Secretariat of Trade and Investment
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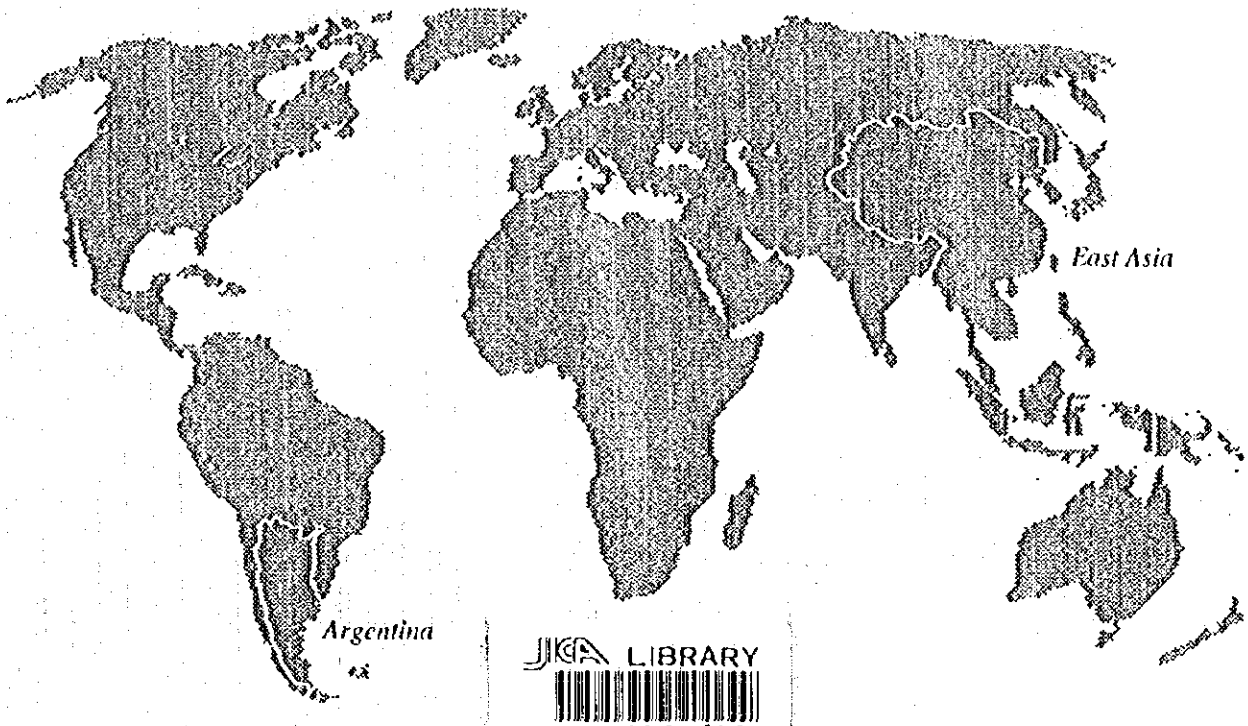
TOWARD A GREATER INTERDEPENDENCE BETWEEN ARGENTINA AND EAST ASIA: A NEW OPPORTUNITY FOR THE ARGENTINE ECONOMY

Final Report



Vol. 7 Transport Infrastructure Improvement for Industrial Development and Trade Promotion

Study on Economic Development of
the Argentine Republic (The Second Study)

June 1996

International Development Center of Japan

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Country	Currency	Average Exchange Rate		
Argentina	Argentine Peso	¥1	=	US$1.00
Australia	Australian Dollar	A$10	=	US$7.45
Belgium	Belgium Franc	BF.100	=	US$3.39
Brazil	Real	R$1	=	US$1.03
Canada	Canadian Dollar	C$10	=	US$7.36
Chile	Chilean Peso	Ch$1,000	=	US$2.38
Hong Kong	Hong Kong Dollar	HK$10	=	US$1.29
Indonesia	Rupiah	Rp.10,000	=	US$4.31
Italy	Lira	Lit.10,000	=	US$6.26
Japan	Yen	¥100	=	US$0.97
Korea	Won	W.1,000	=	US$1.29
Malaysia	Ringgit	RM.10	=	US$3.90
Mexico	Mexican Peso	N$10	=	US$1.33
Singapore	Singapore Dollar	S$10	=	US$7.09
South Africa	Rando	R.10	=	US$2.73

Above exchange rate figures were calculated from the actual purchases of the currencies made by the Study Team members during the visits to those countries concerned in the period between June 1995 through March 1996.

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Summary and Recommendations

Summary and Recommendations

The issue on transport improvements consists of two sub-issues: Container transportation systems development; The development of trunk routes between Argentina and Brazil/Chile, both of which are essential to support industrial development and trade promotion in Argentina.

Concerning the first issue in the above on Container Transportation Systems Development, the study focuses on assessing what is needed to modernize existing facilities, better container handling operations and management, upgraded information flow, and methods for financing their development, which are basic measures for trade promotion, particularly with East Asian markets. The study refers to the experiences of East Asian and Pacific ports, which are now vigorously pursuing the new concept of the roles of ports in the 21st century and leading the world's trend of containerization.

On the second issue, related to the Development of Trunk Routes between Argentina and Brazil/Chile, the study assesses the requirements for improvements to the transport infrastructure and better transport services and analyzes various transport development issues. The development of Argentina - Brazil/Chile trunk routes will create transcontinental corridors connecting the MERCOSUR countries along them and both the Atlantic and Pacific oceans, and will open up new economic opportunities for countries and regions along those routes. The study refers to the experiences of coordinated transport system improvements in the European Union, which devised the Common Transport Policy, cross-border controls, and cabotage operations and developed common land transport networks. They will be good precedents for preparing the common transport policy for MERCOSUR countries.

1. Development of Container Transportation Systems Issues

1.1 Issues

Since the beginning of the 1960's, containers have brought about fundamental changes in the international economy trade, particularly in the concept, design, function, and activities of world transport systems, including the shipping industry and ports. Before the introduction of container transportation systems, the port was a place to conduct fixed activities limited to the functions of loading and unloading cargoes. Containerized transportation systems were immediately recognized as the most effective and efficient cargo handling system. They were expanded all over the world to support

global economics and growth through international cargo trade offering quick and unitized delivery.

The port changed its concept and function to perform a wider variety of operations. In addition to the traditional role of loading and unloading cargo, the port experienced a closer relationship with transport and business partners, functioning as the "dynamic knots" within the international production and distribution network. Activities and services were specialized and integrated, including industrial, commercial, environmental, administrative, and logistic services. Ports are considered to be the cores of regional development. The leading ports in Asian countries, Europe, and USA have vigorously promoted the provision of these services97not only the trans-shipment of cargo, but also information supply services and integrated intermodal transport services to deliver cargoes from the origin to the final destination.

Since Argentina has traditionally exported bulk commodities such as the agricultural products of wheat, maize, etc., to the European and North American markets along the Atlantic Ocean, the ports of Argentina have been mainly built along the Parana and the La Plata rivers, with production areas connected to the Atlantic Ocean through relatively shallow and narrow navigable waterways. This situation has obstructed the development of container transportation systems.

However, in order to develop and promote trade with East Asia as a new market, it is essential that Argentina develop the infrastructure and software necessary for containerized transport systems of sea and land, and realize the following advantages of containerized transport to the national economy and industries:

- Time-saving and convenience by unitized cargo delivery offering door-to-door service;
- Minimized sea and land cost for long distance transportation;
- Minimized damages and loss of cargoes during transport between the origin and the destination.

1.2 Trend of World and Regional Containerization

(1) Increasing trend in world container traffic

The volume of container traffic on a global scale reached more than 100 million TEUs (twenty-foot container equivalent units) in 1992 through 350 ports in the world, and it continues to be rapidly increasing. This trend towards a rapid increase of containerized transportation has been led by the Asian region. Since Asian economies are

situated in the archipelago, sea transportation is an essential and indispensable means of communication. Singapore, Hong Kong, Taiwan, and Malaysia are all geographically located at the trans-shipment points of key regional locations along the international shipping routes. The traffic volume from/to the Asian region represented 60% of the global container traffic volume in the year 1993-1994. Of world's top 10 ports handling containers, 6 are located in Asia.

(2) Trend towards changes in container ship size

The size of ships operating through the main international shipping routes, such as Japan/North America and Japan/Europe, have gotten bigger. The post-Panamax type (40-50,000 DWT carrying 4,500 to 5,00 TEUs) became the average size and the predominant type of container ships along these routes. The previously engaged smaller ships of the 20-30,000 DWT class were transferred to serve as feeder and secondary routes. The ship companies plan to procure bigger ships to carry a large volume of containers with a minimum number of trips, to cut down on the sea transportation cost.

Along the Japan/South America route, if port facilities are acceptable for container carrying vessels larger than 2,500 to 3,000 TEUs, shipping companies would like to put these vessels in service to the Port of Santos or other main ports in this region. But the present traffic congestion at Santos, due to the poor port operation and inefficient services, prohibits shipping companies from putting their preferred size container ships in this port. The port facilities and channel and quayside depth at Buenos Aires cannot accommodate vessels of this size.

(3) Required facilities for the modernized container terminal

A modernized container terminal intending to handle 1.5 to 2.0 million containers per year should be equipped with the following facilities:

- The port have sufficient depth of the access channel and alongside of the wharf, with calm wave conditions, to accommodate full oceangoing container ships. The major container terminals in the world have a water depth of -13 to 14m (39 ft. to 42 ft.) to accommodate Panamax-type container ships. Some have a greater water depth in anticipation of receiving Super Panamax class ships.
- The wharf length should have sufficient length to berth full oceangoing container ships (generally the length of the wharf is 350m, minimum 250 to 300m).
- There should be sufficient areas directly behind the wharf to store containers.
- Generally the area required is a length of 400 to 500m behind the wharf.

- The gantry cranes should be installed on the apron of the wharf, usually 2 - 3 cranes for each berth, supporting transtainers (3 - 4 units per one gantry crane), straddle carriers or forklifts in the container yard with 25 - 40 tons capacity, and a number of trailer chassis for transporting containers.
- The terminal should be equipped with facilities for lighting the yard operation, electrical outlets for reefer containers, a mechanical workshop to repair damaged container boxes, equipment and a computer information system at the truck gate, an administrative control building, and a container freight station (CFS).
- To support a smooth and efficient terminal operation, there should be land area equivalent to the container yard for constructing access roads to the main public roads, and a depot for stocking the containers.

1.3 Required Scheme for Development of Containerized Transportation through Argentine Ports

(1) Forecast of container traffic demands through Argentina

The port of Buenos Aires handled 540,000 TEUs of containers in 1994, which is more than 97% of the total container volume in the country and a 54% increase over the last two years' total. According to the Study Team's forecast of container volumes to be handled through Argentine ports, a total of 966,000 TEUs of containers will need to be handled in the year 2000, 1,355,000 TEUs in 2005, and 1,730,000 TEUs in 2010.

(2) Required scale of Argentine container terminal

In order to meet the future container traffic demands throughout Argentina, the ability to accommodate the larger-sized container ships is required. The shipping companies presently connecting Asia with Argentine want to engage larger full container ships. They are currently providing for semi container ships operating between Latin America and Asia averaging 20-30,000 DWT, and have to arrange for a suitable size and type of ship depending on the physical constraints of the terminals of call. They want the major ports of Latin American countries, like Santos, Buenos Aires, and Valparaiso, equipped with deeper drafts in the access channel and quaywall and larger handling cranes to accommodate the larger-sized full container ships.

(3) Required schemes for developing containerized transportation

Based on the Study Team's forecast of container volumes to be handled at Argentine ports as stated above, and the shipping companies' requests to introduce full

container ships to the Latin America/Asia routes, improving the current container terminals at Buenos Aires ports is essential and of the highest priority. The following development schemes should be considered sequentially to meet the demands of containerized transportation in Argentina:

1) The optimum utilization of existing facilities at Buenos Aires port as a start towards further development of the current container terminals.
2) The development of container terminals at other ports in Argentina (other than Buenos Aires), such as Bahia Blanca, Quequen, and Rosario ports.
3) The development of a new secondary port or artificial off-shore island terminal.

(4) Optimum utilization of existing facilities of Buenos Aires Port

According to the above demands forecast we estimate that the port will receive about 1.2 million containers by 2005. The maximum possible container handling capacity, under the present arrangement of the terminal facilities operated by five private companies, is about 1.2 million containers, provided that the following measures are conducted as the first step toward improving the current conditions at Buenos Aires port:

- Utilization of railway facilities for inland transportation of containers;
- Modernization of container-handling equipment and improvement in handling efficiency;
- Integrated terminal area development by land reclamation, and
- improvements to the information flow system

1.4 Measures to Improve the Quality of Port Service for Container Transport in Argentina

(1) Review of current plans for Buenos Aires port development

The terminal operations at Buenos Aires port are handicapped under physical restrictions and constraints, such as: (1) shallow draft of the access channel, basins around piers and alongside the depth of the berths; (2) narrow access channel width to the north and narrow basin in front of each berth of the north and south terminals; and (3) limited land area for stockyards and future expansion limited by the power plant facility, grain silos, railway marshaling yards in the middle of the stock yard, old maritime authority buildings in the north and oil tanks and ship repair dock in the south. The terminal area is divided into many concessions rather than together in an integrated terminal area. The previous land use plan of the port area must be reviewed; an updated

and integrated plan with an implementation program must be prepared which includes technically justified methods for utilizing the remaining part of the land available to the port.

(2) Conducting nationwide containerization study

The Buenos Aires port's container handling capacity will be saturated in the near future unless further physical developments are undertaken soon. The major ports in neighboring countries have already begun to develop container terminals with deep drafts and some of them are equipped with waterfront facilities and handling equipment to accommodate Panamax and post-Panamax container carriers (40-50,000 DWT with drafts of 11-12m) to meet the global containerization trend. Considering the cargo transport situation and the user demands, we suggest conducting a "Nationwide Containerization study" and establishing a long-term master plan for nationwide container terminals development.

(3) Introducing the port sales concept

We recommended that the Argentine port management expand the concept of port sales, which introduce port-based business opportunities to port users and private investors by providing information and publications on the port. Establishing the concept of port sales will help port management's knowledge regarding the quality and composition of the port facilities, invite future business opportunities, and subsequently promote necessary infrastructure development. The port will be able to encourage private investors who have strong and growing wishes to participate in port-related activities, which will further encourage regional economic activities for the remote areas of the port. The first step in promoting the concept of port sales is to provide adequate information and publications about port statistics and data on the facilities and services available to port users. These publications and statistic data will be useful to port administration in developing new port clients as well as market research.

(4) Upgrading the quality of port services as the third generation port

Based on the UNCTAD classification of port development stages in three generations, Buenos Aires and other major ports in Argentina are functioning as the trans-shipments of cargo for export and import and can be classified as a second generation level port. In order to develop these ports into third generation ports and meet the demands of port users, it is essential to develop not only the port infrastructure 97by deepening the channel and constructing deeper draft berths but also the land transportation network, especially

the railway system. The port is required to cooperate and coexist with the city's economic and social activities while attracting people from the city and surrounding regions. For these purposes, a third generation port must have convention centers, hotels, and other types of accommodation facilities, business centers, shopping centers, restaurants, and waterfront recreational centers for people from the city and surrounding regions.

(5) Development of a secondary container port and/or deep sea port

Considering the physical constraints of the port of Buenos Aires and the Study Team's forecast of the number of containers to be handled in Argentina, under the present arrangement the port will be saturated by 2005. To face this situation, possible alternative policy measures are: (1) to develop container terminals at the ports of Bahia Blanca and/or Quequen and/or Rosario as secondary container port(s) to Buenos Aires; (2) to use the deep sea container ports of neighboring countries such as the ports of Santos or Seputiba or Rio Grande or Montevideo; and (3) to develop a deep draft sea port through an artificial off-shore island port on the Atlantic coast. Since port development takes time and the year 2005 is not in the distant future, the government's decision to proceed with an alternative measure should be made soon.

2. Development of Trunk Routes between Argentina and Brazil/Chile

2.1 Network

Since the start of MERCOSUR, the volume of trade between member countries is increasing rapidly along with the traffic volumes between them, particularly those between Argentina and Brazil in both directions. This increase is observed not only in marine traffic volumes but also, and more acutely, in land traffic. This increasing trend in land traffic volumes between Argentina and Brazil will continue further as the economic links grow between the two countries. However, the land transport infrastructure across the border from the two countries is presently restricted to the Paso de los Libres - Uruguayana rail and road bridge (one lane for each direction) and is experiencing acute capacity shortage.

The Argentine inland regions along the Andes mountains represent limitations to the economic potentials, because of the long distance to the domestic markets and ports for export. The recently improved diplomatic and economic relationships between Argentina and Chile has widened the development potentials of the long-awaited surface links between both countries across the Andes, which will open up direct access to the Pacific 97not only for the Argentine regions along the Andes but also for other regions of Argentina and neighboring countries, including Bolivia, Paraguay, Brazil, and Uruguay.

The existing network connecting Argentina and Brazil/Chile consists of the following three trunk routes (from the Pacific to the Atlantic):

(1) Northern corridor

Iquique/Arica/Antofagasta - Pasos de Jama/Sico/Socompa - Jujuy/Salta - (National Route 16/Belgrano Railway) - Resistencia - Corrientes/Posadas - Paso de los Libres - Uruguaiana - Porto Alegre/Rio Grande - Curitiba/Paranagua - Sao Paulo

(2) Central Corridor

Valparaiso/San Antonio - Santiago - Paso Cristo Redentor - Mendoza -

1) (National Route 7/BAP Railway) Buenos Aires - Montevideo
2) Cordoba - Santa Fe Parana - Paso de los Libres - Uruguaiana - Porto Alegre/Rio Grande - Curitiba/Paranagua - Sao Paulo

(3) Southern Corridor

Concepcion (Talcahuano/other ports) - Victoria - Paso de Pino Hachado -Zapala/Neuquen - (National Route 22/Ferrosur Roca) - Bahia Blanca/Quequen

2.2 Characteristics of Each Corridor

(1) Northern Corridor

The Northern Corridor will secure the surface link to Chilean ports at the Pacific coast and open up the development potentials of agriculture, mining, and other productive sectors in the North Western Region of Argentina. The Corridor will also serve as Brazil's alternative access route to the Pacific, which will be important for the southern states of Brazil and as an alternative route to sea ports for Bolivian and Paraguayan external trade.

