0.1%					0.1%
SSE										
S										
Total		0.7%	13.7%	42.2%	32.6%	8.4%	2.4%			100.0%

Jun

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4				0.1%						0.1%
4-5			1.4%	6.3%	1.7%	0.1%				9.4%
5-6		0.1%	2.9%	19.1%	18.7%	4.6%	0.3%			45.7%
6-7			0.7%	4.8%	10.7%	5.9%	1.5%	0.3%		23.8%
7-8			2.0%	2.6%	0.7%	1.6%	0.6%	0.1%	0.1%	7.7%
8-9		0.4%	3.4%	2.0%	0.1%					5.9%
9-10			1.7%	1.7%	0.1%					3.5%
10-11			0.1%	0.2%						0.3%
11-12		0.1%	0.1%	0.5%						0.7%
12-13			0.5%	0.6%	0.1%					1.2%
13-14			0.3%	0.5%						0.8%
14-15			0.3%	0.2%		0.1%				0.6%
15-				0.3%	0.1%					0.4%
Total		0.6%	13.3%	39.0%	32.1%	12.2%	2.3%	0.4%	0.1%	100.0%

Jun

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE			0.2%	0.5%						0.7%
NE		0.3%	3.6%	3.8%	0.1%	0.1%				7.9%
ENE		0.2%	4.1%	4.1%	0.5%					8.8%
E			3.4%	13.1%	9.2%	3.0%	0.5%	0.1%		29.3%
ESE			2.0%	17.5%	22.2%	9.1%	1.8%	0.3%	0.1%	53.2%
SE					0.1%					0.1%
SSE										
S										
Total		0.5%	13.3%	39.0%	32.1%	12.2%	2.3%	0.4%	0.1%	100.0%

Jul

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4				0.1%						0.1%
4-5			0.7%	4.1%	2.4%	0.3%	0.1%			7.6%
5-6			1.6%	10.4%	18.5%	9.1%	0.4%			39.9%
6-7			0.4%	3.6%	12.4%	13.3%	4.3%	0.4%		34.4%
7-8			1.2%	0.8%	1.7%	3.3%	1.5%	1.2%	0.3%	10.0%
8-9			1.3%	0.9%			0.1%			2.4%
9-10			1.6%	2.3%	0.9%	0.1%				4.9%
10-11			0.1%	0.4%						0.5%
11-12				0.1%						0.1%
12-13										
13-14										
14-15										
15-										
Total			6.9%	22.8%	36.0%	26.1%	6.4%	1.6%	0.3%	100.0%

Jul

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE										
NE			0.3%	0.8%	0.3%					1.3%
ENE			2.4%	2.5%	0.3%	0.1%				5.3%
E			2.8%	6.7%	6.8%	4.5%	0.7%	0.4%		21.8%
ESE			1.5%	12.8%	28.6%	21.3%	5.7%	1.2%	0.3%	71.4%
SE						0.1%				0.1%
SSE										
S										
Total			6.9%	22.8%	36.0%	26.1%	6.4%	1.6%	0.3%	100.0%

Aug

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5			0.3%	2.2%	1.0%	1.4%	0.1%			5.0%
5-6			1.3%	7.0%	13.9%	13.7%	2.2%	0.2%		38.3%
6-7			0.3%	1.6%	11.0%	18.4%	7.4%	0.9%	0.2%	40.0%
7-8			0.1%	0.1%	2.1%	6.7%	4.1%	1.9%	0.5%	15.4%
8-9			0.1%	0.1%	0.1%	0.1%		0.1%		0.5%
9-10			0.6%	0.1%						0.7%
10-11										
11-12										

Aug

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE										
NE			0.4%							0.4%
ENE			0.2%	0.2%						0.4%
E			1.5%	4.0%	5.9%	5.8%	2.4%	0.4%		20.0%
ESE			0.6%	6.9%	22.2%	34.5%	11.4%	2.7%	0.7%	79.1%
SE						0.1%				0.1%
SSE										
S										
Total			2.8%	11.1%	28.1%	40.4%	13.8%	3.1%	0.7%	100.0%

Sep

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4				0.1%						0.1%
4-5			0.5%	1.8%	1.9%	0.8%				5.0%
5-6			0.6%	6.3%	13.2%	15.4%	3.0%	0.1%		38.5%
6-7			0.1%	1.1%	7.9%	17.6%	8.9%	1.0%	0.1%	36.7%
7-8			0.7%	0.1%	1.6%	4.5%	4.9%	1.7%	0.3%	13.7%
8-9							0.1%	0.2%		0.3%
9-10			0.1%							0.1%
10-11			0.1%							0.1%
11-12			0.5%	0.6%	0.1%					1.2%
12-13			0.1%	0.4%	0.1%	0.1%				0.6%
13-14			0.2%	0.4%	0.7%	0.2%				1.5%
14-15			0.5%	0.5%	0.2%	0.6%	0.2%			1.8%
15-					0.2%	0.2%				0.4%
Total			3.2%	11.2%	25.9%	39.4%	17.0%	3.0%	0.4%	100.0%

Sep

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N			0.1%	0.1%						0.2%
NNE			0.4%	0.6%	0.5%	0.3%	0.1%			1.8%
NE			0.7%	1.0%	0.6%	0.7%	0.1%			3.1%
ENE			0.2%	0.1%	0.3%					0.6%
E			1.5%	4.2%	6.5%	4.7%	1.8%	0.6%	0.1%	19.2%
ESE			0.4%	5.1%	18.2%	33.6%	15.0%	2.4%	0.3%	74.9%
SE				0.1%		0.1%				0.2%
SSE										
S										
Total			3.2%	11.2%	25.9%	39.4%	17.0%	3.0%	0.4%	100.0%

Oct

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4			0.1%	0.1%						0.2%
4-5			0.8%	2.6%	3.1%	0.7%	0.1%			7.3%
5-6		0.1%	0.5%	5.5%	15.4%	10.3%	2.8%	0.1%		34.7%
6-7			0.2%	1.7%	9.4%	14.4%	7.8%	1.7%		35.3%
7-8			0.1%	0.2%	1.6%	3.3%	2.3%	1.0%	0.6%	9.1%
8-9										0.0%
9-10			0.2%	0.1%						0.3%
10-11				0.2%						0.2%
11-12		0.1%		0.3%						0.4%
12-13		0.1%		0.9%	0.7%					1.7%
13-14		0.2%	0.3%	0.6%	0.9%	0.3%				2.4%
14-15			0.1%	0.8%	2.1%	0.7%	0.1%			3.8%
15-			0.1%	0.7%	1.6%	1.7%	0.2%	0.2%		4.6%
Total		0.5%	2.5%	13.8%	34.9%	31.4%	13.2%	3.1%	0.6%	100.0%

Oct

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N										
NNE			0.1%	0.7%	0.8%	0.2%				1.8%
NE		0.4%	0.6%	2.6%	3.8%	2.1%	0.3%	0.1%	0.0%	9.8%
ENE			0.0%	0.6%	1.1%	0.6%		0.1%		2.5%
E			1.1%	2.9%	7.8%	6.3%	1.5%	0.2%	0.1%	19.9%
ESE		0.1%	0.6%	7.1%	21.3%	22.3%	11.4%	2.7%	0.5%	65.9%
SE										
SSE										
S										
Total		0.5%	2.5%	13.8%	34.9%	31.4%	13.2%	3.1%	0.6%	100.0%

Nov

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4			0.1%	0.4%						0.5%
4-5			0.8%	4.9%	3.3%	0.6%				9.6%
5-6			0.5%	9.5%	16.6%	9.1%	0.8%			36.5%
6-7			0.2%	1.9%	9.1%	9.1%	2.9%	0.5%		23.8%
7-8			0.4%	1.3%	1.8%	1.3%	1.1%	0.2%		6.2%
8-9			0.2%	0.5%	0.4%					1.1%
9-10			0.4%	0.8%	0.8%	0.5%				2.5%
10-11			0.1%	0.4%	0.6%	0.1%				1.2%
11-12			0.7%	1.6%	0.7%	0.1%				3.2%
12-13			0.4%	1.2%	1.1%	0.4%				3.0%
13-14			0.2%	1.6%	2.5%	0.5%				4.9%
14-15			0.8%	0.4%	2.7%	0.6%				4.5%
15-			0.2%	0.2%	1.3%	1.1%	0.1%			3.0%
Total			5.2%	24.6%	41.0%	23.4%	5.0%	0.7%	0.0%	100.0%

Nov

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N				0.1%						0.1%
NNE			0.5%	0.4%	0.7%	0.1%				1.7%
NE			2.2%	5.5%	7.6%	2.8%				18.1%
ENE			0.7%	1.2%	2.3%	0.4%	0.1%			4.7%
E			1.2%	11.3%	13.5%	6.4%	1.9%	0.2%		34.6%
ESE			0.6%	6.2%	16.9%	13.7%	2.9%	0.5%		40.8%
SE										
SSE										
S										
Total			5.2%	24.6%	41.0%	23.4%	5.0%	0.7%	0.0%	100.0%

Dec

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
3<=										
3-4										
4-5				1.1%	1.0%	0.2%				2.3%
5-6				1.5%	7.4%	4.9%	0.7%	0.2%		14.6%
6-7				0.5%	4.1%	5.3%	1.5%	0.7%		12.0%
7-8			0.5%	0.7%	3.1%	1.8%	0.5%			6.6%
8-9				1.0%	1.0%	0.2%				2.1%
9-10				2.3%	3.4%	0.8%				6.6%
10-11				1.6%	1.6%	0.2%	0.2%			3.6%
11-12			0.8%	3.3%	2.0%	0.8%	0.2%			7.1%

Dec

	-0.5	0.5-0.	0.75-1	1.0-1.	1.25-1	1.50-1	1.75-2	2.00-2	2.25-2	Total
N					0.2%					0.2%
NNE			1.1%	5.6%	11.0%	3.1%	0.2%			21.0%
NE		0.5%	1.6%	9.5%	18.7%	6.2%	0.7%			37.3%
ENE			0.3%	2.5%	5.1%	1.3%	0.3%			9.5%
E				1.8%	9.2%	5.7%	1.0%	0.3%		18.1%
ESE				1.1%	4.4%	6.2%	1.6%	0.5%		14.0%
SE										
SSE										
S										
Total		0.5%	3.1%	20.5%	48.6%	22.7%	3.8%	0.8%	0.0%	100.0%

Appendix 6.5.1 Calmness for the West Development Plan

As the reference, the calmness for the layout of the West Development Plan has been examined. The location map for estimation points is shown in Figure A.6.5.1.

The computed distribution of wave height rate and wave direction in case of the incident wave direction ESE is shown in Figure A.6.5.2 and A.6.5.3, respectively. The estimated calmness (H_{cr}=30cm) is shown in Table A.6.5.1. The wave intrusion from the tip of the existing South Breakwater is dominant in case of incident wave direction ESE. Due to this, the calmness at the points of P2 to P6 is 94.5% and is less than the target value of 97.5%. To improve the calmness, the extension of South Breakwater is required. However, it is difficult to further extend to southward considering the influence to the coastal impact.

