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## recursos naturales e infraestructura

# **L**andlocked Countries in South America: Transport System Challenges

Gordon Wilmsmeier

Ricardo J Sánchez



NACIONES UNIDAS



Natural Resources and Infrastructure Division  
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This document was prepared by Gordon Wilmsmeier, consultant from UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, and Ricardo J. Sánchez, Economic Affairs Officer of the Natural Resources and Infrastructure Division of ECLAC, United Nations

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## Abstract

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This report analyses the current state of the landlocked developing countries (LLDCs) Bolivia and Paraguay. The report analyses the traditional topics (1) infrastructure at national level and connectivity towards adjacent countries; (2) the recent development in international laws and treaties and (3) cross-border operation. Beyond these traditional topics the report evaluates the level of international transport costs and the potential impact on trade. It further presents the currently induced over costs in logistic chains, which pose an additional burden to the competitiveness of the countries. This structure aims to give insight on the current situation in South America's LLDC'S in relation to the five priority areas in the ALMATY Programme (2003).

- Transit Policy and regulatory framework
- Infrastructure development
- Trade and transport facilitation
- Development assistance
- Implementation and Review



## **I. Characteristics of landlocked countries in South America**

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This chapter describes the characteristics of the trade performance, description of the transit transport infrastructure assets and bottlenecks, and trade facilitation of Bolivia and Paraguay.

### **1. Bolivia**

#### **1.1 Trade performance**

Bolivia's trade has been growing at increased rates since 2003. The value of exports has grown more than threefold between 2003 and 2006. Imports have increased at a lower pace in the same period. The strong growth in exports has converted Bolivia's trade balance from a historically negative one, in the period from 1995 to 2002, into a positive one (see table 1).

**TABLE 1**  
**BOLIVIA: TOTAL TRADE**

(Millions of dollars)

	1990	1995	1999	2000	2001	2002	2003	2004	2005	2006
Exports	923	1 181	1 402	1 457	1 353	1 372	1 651	2 254	2 797	4 223
Imports	703	1 396	1 835	1 849	1 708	1 769	1 684	1 887	1 887	2 824
Balance	220	-215	-434	-392	-355	-398	-34	367	367	1 399

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

### 1.1.1 Structure of merchandise

Bolivia's foreign trade is heavily based on exporting primary products. The importance of this product group has been growing and in 2006 primary products made up for 76.3% of all Bolivian exports in terms of value (see table 2).

**TABLE 2**  
**BOLIVIA: EXPORTS BY PRODUCT CATEGORY**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
Primary products	645	576	756	1 525	2 054	3 229
Manufacture goods (natural resources)	245	295	252	431	408	490
Manufactured goods (low technology)	31	131	144	180	184	207
Manufactured goods (medium technology)	1	23	54	56	53	81
Manufactured goods (high technology)	0	22	159	24	17	87
Other transactions	1	134	91	37	82	130
Total	923	1 181	1 457	2 254	2 797	4 223

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

The export of manufactured products has also increased significantly between 2000 and 2006; however in overall trade, manufactured goods continue to play a subordinate role.

The analysis of Bolivia's main export products shows that the top 10 export products account for over 80% of all exports in terms of value. Petroleum products and derivatives make up for over 47% of all exports, followed by zinc ores (12.99%) other ores and soy bean oil (2.98%). The export product structure displays a high affinity to bulk transport, which is highly susceptible to transport costs and requires high volume transport services to generate economies of scale, which allow to reduce transport costs (for details on Bolivia's main export products see Appendix).

Bolivia's import product structure is more diversified than the exports and is formed principally from manufactured products. The top 20 import products in terms of value, accounted for only 30.54% of all imports in 2006. Interestingly soy beans were the fifth most important import product and therefore there is a high demand for transport services for this product when considering their weight/value ratio.

### 1.1.2 Imports and exports and major trading partners

Bolivia's main trading partners are located within Latin America and received 65.6% of all exports. 5.8% and 9.8% of all Bolivian exports are destined for the European Union and United States respectively. Exports destined for Latin American countries have been outnumbering exports to other regions significantly this turn of the century. In 2000 44.2% of all Bolivian exports were destined for LAC and 22.4% to the United States. The participation of exports to the United States dropped to 9.8% in 2006. A similar phenomenon can be observed for exports to the European Union (see table 3).

**TABLE 3**  
**BOLIVIA: EXPORTS BY REGION OF DESTINATION**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
Latin America and the Caribbean	414	435	644	1 471	1 842	2 770
United States	185	332	350	360	409	414
European Union	268	306	252	163	162	247
Asia	7	8	19	179	240	490
China	0	0	6	23	20	36
Japan	3	4	3	68	134	378
Other countries	49	100	192	82	145	303
Total	923	1 181	1 457	2 254	2 797	4 223

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

An important development is the rapid growth of exports to Asia. While exports to Asia were insignificant until 1995, exports to this region had a greater share in overall trade than the United States and the European Union. The biggest trading partner in Asia is Japan. The development of these trade relations also depicts the importance trade corridors to ports on the Pacific coast have for Bolivia.