The present state of the transport infrastructure for Argentina-Chile links is not yet sufficient, but upgrading the roads which do not experience much snowfall and are passable almost all year and the construction of bridges connecting the two countries should be completed by the end of 1996. However, the ports in Northern Chile require substantial upgrading or new construction in order to serve as reliable facilities for external trade with other countries.

The Belgrano Railway Line connecting Salta and Antofagasta via Socompa is underutilized because of limited traffic demand. The capacity of the line is also limited by its obsolete facilities and rolling stocks, which receive insufficient maintenance. In addition, the Belgrano Railway and the Mesopotamico Railway are not directly connected, separated by the Parana River at the Resistencia/Barranqueras - Corrientes section.

The existing link between Argentina and Brazil on the Northern Corridor is routed southward to the Paso de los Libres -- Uruguayana Bridge because there is no other bridge over the Uruguay River connecting the two countries. The planned construction of the Santo Tome - Sao Borja Bridge will relieve the present congestion of traffic at the Paso de los Libres - Uruguayana Bridge. The Paso de los Libres - Uruguayana Bridge alone is not sufficient to handle the increasing Argentina - Brazil land traffic and, therefore, the planned project isbe economically justified.

(2) Central Corridor

The Central Corridor, which passes through Paso de Cristo Redentor and directly connects the economic centers of both countries, handles more than 80% of the Argentine - Chile border crossing traffic and trade by land transport. However, the Paso is unreliable due to closures caused by winter snowfall. The length of closure is different each year according to the volume of snowfall; in 1994 it was unavailable for 12 consecutive days, but in 1995 has caused minimal problems.

Comparing Valparaiso with San Antonio ports in Chile, the latter has more development potentials for handling containers, although the existing facilities of both ports are insufficient to handle the possibly large-scale export of Argentine products through Chilean ports.

There is a tunnel project at a low-altitude site; however, the present traffic volume would not justify the huge investment for its construction. Some alternative measures must be sought, such as constructing roofs over snow-covered sections of road, which is much cheaper than tunnel construction.

Presently, almost all land traffic between Argentina and Brazil passes across the Paso de los Libres - Uruguayana Bridge. The capacity of the bridge, which is a two-lane road and rail bridge, is too near saturation to increase the road traffic. For cargoes originating from and going to Brazil through Rosario do not have a direct land link to the city. The Rosario -Victoria Bridge Construction Project will serve that purpose.

The planned construction of Buenos Aires -. Colonia Bridge will eleviate not only the traffic between Argentina and Uruguay but also between Argentina and Brazil. The construction of the bridge may create the possibility of using the Montevideo port of Uruguay and Rio Grande port of Brazil for Argentine cargoes in the future when the Buenos Aires port is saturated.

(3) Southern Corridor

The region along the Southern Corridor is rich in oil, gas, agriculture, and tourism resources on the Argentine side and forestry, fishing, and tourism resources on the Chilean side. The Southern Corridor connects the Pacific and the Atlantic by the shortest distance among the three corridors, with a possibility of road and rail connection, and is also connected to Pampa Humeda and Buenos Aires by road and rail from Bahia Blanca. Both ends of the Corridor are served by deep sea ports.

The Chilean ports near Concepcion, including Talcahuano, San Vicente, and Lirquen will need substantial improvements before handling a possibly large quantity of Argentine export/import cargoes in the future. They have the development potential for handling them.

The Chilean side of Paso de Pino Hachado is not improved yet and presently, during snowfall season, the Paso is closed for about four months. The Argentine side of the Paso is well-developed and only the final 10 km is not yet paved, but is passable to the border all year. Further down to the south, Paso Cardenal Zamore is passable all year because road maintenance during the snowfall season is regularly conducted at both sides of the border.

There is a rail link project idea between Zapala (Argentina) and Lonquimay (Chile), the remaining unconnected section is only 170 km on both sides of the border. The Argentine side has started construction of its first 14 km section from Zapala.

Chile is not interested in the connection from the Pacific to the Atlantic, but rather the southern connection of Chilean territory passing through Paso Cardenal Zamore, going south through National Route 40 of Argentina, and passing Pasos Coihaique, Huemules, and Integracion Austral to Punta Arenas.

2.3 Policy Measures For Possible Future Expansion of Traffic Between Argentina and Brazil/Chile

(1) The three corridors have individual objectives and functions, and each corridor should be considered as an independent route rather than an alternative route to the others. Therefore, all three corridors should be developed, at least in the medium and long-term perspective.

(2) The three corridors are presently considered to be infrastructure development projects. They should instead be considered from a regional development standpoint, under the new economic opportunities resulting from the establishment of MERCOSUR, as a gateway to the Pacific for Argentina and to the Atlantic for Chile. A "Comprehensive Regional Development Study" should be conducted for each region along the three corridors prior to assessing the feasibility of a specific mode of transportation. The study should cover the following items:

- Development potentials of agricultural, industrial, mining, forestry, tourism and other sectors;
- Analysis of the potential domestic and international markets of these sectors.

(3) When implemented, the following three bridge projects will relieve existing and future bottlenecks in transportation within the MERCOSUR countries:
Rosario - Victoria bridge
Santo Tome - Sao Borja
Colonia - Buenos Aires

(4) Since the lack of consistent and updated information on reliable transport facilities and data on MERCOSUR countries has made the planning of future transport network difficult, a "MERCOSUR Transport Study" should be implemented as soon as possible. The study should cover not only the MERCOSUR countries but also other neighboring countries such as Chile, Bolivia and Peru.

(5) The upgrading of cargo trans-shipment facilities from rail to rail of different guages, from rail to road, and at ports is urgently required. They should be better laid out and operational procedures should also be improved. Since an extensive railway network has already been constructed in the MERCOSUR countries, it should be exploited.

(6) The experiences of the EU with a smooth cross-border traffic system and regulatory process would provide some insight. Particularly, following issues are important:

- EU's Common Transport Policy, which will be a useful guideline for the preparation of Mercosur Common Transport Policy;
- EU's Trans-European Transport Network, which suggests the designation of Mercosur Trunk Routes; and
- EU's development of Combined Transport System. Among various alternative systems, the modernization of container transport systems would have the highest priority in Argentina and Mercosur.

Introduction

Introduction

Since Argentina has an extensive land area and the locational distribution of production and consumption centers all over the country, the supply of an efficient transport service is vital to the development of economy. The transportation costs to different origins and destinations of cargoes are dominant factors to the economic growth potentials of each region. According to "La Politica del Sector Transporte" prepared by the Secretariat of Transport, Ministry of Economy and Public Works, the transport sector is estimated to have the sizable shares of 5.1% of total GDP and 34 % share of energy consumption.

However, the transport sector has so far made light of its importance for quite a long period until the end of 1980's. This caused the deterioration of both transport infrastructures and quality of services. The sector's development had been hindered by bureaucratic procedures and various direct and indirect subsidies, which damaged the competitiveness of the sector. The management of transport systems were centralized and operated by state-owned enterprises. For example, the Argentine Railways (Ferrocarriles Argentinos; FA), which had the monopoly in rail transport service and ran a network of 35,000 kilometers of track lengths, had not able to meet the needs of users and faced the decrease in activity level since 1960's and an operational deficit of 845 million dollars at a peak in 1988.

The present government took the general policy of economic deregulation and directed the liberalization of the out of date controls and legislations since 1989. In order to recover the competitiveness and raise the productivity of activities of those state-owned enterprises, the government streamlined and privatized them, deregulated the obsolete controls and regulations, which hindered an efficient operation of those enterprises, and decentralized some of rail and port activities to provincial authorities.

Further stimulation to the transport sector was made by Mercosur. Since the signing of the Asuncion Treaty on 26th march 1991, the preparation for an integrated transport system of Mercosur has commenced and the Working Sub-Group Number 5 on Land Transport adopts the Mercosur Resolution No.8/92, the "Regulation of Traffic and Road Safety" in 1992. The official start of Mercosur since 1st January 1995 further accelerated this process.

However, there are still rooms for further improvements of transport infrastructures and operation of transport services when the comparison is made with the current practices in most developed systems of the world.

The Phase 2 of the present Study consists of two sub-issues:

1) Container transportation systems development; and

2) The development of trunk routes between Argentina and Brazil/Chile,

both of which being essential to support industrial development and trade promotion in Argentina, the first sub-issue being required to make further development in comparison with the ongoing container handling systems in the world, and the second sub-issue being needed more concerted development efforts of Mercosur member countries and, possibly, of Chile in order to materialize the best results of economic integration in Southern South America.

Concerning the first issue in the above on "Container Transportation Systems Development", the study focuses on the assessment of needs for the modernization of existing facilities, better container handling operations and management, upgraded means of information flows, and methods of financing their development, which are basic measures for the trade promotion particularly with East Asian markets. The study refers to the experiences of East Asian and Pacific ports, which are now vigorously pursuing the new concept on roles of ports in 21st century and leading the trend of containerization in the world.

On the second issue related to "Development of Trunk Routes between Argentina and Brazil/Chile", the study assesses requirements for transport infrastructure improvements and better transport services, and analyses various transport development issues. The development of Argentina - Brazil/Chile trunk routes will realize trans-continental corridors connecting Mercosur countries along them and oceans of both the Atlantic and the Pacific. They will open up new economic opportunities for countries and regions along those routes. The study refers to the experiences of coordinated transport systems improvements in the European Union, which has devised the Common Transport Policy, eased cross-border controls, promoted combined transport operations and proposed trans-European transport networks. They will be good precedents to prepare the common transport policy for Mercosur countries.

Chapter 1
Study on the Container Transportation System Development

1.1 Introduction

1.1.1 Background of the Study

(1) The necessity for container transportation study

As seen from the Figure VII-1-1-1, the Argentine port counts as one in 50 locations spread out along 3,500 km of sea shore and 2,000 km of navigable waterways. The annual total traffic volume handled through these ports ranged from 75 to 80 million tons, including liquid cargoes out of which 90 % of these cargoes were handled through the comparatively important ports like Buenos Aires, Bahia Blanca, Quequen, Rosarion, Santa Fe, La Plata, Mal del Plata, Ushuaia. Table VII-1-1-1 and 2 show the cargo volume excluding liquid cargoes handled through the port of Argentina from 1990 to 1993.

Table VII-1-1-1 Export Volume Through Major Ports of Argentina, From 1990 to 1993

(Unit: tons)

Name of Port	1990	1991	1992	of 1993
Bahia Blanca	4,271,340	4,286,908	5,416,280	6,257,260
Barranqueras	13,580	8,817	18,438	15,691
Buenos Aires	5,800,711	4,190,473	2,945,444	3,462,058
Campana	994,484	1,150,571	1,056,720	1,167,301
C. Rivadavia	496,829	378,150	1,028,285	791,761
C. del Uruguay	373,748	326,504	494,809	1,334,210
Deseado, Pto	48,080	55,145	447,733	496,496
Diamante	191,650	156,522	329,322	264,240
Formosa	50	140	91,754	72,791
La Plata	3,464,201	2,534,652	3,145,186	2,869,487
Madryn Pto.	249,080	203,728	193,054	266,638
Mar del Plata	148,730	250,505	261,931	167,702
Quequen	2,990,662	3,159,124	3,421,935	2,665,124
Rosario	3,380,996	3,834,401	4,845,453	4,491,335
San Antonio Este	320,611	282,518	393,393	360,409
San Lorenzo	9,763,411	11,848,734	12,899,911	12,210,248
San Nicolas	2,237,241	1,948,894	1,312,427	808,271
San Pedro	334,034	627,774	384,306	338,711
Santa Cruz	519	1,548	5,476	97,711
Sante Fe	119,418	172,769	130,003	217,961
Rio Gallegos	420,057	242,306	218,754	272,757
Rio Grande	170,275	293,781	332,364	910,823
V. Constitucion	1,027,173	869,824	562,004	459,556
Ushuaia	474	17,382	24,966	50,302
TOTAL	26,817,304	36,841,030	39,960,948	38,848,843

Source: INDEC

Table VII-1-1-2 Export Volume Through Major Ports of Argentina, From 1990 to 1993

(Unit: tons)

Name of Port	1990	1991	1992	1993
Bahia Blanca	42,981	90,332	110,077	160,064
Barranqueras	25,420	2,488	30,938	20,872
Buenos Aires	1,098,885	2,583,867	4,365,782	5,266,253
Campana	880,152	837,327	655,696	767,674
c. rivadavia	4,678	1,837	4,164	4,050
C. del Uruguay	0	8	3,047	2,972
Deseado, Pto	1,850	1,343	3,197	2,114
Diamante				
Formosa				
La Plata	127,543	322,167	526,187	199,534
Madryn Pto.	227,501	369,353	272,877	327,522
Mar del Plata	814	5,410	11,019	14,445
Quequen	21,482	24,783	99,402	113,776
Rosario	12,405	42,347	224,898	143,136
San Antonio Este	74	0	303	0
San Lorenzo	80,264	61,371	75,564	116,202
San Nicolas	2,384,098	1,712,356	3,440,132	3,152,758
San Pedro	15	267	735	1,704
Santa Cruz	369	202	31	1,697
Sante Fe	427	8,039	19,002	18,067
Rio Gallegos	0	0	4,610	6,075
Rio Grande	8,959	12,809	28,232	28,743
v. Constitution	934,630	771,128	821,282	981,262
Ushuaia	12,498	21,286	49,158	54,140
TOTAL	5,865,045	6,868,720	10,746,333	11,383,060

Source: INDEC

Argentina have used to export agricultural products and import industrial products with European, North American and neighboring countries.

However, the government have set the economic policy to develop and promote export and import trades with Asian countries as a new market, and generate the economic sustainability. In order to accelerate the trade with Asian countries, it will be essential to develop the necessary infrastructures for containerized system of sea and land transportations, and to promote the following advantages and benefits of containerized transport to the national economic and industries level.

- Unitized cargo delivery by door-to-door service,
- Minimize the cost of sea and land transport for longer distance
- Minimize damages and loses of cargoes between origin and destination

Since the beginning of 1960's the international sea transportation began to containerize. Cargoes nowadays are generally transported by containers on the global scale.

The containerized transportation system have been extended to all corners of the continents of the world to further enhance the global economic activities and growth of international cargo trade in large unitized and quick delivery services. It has developed and been recognized as the most effective and efficient international mode of transport system.

The current trends of containerization in the global sea transport is found as follows:

- The ship size becomes bigger to 50,000 DWT with deeper draft (-14m depth alongside berth and wharf length per one berth of 300~350 m) are built.
- The cargo handling equipment becomes larger with bigger lifting capacity and faster rate in handling operation.
- Information system have developed to faster service and communicated on line to all over the world.

However the infrastructures to cope with such containerized transportation system in Argentina has just begun at the port of Buenos Aires.

(2) Restructuring Argentine ports system

The privatization and deregulation programs of the port and harbor sector were implemented in 1993 by the Decree 817 "Ports Law" passed in 1992 with the objective of improving the operative conditions of the premises, reducing operating costs and make port services more efficient and support service more flexible.

In pursuant to Decree 817/92 some relevant labor, operation and management deregulatory measures were introduced while some obsolete regulations, which caused port operating costs artificially expensive and well over international levels, were removed.

Due to the 1992 Port Active Law, 1992 the Argentine port system has been changed as follows;

There are 64 public ports, and 22 private owned terminals. The management responsibility of 59 comparative small scale ports were transferred or in the process of being transferred to the provinces government control. The cargo handling operation of selected wharves of some ports were given to the private companies on contract basis.

5 strategically important ports (Buenos Aires, Bahia Blanca, Quequen, Rosario, Santa Fe) were formed into independent port authority of non-state private basis, that would be responsible of the management and development of each respective port.

These authorities were organized by the representatives of all those private sectors interested in the port activities including the province and municipality.

The decentralization of the national port system was implemented during the same process of privatization since 1993 so that the strategic ports could become sufficiently autonomous to provide an efficient operation and to conduct a rational productive and self sufficient management system. This policy has been complemented by the transference of all the ports administered by the Central Government Institution to the corresponding provinces, with the exception of the port of Buenos Aires, which remain under the administrative jurisdiction of the Central Government.

The other ports are being transferred to their respective municipalities as follows:

The ports of Baradero, Ramallo, Carmen de Patagones and Olivos will be transferred to their respective municipalities. San Isidro will be privatized, as well as the ports of San Nicolas, Zarate, Campana, Olivos, San Isidro, Tigre, La Plata and Mar del Plata and the provincial government will only be responsible for external auditing.

1.1.2 Issues Discussed in the Report

(1) Study flow

The Study had been conducted in the following flow chart Figure VII-1-1-2. Each subject at the respective stage of the activity is explained at the relevant chapter and sections in this report as indicated in the rectangular frame.

For contributing to improve the containerized transportation system in Argentina under the transferred stage of port operation and management, the study team had conducted reconnaissance survey to observe existing conditions of container transportation at Buenos Aires Port and other major ports in Argentina including container terminals development at major ports of neighboring countries. The study team also visited major ports of the trade route of shipment between Asian and Latin American regions for comparing the situation of container terminals.

