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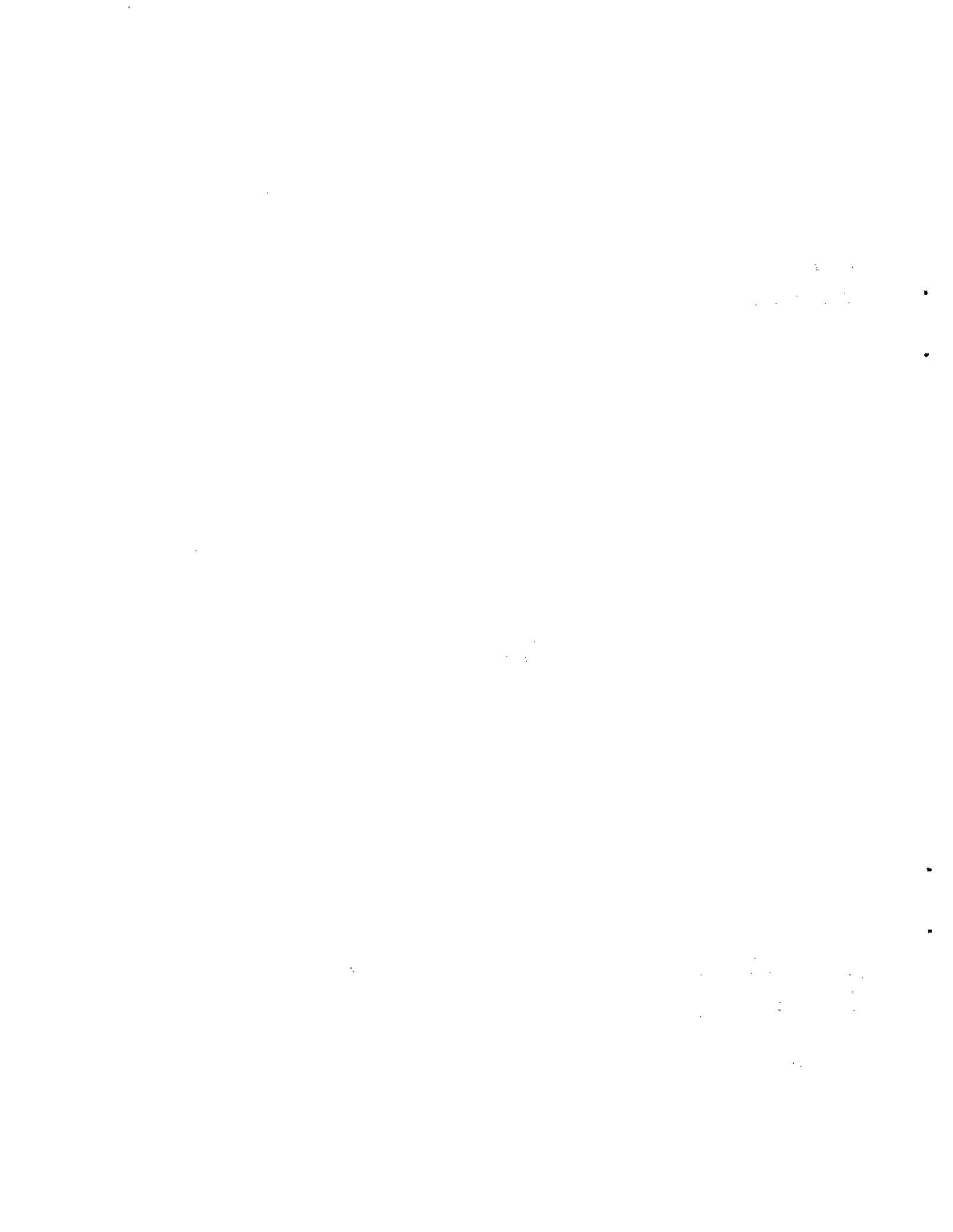
Economic Commission for Latin America and the Caribbean



**TRANSPORT OF PARAGUAY'S EXPORTS THROUGH
THE ARGENTINE-CHILEAN CORRIDOR**

The information contained in this document was obtained during a mission to Argentina and Paraguay in August 1985. Although the analysis is based on the situation prevailing at that time, it is hoped that the conclusions and recommendations are still valid when this study is published.

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SUMMARY

This document examines the transport corridor through Argentina and Chile as an alternative route for Paraguay's exports. All the transport options by road, rail and river have been considered and also the possible options which result when these modes are combined.

Thirteen transport options have been selected in the corridor across the Mendoza (Argentina)-Valparaiso (Chile) axis: one by road, three by rail, four by road and rail, two by rail and river and three by road, rail and river.

A detailed analysis has been made of all the institutional and operational aspects of the use of each transport option in order to pinpoint the obstacles and their possible solutions. As a rule, it must be borne in mind that these obstacles relate to:

- i) the specific operation of each mode of transport in each of the three countries;
- ii) the co-ordination of the same mode of transport between two countries;
- iii) the border, customs, health aspects, etc., and
- iv) the co-ordination of the different modes of transport.

A comparative analysis has been made of all the options chosen and the advantages and disadvantages of each are listed. In this connection, it should be emphasized that the transport options which have been studied here are little known to Paraguayan exporters and importers or to transport operators and carriers, because so far, more attention has always been paid to the transport corridors from Paraguay to the Atlantic while the corridors to the Pacific were neglected.

Lastly, on the basis of the studies done, institutional and operational recommendations have been made which could help to simplify and facilitate transport through the Paraguay-Argentina-Chile corridor, which is the subject of this study.

Chapter I

BACKGROUND

The International Rail Transportation Project (IRT Project) was started in 1978 and is being carried out jointly with the Latin American Railways Association (ALAF). As part of this project, many studies have been done which have enabled advice and support to be given to the railway companies of Latin America, especially in the promotion of international rail transport.

The Federal Republic of Germany seconded a railway expert to ECLAC, to co-operate with the Transport and Communications Division in the area of his specialty. During his stay with ECLAC he worked within the framework of the IRT Project.

A list is given below of some of the studies carried out under the IRT Project, which have provided background information for the present study:

i) Transporte Internacional por Ferrocarril (TIF) Paraguay-Atlántico (E/CEPAL/L.252, August 1981), prepared with funding from the Government of the Federal Republic of Germany.

ii) Flujos de Mercancías en el Corredor Sao Paulo-Buenos Aires (December 1982), prepared by the Consulting Firm of Engineering and Transport Economics (INECO) under the sponsorship of the International Technical Co-operation Division of the Ministry of Foreign Affairs of Spain.

iii) Corredor Paraguay/Atlántico (March 1984), prepared by the Technical Assistance Programme of the Government of the Federal Republic of Germany to the Latin American Railways Association.

iv) Análisis de la situación actual del Ferrocarril Trasandino Mendoza-Ios Andes y alternativas posibles para mejorar dicha situación (November 1984), prepared under the Technical Assistance Agreement between the Latin American Railways Association and the Ministry of Transport, Tourism and Communications of the Government of Spain.

Two of the studies mentioned above have made a detailed analysis of Paraguay's transport options in respect of the Atlantic. So far, however, no study of Paraguay's transport options has been done in respect of the Pacific. The other two studies mentioned contain specific analyses of certain stretches in respect of the possible transportation options which are studied in this document. Consequently, the study may be regarded as being supplementary to those mentioned above and as seeking to indicate the possible transport options between Paraguay and the Pacific Ocean through the Argentina-Chile corridor.

A. PURPOSE OF THE STUDY

In this study particular attention is paid to the institutional, operational and technological aspects of the existing transport options for Paraguay's exports through the Asunción-Pacific corridor, across the Mendoza (Argentina) -Valparaíso (Chile) axis. The study considers and analyses the most important transport options in this corridor by road, rail, road and rail, river and rail and river, rail and road.

The study attempts to show the advantages and disadvantages of transport options through this corridor, which are little known to Paraguayan exporters or transport operators and carriers. Institutional, operational and technological recommendations are made in respect of the options chosen in this corridor, with a view to simplifying and facilitating their use.

B. TRANSPORT CORRIDORS THAT MAY BE USED FOR PARAGUAY'S EXPORTS AND IMPORTS

A brief description is given below of the four most important transport corridors that may be used by Paraguay for its foreign trade.

1. The Paraguay and Paraná rivers

Historically, Paraguay has used the natural route provided by the Paraguay and Paraná rivers for transporting its merchandise abroad and this has usually been done by transshipping goods from river boats to ocean liners of vice-versa in the port of Buenos Aires. As time went by, however, transportation on the Paraguay-Paraná river and the transshipment in the ports has become very

costly and the operations have become more inefficient every day. For example, it is fair to say, that transportation between Asunción and Buenos Aires and subsequent transshipment to ocean liners costs as much as transportation between Buenos Aires and Rotterdam.

River transport with transshipment to ocean liners has been declining and may well be phased out completely if the necessary measures are not taken to prevent this. Furthermore, there has been an increasing use of small river boats which can sail on the Paraguay and Paraná rivers and also cross the high seas to Europe without any need for transshipment. At present there are six boats of this kind, four of which have a loading capacity of 2 500 tons each, owned by the Navemar Shipping Company. They ply regularly between Asunción and Northern Europe and seem to be highly profitable although they can only carry light cargo up to 1 500 tons in order to avoid draft problems when crossing both rivers. These ships are profitable because they eliminate operational delays and high costs that are incurred by transshipment in some of the River Plate ports. Bearing this in mind, it can be said that the economic inefficiency of transportation between the River Plate and northern Europe in these small boats is less than transportation in lighters from Paraguay and transshipping to ocean liners in a River Plate port.

There is also a Chilean boat which plies fairly regularly directly between Asunción and Chile without any kind of transshipment.

Some of Paraguay's exports are shipped through the ports of Montevideo, Nueva Palmira and Fray Bentos in Uruguay instead of through the port of Buenos Aires. The advantage is that the maritime transportation from Uruguay is in ships which are not affiliated to any maritime conference and therefore the freight rates are lower. Uruguay is building installations in its ports which will enable the transshipment of bulk cargo and is making these installations available to Paraguay. Furthermore, since river barges are adequate to reach the ports of Nueva Palmira and Fray Bentos, while small ships are required to reach the port of Montevideo because of the high waves, it would be more convenient for Paraguay to use the ports of Nueva Palmira and Fray Bentos to transship its merchandise from barges to ocean-going vessels when it uses the river route.

2. The corridors through Brazil

Because of the problems encountered on the river route, Paraguay has been seeking other transport options with its neighbours. Accordingly, Paraguay has signed a number of very important agreements with Brazil to facilitate the transport of its goods through that country and to use the ports of Paraná and Rio Grande. In principle, this route has been used primarily with the participation of truckers from Brazil and Paraguay. Paraguayan exports are composed mainly of large volumes of bulk products which become more expensive when transported by road. Similarly, there are major congestion problems on the Brazilian highways because of the large number of trucks which have to be used. Finally, the products being transported by Paraguay are similar to those produced by the Brazilian states closest to Paraguay and this considerably increases the demand for transportation in both countries at the same period of the year.

Because of the difficulties encountered in river transport and the high costs of transport by road to Paranaguá, Paraguay is making increasing use of the Asunción-Encarnación-Posadas-Paso rail route from Los Libres-Uruguaiana-Rio Grande, which includes the Paraguayan railroad, the Argentine railroad and finally transshipment to the Brazilian railroad for transportation to the port of Rio Grande. Consequently, it can be said that transport to the Port of Paranaguá is done chiefly in trucks and then by rail to the port of Rio Grande. Brazil seems to want Paraguay's exports to be shifted from the port of Paranaguá to the port of Rio Grande and to use the rail route more and the road route less. A number of Paraguayan exporters have stated that the problem with using the railway is that there is no certainty as to the availability of rail cars or to the actual time the goods will take to reach Rio Grande.

This route has been studied in detail in the documents Transporte internacional por ferrocarril Paraguay-Atlántico (E/CEPAL/L.252, August 1981) and Corredor Paraguay-Atlántico (ALAF, March 1984).

3. Corridor through Argentina and Uruguay

When the binational Salto Grande dam between Argentina and Uruguay was inaugurated in August 1982, it provided the cities of Concordia in Argentina and Salto in Uruguay with a road and rail link. The railway connection has made it possible to link up the networks of both countries and it is important to emphasize here that the Uruguayan and railway gauge is the same as that of

the Ferrocarril General Urquiza of Argentina, and this in turn has made it possible to link up the railways of Paraguay and Uruguay.

This fact is of major importance for Paraguay because now the country had been provided with a new railway route through Argentina and Uruguay and with the possibility of shipping goods through the port of Montevideo. So far, this route has hardly been used, but it will be able to carry much more traffic between Argentina and Paraguay when the binational Yaciretá dam is built, which will link the cities of Encarnación in Paraguay and Posadas in Argentina by road and by rail.

4. Corridor through Argentina and Chile

In principle, it may appear that this route is not very important, which explains why it has not been studied before. As it is virtually unknown to Paraguayan importers and exporters, it is very little used. However, before making a judgement of any kind as to its present and future potential, a comparative analysis will have to be made of its various options and this analysis will be the focal point of this study. None of the routes mentioned above is operating efficiently, since they all have many operational and institutional shortcomings that increase the cost of their use. At the same time, the trade routes across the Atlantic are declining in importance compared to the trade routes across the Pacific. It can be said that today's trade markets are in the Atlantic whereas those of the future and the not too distant future will be in the Pacific.

Lastly, this route is also important for the growth of the South American markets on the Pacific and, naturally, for trade between Chile and Paraguay. Five years ago the idea of establishing a trade link between Chile and Paraguay was unthinkable because the volume of cargo was too small to justify the use of a ship with transshipment in Buenos Aires. Recently, however, road carriers have been growing in both countries and are now providing weekly, competitive services along the traditional routes.

C. DESCRIPTION OF THE PARAGUAYAN-ARGENTINE-CHILEAN CORRIDOR

The transport corridor being examined in this study runs through Paraguay, Argentina and Chile. In principle, Chile could offer two important outlets, one through the port of Antofagasta and the other through the ports in Central

one through the port of Antofagasta and the other through the ports in Central Chile. A study of both outlets together would mean analysing a host of different options for each one which would make it difficult to understand. At the same time, the technical assistance programme agreed on by the Latin American Railways Association and the Government of the Federal Republic of Germany is conducting a study of the Paraguayan-Argentine-Chilean transportation corridor through the port of Antofagasta. Accordingly, it has been decided for the present to study the transportation corridor through the ports of Central Chile, pointing out the obstacles to bilateral trade between Chile and Paraguay.

There are two major ports in the central area of Chile: Valparaiso and San Antonio. The port of Valparaiso was chosen because it has a railway line and provides a more direct road route to the Pacific. However, all the points made here are equally valid for the port of San Antonio.

This corridor offers many transport options, especially if the possibility of using the road, rail and river routes and their possible combinations is considered. Consequently, of all the possible options, the most important ones, which should be studied most carefully, are: the Asunción-Mendoza-Valparaiso road the Asunción-Buenos Aires-Justo Daract-Mendoza-Valparaiso rail road, the Asunción-Buenos Aires-Córdoba-Mendoza-Valparaiso and Asunción-Paraná-Santa Fe-Mendoza-Valparaiso railways; the Asunción-Resistencia, Asunción-Santa Fe and Asunción-Rosario river routes combined with the railway stretches between Resistencia and Valparaiso, Santa Fe and Valparaiso and Rosario and Valparaiso. Finally, in the Mendoza-Valparaiso stretch the rail and road option has always been used.

Chapter II

PARAGUAY'S FOREIGN TRADE

In order to determine the nature of Paraguay's exports and imports, the statistics of the Central Bank, of the National Navigation and Ports Authority, of the Customs Department and of the Export Promotion Centre (CEPEX) were consulted. These statistics are not completely compatible one with another and after they had been studied in detail it was deemed preferable to use only the Statistical Bulletins of the Department of Economic Studies of the Central Bank of Paraguay. These statistics as they relate to exports and imports include only those that appear in the exchange register but not the unregistered FOB exports and imports.

The aim was to gather information which would give the ratio of the registered and unregistered foreign trade operations, but it was not possible to obtain sufficiently reliable data. However, in 1981, an official of the Ministry of Industry and Trade gave an unofficial estimate that the unregistered exports were 50% of the total. In addition, in an editorial of 30 July 1985 the newspaper El Diario de Asunción reported that, "according to present unconfirmed reports, legal exports account for 33% of Paraguay's total exportable goods". Several persons have said that the 50-50 rule has been followed fairly closely for some time. Although these data do not yield anything specific, this is an important fact in terms of Paraguay's real foreign trade transportation needs and should be taken into account.

A. EXPORTS

Table 1 traces the exports of goods in millions of United States dollars, FOB, over a number of years, as they appear in the exchange register of the Central Bank of Paraguay. The table does not include exports of unregistered goods or

adjustments for exports to binational entities. The goods have been grouped into major categories and it will be observed that the largest volume of exports is of cotton fibres and oilseeds.