In terms of imports a parallel development for exports can be observed. While imports from within LAC have increased almost threefold between 1995 and 2006, imports from the United States and European Union have been rather stagnant. At the same time imports from Asia have been growing at a high pace. Especially, imports from China which showed the strongest growth performance.

**TABLE 4**  
**BOLIVIA: IMPORTS BY REGION OF ORIGIN**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
Latin America and the Caribbean	331	541	917	1 170	1 416	1 672
United States	156	313	406	260	325	342
European Union	114	273	215	160	221	258
Asia	81	221	228	248	325	475
China	4	14	58	107	136	192
Japan	69	172	101	105	143	222
Other countries	21	48	82	48	58	77
Total	703	1 396	1 849	1 887	2 343	2 824

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

The more detailed analysis of Bolivia's trade relations with LAC countries shows that Bolivia's trade with MERCOSUR countries has outnumbered all other trade relations with an over tenfold increase in export trade volumes (United States dollars) between 1995 and 2006. Trade with ANDEAN Community has doubled in the same period (see table 5).

**TABLE 5**  
**BOLIVIA: DISTRIBUTION OF INTRAREGIONAL EXPORTS BY DESTINATION**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
MERCOSUR	319	173	292	865	1 305	2 013
Andean Community	60	222	311	508	466	616
CACM	0	0	0	10	6	1
CARICOM	0	8	1	1	1	1
Other Latin American Countries	35	32	40	87	64	139
Rest of the world	509	746	813	783	955	1 453

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

MERCOSUR countries have developed as the most important sources of Bolivian imports, however its growth rates from 2004 to 2006 have slowed down and the market shares of the different intraregional trade blocks have developed steadily in the last three years (see table 6).

**TABLE 6**  
**BOLIVIA: DISTRIBUTION OF INTRAREGIONAL IMPORTS BY ORIGIN**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
MERCOSUR	198	298	559	805	933	1 054
Andean Community	30	111	157	208	261	320
CACM	0	2	1	1	1	1
CARICOM	0	0	0	0	0	0
Other Latin American Countries	103	130	200	156	221	297
Rest of the world	372	855	932	717	927	1 152

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

Bolivia's main export destinations are Brazil (37.7%), followed by United States (9.8%) and Argentina (9.26%). The top 10 export destination countries accounted for 88.55% of Bolivia's total export values (see table 7).

**TABLE 7**  
**BOLIVIA: TOP 10 EXPORT DESTINATION COUNTRIES**

(Thousands of dollars)

No.	Partner	Export Value
	World	4 223 297
1	Brazil	1 592 048
2	United States	413 801
3	Argentina	391 247
4	Japan	377 971
5	Peru	248 693
6	Switzerland	210 633
7	Venezuela (Bol. Rep. of)	200 972
8	Colombia	155 832
9	United Kingdom	80 320
10	Chile	68 144

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007

Brazil is also the main origin of Bolivian imports (20.41%). Argentina (15.84%) and the United States (12.12%) are the followers. The geographic distribution of the main trade partners for imports and exports underlines the importance of overland transport corridors towards Brazil and Argentina and the well functioning of trade corridors connecting Bolivia and the Pacific ports.

**TABLE 8**  
**BOLIVIA: TOP 10 IMPORTING COUNTRIES**

(Thousands of dollars)

No.	Partner	Export Value
	World	2 824 242
1	Brazil	576 301
2	Argentina	447 237
3	United States	342 292
4	Chile	234 648
5	Japan	222 460
6	China	192 057
7	Peru	189 417
8	Germany	65 427
9	Colombia	63 880
10	Venezuela (Bol. Rep. of)	56 635

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007

The analysis of trade data in terms of value gives good insight of the importance of each trade partner. However, it does not allow analysing the demand for transport infrastructure and transport services directly, since these are highly correlated to the volume of the cargo transported. These issues will be discussed in the section regarding modal split in international transport.

## 1.2. Description of transit transport infrastructure assets and bottlenecks

### 1.2.1 Infrastructure assets

#### *General setting*

Bolivia's territory includes an area of 1,098,580 km<sup>2</sup>. The overall border length is 6,743 km, of which 832 km are shared with Argentina in the south, 3,400 km with Brazil in the North and East, 750 km with Paraguay in the South and 900 km with Peru and 890 km with Chile in the west.

#### *Road transport*

In terms of road infrastructure Bolivia's road network has a total length of 60,762 km of which about 4,314 km are paved. The remaining roads are either gravel or dirt roads.

The main transit corridors at South American level, which include Bolivia, are:

- East-West corridor with the objective to create a connection between the Pacific ports of Arica and Iquique (Chile) with the port of Santos in Brazil on the Atlantic coast, crossing Bolivia. This corridor also connects with the railway network, allowing access to Antofagasta (Chile) and by using a connecting railway line to the Peruvian ports of Ilo and Matarani.
- The Northern corridor: connecting the state of Rondonia (Brazil) by passing through the departments Beni and La Paz in Bolivia with the East-West Corridor. A branch of this corridor links the Pando department with Peru.
- The Southern corridor: allows the interconnection between Buenos Aires and Lima and also promotes Paraguay's access to the Pacific Ocean.