Figure VII-1-1-1
LOCATION OF MAINPORTS IN ARGENTINE

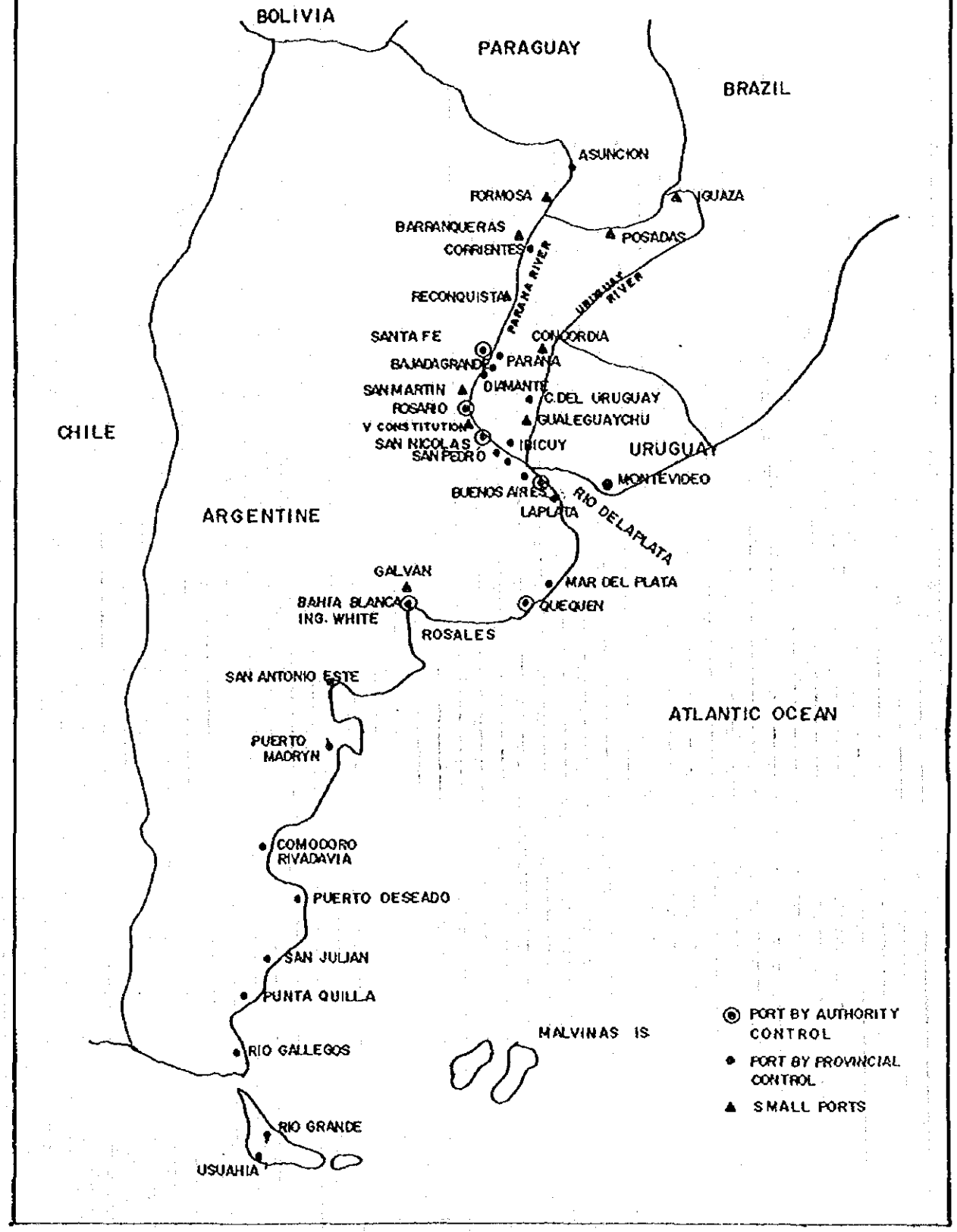


Figure VII-1-1-2 Study Flow Chart

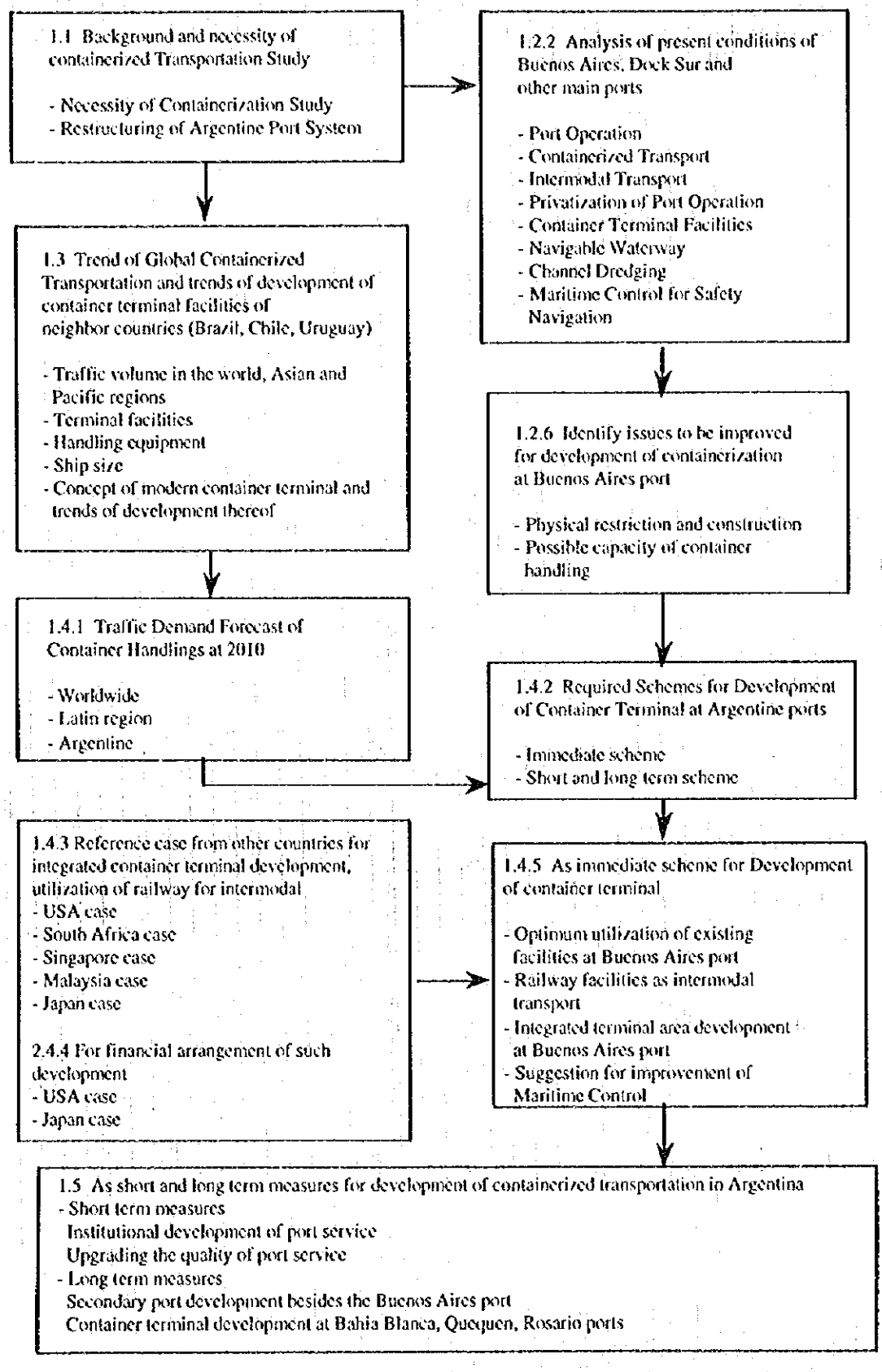


Figure UII-1-1-3 MAIN SHIPPING ROUTES CONNECTING ASIAN COUNTRIES AND LATIN AMERICA

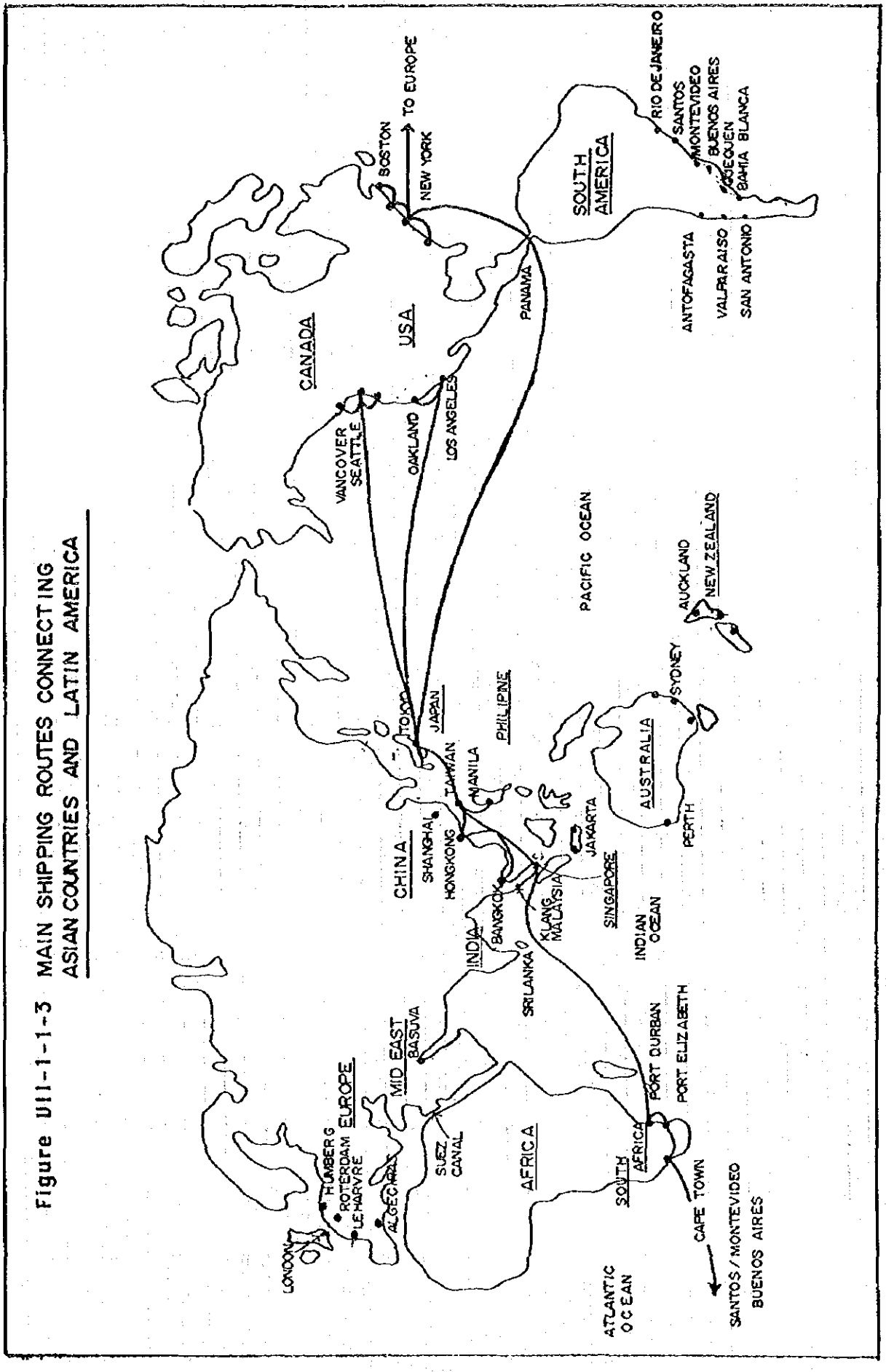


Figure VII-1-1-3 shows the main shipping routes connecting Asian and Latin American countries. Main ports referred to in this report are those where the study team visited to collect relevant data and information for the study.

Based on the findings, the study team provide the useful examples and opinions of the following highlighted points for guidance to the future course of the container terminal development of Argentina.

- How far the infrastructure of container terminal have been developed in ports of Asian countries, USA, neighbor countries and ports located on the main shipping routes connecting between Asian countries and Latin American countries,
- How the financial requirements are arranged for the development project implementation from the case of USA, Japan.
- How the railway is utilized as intermodal transport for container transport from the case of South Africa, USA.
- The measures of containerized transportation to be developed in Argentina.

The following main issues in relation with container transportation system are discussed in this report.

(2) Issues discussed in the report

a. The existing condition of the container terminal facilities, equipment and other supporting facilities in Argentine port mainly through the sea transportation and its related mode of transport, like navigable waterway and railway. The existing conditions of channel dredging, Hidrovia project and maritime control, which are related to the container transportation by sea.
b. Impacts to port service by privatization.
c. Estimation of the possible capacity of container handling at the Buenos Aires port under the present condition of the facilities arrangement utilization and physical constraints.
d. Trends of containerization transport in the world, particularly in Asia and Pacific region, regarding the scale of container terminal supporting facilities, cargo handling equipment, size of container ships, and information flow system.
e. The concept of modern container terminal facilities and trends of development thereof in the world.
f. The current progress of container terminal development in the neighboring countries.
g. The traffic demands forecast of container handling through the world sea transport and to the Argentina aiming at year 2010.

h. The required schemes for development of container terminals in Argentina to meet such demands. For immediate scheme, optimum utilization of available facilities at Buenos Aires Port for integrated terminal area development.
i. The examples of financial arrangement for the project implementation of the other ports in Asia, USA, etc.
j. Short and long term measures for improvement of port services and operation through the Argentine ports.
k. Institutional development and upgrading the quality of port service and secondary port development for container transportation beside the Buenos Aires port.

1.2 Present Situation of Port Operation and Container Transportation in Argentina

1.2.1 Profile of Port and Harbor as Transportation Sector of Argentina

(1) Profile of port and harbor sector

In pursuant with the provisions of Decree N(817/92, the new organization for ports coordination was implemented in 1993 by establishing sub secretariate of Port and Navigable for coordination and supervision of 15 main provincial and autonomy ports under the Secretary of Transportation, the Ministry of Economy and Public Works and Service. The Administration General de Puertos (AGP) will be reorganized and renamed as Sociedao Administradora Puerto Buenos Aires to be responsible of the management of the Buenos Aires port and Concocium de Puerto Argentina (CPA) for coordinating all the provincial ports development planning relative to technical and administrative aspects.

The sea transportation sector has been deregulated in 1992 and these measures include as follows;

- The dissolution of AGP and the decentralization of port administration
- The establishment of legal regime for private ports
- The deregulation of port operation and the dissolution of previous respective labor agreements
- The privatization of cargo handling and storage operations within a competitive framework, through concessions,
- The deregulation of pilotage and towage
- The deregulation of sea and river transport.

Since Buenos Aires port is the gateway port of the Argentina and had handled about 97% of total container coming to the Argentina, the improvement of the Buenos Aires port is considered important issue in the development of containerized transportation in Argentina. In this section it is focused on the present situation of container handling operation including the possibility of intermodal transport through Buenos Aires port and other major ports for handling containers.

1.2.2 Buenos Aires Port

(1) Character and function of the port service

The port of Buenos Aires is located about 250 km west from the mouth of the La Plata River and considered the gate of the capital city of the country. The port have been developed to function as transshipment port for handling export and import cargoes.

The import cargoes are distributed to industry and agroindustry located within the radius of 40 km from the port. The export cargoes are also collected from these areas by railway and trucks and loaded to vessels through Buenos Aires Port.

Specially regarding container traffic, the port have handled nearly 97% of total national traffic. Under such traffic flows and demands the road and railways have been developed to connect from the Buenos Aires to different corners of the countries.

The traffic volume in 1993 was 8.11 million tons of which some 1.45 million tons are general cargo, 1.824 mil ton of liquid bulk, 1.433 mil of solid bulk cargo and 3.398 million ton of containerized cargo which has been growing rapidly and had handled 448.219 TEUs in 1993 (246.665 of import, 189,340 of export and 12,205 of transit).

Buenos Aires port, with its 20 to 30ft draft of berthing facilities, is the largest general cargo and container port in Argentina.

To streamline administration and encourage private sector investment in the port operation, the port of Buenos Aires has been divided into three independent areas, namely as follows; (as shown Figure VII-1-2-1). Such division has been made on the basis of geographical and jurisdictional features and to enhance competitiveness among these ports.

a. Puerto Nuevo; In 1992, the Government decided that this port be administrated by an independent Port Authority organized with member of representatives from port users of private sectors. All the cargo handling and storage operation will be handled by the private sectors. There are 6 container and multi-purpose terminals, which are operated by 5 private companies from September 1994.

b. Puerto Darsena Sur; as parts of the Puerto Madero area which were constructed about 100 years ago and to be offered as a long term concession for development of commercial port service including mariner and ferry service. The remaining parts of Puerto Madero (Dique 1 to 4) were transferred to the municipality of

Buenos Aires in 1989 for renovation to the city business and office activities center.

c. Puerto Dock Sur; An independent Port Authority is established for the development of this area including Riachuelo-Boca basin and cannel area under the jurisdiction of the Buenos Aires province.

(2) Privatization of port operation

a. Background of privatization

Before the privatization of the port operation at Buenos Aires port, the port service were provided under the following conditions:

1) There are many unnecessary infrastructures and facilities in the port area
2) Too complicated documentation for export and import cargo handling process
3) There is no clear definition of responsibility and authority of port operation between the national level and provincial level, resulting to a lot of confussions to implement the improvement programs
4) The equipment for cargo handling and railway facilities and other waterfront facilities had been already worn out.
5) There are no investment for development and maintenance of infrastructure even under the central government control of the port operation
6) The container handling were carried out by using old equipment without competitive concept and,
7) The handling cost have got too high and the tariff have got too complicated and uncleared.

The privatization and deregulation programs of the port and harbor sector were aimed at the improvement of the operative conditions of the premises to reduce operating costs and to make port services more efficient and support services more flexible.

This will bring a general reduction in the sea transportation costs of import and export cargoes, thus optimizing the operational efficiency, fostering the competition, promoting the private sector investment for port operation, preventing monopolized practices, improving the quality of the services and reducing port costs and simplified the tariff structure.

b. Privatization of cargo handling at the port of Buenos Aires

The privatization of cargo handling operation at Puerto Nuevo in the North of Puerto Madero, herein called "The Port of Buenos Aires" had been proceeded with the following conditions.