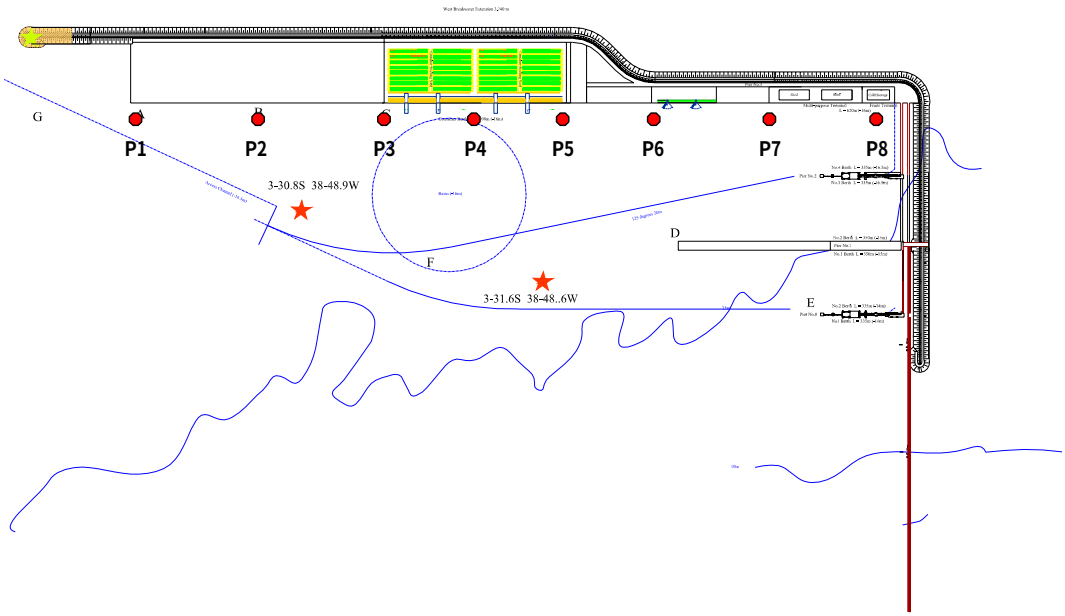


Figure A.6.5.1 Calmness Estimation Points

Table A.6.5.1 Estimated Calmness

Estimation Point	P1	P2	P3	P4	P5	P6	P7	P8
Calmness (H_{cr}=30cm)	99.0	94.5	94.5	94.5	94.5	94.5	100	100

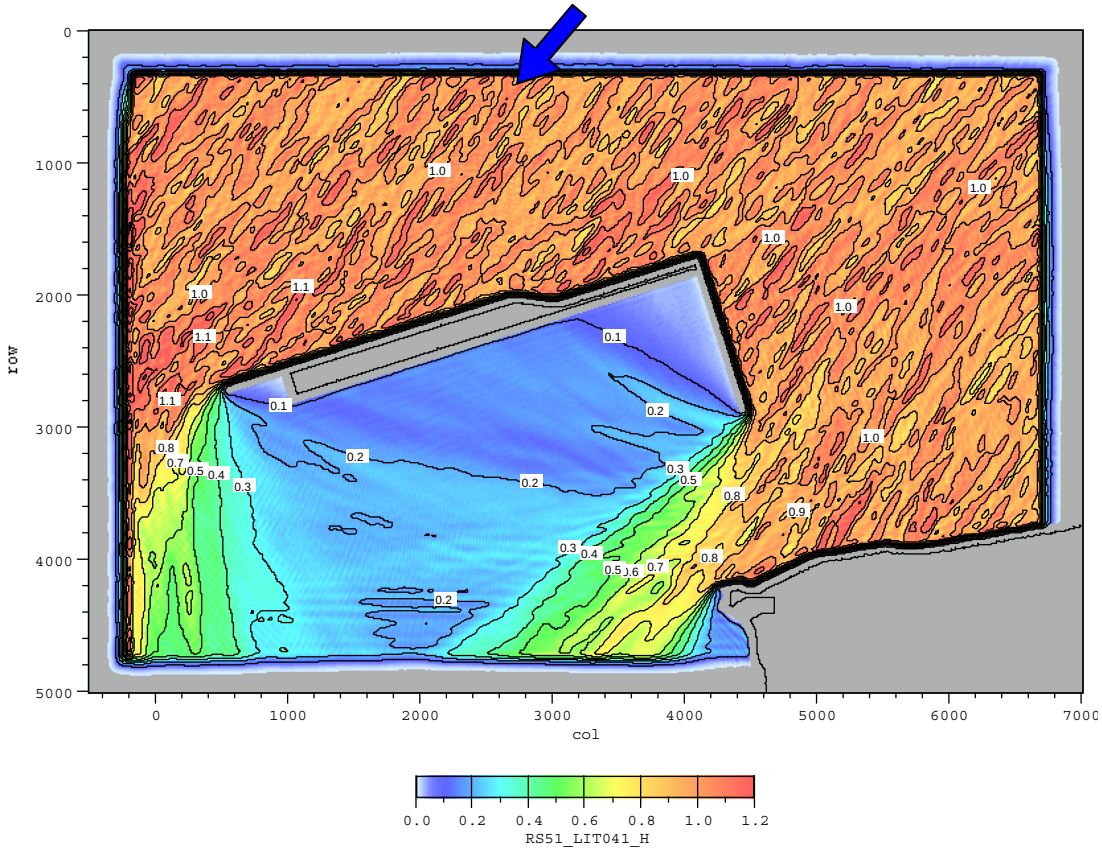


Figure A.6.5.2 Distribution of Wave Height Rate (Wave Direction ESE)

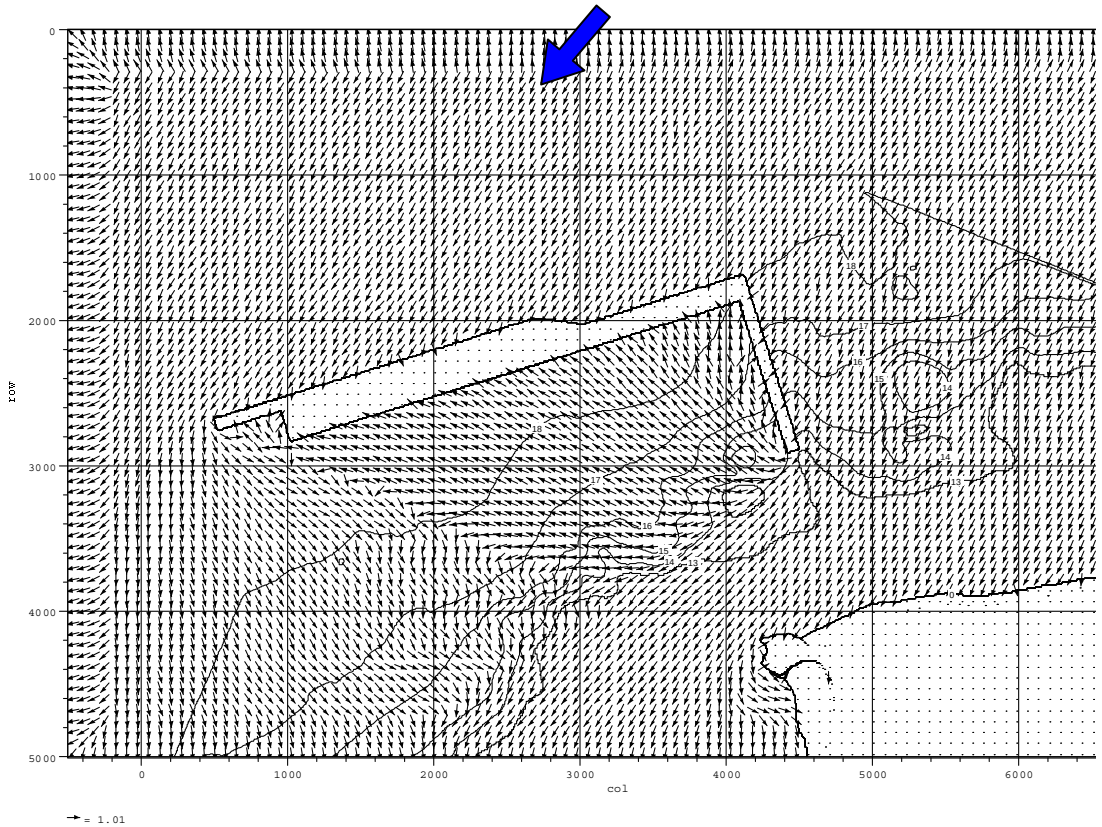


Figure A.6.5.3 Distribution of Wave Direction (Wave Direction ESE)

A.6.5.2 Calmness at the Pier No.0

The calmness at the Pier No.0 is 90.3% in average in the long term development plan of 300 m extension of the West Breakwater, assuming H_{cr}=50cm as the threshold wave height. If the calmness with higher value is required, the further extension of the West Breakwater is necessary to prevent the intrusion of swell waves.

Table A.6.5.2 and Figure A.6.5.3 show the estimated calmness for each different extension length of the West Breakwater. From this, the calmness exceeding the target value of 97.5% is obtained when the extension of the West Breakwater is more than 700 m.

Table A.6.5.2 Estimated Calmness with Different Extension of the West Breakwater

Extension of West Breakwater	Position	Point No.	Calmness (Hcr=50cm)
0m	Head	10	65.5%
	Center	11	79.7%
	Average		72.6%
+200m	Head	10	69.7%
	Center	11	91.3%
	Average		80.5%
+300m (Proposed Long Term Development Plan)	Head	10	89.2%
	Center	11	91.3%
	Average		90.3%
+400m	Head	10	92.1%
	Center	11	91.9%
	Average		92.0%
+500m	Head	10	92.1%
	Center	11	91.9%
	Average		92.0%
+600m	Head	10	91.9%
	Center	11	95.7%
	Average		93.8%
+700m	Head	10	94.9%
	Center	11	99.8%
	Average		97.4%

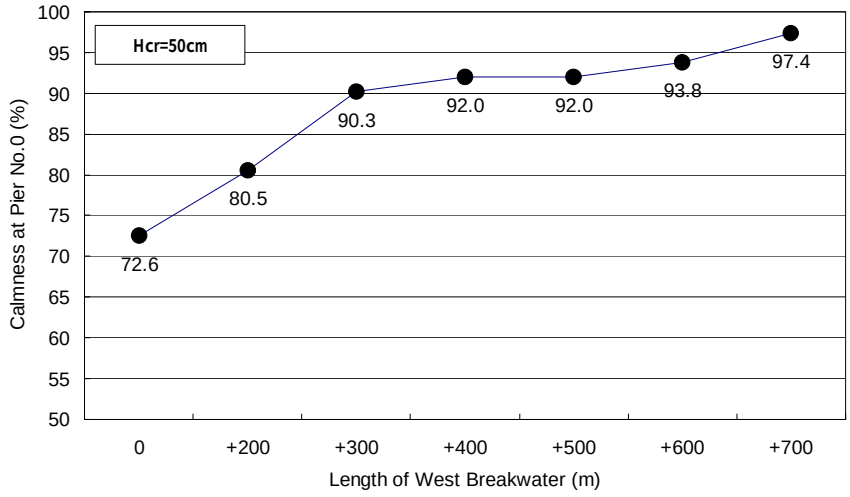


Figure 6.5.4 Estimated Calmness with Different Extension of the West Breakwater

Appendix 8.1 Interview Survey of Social Conditions

1. General

Interview survey was implemented to grasp the social condition and the opinion of local residents. The sampling initially had a reliable interval of 95% and samples error of 5%. 200 surveys were applied, 100 surveys in the urban area and another 100 in the rural area, although the calculated margin of error to has been extended to 7% with this procedure.

2. Measurement

The survey shall be carried out by means of direct interviews using a questionnaire to be filled in by the interviewers. The questionnaire is shown in the following attachment. A team for interview shall consist of an interviewer and a recorder. In order to optimize the survey, a few preliminary surveys shall be conducted before carrying out the full survey. The interview survey results shall be stored using electrical form.

3. Survey Items

The main survey items are shown in Table 1.

Table 1 - Main Survey Items

Content	Item
1. Attributes of Interviewee	Name, Gender, Age, Education level, Occupation, Family Structure, Duration of dwelling.
2. Opinion on the Study on Pecem Industrial and Port Complex Development Plan	- Complain on existing Pecem port and its industrial complex - Type of expected benefits brought by Pecem Industrial and Port Complex Development Plan
3. Anxiety of prospecting Environmental and Social Impacts regarding to development of Pecem port and its industrial complex	- Feared impact on natural environment and public nuisance due to Pecem Industrial and Port Complex Development Plan - Feared impact on social environment due to Pecem Industrial and Port Complex Development Plan
4. Other	Opinions, Requests, Suggestions, etc.

4. Implementation Period

The survey was conducted from 14th May 2005 to 17th May 2005.

5. Result

It is anchored in a great expectation that the CIPP comes to bring relative benefits such as jobs for the local population as it shows the following Table.

Table 2 – Will Pecem Port Expansion bring benefits regarding job creation? - Relation between response for domicile situation

Specification	Pecem Urban Area (%)	Pecem Agricultural Area (%)	Total of Urban and Agricultural Areas (%)
Yes	88.9	79.0	83.9
No	6.1	3.0	4.5
Perhaps	2.0	14.0	8.0
Does not know / did not answer	3.0	4.0	3.5

Source: direct research

The evaluation regarding the expectancy, can also be analyzed by the opinion from local residents in reference to the changes caused by Pecem Port installation, as it shows the following Table.