The Jaime Mendoza diagonal: allows Peru and Paraguay access to the Atlantic and Pacific ports.

In detail these corridors pass through the following routes in Bolivia:

- East-West:
  - Brazilian border-Puerto Quijarro-Santa Cruz-Cochabamba-Oruro-Chilean border (either to Arica or to Iquique) (Route 4);

- An alternative is: Brazilian border–San Matías–San Ignacio–Santa Cruz (Route 10); and continuation,
- Brazilian border–Guajamerín–Cobija–Peruvian border.
- North South:
  - The main North South corridor runs from: Brazilian border–Guajamerín–Trinidad–Santa Cruz–Yacuiba–Argentine border.

There are number of connecting roads between the main axis.

Significant attention has been given to the development of main national and international transit routes. These activities have been partly driven by the available funding schemes, especially for the transport corridors, which are listed as main projects in the IIRSA initiative (Regional Infrastructure Integration in South America). However, transport infrastructure deficiencies persist especially in the secondary regional network. The development of these routes is lacking progress, because of unclear funding schemes and restricted financial budgets in the regions. Furthermore, a revision of the construction costs shows a high variability in the final costs, which in parts should be reviewed in terms of quality of the delivered work and integrity of financial flows.

The previous government emphasized paving roads and establishing a road maintenance system, and encouraged participation of private enterprises. In particular, as for the main roads (Red Fundamental), the government regarded paving them as important and planned to maintain the East-West Corridor using the concession method. According to the Strategic Plan (Plan Estratégico Obras con Empleos 2003-2008), roads totalling 5,884 km are to be paved over the six years from 2003 to 2008, with the expected result that 80% of the arterial road system will be paved. It was estimated the construction, rehabilitation, and regular maintenance of arterial roads would require the employment of 25,950 unskilled workers yearly, and 103,800 workers when indirect impacts are included. Concerning local roads (Red Departamental y Red Municipal), the Bolivarian Strategy for Poverty Reduction (Estrategia Boliviana de Reducción de la Pobreza) EBRP places emphasis on the improvement of roads connected to arterial ones to encourage the transport of products by small-scale farmers. Furthermore, the EBRP shows that the government will decide on priorities according to the degree to which the road will contribute to the promotion of “production chains.” The evaluation of the EBRP and its contribution to the development of infrastructure next year will show the success of the programme.

A recent study from the Exporters Chamber of Santa Cruz (CADEX) (Cámara de Exportadores de Santa Cruz) has analysed the current situation of 169 bridges for a number of export corridors along the national routes (Routes 01, 04, 09 and 10). The study has found, based on the assumption of the circulation of 45t trucks, that 128 of the bridges along these corridors can support this kind of traffic. However, the study also concludes that 34 bridges are in need of reparation or reinforcement. The study also found that there is a need to build 27 bridges along route 04 and one new bridge along route 09. Further findings show that a number of bridges are affected by the hydrological conditions of the rivers, which will have an impact on the stability of their infrastructure in the short or medium term.

In its current programme the Japanese development agency is addressing the development of the secondary and local road networks and their efficient management with emphasis on road maintenance management, increasing the resistance of the secondary network to natural disasters and construction of the fundamental road network.

Based on the motor vehicle registration statistics the supply of trucks has been growing six fold between 1998 and 2005. The statistics do not show that a significant number of trucks have completed its life cycle and do not fulfil the necessary safety standards. A further problem is that a number of trucks are banned from international travel, because of unidentified origin of the truck. A new initiative has been launched to replace old trucks with the help of an agreement between China and Bolivia. The idea is to

import new trucks from China at a specific price that gives an incentive for a faster renewal of the vehicle fleet.

A further topic under discussion is the existing weight rules for trucks and the complementarity between market demands, impact of higher axle loads on road infrastructure and competitiveness of national road transport service providers in comparison to their foreign counterparts. This discussion is underlined by demand to allow the so called BITREN on Bolivia's roads. This type of vehicle is used in Brazil, but under the current regulatory framework cannot circulate in Bolivia and also the current infrastructure would not sustain the impact from this type of truck<sup>1</sup>.

In general the complementarity of road systems and vehicle weight measurements is a topic of increasing importance with the continuing integration of South America's road network. A lack of harmonization in weight standards can (and in parts already has led—Argentina—Chile) to unanticipated deterioration of the road infrastructure incurring significant costs. Therefore an agreement on truck weight and road layout standards, especially on transit routes is an urgent requirement. This affects Bolivia since the country has the potential to develop towards a transit country for cargoes from Western Brazil (Mato Grosso), which can potentially be exported through Peruvian and Chilean ports once the road network is completed.

### *Air transport*

Bolivia has 13 airports. Three are international airports. These are Santa Cruz (Viru Viru International), Cochabamba (Aeropuerto Internacional Jorge Wilstermann) and La Paz (El Alto). Bolivia has another ten airports with paved runways and regional importance.

Currently two national airlines operate national flights and offer international services: Lloyd Aéreo Boliviano (LAB) and Aerosur. The following foreign airlines offer regular passenger transport services to Bolivia: American Airlines, Aerolíneas Argentinas, LAN, Lapsa, GOL and Saeta.