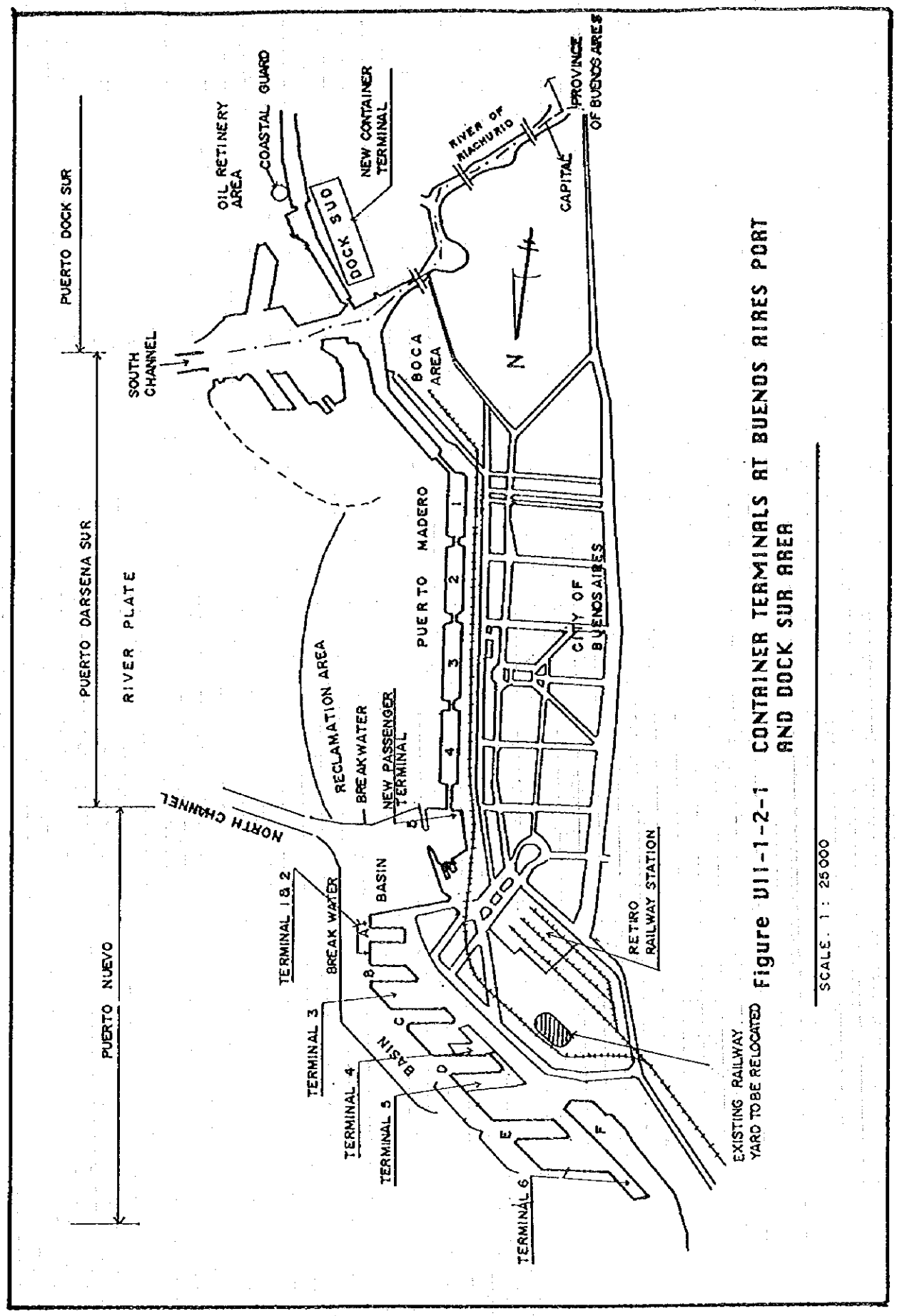


Figure VII-1-2-1 CONTAINER TERMINALS AT BUENOS AIRES PORT AND DOCK SUR AREA

The terminal operators will have the rights to;

1) Equip and use the terminal with its berth and storage areas considered adequate.
2) Determine the modifications to the superstructure on the basis of the operational and conventional scheme to be selected.
3) Define the sector of the market for general cargo, multipurpose, container, or bulks handled.
4) Establish the levels of the rates charged for cargo services and for ship stay within a common structure or basin area to be defined by the port authority.

In return, the operators will be responsible of ;

1) Payment of a lease amount as asset charges and cargo handling charges as port due to the port authority.
2) Maintain and rehabilitate the infrastructures warehouses, cargo handling equipment, pavement, damaged quaywall, in concession for the use in their operation.
3) Invest for development of infrastructures and procurement of equipment
4) Maintain the safety of traffic and cargo operational responsibility
5) Providing a human resources development training.
6) Abstention from economic and commercial relations with other terminals.
7) Compliance with applicable laws and regulations, in particular those relating to safety and protection of the environment.

Based on the above conditions the tender had been advertized for terminal operation. Five (5) private contractors were awarded in 1994 for respective terminals to operate cargo handling with concession of 20 to 25 years.

The operator must provide necessary cargo handling equipment for containers and general cargo, arrange for the required labor force for stevedoring and carry out rehabilitation / repair, reconstruction of the existing wharf and inside port road including demolition of existing warehouse and sheds. The operator started the terminal operation from September-October 1994. The port authority (currently, AGP) is responsible of maintenance dredging to keep the channel and basin in front of the wharf at the specified draft of 31 ft.

c. The case of Dock Sur Area

Untill 1992, this area was parts of the port of Buenos Aires under the control of AGP. The control and operation of the part of the Dock Sur at the west of the Riachuelo River were transferred to the Buenos Aires Provinces in 1991 and was also authorized for a private terminal operator to utilize the facilities as container terminal by concession through the provincial government in 1994.

The present condition of the Dock Sur area are shallow water depth and many bulk industries like oil storage tank yards, chemical plants, shipbuilding dock are established and operated. The waterfront facilities were old and worn-out.

The new authority will prepare the master plan to convert this area for industrial port facilities as well as container terminals and also preserving the historical monument and sites for the tourist attraction spots for the city of Buenos Aires. The renovation and infrastructure development of port facilities along with the Riachero and Matansa rivers cleaning and development project will be conducted jointly by the private investors.

The Dock Sur is located at the mouth of Riachero and Matansa rivers. The cleaning and development project of the rivers are essential for maintaining the port operations efficiently.

d. Difference by Privatization of Port Operation

The following differences are reported before and after the privatization of port service and facilities development by the implementation of the above new policy.

The Government policy had enforced the port sector to turn out in the decrease of costs in port services. Costs reductions have contributed to the growth factors for some sectors of the economy and permitting to enter foreign markets.

Table VII-1-2-1 The Difference Before and After the Privatization of Port Operation

No.	Description	in 1991	in 1994/95	Remarks
1	Volume of Cargo handled			
1-1	-General Cargo (1,000,000)	4.2	6.0	
1-2	Container (TEUs)	240,000	525,801	
2	Operation Areas (ha)	65	95	
3	Number of Heavy Equipment	3 units	13 units	Gantry cranes
4	Infrastructure Investment (Mil US$)	Nil	135	Container Terminal
5	Average Stay Period of ships			
5-1	-for general cargo ships (days)	6.2	3.1	
5-2	-for container ship (days)	2.5	1.5	
6	Reduction of handling cost (US$/box)	440	114	import containers on apron
7	Productivity (ton/person/year)	667	2,040	
8	Capacity of container handling (TEU)	400,000	1,200,000	
9	Port Charges			
9-1	-Import cargo ships (US$/ton)	6.69	3.00	
9-2	-Export cargo ships (US$/ton)	2.10	1.50	

Source: AGP

e. Beneficial Effects in Port Operation by Privatization

The impacts by the deregulation's and privatization of port operation is enumerated as follows;

1) The cargo handling cost such as the container handling on the wharf was reduced from around US$600 / container, now to US$200 which will be further reduced by the private terminal operator to around US$150.
2) The cheaper freight of about 12 to 30 % of major bulk cargo such as wheat, coal and stone by railway are provided previously by truck transport due to heavy competition, but subsequently traffic volume of bulk cargo have increased in the railway.
3) The railway companies are allowed to develop new markets to transport trucks on wagon with new technology and to promote new customers of wheat collectors at production area by creating a confidence to the customers that their cargoes are delivered in time with required quantities at cheaper cost.
4) The railway company started and plan new projects to construct truck collection terminal in the suburb of Buenos Aires city to deliver bulk cargo like cement and stones, etc to the destinations within the city without asking customers to collect such cargo from their stations or production factories and avoid interference to heavy city traffic congestion.
5) The pilot services and tug boat service are provided with reasonable cost and time because the government introduce the free competitive market to users of pilot and tug boats for sailing the Parana - La Plata rivers
6) The custom clearance procedure are simplified and faster at the port since they are allowed to introduce the computer network system connecting customer office, shipping agents and cargo consignees. All paper works can be disposed by the computer network and no need to visit number of desks in the customer's office.

f. Evaluation of Privatization of Port Operation

The above differences and impacts by privatization of the port operation and services are evaluated on preliminary basis at this stage after 2 years of implementation as follows:

1) Changes in port operation

Previously the port is operated in a common user's public berth operation with private stevedore companies, which was changed into privately operated and specialized container and multipurpose terminals under the terms and conditions agreement with the Buenos Aires Port autonomous company (currently AGP). The privatization and modernization of ports services are required in the process of national economic adjustment, facing market globalization with trades and growth of competition among ports.

The terminal operators take over the exclusive responsibility for a designated area and given the right to carry out an integrated operation of cargo handling and storage under their sole, complete and direct responsibility.

The pricing and tariff aspects of cargo handling services are left to the concept of free competition with an anti monopoly procedure.

The terminals are defined with their berths, water areas, present utilized length and alongside depth and location. The necessary repairs and rehabilitation of the waterfront and land facilities to be carried out by the potential terminal operators are defined.

The terminal operators are required to provide professional training to achieve a transformation of traditional stevedore workers into a qualified industrial workers.

The terminal operators are authorized to charge wharfage on behalf of the port authority with a simplified and economic administration tariff.

In the transformation process, the previously high prices with inefficient port services were no longer deemed politically acceptable. From the short term experience of the privatization of port operation, such process presented one of the concrete opportunities to make ports more efficient.

The modernized incorporation of technology and the management amelioration derived from the active participation of private sector in the port activities have contributed not only to the increase of productivity, but also to the improvement of the service quality and efficiency in the achievement of the sector's objectives. The process of privatization and modernization were accompanied and driven by port users.

Since implementing the privatized container handling at Buenos Aires port, new demands for development of accommodating arrival of full larger container vessels are envisaged to be served in the regular shipping operation and handling operation of 1 or 2 days stay at port. Such changes in the efficiency of the port operation will reveal a quite favorable situation for the port and shipping companies and national economic growth by increasing export and import trade volume by the agro-industrial sector.

2) Cost structural changes of container transport

With all the regulations affecting port operation, the final price of cargo handling on the wharf amounted to US$ 550 to 600 per ton and the excess of workers in stevedore gangs was about US$ 110 with a six hours shift for one longshoreman before the deregulation and privatization. However, after such policy of deregulation and

privatization one of the terminal operator has set his typical applicable price of container handling charges as follows;

* Transportation of export container from the client to the container yard is US$ 70 per box

* General handling cost from stock area to marshaling area in the container yard is US$ 200 per box, in case of storage of containers for two days US$70 per box and for five days US$ 100, (more than 5 days, 300 US$ per container)

* Handling charges from apron to ship by crane is generally US$ 80 to 100 per container, but special discounted rate is given to the customers with fixed guaranteed quantity of containers

* For the cargo tax, US$ 3/ton for import cargo and US$ 1.5 per ton for export cargo are paid to the port authority

* For Port due, US$ 0.3/ton is paid to the port authority and berthing fee of US$ 0.70/day/ton is paid as the terminal operation to the port authority.

3) Traffic of containers and ships

Table VII-1-2-2 shows the cargo traffic of 1994 for the whole year and the same cargo from January to August of 1994 and 1995 for comparison through the Buenos Aires port.

The traffic volume of containers have increased substantially from 1992 to 1995 at the Buenos Aires port by the privatization of the terminal operation as shown in the Table VII-1-2-3.

The port had handled 448,219 TEU containers in 1993 which was 61.2 % increase (170,094 TEU) from the volume of 1992 and estimated to handle 532,681 TEU in 1994 which was 17.3 % increase (84,462 TEU) from the volume of 1993.

In addition to the above volume of containers the terminal operator at the Dock Sur started the operation from March 1995 and its traffic up to August 1995 was 62,094 TEUs. The volume upto August 1995 is estimated 340,191 TEUs including the volume through the Dock Sur terminal and by the end of the year, the ports of Buenos Aires area will reach around 600,000 TEUs.

Table VII-1-2-2 Type of Cargoes volume of Buenos Aires Port in 1994 and 1995 Between January to August

Description		1994	Jan-Aug of 1994	Jan-Aug of 1995	Difference (%)
Cargo Throughput (ton)					
General Cargo		1,440,609	1,037,297	664,384	-39.95
By Containers		4,029,765	2,509,033	2,775,330	+10.61
Liquid Bulk		410,326	371,087	278,530	-24.94
Dry Bulk Cargo		953,908	739,921	945,694	+27.81
Total		6,834,608	4,657,338	4,663,937	+0.14
Import/Export					
Import Cargo		4,411,711	3,101,353	2,105,706	-32.10
Export Cargo		2,321,656	1,504,777	2,500,987	+66.20
Transshipment		101,241	51,208	57,244	+11.78
Total		6,934,608	4,657,338	4,663,937	+0.14
Container (TEU)		532,681	328,056	340,191	+3.69
Cargoes in Import and Export for Jan-Aug 1994 and 1995					
General Cargo (ton)	Import		776,470	420,968	-45.78
	Export		251,945	238,065	-5.50
	Transshipment		8,882	5,352	-39.74
By Container (ton)	Import		1,608,846	1,433,860	-10.87
	Export		857,861	1,289,578	+50.32
	Transshipment		42,326	51,892	+22.60
Liquid Bulk (ton)	Import		341,831	171,821	-49.73
	Export		29,256	106,709	+264.74
	Transshipment		0	0	0
Dry Bulk Cargo (ton)	Import		374,206	79,058	-78.87
	Export		365,715	866,636	+136.97
	Transshipment		0	0	0
	Total		4,657,338	4,663,937	+0.14

The general trend of containers handled through the port is, 70% are of 20ft containers and 30% are 40ft and there is a trend toward having more containers of 40 ft in near future. Concerning the export containers, out of 10 containers 5.6 containers leave the port empty and 4.4 leave it full, while on import containers, out of ten containers, 8.8 enter full while 1.2 enter empty.

In total traffic of containers, 34% of the traffic (exports and imports) were empty and 66% were full containers.

Table VII-1-2-4 shows the details of respective terminal operators and volume of containers handled by them between January to August 1995.

Table VII-1-2-3 Volume of Containers Through Buenos Aires Port from 1980 to 1994

Year	Import Container	Export Container	Transit Container	Total in TEU	Difference in TEUs from previous year	Rate of Increase/ Decrease (%)
1980	71,438	51,217	n.a.	122,655	+72,791	-
1981	81,384	70,846	n.a.	152,230	+29,575	+24.1
1982	50,110	44,940	n.a.	95,050	-57,180	-62.0
1983	65,273	54,900	n.a.	120,173	+25,123	+26.0
1984	68,739	51,296	n.a.	120,035	-106	-
1985	56,296	53,619	n.a.	109,915	-10,085	-9.2
1986	73,310	67,017	n.a.	140,327	+30,409	+27.6
1987	91,991	96,614	n.a.	188,605	+48,278	+34.4
1988	94,645	101,103	n.a.	195,748	+7,143	+3.7
1989	105,342	107,793	n.a.	213,135	+17,387	+9.2
1990	107,915	110,537	n.a.	218,452	+5,317	+2.5
1991	125,715	129,030	n.a.	254,745	+27,293	+12.5
1992	167,576	174,416	n.a.	341,992	+32,781	+13.3
1993	245,260	229,252	n.a.	474,512	+169,693	+60.9
1994	295,203	230,598	6,880	532,681	+84,462	+18.8

Source: Container International Year 1993 and AGP.

Table VII-1-2-4 The Details of the Respective Container Terminal Operators at Buenos Aires Ports and Their Traffic of 1995 (Jan - August)

Description	Terminal 1&2	Terminal 3	Terminal 4	Terminal 5	Terminal 6
Name of terminal operator	Terminal Rio de la Plata SA	Terminals Portuarias Argentinas SA	DNA "C" Cabecera and Lado Norte	BS.AS. Container Terminal Services	Inlefema de Buenos Aires
Annual fee offered to port authority	US$9,661,000	US$5,105,550	US$1,115,000	US$8,873,788	US$8,254,000
Annual fee requested by port authority	US$2,500,000	US$1,950,000	US$550,000	US$2,600,000	US$750,000
Length of berth	1,813m	1,160m	449m	669m	585m
Number of berths	7	8	2	4	6
Number of cranes and handling equipment	total 10 units 20/30ton - 5 units 6/12.5ton - 3 20/25ton - 2	total 22 units 3ton - 8 units 6.4ton - 12 27.5ton - 1 20/35ton - 1	total 3 units 6.4ton - 2 12.5ton - 1	total 9 units 6 to 12.05ton - 3 45ton - 3 80ton - 3	total 6 units 6.4ton - 6
Depth alongside berth	27ft	28ft	28ft	28ft	22ft
Number of ships	341 ships (Jan-Aug, 1995)	164 ships	92 ships	194 ships	169 ships
Number of containers handled	125,000 box (Jan-Aug, 1995)	43,505 box	11,230 box	82,870 box	28,420 box
Number of workers	803 persons	187 persons	174 persons	260 persons	550 persons

Source: AGP

Table VII-1-2-5 shows the number of vessels and export/import cargoes through Buenos Aires port between 1990 to 1994.

(3) Existing conditions of port facilities, and operation after the privatization at Buenos Aires and Dock Sur Terminals

Table VII-1-2-5 Number of Vessels and Export/Import Cargo Through Buenos Aires Port Between 1990 to 1994

Year	Vessels	Cargo Volume (x1,000ton)		
		Import	Export	Total
1985	1,322	1,227	6,808	8,035
1990	1,666	1,258	7,636	8,894
1991	1,508	2,465	5,206	7,671
1992	1,624	3,560	4,307	7,867
1993 with Dock Sur	2,049	4,903	3,074	7,977
1993 without Dock Sur	1,655	3,867	2,684	6,551
1994	2,145	4,412	2,322	6,734
1995 for 6 months	633	1,523	1,804	3,327

Source: FAEM

Private terminal operators had taken over the premises of respective areas of the port facilities and commenced handling service and operation in October 1994.

The conditions of port facilities are summarized as follows:

- Terminal No 3 specializing for exporting grain and sub-products for which a concession has already been awarded to the private company.
- The basin in front of the terminal were dredged up to -10 m (31 ft) by A.G.P which is applied to all the terminals.
- The infrastructures inside the port road and wharf, warehouses and transit sheds were deteriorated and worn out in many parts which are not suitable for the container handling operation. The terminal operators are required to rehabilitate or reconstruct such parts for efficient and safe handling operation.
- There are not enough space available on the land side for expansion of container yard, then containers are stocked everywhere of the port road area. It is observed that the present arrangement of the port facilities for containers operation will be saturated.
- The pilot services are provided through the pilot association and tug boats are provided by the private companies.