Table 3 - The changes caused by the Pecem Port installation were (option): - relation between response and situation of domicile

Specification	Pecem Urban Area (%)	Pecem Agricultural Area (%)	Total of Urban and agricultural Areas (%)
Great	16.3	9.0	12.6
Very Good	6.1	2.0	4.0
Good	39.8	36.0	37.9
Regular	15.3	11.0	13.1
Bad	5.1	7.0	6.1
Awful	4.1	1.0	2.5
Did not change anything	10.2	25.0	17.7
Does not know /did not answer	3.1	9.0	6.1

Source: direct research

Despite the evaluation being positive, the numbers show a kind of doubt, and at the time a great expectation that the Port Expansion may create more jobs. Regarding the benefits that the expansion might bring, 72.9% think that it might bring some benefits, 13.6% think that it will not bring any benefits, 6.5% answered perhaps, and 7% did not answered anything, or they do not know. The next Table shows the type of expected benefit for those that had answered "yes" and "perhaps":

Table 4 - Types of benefits that the population expect with the Pecem Port Expansion

Specification	Reply: Yes (%)	Reply: Perhaps (%)
Increasing on sales of goods	11.1	16.7
Jobs creation	69.4	75.0
Enlarge commerce variety	2.8	0.0
To meet new people and to acquire information	0.7	0.0
Increase the number of banks and hospitals	0.7	0.0
Installation of industries	0.7	0.0
Does not know / did not answer	2.1	8.3
To be able to buy a boat	0.7	0.0
Increase of wages	2.8	0.0
To facilitate the exportation of goods	0.7	0.0
Urban life facilities	0.7	0.0
Education	2.1	0.0
Improve and increase public waste collect	0.7	0.0
Increasing the number of real estate constructions and other major constructions	0.7	0.0
Increasing real estate value	1.4	0.0
Better health conditions	0.7	0.0
Enlarge the variety of technical and qualifying courses	0.7	0.0
To facilitate the importation of fruits	0.7	0.0
Benefits to the resettlement area	0.7	0.0

Source: direct research

It is noticed that Pecem population has a great expectation regarding the job creation from CIPP, although they have a sort of mistrust[1] according to the experience that have already had by the Port construction. Port employees and government staff hired some people without any qualifications. Another factor constantly indicated especially by the indemnified families[2], it was the fact of the indemnity (compensation) was quite insufficient. Some had complained that the received money, was not enough to buy nor even the equivalent to the half of the land that had before. Perhaps this explains this mistrust.

Another important factor to be considered is that Pecem population is extremely needy. Low education level also is a characteristic of the relative problems to employment at the CIPP, that, in turn, it demands qualification and specialization, something that the majority of the heads of family or able to work they do not have. The next Table shows the relationship within the family heads.

1. Mistrust: Lack of trust or confidence arising from suspicion
2. Indemnified families: families who got compensation for leaving their houses.

Table 5 - Position of kinship in the family of the head of family for domicile situation:

Specification	Total (%)	Rural (%)	Urban (%)
Masculine-father	52.5	60.0	45.0
Feminine-mother	36.0	29.0	43.0
Son living with his parents	4.0	3.0	5.0
Daughter living with her parents	4.0	4.0	5.0
Grandfather	0.0	0.0	0.0
Grandmother	1.0	2.0	0.0
Feminine living with the mother only	0.5	0.0	0.0
Masculine that living with the mother	0.5	0.0	1.0
Feminine – living with her children only	0.5	1.0	0.0
Feminine – elder sister – living with other sisters	0.5	0.0	1.0
Masculine living with the brother-in-law	0.5	1.0	0.0

Source: direct research

The picture shows a trend in assuring to the man the condition of head of family in the agricultural zone this represents (60%), an usual fact all over Brazil Brazil. In the urban area this trend more is balanced, despite Men frequently appear as head of family. This next Table shows basic education of the family heads:

Table 6 - Education of the heads of family

Specification	Total (%)	Rural (%)	Urban (%)
Not literate (not educated)	23.0	29.0	17.0
Incomplete Elementary school education	47.0	50.0	44.0
Complete Elementary school education	7.0	6.0	8.0
Incomplete Secondary school education	3.0	2.0	4.0
Complete Secondary school education	16.5	10.0	23.0
Incomplete College or Bachelor's degree	0.0	0.0	0.0
Complete College or Bachelor's degree	3.5	3.0	4.0

Source: direct research

The table below shows the professions registered for surveys:

Table 7 - Profession of the head of family for domicile situation

Specification	Total (%)	Rural (%)	Urban (%)
Fishing enterpriser	0.5	1.0	0.0
Civil Servant	4.5	3.0	6.1
Freelancer (with his own settled business)	20.5	21.0	23.2
Freelancer (without his own settled business)	0.0	0.0	0.0
Student	0.0	0.0	0.0
Retired	16.0	14.0	18.2
Farming producer (Rural producer)	17.0	33.0	1.0
Unemployed	4.5	4.0	5.1
Fisherman	5.5	1.0	8.1
Trader	10.5	6.0	15.2
Enterpriser	0.5	0.0	1.0
Caretaker	4.0	3.0	4.0
Maid	1.0	2.0	0.0
Port Mechanic	0.5	0.0	1.0
Welder	0.5	0.0	1.0
Employee in charge of the containers	0.5	0.0	1.0
Employee of Mercury company	0.5	1.0	0.0
Digger	0.5	1.0	0.0
Port operator	1.0	0.0	2.0
Syndicate Employee	0.5	1.0	0.0
Money-changer	0.5	1.0	0.0
Bus Driver	0.5	1.0	0.0
Pension from the parents	0.5	1.0	0.0
Port general assistant	0.5	0.0	1.0
Port Truck driver	1.0	0.0	2.0
NGO assistant	0.5	0.0	1.0
Teacher	0.5	0.0	1.0
Pension from divorce	0.5	0.0	1.0
GTP Cleaner	0.5	0.0	1.0
Wooden Industries employee	1.0	0.0	2.0
Recycling	1.0	0.0	1.0
Cook (cottage houses)	0.5	0.0	1.0
Rapadura's factory employee	2.0	4.0	0.0
Civil Construction (Contractor's employee)	0.0	0.0	0.0
Carpentry employee	0.5	1.0	0.0
Security guard	0.5	1.0	0.0
Representative	0.5	0.0	1.0
Port computer operator	0.5	0.0	1.0

Source: direct research

The large number of freelancers (20.5%) and traders (10.5%) is a result from the lack of registered jobs in Pecem. Therefore many persons because the small number of job opportunities, find as option to open a small commerce, or do "casual jobs", or works as in the civil construction, or housekeeping, or sewing, or plumbing, or do electric services, or sales, just to mention some. The following Table shows the professions of the freelancers registered for surveys:

Table 8 - Profession of the Freelancers

Specification	%
Sewing	4.3
Private classes	0.0
Grocer	4.3
Street Seafood vendor	2.1
Accounting	0.0
Clothes sales	6.4
Beauty products sales	0.0
House appliances technician	4.3
Construction and reform in constructions	38.3
Plumber	0.0
Residential electrician	0.0
Administration of the fishing cooperative	2.1
Part-time maid	4.3
Cook assistant	2.1
Laundry person	4.3
Craftsman	2.1
Hair-Dresser	0.0
Solderer	2.1
Road sweeper	2.1
Cleaner	2.1
Fertilizer vendor	2.1
Car mechanic	2.1
Freight	2.1
Rural worker (does not work for himself)	6.4
Security guard	2.1
Assistant of grocery shop	2.1
Dump truck driver	2.1

Source: direct research

It is noticed that the majority works with construction and restoration of buildings (38%), from within this total there are: bricklayer assistants, construction assistants. The following Table shows the monthly income from the activity performed by these freelancers:

Table 9 - Income of the Freelancers

Specification	%
Up to 1 minimum wage	68.1
From 1 to 3 minimum wages	27.7
From 3 to 5 minimum wages	4.3
From 5 to 8 minimum wages	0.0
From 8 to 10 minimum wages	0.0
More than 10 minimum wages	0.0

Source: direct research

68.1% earns up to 1 minimum wage with his activity and 95.8% earns up to 3 minimum wages. The next Table shows the kind of activity from the local traders:

Table 10 - Activity of the traders

Specification	%
Bar	7.4
Grocery	59.3
Hotel or Inn	3.7
Restaurant	11.1
Ice cream parlor	3.7
Garage (car repairing)	3.7
Clothes store	7.4
Hairdresser	3.7

Source: direct research

Following Table shows the quantity of people that work per residence.

Table 11 – Number of local residents that work per residence

Age Group	Total (%)	Urban Area (%)	Rural Area(%)
Only the Head of the family works	51.8	51.6	46.9
1 to 2 persons work	42.9	45.3	45.8
3 to 4 persons work	3.7	3.2	4.2
5 to 6 persons work	1.6	0.0	3.1
7 to 8 persons work	0.0	0.0	0.0

Source: direct research

As shown in the table above, most of the homes (51.8%) only the head of the family works. This frequency is larger (51.6%) in the urban area. In the rural area for instance, the frequency of one to two people that work besides the head of the family is almost the same frequency of those residences where only the head of the family works. Considering the indicator of 33% of rural producers and of 51.9% of farmers in the area still occupied for the CIPP, usually there is an agreement among the members of the family that they all should contribute with this activity, as to achieve this mentioned balance The head of the family and the other residents usually join in this activity, resulting on a smaller school education of some members of the house in school. The difference of the amount of people who are illiterate people (29%) and the people who have not finish Elementary school education (50%) at the rural areas when compared with the same index from the urban area (17% illiterate and 44% have not finish Elementary school education), may be explained by this factor, because working in agriculture, these people will not have time available and/or interest for school education. That becomes more obvious when observing that in the CIPP area still occupied, the frequency of 1 to 2 working people (67%), beyond the head of the family is larger than the frequency of residences which only the head of the family works (29.6%).

6. Discussion

The general picture shows that there is a great expectation by Pecem's urban population and Pecem rural population regarding the job creation. But, they are a poor population, with little education and wishing a better life. Any benefit, even from performing activities that will not bring personal satisfaction, but at least it makes possible an income to supply the basic needs as feeding and housing, will always be very much welcomed

CIPP was designed to answer to a demand that was not necessarily part of the Pecem's community's wishes. It is hard to think that a community comprised of fisherman, farmers and housekeepers wanted such an enormous enterprise. Specially because to work in the industries implemented or promised to be implemented it is necessary to hold a qualification that nobody has at Pecem. According to the Tables shown, in spite of the accomplished investments, courses conducted and implemented projects, the demand is larger than the offer. This reality generates a mixed of distrust, fear and expectation, that may be either positive as new job generation, or negative when the possibility of losing their individual patrimony.

It is worth for better understanding we know the meaning of demand for job. The idea of work is usually different from the job conception. The work requires a material or intellectual exercise, an effort, hard work, usually followed by a commitment with care to use an effort for execution of the work. It is the result of multiplication forces, articulated with afflictions, emotions, desires, cares, enterprises and a perfect understanding of techniques.

Appendix 8.2 Minutes of Stakeholders Meeting

(1) Objective

JICA Guidelines for the environmental and social consideration requires that the formulation of the development plans should be done in a transparent manner. In the process of elaborating the long-term development plan, opinions of inhabitants and various agencies concerned with the projects should be taken into considerations. For that purpose, stakeholders meeting was held and the opinions of them were reflected in the plan.

(2) Dates and Venues

August 16, 2005 (Tuesday), Participative Group of Work (GTP)

August 22, 2005 (Monday), Ceará State University (UECE)

(3) Program and Time Schedule

August 16, GTP

Time	Program
16:00-16:10	Opening Speech (Mr. Luis Marques-GTP-, Portuguese)
16:10-16:25	Background of the Project (Mr. Ney Cardoso-SEINFRA-, Portuguese)
16:25-16:40	Environmental and Social Considerations (Mr. Shinichiro Tanimoto, -JICA Study Team-, English/Portuguese)
16:40-18:10	Public Comments and Suggestions (moderated by Dr. Divaldo Rezende-Ecologica-, Portuguese)
18:10-18:30	Closing speech (Mr. José Roberto-CEARAPORTOS-, Portuguese)

August 22, UECE

Time	Program
8:30-8:50	Opening Speech (Dr. Jader Onofre and Dr. Luis Eduardo -UECE-, Portuguese)
8:50-9:40	Strategic Environment Evaluation of CIPP and its Direct Area of Influence (Dr. Marcos Nogueira-UECE, Dr. Fausto Nilo-UECE-, Portuguese)
9:40-10:00	Interim Report of JICA Study (Dr. Kouji Kobuneto-JICA Study Team-, English/Portuguese)
10:00-10:10	Break
10:10-11:30	Comments and Suggestions (moderated by Dr. Luis Cruz-UECE-, Portuguese)
11:30-11:50	Closing speech (Dr. Luis Cruz-UECE-, Portuguese)

(4) Participants

The participants are as follows;

GTP

- Representatives of residents,
- Fishery cooperative,

- Enterprises and restaurants,

UECE

- Universities,
- Industries
- Other relevant (administrative) organizations

(5) Presentations and Discussion at GTP

1) Presentation

Mr. Ney Cardoso (SEINFRA) discourses about the background of the project. He reinforced the importance of the support from the federal government, and explains what already has been done concerning the different types benefits such as highways, railways, water ways, etc. He mentioned the importance of the Steel Mill to the area and to the economy.