The Viru Viru Airport is situated 17km from the centre of Santa Cruz, has a runway length of 3,500m and 45m width, which allows the airport to operate aircrafts of all sizes. The Viru Viru Airport and other Bolivian airports are operated by SABS (e.g. El Alto and Jorge Wilstermann) the airport is used as a hub by Lloyd Aéreo Boliviano and Aerosur, with the greatest number of flights being national and to neighbouring countries.

The Airport El Alto en La Paz, is one of the highest in the world and the second most important in Bolivia in terms of connectivity.

SABS is operating the three main Bolivian airports under a general 25 year concession, which was granted in 1997. For the concession period SABS is responsible for the operation, maintenance, control and expansion of the airports.

### *Waterborne transport*

Bolivia has more than 14,000 km of navigable rivers. Bolivia's main river ports are Central Aguirre and Gravel, which are both located in the Canal Tamengo. The importance of Bolivia's river transport has been growing in recent years in strong correlation with the development of soybean production in the Eastern lowlands<sup>2</sup>. In relation to the planned development of Mutún, an iron ore mining project, for which the exploration was recently agreed on by the Bolivian government and the Jintal Group of India, river transport will play a key role in future development of the eastern lowlands. In order to facilitate the exploration of iron ore a port and connecting railway project is being studied. The project, Puerto Busch, shall ensure a free movement of Bolivian cargo to the Atlantic. The development of Puerto Busch also allows surpassing a number of physical barriers obstructing current river transport activities

<sup>1</sup> For details see study from CADEX (2006).

<sup>2</sup> Cargo movements in Puerto Suarez have increased more than 100% between 1995 and 2003.

from Puerto Suarez (bridges and a drinking water extraction facility on the Paraguay River currently impede the movement of convoys along the river).

The Port Suarez transport cluster builds a trimodal interconnection point with access from Bolivia, Brazil and the north of Paraguay with infrastructure installations for bulk and general cargoes.

The Bolivian river transport development projects depend significantly on the cooperation with the bordering countries of Paraguay and Brazil, because the physical barriers affecting Paraguay (see Paraguay chapter for details) also affect Bolivian river transport. Currently no solution is in reach on how to distribute the provisioned costs for the elimination of the natural barriers (especially dredging) and no effective instrument is at hand to recover the required investment and to ensure long term maintenance of the river.

Currently, the main products moved in Bolivian river ports are sugar and soybeans.

Interviews with the exporter's representative body, CADEX in Santa Cruz have revealed that exporting via the Hidrovía Paraguay-Paraná is cheaper than through Pacific ports and offers greater control of the cargos, because the river ports are geographically closer to Bolivia's main production regions.

With the anticipated developments of the productive sectors of Santa Cruz and its adjacent regions, the development of a growth pole with access to the river network and adequate road infrastructure accessibility is a main challenge. This will also require coordination and integrated administrative efforts to plan and control for urbanization and migration pressures in the region.

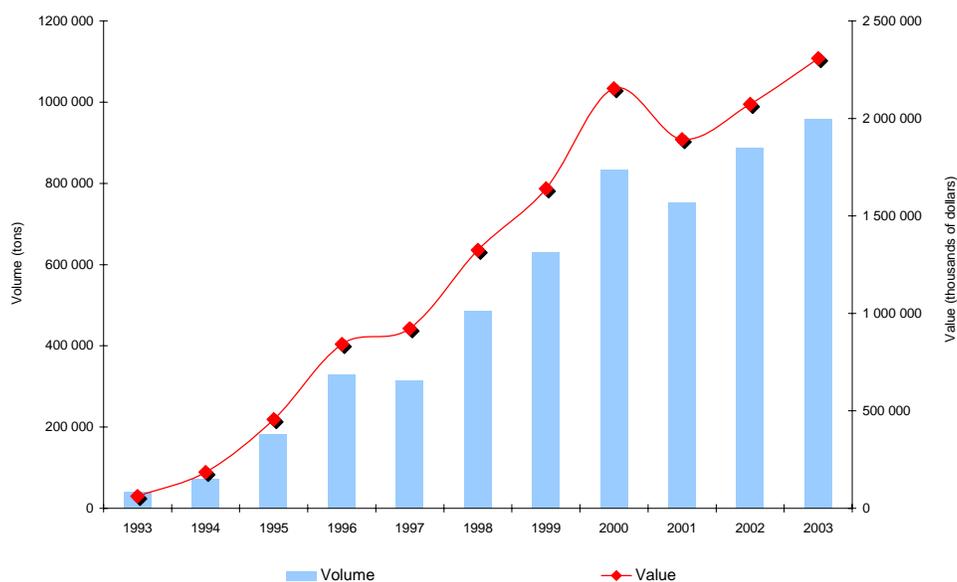
The geographically close location to the Brazilian border will also require intensive and proactive cross border cooperation at regional level.