Table 2 gives a historical picture of Paraguay's exports to certain specific countries. For purposes of this study, an analysis has been made of the exports that Paraguay could ship through the Paraguay-Mendoza-Valparaiso corridor and it has been found that the following countries are the most likely destinations: Colombia (CO), Chile (CL), Ecuador (EC), United States of America (US), Japan (JP), Mexico (MX), and Peru (PE).

Paraguay has traditionally exported to Argentina, Brazil and Uruguay in Latin America and to Holland, Germany, Switzerland, Spain, Belgium, France and Italy in Europe, in declining order. Other major importers outside of these two regions are the United States, Japan and South Africa.

Paraguay exports mainly cotton fibres, feed cake and expellers and flour, vegetable oils and meat products to Chile. It exports quebracho extract, sugar and vegetable oils to the United States and cotton fibres to Japan.

Table 3 makes a historical presentation of Paraguayan exports, in thousands of tons, specifying the total volume of all the exports to the countries selected in order to quantify the maximum volume of goods which could be transported from Paraguay to the Pacific through this corridor.

It will be noted that in table 3, the export volumes to the countries chosen are on the whole fairly stable although there was a substantial decline in 1979 and 1981. However, it should be borne in mind that virtually all the volumes mentioned have used the traditional transport route and therefore, there is doubt as to whether they would not have been greater if the transport corridor across Argentina had been used and if other markets in other Pacific countries had been opened up through this corridor.

Table 1
 PARAGUAY: EXPORTS
 (Millions of US dollars, FOB)

Products	1977	1978	1979	1980	1981	1982	1983	1984
Livestock goods	28	32	12	4	7	9	13	12
Wood	20	20	42	66	36	44	20	22
Oils	42	25	29	26	29	22	21	22
Tobacco	14	9	9	10	6	6	10	15
Quebracho extract	0	0	3	4	6	5	5	6
Cotton fibres	80	100	99	106	129	122	85	131
Oilseeds	56	38	79	42	48	90	84	99
Feed cake and expellers	8	8	12	22	14	13	14	12
Fruits and vegetables	0	0	3	8	4	9	3	4
Others	30	25	17	22	16	11	14	12
<u>Total</u>	<u>278</u>	<u>257</u>	<u>305</u>	<u>310</u>	<u>296</u>	<u>330</u>	<u>269</u>	<u>335</u>

Table 2
 PARAGUAY: EXPORTS
 (Millions of US dollars, FOB)

Destination	CO	CL	EC	MX	PE	US	JP	Total
1960	0.0	0.0	0.0	0.0	0.0	7.2	0.0	27.0
1965	0.0	0.0	0.0	0.0	0.0	14.5	0.2	57.3
1970	0.2	1.5	0.6	0.7	0.2	9.1	1.2	64.1
1975	0.2	1.0	0.1	2.2	0.4	15.5	3.6	176.7
1976	0.1	7.4	0.0	2.4	0.4	21.3	6.4	181.8
1977	0.2	8.7	0.0	0.7	0.1	39.5	6.4	278.9
1978	0.2	13.5	0.0	1.2	0.1	22.2	32.3	257.0
1979	0.4	7.2	0.0	2.5	0.0	17.6	16.4	305.2
1980	0.1	11.3	0.0	4.0	0.0	16.7	11.3	310.2
1981	0.1	11.1	0.0	2.5	0.5	15.3	24.9	295.5
1982	0.2	6.9	0.0	0.9	0.2	8.7	25.5	329.8
1983	0.0	8.9	0.0	0.0	2.3	23.2	5.2	269.2
1984	0.0	16.7	0.2	0.0	1.3	17.5	7.9	334.5

Table 3

PARAGUAY: EXPORTS

(Thousands of tons)

Destination	CO	CL	EC	MX	PE	US	JP	Total
1976	0.1	10.6	0.0	6.2	1.7	42.6	4.7	65.9
1977	0.2	14.3	0.0	1.6	0.2	63.7	4.8	84.8
1978	0.2	22.9	0.0	2.4	0.1	33.7	26.5	85.8
1979	0.2	12.8	0.0	5.5	0.0	26.6	12.6	57.7
1980	0.1	35.7	0.0	7.8	0.0	21.5	8.8	73.9
1981	0.1	17.8	0.0	3.6	0.4	16.4	21.1	59.4
1982	0.1	19.7	0.0	0.9	0.2	20.2	25.9	67.0
1983	0.0	27.6	0.1	0.1	3.3	38.7	8.3	78.1
1984	0.0	41.3	0.1	0.0	8.8	23.4	8.9	82.5

B. IMPORTS

Table 4 shows the imports of goods in million of US dollars, FOB, which appear in the exchange register of the Central Bank of Paraguay. The table does not include the imports of goods by the binational entities of Itaipú and Yaciretá nor does it include imports tied to foreign loans and to unrequited official transfers or imports tied to direct foreign investment.

From table 4, it can be seen that Paraguay's major imports are fuels and lubricants, transport elements and accessories and machinery and motors.

Table 5 shows Paraguay's imports over a number of years from the same countries used in the table of exports exports.

In Latin America, Paraguay imports primarily from Argentina, Brazil and Uruguay; in Europe it imports from England, Germany, France, Spain, Italy and Holland and in the rest of the world from Algeria, the United States, Japan and Dutch Antilles. Paraguay's main imports from Chile are: paper, cardboard and cardboard products and, in particular, newsprint, metals and metal manufactures, beverages and tobacco, chemical and pharmaceutical products; from Japan, transport elements and their accessories, machinery, equipment and

motors, textiles and textile manufactures, iron and iron manufactures; and from the United States, machinery, equipment and motors, transport elements and accessories, beverages and tobacco, textiles and textile manufactures and chemical and pharmaceutical products.

Table 4

PARAGUAY: IMPORTS
(Millions of US dollars, FOB)

Products	1977	1978	1979	1980	1981	1982	1983	1984
Foodstuffs	12.7	14.5	20.0	24.1	32.6	23.9	31.2	14.3
Beverages and tobacco	19.6	29.0	41.6	39.7	37.2	38.2	15.6	25.5
Fuels and lubricants	42.6	59.6	87.6	129.5	95.6	154.2	120.0	137.6
Paper and paper manufactures	7.1	7.1	8.7	12.3	9.8	13.4	7.0	7.8
Chemical and pharmaceutical products	12.5	16.3	26.2	31.7	31.1	32.7	28.3	29.4
Transport elements and accessories	40.7	60.1	69.3	93.3	65.5	47.6	29.4	102.6
Textiles and manufactures	6.2	6.7	9.4	9.8	9.8	9.7	8.5	6.1
Agricultural implements and accessories	9.8	10.5	11.1	9.5	13.2	9.4	6.9	11.8
Iron and iron manufactures	15.2	14.7	30.9	20.0	22.7	39.5	39.6	23.5
Metals and their manufactures	3.6	5.2	4.4	6.4	7.6	14.5	11.3	5.6
Machinery and motors	56.9	53.8	79.7	79.7	107.8	105.4	107.8	92.2
Others	28.7	40.2	48.9	61.2	74.3	92.9	72.4	56.8
<u>Total</u>	<u>255.4</u>	<u>317.7</u>	<u>437.7</u>	<u>517.1</u>	<u>506.1</u>	<u>581.5</u>	<u>478.3</u>	<u>513.1</u>

Table 5

PARAGUAY: IMPORTS

(Millions of US dollars, FOB)

Origin	CO	CL	EC	MX	PE	US	JP	Total
1960	0.0	0.0	0.0	0.0	0.0	7.6	2.1	32.4
1965	0.0	0.1	0.0	0.0	0.0	10.4	3.1	47.4
1970	0.0	0.2	0.1	0.2	0.1	14.9	4.3	63.8
1975	0.3	1.4	0.1	1.0	0.0	21.8	8.8	205.6
1976	0.3	2.0	0.1	0.0	0.0	18.4	8.5	220.2
1977	0.4	3.3	0.4	2.0	0.1	30.9	22.8	308.3
1978	0.2	4.0	0.2	1.0	0.2	34.8	25.2	383.0
1979	0.3	5.1	0.4	1.0	0.1	49.8	36.1	527.0
1980	0.6	7.7	0.3	0.0	0.5	51.2	42.0	614.7
1981	0.7	7.2	0.3	2.0	0.4	49.2	42.0	599.6
1982	0.4	7.5	0.1	0.0	0.2	51.1	32.0	672.0
1983	0.0	2.4	0.0	0.0	2.3	30.8	20.2	545.9
1984	0.0	3.6	0.0	0.2	0.1	44.9	60.7	586.0

Table 6 shows Paraguay's imports in thousands of tons over a period of time, specifying the countries of origin chosen and the total volume of the imports from those countries, in order to quantify the maximum volume of goods which could have been transported from Paraguay along this corridor to the Pacific.

It will be observed that the import volumes from the countries chosen are on the whole fairly stable, although there was a marked decline in 1983. However, it should be borne in mind that virtually all the volumes given here have used the traditional transport route and that therefore there is doubt as to whether these volumes could not have been secured under more favourable conditions if the transport corridor through Argentina and Chile had been used and also if they could not have been obtained in other Pacific coast countries.

Table 6

PARAGUAY: IMPORTS
(Thousands of tons)

Origin	CO	CL	EC	MX	PE	US	JP	Total
1976	0.1	3.8	0.0	0.3	1.5	13.0	3.6	22.3
1977	0.1	6.6	0.1	0.4	0.0	13.6	13.3	34.1
1978	0.1	8.2	0.0	0.2	0.2	15.4	11.2	35.3
1979	0.1	6.5	0.1	0.3	0.1	14.8	12.3	34.2
1980	0.1	7.8	0.1	0.1	0.1	16.1	13.0	37.3
1981	0.1	6.1	0.1	0.1	0.3	16.4	12.5	35.6
1982	0.1	11.3	0.0	0.1	0.2	12.0	9.5	33.2
1983	0.0	3.8	0.0	0.1	0.1	5.8	4.9	14.7
1984	0.0	7.1	0.0	0.1	0.1	6.8	16.4	30.5

Chapter III

OPTIONS FOR THE TRANSPORT OF PARAGUAYAN IMPORTS AND EXPORTS THROUGH ARGENTINA AND CHILE

Section C of chapter II gave an overall description of the corridor being studied here and of the different options that will be considered. A detailed description is then given of the options and therefore, they are grouped according to whether they are strictly for road or for rail or mixed options for road and rail; river and rail; and river, rail and road. Finally, all these options are considered.

Each option has some stretches in common with the others. Consequently, the analysis of a given stretch is made in the first option in which it appears. For the remaining options, reference is made only to the place previously studied, thus avoiding unnecessary repetition.

In each option an estimate is made of the total number of hours that it would take to transport an item of merchandise between Asunción and Valparaíso following the route outlined for each of them. In order to estimate the total time, account has been taken not only of the travel time needed but also the time needed for border inspections, transfers, waiting time, etc. Similarly, in order to make these calculations average times have been taken, based on the various items of information received. Some of the estimates were made by persons who were very closely connected with these operations.

A. ROAD OPTION

The shortest road option from Asunción to Valparaíso in distance and in time --and therefore the most frequently used-- is called C-1. Its route is as follows: Asunción, Puerto Falcón, which is the Paraguayan border inspection point between Paraguay and Argentina, the Argentine border inspection point, Clorinda, it then follows highway 11 passing through Formosa, Resistencia, Reconquista and Santa Fe and then follows route 19 through San Francisco,

Villa María, Río Cuarto and Mercedes; it then continues along route 7, San Luis, Mendoza and Las Cuevas where the Argentine border inspection point is located; it then continues into Caracoles which is the Chilean border inspection point, and finally reaches Los Andes and Valparaíso. This route is completely asphalted and is usually in good condition except for a few stretches in northern Argentina which have deteriorated somewhat.

Table 7 shows the different stretches of the route by road through Paraguay, Argentina and Chile and it lists the main cities through which it passes, the partial distances and gives an estimate of the travelling time.

Table 7

OPTION C-1

Countries	Cities	Kilometres	Hours
Paraguay	Asunción		
	Puerto Falcón	45	
Argentina	Clorinda		
	Formosa	120	
	Resistencia	193	
	Reconquista	288	
	Santa Fe	250	
	San Francisco	139	
	Villa María	159	
	Río Cuarto	138	
	Mercedes	124	
	San Luis	104	
Mendoza	264	72	
Las Cuevas	207		
Chile	Caracoles	9	
	Los Andes	69	10
	Valparaíso	145	24
Total		2 254	106

Paraguayan customs inspection takes place in Asunción for both imports and exports. In the case of imports, if the duties are paid beforehand, it takes 48 hours to release the cargo and if there is any documentation problem, the merchandise may be left in the customs warehouses in order to release the truck. Goods for export are checked by a customs inspector at the point where the truck is loaded, and documentation processing for this must be started five days beforehand.

Between Puerto Falcón and Asunción, trucks must have a customs escort which is provided twice daily at 12 and 3 p.m. The charge is US\$20 per truck.

The border inspection point in Paraguay is Puerto Falcón where there is a border customs post for the control of goods leaving or entering the country. This customs post operates from 7 a.m. to 6 p.m. from Monday to Friday and on Saturday from 7 a.m. to 11.30 a.m. Outside of these hours, special arrangements may be made. Customs, health and international police inspections are done at this point.

The Argentine border check point is called San Ignacio de Loyola and here the customs, police and health inspections are done from 7 a.m. to 1 p.m. from Monday to Friday. Outside of this schedule special arrangements may be made. According to the information gathered, almost all the trucks pass outside of the scheduled hours.

The formalities for crossing the border may be started early by sending the documentation to the carrier's agent in Clorinda to complete the customs entry formalities and pay for the customs transit insurance policy. After this has been done, the inspection in San Ignacio de Loyola takes only about two or three hours to check the documentation and the cargo and to seal the truck. If the formalities have not been completed previously, the average time for this inspection is about three days. After the border has been crossed from Argentina into Paraguay, the customs inspection in Paraguay is very brief since this is an inspection for one exit only.

As there are no health authorities for plant inspection (SENASA) in Clorinda, arrangements for this must be made in Buenos Aires or Formosa, and the fees for and cost of bringing an inspector from that service from Formosa to Clorinda to carry out the necessary inspection must be paid.

If the trucks have completed the procedures for entry into Clorinda no inspection is necessary in Mendoza and they proceed directly to the Argentine border inspection in Las Cuevas. On the trip from Chile to Paraguay, transit

procedures for entry through Las Cuevas must be completed in Mendoza. The customs formalities can also be started early and this necessitates sending all the documentation to the carrier's representative in Mendoza a few days previously to complete the transit formalities, pay the customs transit insurance policy, etc. After this, the Mendoza inspection takes about four hours.

The border inspection in Las Cuevas is a departure procedure and like the entry procedure takes some two hours. At this border inspection point, there are customs, police and health checks. Animal health inspection takes place in Punta de Vaca, which is some 30 km from Las Cuevas and 144 km from Mendoza on Tuesdays, Thursdays and Saturdays only and the carrier's agent must be present. The total cost of this operation is some US\$160 per truck.

When travelling through Argentina there are obligatory police checks on entry or departure from each province.

The International Cristo Redentor tunnel connects Argentina and Chile by road at the Mendoza-Los Andes axis. In 1986, the toll paid was US\$39 per vehicle in Argentina and US\$16 per vehicle in Chile.

The border inspection in Chile is conducted in the Los Libertadores complex, which is located in a place called Caracoles. There, inspections are made by the customs, emigration and agricultural and livestock services. These inspections take from two to three hours. In Los Andes, there are obligatory inspections by customs, agriculture and health. The formalities can be completed before the truck's arrival, in which case inspections would take two to three hours.

With respect to the travel times calculated along this route, from Mendoza to Asunción the time is 72 hours, from Mendoza to Los Andes some 10 hours and from Los Andes to Valparaiso some 24 hours. Another road option that could be considered is Asunción, Encarnación, Posadas, Paraná and Santa Fe, from which point the route would continue as for option C-1. A bridge is being built between Encarnación and Posadas which will permanently link the rail and road networks of Argentina and Paraguay. Construction on this bridge is far advanced, although the deadline for its completion at the end of 1986 has already passed.

At present, a ferry crosses the Paraná river at this point which can take up to four large trucks at a cost of around US\$32 per truck in some 22 or 25 minutes. It seems that 15 days each year, this crossing is unusable because

the water level in the Paraná is too high for the present installations. Some carriers have advised that because trucks are damaged on the ferry, especially during loading and unloading they prefer not to use this system.

Furthermore, they have also reported that the Argentine customs clearance in Posadas is faster than in Clorinda and sometimes saves a considerable amount of time. Despite this, the new option is longer and does not appear to have any advantages over C-1, which is the route currently used by all the carriers plying between Paraguay and Chile. Therefore, so as to avoid making the study too complicated it was decided not to consider this option.