Mr. Shinichiro Tanimoto (JICA) explained about the socio and environmental conditions, guidelines, and objectives for of these considerations. He presented through slides and oral explanations what has already has been done concerning the environmental issues as well as the changes caused by Pecém Port construction, and he finished his speech by explicating the objectives of the study conducted by JICA.

2) Discussion

Mr. Júlio Cruz (Small Businessman) "good afternoon my name is Júlio Cruz, I am a Small Business man here in Pecém, I live here at about 17 years; the project showed clearly that a change on the coast line will happen, also the project revealed that this sort of change would be protected by groins, etc…so my question for you is: even with the intention to protect, will the State Government really compensate due to the changes on the coast line that may come?**"**

Mr. Ney Cardoso (SEINFRA) explained that the government will do an intervention only if all the conducted studies indicate the countermeasures protection, and that the objective is not allow the destruction of real estate, beaches etc. the government is really worried about the compensation itself; he said he is really concerned to prevent this kind of disaster. He finally said that is any damage occurs the government will do the compensation.

Mr. Júlio Cruz (Small Businessman) "that's great, because makes clear the government position regarding the compensation matters. But of course there are some kinds of damage that cannot be measured; for example if I break this chair, I know how much it is, because I can buy a similar one at the market, because I know how much it costs at the market, but there are some damages that are difficult to be measured, for example it was mentioned within the project that natural fishing environment would suffer some changes, then I ask again; how should we measure this and what kind of compensation will be pay to the local fishermen, and what kind of compensation will the government pay for those who live of fishing?**"**

Mr. Ney Cardoso (SEINFRA) explained that some measures have been executed in order to avoid this situation and he said that the fishing on the area has increased a lot after Pecém Port construction.

Mr. José Roberto (Cearáportos) said that the port and the fishermen community must exist harmoniously, and this coexistence must improve day after day, and Cearáportos was aware that the port installation would generate more fishing activity, and as consequence more boats would appear on the surrounding areas of Pecém Port. He reinforces that Pecém Port came not to complicate the lives of the fishermen on the contrary, came to facilitate their lives.

Mr. Célio (Catholic Community Member) "good afternoon I live at Matões and I belong to the Archdiocese of Fortaleza and I am former president of the metalworker union, anyway…because the first stage of the project specially concerning the relocation of locals, because when you mention that the relocation must be done in order to start public works, you mentioned that this measure was done to avoid the risk of speculators buying plots of land, but then we experienced this same thing at an area called Parque Genibaú in Fortaleza where the government used this same solution, I mean relocate families and avoid speculators buying plots of land in there, then here we have the experience that the government paid at about R$ 300,00 and because of this we have here in Pecém senior citizens who were famous and known within the community that passed way, we featured 17 deaths of famous senior citizens, anyway I am worried because some say that this measure is done to avoid that strangers purchase plots of land, but then what happened by the first stage is what I have already mentioned. Another thing that I would like to mention is the employment matter, we have seen this huge infrastructure and the majority of job positions and if I am not wrong almost 90 percent of positions where occupied by people from other Brazilian states, such as Minas Gerais, Piauí, Maranhão, Bahia, and surely just a few job positions where left for the locals, meaning that a minority of the local labor force was used, then we were discussing among ourselves, when a contract is sign with a certain company (at least some States of Brazil do that) one of the clauses mentions that employment is guaranteed for the locals of the recipient state or municipality…so I ask once again will you expropriate local residents for future projects? What does the State Government thinks about situation of the ***Anacés*** community? I mention them because the government created three resettlements, and these people are dwelling on the middle of nowhere, quite distant; and just to let you know how hard is their situation that they are facing, with the sale of one thousand bunch of parsley and spring onion, this people only collect the amount of R$ 60.00 which is shared among 27 families…so we become worried about that, and keep thinking: what kind of development is this? And also we continuing discussing how negative was the impact caused from this first stage….How you are going to solve these problems? That is why I think is important the participation of the community and community leaders on the discussion of these matters…the progress is very much welcomed, since it respects the people as well as it coexists harmoniously with the people, and with environment; so that is what we would like to disclose in here, also warning the community about this and at the same time asking once again, will the government expropriate local residents for future projects? What is going to be the condition of the people who lost their properties, plots, etc? **"**

Mr. Ney Cardoso (SEINFRA) said that he appreciates the comments from Mr. Célio because they reminds him of an import topic of the project itself – the magnitude of the project – he mentioed that Mr. Célio is not very informed concerned the employment and job positions and just a few positions where occupied by very skilled persons from, who actually are unique in Brazil, because by the time of the construction this kind of qualified professionals where not available in Ceará. He said that regarding the resettlements the government is really worried about avoiding the acquisition of plots of land by the speculators, and concerning that Port itself there is no necessity of expropriation of local residents, but for the Industrial stage the locals are the one who will decide. He said that right now there is no necessity for expropriation by the government.

Mr. José Roberto (Cearáportos) reinforced the importance of the training and preparation of local professionals in order that on a second stage of the port construction they might be ready to be employed. That is one of the main objectives of Pecém Port administration, to create jobs for the local community. He said that is necessary that the locals organize themselves and inform to GTP their availability as well as how much qualified and prepare they are, but this must happen before the job opportunities arrive, otherwise they might miss the opportunity of be employed.

Mr. Célio (Catholic Community Member) "I would like to ask something else regarding what you have just spoken…does the State Government boasts any kind of project for training and/or preparation of locals, I am telling you that, because there is already centers such as SENAI, SENAC, as well as NGOs that have been working with this…anyway, as you know there is a lot a people working with handcrafts within this area. What could be done in order to improve this handcraft activity? That is what I wanted to say, by the way what about the **Anacés** community situation? You have not done any comment regarded to that!**"**

Mr. Ney Cardoso (SEINFRA) said that although some work has been done, the government must not stop to bring all kinds of improvement and benefits to the local community.

Mr. Luis Marques (GTP) said that the GTP is already aware of the necessity of training and preparing of the local labor force, and that GTP has been assisted by SEBRAE as well as CVT regarding the conduction of some training courses. He also mentioned that a number of 200 had already been trained and who now are skilled professionals, and nowadays these professionals surely will be used by the installation of the industries.

Ms. Ilafaiete (Local Resident) "I am a native, daughter of a fisherman, I have nine brothers and thanks to this gentleman, and although I do not know who he is, I liked him a lot, and the reason why is because he reinforced a lot the necessity of training through courses. Talking about these courses, I must be quite honest to say that nowadays some of my brothers are working because now they are skilled professionals, and me myself would like to reinforce the necessity of theses courses, since my people really need that very much, specially after we had faced the consequences due to losing of job opportunities, and what they said was that Pecém population is was not skilled to develop some kinds of job. After that we could prove to them that we are able to develop any kind of job, and for instance there are some very good professionals within the companies. Anyway I would

like to know from the study team is concerned about the city infrastructure, since we know that the city looks quite nice, with flowers and public gardens, anyway I feel the necessity for good hotels, restaurants, and other facilities, I can mention that some visitors come to our city but they do no find facilities, such as ATMs; I also would like to know if the group is concerned about the beach, I mean the beach here is so beautiful and then there are no facilities such as kiosks, restaurants, in order that tourists may come and try our local specialties and enjoy themselves; anyway there is just one kiosk on the beach, at least myself miss a better structure regarding facilities. As we know you were concerned about the beauty of our city, that's nice! But then I must say again that visitors like our city but they don't come more often because they can not find all the major facilities, in here. I think the state government or even the municipal government should care a bit more of my city. That's it I would like to know if you have a project related to all this?**"**

Mr. Ney Cardoso (SEINFRA) said that what was mentioned by Ms. Ilafaiete is an opportunity that might be explored; and said also that these kind of business must be organize by themselves, because the responsibility of the government is related to other subjects such as education, sanitation, health, infrastructure, etc. He commented that one the major concerns of the government is to train and prepare this community for further opportunities, in order that the locals themselves might establish restaurants, kiosks, etc.

Mr. Eduardo Alcântra (SEMACE) asked what would be the sediment transportation like?

Mr. Ney Cardoso (SEINFRA) said that he does not know yet, how this transportation will occur. He said also that, if may come necessary this action, an EIA/RIMA study will be required.

Mr. Aragão (Retail Trader) "my name is Aragão I am a retail trader, we here face a serious difficult concerning the sale of goods, specially because the lack of bank facilities, the city is still quite behind regarding modernity. I would like to know what possibility of bank facilities for our city is?**"**

Mr. Ney Cardoso (SEINFRA) said that he is not sure about this subject, but they may help on this matter. And he added that in order to the city develop, bank facilities must be settled in Pecém.

Mr. José Roberto (CEARÁPORTOS) said that Cearáportos has been trying to bring bank facilities to the city, but it is a quite difficult matter; and he said that Cearáportos will be keep trying, and won't give up.

Mr. Ney Cardoso (SEINFRA) said that really bank agencies in Pecém are a strong necessity, and that Cearáportos is leading this request, but more and more people must join this requirement for bank facilities.

Mr. Shell (Fishing Engineer – Netuno Foundation) he asked what is the contribution of the exotic species within the Ports marine biota, he asked also if they have seen any exotic species within the area as a result of the ballast water from vessels, and asked the JICA to team to mention what kind of studies there are regarding to this subject on other Ports (percentage, contribution, etc). He mentions that the Netuno Foundation has developed already an experience (for

years already) with the support of the State Government, Cearáporto on *Coquille Saint Jacques* breeding and another kind of pearl beneath the Bollard no 86, and he affirmed that they achieved excellent results. He finished his speech by saying that this experience expects to achieve a goal of pearl-farm, creating more jobs for locals.

Mr. Shinichiro Tanimoto (JICA Study Team) said that in Japan there are some exotic species as a consequence of the ballast water; he also mentioned that this kind of control is quite difficult and that in is not that much affected with this problem, he also mention that this seldom affect fishing, and that the important is to monitoring and controlling and adopt the necessary measures when necessary.

Mr. José Roberto (CEARÁPORTOS) explained the meaning of the term Ballast Water (water that is placed in the hold of a ship to enhance stability), and he said that Pecém Port does not face this problem.

Ms. Janaína (Student) "My name is Janaína I am an student and I want to say that you did not respond anything concrete, and I would like to know as a student what the projects or proposal that you may have in order to use the local young labor force?! I would also want to know what are the consequences that Refinery may bring such as air and water pollution, and chemicals that are bad to our health?! I do not mean to insist, but what is your opinion about the ***Anacés*** community, since you have not said anything yet about them?**"**

Mr. Ney Cardoso (SEINFRA) said that Pecém population training and preparation must be improved, in order that companies which may come, contract the locals, since one the requirements of these companies is employ mostly the skilled professional. He also reinforced that the local aptitudes must be very much developed, so the locals won't be depending only on industry jobs. Regarding the ***Anacés*** community he said that the government does not intend to create artificial solution to protect this or that segment because this kind of protection does not last the desired sustainability. He also mention that the special protection towards this community won´t happen because it sounds like domination instead of aid. The government will protect them in different manners such as allowing them to decide which kind of life style they want to take. He finalized his speech by saying that the government will support them also if they want to develop any kind of labor activities that suit them, such as agriculture, etc.