The terminal infrastructure development, handling cost, operational efficiency and issues required to be improved are briefly described from the cases referring to the terminal operators 1 & 2, 5 and Dock Sur who are active in container handling and observed to be successful.

a. Case of terminal operator of Terminal 1 & 2 (Rio de La Plata Co.)

The operation of Terminal 1 & 2 were started on November 1, 1994.

The present terminal have 6 berths and accommodate 150 m long vessels with draft of -10 m and number of barges for inland waterway transport through the Parana river to Paraguay.

1) Infrastructure development

- The company committed to invest US$126 million for development of terminal No.2 and demolished cargo warehouse for converting into container open stock yard with pavement and drainage.

- The damaged quaywall and apron were repaired for deepening the depth along side the wharf up to - 10 m.

- The fixed cranes without railway owned by the AGP were demolished and PC piles were driven to support the 500 tons crane rail foundation.

- In 1995, 2 gantry cranes were installed on terminal No. 1 and in August 1995 pavement of terminal No.2 are completed and all buildings thereat were demolished.

2) Development plan

- It is planned to fill the basin between terminal 1 and 2 to develop one container stock yard. The basin in front of the terminal No. 1 & 2 of 40 m distance from the breakwater will be dredged by AGP's dredger up to - 10 m. The waterfront side facing to the waterway basin is planned to develop a new quaywall and install 2 gantry cranes.

- It is planned to develop reefer terminal by demolishing the existing coast guard office area in 1996. They estimate the stocking capacity of reefer terminal at 720,000 TEUs.

- Shipping line who is using this terminal plan to develop an inland depot and to deliver the in-coming containers smoothly from the terminal area so as to utilize the limited area in the full capacity.

3) Traffic volume

The company estimate that the handling capacity will be increased to 380,000 TEUs per year after completion of the pavement works of terminal No.2 and procurement of 7 units of new rubber type transtainers, (4 units for terminal No. 1 and 3 units for terminal No. 2).

The company estimate the handling volume of 650,000 TEUs per year through terminal No. 1 &2 in next five years and the traffic volume of 750,000 to 800,000 TEUs by the year 2000. The maximum size of ships will have capacity of 4,500 TEUs.

4) Information and documentation system

The company have adopted the custom clearance documentation system called "Maria" developed by the custom authority to meet the following objectives,

- to deliver cargo efficiently through the new custom clearance system.
- deliver the containers through the gate in and out in 35 minutes as the targeted period and,
- to simplify the delivery documentation.

All the other operators at this port also adopted this custom clearance system.

5) Operation and management aspects

The productivity has increased and the services become competitive. The operation service provide for 24 hours for 6 working days a week.

The maximum handling rate by good experienced operator is 40 units per hour and in average 25 units per hour.

6) Handling cost

The average handling cost is around to US$200 per box which include all expenses from the ship along the wharf through the yard to the gate of terminal.

b. Case of terminal operator of Terminal No. 5 (BATCSA)

The company started the operation of the wharf No.5, having 4 berths with draft of 31 ft in October 1994.

1) Infrastructure development

3 gantry cranes were installed and their handling rate is 30 box per hour. The container handling system in the yard is by used transtainer and mobile cranes (18 ton capacity each).

The company have constructed the Container Freight Station (CFS) and a new building to be used as a canteen for labors to have foods and shower. Since the terminal area are scattered, such as a power plant is located behind the berth of terminal 5 and a railway yard between the berth and open storage areas. The company organized the stock area of containers depending on their purposes, wherein, the import and empty containers are stocked in the back yard area behind the railway yard and export are stocked behind the berth.

2) Development plan

Since the terminal area at the water front in the port is not large, the company plan to get stock yard area from the existing railway yard for inland depot as short term plan.

The berths were designed for comparatively smaller size of container ships or restricted draft of larger ships entering to the port.

3) Traffic volume

The traffic of 14,000 to 15,000 containers equivalent to 17,000 to 18,000 TEUs per month on the average were handled. 2 to 3 container ships per day called this terminal, which go to the ports of Chile, the port of Valpalaiso and other ports along the Pacific Ocean. Under the present arrangement of the stock yard areas and facility, the company estimate to accommodate containers about 18,000 TEUs per month and 220,000 TEUs per year.

4) Information and documentation

The company have their own information system to trace containers and plan to install such system shortly through a new gate to make on line system between clients of cargo, ship lines and terminal administration office.

It is planned to adopt "Maria" as custom clearance computer system commonly applied to port users.

5) Operation and management aspects

According to the comments of the port users, "Mitui O.S.K. Lines, Ltd." using this terminal the port operation and handling services had improved as follows; Their ships have sailed through the route of Japan-Singapore-Durban (South Africa)-Montevideo-Buenos Aires-Santos-Durban-Japan, to trade between Asian and Latin American regions.

* Before the privatization of port operation, the berth is specified by the port administration and the ship agents make a contract with terminal operator of the port administration office every time when ship come to the port who arrange equipment and stevedoring co. including labors supply for cargo handling. After the privatization the ship agent made long term contract in lump sum basis for exclusive use of the specified berth with private terminal operator who arrange equipment, labors. The ship agent can not use the previous stevedoring company.

* The same cost of wharfage is charged according to the existing port tariff and have not been changed. The handling rate are reduced about US$200 per one container, because the private terminal operator desired to retain the users. The previous handling rate were composed of the costs of equipment, stand-by time of equipment and labor, actual number of labor and their working time. The present handling rate is clear and simplified on lump sum basis including all the expenses for handling from ship to yard.

* The efficiency of handling have improved substantially and maintain punctuality cargo delivery. The terminal operators have the know-how of container operation and provide appropriate services for containers handling in the yard and on the apron.

* To conclude a contract with the terminal operator for berth priority, the shipping line have to guarantee the minimum volume of cargo and number of ship calls to the terminal. They receive fixed day service (fixed time arrival and departure basis)

6) Handling cost

The company manage to handle containers from the gate to loading to ship around US$200 per one box. The terminal operator allow to stock import container free for 5 days in the yard and export for 7 to 10 days.

c. Case of terminal operation of Dock Sur, (Exolgan)

The provincial government plans to develop the Dock Sur area under the separate authority to be established jointly with the province and municipality of Buenos Aires government representatives.

1) Infrastructure development

The company have received the land area as concession from the Buenos Aires province.

The company developed infrastructures and utility supplies to be used as container terminal, such as water and electric power supplies and access road rehabilitation and yard pavement including reinforcement of transtainer running lines in the yard area.

The company developed the wharf length of 500 m with 10 m depth and 180 m with depth of 8 m and installed two (2) gantry cranes and number of yard cranes (transtainers).

2) Traffic volume

This terminal handled about 35 % of the total containers,(12,000 TEUs per month) through the Buenos Aires port in 1995. The share of containers has been changed from 1993 to 1995 as follows;

30 % of export, 45 % of import and 25 % of empty in 1993 were changed into 40 % of export and 45 % of import and 15 % of empty in 1995.

23 vessels had called this terminal in August 1995 with average size of ships carrying 1,200 TEUs containers. The maximum size of ship was 20,000 to 25,000 DWT

carrying about 2,000 TEUs. The container traffic during March to August, 1995 was 62,094 TEUs.

3) Information and communication system

It is planned to install a new gate at the entrance of the present terminal with new computer system called "Navis" system which was developed by the company integrated on line system with ship, container yard, CFS, container terminal administration.

4) Development plan

It is planned to extend the berth for 250 m with 10 m depth for one more berth of container ship and install additional gantry cranes.

There are 2 gantry cranes at present and one additional crane will be installed shortly. The operator plans to expand the handling capacity to about 800,000 TEUs per year by development of additional berth and yard and new information system through the gate operation.

It was also planned to transport containers by using the railway, FERROSUR, Co. and to collect export cargoes in containers from north west part of Argentina, Mendosa areas and import cargo carrying between Cordoba, Rosario and Buenos Aires. The necessary infrastructure investment will be worked out by two companies jointly.

5) Dredging works

The present draft of the access channel at the South Channel to the Dock Sur of Buenos Aires is 28 ft, but the provincial government of Buenos Aires committed to deepen the draft to 32 ft.

6) Handling cost

Transport cost from the client to the yard is US$70 per export container and storage fees is US$70 for 2 days and US$100 for 5 days. General handling charges in the yard is US$200 per unit, while handling charge on the apron to ship is US$100 to 120 .

(4) Container handling equipment system at the Buenos Aires Port

a. Handling equipment

Actually, Terminal No. 1&2, 5, and Dock Sur are adopting the transtainer operation system.

Rubber tired transtainer in the stock yard handling operation is more flexible for changes of terminal lay-out in future.

The container terminal at the Cape Town port has now faced difficulty to expand and adjust the container stocks due to the railed transtainer system port.

The current arrangement of container handling equipment of the respective terminal operators at the Buenos Aires port are tabulated below:

Table VII-1-2-6 Handling Equipment System by Respective Operators (as of Oct. 1995)

Terminal	Container Handling Equipment Working	Name of Operator
Terminal 1/2	4 Portainer, 11 Transtrainers, 20 Tractors, 33 Chassis 16 Constackers	P&O (Australia), Murchison S.A. (Argentina)
Terminal 3	2 Mobile cranes of 200 tons, 3 Cranes on rail of 6.4 tons 3 Cranes for container yard, 3 Constackers, 20 Tractors & chassis	Auto Transportes Antartida (ATA S.A.), Mi Jack Products Inc. (USA) Arpetro S.A., Rogge Marine Consulting GMBH (Germany)
Terminal 4	2 Mobile Cranes, 2 Reach stackers, 10 Folklifts 3 Tractors & chassis	Gabriel SRL, Empresa Guillermo Martinez, Graneles Portuarios S.A. Platachart S.A.
Terminal 5	3 Portainers, 3 Mobile cranes, 5 Transtainers, 5 Reach stackers 28 Tractors, 22 Trailers	H. Brouzas y Cia S.A., International Container Services Inc. Exolgan S.a., HPC de Hamburgo
Terminal 6	1 Portainer, 4 Mobile cranes, 6 Wharf cranes on rail	Maritima Buenos Aires SRL, Tenanco S.A. Ferry Line as Argentinas S.A.
Dock Sur	2 Portainers, 6 Transtainers	Exolgan S.A., HPC de Hamburgo

For efficient container handling in the yard by transtainer operation which fixed the location of container to stock, the combination of 1 Quay crane (Gantry crane), 2 Transtainers, 8 chassis are advisable combination of equipment. Some additional equipments like top-lifters, folklifts, Constackers are required.

Terminal No.5 having separate storage yards apart from their marshaling yard at the wharf area need additional terminal chassis and top-lifters, etc. for carrying containers between the wharf and yard areas.

b. Optimum combination of equipment on apron and yard

The space of each terminal in Buenos Aires Port is not ample due restricted finger type berth in shape. The minimum space between 15 to 20 m under quay crane is required for the crane operation. Marshaling yard space and container storage space are limited. To cope with increasing containers volume the operation will be forced to stack containers higher and higher in the apron and stock yard. At present No.5 terminal and Dock Sur are stacking not only empty containers but also loaded containers up to 4 tiers. Terminal No.1&2 are stacking empty containers up to 5 tiers and the rubber tired transtainer operation system is deemed more suitable under the present condition.

At present Terminal No. 3 and 4 are mainly using the mobile cranes for handling containers.

c. Handling cost and comments before and after privatization

1) Reduction of handling cost by privatization

As seen from the Table VII-1-2-1, the handling costs per box of import container in 1995 has been reduced under privatization system.

It is reported that in 1990/91 the customs import documentation clearance took about ten days. Processing an export operation required 27 different steps at 17 separate windows and took at least a whole week.

Since the custom agency introduced new computerized on line system called "Maria" in 1994 the processing become simplified, subsequently the time and cost have been reduced, which appears to be reasonable.

But impacts thereof to the total cost reduction of the container handling is not yet substantial, because the capacity of container per one vessel is limited and comparatively small.

2) Comparison of handling cost of containers among Buenos Aires, Santos, Seattle, Singapore and Nagoya.

The handling cost of container per 20ft FCL (Full Container Load) at the port of Buenos Aires after privatization of terminal operation was compared with relative costs at Santos, Seattle, Singapore and Nagoya in the following manner;

The average handling charges at respective ports are estimated by applying their respective port tariff for consignee, shipper, port user, etc as shown on Table VII-1-2-7.

The comparative study of container handling cost per 20ft FCL is conducted on the basis of the following three cases at ports which can accommodate optimum size ships depending on the available infrastructures. The handling cost per 20ft container is worked out by dividing the accumulated amount of port charges applicable depending on the size of ships and total handling cost of containers with the number of containers handled per ship.

It is assumed that the respective size of ships and number of containers handled is estimated at each port depend on the capacity of port facilities.

- Buenos Aires Port (Case 1)
  Assuming that the port can accommodate 16,000 DWT max size ships having 9.5 m draft, carrying 1,500 TEU containers, the ships stay for 20 hrs in which 140 units of 20ft full load containers, 70 units of 20ft empty containers, 70 units of 40ft full loaded containers, 35 units of 40ft empty container are handled.

- Santos Port (Case 2)

Assuming that the port accommodate 21,000 GRT size ship having 10.50m draft, carrying 1,800 TEU containers. The estimated number of container handling to work out the handling cost is shown on the Table VII-1-2-7.

- The ports Seattle, Singapore and Nagoya (case-3). Assuming that these ports can accommodate average size of ship 42,000 GRT, having 11,50m draft, carrying 2,600 TEU, containers. The number of container handling to work out the handling cost is shown on the Table VII-1-2-7.

According to Japanese shipping line calling at Buenos Aires Port the handling charge thereof was reduced and became nearly half of the charge before the privatization such that the container handling charge at the Buenos Aires seems to be competitive.

The heavy port charges including pilot and tug services charges are generally the cause in the increase of the handling charges per container, but such charges are easily compensated if the port can accommodate such larger vessel that can carry big cargo volume of container per ship. Therefore ship carriers must use large container vessels size in services that could be suitably accommodate at such port.

Table VII-1-2-7 Comparison of Port Charges and Projected Handling Cost per Container Among the Ports of USA, Neighbor and Asian Countries

	Description	Port of Buenos Aires	Santos Port	Seattle Port	Singapore Port		Nagoya Port
1	Vessel Type						
1-1	Length	155 m	180 m	250 m	250 m		250 m
1-2	G/T	16,000	21,000	42,000	42,000		42,000
1-3	Port Stay Period	20 hours	20 hours	20 hours	20 hours		20 hours
1-4	Number of Container in ship	1,500 TEU	1,800 TEU	2,600 TEU	2,600 TEU		2,600 TEU
2	Port Charges in US$						
2-1	Pilotage	8,218	4,500	9,590	1,256		13,517
2-2	Tug Boat Service	11,360	10,000	10,800	4,411		7,822
2-3	Line Handling	500	750	1,920	175		1,223
2-4	Dockage	1,200	4,800	8,598	8,963		7,631
2-5	Others	3,600	4,500	na	122		909
2-6	Total of Port Charges	24,878	24,550	30,908	14,927		31,102
3	Container Handling Charges in US$				Transhipment	48 hrs	
3-1	20 ft Full	145-185	168	200	108	72	155
3-2	20ft Empty	95	85	200	59	59	155
3-3	40 ft Full	165-205	209	200	152	107	233
3-4	40 ft Empty	95	106	200	85	85	233
4	Remarks	AGP Charge, 3$ / ton Import 1$ / ton Export					
5	Number of Container to handle						
5-1	20 ft full	140	160	400	400		400
5-2	20 ft Empty	70	80	200	200		200
5-3	40 ft Full	70	100	800	800		800
5-4	40 ft Empty	35	50	400	400		400
6	Total handling Charges in US$	46,025	59,880	360,000	210,600	160,200	372,600
7	Cost in US$ per 20 ft Container	253	235	195	113	88	202

In case of Singapore port, the handling cost is remarkable. Addition to the regular standard handling cost, the handling cost for the transshipment container are applied about 30% reduced charge. Addition to this 60% reduced charge for transshipment container within 24 hours, 55% within 48 hours, 45% within 72 hours are applied. The

Singapore Port intends to become biggest hub port in East Asia area in competing with neighbor ports by providing such tariff and efficient operation.

d. Handling efficiency before and after privatization

Terminal No. 5 operator are committing their productivity of 30 units x 24 hours by 3 cranes on the agreements with users, who guarantee to handle 720 units per day. In other words, vessels presently calling at Terminal No. 5 can sail in and out on the same day because the average number of container carrying by one ship is less than 500. Terminal No.1&2 operator trained new crane drivers to improve the productivity to keep more than 25 units per hour.

Before privatization, shipping lines could not make their accurate fleet schedules, but now the shipping lines are keeping on their schedules. The fleet operation of shipping lines become simple and operation cost at port got cheaper than before.

e. Information Flow System for Containerized Transportation

Containerized transportation system requires tremendous information exchanges among concerned agencies and parties. The establishment of Electric Data Interchange (EDI) system for such information exchange is a "must" for efficient container transportation. In Buenos Aires Port some terminal operators have just started to investigate and install their EDI systems, which facilitate communications with agents, ship owners and transport companies. In addition to this EDI systems independent and compatible terminal data exchange systems are required by these operators.

Unfortunately, in the port of Buenos Aires, information exchanges are still conducted manually being an uncomputerized container terminal.

The following information are required to be exchanged for container terminal operation among the agencies;

1) Between Shipping Co.& Consignee, Forwarders and Container Terminal(Import/Export):
Booking Information, Shipping Order(S/O), Cargo Manifest, Container Loading List(CLP), Container Discharging List, Declaration for Export or Import, Bay Plan, Dangerous Cargo List, Reefer Container List, Delivery Order, Equipment Delivery(E/D), Dock Receipt(D/R), Ship Schedule

2) At gate of container terminal
Dock Receipt (D/R), Equipment In/Out, Weighing, Instructions of Container Location, Container Inspection Report,

3) In container terminal

Ship Schedule, Booking Information, Estimate Loading (Discharging) Summary, Final Loading (Discharging) List, Dangerous Cargo List, Bay Plan, Yard Plan, Ship Stowage Plan, Tally Sheet, Delivery Information

To simplify information flow of container movements, the system could be divided into two parts, namely outside container terminal and inside container terminal as shown on Figure VII-1-2-2 to 4.