B. RAIL OPTIONS

The Latin American Railways Association (ALAF) and the Argentine Railways were asked which rail options across Argentina were most suitable to link up with the Presidente Carlos Antonio López Railway and the Chilean State Railways. Taking into account the information provided it was decided to consider three rail options. The first two cross Buenos Aires and the third crosses the highway below the river tunnel between Santa Fe and Paraná.

Argentine Railways has advised that a distinction has to be made between the actual route taken by the merchandise within its own network and the "tariff route". The actual route taken depends on the demand, on the trains running, on the availability of engines and cars, etc. and it is difficult to know the exact route beforehand. Furthermore the so-called "tariff route" is the shortest route by which merchandise can be transported between a given point of origin and a given destination point and the tariffs are established on the basis of this. The Argentine Railways personnel has said that customers are less concerned about the actual route than about rates and travelling time, which has no direct bearing on the tariff route. In light of these considerations, the distance covered on the tariff route was taken into account and not the distance covered on the route actually travelled.

The different railroads which make up the railway network of Argentina enjoy a high degree of autonomy. Each one schedules its trains, the cars are transferred from one railway to another if the gauges are the same, or if there is equipment with which to make the change of bogies to the cars, but the locomotives are never transferred.

In estimating the time required to cross each stretch of railroad, the goods trains that are scheduled to provide transport services and the waiting time for connecting the train providing the service on one stretch with the one on the following stretch were taken into account. It was also necessary to estimate the time required for ferry-crossings, border inspections, etc. However, the estimated times may be substantially reduced if enough merchandise is transported to fill an entire train, if it comes from one specific place to a particular destination and uses a single loader, as this will reduce the waiting times. It is also important to bear in mind that the rates on the Argentine Railways are lower when a whole train is hired.

1. Railway option F-1

This option, called F-1, plys the Asunción, Encarnación, Posadas, Buenos Aires, Mendoza, Los Andes, Valparaiso route. Table 8 details the different tracks of this route along the different railways, and the distances and gives an estimate of the hours required to cover them.

The Asunción-Encarnación stretch is covered by the Presidente Carlos Antonio López Railway of Paraguay with a 1.435 metre gauge. On the next stretch, it crosses the Paraná river from Encarnación to Posadas in Argentina on a ferry boat, built for this purpose. In order to cross Argentina by rail, the formalities must be completed in Posadas. The General Urquiza Railway, which has the same gauge as the one before, covers the stretch from Posadas, through Concordia, Zárate and to the Caseros Exchange Yard, which is very close to Buenos Aires and where the goods can be transferred or the wagon bogies changed to fit the 1.676 metre gauge of the General San Martín Railway. This railway runs through Rufino and J. Daract to Mendoza where in the General Gutiérrez Exchange Yard, the transfer is made between the General San Martín Railway with a 1.676 metre gauge and the General Belgrano Railway with a one metre gauge. At Las Cuevas, there is the Argentine border inspection point where the formalities are completed for passage through the country.

At the end of the International Railway tunnel between Argentina and Chile, the route reaches the Chilean border inspection point in Caracoles, where a brief inspection is made. Continuing on the Transandean Railway, the route crosses through Río Blanco and Los Andes and here the goods must be inspected by the customs authorities and the appropriate customs duties paid, if they are being taken into Chile or the formalities of passage through Chile

must be completed if the destination is a third country. In Los Andes, there is a plant for changing bogies of one metre to those of 1.676 metres. The route then continues up to Llay Llay, where traffic can continue to Calera and from there to Valparaiso or Santiago.

Table 8
OPTION F-1

Country	Railway	Cities	km	Hours
Argentina	P.C.A. López	Asunción Encarnación	392	30 48
Argentina	Gral. Urquiza	Posadas Concordia Zárate Caseros Exchange	1 089	30 48
	Gral. S. Martín	Buenos Aires Retiro Rufino J. Daract Mendoza	1 056	43
	Gral. Belgrano	Int. G. Gutiérrez Las Cuevas	189	48 14
Chile	Transandean	Caracoles Río Blanco Los Andes	7 35 34	6 24
	Southern Network	Llay Llay Calera Valparaiso	46 26 68	18
<u>Total</u>			<u>2 942</u>	<u>309</u>

The Presidente Carlos Antonio López Railway is not in the best state of repair and this goes for both the infrastructure and the engine and wagons. However, the co-operation that exists between the Argentine and the Paraguayan railways facilitates the Paraguayan railway's operations. In this connection it should be noted that:

i) Some 60 km of track are being repaired between General Artigas and Encarnación, in order to make use of this infrastructure in the binational Yaciretá dam works, because a part of the route is below the dam's water level.

ii) There is a blueprint for railway linkages between the Republic of Paraguay and the Federative Republic of Brazil to link Asunción, Paraguay and Salto del Guaira, Brazil, and the route includes the 150 km stretch between Asunción and Villarrica; consequently, this stretch will be fully repaired when that work is completed. Nevertheless, it does not appear that this task will be undertaken in the short term. For the present, Brazil is doing extension work on its railway line which will provide a long-term link with the border city of Guaira.

Goods trains ply between Asunción and Encarnación on Tuesdays, Thursdays and Saturdays and the journey takes between 28 and 30 hours. In Paraguay, 60 wagons of the General Urquiza Railway of Argentina are being used for these journeys and Paraguayan Railways is renting a wood-fueled steam engine from Urquiza as well as an electric diesel engine which carries out all the operations between the transfer point and Pacú-Oúa, the Paraguayan railway station in Encarnación.

Paraguayan railway traffic is composed mainly of exports to Argentina, Brazil and Uruguay. For further information see table 9, which shows the volume of goods transported by rail in 1984 and in the first half of 1985 and this encompasses exports from Paraguay to Argentina, Brazil and Uruguay or through these countries and also Paraguay's imports from Argentina, Brazil and Uruguay or through these countries.

Between Encarnación and Posadas there are ferry boats owned by the General Urquiza Railway of Argentina which transport some 40 wagons a day across the Paraná river.

As was mentioned before, a bridge is being built at this point, to make a permanent link between the Argentine and Paraguayan rail and road networks. When the bridge has been completed, a number of changes of route will have to be made in order to facilitate access to it. Considering that railway traffic is relatively light and that major works are being undertaken, it is possible that the linkage between these routes can be made after the road link has been made.

Table 9

VOLUME OF PARAGUAYAN IMPORTS AND EXPORTS
TRANSPORTED BY RAIL

(Tons)

Countries	1984		1985 (6 months)	
	Exports	Imports	Exports	Imports
Argentina	19 188	6 016	3 006	1 046
Uruguay	8 470	6 679	3 604	3 859
Brazil	33 545	11 079	20 400	5 455
<u>Total</u>	<u>61 203</u>	<u>23 774</u>	<u>27 010</u>	<u>10 360</u>

It takes 48 hours to assemble the wagons in Pacú-Oía, prepare them to leave Posadas, complete Argentine customs inspection formalities and obtain the necessary Argentine railway documentation. The consignment note from Argentina, Chile and Paraguay is valid in the three countries and this is a considerable advantage in facilitating border and traffic operations.

In 1985, a system for switching bogies was established in the Caseros exchange railway station, whereby wagons are switched between the General Urquiza Railway (GU), with a 1.435 metre gauge and the General San Martín Railway (GSM) with a 1.676 metre gauge. When this installation was visited it was being test operated and it was stated that operations took some 17 minutes and that another five minutes per wagon should be added for a final inspection of the train to ensure that everything was in order. However, it was stated that with more experience, the time per wagon could be reduced to some 10 minutes.

In Caseros, Argentine Railways also has a contractor who transfers the merchandise from one wagon to another and this transfer is carried out on two parallel tracks of the General Urquiza and General San Martín railways respectively, because there is a temporary platform which can accommodate three wagons per track. The contractor is bound to transfer whatever type of merchandise the client requires but he does not have an exclusive monopoly of

service because the customer can contract another person or use his own means if he so desires.

The General Urquiza Railway is responsible for both the transfers and the switching of bogies. Some 75 US cents per ton must be added, to the overall tariff for double track operations if 30-ton wagons are being contemplated.

The General Gutiérrez Exchange Station is some 19 km from Mendoza. At the station, transfers are carried out from wagon to wagon between the General San Martín Railway with a 1.676 metre gauge and the General Belgrano Railway with a one metre gauge. Argentine Railways is directly responsible for all the transfers except for bulk cargo, because they do not have the necessary equipment for this and the customer has to hire it himself. The Railway completes all the necessary customs formalities for the transfers. Customs has to unseal the wagons, supervise the transfer and reseal the loaded wagons. A maximum of four working days (06:00-18:00) is needed for the transfer but, on the average, allowance should be made for some two or three days per train including the time required to go through customs and health inspections.

The transfers carried out by the Railway are cheaper because there is a company contracted for this purpose. For example, the transfer of wooden beams costs some 0.13 US cents per ton and the transfer of bulk or bottled oil as well as tobacco costs US\$0.09 per ton. A number of private companies, when consulted, said that they charge between US\$1.50 and US\$2.30 per ton for the transfer of bulk cargo and between US\$2.00 and US\$3.50 for the transfer of packages. These rates are the same if the transfer is made directly from wagon to wagon or from wagon to truck or vice versa.

The gauge of wagons has to be changed in Los Andes to that of the Transandean Railway to Valparaíso and the Southern Network of Chilean State Railways. The dual gauge switching plant is small but fast and customs agriculture and health formalities can be completed while this changeover is taking place. A further 0.26 US cents per ton must be added for the gauge changeover.

2. Railway option F-2

This option runs from Asunción through Encarnación, Posadas, Buenos Aires, Córdoba, Mendoza, Los Andes to Valparaíso. It is similar to the previous one between Asunción and Buenos Aires, where the transfer of goods is made between the General Urquiza Railway with a 1.435 metre gauge and the General Belgrano

Railway with a one metre gauge. From Buenos Aires, the route goes through Córdoba, Dean Funes, Serrezuela, Pie de Palo and Mendoza, where the route rejoins the option described previously up to Valparaíso. However, with this option, it is not necessary to transfer goods in Mendoza because from here to the Chilean border, the General Belgrano Railway is used and it also has a one metre gauge.

Table 10 shows the different stretches of the route, some of the cities through which it passes, the partial distances and an estimate of the hours required to cover each stretch.

Table 10

OPTION F-2

Country	Railway	Cities	km	Hours
Paraguay	P.C.A. López	Asunción Encarnación	392	30 48
Argentina	Gral. Urquiza	Posadas Concordia Zárate Buenos Aires	1 101	30 48
	Gral. Belgrano	Retiro Córdoba Dean Funes Serrezuela Pie de Palo Mendoza Las Cuevas	2 028	99 14
Chile	Transandean	Caracoles Río Blanco Los Andes	7 35 34	6 24
	Southern Network	Llay Llay Calera Valparaíso	46 26 68	18
<u>Total</u>			<u>3 737</u>	<u>317</u>

This option has the advantage over the F-1 in that it saves time and lowers the transfer costs at the General Gutiérrez station, which is close to Mendoza. Although this route is 795 km longer than the F-1 option it has been estimated that it can be completed in six hours less because of the amount of time needed for the transfer.

3. Railway option F-3

The F-3 option, runs from Asunción through Encarnación, Posadas, Concordia, Paraná, Santa Fe, Córdoba, Mendoza, Los Andes to Valparaíso. Table 11 shows the different stretches of this route on the different Railways, some of the cities through which it passes, the partial distances and an estimate of the hours needed to cover each stretch.

Table 11

OPTION F-3

Country	Railway	Cities	km	Hours
Paraguay	P.C.A.López	Asunción	392	30
		Encarnación		
Argentina	Gral.Urquiza	Posadas	874	20
		Concordia		
	Gral.Belgrano	Sante Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza Las Cuevas	1 668	71 14
Chile	Transandean	Caracoles	7	6
		Río Blanco	35	
		Los Andes	34	
	Southern Network	Llay Llay	46	18
		Calera	26	
	Valparaíso	68		
<u>Total</u>			<u>3 150</u>	<u>279</u>

The route in this option is similar to the previous two from Asunción to Concordia, at which point the General Urquiza Railway continues up to Paraná on the Paraná river. The cities of Paraná and Santa Fe are separated by the river and are connected only by a highway through a tunnel below the river.

From Santa Fe, the route continues to Córdoba and from there it is the same as the one described in the previous paragraph up to Valparaíso. If this option is used it will not be necessary to transfer goods in Mendoza, because the same gauge is used from Santa Fe to the Chilean border.

The Argentine Railways has a contract with a private firm to carry out the Railway transfers between Paraná and Santa Fe through the tunnel thus avoiding the 20 km of track between these two cities and the respective Railways: General Urquiza (GU) in Paraná, with a 1.435 metre gauge and General Belgrano (GB) with a one metre gauge or General San Martín (GSM) with a 1.667 metre gauge both in Santa Fe. The transfer cost is included in the Railway rates and the customer is relieved of all responsibility for them. However, this contract has ended and now several problems have arisen, because the private company wants to increase its rates fairly substantially and Argentine Railways refuses to accept the increase. The result is that customers are now being forced to assume responsibility for contracting out the transfer. It is difficult to reach private agreements or contracts with some carriers in the area unless there are huge volumes of goods to be transported.

The railway does not have the equipment required to make the transfers from wagon to truck and vice versa either in Paraná or Santa Fe and so the customer must hire the equipment to do so. The railway consignment note states that the transfer must be done by the customer. No maritime agent is needed for such a transfer. If the goods are stored in a customs warehouse, the operation has to be witnessed by a customs officer in each railway station. There is no charge if they are stored between 7 a.m. and 6 p.m. from Monday to Friday but outside of these hours the service must be paid for. The transfer time will depend on the quantity of goods and the equipment hired but a minimum of 20 to 22 hours should be calculated. Customs formalities are taken care of by the railway; therefore, no intervention by anyone on behalf of the customer is needed.

Normally, when the railway contracts a private company to make the transfers the rates are lower. Thus, for example, in January 1985, the rates for moving goods between Paraná and Santa Fe through the tunnel below the

Paraná river were: for grains and oil in bottles 0.75 US cents per ton and for ginned cotton, seeds, tobacco and wood US\$1.13 per ton. Nevertheless, several of the firms consulted said that the rates would be around US\$3.40 per ton. The transfer between Corrientes and Resistencia across the General Belgrano bridge is US\$1.36 per ton for grains and US\$2.11 per ton for bales of cotton.

This option is 208 km longer than the F-1 and 587 km shorter than the F-2, and in terms of the estimated times, it is 30 hours shorter than the F-1 and 38 hours shorter than the F-2. However, the problem now is how to transfer goods from Paraná to Santa Fe until the difficulty between their railways and the concessionary company is settled or until a new company can be contracted.

4. The Mendoza-Los Andes Transandean Railway

It was felt necessary to include a few comments in this chapter on the Mendoza-Los Andes Transandean Railway since it is a stretch of railway common to all three previously mentioned railway options. For this purpose, the above-mentioned study Análisis de la situación actual del Ferrocarril Trasandino Mendoza-Los Andes y alternativas posibles para mejorar dicha situación was consulted.

This binational railway consists of two sectors, one 189 km long in Argentina from Mendoza to the border and another, 71 km long in Chile from the border to Los Andes. The border limit is actually inside the railway tunnel, 3 200 metres above sea-level.

The Chilean sector is electrified as far as Las Cuevas in Argentina. This sector should be divided into two subsectors: Caracoles-Río Blanco and Río Blanco-Los Andes. The first is used only by international traffic going to and from Argentina. The second is used to transport copper concentrate through a branch line linked to the Río Blanco station.

During the winter, the first subsector is subject to constant snow slides which destroy the catenary and damage some of the 28 sheds that were built to protect the line. Its route has maximum grades of 8% which require the use of electric cogwheel locomotives which are very old and in poor condition. Because of the steep grades, on the upward journey, the average train has one loaded car, two empty cars and four grill cars to maintain braking, and on the downward journey the train is composed of three loaded cars and four grill cars. This means that the net capacity per train is 30 tons going up and

90 tons going down. A train takes four hours between Río Blanco and Caracoles and another five hours in the opposite direction.

There is no danger of snow or rock slides in the second subsector and as the grades do not require the use of cogwheels, simple adhesion diesel locomotives can be used.

The Argentine sector can also be divided into two subsectors. The first runs from Mendoza to Polvareda, and has moderate slopes so that the train can be pulled up by single traction. The second runs from Polvareda to Las Cuevas, with maximum grades of 6%, for which double traction must be used. In this subsector, snow slides also occur in winter, but they are less frequent than on the Chilean side. From Mendoza to Las Cuevas in the first subsector, trains can haul 300 net tons with single traction and 600 net tons with double traction. In the second subsector, trains can haul 180 net tons with double traction. Between Las Cuevas and Mendoza, trains can be of 400 tons with double traction in the second subsector and single traction in the first.

The information given in the foregoing paragraphs shows up the huge gap between the capability of Argentine transports and that of the Chilean sector and above all, the operational difficulty faced by the Chilean sector which can only transport 30 net tons by train between Río Blanco and Caracoles. This is a major disadvantage.