Mr. Pedro Calvo (Grocer) "My name is Pedro Calvo, I have been living here for about two and a half years, I have an small grocery shop; I use to be an airplane pilot, I flew for Bamerindus Bank for ten years. I lived seven years in the State of Acre, Rondônia, and I have flew always within the countryside of Brazil, so I must say that I am a countryman. (laugh…) I finally decide to be a grocer here in Ceará, I went to Fortaleza but I did not like, then I decide to move to Pecém. My family moved from the State of São Paulo to the State of Paraná and started to working with Coffee Beans, then the coffee industry in Paraná developed hugely, we decide to move to the State of Mato Grosso to breed Soya beans, and then the Soya beans market developed hugely, we must notice that the majority of the population do not have any benefits from these developments, otherwise the population in Brazil today would not be of poor people. I traveled all over Brazil, and from my experience I find the ostrich breeding would be a good manner of developing the Northeastern economy, we product the grains for feeding these

animals in the Centerwest region of Brazil and the animals can be raised in here, due to the fact that they are very comfortable in here. We must be sure that the ostrich breeding will comprise and require a lot of skilled workers and that's to benefit the people specially because the exportation of the ostrich meat and derivative products, that's my biggest expectation…and I would like to ask if there is any chance or possibility for this matter to grow along with the Steel Mill or the Port Expansion?**"**

Mr. Ney Cardoso (SEINFRA) said the struggle to bring the refinery is an old desire of the State Government. He said also that the "home work of the State Government is done", the only thing missing is the "home work of the actors". He mentioned that the Refinery construction and operation is expected to happen very soon.

End of the discussion.

(6) Presentations and Discussion at UECE

1) Presentation

Dr. Marcos Nogueira (Professor, UECE) he explained in very precise and detailed manner what that the So the main goal was to protect the biological diversity even with the installation of the CIPP within that, and also the objective of the study was to contribute for the rational use of the land and assure the maintenance of productive capacity of the natural resources and environmental sustainability.

Dr. Fausto Nilo (Professor, UECE) presented the socio-economic estimate of the project. He also mentioned the problem faced by the municipality of Fortaleza is urban concentration for more than a century which is a result of the non creation of opportunities for the life quality development in the country side. It was also explained by him in very detailed manner the territory organizational plan within the AAE context.

Dr. Koji Kobune (JICA Study Team) presented the interim report and did a concise presentation by means of graphics and tables of the importation and exportation of products through Mucuripe and Pecém Ports and explained the impact of the port on regional economy. He also presented the origin of the exportation and importation of the products from the Pecém hinterland. Was also mentioned by him the preliminary strategies of Pecém Port, that summarizing were the followings: facilitate the importation of products for residences; to serve the neighbor states; to promote the logistic services; and to promote the container business. It was explained by him the zoning, monitoring, and the sustainable development zones. He also explicated through graphics the logic sequence of the objective of the AAE study. Dr. Kobune also showed the basic background of the Port Development Plan.

2) Discussion

Mr. Raul Barbosa (DOCAS Company) "first of all I would like to congratulate all the representatives here presents, for instance SEINFRA, UECE, and JICA Study Team experts who are developing a marvelous job, and must be very much congratulated for that. The strategic planning is one of the most important things

on a Port context, our State had the initiative of studying this scenario with a prospect until 2022 as well as 2012, meaning long-term and short-term planning, this is a very important issue because materializes the view of the State of Ceará on the Port context, those who do not see and do try to reach this future on a daily basis have the chance of someone else take your place. We from DOCAS company are related to the Ministry of Transports, and this can sound strange but since 1990, when PORTORBRÁS a company which was in charge of port studies in Brazil, closed down, from that time up to now 15 years have already passed and the Ministry of the Transports do not have an strategic plan for the Brazilian Ports; each port developed its own study, the DOCAS company studied its own strategic agenda until 2008, but it is very much interesting the work you have been developing in here, gentlemen. With the law no. 8,630/93 and brought to the port scenario the port operator, the private port tenant, mixed terminals, etc without any doubt port productivity increased, but what we could not detect is if this achieved productivity resulted also on the decrease of the port costs, if for instance the client is really having benefits with the law 8,630; this law establishes the competitiveness of the ports, but here in Ceará the ports are not competitive ports, I always defended the idea that they are complementary ports, it means that they help one another with the benefit of the State of Ceará; cargoes that today go to Pecém Port go to there due to its depth, due to the big vessels that berth in there; the port of Fortaleza is limited in this matter of depth, and some works have been considered in order to expand its depth, but then, that's not the way of compete to Pecém Port. Pecém Port has a much more advance view on the future than we at Mucuripe Port, and I just have to congratulate and to thank to the technicians that are developing this study for the State of Ceará. Thank you**"**

Mr. Praxedes (Engineer, CAGECE) "I am interested to know what's happening concerning the port licensing processes by IBAMA? Because the last thing I heard was that the whole was still in progress**"**

Mr. Ney Cardoso (SEINFRA) said that the environmental issue, was always an environmental licensing issue. He also said that since the beginning of the project a vast range of environmental studies were conducted, and he complemented that a range of environmental studies like that, he himself have never seen within Brazil. He explained the chronology of the licensing process and procedures, and the port is fully licensed.

Mr. José Roberto (CEARÁPORTOS) said that they have already requested the renewing of the licensing. He also reinforced the importance of the participation of UECE on the monitoring studies, required by IBAMA.

Dr. Luis Cruz (Professor, UECE) "I would like to do a comment from what I have observed on the Progress Report that was given to me by Dr. Kobune. While I was reading the above mentioned report I noticed some points that, and I would the attention from Mr. Kobune, Professor Marcos Nogueira, as well as the attention from Professor Fausto Nilo regarding to what is written on page **f-3** says as follows: 'the State of Ceará it is one of the poorest Brazilian States due to fact the most of State is comprised by dry, rocky and sandy areas and because it does not boast a large river to supply water to the State and also the fact that also the most part of lands on the state do not be adequate for agriculture is also a plus for that condition. This question surprised me, since it appears very determinist concerning the poverty situation found in Ceará, and that from my Geologist point

of view is not related to the fact of the State feature dry, rocky and sandy areas, on the contrary this is due to the background of State, its history and also for the domain of the militarism during centuries, in this manner we have the actual explication for situation that is seen nowadays. I would like to ask to Dr. Kobune, what is the source of this information? Another question, that I would like to ask is because when it is mentioned that Mucuripe Port is the fifth more important within the Northeastern region, behind Itaqui Port and Suape Port, so I doubted if is really the fifth in the of Northeast Brazil; this is mentioned on page **e-4**.**"**

Dr. Koji Kobune (JICA Study Team) firstly he apologized for the short analysis of such important issue, we believe that because this State has some rocky, dry and sandy areas the agriculture here did not develop as much as the agriculture on the neighbor States of Pernambuco and Bahia. Regarding the second question Mucuripe Port is the fifth port of the region on cargo volume.

Dr. Luis Cruz (Professor, UECE) "I believe that the first question asked is important for the interpretation of other phenomena; worries me when it is mentioned that dry, rocky and sandy areas are the factors for the sub-development and poverty of Ceará. I believe that this poverty and sub-development are the man creations. Of course we have droughts, but then the drought itself is used by politicians as the excuse for the poverty and sub-development. As a Geologist I think it would be very interesting and necessary a discussion on this matter. Certainly because the limited time we have here, that won't be possible.**"**

Dr. Koji Kobune (JICA Study Team) said that the soil condition and the weather are sort of disadvantages, when it is compared to the agriculture business of Bahia which has the advantage of São Francisco river. He also mentioned that on the other hand the State of Ceará attracts industries to balance this situation.

Dr. Luis Cruz (Professor, UECE) "another issue that is mentioned on the page **r-9** of the report says that prospected area for the CIPP is 350ha, an area featuring the same size of Fortaleza city, I believe that there is little misunderstood, isn't so? It also says on the following paragraph that FIEC proposed to relocate the EPZ from Maracanaú district to the CIPP area, but then this is maybe a different project, since EPZ do not exist in the Brazilian territory no more since the President Collor government; and by the time it was a huge project, I personally studied this project, and the previous EPZ today is part of the industrial district itself. Other import thing on the report seen on the following paragraph is what Professor Fausto Nilo had already mentioned, regarding the creation of slums and development of criminality around the port area. I can mention also that something worth of attention is written on page r-11 which says that the one of the port development objectives is to serve the residents in the hinterland of Pecém port importing consumer products through the port. From what I have heard within the Pecém port is that the port is privative and not an open port. So would this fourth item here be true when considering the present Pecém Port plan? Or would it be only a proposal of changing the model of privative port to an open port model?**"**

Dr. Koji Kobune (JICA Study Team) answered that regarding the relocation of the EPZ to Pecém when this report was written they did not understood completely the terminology used. He said that it was understood that Maracanaú

was a industrial zone and that those industries wanted to relocate to be close to Pecém port facilities.

Mr. Ney Cardoso (SEINFRA) did a very brief and explanatory comment regarding the terminologies private port and privative port, according to the law point of view.

Mr. José Roberto (CEARÁPORTOS) explained in a very detailed and precise manner the terminologies private port and privative port, also according to the law.

Mr. Raul Barbosa (DOCAS Company) also did a complementary comment on the terminologies private port and privative port.

Mr. José Roberto (CEARÁPORTOS) he mentioned that the resources for Pecém Port construction were originated from the State Government and made extra commentaries regarding the use of a privative port terminal.

Mr. Ney Cardoso (SEINFRA) made the final comment regarding the terminologies private port and privative port.

Dr. Luis Cruz (Professor, UECE) "I wasn't thinking about a private port on my questioning, actually the port policy which you have mentioned is known by me, but what I really wanted to say was the fact that Pecém port was connected to the industrial complex, for instance there is a proposal for transforming that industrial district on a marshalling district, then my question was: 'to follow the hinterland model wouldn't interfere on preliminary objective of the port, that was to assist the two large industries the refinery and the steel mill? So that was it, but right now it is very clear. Thank you.**"**

Mr. Silvio (CEARÁPORTOS) "actually I would like to comment on what the Professor Fausto Nilo said regarding main road that access Pecém port, the Estruturante Highway. Professor you must know that for those like me that on a daily basis travel to Pecém is easy to observe that many houses have been constructed along this road. It is worth to mention that some time ago, I think that two years time, the County Hall of Caucaia have built 48 houses; and this reason for being worried because the very soon will be seen children playing by the road side, then the first car accident involving pedestrians will happen, then the TV will pop there, the mother will be crying in front of the cameras, then she will complain the lack of a road reducer (quebra-mola). So I think that maybe should be the proper time for the traffic department start to do something in order to avoid these problems or even you here in Fortaleza somehow act concerning this matter**"**

Dr. Luis Cruz (Professor, UECE) mentioned that in 1995 while himself, Professor Marcos Nogueira and Professor Jader Onofre were participating of a National Coast Management convention in the municipality of Caucaia, they were told about the Pecém Port project. He said that by that time they did what they called "Carta do Ceará" (Letter from Ceará), and he mentioned that this very letter was for a certain period of time hidden, because it might cause some displeasure to some SEMACE members, because of political matters. He mentioned the reason for this letter was that they were facing a project that was starting and that by that time would not be compatible with a tourist zone. The he asked: wouldn't

that bring on the study conducted by you a problem regarding tourism and how would the tourism perform on the marketing dimension?

Dr. Fausto Nilo (Professor UECE) he commented in s very detailed manner what is necessary when a port project is done. He said the all the major facilities must be available to the locals when a project like that is contemplated. He also said that is not correct that a port complex make unfeasible the lives of people and tourism, the correct thing is to design all this in such a form that a coexistence of all these factors may happen, creating so a huge complex of combined facilities. He mentioned that is exactly what his team has been developing. He said that there are designs that make possible the development of many communities with proximity of the work places, which less gasoline will be used, whose nature will be preserved, and that coexist with the tourism and many other facilities.

Dr. Marcos Nogueira (Professor, UECE) mentioned that the coastal areas seen previously on the map showed by him, were areas that have a great potentiality for tourism would be protected. He said that the sustainable use zone would be occupied by the installation of the complex.