#### *Access to maritime ports*

Due to Bolivia's geographic location the country carries out its import and export operations to other world regions through a number of foreign ports. The main ports on the Pacific coast are Arica, Antofagasta and Mejillones in Chile and Ilo, Matarani and Mollendo in Peru. On the Atlantic coast Bolivian cargo is usually moved through the ports of Santos (Brazil), Buenos Aires (Argentina) and Nuevo Palmira (Uruguay).

Bolivia has a number of agreements on port use with neighbouring countries with special access rights; Peru and Chile on the Pacific Coast, and Argentina, Brazil, Paraguay and Uruguay along the Hidrovía Paraguay Paraná with access to the Atlantic Ocean.

**FIGURE 1**  
**PORT MOVEMENT PUERTO SUAREZ, BOLIVIA, 1993-2003**



Source: Own elaboration based on INE, Bolivia.

In 1996 Bolivia created the Administration for Port Services-Bolivia (Administración de Servicios Portuarios Bolivia) ASP-B<sup>3</sup> to replace the Autonomous Administration of Customs Warehouses (Administración Autónoma de Almacenes Aduaneros) AADAA<sup>4</sup>, to execute the country's national policies on port development and external trade.

ASP-B is based in a number of ports to oversee and support the external trade activities and the transit facilitation. ASP-B also controls the trade related treaties and agreements.

Some of the main functions are to establish warehouses and storage areas to service the external trade of Bolivia. Moreover, the ASP-B was to create a port information system to generate an integrated database, which was to be integrated with the customs information system.

In Arica and Antofagasta (Chile) ASP-B fulfils the role of customs including inspections and verifications of bolivian cargoes. In general ASP-B offers services of cargo reception, verification, storage, control, and certification for all import and export cargoes.

Regional functions:

- Information on the arrival of ships;
- Status reports on the status of the shipment in the port;
- Orientation and assessment on import procedures;
- Emission of port tariffs;
- Reception of port service requests for imports and exports.

<sup>3</sup> Bolivian Administration of Port Services.

<sup>4</sup> Autonomous Administration of Customs Warehouses.

Sometimes, the effectiveness of ASP-B is criticised, the information accessible on the ASP-B website, which could be the backbone of the information system, is not developed properly and in accordance with the functions of ASP-B laid out in the decree.

The port of Arica is Chile's northernmost port and has been operated under concession since 2004<sup>5</sup>. The change in the operational scheme has brought a lot of dispute with Bolivia, because exporters and importers have been complaining about rising port costs and restricted access to the port.

**MAP 1  
PORT OF ARICA - HINTERLAND**



Source: Empresa Portuaria de Arica, 2007.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Arica has been Bolivia's main gateway port. At the same time Bolivia is the port's biggest customer. Transit cargo to Bolivia accounted for 64% (806,200 tons) of all cargo throughputs in the port in 2006 (see table 9).

**TABLE 9  
CARGO THROUGHPUT IN THE PORT OF ARICA BY TYPE OF SERVICE,  
2005 AND 2006**

Type of Service	(Tons)	
	2005	2006
Transit to/from Bolivia	803 551	806 200
Transit to/from Peru	19 031	45 952
Cabotage	53 168	32 954
Exports Chile	86 997	144 029
Imports Chile	136 646	116 321
Other	54 096	104 614

Source: Empresa Portuaria Arica, 2007.

<sup>5</sup> In 2004 the Chilean authorities decided to tender out the operation of the port of Arica in a bid to revert an incipient decline. Investments began as soon as the contract came into effect. Major improvements were made to port management and new equipment was acquired, enabling the port not only to recover cargo but also to secure new cargo. In 2007 a record 1,528,725 tons were transferred, of which 1,000,597 were Bolivian cargo.

A comparison of the flow of transport volumes through Pacific ports in Chile and Peru shows that Arica was able to increase its market share from 42% in 2002 to 56% in 2006. Matarani, Peru, at the same time has lost 50% of its original market share. Antofagasta has stepped up to be the second biggest gateway for Bolivian cargo in 2006 (22%); Iquique moved 7%.

The available figures and growth rates also indicate that Bolivian importers and exporters are returning cargo to the port of Arica, which was rerouted prior to the concession and during a first period of uncertainty during the beginning of the concession.

The main cargo moved in the port of Arica is containerized and general cargo. Storage facilities for wheat and soybeans exist; even so the port does not dispose of the necessary infrastructure to handle these products.