In winter 1983 there were snow and rock slides on the Río Blanco-Caracoles subsector which destroyed long stretches of the catenary and many of the sheds. Stones and earth blocked the road. This unfortunate event and operational difficulties have discouraged Chilean Railways from repairing this subsector and, apparently, no official decision has been taken to do this. In the meanwhile, international rail traffic has been discontinued. This situation is causing the Mendoza railway authorities concern, since the traffic on the Mendoza-Las Cuevas sector is negligible if the Chilean sector is not in operation. Therefore, at this time very little use is made of the personnel, infrastructure and equipment of the Argentine sector because they are waiting to see what will happen on the Chilean sector of the railway.

The distance between Mendoza and Valparaiso is 405 km by rail and 430 km by road, but by train there is a change of gauge in Los Andes. In some cases, a transfer would also be necessary in Mendoza, depending on which railway was used from the hinterland of Argentina to Mendoza. In turn, this railway's operating times are somewhat longer than those of the road. The distance

between the two cities is not very great therefore, except in a few specific cases, the road services provided between them are better than those provided by rail, so that it will be difficult to compete with the road services for this transport.

C. ROAD AND RAIL OPTIONS

This section covers the options using the road and railways complementarily and completely, in an effort to take advantage of the best features inherent in each mode of transport. In selecting these options, the following aspects were taken into account:

i) The Paraguayan rail infrastructure is in a bad state of repair, hence there are major limitations to its exploitation. Consequently, it seems reasonable to envisage an option which would make it possible to substitute that particular stretch of railroad for a road stretch.

ii) As mentioned before, the Río Blanco-Caracoles subsector of the Transandean Chilean Railway is out of use; therefore, it is necessary to examine the railway options in which the Mendoza-Valparaíso stretch is completed by road.

1. The CF-1 option by road and rail

This option, called the CF-1, will follow the road from Asunción through Clorinda and Resistencia, and continues by rail through Mendoza and Los Andes to Valparaíso. Table 12 shows the various stretches of the course, some of the cities through which it passes, the partial distances, and gives an estimate of the time required for the journey.

This option follows the same route as C-1 from Asunción to Resistencia, where there is a transfer of goods from truck to railway car and this can be done without any problem in the Resistencia station. In the next stretch the General Belgrano Railway is used with a one metre gauge between Resistencia, Córdoba, Mendoza and Las Cuevas and across the Transandean Railway to Valparaíso. It should be borne in mind that from Córdoba to Valparaíso the option is similar to those of F-2 and F-3 described in the previous section.

Table 12

OPTION CF-1

Country	Means of transport	Cities	km	Hours
Paraguay	Road	Asunción Puerto Falcón	45	
Argentina	Road	Clorinda Formosa Resistencia	120 193	14 48
	Gral. Belgrano Railway	Resistencia Santa Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza Las Cuevas	2 226	99 14
Chile	Transandean Railway	Caracoles Río Blanco Los Andes	7 35 34	6 24
	Southern Network Railway	Llay Llay Calera Valparaíso	46 26 68	18
<u>Total</u>			<u>2 800</u>	<u>223</u>

Transfers in Resistencia from truck to wagon are the responsibility of the customer who must hire a company for those services. Although these transfers can be carried out in the port of Barranqueras, it is advisable to do this in the Resistencia station where it is cheaper. According to the information obtained from different companies, the transfer of loose cargo costs US\$10.70 per ton inside the port and US\$3.50 per ton outside, whereas packages cost US\$10.20 and US\$2.30 per ton respectively. During the transfer, the customs authority must be present to break the seal of the truck, supervise the entire operation and seal the railway cars.

This option is shorter than the F-1, F-2 and F-3 because the itinerary is more direct and it also replaces the use of the Paraguayan railway by trucks,

which saves considerable time. However, the fact that the customer must assume the responsibility for contracting transfer companies in Resistencia could be a major restriction.

2. Road and rail option CF-2

This option, called the CF-2, uses the railway from Asunción, through Buenos Aires and Rufino to Mendoza and the road from Mendoza through Los Andes to Valparaíso. It is similar to option F-1 from Asunción to Mendoza, where the goods have to be transferred from railway to truck and to the last part of the road options C-1 and C-2 from Mendoza to Valparaíso. Table 13 shows the different stretches of the route, some of the cities through which it passes, the partial distances, and gives an estimate of the time required for the journey.

Table 13
OPTION CF-2

Country	Mode of transport	Cities	km	Hours
Paraguay	P.C.A.López Railway	Asunción	392	30
		Encarnación		
Argentina	Gral.Urquiza Railway	Posadas	1 089	30
		Concordia		
	Gral.S.Martin Railway	Zárate	1 056	43
		Caseros Exchange		
Chile	Road	Buenos Aires	207	48
		Retiro		
Chile	Road	Rufino	9	10
		J. Daract		
		Mendoza		
Chile	Road	Mendoza	145	24
		Las Cuevas		
		Caracoles		
<u>Total</u>			<u>2 967</u>	<u>281</u>

The transfers in Mendoza from wagon to truck must be paid for by the customer who completes the necessary customs formalities, through a maritime agent from Mendoza. The customs officer unseals the wagons, supervises the transfer operations and finally, seals the trucks. According to the information provided by several companies, the transfers of bulk cargo cost between US\$1.50 and US\$2.30 per ton while transfers of packages cost between US\$2.00 and US\$3.50 per ton.

This option is less direct than CF-1, it is a longer route and takes more time. However, it is very similar to F-1, because on both there is a transfer in Mendoza, and on F-1, the transfer is made from wagon to wagon and on CF-2 from wagon to truck.

The difference in kilometres between the road route and rail route from Mendoza to Valparaiso is very slight; by rail the journey is 405 km and by road 430 km. However, the estimated times are 34 and 62 hours respectively, because of the difficulty of operating the Transandean Railway using the present route and with a change of track in Los Andes. The rail rates are 17% lower than the rates by road.

3. Road and rail option CF-3

This option takes the railway from Asunción through Buenos Aires, Córdoba and Mendoza and the road from Mendoza, through Los Andes to Valparaiso. This option is identical to option F-2 from Asunción to Mendoza, where the goods must be transferred from railway to truck and to the last stretch of options C-1 and CF-2 from Mendoza to Valparaiso. Table 14 lists the various sectors of the route, some of the cities through which it passes and gives an estimate of the time required for the journey.

As the goods are transported by the General Belgrano Railway, which has one metre gauge they can continue up to the Chilean border without requiring a transfer in Mendoza. In the past, goods were sometimes transferred from wagon to truck in Las Cuevas, which is actually on the border with Chile, but the valley in which the railway yard is situated is so narrow that it makes operations very difficult. It would be preferable to make the change in Punta de Vaca, 144 km from Mendoza and 30 km from Las Cuevas, where conditions are better.

The Mendoza railway personnel has advised that because the Caracoles-Río Blanco Chilean subsector is closed and it is not known when it will re-open

the possibility is being studied of equipping the Uspallata Station, 92 km from Mendoza and 52 km from Punta de Vaca, so that transfers can be made there from railway car to truck and vice versa. For this, a number of warehouses would have to be built and various equipment for these operations would have to be acquired. Argentine Railways has indicated that it is interested in making transfers closer to the Chilean border, in order to make the maximum use of its infrastructure because at present, the sector between Mendoza and Las Cuevas is virtually closed.

Table 14

OPTION CF-3

Country	Mode of transport	Cities	km	Hours
Paraguay	P.C.A. López Railway	Asunción	392	30
		Encarnación		48
Argentina	Gral. Urquiza Railway	Posadas	1 101	30
		Concordia		48
		Zárate		
	Gral. Belgrano Railway	Buenos Aires	1 485	99
		Retiro		48
		Córdoba		
	Road	Dean Funes	207	
		Serrezuela		
		Pie de Palo		
Chile	Road	Mendoza	9	
		Las Cuevas		69
		Los Andes		10
		Valparaíso	145	24
<u>Total</u>			<u>3 406</u>	<u>337</u>

This option is much longer than options CF-1 and CF-2 and the longer route to Mendoza with a one metre gauge and without the need for a transfer before reaching Los Andes is not used because a transfer to truck has to be made in Mendoza. This option could be considered if the transfer were made in a place closer to the Argentine/Chilean border, and if it could be simpler and more economic.

In this connection it must be borne in mind that if the customer had to bear the cost of transferring the goods, this operation would be more costly on the border than in Mendoza because of the cost of transferring personnel and the necessary equipment from Mendoza. However, option CF-3 could be more attractive, if the trucks were allowed to travel to that border point which has more institutional facilities and it would, therefore, be faster and cheaper than the option of continuing to Mendoza. Otherwise, no cheaper land rates could be obtained because the land carriers would probably have fewer chances of obtaining cargo for the return journey. These factors must be assessed very carefully by the Argentine Railways before investments are made in any station close to the Chilean border because they may not be as efficient or yield the profits expected.

4. The CF-4 option by road and rail

This option called CF-4, would be by road from Asunción through Clorinda to Resistencia, and by rail from Resistencia to Mendoza and back again by road from Mendoza, through Los Andes to Valparaiso. It is identical to option CF-1 from Asunción to Mendoza, where a transfer would be made from railway car to truck, and from Mendoza to Valparaiso the route is the same as for options C-1, CF-2 and CF-3. This option measures about the same in kilometres as CF-1 and is estimated to be 20 hours shorter and the rates of CF-1 are 10% lower than those of CF-4.

Table 15 gives the different sectors of the route, some of the cities through which it passes, the partial distances and an estimate of the time required for the journey.

Table 15

OPTION CF-4

Country	Mode of transport	Cities	Km.	Hours
Paraguay	Road	Asunción Puerto Falcón	45	
Argentina	Road	Clorinda Formosa Resistencia	120 193	14 48
	Gral. Belgrano Railway	Resistencia Santa Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza	1 681	99 48
	Road	Mendoza Las Cuevas	207	
Chile	Road	Caracoles Los Andes Valparaiso	9 69 145	 10 24
<u>Total</u>			<u>2 469</u>	<u>243</u>

D. RIVER AND RAIL OPTIONS

This section covers complementary and comprehensive river and rail options and tries to make use of the advantages inherent in each mode of transport. The three most important river ports linking the Argentine railway network are Resistencia, Santa Fe and Rosario. However, in this case an effort has been made to avoid the transfer in Mendoza and consequently the option across the Rosario bridge has been excluded which means a longer trip to avoid that transfer.

The sailing times can be very different from one vessel to another because for example, some travel by day and others by night and others only

make the journey by day when there is no mist or fog. As a result, for purposes of this study, an average has been taken of the times given by the various carriers engaged in this mode of transport.

1. FF-1 river and rail option

This option, the FF-1, follows the river route between Asunción and Resistencia and the rail route from Resistencia through Mendoza and Los Andes to Valparaíso. Table 16 shows the various stretches of the route, some of the cities through which it passes, the partial distances and the estimated time required for the journey.

Table 16

OPTION FF-1

Country	Mode of transport	Cities	Km	Hours
Paraguay	River	Asunción Confluencia	390	
Argentina	River	Confluencia Resistencia	25	48 48
	Gral. Belgrano Railway	Resistencia Santa Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza Las Cuevas	2 226	99 14
Chile	Transandean Railway	Caracoles Río Blanco Los Andes	7 35 34	6 24
	Southern Network Railway	Llay Llay Calera Valparaíso	46 26 68	18
Total			2 857	257

The port of Resistencia in Barranqueras has the disadvantage that it sometimes becomes flooded when the water level rises in the Paraná and Paraguay rivers. The average sailing time from Asunción to Barranqueras is about 48 hours. The port has railway lines along the wharf which enables direct transfers from railway wagon to truck. The port is also equipped with cranes and enough loading and unloading equipment but has no silos for storing grains.

The transfer formalities would have to be carried out by a maritime agent from Argentina who would have to hire the necessary personnel and the transfer would have to be done in the presence of the customs authorities. Port and stevedore costs are rather high and this offsets the advantages of the lower rates charged for river transportation. We have been informed that the transfer from ship to truck or railway is US\$10.70 per ton for bales of cotton or tobacco and US\$10.20 per ton for loose cargo. Rather surprisingly, the transfer from ship to railway or truck is more expensive in Resistencia than transportation from Asunción to Resistencia.

The consignment note which is needed for railway transportation in Argentina could be filled out in Paraguay and should reach Resistencia prior to the arrival of the vessel so that the formalities can be completed beforehand. The shipments or consignments would have to be scheduled 10 days in advance for bulk cargo and one week in advance for containers. This option is different from option CF-1 in that the Asunción-Resistencia stretch is by river rather than by road and although it lowers the cost by 8%, the trip takes 34 hours. River transportation is more economical and advantageous over long distances and the stretch between Asunción and Resistencia is 415 km by river and 358 km by road.

2. River and rail option FF-2

This option takes the river route between Asunción and Santa Fe and the rail route between Santa Fe, Mendoza, Los Andes and Valparaíso. Table 17 specifies the different stretches of the route, some of the cities through which it passes, the partial distances and gives an estimate of the time required for the journey.

The average sailing time between Asunción and Santa Fe is about five days. A number of shipping companies from Paraguay have reported that there are good conditions in the Port of Santa Fe for transferring goods by rail,

but that this port has been flooded on a number of occasions when the Paraná and Paraguay rivers were swollen and that special attention would have to be paid to the dredging of the port and its access canal which is some 10 km long.

Table 17
OPTION FF-2

Country	Mode of transport	Cities	km	Hours
Paraguay	River	Asunción Confluencia	390	
Argentina	River	Confluencia Resistencia Santa Fe	25 625	120 48
	Gral. Belgrano Railway	Sante Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza Las Cuevas	1 668	71 14
Chile	Transandean Railway	Caracoles Río Blanco Los Andes	7 35 34	6 24
	Southern Network Railway	Llay Llay Calera Valparaiso	46 26 68	18
<u>Total</u>			<u>2 924</u>	<u>301</u>

Argentina has made Paraguay an offer of a free zone within the port area but so far nothing has materialized.

The port of Santa Fe has double-gauge of one and 1.676 metres on all the wharfs. Within the port itself, there is a railway yard with capacity for 40 to 50 wagons and this facilitates transfer operations. A number of its tracks could be repaired which would bring the total capacity to some 100 wagons. The port has cranes on the wharfs and on the trucks.

Whereas this port handled 1.5 million tons of cargo in 1974, in 1984 it handled only 400 thousand tons. Because of this considerable decline the port authorities might be prepared to make the necessary investment to increase activity there if the traffic warranted it.

The cost of transfers from ship to railway wagon is similar to those given for the port of Barranqueras, beside Resistencia.

This option is equal in kilometres to FF-1 although it takes 44 hours more because a longer distance is travelled by river and for the same reason, it costs 12% less.

E. RIVER, RAIL AND ROAD OPTIONS

This section includes the options using the river, road and rail routes and tries to take advantage of the benefits inherent in each mode of transport. In selecting these options the following aspects were taken into account.

i) The Paraguayan railway infrastructure is in an advanced state of disrepair and this severely hampers its development. It would seem reasonable, therefore, to contemplate an option to replace this stretch of railway by a stretch of road.

ii) River transport is cheaper but longer than any other means of transport.

iii) The Río Blanco-Caracoles subsector of the Transandean Railway of Chile is not in use and therefore, the railway options should be examined with the aim of including a variant in which the Mendoza-Valparaíso sector could be done by road.

1. River, road and rail option FFC-1

This option, FFC-1, takes the river route from Asunción to Resistencia and the rail route from Resistencia to Mendoza and continues by road from Mendoza through Los Andes to Valparaíso. It is similar to FF-1 between Asunción and Resistencia and the CF-2 between Resistencia and Valparaíso. All the points that should be borne in mind in examining this option have already been included in options FF-1 and CF-4.

Table 18 shows the different stretches of the route, some of the cities through which it runs, the partial distances and an estimate of the time

Table 18

OPTION FFC-1

Country	Mode of transport	Cities	km	Hours
Paraguay	River	Asunción Confluencia	390	
Argentina	River	Confluencia Resistencia	25	48 48
	Gral. Belgrano Railway	Resistencia Santa Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza	1 681	99 48
	Road	Mendoza Las Cuevas	207	
Chile	Road	Caracoles Los Andes Valparaíso	9 69 145	10 24
<u>Total</u>			<u>2 526</u>	<u>277</u>

2. River, rail and road option FFC-2

This option goes by river from Asunción to Santa Fe, by rail from Santa Fe to Mendoza, and by road from Mendoza through Los Andes to Valparaíso. It is identical to the FF-2 option between Asunción and Mendoza and to option CF-4 between Mendoza and Valparaíso. It is 423 km longer than FFC-1 option and takes 44 hours longer, but it is 12% cheaper.

A different option, 189 km shorter, can be used from Santa Fe to Mendoza on the General Mitre Railway up to Villa María, where a transfer would have to be made from one railway wagon to another in order to continue the journey using the General San Martín Railway, since the former has a one metre gauge and the latter a 1.676 metre gauge. However, the time required for the transfer in Villa María and the rest of the journey is not known.