Ms. Ana Maria Matos (Population Researcher) "since 1996 I have been conducting surveys on Greater Fortaleza population, and I have a masters dissertation in geography and my major was economy, but I studied population. Anyway I think you have already received my contribution as my masters dissertation, but I would to comment about the discussion of population mobility; the history of the native people of Ceará is connected to the social and geographic mobility, there is a desire of leaving the center of Fortaleza, a desire of go through territories such as Caucaia, Euzébio, Aquiraz, as was mentioned before by Professor Fausto Nilo, and when this is done in a daily basis becomes a tiring task, but that is the only option for surviving. For instance, I can mention that at Pecém I studied since 1995 when I was part of the State Government; from 2000 to 2002 I conducted five surveys and what I could find out was the strategy of mobility is an attempt of social mobility, and trying to stop this is the same of trying to prohibit someone to develop and improve his life, and was very interesting the fact the migration to there happened in different ways, from Fortaleza, from the countryside, from other states. Many times while there, I thought to myself that due to the opening of many inns, restaurants, grocery shops, etc, Pecém would really develop, but then on another stage it looked like a ghost town; then this is a feature of the mobility, I think we must plan, I myself defend the planning, but the planning must done taking into consideration the aspect of the mobility, which is an aspect that cannot be controlled, since it comes from within the groups due the necessity of surviving. We must work with this variable, I know that the state government tries to decentralize to another regions, but sometimes this do not work out, because the population is subject of its own history; then I find myself thinking that if the industries were set, people from all over will appear, and also people will leave; because people normally go to a place with a expectancy, but they are not always achieved; for instance SINE- São Gonçalo do Amarante had a huge number of labor, superior to the number of vacancies, of course that is the natural statistics in the whole world, but then how a fisherman or a farmer will become an industry worker, suddenly? In order to that happen they must be trained and able. So in my opinion that area, I mean Pecém, will be a territory of foreign due to the amount of aliens working there. Therefore, we should think

about the local population, certainly you do, I do. From my point of view the communication between the Government and the population wasn't satisfactory, for instance the government had some instruments such as the GTP. But why I said that communication wasn't good as suppose to be? Because a lot conflicts happened, and because this participative budget always led the way, I don't know about this new you one you have been planning, but in my opinion it was terrible, I expected something else.

Dr. Fausto Nilo (Professor UECE) did some considerations about population physical and social mobility. He also said that the population settlement depends on the meet with the convenience favorable geography and he said that the migration are going to happen for sure.

End of discussion.

(7) Participant List

1) GTP

-	FULL NAME	ORGANIZATION
01	Mr. Eduardo Alcântra	SEMACE
02	Mrs. Albaniza Rocha de Souza	Pecem I Love You
03	Mrs. Antônia Pereira Mendes	Coqueiro Community Association
04	Mrs. Iracema dos Santos Lima	Coqueiro Community Association
05	Mrs. Auricelis Maria Ferreira Rodrigues	PR. Association CAUIPE
06	Mrs. Maria da Paz Ferreira Lima	Coqueiro Community Association
08	Mrs. Ana Maria de Alcântra Ferreira	PIAPORA Residents Association
09	Mrs. Maria Nair de Alcântra	PIAPORA Residents Association
10	Mrs. Maria Eva Siqueira de Moura	Pirapora city
11	Mr. José Wellington Ferreira Mendes	Pecem Theatre Group
12	Mrs.Brenna Kelly Freire Paiva	Pecem Theatre Group
13	Mr. Naeloon de Souza Silva	Pecem Theatre Group
14	Mr. Nailoon de Souza Silva	Pecem Theatre Group
15	Mrs. Ana Flávia Bernardo Alves	Pecem Theatre Group
16	Mrs. Vany Alves de Azevedo	Pecem Theatre Group
17	Mrs. Adriana da Silva Lima	Pecem Theatre Group
18	Mr. Francisco Antônio Tavares	Participative Group of Work
19	Mr. Silvio Roberto T. Monteiro	CEARÁPORTOS
20	Mrs. Lucineide M. Gomes	-
21	Mr. José Ferreira de Souza	-
22	Mr. Paulo César Sousa Santos	Military Police
23	Mr. Eduardo César Lima	-
24	Mr. Arlindo F. dos Santos	-

25	Mr. Júlio P. Cruz	Porto do Pecém Restaurant
26	Mr. José Aragão de Lima	-
27	Mr. Marcelo Tavares Torres	Netuno Foundation
28	Mr. Rafael Marques de Souza	Pecém city
29	Mr. Francisco das Chagas de Sousa	Pecém city
30	Mr. José Ribamar da Silva	Pecém city
31	Mr. Antônio Marcelo P. de Sousa	-
32	Mr. Francisco Deltimo	Pecém city
33	Mr. Cícero Silva	Pecém city
34	Mr. Raphael Correia de Oliveira	Pecém city
35	Mr. Reginaldo Granjeiro da Silva	Pecém city
36	Mr. João Ferreira M.	Forquilha city
37	Mrs. Maria de Fátima A. Freitas	Forquilha city
38	Mrs. Katiane Vieira Gomes	Pecém Families Association
39	Mrs. Glaciene R. Gondim	Pecém Families Association
40	Mrs. Antônia Maria Oliveira Silva	Pecém Families Association
41	Mr. Francisco Humberto do N. Duarte	Pecém Families Association
42	Mrs. Maria Auxiliadora Spinosa Braga	Pecém Families Association
43	Mr. Francisco Célio de Souza Parente	Migrant Care Catholic Division
44	Mrs. Maria Luzinete de Brito	Migrant Care Catholic Division
45	Mrs. Joselina Maria Lima da Silva	B. das Carnaúbas Community Association
46	Mr. Francisco Iran da Silva	Matões Trade Development Association
47	Mr. Reudo Ferreira de Matos	-
48	Mrs. Maria Ateiza M. Mourões	-
49	Mrs.Adriana Sampaio de Azevedo	Pecém Families Association
50	Mrs. Lídia Moreira Almeida	S. Luis Gonzaga Diocese
51	Pe. Antônio Alves de Lima	S. Luis Gonzaga Diocese
52	Mrs. Maria Jovelina Gomes da Silva	SEMACE
53	Mr. Calixto Alves de Souza	Coité Matões Community Association
54	Mrs. Rosa Amélia do Monte Alves	Coité Matões Community Association
55	Mrs. Renata Maria do Monte Pereira	Coité Matões Community Association
56	Mr. José Carolino de Souza	Novo Torém Association
57	Mr. Gilmar de Lima	Novo Torém Association
58	Mrs. Maria Nazareth Matias	Pecém city
60	Mr. Francisco das Chagas Costa	GTP
61	Mr. Fábio Fernando Pe.	SDE
62	Mr. Etelvino Lima	SEMACE
63	Mr. William Nogueira do Berro	CEARÀPORTOS
64	Mrs. Elizeuda Lobo	SINE / IDT

65	Mr. José Roberto C. Serra	CEARÀPORTOS
66	Mr. Eduardo Ney F. Cardoso	SEINFRA
67	Mrs. Márcia Lucia Oliveira Coutinho	SEINFRA
68	Ms. Luciana Pessoa Otoch	JICA Study Team
69	Mr. Luciano N. Diniz Alencar	JICA Study Team
70	Mr. Shakir Dixon	JICA Study Team
71	Mr. Yugo Otuki	JICA Study Team
72	Mr. Susumu Onaka	JICA Study Team
73	Mr. Mitsuo Sato	JICA Study Team
74	Mr. Shinichiro Tanimoto	JICA Study Team
75	Mr. Koji Kobune	JICA Study Team

2) UECE

-	FULL NAME	OCCUPATION	ORGANIZATION
01	Mrs. Márcia Lúcia Coutinho	Technical Assistant	SEINFRA
02	Mr. Francisco Carlos M. e Silva	Technical Assistant	SEINFRA
03	Mr. Luiz Cruz Lima	Professor	UECE
04	Mr. Francisca Gonçalves	Geographer	UECE
05	Mr. Silvio Roberto Monteiro	Technical Assistant	CEARÀPORTOS
06	Mrs. Luciane Orlandini Cunha	Technical Assistant	CEARÀPORTOS
08	Mr. José Roberto C. Serra	Director President	CEARÀPORTOS
09	Mrs. Irene Serenário	Technical Assistant	Secretariat of Economic Development
10	Mr. Fábio Abreu F. de Souza	Logistics Assistant	CEARÀPORTOS
11	Mr. Raul Barroso	Assistant	Compania Docas Do Ceara
12	Mr. Luiz Eduardo Moraes	Secretary	SEINFRA
13	Mrs. Isadora Matos Araújo	Under Graduate Student	UECE
14	Mrs. Ana Maria Matos Araújo	Population Researcher	UECE/LEPOP
15	Mr. Francisco K.Monteiro de Oliveira	Under Graduate Student	UECE
16	Mr. Marcos Nogueira	Professor	UECE
17	Mrs. Cicera Inara O. Sousa	Under Graduate Student	UECE
18	Mr. Aridênio Bezerra Quintiliano	Under Graduate Student	UECE
19	Mr. Jader Onofre	Professor	UECE
20	Mr. Galba Bessa	Articulator	Secretariat of Economic Development

21	Mrs. F. Enylocláudia R. de Lima	Under Graduate Student	UECE
22	Mr. Antônio Praxedes Berto	Engineer	Ceara Sewage and Water Supply Company
23	Mr. Fausto Nilo	Professor	UECE
24	Mr. Diogo Gadelha de Almeida	Under Graduate Student	UECE
25	Mr. Franco Sylvio de O. Barros	Professor	UECE
26	Mr. Anastácio R. Neto	Student	-
27	Mr. Ney Cardoso	Consultant	SEINFRA
28	Mrs. Raquel	Administrative Assistant	-
29	Mr. Juscelino Eudâmidas Bezerra	Under Graduate Student	UECE
30	Mr. João Nogueira Monte	Philosophy	UECE
31	Mr. Cemig Marques	-	Secretariat of Economic Development
32	Mr. Cândido B. C. Mota	University Extension Courses	UECE
33	Mr. Francisco Fernndo da Silva	University Extension Courses	UECE
34	Mr. Milene Almeida da Costa	Under Graduate Student	UECE
35	Mr. Julio Pinto de Souza	University Extension Courses	UECE
36	Mrs. Camila Freire Sampaio	Under Graduate Student	UECE
37	Mr. Antônio de O. Gomes Neto	Professor	UECE
38	Mr. Luciano N. Diniz Alencar	Interpreter	JICA Study Team
39	Mr. Shakir Dixon	Interpreter	JICA Study Team
40	Ms. Luciana Pessoa Otoch	Interpreter	JICA Study Team
41	Mr. Yugo Otsuki	Engineer	JICA Study Team
42	Mr. Susumu Onaka	Engineer	JICA Study Team
43	Mr. Mitsuo Sato	Engineer	JICA Study Team
44	Mr. Shinichiro Tanimoto	Engineer	JICA Study Team
45	Mr. Koji Kobune	Engineer	JICA Study Team

Appendix 10.1 Minutes of Stakeholders Meeting

(1) Objective

JICA Guidelines for the environmental and social consideration requires that the formulation of the development plans should be done in a transparent manner. In the process of elaborating the short-term development plan, opinions of inhabitants and various agencies concerned with the projects should be taken into considerations. For that purpose, stakeholders meetings were held and the opinions of them were reflected into the plan.

(2) Dates and Venues

January 5, 2006 (Thursday), Mucuripe Port

January 12, 2006 (Thursday), Participative Group of Work (GTP)

(3) Program and Time Schedule

January 5, Mucuripe Port

Time	Program
9:00-10:00	Necessity of port development in Ceara (Dr. Kouji Kobune-JICA Study Team-, Portuguese)
10:00-11:00	Public Comments and Suggestions (All participants, Portuguese)
11:00-11:10	Closing speech (Dr. Kouji Kobune-JICA Study Team-, English/Portuguese)

January 12, GTP

Time	Program
16:30-16:40	Opening Speech (Ms. Soccorro -GTP-, Portuguese)
16:40-18:30	Outline of the study and Environmental and Social Considerations; Presentation and Discussion (Ms. Marcia Lúcia Coutinho -SEINFRA-, Portuguese)

(4) Participants

The participants are shown in the attached participant lists.

(5) Presentations and Discussion at Mucuripe port

1) Introduction

Dr. Koji Kobune, JICA study team leader, through tables and figures did a concise and practical presentation of the work that had been developed by team up to the present time. He explain the topics as follows: Background and information, Business opportunities and the role of the ports within the state of Ceara of Pecém and Fortaleza ports.

2) Discussion

Mrs. Denise Carneiro Bessa (President of Companhia Doca do Ceará): "She welcomed the representatives and the other invitees and congratulated the study on the Pecém Industrial and Port Complex. She said that Pecém port has influenced on

the decreased of Fortaleza port activities, although it has been said the contrary in order to convince them. It was also mentioned by her that as long as she occupies the chair of President of Fortaleza port, they will not give and surrender and be controlled by the state authority. She also mentioned that the port has its importance to the state government, and that if it is not aware of this matter, it must be convinced about this."