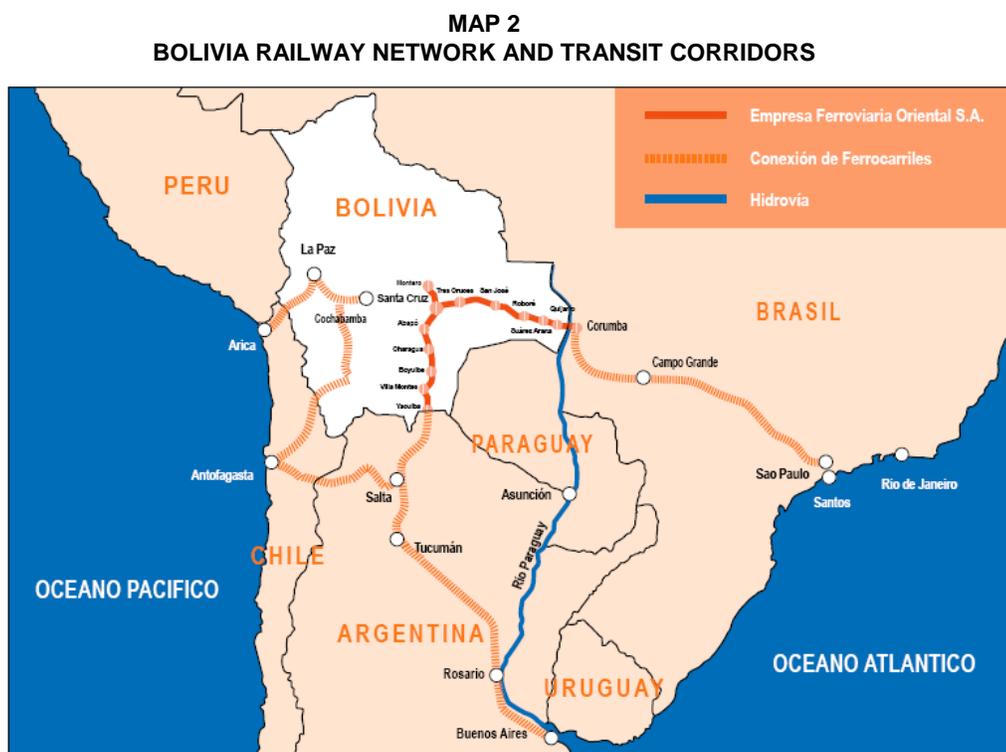
The port of Antofagasta is mainly used for the export of minerals and has a throughput of about 2.5 million tons per year, of which 10% is Bolivian cargo. The port is located slightly further away from Bolivia than Arica and disposes of two transit routes (a) Antofagasta-Huara-Colchane-Oruro, using route 26, which connects to the Panamericana Norte (Ruta A-5), combining Ruta A-55, of 180 km length which connects Huara with Colchane; (b) transiting Argentina, using the pass La Quiaca (Jujuy Province) and Yacuiba (Salta Provinces). Further, the port of Antofagasta is connected to Bolivia by rail using the network of Ferrocarril Antofagasta-Bolivia (F.C.A.B.), Ferronor and FC Belgrano. This route provides a high capacity for services.

### *Railway network*

Bolivia's railway network is divided into an Eastern and a Western network. The Eastern network has a total length of 1,244 km, the Western disposes for 2,318 km of railway tracks. The network passes through the regions of La Paz (West), Oruro (Southwest), Chuquisaca (Southeast), Cochabamba (Central) and Potosí (South). It connects to the neighbouring railway networks which allow transit to the Pacific ports of Arica and Antofagasta (Chile) and to Córdoba and Buenos Aires (Argentina), with a number of connections to Argentine ports.

A main restriction to the development of railway transport is the missing link between the Eastern and the Western network, which does not allow the creation of a railway transit corridor. This deficiency also impedes all railway transport from the Eastern lowlands towards Pacific ports (see map 2).

The current railway network in Bolivia has been operated by two Chilean groups since 1994. Today two railway companies operate under a 40-year concession contract: Ferrocarril del Oriente (FCO SAM) running the Eastern section and Ferrocarril Andino (FCA SAM) running the western section.



Source: FCO SAM, 2007.

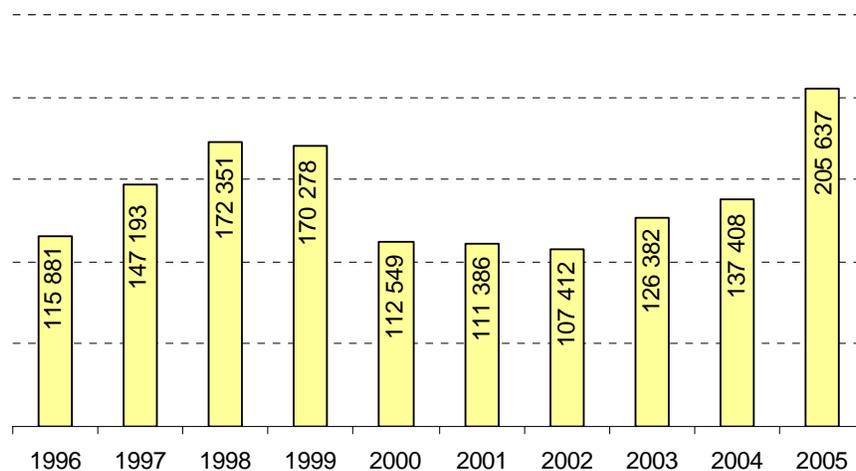
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

FCO SAM connects the east of Bolivia with Argentina through Yacuiba and to Brazil running through Puerto Suárez–Quijarro–Corumbá. The network also runs to Warnes and Montero in the north of Santa Cruz. The eastern network provides access to the Atlantic ports: Buenos Aires, Rosario and Santa Fe using the Argentine networks from Belgrano Cargas. Access to the Brazilian ports of Paranagua and Santos is possible using the Ferrovia Noreste and Ferrobán. As shown in the figure above FCO SAM services also offer access to the Paraguay-Paraná River system and thus to the ports of Nueva Palmira in Uruguay.