Table 19 indicates the different stretches of the route, some of the cities through which it runs, the partial distances and an estimate of the time required for the journey.

Table 19

OPTION FFC-2

Country	Mode of transport	Cities	km	Hours
Paraguay	River	Asunción Confluencia	390	
Argentina	River	Confluencia Resistencia Santa Fe	25 625	120 48
	Gral. Belgrano Railway	Santa Fe Córdoba Dean Funes Serrezuela Pie de Palo Mendoza	1 479	71 48
	Road	Mendoza Las Cuevas	207	
Chile	Road	Caracoles Los Andes Valparaíso	9 69 145	10 24
<u>Total</u>			<u>2 949</u>	<u>321</u>

3. The FFC-3 option by river, rail and road

This option, the FFC-3, follows the river route from Asunción to Rosario, the railway route from Rosario to Mendoza and the road route from Mendoza through Los Andes to Valparaíso. Table 20 shows the different stretches of the route, some of the cities through which it runs, the partial distances and an estimate of the time required for the journey.

Table 20

OPTION FFC-3

Country	Mode of transport	Cities	km	Hours
Paraguay	River	Asunción Confluencia	390	
Argentina	River	Confluencia Resistencia Santa Fe Rosario	25 625 170	192 48
	Gral.Mitre Railway	Rosario Venado Tuerto		
	Gral.S.Martin Railway	Venado Tuerto Rufino Laboulaye J. Daract Mendoza	1 009	45 48
	Road	Mendoza Las Cuevas	207	
Chile	Road	Caracoles Los Andes Valparaíso	9 69 145	10 24
<u>Total</u>			<u>2 649</u>	<u>367</u>

The average sailing time between Asunción and Rosario is from seven to eight days. Some of the Paraguayan shipping companies have stated that the port of Rosario has good facilities for transferring goods to the railway and that furthermore, this port is not usually inundated when the Paraná and Paraguay rivers flood. However, they said that special attention needed to be paid to dredging. The port has railway lines with one metre and 1.676 metre gauges which are parallel and adjacent to the wharfs and so transfers can be made directly from vessel to railway car or vice versa. The port is equipped with cranes, with a capacity of six to 35 tons, which can transfer some 150 tons of bulk cargo per hour from barge to wharf.

The port of Rosario has given Paraguay a cost-free concession, Unit 5 in the port area for development as a free zone, but so far it has not been used. Unit 5 is an old elevator which was used to transfer bulk cargo from land to river transport but could not transfer goods in the opposite direction. Its installations include a stretch of wharf for its exclusive use, silos for bulk cargo with a capacity of some 20 thousand tons and several large sheds in which bales of cotton or any other packaged product could be stored.

The railway tracks are situated at some 50 metres from the wharf and this would make a direct transfer difficult. There is a raised belt along the wharf with a rather complex metallic structure that also prevents more flexible use of the installations and hinders the operation of the existing cranes in the wharf area next to that unit.

Bulk cargo from Paraguay has sometimes been transferred directly from barge to ship, in this port.

The port authorities were consulted as to how rigid or flexible the concession of Unit 5 to Paraguay was and whether the present installations could be changed. They responded that they were aware that the installations were very old and that some of them were far from useful. Accordingly, some changes could be made, such as removing the conveyor bands on the wharf, extending the crane tracks so that work could be done on that part of the wharf, and extending the railway tracks along the wharf so that direct transfers could be made. Similarly, the existing silos and sheds could be used and mobile systems leased to facilitate transfers from the ship to land transport.

Transfers in the port of Rosario must be conducted in the presence of customs authorities who seal the wagons as they are loaded. The customer must himself make the contracts for the operations, which cost some US\$11.90 per ton for packages and between US\$6.00 and US\$6.80 per ton for bulk cargo. Compared with the port of Barranqueras, this port charges very similar costs per ton for packages and lower costs for bulk cargo because the port of Rosario is basically geared to receive bulk cargo and has the necessary equipment for making faster and cheaper transfers.

This option is more or less similar in terms of kilometres to option FFC-1 and option FFC-2 but requires 46 hours more than option FFC-2 and 90 hours more than option FFC-1. On the other hand, it is the cheapest of the

three because it costs 6% less than option FFC-2 and 18% less than option FFC-1.

F. OVERALL ANALYSIS OF THE OPTIONS

This section analyses all the options. Although it is difficult to make a global comparison of the advantages and disadvantages of each one, at least three elements should be considered in the case of each option:

i) The total distance in kilometres, which is not quite exact for the stretches of railway through Argentina because the rate routes have been used instead of the routes which may actually be used at any given time.

ii) The total time in hours, which includes not only the time needed to cover the distances but also the time required for customs inspections, transfers, waiting times, etc. This estimate of the times was made, taking the average of the times provided by various persons, who are closely involved with those operations.

iii) The total cost of transportation per ton of product for oil seeds and cotton fibres, Paraguay's main exports. Only these two were selected because otherwise it would have been immensely confusing to compare a range of goods, especially if the various freight breakdowns by type of merchandise carried by the railways in the three countries, the shipping companies and the road transportation companies were taken into account, because they usually differ from one another.

The costs calculated are those actually paid by the customer and not the costs to the carriers or railway companies. Therefore, the costs paid by the carriers are not taken into account as these are already included in the rates paid by the customers but all the payments that the customers must make over and above freight charges for transporting merchandise have been taken into account. The costs have been calculated on the basis of the information gathered in August 1985 and the amounts quoted in guaranis, australs and Chilean pesos have been converted into US dollars at the exchange rate in effect that month in the respective countries. Consequently, there may be some differences especially in respect of the exchange rates vis-à-vis the dollar in each country and because of the increases in cost. Despite this, the differences are expected to affect each of the options equally, so that the costs can serve as a yardstick in making the comparisons.

Table 21 gives a summary of all the options that have been considered and it includes the total distance of each in kilometres, the total estimated time required for transportation between Asunción and Valparaiso and the cost per ton for transporting oil seeds and cotton fibres.

The shortest option in kilometres and in time is option C-1 which is entirely by road, but at the same time, it is the most expensive, costing up to twice as much as the cheapest option.

Comparing the three rail options, F-3 is 208 km longer than option F-1 and 587 km shorter than F-2 but it is the cheapest and takes the least time.

With respect to the four road and rail options it will be observed that option CF-4 is the shortest in kilometres but that option CF-1 takes the shortest time and is also the most economic.

With respect to the two river and road options, the shortest in kilometres and in time is option FF-1 through the port of Barranqueras, but it is 8 to 12% more expensive than option FF-2 which makes the transfer in Santa Fe in order to take advantage of the cheap river transport. The use of one option or the other will depend on type of product to be transported.

Of the river, rail and road options, the FFC-1 is the shortest and the FFC-3 the most economical. The differences in the distances between the three are not very great, and therefore this criterion can be dispensed with. The differences in time are greater because FFC-1 is 44 hours shorter than FFC-2, which is 46 hours shorter than FFC-3. The difference is determined by the sailing times versus the times of the trip by rail. The choice of option will depend on the type of product to be transported.

If all the options are compared, excepting those which have been eliminated, it is the type of product that will determine which of the following options should be chosen: C-1, F-3, CF-1, FF-1, FF-2, FFC-1, FFC-2 and FFC-3. However, until the Chilean sector of the Transandean Railways is not reopened to traffic the F-3, FF-1 and FF-2 options cannot be considered and the option CF-1 would have to replace CF-2, CF-3 or CF-4 and the only options that could be considered are the FFC-1, FFC-2 and FFC-3. Accordingly, for the present, the following are the options from which a choice would have to be made, C-1, CF-2, CF-3, CF-4, FFC-1, FFC-2 and FFC-3.

Table 21

COMPARISON OF THE OPTIONS

Options	Distance	Time		Cost in US\$/metric tons	
	km	hours	days	Oil seeds	Cotton fibres
C-1	2254	106	4.42	90.00	120.00
F-1	2942	309	12.88	77.92	66.81
F-2	3737	317	13.21	77.92	66.81
F-3	3150	279	11.63	67.50	58.41
CF-1	2800	223	9.29	76.09	67.57
CF-2	2967	281	11.71	82.78	74.63
CF-3	3406	337	14.04	84.28	76.63
CF-4	2469	243	10.13	86.00	79.49
FF-1	2857	257	10.71	70.79	73.27
FF-2	2924	301	12.54	62.05	67.53
FFC-1	2526	277	11.54	82.20	87.19
FFC-2	2949	321	13.38	71.96	80.18
FFC-3	2649	367	15.29	67.40	80.86

Chapter IV

AN EXAMINATION OF THE DIFFERENT ASPECTS OF TRANSPORT

In order to make the analysis more comprehensible, it was decided to treat the aspects relating to each mode of transport separately: that is to say, road, rail and river, as well as a number of aspects concerning transfers between them.

A. ROAD TRANSPORT

Up to very recently goods between Chile and Paraguay were shipped only by river boat between Asunción and Buenos Aires, where they were transferred to an ocean liner bound for Chile and vice versa and no thought was given to the feasibility of using a different mode of transport. Nevertheless, a more or less regular service between Chile and Paraguay is provided by the road carriers of both countries. Cotton bales and sometimes soya pellets are the main products transported from Paraguay to Chile and in order to prevent the trucks from returning empty from Chile to Paraguay reels of paper and occasionally, wine are transported.

1. Institutional aspects

International land transport among the Southern Cone countries is regulated by an International Land Transport Agreement adopted at the Eighth Meeting of Ministers of Public Works and Transportation of the Southern Cone countries held from 7 to 12 November 1977 in the city of Mar del Plata, Argentina. The Convention is known more generically as the Mar del Plata Convention to distinguish it from an earlier one. To date, this convention and its annexes have been ratified by all the Southern Cone countries: Uruguay, Paraguay, ~~Argentina, Brazil and Chile in that order.~~

a) Transportation shares and quotas

The Mar del Plata Convention specifies that:

"Passenger and cargo traffic shall be distributed in the area in accordance with directly negotiated bilateral agreements between signatory countries on a reciprocal basis".

These negotiations shall be conducted between the competent agencies of each pair of countries and updated when the parties deem appropriate. These agencies shall determine or establish the participation of their carriers on the basis of the traffic demand between the two countries, which shall be called the transportation share or quota. The competent agencies of Argentina, Chile and Paraguay shall be respectively the Secretariat of State for Transport and Public Works (National Land Transport Division); the Ministry of Transport and Telecommunications; and the Ministry of Public Works and Communications (Road Transport Division).

For some time, there were no carriers in Chile or Paraguay providing land transport services between both countries, possibly because they lacked the capacity to do so, or because they thought the demand was too small or because there was other more profitable international traffic. However, an Argentine carrier decided to begin a service and requested the appropriate licenses from the competent agencies in Chile and Paraguay. It must be remembered that this aspect is covered in Article 7, paragraph two of Annex II of the Convention on International Land Transport and that its interpretation was agreed on by all the delegations at the Ninth Meeting of Ministers, held in Cochabamba, Bolivia in June 1979. The article establishes that the countries involved may agree on the provision of transportation services among third countries by carriers of the countries traversed.

As there were no carriers in Chile or Paraguay wishing to participate in this traffic, the Chilean and Paraguayan enforcement agencies agreed that services could be provided between both countries by an Argentine company. This situation has now changed and there are now several Chilean and Paraguayan carriers operating specifically in this kind of traffic. The upshot is that the agencies enforcing the Convention in both countries have not renewed the licenses granted to the above-mentioned Argentine carrier.

As the Convention does not lay down a single system for the bilateral distribution of the different shares and quotas among the countries, they reach bilateral agreements on their own systems. Chile and Paraguay have

agreed to establish an equal static capacity for both parties so that each country may authorize trucks from its own carriers to operate, provided that the sum of the capacities of these carriers does not exceed the total static capacity which is presently set at 1 500 tons for general cargo and 1 500 tons of refrigerated cargo for each country. There were 13 authorized carriers in Chile for this traffic in 1985, with a total of 25 trucks, 25 tractors, 25 trailers and 40 semitrailers. There were six in Paraguay, with six trucks, 44 tractors, five trailers and 44 semitrailers.

b) International transport and transit licenses

In applying for international transport licenses in each country, a host of documents is required which has a very high direct and indirect cost, due to the time required to process them and the delays occasioned in obtaining them.

The carriers must apply to their respective governments for an international transport permit of the country of origin for each country in which they wish to operate and for each vehicle that they wish to use for this traffic. Having obtained these permits, the carriers must then request the complementary permit from the country to which they wish to move the goods. After obtaining permits from the countries of origin and destination, they must then obtain transit permits for each vehicle. For example, if a Paraguayan carrier wishes to transport goods to Chile, for each vehicle that will be used, it must obtain the permit of origin in Paraguay, the complementary permit in Chile and the transit permit in Argentina. In this connection, it must be borne in mind that the transit permit issued for travel to Chile is different from the transit permit issued for travel to Uruguay.

In making the application for the transit permits, the route for which it is requested must be specified. However, an alternative route may also be included. In practice, if for reasons of force majeure a particular route cannot be used, the authorities usually allow a different one to be used, although it may not appear in the permit. For example, if the border pass through the Cristo Redentor tunnel is blocked by snow or rocks, the Puyehue Pass may be used, and so forth.

Permits in Chile are issued for a period of five years, in some cases permits in Argentina are only issued provisionally for six months, and in Paraguay they are only valid for one year. The periodic renewal of the permits

considerably increases the cost of transport, and consequently the respective authorities should consider granting all permits for a five-year period.

c) Technical standards of the vehicles

It is implicit in article 14 of the main body of the Mar del Plata Convention that the agreement does not refer to provisions concerning maximum weights and other technical norms required by each country for vehicular traffic. What it does specify, however, is that each country should inform the other signatories of the provisions in force and encourages them to reach agreements to permit the use of vehicles with different features from those contained in the respective national rules and regulations.

Argentina and Brazil have agreed to respect the Brazilian rules of 1979; there is a recommendation between Argentina and Paraguay in this respect; there is no problem between Brazil, Chile and Paraguay because the national rules and regulations are very similar. Furthermore, Chile and Paraguay have different rules from Argentina with respect to the weight per axle, the maximum length of vehicles, the type of lights to be used, which means that certain changes must be made to the vehicles wanting to ply this route. One transport authority in Brazil remarked on one occasion that the trucks engaged in international transport in the Southern Cone countries looked like "real Christmas trees", since they had to turn the different lighting systems on and off according to the country in which they were travelling.

The existing differences should be examined by a group of experts from each of the Southern Cone countries at the Meeting of Ministers of Public Works and Transport, so as to reach an agreement that will quickly standardize the national rules.

d) Compulsory vehicular insurance

Article 15 of the Mar del Plata Convention stipulates that the carriers making international trips are required to insure against liability consequential to the transportation contract, and to take out third party insurance, in accordance with the laws and regulations in force in each country in whose territory the vehicles travel. The Article specifies further that the contractual liabilities must be covered by insurance companies from the country which issues the permit of origin, and any civil liability not covered by the contract must be assumed by insurance companies in each country.

Argentina, Chile and Paraguay require that all national or foreign vehicles should have third party insurance and pursuant to the Convention, this insurance must be provided by the authorized companies of each one of the three countries. This means applying for and renewing insurance policies in each country. The approximate cost of this third party insurance in Argentina for a 24-ton vehicle is US\$77 for four months, in Chile, US\$115 per year and so on. Hence it can be seen that insurance is a rather large item of transport costs.

Within the framework of the Meeting of Ministers, a group of experts has been working on the question of insurance. Based on its conclusions, the Ministers at the twelfth session held in Asunción in October 1982 adopted the following:

- i) Third party insurance for the carrier on an international trip;
- ii) Special conditions for third party insurance for the carrier on an international trip --in respect of damage either to persons or things whether transported or not;
- iii) A mutual agreement between insurance agencies for the application of third party insurance to international land transport.

In this respect it is hoped that out of the above-mentioned agreements will emerge insurance policies offering regional coverage which can be negotiated in the country to which each transport company belongs and that the obligation to negotiate insurance in each of the Southern Cone countries will be removed. Similarly, the cost of an insurance policy which is valid for all five countries should be lower than the total cost insurance for that same vehicle in each of the five countries. It is therefore hoped that when a global insurance policy is devised it will cost less than the present ones.

e) Documentation

The documentation required for the international transport of goods by road, for the means of transport, for the goods, and for the driver and attendants is voluminous. All the documents have different formats and contain very similar information located at different places and they lack a homogenous structure. This may be due to the fact that international transport and foreign trade fall within the competence of numerous agencies in each country which have different aims and responsibilities. Because of this and because of a lack of co-ordination and co-operation, each agency designs and demands its own specific document. The result is that a pile of different

documents has to be filled out which essentially contain very similar information.