Mr. Bruno Lughetti (Consultant): "he complimented Mrs. Denise for her speech. He mentioned that this meeting was the first opportunity for the society of Fortaleza got in touch with the project and its plans. According to him they have never get together in order to disclose the information concerning this project. It was said by him that the numbers and graphics presented were not that much important as the concept matter itself. He also declared that two ports within the same state with no predatory competition may be able to exist. He stated that the perspective of the member it was quite simple, as long as it was conducted with no consultation, a task done without partnership. He basically said that the members are no up-to-dated to what is happening concerning the steel mill as well as the refinery; and that they do not seek for competition but they want to work due to their efficiency. He finished by saying that the study that has been conducted is extremely worth of notice but it needs to be refined and needs to comprise other involved parts.

Mr. Francisco José Brandão Filho (FORTSHIP): "he said that the study has been conducted the other way round – starting from an economy either from the region of the influenced area towards the port and that this performance creates and huge scenery as well as an universe to what might happen around it. He also asked about the swell waves and five tons vessels and questioned: what was the purpose on mentioning the frequency of swell waves within this study and five tons vessel of gross weight?"

Mr. Shakir Dixon (Interpreter – JICA Study Team): "it has been done in order to establish the calmness index of the port berth."

Mr. Francisco José Brandão Filho (FORTSHIP): "he said that as far as he is concerned the waves on Pecém port area may sink a five tons vessel easily. He also stated that it would be more appropriated if it were mentioned on the study a twenty tons vessels instead of a five tons one; due to the no unsafe for operating.

Mr. Ney Cardoso (Engineer – SEINFRA): "responded to that the numbers mentioned referred to pier no 01."

Mr. Francisco José Brandão Filho (FORTSHIP): he asked: "so it means that from 5,001 it is safe to berth?"

Mr. Ney Cardoso (Engineer – SEINFRA): "he answered: yes!"

Mr. Francisco José Brandão Filho (FORTSHIP): "he said: that's not true, no vessels under 12 tons are able to berth at Pecém port?"

Mr. Ney Cardoso (Engineer – SEINFRA): "he asked: who told you that?"

Mr. Francisco José Brandão Filho (FORTSHIP): "he said: I am telling you that. He added by asking: was not the fact that two meetings were conducted to inform the society, about what? That a plan has been already elaborated in a dictatorial manner? A modeling of the port has been made? Like water influence study is done in Japan,

in the United States? Or will you construct one billion Reais breakwater and afterwards that swell waves affect any kind of vessel?

Mr. Ney Cardoso (Engineer – SEINFRA): "he introduced himself as a consultant performing jobs at the Secretariat of the Infrastructure and that he has a kind of relationship with Companhia Docas do Ceará, because he started his career in there. He mention that the objective of that kind of meeting is to bring forward information so all the involved ones may give suggestions, and additional matters that has not been detected within the study. It was said by him that on a first stage of the study information are collected and processed and this continuous until enough information are available in order to be formatted and disclosed to the society. He stated that the government does not interfere in absolutely anything regarding the study itself; it only supports the experts by means of logistics and facilities – meaning that it is not a plan imposed by the government but it has been done by a team freed from any government duty. He emphasized that the port is not the main preoccupation of the state government, and that the government is really interested for the state's economy as a whole. He added that is not worth for the state government to have a structure as Mucuripe and do not use it properly, and that it must be maximized in all the aspects. He finished his speech by explaining that JICA study team did not obtained these information from the state government; they got these information on their own, meaning that they visited port users, farms, clients, ports authorities and heard from them what are their expectancies and necessities. He stressed on the fact they must work together."

Mr. Invitee (not identified): "he said that when he overlooks the government tendency he realizes that a particular attention and assistance is given to Pecém. He mentioned that for instance in 1995 the federal government addressed 13 million to them and the governor, at the time, Mr.Tasso Jereisssati embezzled these 13 million to Pecém port."

Mr. Ney Cardoso (Engineer – SEINFRA): "he said that for about three years not even a single penny has been invested in Pecém from the federal government. He also told that if they have received 200 million and Pecém port had got all this amount of money, then he himself would he "wear the cap". He finished saying that the state is a strong allied of Pecém and Mucuripe ports and that in the sense of bringing money to the state of Ceará."

Mr. Invitee (not identified): "he said that sounds like demagogy to him the fact of studies being conducted and most of the involved ones, meaning the port operators and users, suffer the consequences and that they have not been consulted. He stressed that Pecém a few years ago was a fishermen village only and that any kind of investment there is very much welcomed by the locals, and that they are only changed the local's kind of employment, from fishermen to industry workers; he added that the cargo demand at Mucuripe port experienced a considerable loss and exemplified this by mentioning that companies such as Maersk and Hamburg Süd do not call Mucuripe port anymore, there is no meaning for doing that, and this change produces a large impact on Mucuripe cargoes. He added that what is happening now in Ceará concerning the ports is something really predatory and that in a very short period of time Suape port will be a problem for Ceará ports due to the increase on its cargo handling and it experienced a growth of 40% in 2004. He finalized his comments saying that in order to improve the study, the experts and other involved ones should consult firstly the port workforce, operators, the people that are in the 'port front'."

Mr. Ney Cardoso (Engineer – SEINFRA): "he explained once again that the information collected and used by JICA Study Team was not given to them by the state government, but those data were obtained from the clients, and companies which are working in huge fruit projects in the state of Ceará. He guaranteed that several port workers and several port users (not a hundred percent of them) were consulted during the conduction of the study and that basically their necessities and their overview do not represent the same opinion of the government. He mentioned that of course some opinions are not the same and then must find out where they do not agree. He emphasized that they work together, that the northeastern ports do go further on their own; and that the basic point is that they be worried about selling the production. He finished saying that the other ports also must be looking at the development of Ceará port and thinking the same way you do; he illustrated this matter as the gravitation – whether we like or not it is present in our everyday lives."

Mr. Invitee (not identified): "he mentioned that according to what Mr. Ney Cardoso said previously (regarding the information sources, the consulting of the clients and their expectations); all that of course were related to the progress of Pecém port, the client is requesting the Pecém port development. He concluded mentioning that due to the lower prices Pecém port is charging the clients are moving into there."

Mr. Ney Cardoso (Engineer – SEINFRA):"he explained that the state government is not worried if Pecém port business is optimized or not; the state government main concern is how much money it is investing there. He said that they expect that the government investment be restricted only to the public facilities – the breakwater for instance; but that terminal itself be financed by private investments. He terminated by saying that the port business must not be a burden for the state government, since the government has other important duties and many times it does not manage to achieve them."

Mr. Jose Ribeiro Lobo (President – Clerk's Union): "he said that the audience paid close attention to the plan presentation, but within the plan did not mention the social aspect, the workers situation. He also mentioned that, by the time of creation of Cearáportos company, the union tried to talk to about work relations and the response the union had was that Cearáporto would not discuss to no union at all, and when Cearáportos finally decided to discuss something, it was only to impose; and that Cearáportos elaborated a document that basically said that the only ones who would work there were the ones who it wanted to. He added that the study presented a prospect of job opportunities but did mention the unemployment caused. He finished his speech asking: is the government aware of the bills of the port workers? Is the government aware that the power on these workers home has been cut off? And that he as a worker feels sad when watching this presentation, and not see any mention about the workers."

Mr. Petrônio Magalhães (Consultant and former employee of Companhia Docas do Ceará): "he said this meeting was the first opportunity for the people involved in port business at Companhia Docas do Ceará to discuss their ideas with the representatives of Pecém port as well as the state government. He also mentioned that the lack of cooperation between two ports within the same state is not a "healthy" policy to adopt. He added that these new approaches should be considered, and that the approach of the Pecém study must take into account the existence of Mucuripe port, and that it was clear JICA did not examine as thoroughly as it did for Pecém the possibilities of development of container terminal. He stated that the development of

the domestic cargo transhipment in the port of Fortaleza could lead to a development of international transport; transhipment should increase, that it is the world tendency and it should be analyzed. He concluded his intervention saying that they should take advantage of this conflict of ideas to try and build an opportunity to work along and get to a consensus in order to "walk together", and that conflicts concerning the activities of Pecém may exist ; the way to overcome them may be healthy competitiveness on port tariffs."

Dr. Koji Kobune (Engineer – JICA Study Team Leader): "he said that the guidelines of the study were established by the state, federal and JICA cooperation, the focus of the study it is the development of Pecém port, although the roles of both ports have been discussed. He also mentioned that he had no preference for Pecém or Fortaleza for the new container terminal and he knows that for the development of the state of Ceará it is necessary a effective container terminal. He mentioned also that if the port of Fortaleza port provides good services as Suape port, so everybody would be happy; otherwise if this development do not occur then the port users and exporters may use Suape port with extra costs. He also explained that both ports should solve this matter of infrastructure implementation in the state of Ceará urgently and if this structure is able to absorb the demand of the present and future clients. He finished his participation asking: "how Ceará state can get the new container terminal".

End of discussion

(6) Presentations and Discussion at GTP

1) Introduction

Mr. Shinichiro Tanimoto, member of JICA Study Team, and expert on the Social and Environment Consideration, together with the representative of SEINFRA (Secretariat of Infrastructure) the geologist Mrs. Márcia Coutinho. Presented the study on the Development of Pecém Industrial and Port Complex, developed by this team of experts of JICA and also disclosed the following topics: Basic Concept of Pecém Development Plan, Short-Term Plan, Social and Environmental Considerations, Life Quality, Changes on the Shoreline, Impact on the Fishing Activity and Tourism.

2) Discussion

Mr. Júlio Cruz (Owner of the Restaurante Porto do Céu): "he asked: 'will this new siding railway be an extra one? will it discontinue the use of the existing railway? will the belt conveyer keeping on operating?"

Mrs. Márcia Coutinho (Geologist – SEINFRA): "she said that it would be a support for the transport and handling of the production; and added that the belt conveyer it is under licensing process yet."

Mrs. Ângela (Representative of the School Luís Pereira Gomes): "she asked when the works would start?"

Mrs. Márcia Coutinho (Geologist – SEINFRA): " she said that they have a period of six years, but that she did not know the exact date, and completed saying that it should be implemented within this period of six years"

Mr. Daniel Batista da Silva (Fishermen –Taíba Fishermen Association): "he said that among the fishermen there is a concern about the pollution due to the development the may ocurr, and a loss of local culture."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "she said that population will be prepared with the conduction of vocation courses, and that the fishing will increase."

Priest Antônio (Pecém Church): "he said that progress brings much benefits but also brings some damage especially with respect to the cultural aspects and people values. He added the responsible for this project must clarify to the population what really is going to happen, in order that local people do not be deceived."

Mrs. Márcia Coutinho (Geologist– SEINFRA): "she said that kind of meeting was a way of sharing with the local population all the information, and a form of collecting suggestions, opinions and to find out what are the involved ones conception of this project."

Priest Antônio (Pecém Church): "he said that Pecém's community is basically formed by fishermen and farmers, he also mentioned that vocation training is something really necessary."

Mrs. Márcia Coutinho (Geologist– SEINFRA): "she said that from the beginning of this Project that is one of the main concerns of the state; that is why GTP was created, to support the local population on the matter, because the population is a subject of importance to the government"

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said the must understand the importance of the vocational training, in order that she wish to be trained. She also said this kind training must be emphasized in the schools and finished saying the best positions in companies are occupied by skilled people only."

Mr. Francisco Ribeiro (President of Colônia Association): "he said the all development bring some damage with, so in order to changes happen, the care for the education, security and improvement of schools should be done, due to the relocation of many people to the city."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said that since many people are going to move into the city, a concern with the loss of the local culture, people moral values must be considered. He also mentioned his concern with the police, prostitution and finished saying the government must be aware that this infrastructure do not change the population structure as a whole."

Mrs. Diná (Principal of Edy Alcantra Moura School): "she said the school received forty-five new students and it has no capacity to receive more students. She stated this development may bring more people to the city, and asked what will be done to accommodate all this new ones. She mentioned that local students are complaining because for the morning period there is no more vacancies, because some of them are occupied by non native students. The also questioned what will happen in six years time if the new school be not constructed."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said that other problem which deserves attention is the

opening of new shops during the construction period, and that after the construction finishes the people who invested will be financially ruined, due to decrease of business, and this fact must also be analyzed."

Priest Antônio (Pecém Church): "he mentioned the problem happening on the street behind the church, since many heavy trucks drive through that road; he said also that specially after rains showers a kind of "lake "is formed on that street, so some infrastructure must be planned to the road."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said the people do not know how large the damage caused on that road because of the intense heavy vehicles traffic, and added that where this road is settled now, used to be a lake, so is necessary to construct a channel there."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "once again he emphasized the young must be aware of the need vocational training, consequently the improvement of the workforce."