The Ferroviaria Oriental de Bolivia has access to Chile through the Socompa pass, passing through Argentine territory. The Empresa Ferroviaria Andina railway, which is administered by Bolivia's western network, connects with the ports of Antofagasta, Mejillones and Iquique through the Ollagüe-Avaroa pass.

In 2006 FCO SAM transported 1,385,260 tons of freight. The greatest volumes are moved on the eastern routes (1,270,437 tons, 2005). In general FCO SAM has experienced growing competition by road transport, but was able to recover the decline from the previous year. However, the lesser diversity of products transported continues. In general FCO SAM mobilizes about 50% of all exports from the Santa Cruz region in terms of volume. During 2005 participation of soybean exports in FCO SAM's transport activities has been growing continuously (91.9% of all export movements in 2005). At the same time the transport of general cargo has continuously declined, which is due to the lack of an adequate infrastructure and service structure. The restrictions have become more obvious with the development of the road network parallel to the railway, especially in the transit corridor from Santa Cruz to Puerto Suarez towards Brazil. The road infrastructure improvement has increased the competitive advantage of the road transport over rail in terms of transit times and flexibility.

**FIGURE 2**  
**BOLIVIA: REGIONAL TRANSPORT VOLUMES**  
*(Tons)*



Source: FCO SAM, 2007.

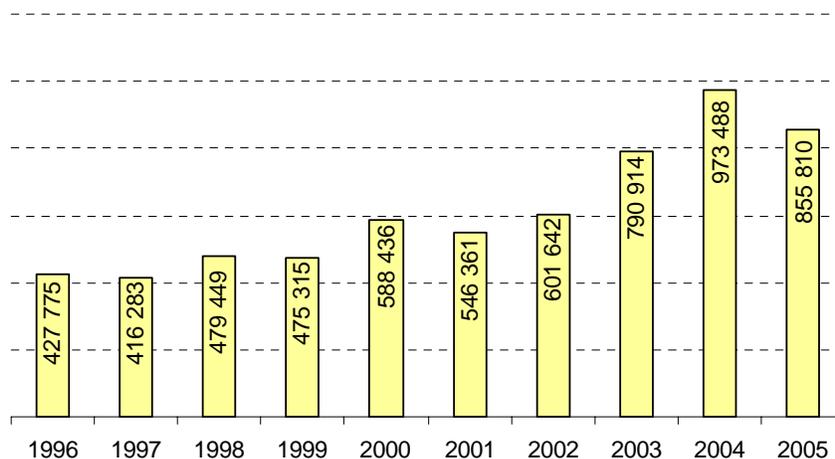
However, imports (259,762 tons, 2005) by rail have increased continuously, the main products being steel mainly from Brazil and wheat mainly from Argentina.

Further regional transport has shown significant growth rates (205,637 tons, 2005). The main products moved at regional level are cement (>80%), soybeans and diesel oil. Regional freight transport showed a 52% increase in comparison to 2003.

Since 2005, FCO SAM has offered services to transport containers, to create a new intermodal transport option for import and export cargo using the Paraguay-Paraná River system.

In terms of passenger transport, FCO SAM's passenger services show continuous growth rates and have more than doubled the number of passengers since 1996.

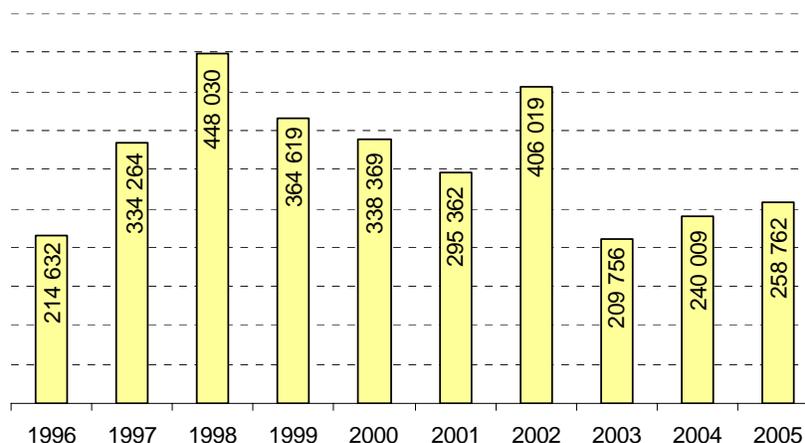
**FIGURE 3**  
**BOLIVIA: EXPORT VOLUMES FCO SAM**  
*(Tons)*



Source: FCO SAM, 2007.