If all the documents required are examined together, it is clear that they could be standardized and at the same time, meet the needs of the various agencies. But for this to happen the countries must be aware of the effects of excessive red tape and disparate procedures on transport costs and on regional and international trade.

f) Consular visa

Argentina and Paraguay both require a consular visa on all transport documents, which must be obtained by the carriers. A consular visa is also required for all foreign trade documents and this is taken care of by importers and exporters. It takes at least a day to obtain a visa because consular offices are open to the public on working days only and in the mornings. The consuls do not grant visas on the same day on which they are requested but late in the morning of the following day so that they cannot be collected until the following working day at the end of the morning.

The consular visa has been historically required for some documents such as the trade invoice, the certificate of origin, the manifest, the phytosanitary certificate, etc. This document is no longer required in any country in the world in respect of air transport. In the case of maritime transport, it has been revoked in virtually all countries and remains in force in Latin America only in the following countries: Bolivia, Colombia, Ecuador, Haiti, Honduras, Panama, Paraguay, Peru and the Dominican Republic. However, there are countries in the region which demand a consular visa for land transport, although they do not require one for either air or maritime transport. Several international organizations have repeated time and time again that the requirement of a consular intervention in foreign trade and international transport is an obsolete practice, which is unwarranted today and makes the goods trade and transport services more expensive.

The consular visa requirement originated in maritime transport and was subsequently extended to other modes of transport. It was intended to authenticate the signature of the documents issued abroad to satisfy customs and other authorities. However, this requirement, at best, only authenticates the signature but not the information contained in the document so that this procedure is useless and inadequate. Considering that its high cost is not attributable to the fees charged by the consular offices but to the delay in

obtaining the visa it would be advisable to look into the possibility of eliminating the consular visa requirement. If it is necessary to continue collecting these fees, they could be collected by the customs authorities at the point where the goods enter the country.

g) Security bond for goods in transit

The customs authorities of many countries in the world demand a security bond before allowing goods to travel through the territory under their jurisdiction. This bond is a kind of guarantee which covers only the duties and taxes that would have to be paid on goods in transit if they were brought into the country for consumption in the country being crossed, which would ensure that the customs authorities had collected the duties and taxes payable on the goods which might be smuggled into the country while they were in transit.

Chapter III, Article 12, paragraph 1 c, of Annex I of the International Land Transport Convention stipulates that the customs authority may request the relevant bond to ensure the payment of such duties and taxes as may be levied on the cargo. Pursuant to this paragraph, the customs authorities of each country shall decide on all matters relating to the bond, which implies that there are usually different procedures and requirements in each country.

Two types of transit operation must be taken into account here. One type of operation moves the goods to a third country when the trading takes place between non-adjacent countries. The other takes place between the border and the interior of a country and vice versa in order to facilitate the completion of customs inspection and payment of the appropriate customs duties and taxes at the point of destination or the payment of export duties at the point of origin. In this connection, the customs authorities require a customs transit guarantee for both types of transit operation.

i) Argentina

The Customs authorities permit both types of transit operations and for them, they require a customs transit guarantee called the customs transit policy. This policy has to be obtained from an Argentine insurance company authorized for this purpose by the National Insurance Superintendent. The policy must cover customs duties and taxes on goods in transit. However, a policy is required for the transit of goods whose importation has been suspended, but covers the full value of the goods in addition to the duties and taxes, which adds considerably to their cost. In this connection, some

carriers have said that this coverage is so costly that they cannot undertake this type of transport and at the same time charge rates that are acceptable to importers and exporters.

Argentina has dispensed with the requirement of a customs transit policy over the stretch between the Argentine-Chilean border and Mendoza. This represents a major simplification of the situation which obtained previously, in which the policy was needed in order to enter Argentina and could not be purchased at the border. A contact was therefore needed in Mendoza to provide information as to the data on the truck, the merchandise and the day on which it would arrive at the border so that the policy could be obtained from an Argentine insurance company authorized to issue one and submitted to the customs office in Mendoza, which in turn would inform the frontier customs post by radio.

The process of obtaining the customs transit guarantee has also been simplified at the Argentine-Paraguayan border, with the establishment in Clorinda of an Argentine insurance company authorized for this purpose. Previously, a process similar to the one in Mendoza was undertaken with the additional inconvenience that the guarantee usually had to be obtained in Buenos Aires and it was necessary to wait for a few days at the border for it to arrive. This was a major obstacle which has fortunately been removed.

ii) Chile

The Chilean Customs authorities require a letter of guarantee for the value of the duties and taxes payable on the goods in transit. This letter is usually issued by the customs forwarder or the carrier's representative in Chile, but in any case, its costs must be guaranteed by the property of the sender.

iii) Paraguay

There is very little transfer of goods between third countries through Paraguay but there are many transit operations within the country itself. The Customs border authorities in Puerto Falcón which lies on the Clorinda-Asunción route acts only as an advanced customs post and the import and export formalities are completed at the Asunción Customs post; therefore, for all practical purposes, this may be regarded as a purely internal movement of goods. For transit through Paraguay, the customs authorities require that goods be accompanied by a customs escort, which implies the payment of the

expenses and per diem incurred as a result of this escort because of the distance and the time.

h) Taxes

In Argentina, the annual payment of an inspection fee is required for each vehicle, which the foreign carriers usually arrange through their agents in Argentina. In 1986, the fee per vehicle of 24 tons was US\$137. In Chile and Paraguay no equivalent fee was charged on vehicles.

i) Legal representatives of the carriers

Article 4, of Annex II, of the International Land Transport Convention specifies the documents that must be submitted by the carriers when requesting the complementary licenses. In this regard, article 4 c) of the annex stipulates that in the country in which the application is made for this license, the carrier must have a legal representative with full powers to represent it in all the administrative and judicial proceedings of that country. The powers that we have been able to review are very broad and must be analysed from different viewpoints. On the one hand, the carrier is not very reassured at having to grant such broad powers and it is not easy to find a person in another country to whom such power or authority may be given. At the same time, the agent undertakes to be responsible for a number of important acts, which the carrier and its chauffeur undertake and that too is not very reassuring.

Fortunately, no problem has arisen so far and the agents have only had to shoulder responsibility for administrative procedures, connected with renewing the complementary licenses or third party insurance or the payment of certain fees. It is not very clear what would happen if a major problem were ever to arise and perhaps then it will be demonstrated that the actual usefulness of this measure is rather relative.

According to the information received, an Argentine agent charges an annual average of US\$400 per truck and a Chilean representative some US\$ 200. Consequently, if a carrier wishes to provide services in Argentina, Brazil, Chile, Paraguay and Uruguay and has 10 trucks, the cost for agents is fairly significant.

In the European countries, there is no such obligation and so far no legal or institutional problem seems to have arisen, which would have called for settlement by this kind of legal representative.

2. Operational aspects

a) Concerning the route

The road route between Paraguay and Chile through Argentina usually presents no problem except that of crossing the Cordillera during winter when the road is blocked by snow or rocks. There are occasions when the road has been impassable for over a month and several trucks have been trapped in the snow causing loss and theft of equipment. When this occurs, the vehicles on both sides of the Cordillera have the option of waiting for the route to be cleared or of using the Puyehue Pass which is 700 km further south and considerably increases the distance of the journey.

The international Cristo Redentor tunnel linking Argentina and Chile by route on the Mendoza-Los Andes access should also be considered. Ever since this tunnel was opened, both countries have charged a toll, the price of which was different on either side. The toll is paid in one direction only, before entering the tunnel. In other words, on the trip from Chile to Argentina, the toll is paid in Chile and on the trip from Argentina to Chile, the toll is paid in Argentina. We gather that the toll collection system is being studied at bilateral meetings between development authorities of both countries.

The tunnel is open every day from 9 a.m. to 6 p.m. in winter and usually between 8 a.m. and 8 p.m. in summer. This schedule is sometimes most inconvenient and there seems to be no reason why the hours are so short. The border services of both countries function according to the tunnel schedule, to prevent the trucks from having to stop in the immediate vicinity, since there is no adequate accommodation for spending the night, especially during the winter season when the temperatures are very low. Inspections take a much longer time for the trucks during the peak tourist season, because high priority is usually given to the tourists causing the goods carriers considerable delays.

Although there is no justification for the pass to be manned 24 hours a day the possibility ought to be considered of establishing a more flexible timetable during the peak periods not only in summer but also at weekends, during Holly Week, the winter holidays, etc. This would be a considerable incentive to tourism and regional trade.

b) Border and internal inspections

In discussing the road option, mention was made of the most important aspects of the border inspections. However, in the following section several aspects which are considered to be particularly important are emphasized.

i) Argentina

When goods are transported from Chile to Paraguay they go through police and customs control in Las Cuevas, and subsequently they pass the plant health check in Punta de Vaca. However, as there are no agricultural inspectors residing in Punta de Vaca and these inspectors only come up from Mendoza on Tuesdays, Thursdays and Saturdays, this inspection has to be requested beforehand by the carrier's shipping agent in Mendoza, who then has to bring the inspector to Punta de Vaca by car and the carrier must then pay the inspector and the agent a per diem. This presents a major obstacle because the products that must undergo agricultural inspection may only enter Argentina three days a week and this substantially increases transport costs.

The goods must be inspected by customs in Mendoza, where the transit is arranged and the customs transit policy is paid. The inspections that must be done in Mendoza, for both goods in transit and bilateral transport operations are located in different places and this slows down the operations. In this regard, a decision has been taken to build a dry port in Mendoza, where all the activities concerning foreign trade and international transport will be concentrated and this should simplify and expedite all these operations.

In Argentina there are fixed police posts all along the route at the borders of the provinces at which trucks must stop. Normally, there is some checking of documents at each post but this is usually very brief. However, the reasons which dictated the creation of these checks should be examined to determine whether they are still valid and if they are, their efficiency should be re-examined because it might then be advisable to eliminate the majority of these posts or replace the mandatory check of all trucks by a system similar to the one for motor cars.

Border inspection in Clorinda is difficult because there are no plant health inspectors. These inspectors have to travel from Formosa and their trip has to be arranged well beforehand because there are no specific days for carrying out these inspections. Because these inspections then become extraordinary ones, getting them done becomes even more difficult. They

therefore become a major obstacle and push up the cost of transport operations for any products that have to be subjected to this type of inspection.

ii) Chile

The Chilean border control is carried out in the Los Libertadores complex located close to the international Cristo Redentor tunnel. A brief inspection is carried out here by the international police, the customs authorities and the agricultural and livestock service. The trucks are sealed and given a few hours to reach the customs area in Los Andes where the necessary formalities for completion of customs inspection and payment of the appropriate customs duties on the goods are completed, if their destination is Chile, or transit formalities if their destination is a third country.

In Los Andes, the goods must undergo inspection by customs, the agricultural and livestock service and the health service. Unfortunately, the inspections mentioned are conducted at different places and for example, the health inspection takes place in a street near the centre of the city with the attendant traffic and parking problems. The possibility should, therefore, be considered of locating in a single area all the inspection that has to be done in Los Andes, which would considerably simplify and expedite all these procedures. However, bearing in mind that most of the goods are destined for Santiago, it might be well to consider centralizing all the operations in a terminal close to this city.

When goods are transported from Chile to Paraguay, all the relevant export formalities and inspections are completed in Los Andes, the truck is sealed and the driver is given a time within which to reach the Los Libertadores complex, where a brief border check is made.

In Chile, there is a number of fixed police posts along the route where all trucks must stop. Normally, the police here check the vehicles' documents but only briefly, rather like the Argentine national police. Similarly, the actual need to maintain them or whether they should be replaced by a system similar to the one for motorcars should be re-examined.

iii) Paraguay

For goods transported along the Paraguay-Argentina-Chile corridor all the import and export formalities must be completed in the city of Asunción.

The road border post in Puerto Falcón, Paraguay, acts as an advance customs post and makes only some brief checks. The foreign trade transport between Asunción and Puerto Falcón takes place twice a day, with a customs

escort, which supervises and accompanies the transfer from all the trucks which are authorized to make that transit journey. The distance between Asunción and Puerto Falcón is only 45 km and there is no justification for charging a guarantee for in transit goods, especially for the carriers which are professionally engaged in international transport and are duly authorized to do so. The use of a customs escort to supervise the transit operation is an obsolete practice which has been eliminated in virtually every country and its inefficiency has been demonstrated scores of times. The fact that the trucks may only make the journey twice a day is an obstacle which forces them to organize their activities to match the hours of the customs escort, to avoid spending the night at the border and waiting a considerable time.

Argentina does not require a customs escort and has eliminated the payment of the customs transit policy for all transport between the border with Chile and Mendoza. Likewise, Chile does not require either a customs escort or a customs transit policy for goods being transported from the Argentine border to Los Andes. In these stretches mentioned, both Argentina and Chile confine themselves to sealing the vehicles, setting the route and establishing a time limit for completing the journey.

c) Concerning carriers

International transport between Chile and Paraguay through Argentina is conducted by carriers from both countries which must have a legal representative in Argentina and another in Paraguay or Chile respectively. The representatives of the carriers in Argentina must have their legal domicile in Buenos Aires, in order to facilitate the renewal of transit licenses by the Argentine authorities and obtaining the annual inspection fee for each vehicle and the third party insurance policies. Similarly, the representative in Chile must reside in Santiago and the representative in Paraguay in Asunción.

Because the demand in this corridor for specific transport is fundamentally between Santiago and Asunción, the representatives in both places can perform more duties but this is not the case with the representative in Buenos Aires. Given the existing institutional situation in order to operate with any amount of dispatch, the carriers must have a representative in Clorinda, another in Mendoza and another in Los Andes, to complete the necessary formalities with the customs and health inspection authorities. In turn, the Chilean carriers must have someone in Asunción and the Paraguayan carriers must have someone in Santiago to complete the

necessary formalities for each transport operation. In principle, these persons need not work exclusively for a given carrier unless the volume of international traffic is heavy enough to warrant this.

Some of the carriers from Chile and Paraguay have signed co-operation agreements, which will enable them to reduce their representation costs not only for the legal aspects but also for the commercial operational aspects as well. In addition, there are several enterprises from Argentina which have joint offices for international transport which they undertake with other Southern Cone countries. This type of co-operation seems to be highly advisable and it should be encouraged through the international transport union associations of the different countries.

The transport demand is greater from Asunción to Santiago than vice versa both in terms of tons and in the value of goods. This disequilibrium in demand means that there are some trips on which the trucks are empty and this increases the entire cost of the supply. Furthermore, because demand is not steady, the carriers are unable to establish regular services.

B. RAIL TRANSPORT

Although no use has been made so far of the rail transport option between Paraguay and Chile through Argentina, this type of transportation is perfectly feasible from the operational viewpoint.

1. Institutional aspects

The Latin American Railways have encouraged bilateral co-operation ever since they began operation. This co-operation has been increasing and has enabled the establishment of a Latin American railway carriers' association called the Latin American Railways Association (ALAF) established by its charter signed in Chapadmalal, Argentina, on 27 March 1964.

Article 2 of the Latin American Railways Association charter stipulates that the aim of the association is: to encourage safe, efficient and economical rail transport; to further trade by rail and to encourage the co-ordination and progress of railways and Latin American industries as one way to achieve social and economic integration for the benefit of the peoples of Latin America.

The Latin American Railways Association charter establishes that the management of the Association shall be the responsibility of the Assembly, the Consultative Board and the Secretary General who is elected by an ordinary or extraordinary assembly (articles 10 and 14). It further establishes that the headquarters and legal domicile of the Association is the city of Buenos Aires, Republic of Argentina, where the General Secretariat shall operate (article 15).

The Association works through operational co-operation among the Latin American railways through area meetings and the meetings or specific tasks which are performed through the Secretariat.

a) Agreements or conventions

There are bilateral or multilateral agreements or conventions among the Latin American railways as well as some which are applicable to all railways which are members of the Latin American Railways Association.

i) Convention between Argentina and Chile

Many agreements and conventions have been reached between Argentina and Chile to facilitate the development of rail transport between both countries. For example, the Rail Traffic Convention was signed in Santiago, Chile, on 17 October 1887 between both countries. Since then various conventions have been signed in 1917, 1922, 1935, 1946, 1951, etc., but rail traffic at present is specially governed by the following documents:

- Final record of the First Meeting of Mixed Chilean-Argentine Commission to study Transandean Railways and other subjects indicated in the protocol of 2 July 1935.
- International Traffic Convention and complementary agreement of said Convention between the Chilean State Railways Company and Argentine Railways, signed on 5 May 1972.

The Convention lays down the necessary foundations for railway interchanges between Argentina and Chile, and this Convention regulates all the operational activities of the railways of both countries for the transport of passengers and cargo. The Convention covers the use and maintenance of the installations, the fare structure and the accounts for the exchange of wagons, the customs system, etc.

The zone meeting between Argentina and Chile takes place annually with the assistance of the ALAF Secretariat. At this meeting, all the technical, operational and commercial aspects of bilateral rail traffic are discussed.

ii) Convention between Argentina and Paraguay

There has always been co-operation between Argentine and Paraguayan railways and in practice this has even extended beyond what is specified in the existing formal agreements. At present, this co-operation is governed by the Joint Traffic Regulations of the President Carlos Antonio López Railway of Paraguay and Argentine Railways, signed on 20 September 1983. The Regulations specify all the measures to be taken to facilitate the traffic of passengers, packages, equipment and cargo and also the exchange of passenger coaches, cargo wagons, rolling stock and loading equipment such as canvas belts, ropes, chains, etc. These Regulations have been in force since 1 November 1983, and replace the regulations which were in effect since 1961.