For efficient and effective container flow, all necessary information should be timely exchanged at each stage but most of information exchanges are presently done by manual at terminals in Buenos Aires Port as mentioned here in above.

The establishment of this informations exchange system is the key for improvement of current container terminal operation for Argentina. Actually most container terminals in the world have developed or are developing their own Electrical Data Interchange (EDI) systems and computerized terminal operating systems for efficient terminal operation.

Even container terminals in the developing countries are eager to develop their system to cope up with modernization of container operation.

(5) Physical restrictions and constrains for development of container terminal facilities

As seen from Figure VII-1-2-1, despite of the existing shape of finger type of six piers at Buenos Aires port and one finger berth at Dock Sur such facilities were converted to the container and multipurpose terminals. The terminal operation of both ports are being adversely affected under the following physical restrictions and constraints,

- shallow draft of the access channel and basins around the piers and along side the berths,
- narrow width of the access channel to the north and south parts of terminals
- narrow width of basin in front of each berth of north and the south terminal
- limited land area for port expansion at the Buenos Aires area by city development towards the port and railway marshaling yards
- limited land space for expansion at the Dock Sur area by the adjacent industries, factories, ship building yard and oil tank yards
- open space for stock yards provided to terminal operators at Buenos Aires under the concession are not integrated in one terminal area with berth, but scattered due to the power plant facility, grain silo facilities and railway marshaling yards located in the

middle of the stock yard, and old branch office building of the maritime authority in the north and oil tanks and ship repair dock in the south.

- insufficient intermodel transport connection with each terminal to inland depots by railway and trucks
- heavy congestion of trucks transport on the access road through the city for transferring containers between the terminals and railway station around the Retiro station area

This situations will cause additional time for transferring containers from port terminal areas and will encounter difficulty for handling large volume of containers.

(6) Estimation of possible capacity of container handling at Buenos Aires

Based on the information and data obtained from the terminal operators working in the Buenos Aires port and Dock Sur the maximum possible handling volume are approximately estimated based on the following assumption as follows.

a. Dock Sur container terminal

1) The existing wharf length is 500 m with 10 m depth and 180 m with depth of 8 m and it is planned to extend for 250 m with 10 m depth for one more berth.
There are currently 2 gantry cranes operational and will have one additional one shortly.

2) The company handle about 670 TEUs on the average per ship (in August 1995, 15,428 TEUs were handled through 23 vessels that called at the port during the same period, on the average 670 TEUs per ship) and about 2 days stay time for loading and unloading by two cranes, handling rate of 20 boxes per hour.

The volume of handling capacity under the present arrangement of facilities are;
= 365 days / 2 days x 670 TEUs x 2 berths x 0.85 = 207,867 TEUs

3) In case one additional berth with one additional crane the volume are expanded, the handling capacity will be; 365 days / 2 days x 670 TEUs x 3 berths x 0.85 = 311,802 TEUs.
There is a potential increase in the handling capacity by improving the crane efficiency and providing additional yard cranes and berth facilities.

4) In case the depth of access channel is deepened from 10 to 11 m and made navigable for 25,000 to 30,000 DWT ships carrying 1,200 TEUs per one ship, then the handling capacity of this terminal will further increase to around 560,000 TEUs.

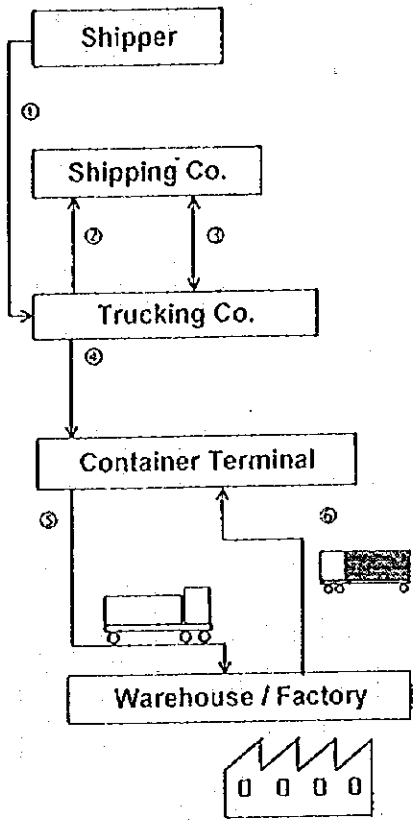


Figure VII-1-2-2
Container Flow - Export
(Container Haulage)

1. An order for haulage is received from shipper (or forwarder, shipping compay).
2. The trucking Co. contacts and requests the shipping Co. to deliver empty containers.
3. And receives the Equipment Despatch Order (EDO) from the shipping Co.
4. The trucking Co. gives one copy of the EDO to the container terminal (CT) and in exchange receives one copy of equipment receipt (ER)-out, container delivery slip and seal, then receives an empty container.
5. The empty container is hauled to the despatching warehouse or factory, together with the container delivery slip and the seal.
6. After vanning, the loaded container delivery slip accurately filled in with necessary items (SHIP'S NAME, DESTINATION, etc.) is to CT.
7. Upon arrival, the container delivery slip and copy of ER are turned over to the CT. CT inspects the container and in exchange gives the ER (in) to the trucking Co.

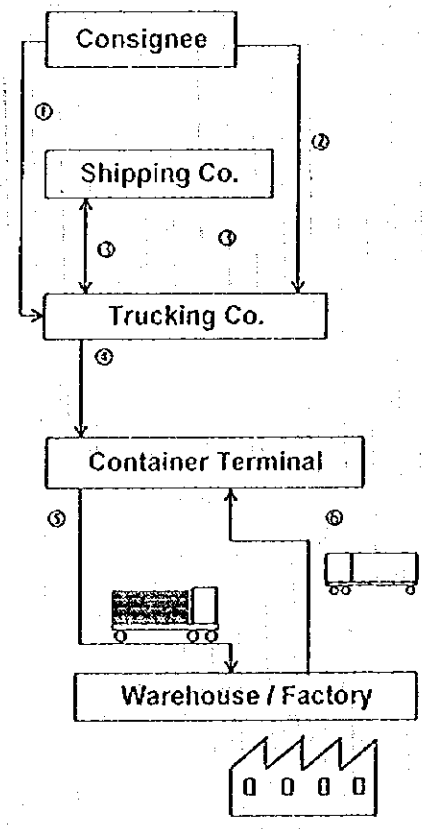


Figure VII-1-2-3
Container Flow - Import
(Container Haulage)

1. An order for haulage is received from a consignee
2. Concurrently, the trucking co. receives the approval and Delivery Order (OD)
3. The trucking co. gives the documents to the shipping co. and receives the EDO
4. And turn over the copy of EDO to CT.
5. In exchange, receives copy of the ER (out) and the loaded container at the CY.
6. Hauls the container with cargo to the receiving Warehouse or Factory.
7. After devanning, hauls the empty container back to the CT.
8. Upon handling over the copy of the ER (out) to the CT, has the container checked against it and receives the copy of the ER (in), and delivers the empty container to the CY.

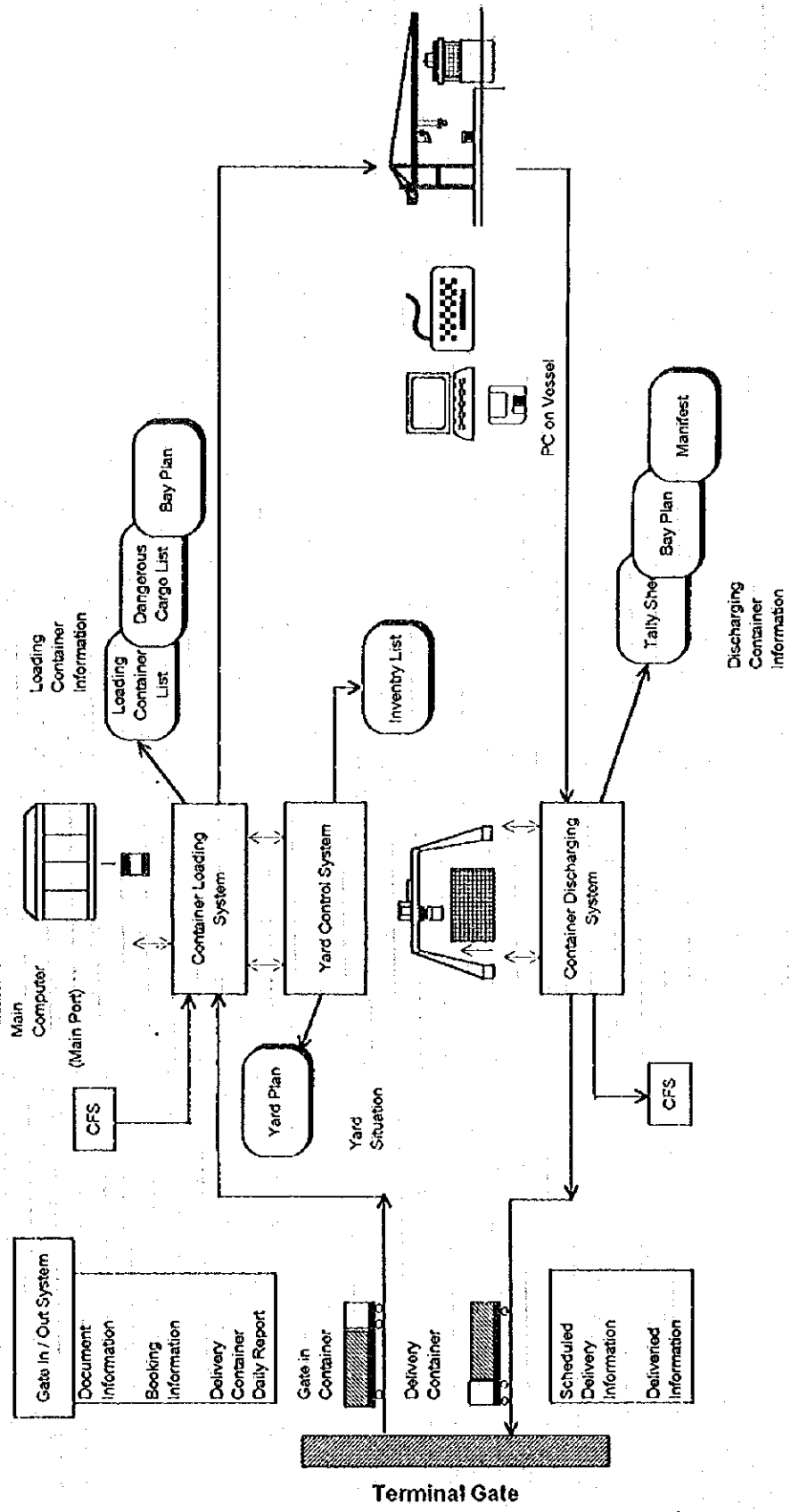


Figure VII-1-2-4
CONTAINER FLOW IN TERMINAL

b. Buenos Aires container terminals

There are 27 berths provided to the private operators, but 18 berths out of them will be capable for berthing 20,000 DWT class container ships in the 5 terminals.

There are 2 gantry cranes at the terminal 1&2, one crane each at the terminal 3 and 5 respectively and other terminal handle containers by mobile cranes with ship gears crane.

1) The terminal 1&2 handle about 400 TEUs on the average per one ship (in 1995 from Jan to August 125,000 TEUs were handled from 341 ships that called at the port during the same period, on the average 367 TEUs per ship) and about 1.5 days stay time for loading and unloading by crane handling rate of 25 boxes per hour.

   There are 6 operational berths, but out of them 4 berths are used for container operation and others are allocated for barges berthing and two cranes are working thereon

   The handling capacity under the present arrangement of facilities are;
   = 365 days/1.5 days x 370 TEUs x 4 berths x 0.85 = 306,113 TEUs

2) The terminal 5 have 4 operational berths and handle about 427 TEUs on the average per one ship(in 1995 from Jan to August 82,870 TEUs were handled from 194 ships that called at the port during the same period, on the average 427 TEUs per ship) and about 1.5 days stay time for loading and unloading by crane handling rate of 20 boxes per hour.

   The handling capacity under the present arrangement of facilities are;
   = 365 days/1.5 days x 427 TEUs x 4 berths x 0.85 = 353,271 TEUs

3) The terminals 3, 4 & 6 have 8 out of 16 berths operational for container handling and handle about 195 TEUs on the average per one ship(in 1995 from Jan to August 83,155 TEUs were handled from 425 ships that called at the port during the same period, on the average 195 TEUs per ship) and about 1.5 days stay time for loading and unloading by the mobile crane handling rate of 12 to 15 boxes per hour.

   Their capacity are;
   = 365 days / 1.5 days x 195 TEUs x 8 berths x 0.85 = 322,660 TEUs

4) Under the present arrangement of terminal facilities, number of operational berth available, number of cranes operation and handling rate by cranes and yard transfer system, the estimated handling capacity will be approximately 1,293,846 TEUs.

In case the depth of access channel is deepened for 10 to 11 m and made navigable for 25,000 to 30,000 DWT ships carrying 1,200 TEUs per one ship, then the traffic capacity will be able to further increase.

The summary of estimation is tabulated on the following Table VII-1-2-8.

Table VII-1-2-8 The Summary of Estimate of Container Handling Capacity

Existing	Dock Sur Port		Buenos Aires Port		
	Existing	Extension	Terminal 1, 2	Terminal 5	Terminal 3, 4, 6
Working days	365	365	365	365	365
Handling day per ship	2	2	1.5	1.5	1.5
Number of container per day handled	670	670	370	427	195
Number of berth operational	2	3	4	4	8
Efficiency	0.85	0.85	0.85	0.85	0.85
Handling value	207,867	311,802	306,113	353,271	322,660
Handling rate per one crane per hour	20 boxes	20 boxes	20 boxes	20 boxes	12 - 15 boxes
Number of cranes	2	3	4	6	5

Source: The Study Team estimate

1.2.3 Other Ports

(1) Introduction

The Argentina occupies an area of 3.7 million square kilometers, including 964,000 sq.km. of continental Antarctic territory and the South Atlantic Islands. The country has a 4,000 km ocean coast line extending from the mouth of the River Plata to Tierra del Fuego.

As well as two big navigable rivers, the Parana and the Uruguay, both running through important industrial and agricultural production areas. According to the National Censor of 1991 the total population of Argentine was 32.6 million, with an average growth rate of 1.5% per year.

a. Character and function of other ports

There are two types of ports: river ports located along the river banks from Port Iguazu to the port of La Plata; and sea ports that are located from Port of Mar del Plata in the Province of Buenos Aires to Port of Usuahia in Tierra del Fuego. The traffic volume through the main ports from 1990 to 1993 are shown in Table VII-1-1-1.

Main commodities for export are grains and by-products which is 68.8% in 1993, crude oil, petrochemical products 23.7% and industrial products are only 9.5%. The ports of Bahia Blanca, La Plata, Quequen and Rosario are mainly handling bulk cargoes. On the contrary most of import cargoes are general cargoes and more than 90% of them are handled at Buenos Aires and 97% of container cargo are handled.

b. Privatization of Port Operation

The strategic ports including Buenos Aires, Bahia Blanca, Quequen, Rosario, are in the process of privatization and modernization of cargo handling system to meet such global container movement and to provide punctual and regular shipping service by efficient cargo handling and port service for large volume of containers delivered by larger size and fully containerized ships.

One of the considerable changes in other major ports by the new policy have been the reduction of handling cost as follows;

The stowage service cost for fishery in the Port of Ushuaia experienced a 77% decrease from US$120/ton to US$26/ton. In Puerto Madryn, this same activity showed a 60% reduction. A 50% reduction has been registered in Quequen and Deseado ports while in Bahia Blanca and Mar del Plata the decrease was 15% only.

The findings on the present situation of port operation and container transportation activities in the other major ports are described as follows.

(2) Existing conditions of port facilities and operations at main ports beside the Buenos Aires

The existing condition of port facilities and operation of major ports beside the Buenos Aires port are briefly described hereinafter.

a. The Port of Bahia Blanca

1) Character and function of port

The port has large hinterland of grain products with good access of railway networks to transport grain. About 40% of the cargo handled through the port were transported by the railway.

Owner of the port facilities is the Province of Buenos Aires. Responsible institution of port operation and management is Consorcio de Gestion del Puerto de Bahia Blanca. Accommodatable ship size is 60,000 DWT (Panamax) with draft of 40ft for grain carrier.

The port authority have sent a mission of port sales representatives to Brazil for exporting grain and to Chile for exporting fruits and others products from Rio Negro province to the Pacific region through Chile port (Talcahuano port). The railway connecting between Rosario and Bahia Blanca have collected wheat and grain from the plain land areas along the railway line for shipment through Bahia Blanca port, since this port can accommodate larger grain carriers.

2) The location and facilities

The port of Bahia Blanca is located about 98 km west from the Atlantic Ocean and composed of various facilities spread over 25 km along the northern coast of the Bahia Blanca estuary. This port features several wharves used for handling of grain, by-product and general cargo and liquid and gaseous fuel. The important main parts are Ingeniero White Port, Galvan Port, and Cangrejales area.

Access from the ocean to the Bahia Blanca port is made through an access channel of the width of 190m and a length of 98 km.

In 1976 the channel was dredged to 40 ft and since then, the outer channel has been maintained at the depth of 11.8 m (40 ft) and inner channel at 12.8m (43 ft) with the width of 190 m, thus enabling access to ships up to 45 feet draught.

The maintenance dredging had been carried out at the cost of US$10 million annually to dredge 3.8 million cum in average.

Because of the deeper depth of the access channel and organized road and railway connection to the port, this port became the main Argentine overseas port and gave the incentive to the private sector investments to the port activities.

There are two main berthing facilities, one is at Ingeniero White located east side port for handling grain, by products and general cargo and the other is Galvan port for handling grain, by product and fuel, located west side with a distance of 1,350m from Ingeniero wharf as described below.

Ingeniero White Port

Ingeniero White Port facilities were constructed in the years 1900's and are composed of two areas for the loading of grain and by-products, which are operated by specialized terminal operator.

Originally, the area designated for general cargoes was developed for the handling of reefer and frozen cargoes which are mainly fruit and fish cargoes. This area also has a quayside railway connecting to inland and large paved area for the storage of goods and parking of grain trucks.