Priest Antônio (Pecém Church): "regarding the topic of school education presented, he mentioned as an example the church itself conduct some religious courses (for priest to be) and these training are organized and divided by areas and he said this model should be used when the vocational training take place, in order to facilitate the people participation."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said that before the vocational training start it must be considered the local demand, and afterwards proper training be elaborated based on the need of the companies. He mentioned the example of urbanization of Pecém beira-mar area which will be great, on the other hand he said the mangrove is quite dirty and contaminated."

Mr. Daniel Batista da Silva (Fisherman –Taíba Fishermen Association): "he said that after seeing the waste water from the public sanitation system be discharged into the mangrove, then he changed his mind about requesting the public sanitation services to his community; and regarding the vocational training he said that people face some problems to attend the classes. He mentioned that Taiba residents had to walk or ride bikes long distances in order to attend classes since those had no money to pay for their buses. Concerning the urbanization he said the municipal authorities, communities and port authorities should interact more."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "he said the population should try to participate in all kinds of meetings and courses; and concerning the subject school education, he suggested that vocational training should be introduced as a school regular subject, because that would increase the interest of the students on learning even the regular disciplines, since they would realize how physics, chemistry, biology are used in practical manner."

Mrs. Diná (Principal of Edy Alcantra Moura School): "she said her students have already experienced this kind of teaching approach, since they conducted a course in that school where students could use their knowledge in daily life"

Mr. Daniel Batista da Silva (Fisherman –Taíba Fishermen Association): "he said his biggest concern were the environmental impact, the beaches pollution and he also mentioned people disregard with this matter."

Mrs. Lucineide Mendes (Fisherwoman – Representative of the Z-6 Fishermen Association): " she said the main income of the fisherwomen was the catching of oysters, crabs from the local mangrove, and nowadays because of this very mangrove is contaminated by the sewage discharging, people refuse to buy their seafood products and this fisherwomen are facing hard times since their income decreased; she mentioned this sewage discharge comes mostly from summer villas.

Mr. Daniel Batista da Silva (Fisherman –Taíba Fishermen Association): "he said this happens because the lack of interest by the port and municipal authorities."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "she asked if this problem have already been informed to SEMACE."

Mr. Júlio Cruz (Owner of the Restaurant Porto do Céu): "he stressed the importance of the school education as a process. He also said there are a lot of secondary school graduated with no job; he added that the vocational training must be arranged according the companies needs. He also mentioned the existence of two thermoelectric plants and the most positions within this places are occupied by people from São Paulo and Rio de Janeiro, since the locals are not qualified enough, and this happens since 2002; he finished his intervention saying the economy of the city suffers with this problem, since the income of these workers are not used in the city, and said too that GTP/SEBRAE should lead this movement, so that it can recognize the centers that might conduct this training."

Mr. Daniel Batista da Silva (Fisherman –Taíba Fishermen Association): "he asked: 'how can we find the support from the companies to develop environmental education, and projects for community developing, since these same communities find difficult approaching the companies?'"

Mrs. Socorro (GTP/Pecém - Representative): "she said nowadays there is partnership with some companies such as ENDESA, and she mentioned this company sponsored some environmental education courses; on February, she said, those students who participated on the environmental education courses will do an extension course conducted by GTP/SEMACE; she ended her comment telling that in Pecém some companies donate her waste which is sold in Fortaleza and this money is used on social projects."

Mrs. Ângela (Principal - Municipal School): "she said GTP is a great partner for the school conducting several training courses."

Mr. Daniel Batista da Silva (Fisherman –Taíba Fishermen Association): "he questioned about the city security since the local population is experiencing a rapid growth; he also mentioned because this growth on the population number, the increase of violence may also occur; and finished asking what measures have been taken to mitigate this fact."

Mr. Alairton (Policeman): "he said there were twenty policemen for the whole district and at the present there are ten men only; he also said they have already

requested equipment, policemen, but those things are quite difficult to be obtained; he ended his intervention saying for Taiba area only two officers are available."

Mrs. Cristina Leite (Proprietary – Sonho Meu Inn): "she said before anything start the city should be structured with a police force, schools, etc in order to be able to receive all the people that may come; she also mentioned that all this development should be done before the construction starts; she finished saying that, in order to avoid the growing of slums, a special attention should be given to."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "she said the slums will not emerge, since that was one of the main concerns of the state government; for instance, she said, the state government elaborated a report named Strategic Environmental Evaluation in order to avoid the emerging of slums; she completed saying that is the purpose of this Short-Term Development Plan – how can we evaluate what might happen and how we can be prepared for these changes."

Mr. Júlio Cruz (Owner of the Restaurante Porto do Céu): "he said that if companies could receive a incentive from the government such as a tax reduction at about 1% to 1.5%, in order to employ locals only, so the employment rate would increase considerably."

Mr. Daniel Batista da Silva ((Fisherman –Taíba Fishermen Association): "he said the traditional communities are the most affected with unemployment; he also mentioned it is not fair somebody leave his vocation and start a new one completely different."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "she explained that, within this context, people carry on thinking they will get new jobs; she also said there are different manners to improve one's skills without changing his main vocation, for instance, she said, a fisherman can learn how to improve his way of catching fish; because, she added, it is not fair to change a persons job after many years doing the same thing."

Priest Antônio (Pecém Church): "he said the school must present to our kids the concept of human moral values."

Mr. Daniel Batista da Silva ((Fisherman –Taíba Fishermen Association): "he asked to JICA member the following question: 'how do you three see all this development we are now experiencing, since the Japanese are people who has a very admirable culture?'"

Mr. Shinichiro Tanimoto (Expert on Social and Environment Considerations – JICA study team): "he said the education is very much important; and he finished saying the methodology changes in each place."

Mr. Yugo Otsuki (Expert on Port Planning – JICA Study Team): "he said regarding port development projects in Japan, the prefecture is the organization that takes the lead the project and when the government takes the initiative of the project, so it cares for all the aspects such as education, road construction, infrastructure, etc. he also said there is a Secretariat of Fishing also involved in the project and looking for better ways to create a new fishing area, so that the possible loss on fishing can be compensated. He also mentioned that in Japan a council is created when a project like this starts and this council comprises members for security & safety issues, education,

industrial facilities around the area, government and municipality members. The municipality plays a really important role to define and discuss the expectations of the project.. He concluded saying this kind of meeting is realized as much as necessary until a satisfactory consensus is reached."

Mr. Daniel Batista da Silva (Fisherman – Association of fishermen of Taíba): "found really interesting the way things are done in Japan, as well as the form everything is organized, including the existence of a Secretariat of Fishing, which doesn't exist here."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "raised the following question: 'What do you plan to use the coastline for? Fishing, tourism?'"

Mrs. Cristina Leite (Owner of Pousada Sonho Meu): "answered: how about fishing and tourism?"

Mrs. Angélita F. Maciel (Colônia de Férias –Beach Bar o Joselito): "Said there were 40 beach bars six months ago, and that today, there are much less. She added that they, beach bar owners, want to invest and expand their bars, but they all fear the erosion of the beach prevent them from doing so. Thus, she asked if there was any way to invest in the area to put an end to the erosion."

Mr. Daniel Batista da Silva (Fisherman – Association of fishermen of Taíba): "Said that, in the área of Taibinha beach, erosion was substantial, people got concerned about the fishing potential there, even about where to put their jangadas (boats)"

Mrs. Cristina Leite (Owner of Pousada Sonho Meu): "said that, during the port construction, a government representative said Pecém would lose its tourism attractiveness and that the latter would transfer to Taíba; she said she would like this toursim potential to be restored in Pecém, for there is nothing that prevents tourism and port operation to work together."

Mrs. Márcia Coutinho (Geologist – SEINFRA): "said they need to think of options for tourism, be creative, adding that the port itself already is a tourist attraction."

Mr. Viera (Secretary of the Economic Development of the municipality of São Gonçalo do Amarante): "thanked everyone for the opportunity of having such a meeting, and asked if there was any chance they could make of this event a regular one. He furthermore added they should use the information and and suggestions that were presented during the meeting. To conclude, he made another mention of the necessity of training the local people."

Mrs. Socorro (GTP/Pecém - Representative): "asked to the study team members if JICA would sponsor the education projects."

Mr. Yugo Otsuki (Expert on Port Planning – JICA Study Team): "said that, at the end of their work, the study team would make recommendations to the federal government, for this to be made possible."

End of discussion

(7) Participant List

1) Mucuripe port

-	FULL NAME	OCCUPATION	ORGANIZATION
01	Mr. Oswaldo Fontenele	Economist	-
02	Mr.Ricardo José Abeal	Operation Manager	TERMACO
03	Mr. José Daniel Neto	President Director	Daniel transportes
04	Mr. Cristiane M de Andrade		-
05	Mr. Manuel Sá Cristiano Filho	Stevedore	Stevedor Union
06	Mrs. Francisco Sales	Architect	SEINF-PMF
08	Mr. Ciro Marques	Student engineer	UFC
09	Mrs. Marta de Farias	Financ. & adm. manager	TBM-Texil Bezerra
10	Mr. Eribaldo Fernandes	Chemical Engineer	Petrobras
11	Mr. Leopoldo Albuquerque	engineer	Companhia Docas Do Ceara (CDC)
12	Mr. Eduardo Ney F. CARDOSO	engineer	SEINFRA
13	Mr. Francisco Eliton M. Albuquerque	engineer	CDC
14	Mr. Emerson Portela	accessory	CDC
15	Mr. Almeida Viana	Admin. Coordinator	CDC
16	Mrs. Maria Priscilla R. Ferreira	Trainee	CDC
17	Mr. Aderson Silveira Aragão	engineer	CDC
18	Mrs. Stela Cavalcante	Journalist	CDC
19	Mr. Elzilene Queiroz	Lawyer	CDC
20	Mr. Galba Bessa	Articulator	Secretariat of Economic Development
21	Mrs. Maria ----------	Secretary	CDC
22	Mrs. Glaúcia Maria Páscoa Alves	Admin. Supervisor	CDC
23	Mr. Manuel Galdino	Economist	CDC
24	Mr. Petrônio Sá Benevides Magalhães	Consultant	-
25	Mr. Luiz Domingos de Lima	Stevedore union	-
26	Mr. José Ribeiro Lôbo	Controller Union	-
27	Mr. Julio Coelho	Nordeste Regional Manager	CMA-CGM For/Rec/Sal
28	Mr. Mario Lima	engineer	CDC
29	Mr. Luciano N. Diniz Alencar	Interpreter	JICA Study Team
30	Mr. Shakir Dixon	Interpreter	JICA Study Team
31	Mr. Shuichi Tsuda	Engineer	JICA Study Team

32	Mr. Susumu Onaka	Engineer	JICA Study Team
33	Mr. Shinichiro Tanimoto	Engineer	JICA Study Team
34	Mr. Koji Kobune	Engineer	JICA Study Team
35	Mr. Shinichi Tezuka	Engineer	JICA Study Team

2) GTP

-	FULL NAME	OCCUPATION	ORGANIZATION
01	Mrs. Márcia Lúcia Coutinho	Technical Assistant	SEINFRA
02	Mr. Maria Auxiliadora Spinosa Braga	Administrative assistant	ASFAP
03	Mrs. Irisnanda C. Alves Monteiro	Student-waitress	TAÍBA
04	Mrs.Maria Valeska B. Alves	Restaurant owner	Restaurant Taíba
05	Mr. Francisco Ribeiro Alfredo	-	-
06	Mrs. Maria Lafaiete Matias	Craftswoman	-
08	Mrs. Francisca Angelha F. Maciel	Restaurant owner	Restaurant Colônia de ferias
09	Mr. Daniel Batista da Silva	Fisherman	Fishermen's association of Pecém
10	Mr. Fábio Abreu F. de Souza	Logistic Development Analyst	CEARÀPORTOS
11	Mrs. Lucineide Mendes	fisherwoman	-
12	Mr. I Júlio P. Cruz	Restaurant owner	Restaurant Porto do Céu
13	Mrs. Cristina Leite	-	Pousada Sonho Meu
14	Mr. Luciano N. Diniz Alencar	Intepreter	JICA Study Team
15	Mr. Yugo Otsuki	Engenheiro	JICA Study Team
16	Mr. Susumu Onaka	Engenheiro	JICA Study Team
17	Mr. Shinichiro Tanimoto	Engenheiro	JICA Study Team