Through the ALAF Secretariat, an annual zone meeting was held, attended by Argentina, Brazil, Paraguay and Uruguay, and within this framework, bilateral meetings between Argentina and Brazil, Argentina and Paraguay, Argentina and Uruguay, as well as trilateral meetings among Argentina, Brazil and Paraguay, and among Argentina, Paraguay and Uruguay were also held. These meetings discussed the technical, operational and commercial aspects of the traffic in which the railways of the respective countries are engaged.

iii) Convention between Argentina, Chile and Paraguay

There is no specific institutional instrument governing relations between the railways of Argentina, Chile and Paraguay. This is probably due to the fact that so far, the possibility of routing rail transport between Chile and Paraguay through the Argentina network has not been considered. However, there are institutional instruments of great importance which have been created within the ALAF to regulate transport links involving railways of more than two countries, namely:

- The Multinational Cargo Railway Traffic Convention (MULTILAF Convention), signed in Montevideo, Uruguay, on 15 October 1975.
- Regulations of the Multinational Cargo Railway Traffic Convention (Regulations of the MULTILAF Convention), adopted in Santa Cruz, Bolivia, on 15 October 1976.

The above-mentioned Convention and its respective regulations are applied solely to cargo transport made by full wagon between more than two countries. These instruments stipulate the aspects covering railways and exchange stations connections; the rolling stock, the traction in stations and the

of the equipment, interchange of wagons and the relevant and economic conditions; classification of cargo and the rates system; payment of accounts; insurance and claims schemes; the customs system and international documentation; intermodal cargo traffic; etc.

So far, no meeting has been held among all three countries, Argentina, Chile and Paraguay, to discuss the technical, operational and commercial aspects which will facilitate the establishment of railway traffic between Chile and Paraguay through Argentina. In this respect the possibility of extending the zone meeting between Argentina and Chile to include Paraguay should be considered, because both the bilateral aspects of these countries and the trilateral aspects could be discussed.

b) International railway transport contract

The rail transport contract is regulated by the document called the Consignment Note. Although the ALAF Secretariat has drafted a model of this note which has been for the most part adopted by Latin American railways no railway company has so far drawn up such a document. However, the ALAF Secretariat has advised that this fact does not constitute an obstacle to transport between Chile and Paraguay through Argentina, because the three railways accept the international transport contract signed at the point of origin which in this case would be Chile or Paraguay. The Chilean consignment note is in turn accepted by Argentina and Paraguay and the Paraguayan consignment note by Argentina and Chile. Notwithstanding this, it would be very desirable if the railway companies of Latin America could finally adopt the consignment note drafted by the ALAF and adopted by several railway companies belonging to that association.

c) Setting international freight rates

Usually railways calculate their international freight rates in the same way as the national rates, setting their cost in national currency. However, when this method is used it is difficult to know beforehand what the cost will be of a particular international transport trip, because this requires knowing all the tariffs that will be charged on each railway depending on the stretches covered, and taking into account currency exchange rates. The problem is compounded by the frequent rate changes and the monetary instability in each country. In order to circumvent this difficulty, the railway companies should establish the international rates jointly in a single

d) Payment of railway freight rates

At present, railway freight rates must be paid to each railway system separately. When the rail transport is between two countries, for example, between Argentina and Paraguay or between Argentina and Chile, this aspect is not a major obstacle because the trade negotiations are made FOB frontier and one stretch can be paid at the point of origin and the other at the destination point.

When the traffic is between three countries the situation becomes enormously complicated. For example, for transport between Chile and Paraguay through Argentina, the Chilean stretch can be paid in Chile, the Paraguayan stretch in Paraguay but the Argentine stretch must be paid in Argentina. This means that the importer or exporter must obtain the foreign exchange and travel with it to an Argentine city with railway offices and this aggravates the problem, especially if a considerable amount is involved.

In this connection, the Latin American railway companies should consider the possibility of establishing a reciprocal payment system which will make it possible to pay the entire transport cost at the point of origin or the destination point, regardless of the railway companies or systems used over the whole journey. This system could be set up through the ALAF Secretariat or through a payment and reciprocal credit convention which would avail itself of the existing agreement between the Central Banks of the respective countries.

e) Consular visa

The consular visa is required equally for the transport of goods by both rail and road. Consequently, the observations made relating to road transport are also valid for rail transport.

f) Customs transit guarantee for goods in transit

Usually when goods are transported by rail through the customs transit system, the customs authorities of the respective countries do not require the payment of guarantees or securities and this reduces the cost of this mode of transport compared with transport by road.

2. Operational aspects

This section includes the number of operational aspects which have not been discussed previously in the study of railway alternatives.

a) Concerning the condition of the line

The railway itineraries are similar in many respects to the road itineraries mentioned above, and therefore they are affected by the same climatic conditions. For example, the railway tunnel crossing the Cordillera is parallel to the road tunnel and both itineraries are affected in the same way by snow and rock slides which sometimes occur in winter and both routes are cut off at the same time.

The Chilean sector of the Transandean Railways is blocked between Río Blanco and Caracoles because during the winter of 1983 some snow and rock slides caused considerable damage to the railway infrastructure.

In addition it has been mentioned before that the railway route with a river transfer is blocked between Encarnación and Posadas when the level of the water in the Río Paraná rises very high because it prevents any transfers from taking place. However, this is relatively infrequent.

The Argentine railway has also been affected on the outskirts of Zárate, because the Paraná river was so swollen that it rendered the railway line and a number of bridges over it impassable.

Because of the characteristics of the railway tracks, the construction specifications and the level of maintenance, the railway network is not homogeneous and standard trains cannot use them. Trains using a narrower gauge then have to be used. This is not usually a very economical way of operating the line because it means that the trains must make manoeuvres at several points during their journey and this increases the time required to complete the entire journey.

b) Concerning frontier controls

The customs and health inspections are virtually the same by rail as well as by road, therefore what has been said in respect of the road customs service is equally valid for the railway. However, there are two minor differences: the first is that a transport agent is not needed in Argentina because Argentine Railways can act as an agent in respect of the customs and health authorities of that country. The cost of the customs inspection is thus eliminated because the railway makes no charge for this purpose. The second difference is that apparently, the frontier inspection in Posadas is speedier than in Clorinda.

C. RIVER TRANSPORT

This section examines river transport between Asunción and the port of Barranqueras, the port of Santa Fe and the port of Rosario which are the river stretches considered in the transport corridor being studied in this paper. All the information gathered in Argentina and Paraguay as well as the following documents have been taken into account:

- Background information and studies on the Paraguay and Paraná rivers aimed at encouraging the reactivation of traffic on both rivers. Document provided by the Chamber of River-boat Owners of Argentina.
- Argentine river transport. Argentine Foundation for Maritime Studies. Argentina 1980.
- An assessment of some of the institutional aspects of river transport in the River Plate Basin (E/CEPAL/R.244/Add.1, 1981).

1. Institutional aspects

a) Agreements and conventions

In Argentina and Paraguay a host of laws, decrees, resolutions, ordinances, conventions and rules concerning river shipping have been adopted, but it would be too long to list them all here and it is not the purpose of the study to discuss these aspects in detail. River transport has always been considered so important in Argentina that the Constitution includes several articles on the subject. For example, article 26 declares the freedom of navigation on all internal rivers for ships of all flags, subject only to the regulations laid down by the national authority. Decree Law 19492/46 of Argentina, which is termed "The National Coastal Sailing Act" is covered in article 26 and states:

"This article governs navigation and national in-land sailing trade in Argentina which is reserved for Argentine vessels. Foreign flag ships may only ply in waters of national navigation jurisdiction and international trade save for those vessels engaged in frontier coastal shipping, in accordance with the treaties, conventions or international agreements that may be established".

River navigation is of historical importance to Paraguay because for many years this has been the country's only means of communication. Only recently have other modes of transport been used for transporting large volumes of

goods in order to reduce the country's dependency on the traditional river route.

There has always been constant concern between Argentina and Paraguay to overcome the obstacles which hinder the rational development of rivers for international trade. For example, in the definitive peace treaty between the two countries, signed in 1876, they agreed that:

"The Contracting Governments will seek to establish a uniform navigation system and policy for the Paraná and Paraguay rivers and Uruguay, with regulations being drafted by common agreement between the riparian States and on the basis which is most conducive to free transit and the growth of trade".

Argentina and Paraguay have drafted and adopted the following treaties:

- Convention on facilities granted to shipping, 1941.
- Navigation treaties of 1954, 1964 and 1967.
- Treaty on the dredging and beaconing of the Paraguay river, 1969.

At present, there is no agreement among the five riparian States of the River Plate Basin on river navigation and therefore each country has its own legislation and different rules, each of which must be respected. In turn, each country has numerous laws, regulations, ordinances and rules relating to river transport as well as a sizeable number of regulating institutions. Consequently, the requirements that must be fulfilled for river transport, with respect to the technical aspects, the loading and unloading operations, the documentation needed for goods, the actual transportation, the use of the means of transport, the beginning and the end of the journey, etc. constitute an interminable volume of requirements. Compared with the requirements for the transport of goods by road or rail, those for river transport are considerably more.

The River Plate Basin countries enforce the same regulations for river transport as for maritime transport despite the fact that their characteristics and needs are completely different. The same requirements cannot be laid down for transport on the high seas between distant points and for transshipment or roll on-roll off services between two riparian States where the ship sails daily.

A number of shipowners have argued that the proliferation of regulations governing river transport hobbles the growth and development of this mode of transport. It hinders its efficiency and prevents any improvement in its

operations, and therefore it is impossible to reduce the costs. Accordingly, it is important to rationalize and streamline the national aspects of river transport through close co-operation among all the agencies directly or indirectly involved.

Again, because the rivers flowing into this basin are under national jurisdiction but are at the same time part of an international transport system, the riparian States of the River Plate Basin should encourage mutual co-operation to simplify and standardize all the institutional aspects affecting river transport between countries.

b) Consular visa

A consular visa is required for both the transport of goods by river and the transport of goods by road or rail. Therefore everything said regarding the last two modes of transport is valid for the first.

c) Customs transit guarantee for in transit goods

The customs authorities of the respective countries do not require the payment of guarantees or sureties for goods transported by river and this reduces the cost of river transport operations vis-à-vis road transport.

2. Operational aspects

The Navigation Treaty of 1967 between Argentina and Paraguay stipulated that each country should accord the vessels of the other the same treatment as it did to its own vessels in all matters concerning navigation. The terms of this treaty were promulgated in Argentina under Decree 9001 of 5 December 1967 and in Paraguay in Decree 31257 of 31 January 1968 and authorizes each country to operate with its own guides or pilots when sailing through the jurisdictional waters of the other country. This has made it possible to eliminate stops simply for pilots to embark or disembark. Nevertheless, the vessel of a third country must hire guides from Argentina and Paraguay, depending on the jurisdiction of the stretch of river being crossed.

Because of the unyielding union resistance of the pilots and guides anxious to maintain their source of work, in Argentina the Buenos Aires Act and the Additional Act of Asunción on "Free Navigation", adopted in Asunción in 1965, is still in force. These documents require that two pilots should be on board Paraguayan ships, one as a pilot and the other as an inspector. According to the information provided, at present, each of these pilots

charges US\$1 500 per return trip between Asunción and Buenos Aires which lasts approximately 25 to 30 days.

The traffic on the Paraná and Paraguay rivers is restricted because ships are not provided with piloting services 24 hours a day, and therefore a system of buoys on land, reflective radar screens on the buoys, etc. would be needed. Another obstacle is the lack of infrastructure works, as for example, the rehabilitation of those stretches of the river which limit the sailing of the lighter convoys because the sharp drops in the river require so many manoeuvres, causing considerable loss of time and cost increases.

The majority of the river vessels have too large a crew on board and not enough skilled manpower. The work system on board is based on a series of regulations which make for costly inefficiency. A study should be conducted which would make it possible to match the size of the crew to the real needs of the river traffic.

Some of the work regulations in the ports have stipulated a minimum number of stevedores per hold, with a minimum of tons to be loaded or unloaded within a day, to meet a number of circumstances prevailing at that time. The technical changes in the equipment presently being used for loading and unloading vessels would make it possible to increase the returns on these operations, which in turn would provide an opportunity to make more efficient use of the fiscal infrastructure of the river transport. However, the stevedores take advantage of the regulations to set their maximum work load in spite of the minimum, completely disregarding the technological innovations.

The Argentine ports located on the Paraná river that were closest to Buenos Aires were usually the most expensive, and this encouraged the use of the ports located upstream. However, a government order placed the wages of the stevedores at the port of Resistencia on par with the wages of the stevedores at the port of Buenos Aires, so that now the wage of a port stevedore in Resistencia is three times that of a porter hired for work outside of the port.

Private ports, where the unions have no influence, have been built close to the ports of Rosario and Santa Fe. These ports are cheaper and more efficient and have captured considerable cargoes from the ports thereby. The result is that to a large extent the other ports are working far below capacity. If the unions do not reconsider their labour and wage demands this flight of cargoes could well be the beginning of the gradual disappearance of

the more inefficient ports so that the rivers can more efficiently play the role that they should in regional and international transport.

In some of the more developed countries, where there are rivers with a large commercial traffic, many changes have been made over the last decade which have contributed to a noticeable improvement in the efficiency of river and river-maritime vessels. The experiences of those countries should be taken into account and the construction of modern vessels with a greater loading capacity should also be contemplated.

Because river transport is from port to port, this system is as efficient as the river infrastructure, the vessels and the loading and unloading installations at each end of the route permit. Despite the fact that studies conducted by special bodies show the desirability of using river transport for distances of over 500 km transportation along the Paraguay-Paraná river is extremely expensive. For example, it can be said that the cost of transport between Asunción and Buenos Aires is equal to the cost between Buenos Aires and Rotterdam.

Moreover, there are six small vessels of some 2 500 tons which ply regularly along the Paraguay-Paraná rivers and also on the high seas to Europe without the need for a transfer in between. These vessels yield a profit despite the fact that they are bound to carry only light cargo and not exceed the weight of 1 500 tons, in order to avoid draft problems on the river. Their operation is profitable because they save the high costs of transfers. Bearing this in mind, it can be said that transport between the River Plate and Northern Europe in the small vessels is less economically inefficient than transport in lighters from Paraguay plus transfers to ocean liners in some River Plate port.

3. Border inspections

When in transit goods are transported by river through Argentina, they must be inspected by the port customs office closest to the border, where the port authorities of Argentina examine the goods, authorize their passage through the country and seal the cargo compartments of the vessel. In a way, this examination is very similar to the examination of goods transported by road or rail. In the ports of origin and destination, the customs authority authorizes the loading and unloading of the goods of a ship and supervises these

operations. When the product necessitates it, the health authority also inspects them.

4. River inspections

The authorities of Argentina and Paraguay may check the documentation of the vessel and its goods when it is sailing in the jurisdictional waters of the respective country. However, in practice, this inspection takes place only very rarely and for some specific reason.

D. ROAD AND RAIL TRANSPORT

If a consignment of goods is transported by truck from Asunción to Resistencia and then transferred to the train, the transport by road can only be undertaken using carriers from Argentina and Paraguay just as with bilateral traffic between both countries. In order to transport goods by road, carriers must apply to the transport authorities of Argentina for a license and specify the transport operation, listing the places at which they wish to make transfers. The licenses must be requested for each cargo vehicle and may be requested for a single trip, temporarily for six months or over the long term for five years. The application is very similar to that for the complementary licenses mentioned before and the administrative procedure is virtually the same.

For transport between Chile and Paraguay by rail from Asunción to Mendoza, and by road from Mendoza to Chile, road transport is undertaken by carriers from Argentina and Chile, and for this, the carriers must apply for the same transport and transfer licenses mentioned above.

In Argentina, the transfer operations from road to rail or vice versa must be directly contracted at the place where they are carried out and they must be duly supervised. It is also necessary to hire directly the mode of transport to which the goods are being transferred and this transport is even more complicated and expensive. These matters can, however, be resolved quite easily by a transport agent in Argentina, if the volume of cargo is large enough or if it is not so large but regular.

E. RIVER AND RAIL TRANSPORT

In Argentina if the goods in transit between third countries are placed in port warehouses, they are allowed to remain for a period of 30 consecutive days, free of the payment of warehouse fees. This period is extended to 90 days when the goods originate from or are destined to Bolivia or Paraguay.

Transfer operations from river to rail transport or vice versa in Argentina is as complicated as the road-rail combination.

The demand for river transport is primarily from north to south. The demand from south to north is much less with the result that on many trips on the south-north route the trucks are often empty. Furthermore, the demand from south to north is mainly from Buenos Aires and there is none from Resistencia, Santa Fe or Rosario.