Galvan Port

Galvan Port was built at the turn of the century by the Pacific Railway to be used as a grain terminal. Within its premises there is a terminal specialized in handling grain and by-products operated by Oleaginous Moreno Hnos. SA. Furthermore, the port has an area assigned to handle general cargo, berth No. 5 and No. 6, thus enabling access to

ships of up to 230 m long. This berth is equipped with two electrically powered gantry cranes with a 35 tons hoisting capacity.

3) Cargo Traffic and Ship Calls

The number of vessels calling at this port is steadily increasing year by year from 1990 and the cargo volume handled at this port is also increasing as follows;

Table VII-1-2-9 Port of Bahia Blanca

Year	Terminals	Vessels			Cargo Volume (x 1,000 tons)				
		Argentine	Allien	Total	Import	Export	SubTotal	Shift	Total
1985	White	17	227	244	22	4,870	4,892	25	4,917
	Galvan	0	56	56	25	419	444	914	1,358
	Belgrano	1	5	6	0	4	4	3	7
	Total	18	288	306	47	5,293	5,340	6,930	12,270
1990	Total	3	255	258	46	4,376	4,423	7,361	11,783
1991	Total	8	326	334	76	4,558	4,634	9,916	14,550
1992	Total	1	295	296	151	5,925	6,076	7,896	13,972
1993	Total	0	0	376	261	6,252	6,513	7,131	13,644
1994	Total	0	0	476	372	6,987	7,359	6,135	13,494

Source: Bahia Blanca Port Authority

The cargo volume for international trade in 1994 was 7,359,078 tons with an increase of 13% of the volume from previous year. It should be pointed out that on 1994 the cargo volume for international traffic surpassed it for domestic traffic and recorded 54.54% of the whole traffic.

4) Cargo handling equipment at the port

The cranes located at Berth No.5 of Galvan Port are suitable for handling small containers and have grabs of 8 m3 capacity for loading bulk cargo (minerals, by-products, etc). The port has mobile cranes of up to 50 tons capacity.

5) Development plan of container terminal

The authority has prepared and reviewed the previous master plan for development of the general cargo and container terminal at "Cangrejales" area. This area has approx. 140 ha and with 1,800m of berthing space along the port's internal channel connecting the White port and Galvan port. When the access channel was dredged, the "Gangrejales" area was filled with good quality of dredged soil. Furthermore, with a view of building new terminal facilities, this dock areas in front was also dredged down to 45 feet deep.

At present the port handle only 700 container boxes in 1994. It is considered that the port has potential to handle containers due to geographic conditions and its proximity to the ocean and large land area available for container terminal, as well as good access connection by rail and road to the hinterland of the port.

The port authority plan to develop the land available of 140 ha between the White port and Galvan port as follows; (Refer to the drawing Figure VII-1-2-5).

- 35 ha and 75 ha for industrial complex
- 17 ha for 1st phase container terminal with wharf for 250m to 300m length with 45 ft. depth.

The targeted volume to handle and years to complete are not yet formulated. The remaining area is used for railway line and inside port roads connection.

This development plan was prepared in 1994 jointly with the municipality and port authority. It is planned that about 80% of the total above area will be provided and developed by the private investors. At present 4 investment groups expressed their interests to participate for such development.

The port has wide land area within the port complex including under water areas along the access channel of 98 km toward the ocean which would be potential for further development. The port facilities have been developed to be industrial supporting port and bulk cargo exporting port to handle grain and wheat and petro chemical products.

It is considered timely arrangement to develop the general cargo and container terminal at the area between the White and Galvan to service the products from the hinterland of the port. The present general cargo handling wharf may be further developed to provide easier maneuvering alongside the berths.

After the privatization of railway operation, the cargo transport area were expanded by the railway company "Ferro Expreso Pampeano" who are sustaining the confidence from the customers by ensuring that cargoes were delivered in time with required volume and cheaper freight cost than trucks.

b. The Port of Quequen

1) Character and function of the port

On the Atlantic Coast, this port is located at the mouth of Quequen river 530 km South of Buenos Aires. The Quequen city is on the east side and the Necochea on the west.

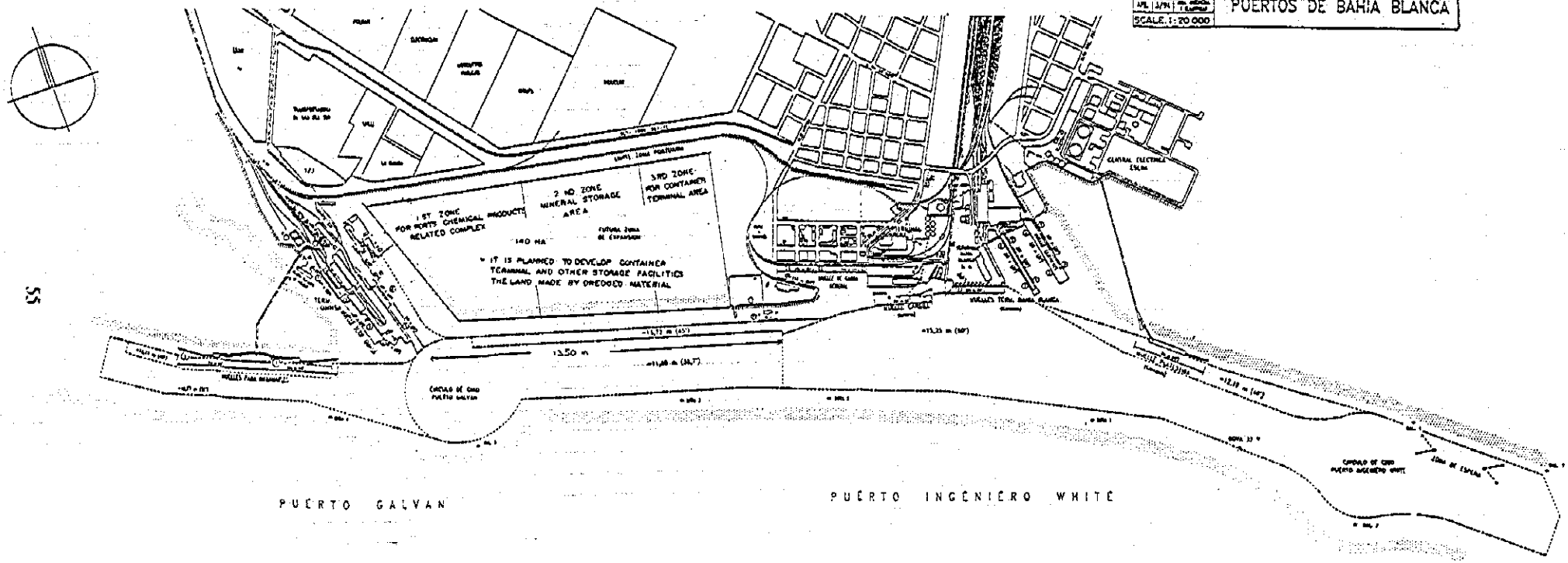
Owing to the deep depth of access channel this port also functions as exporting port for Argentine farming products and like Bahia Blanca it is accommodating the 60,000 DWT (Panamax size) wiith the max. draft, 46ft, 230m length of ship. Export cargoes are grains and by-product like wheat, maize, sun-flower, sun-flower pellets, soy beam-pellets, soybeam-oil, and fresh fish. Import cargo is mainly fertilizer.

Figure VII-1-2-5 CONSORCIO DE GESTION DEL PUERTO DE BAHIA BLANCA

GERENCIA DE INGENIERIA Y DESARROLLO

PUERTOS DE BAHIA BLANCA

SCALE 1:20.000



The port had been developed under the sphere of the AGP along with the growth of traffic volumes. The Quequen port is usually closed to incoming ships for about 120 days a year on the average because of its narrow entrance and not sufficiently protected against high waves from the outer sea.

Due to the deeper depth of the access channel and organized road and railway connection to the port, the port could be developed as the main Argentine port for accommodating deep draught ships provided adequate protections are done for the in-coming and out-going ship through year round. That will give incentive to encourage to the private investments to the port activities.

2) Existing condition of terminal facility

There are 11 terminals on 1,750 m long of the wharf (5 for grain & sub-product, 1 for vegetable oil, 4 for general, 1 for fuel). Grain Terminal Storage have a total capacity of 187,700 ton.

The berth have beam extended over approximately 1,400 meters on both sides of the river. On the left Quequen side, there are loading facilities of grain products for shipment, while on right side there are wharves for handling general cargoes, fishing products and fuel. One of the most significant advantage of the Quequen Port is its proximity to the Atlantic Ocean. In fact, the depth alongwide the wharf is 46 feet, and which is available at the distance of 1,500 meter from the entrance of the channel.

The dredging work along the access channel was deepened to 40 ft draft and 120 m width by the National Direction of Port Construction and Waterways. Two breakwaters were constructed of 1,764 m in total, one is in the south side arm with 1,192 m long, lying from NW to SE, and the other is in the easterly arm 572 m long and lying from North/South, which turned the port into nearly whole year operational condition. Last year about 12 days the port was closed to incoming ships.

The maintenance dredging of the access channel and basin had been carried out on the average of 500,000 to 600,000 cum per year. The port has envisioned to request the provincial and federal government to subsidize the cost of construction of breakwater and maintenance dredging.

It is planned to extend the south side of breakwater to 2,000 m long so as to make the port open all round the year and the access channel will be deepened to allow navigable of vessels up to 45 ft draught ships.

3) Traffic (Cargo and ship)

Traffic volume of 1994 was 2,952 million tons (2,781 million tons of export and 0.17 million tons of import trade as shown in Table VII-1-2-10; out of which 2.381 million were grains and by products.

4) Development plan of container terminal

The port has sufficient capacity for handling export of the required volume of grain, and large hinterland of grain products with good access of railway networks to transport grain.

Table VII-1-2-10 Traffic Volume of Port of Quequen

Year	Vessels			Cargo: volume (ton x 1000)			Grains & Subproducts
	Argentina	Allien	Total	Import	Export	Total	Total
1990	4	199	203	68	2,903	2,971	2,355
1991	7	238	245	49	3,222	3,271	2,624
1992	5	243	248	101	3,420	3,521	2,927
1993	11	194	198	122	2,637	2,759	2,276
1994	8	198	206	171	2,781	2,952	2,381
1995			203	177	2,842	3,019	2,470

Source: Quequen Port Authority, 1995 data is only 1st semester.

The port authority plan to develop container terminal at the entrance part behind the north breakwater (refer to the Figure VII-1-2-6), but has not yet prepared the envisaged practical plan for container terminal.

There are the physical constraints to be solved for development of container terminal as follows;

* Inside harbor area have no enough land area for container terminal yard
* They have about 25-40 days per year that port is close due to rough and high waves, which could be solved by extending the existing south side breakwater.
* It will be difficult for large vessel under the strong wind during the winter season to make turn at the turning basin of the harbor. Turning basin between two breakwater is not sufficient as turning area for Panamax type vessel.

The port, however have potential to develop container terminal because of the following advantages compared with the other ports.

* This port is located at the shortest distance of access channel from the ocean with the depth of 46 feet, which will be able to accommodate the large container ships.
* The port have good access and connection of intermodal rail and road transportation to the hinterland. They will not be interfered by the city traffic.

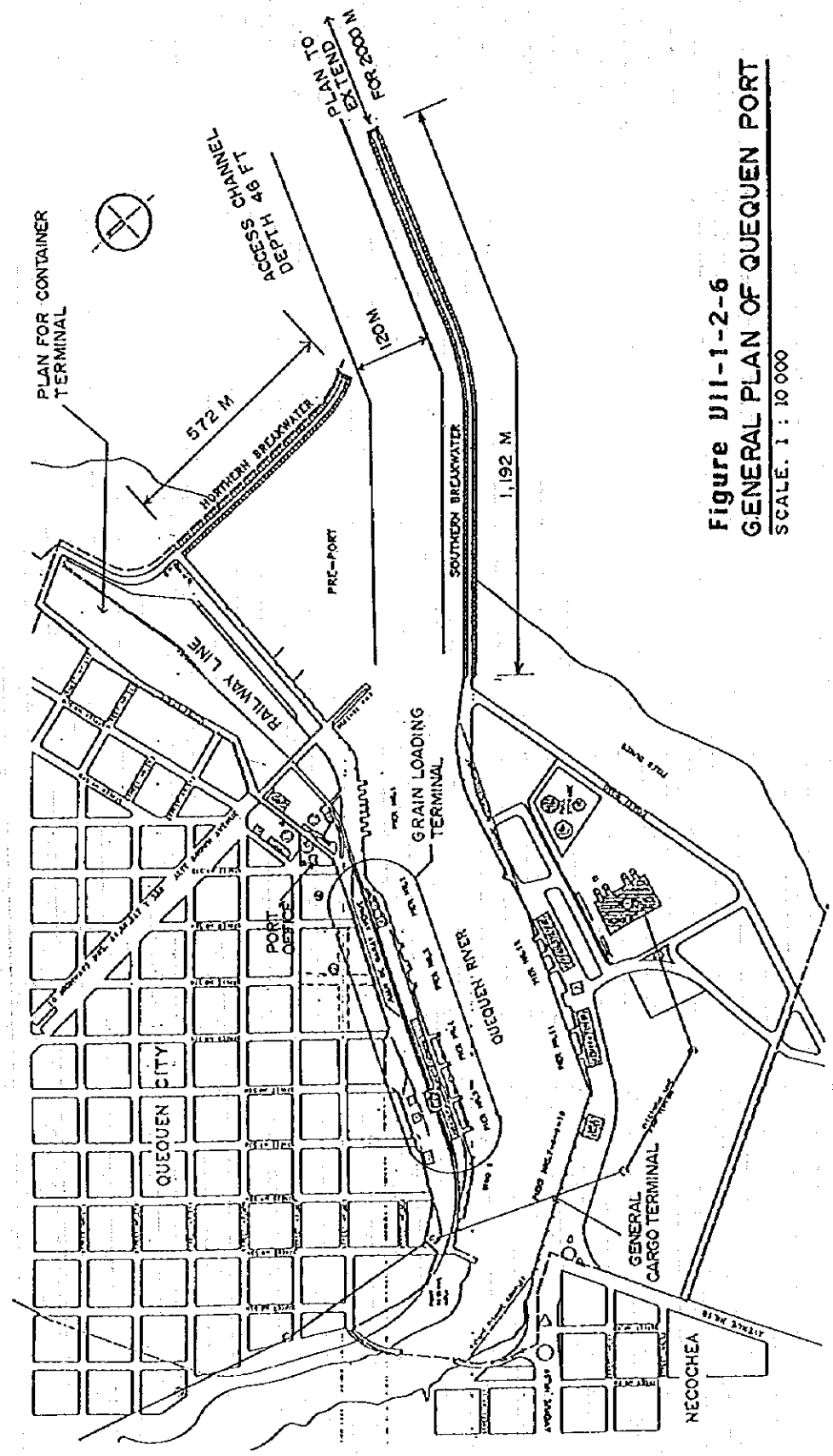


Figure VII-1-2-6
GENERAL PLAN OF QUEQUEN PORT
SCALE. 1 : 10 000

c. The Port of Rosario

1) Character and function of port

Rosario is one of the most important ports in Argentina for the export of grain and by-products. The port is located about 420 km north west from Buenos Aires along the Parana River and situated at the central location of the cargo flows among the Mercosur countries by the various mode of transport.

Generally at this port, the ship load grain around 34,000 ton which is only 2/3 of ship capacity due to the limited depth of Parana river. Subsequently, the ships load the remaining capacity at Bahia Blanca or Quequen ports.

After the deregulation of the port management and establishment of authority it is planned to develop this port to multipurpose and transshipment port of export and import cargo for neighbor countries, considering advantages of its geographical location and well organized intermodal transport networks of the hinterland of the port.

All the ship going to Brazil, Bolivia, Paraguay are loading/unloading cargo here to adjust their draft according to the depth of the channel. Inside the port the railway are connected to Belgrano S.A., Nuevo Central Argentina, and Ferro expreso Pampeano Railway. Manganese and steel raw materials are imported from Bolivia and Brazil through the port, then transported to Mendoza. There are auto industries at Cordoba city area and they import their spare parts in container through this port.

Owner of the port facilities is the Province of Santa Fe while the responsible institution of Port Operation and Management is the Ente Administrador Puerto Rosario (ENAPRO). Access canal have 26 feet depth and the depth alongside the wharf is 28 feet.

2) Existing condition of terminal facility

Total port area is 100 ha (includes 40 ha reserved area) with the following main terminal facilities like the pier length of 5,000 m and 7 terminal elevators.

3) Traffic

The traffic volume of cargo and number of ships call have increased from 1990 to 1995. In 1994 this port handled 1.175 million tons (920,000 tons of export and 255,000 tons of import) of which 60% of the commodities are grains and by-products and 40% are oil.

The cargo volume of grain handled at this port has been decreasing from 1985, since many private exporters and collectors of grain had constructed their own elevators

and storage silos along the Parana River around this port. The private ports are now exporting grains and by products collected by themselves.

4) Development plan for container terminal

The port authority has prepared the revised master plan to develop a multipurpose terminal by renovating the existing facilities considering the following;

- It is planned to provide an intensive promotion in the hinterland served by the railway lines and highways accessing to the port or immediate connection, so as to attract investments of industrial projects.
- In the master plan prepared with city municipality jointly it is planned to develop the multi purpose facilities at a specific area out of total 4 km distance by private investors as done at the Buenos Aires Port. Then gradually the areas is extended for further development depending on the results of privatization and considering that the implementation of facilities development should be flexible to adjust according to the impacts of traffic demands. Once all the areas are given to private sectors with fixed concession for longer term it will be difficult to adjust the implementation of development program and further development to meet the changes of traffic demands and port users.

5) Container transport

The port have handled about 20 boxes of containers (20 feet size) in 1994. The port handled containers transported to Paraguay from Buenos Aires through the Parana river by Barges carrying 1,000 to 3,000 ton called "convoy system". It has the industrial complex in the hinterland around Cordoba, and expected that the raw materials and parts required for such auto-mobile industries are to be containerized for transport shortly.

The port plan has specific and sufficient area at new wharf to develop container terminal.