A lighter has a loading capacity of approximately 850 tons and a tug can manage six lighters. There is no problem if a tug leaves some lighters in port, continues its trip with the remaining lighters and on the return trip picks up the lighters which it had left before. However, it must be remembered that the rates are more advantageous if the cargo to be transported is enough for six lighters together.

Moreover, Argentine Railways lowers its tariffs if whole or operating trains are used. The whole train is one which has a single origin, destination and shipper, whereas the operating train can have up to three different shippers, three origins for the cargo and a single destination. For example, in transporting grains, there is a 10% rebate if three full trains of 1 500 tons are used, a 12% rebate for full trains of 1 000 tons, a 10% rebate for operating trains of 1 500 tons and an 8% rebate for operating trains of 1 000 tons. Hence the need to bear in mind the capacity of the modes of transport in order to take advantage of the rate reductions which they might offer.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

It is most desirable for the landlocked countries to have available to them the maximum number of options for transporting their goods abroad. The authorities of Paraguay should therefore examine the possibility of taking steps to facilitate the transport of some of their exports and imports across the Pacific.

Historically, Paraguay has exported to and imported from Argentina, Brazil and Uruguay, Europe, the United States and Japan, so that the country's foreign trade has been mostly with more traditional markets and markets across the Atlantic. In light of this, the present and future commercial potential of the Pacific countries should be considered and the advantage of opening new markets in these countries should be studied.

A. INSTITUTIONAL ASPECTS

Institutional road-blocks consume a considerable amount of time and incur most of the transport costs in each of the options studied in this paper and any measure that can help to simplify the red-tape would reduce the time and cost involved. Equally, if measures are taken that increase the existing institutional obstacles they too will increase the time and total cost of the options.

a) Consular visa

The consular visa no longer serves its original purpose and the possibility of removing it from all foreign trade and international transport documents should be considered. If circumstances dictate the continued collection of the relevant consular fees, these could be shifted to the customs authorities at the points of origin and destination because the

problem does not stem from the cost of those tariffs but rather from the amount of time required to obtain the consular visa.

1. Road transport

In Paraguay, the documentation required for trucks transporting export goods has to begin five days before loading and if for some reason another truck has to be used, virtually all the formalities have to be repeated. The requirement severely restricts international transport operations because the availability of each one of the vehicles must be known five days beforehand and road transport is always subject to some involuntary breakdown or delay beyond the control of the carriers. Accordingly, in order to avoid these possible problems, the carriers usually park the vehicles during this period and so reduce the number of days they are used during the year and their efficiency. The customs and transport authorities of Paraguay should examine the procedures they now use and decide on the changes that should be made to avoid these problems.

a) Transport quotas and allocation

The distribution of the transport demand among the carriers of the two countries is established jointly by setting a static capacity for each one. According to the information received, this bilateral agreement has so far caused no problem for traffic from Paraguay to Chile. However, this type of agreement cannot ensure fair distribution and in fact, in some countries of the region, where it is in force, bilateral distribution favours the carriers of one country over those of another. The resulting imbalance has created several problems and led to very inefficient transport operations. The transport authorities of both countries should take account of these factors in order to be in a position to change the present system for a more efficient one before transport operations are affected.

b) International transport licenses

The transport authorities of the respective countries should consider the possibility of simplifying the formalities and the documents required for original, complementary and transit license applications and of issuing these licenses for a period of five years, so as to cut down the direct and indirect costs of renewing the different licenses which are now being issued for a period of six months or one year.

Every vehicle providing international transport services must carry all the licenses, insurance policies, sureties and the fees required in each one of the countries through which it must travel. Therefore, every vehicle is bound to carry a host of documents. A single document should be prepared, which is valid in all Southern Cone countries, in which it would be stated that all of these requirements have been met.

In respect of the license of origin and the complementary and transit license just the license of origin could be enough. In other words, the Southern Cone transport authorities, on the basis of mutual trust and reciprocity, would agree to eliminate the complementary and transit licenses. In this way, when a license of origin was being processed in one country, the other countries involved would be informed and they would be allowed a period to state any objections they may have. A similar procedure is followed among the European countries and has yielded important savings.

c) Technical standards of the vehicles

The differences between the technical standards that must be met by the vehicles in each one of the Southern Cone countries hamper, hinder and increase the cost of regional land transport. Faster work must be done by the group of experts which is conferring within the framework of the Meeting of Ministers of Public Works and Transport of the Southern Cone countries to compare and analyse these standards in order to reach an agreement which can standardize them quickly.

d) Mandatory insurance for vehicles

With respect to the mandatory insurance for vehicles, it is expected that based on the agreements reached by the Ministers of Public Works and Transport of the Southern Cone countries a type of insurance will be established that can be negotiated in the country to which each carrier belongs and be valid throughout the region.

e) Documentation

Considering the negative impact on transport and regional and international trade costs of the considerable increase in red-tape and the enormous differences in procedure, an attempt should be made to encourage co-operation among the different national agencies involved in foreign trade and international transport, to draft a single document, that can meet all the existing needs and from which any copies needed can be made and utilized.

f) Customs transit

Unfortunately, the institutional provisions in force among the Southern Cone countries do not give a regional answer to the customs transit problem. Their customs authorities decide all matters concerning the guarantee on their own which means that transit has to be negotiated separately in each country and different procedures followed and different requirements met.

In Argentina, transit through customs is insured through a customs transit policy and the procedure for obtaining it has been simplified in both Mendoza and Clorinda. However, although customs authorities all over the world are requesting that only the duties and taxes of the goods in transit should be insured, the Argentine customs authority is demanding that in addition the total value of the goods should be guaranteed in the customs, when prohibited goods are imported into the country, and to make matters worse, at present time, the prohibited import list is a long one. This implies that the customs transit policy can become very costly and rules out the transit through Argentina of any product included on that list. This aspect should be reconsidered by the customs authorities because this is a major obstacle to regional trade.

In Paraguay the customs authorities require the use of a customs escort during the transit operation, which implies the payment of expenses and per diem to the official, etc. The customs escort makes two trips daily between Asunción and Puerto Falcón, one at 12:00 and the other at 3:00 p.m. and accompanies all trucks waiting to make the journey. The escort system is an obsolete practice, which has proven to be most inefficient and much too costly and has been discontinued in virtually every country. Within the region, it is not used in either Argentina, Brazil, Chile or Uruguay. Furthermore, the fact that it only makes two trips a day between Asunción and Puerto Falcón is a major limitation on the international carrier transport operation. Consequently, the customs authorities of Paraguay should consider eliminating this practice and replacing it by simple procedures such as sealing the vehicles, setting the routes and making a daily check of entries and departures which should be enough, especially considering the short distance between the two points.

Finally, in order to facilitate regional trade and transport the countries need a convention which establishes a single set of rules for the

make it possible to arrange these operations with their appropriate guarantee valid from the starting point of the international trip to the destination. Within the Latin American Integration Association, a Partial Application Agreement is being negotiated which is aimed at overcoming this major obstacle to international road transport and it would be good if all the Southern Cone countries took part in the discussions and lent their support for the enforcement of the system that is finally adopted.

g) Legal representatives of the carriers

Under the International Land Transport Convention, the carriers must have a legal representative invested with very broad powers in each of the countries to which they wish to provide transport services and through which they wish to pass. Fortunately, so far the legal representatives have not needed to exercise their functions and powers fully. However, the day may well come which proves the practical ineffectiveness of this requirement.

In view of this, the authorities of the respective countries might consider dispensing with this requirement or at least restricting the legal responsibility of the representatives to purely administrative tasks. In the European countries, there is no obligation to have legal representatives or anything of the kind and no problem of a legal or institutional nature has arisen where their help was needed in solving it.

2. Rail transport

a) Agreements or conventions

Although there are many international agreements between Argentina and Chile and between Argentina and Paraguay there is no specific institutional consultation framework between the railways. Within the Latin American Railways Association, bilateral meetings are held but no joint meeting has been held of the three railway companies so that trilateral matters are dealt with in the framework of the MULTILAF Convention and its respective regulations. These companies might consider the possibility of holding a tripartite meeting as part of their zone meetings. For example, in the zone meeting between Argentine and Chilean carriers, the Paraguayan company could participate and discuss the different problems that might exist in rail transport between Paraguay and Chile through Argentina. These studies and discussions would enable a decision to be made as to the desirability of

expanding the present bilateral agreements to take into account the traffic among the three countries or whether to sign a specific trilateral agreement.

b) Consignment note

Although the Argentine, Chilean and Paraguayan railway companies accept one another's consignment notes they should consider adopting a standard consignment note drafted by the Latin American Railways Association because a single rail transport document would considerably facilitate bilateral and multilateral traffic.

c) International freight rates

The importers, exporters and indeed the actual or potential customer of international rail transport is unable to know with sufficient time beforehand what the cost of an international shipment will be because each railway company calculates its own freight rates and changes them when it deems fit. These freight rates are expressed in the national currencies so that they are affected by exchange rate increases, etc. In this connection, the companies could establish together international rates in a common currency so that they may remain as stable as possible over time.

Furthermore, the freight rates have to be paid to each railway for the stretch of the journey covered on it and this tends to delay traffic between two countries. The delay is even longer when three countries are involved. Accordingly, the railway companies, should establish a reciprocal payment system which will make it possible to pay all transport charges at the point of origin or at the destination point, irrespective of the railways that are used for the journey. This system could be instituted through the Latin American Railways Association Secretariat or through the convention on reciprocal payments and credits which exists among the Central Banks of the respective countries.

3. River transport

The institutional requirements for river transport, in terms of the technical aspects, the loading and unloading operation, the documentation of goods, the transport of the goods, the use of the means, the beginning and the end of the journey, etc. are much more exacting than those for the transport of goods traded by road or rail. This fact is due quite simply to the need to fulfill all the requirements in each of the countries through whose jurisdiction the vessel sails and to the proliferation in each country of a host of

institutions involved in the international transport of goods by river. In light of this, it is important to streamline the national regulations governing river transport through close co-operation among all the agencies directly or indirectly involved. Thus, the riparian States of the River Plate Basin should encourage mutual co-operation in order to simplify and standardize all the institutional procedures regarding river transport.

4. Multimodal transport

When an international shipment of goods is made by road and then transferred to another mode of transport, the transport authorities of Argentina require that a special license should be applied for, which is different from the origin, complementary and transit licenses. Since there is already a host of licenses, the respective authorities could consider placing these transport and transfer licenses on the same footing as the ones for bilateral transport since both licenses are very similar. In this way, one administrative procedure would be eliminated and this would make it easier for the carriers engaged in providing bilateral international transport services.

B. OPERATIONAL ASPECTS

a) Plant health inspection

There are no health inspectors in Clorinda, Argentina, to inspect the goods and so prior arrangements must be made and the fees and expenses paid to bring an inspector from Formosa to Clorinda to inspect the goods. Similarly, there are no health inspectors in Las Cuevas or in Punta de Vaca, Argentina, and again it is necessary to make prior arrangements for this inspection and pay the fees and expenses of bringing an inspector from Mendoza, but he can only make the inspections on Tuesdays, Thursdays and Saturdays. These two facts constitute a major obstacle to regional trade in those products which must undergo plant health inspection, as this increases the red-tape, the necessary time for doing them and their cost. The goods from Chile, Argentina and Paraguay are the ones affected. This situation has prevailed for a very long time and it has not been rectified, despite the many complaints that have been made and the pressure exercised by the international carriers on the countries concerned.

1. Road transport

The respective authorities in Argentina and Chile should take the necessary measures to reduce the times during which the frontier across the international tunnel and across the Puyehue Pass remained closed, as these are the most important communication links between the two countries. Similarly, the working hours of the customs and health inspectors on both sides of the border should be synchronized.

a) Border inspections

The border authorities of Argentina, Paraguay and Chile should examine the possibility of extending the hours of border inspections and also having special timetables and strengthening the services by providing more personnel during peak periods such as weekends, Holy Week, the winter holidays and the summer season.

b) Non-border inspections

Customs and health inspections which must take place in Mendoza, Argentina and Los Andes, Chile, are scattered over these cities. In Mendoza, this problem will be solved by the construction of a dry port, where all the services relating to foreign trade and international transport will be concentrated. Since there is apparently no similar project planned for Los Andes, consideration should be given to transferring the agriculture and livestock service offices and the health offices to a location close to the customs installations, where there seems to be enough space and this would considerably simplify and expedite the inspections done in that city.

Because of the institutional provisions now in force, it is advisable for the carriers to have someone responsible for going through all the necessary formalities. In this corridor, it is important to have one person in Asunción, another in Clorinda, another in Mendoza, another in Los Andes and another in Santiago or Valparaíso, depending on the destination of the goods. These persons do not have to work exclusively for one carrier unless the flow of vehicles so warrants. Bearing this in mind, the carriers should look into the possibility of merging or reaching some form of agreement not only with other carriers from their own country, but also with carriers from other countries to speed up these proceedings and reduce operating costs.

c) Route inspections

Transport vehicles are subject to route controls by the police in Argentina and Chile. The authorities of both countries should examine the

reasons that gave rise to the establishment of these checks which are still in effect today and, if they decide that they should remain in force, whether they are fulfilling and satisfying the purposes for which they were originally established. These studies might lead to the elimination of some controls and to the reduction of those which are retained.

2. Rail transport

a) Rail infrastructure

The problem of the different rail gauges that now exist is not found only in the corridor being studied in this paper or even the three countries in question, because that problem affects traffic between Argentina and Brazil, Bolivia and Peru, and Brazil and Uruguay. Transfers from wagon to wagon are inefficient and costly and there are frequent losses and breakages when rather delicate or expensive goods are being handled. The situation is even worse when dual transfers have to be made, that is to say, from wagon to truck and from truck to wagon. The railway should be fully aware of the fact that it is important for transfers to be made as quickly, cheaply and easily as possible so that there will be the least loss of time and minimum transport costs. Similarly, the transfer should be so organized that the customer does not have to be involved at any point unless he so wishes.

In order to minimize the problems caused by the differences in gauge, the use of containers could be contemplated. Everything seems to indicate that the future of transport lies in containers, because they make it possible to combine all the modes of transport efficiently and benefit from the comparative advantages of each of them. Besides, the considerable variety offered by containers makes it possible to transport virtually every kind of product. However, when one speaks of containers there is a tendency to think of large and costly cranes which can handle a large number of containers per time unit which are not always in proportion to the existing transfer demands. Consequently, it would be advisable to examine installing small and easy handling cranes provided that the volumes of traffic do not justify the use of equipment of greater capacity.

b) The Paraguayan Railway

The Presidente Carlos Antonio López Railway of Paraguay could be used to a greater extent in international goods transport when the road and rail bridge between Encarnación and Posadas is completed. This bridge will provide

a link with the General Urquiza Railway of Argentina that has the same gauge and subsequently, with the Uruguayan Railway which also uses the same gauge.

However, because of the present condition of the Paraguayan Railway it is unable to provide the service which it should as the result of its geographical location. With this in mind, the Paraguayan transport authorities should consider drafting a long-term investment plan to repair the railway installations so that the opportunity of having a means of transport linked up with a regional network is not lost because through it, a sizeable amount of the country's foreign goods for export could be channeled.

c) Transandean Railway

The Chilean sector of the Transandean Railway is currently out of service. When it was in service it operated under very adverse conditions, mainly because of the steep inclines of its course. The present physical conditions could only be changed by repairing the track so that the crest would be eliminated and traction engines used. However, such an undertaking would require considerable investment which does not appear justified in view of the present transfer demand. A comparative study should therefore be made of other options for connecting the Chilean Railway network with that of Argentina, in light of the present demand and its possible future growth so that the necessary information will be available to clarify any uncertainties as to the future of the Chilean sector of the Transandean Railway.

The fate of the Argentine sector of the Transandean Railway will depend considerably on the decision taken in respect of the Chilean sector. Accordingly, some of the Argentine Railways authorities are considering the possibility of building some transfer installations from rail to road and vice versa at a point close to the Chilean border, so as to encourage some activity in the sector in Argentina. In this connection, it should be borne in mind that a previous study is needed to determine the operational and institutional conditions required to make this alternative sufficiently attractive. If these conditions are not created, the installations may not be as fully used as expected.

3. River transport

River transport in the River Plate Basin has been declining due to the loss of

other modes of transport. With respect to the infrastructure of river transport, there must be adequate assistance to navigation to enable operation 24 hours a day and to rectify the installations in those sectors of the river which restrict the manoeuvres of lighter convoys. Regulation and union hindrances should also be eliminated, because they prevent full use from being made of all the technological advances; the number of pilots and the size of the crew on board each vessel and the number of port stevedores should be reduced; the returns from loading, unloading and navigation should be increased; all workers' wages should be equal to those paid in alternative modes of transport.

Finally, it should be remembered that there is a low utilization of the river transport system of the River Plate Basin for national and regional transport and that this is due to the proliferation of institutions and their lack of homogeneity, in each of the riparian countries. Consequently, the authorities of these countries should give prior attention to these institutional problems but this should not preclude investment in infrastructure which could yield high profits and boost traffic.