The target volume is to handle 50,000 TEU in a first stage and subsequently 100,000 TEU once the development has been completed

d. The Port of Santa Fe

1) Character and function of port

The port facilities was constructed in 1911 as grain export port. The port have functioned of handling export products from Bolivia and Paraguay and as collector port of cargoes from the river ports located along the Parana river for export. The grain carriers load up to 20,000 ton at this port, then reload to full capacity at Bahia Blanca or Quequen ports.

The port is situated on the Santa Fe River (tributary of the Panama), 585 km from Buenos Aires. Entrance to the port from Parana River is by access channel of 6,085 meter long and about 60 meter wide with depth of 24 feet. The port has an area of 70.8 ha in total.

The port facilities is owned by the Province of Santa Fe and the responsible institution of port operation and management is the Santa Fe Port Managing Body (non State public entity).

2) Existing condition of terminal facility

The port have the following facilities;

* Grain Terminal: Annual throughput capacity: 800,000 T. The depth alongside the wharf is more than 24 feet.
* Storage Tank Capacity: Total - 88,800 m^3.
* Inner Harbor I : 2,600 m of granite and reinforced concrete
  Wharf 1/2 : 680 m / 580 m Pier: 120 m
* Inner Harbor II: 3,000 m natural Slope
  Wharf 3/4 : 710 m (elevator berth III) / 900 m (not operating)
* There are 6 piers with depth of 24 ft to handle raw materials, containers, grain, etc. 1st pier; 180 m long, 2nd and 3rd piers; 580 m long in total 4th to 6th piers; 710 m long in total.
* Sheds : 4 Sheds of 105 x 15 m - 7,875 m^3 each of capacity for storage
  1 Shed of 185 x 19 m - 14,000 m^3 capacity for storage
  10 Sheds of different size - 22,280 m^2
* Yards for Containers : 1 Sector of 12,000 m^2 and 2 Sectors of 4,000 m^2
* Parking lot: 200 vehicles, Paved roads: 36,000 m^2, Stockyard area: 4,300 m^2

3) Traffic (Cargo and ship)

The traffic volume of cargo have been decreased and vessels have been increased between 1990 to 1994. Since the regional economy had been changed to export of woods, cotton, and sugar which products volume have reduced.

It is expected that container handling volume through the port will be 3,000-4,000 TEU in 1996 and grain will be 800,000 ton in 1996. Ro-Ro ship transport 1,500 vehicles per month.

The port promote industries and agricultural farmers in the Cordoba and northern provinces to handle and collect agricultural products like beams, tobacco and orange for export from this port.

4) Development plan of container terminal

The port authority prepared to further develop the existing facilities in three stages;

* 1st stage : dredging of access canal of 6.1 km distance to 24 feet (in progress) to 35 feet.
* 2nd stage : Renovating the terminal for general cargo and containers. The target volume to handle 40,000 TEU/year for the year 2000
* 3rd stage : Development of Inner Harbor II area for multi purpose terminals.

e. The Port of Ushuaia

1) Character and function of port

The port was developed in 1884 as transshipment port for ships sailing between the Atlantic and Pacific Oceans, particularly trades between Argentina and Chile.

The port is located at the capital of Tierra del Fuego "Ushuaia" which is the most southern city of the country and around 1,930 miles from Buenos Aires. The provincial government developed the trade industrial zone behind the port. The port had handled containers around 22,000 TEU per year in last three years of imported raw material for industrial manufacturing, particularly electronic industry and exporting their products. Ushuaia port is situated at the north west section of the Ushuaia Bay, which is a wide inlet on the northern coast of the Beagle Channel, west of Punta Segunda.

The port became the second largest in the container handling volume in Argentina after the Buenos Aires, which come from Asian countries through the Pacific Ocean. The port also become second largest of handling volume of fishery products after the Mar del Plata Port. The port facilities is owned by the Province of Tierra del Fuego / YPF. Responsible institution of port operation and management is the Direction Provincial de Puerto / YPF

2) Existing condition of terminal facilities

There are two pier, one is government commercial pier, located on the north west corner of the bay; other is YPF fuel pier, located on the north-east extending from the commercial pier.

3) Traffic (Cargo and ship)

The vessels that called to the port in 1993 were 291 in total: 74-Passenger, 124-Fishing and Refrigerated, 82-General Cargo, 11-Various, and in 1994 were 385 in total: 82-Passenger, 109-Fishing and Refrigerated, 136-General Cargo, 29-Various.

The port is handling containers of about 22,231 TEUs (equivalent to 15,130 boxes) in 1993, 22,071 TEUs in 1994. The container traffic volume in 1995 is estimated at 800 to 900 boxes/month up to August. The fishery products was 50,000 ton in 1993 and general cargo of 1,800 ton.

Container	1993	1994
Import	11,335	11,086
Export	11,896	10,985
Total	22,231	22,071

4) Development plan of container terminal

The extension of the existing pier for other 220m have been planned by filling the existing dolphin area and by widening the existing pier which will allow berthing of cargo vessels of 40 feet draught.

The government requested the financial assistant for such development project with the Inter-American Development Bank (IDB).

The extended piers will be used for multipurpose berths of general cargo, container and fishery terminals. It is planned to commence the project from January 1996.

f. The Port of La Plata

1) The characteristics of the port

The port is located on the left bank of the estuary of the River Plate from seaward, 30 miles south of Buenos Aires. It is the capital of the Province of Buenos Aires and rapidly becoming industrialized. The area is characterized by the traffic of vessels operating with national oil company's tankers, general cargo ships of steel metal plant and several other industries, mostly related to petrochemical products.

The port of La Plata was built before the port of Buenos Aires and started to operate in 1890. It has been used to function as an industrial bulk cargo handling port, but at present the port activities are irregular and current handlings oscillate between 5 and 6 million tons per year. Overseas ships calling at this port average 130, while coastal ships average 150 per year. Operation, however is mainly due to YPF's huge refinery and Propulsora Siderurgica's steel plant and rolling mill.

The government of the Province of Buenos Aires is working on a project called "Zone Franca La Plata" (La Plata Free Zone) with the aim of activating the La Plata port and its surroundings. The area covers 50 ha and have already developed more than 40,900 square meters. This development will be implemented on a concession basis to

the private sector for the exploitation of a commercial, industrial and service free zone with its own port terminal for containers and general cargo.

The port management was transferred in 1992 from AGP to the provincial government of Buenos Aires according to the Port Law of 1992 along with all power and authorized right regarding building, administration and operation of 5 ports (San Nicolas, San Pedro, Zarate, Campana and Mar del Plata) located in the Buenos Aires province. The port administration is under the control of the government of Buenos Aires province. The cargo handling operation are carried out by private stevedoring companies.

The port handled 4,908,000 ton in 1994 consisting of 210,148 ton of import, 2,450,840 ton of export and 2,247,880 ton of domestic trades. The general cargo and containers handled through the port were negligible small quantity. The share of total volume of commodities throughput does not show substantial difference among them since 1987.

The number of ship call to the port were 977 in 1993 and 992 in 1994.

2) Development plan of the port

Since the following development programs were proposed around the port area by regional demands, the provincial government plan to conduct the engineering study to prepare the master plan of the port for the long and short term development considering the following;

* about 6,000 ton of cokes per day or 45,000 ton per month are delivered to the coal exporting company in the port by train wagon, about 1,600 wagons per month from Mendoza,
* the development plan of Free Trade Zone of La Plata at Astillero Fabrication Naval Argentina of Ensenada (ship building company yard) is just behind the west side of the La Plata port including the container terminal inside the Free Trade Zone area,

g. The Port of San Antonio Este

1) Characteristic of the port

The port of San Antonio Este is located on the north side of Villarino Point, in the Gulf of San Matlas, about 480 km south from the Bahia Blanca and is the gateway port in province of Rio Negro, the Patagonian region. The responsibility of port operation and management was transferred to the provincial government from AGP in 1992. The port is located on the routes by railway and roads connecting from Patagonia, fruit production areas of Argentina to the Chilian ports by crossing the Andes.

2) Facilities

The causeway to the pier extends from the coast in north west direction for about 287 meter with 12 m wide. The end wharf is 200 m long and 30 m wide accommodating 2-115 m long ships. The water depth along side the berth reaches 40', but due to a neighboring sand bank the port can only accommodate ships of up to 27' draft. The tidal range at the port is 18ft.

Facilities include three warehouses, a parking place for trucks and a concrete yard for storage of containers.

The port facilities was constructed in 1983 for anchorage of small fishery boats and now is owned by the Rio Negro Province by the Port Law in 1992.

3) Traffic

In 1994 the port handled palletized cargo 246,000 units, fish 10,548 ton, and containers of 205 units of 20 feet and 38 units of 40 feet. These containerized commodity are fruits and fruits' juice, which are collected from the Rio Negro and Neoken provinces, and exported to Brazil. These cargoes are handled only January to June during the fruit season.

Before the fruit season, empty containers were delivered to the port. Fruits and its juice were collected from farmers located in the radius of 400 to 450 km in the hinterland of the port. These commodities are packed in the containers at the port. There are reefer container stock yard with electric supply facilities.

After July the stuffing of fishery products are carried out in the containers, 68,000 TEU were exported in 1992 to Israel and or European and other countries.

It is observed that the port have potential to handle more containers by expanding the business fields such as collecting containerized cargoes from the hinterland and/or constructing cold storage to stock fruits and its products within the port area to be exported by container after the season. There will be large demands of such products in Pacific regions, and neighbor countries as well.

1.2.4 Navigable Waterway

(1) Present conditions of channel dredging

a. Background of privatization of channel dredging

The government office in charge of construction of channels and port facilities is Director Nacional de Construcciones Portuarias y Vias Navegables (CPVN) (National

Direction of Port and Navigable Waterways Construction Work) under the control of the Ministry of Economy and Public Works and Service. Construction of port facilities and channel dredging had been undertaken by CPVN for the last 20 years. At present almost all the works are carried out by the private sector on contract basis.

The CPVN formulates an annual dredging plan each year to maintain the required channel depth. But the actual maintenance dredging had not been carried out satisfactorily mainly for the following reasons

- Shortage of crew, which makes it impossible for the dredgers to operate
- Mechanical defects and related failures of dredging equipment

Under such conditions, the government decided to conduct the maintenance dredging and improvement of navigation aid facilities along the Parana river by the private sector giving concession to collect the toll from ships through the channel for compensation of invested dredging cost. All the ships shall pay the toll according to their ship size (Net Registor Ton-NRT).

La Plata river provides important access channels to a number of river ports located along the Parana for the major grain export shipment. It is also the access to Uruguay and the Buenos Aires. Owing to the heavy sedimentation flow from Parana, the La Plata lose its depth and if no maintenance dredging had been carried out, at once it will entail enormous cost of dredging. It is really a heavy financial burden to maintain the channel depth deep enough to accommodate the larger bulk carriers to meet the sea transport demands.

The maximum draft for ships to be able to enter to the Buenos Aires is 32ft (9.8m) and have only 28ft (8.5m) navigable depth on the Mitre Channel. This means that fully loaded large-size ships of more than 10 .0 m draft are not allowed to enter the Buenos Aires port. The Parana river has restricted the maximum draught of 28 ft (8.5m) and the channel had been maintained for oceangoing ships navigable up to Rosario and San Lorenzo.

The maintenance dredging of the main channel through the upstream rivers is the responsibility of the CPVN as mentioned above, but the maintenance dredging of the access channel to the por is the responsibility of each port.

Channel dredging of the Parana de Palmas river will be deepen to 28ft up to Rosario and Sta Fe as first stage and subsequently to 32ft at the second stage between Buenos Aires and Rosario by private companies. The deepening of the navigable waterway shall improve the access of larger vessels.

It is estimated that when the dredging up to Rosario is made to 32ft draft, those ships that are now calling the ports with only 26,000 tons shall be able to carry 34,000 tons. This shall derive a significant savings in cost of export products particularly grains which has been estimated around 60 to 80 million dollars annually.

The expected cargo to be transported will be cotton, grain, soya beans, iron ore, fuel oil, general cargo and their total volume is estimated at 7 million tons after 5 years time and by 10 years time around 15 to 17 million tons will be moved through this waterway.

The traffic volume of general cargo, grain, and oil by sea transport between Argentina and Brazil during 1990 to 1994 are shown as follows;

Table VII-1-2-11 Traffic Volume for 1990 to 1994 by Sea Transport Between Brazil and Argentine

(unit: ton)

Type of Cargo	Year	1990	1991	1992	1993	1994
Grain, bulk solid cargo	Export	75,665	1,090,824	897,805	1,480,373	1,243,786
	Import	76,297	285,536	744,922	476,820	780,401
	Total	828,962	1,376,360	1,642,727	1,957,193	2,024,187
General cargo	Export	74,644	27,898	45,713	101,651	154,128
	Import	53,644	65,463	106,478	201,972	284,179
	Total	128,288	93,361	152,191	303,623	438,307
Freezed cargo	Export	12,315	637	1,193	4,877	19,501
	Import	-	-	-	155	1,470
	Total	12,315	637	1,193	5,032	20,971
Oil, liquid cargo	Export	172,718	135,443	109,431	89,709	197,810
	Import	92,075	103,912	144,573	184,125	240,508
	Total	264,793	239,355	254,004	273,834	438,318
Total	Export	1,012,342	1,254,802	1,065,142	1,676,610	1,615,225
	Import	222,016	454,911	995,973	863,072	1,306,558
	Total	1,234,358	1,709,713	2,050,115	2,539,682	2,921,783

Source: FEAM

b. Hidrovia Waterways (Paraguay - Parana Waterway)

1) Background

The proposal of developing the Parana river for inland waterway transport system as regional development schemes were agreed by both governments (Argentina side desires to develop the routes from north to south along the Parana river and Brazil side desires to develop the route from east to west along the Tiete river around Sao Paulo in the southern parts).

2) Cargo traffic (Ships and cargo including container)

The major cargoes transported by the derrick navigation system is basically of soya and minerals. Soya origined and produced in Paraguay is transported by barges to the ports of Rosario-San Lorenzo area, to Escobar (Argentina) and to Nueva Palmira (Uruguay). The iron and manganese minerals, both originated from Brazilian resource

are also transported by this means of transport in order to reach their destinations in San Nicolas (Argentina) and Nueva Palmira (Uruguay) respectively.

The containers with general cargoes are mainly parts of auto mobiles and manufactured electric products from Argentina side are transported with small quantity through this water way from Buenos Aires for Paraquay.

1.2.5 Maritime Control

In this section the summarized finding on maritime control regarding the container transportation of the Buenos Aires and Bahia Blanca Ports are briefly explained.

Function and present condition of facilities of the maritime control authority is described below;

(1) Functions of maritime control to port service

Prefectura Naval Argentina (PNA-Argentine Coast Guard) is the responsible institution under the Argentina maritime control authority to perform the following functions;

a. To perform police functions in the fields of safety of navigation and public enforcement within the jurisdictional waterways and ports;
b. For the Argentine Maritime Authority to enforces international conventions on safety of human life at sea;
c. To enforce pollution control as well as related technical and legal matters;
d. Flag State and Port State Control functions involving vessel records and control of ship safety conditions pursuant to the provisions of related laws, regulations and relevant international agreements.

(2) Environmental control supervision

The evolution of navigation and the constantly increasing size and tonnage of ships made it necessary to study, at the international level, the most effective way to face the problems of ship-derived pollution. Important legal instrument, completed in 1990, was the International Convention on Oil Pollution Preparedness, Response and Corporation (OPRC/90).

The OPRC/90 took measures to clean up when a spill has occurred. PNA must deal with laws forbidding water pollution(in rivers, lakes and seas) through oil or other noxious substances. The laws by which Argentina approved relative to the above-mentioned conventions, consider Prefectura as the enforcement authority of the rules.

The penalty system and the measures concerning the restoration of the harmed environment are stated in the National Act No. 22190 on "Prevention and Control of Pollution from Ships and Naval Craft".

With regards to restoration of the damaged environment, Prefectura cleans polluted waters. This task is performed by its salvage, fire-fighting and pollution control service and the different specialized units located along the river and sea shores.

(3) Traffic control through main channel to ports and coastal ports

As mentioned above PNA (Argentine Coast Guard) is responsible for providing safety of navigation and to safeguard human lives and goods in sea, river and lake waterways, as well as for directing navigation of traffic to ports.

To this effect, the Communications Service for safety in navigation (called "SECOSENA") has been created through a network of coastal stations distributed along the sea and river shores in the country.

The traffic and security control system (called "CONTRASE") is a complementary system to SECOSENA established and ruled by the PNA, that provides control of movement of vessels as well as the exchange of information between a coastal station and vessel and, if necessary, regulates its movement so as to strengthen the safety in navigation and faster and efficient flow of traffic, especially in heavily congested area, in difficult zone for navigation or when there exist dangerous loads.

This traffic and security control system is performed at PNA's radio stations mainly by radio communications network without advanced equipments like shore based radar system, traffic separation scheme, etc.

a. Buenos Aires Port

At Buenos Aires Prefectura, the control is being carried out by using a big panel board on which ships' positions are indicated with colored pins after confirming their position and characteristic by VHF or radio communications with ships.

Radars are used but more advanced shore based radars should be used at traffic control centers in international channels and those radars have vessel data processing system and show on a graphic display marks with identification codes and bars of heading and speed.

b. Bahia Blanca Port

At Bahia Blanca Prefectura they have developed their traffic control system of PC computer which can show vessels' position on the display. The system help and enable them to control entering and sailing vessels on display for giving orders or directions of waiting, proceeding or anchoring.

1.2.6 Issues for Development of Containerized Transportation in Argentine Ports

Based on the analysis of the existing situation of port operation, navigable waterway and conditions of facilities at Buenos Aires and other main ports, following issues are identified for further development of containerized transportation in Argentina.

(1) Physical restriction and constraints at the Buenos Aires port are as detailed in section 1.2.2(5). There are limited land space and shallow draft of channel to the port for accommodating the large container ships.

(2) Nationwide intermodal transportation railway and road have developed by the centralized way to the Buenos Aires.

(3) The main ports like Bahia Blanca, Quequen, Rosario and Santa Fe have been developed as bulk cargo exporting ports, but currently there are demands from the regional communities for development of multipurpose terminal within the port area to handle general cargo and containers as detailed in section 1.2.3.

(4) Maritime safety control system along the access channel to Buenos Aires port and other main ports are conducted by obsolete means of communications which needs to be modernized by applying a current electronic technology.