**FIGURE 4**  
**BOLIVIA: IMPORT VOLUMES FCO SAM**

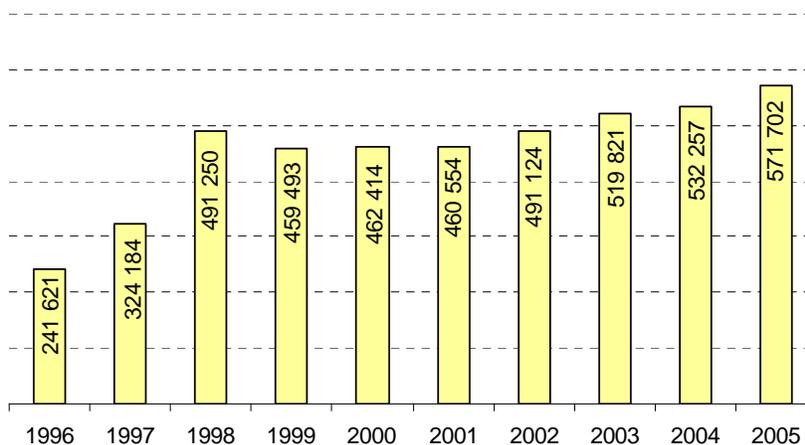
(Tons)



Source: FCO SAM, 2007.

**FIGURE 5**  
**BOLIVIA: PASSENGER TRANSPORT VOLUMES FCO SAM**

(Thousands)



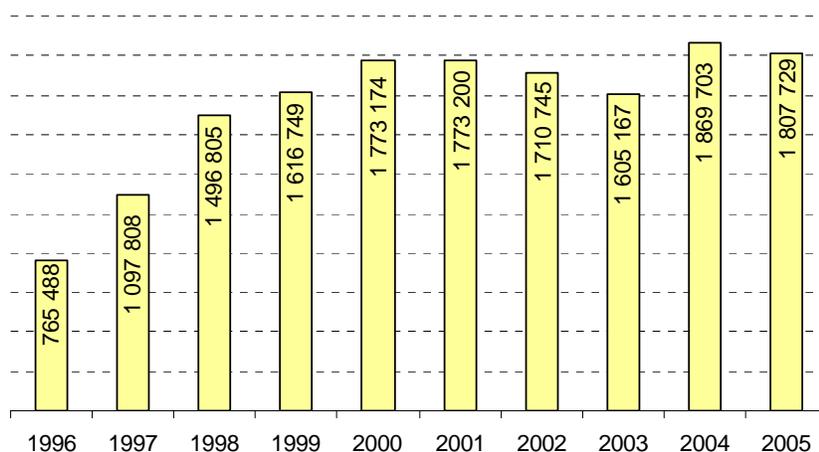
Source: FCO SAM, 2007.

FCO SAM has invested significantly in the improvement of railway infrastructure, but figures show that the investments carried out are not sufficient to keep up with the growth demand since 1999. This is also reflected in the rise of accidents and lost days in operation, which in 2005 have risen above the level of 2002. Interestingly, the level of investments carried out since the start of the concession exceeded the agreed level by 221% at the end of 2005, accumulating to over US\$ 83 million in the period from 1996 to 2005. This shows that the planning and forecasting prior to the concession by the public sector institutions was poor and did not reflect the real needs of improvements in railway infrastructure.

In line with investments FCO SAM was able to increase the productivity of the work force significantly since the start of operations in 1996. An important part of this improvement is related to the restructuring of the work force and the greater emphasis on capacity building and learning exercises.

The western railway section has been facing severe difficulties to maintain its status as a transit corridor towards the pacific ports. Especially, the halt in the operation of the Ferrocarril Arica-La Paz since November 2005 has impeded any development of this link.

**FIGURE 6**  
**BOLIVIA: FCO SAM PRODUCTIVITY TRANSPORT KILOMETRE PER WORKER**  
(Kilometres of transport by worker)



Source: FCO SAM, 2007.

Since then there have been attempts to reactivate the railway connections and the port of Arica (EPA) has been a main driver to move towards new operation of services. In July 2007 it was recognized by the Chilean Ministry of Public Works that it was necessary and feasible to concession the link, but under a different framework, which liberates the concessionaire from the maintenance costs of the track, leaving the tracks to stay in public hands. In November 2006 an agreement was reached between EFE (Empresa Ferrocarril del Estado) and EPA to allow EPA the development of the rehabilitation project of the Arica- La Paz Railway. The project includes the reparation of 206 km of railway tracks between Arica and Visviri on the Bolivian border and the reparation and upgrading of the existing locomotives and wagons. The Chilean public body that oversees the concessions, Sistema de Empresas Públicas (SEP), assigned US\$ 5 million to EPA in order to administer the rehabilitation of the railway link and to be able to perform a number of environmental impact studies, where the railway has been constructed on contaminated grounds.

After the concession-holder went bankrupt, the Government of Chile set out a course of action to enable the refurbishment of the Arica-La Paz railway link. A project has been developed and has an approved environmental impact declaration. It is planned to invite tenders in the second half of 2008 in order to begin work at the end of the year. The project includes the repair of the tracks to allow the passage of trains at an average speed of 40 kmph, as well as the environmental refurbishment of the first 10 km of track from the city of Arica. The investment amount programmed is US\$ 31 million.

One of Bolivia's government's projects is the nationalization of the railway companies, which has created uncertainty among the current operators. The government has tried to keep these rumours at bay, as it might delay important investment activities.

### *Transit transport routes*

The trade routes of import and export, towards the main transfer points are described in table 10.

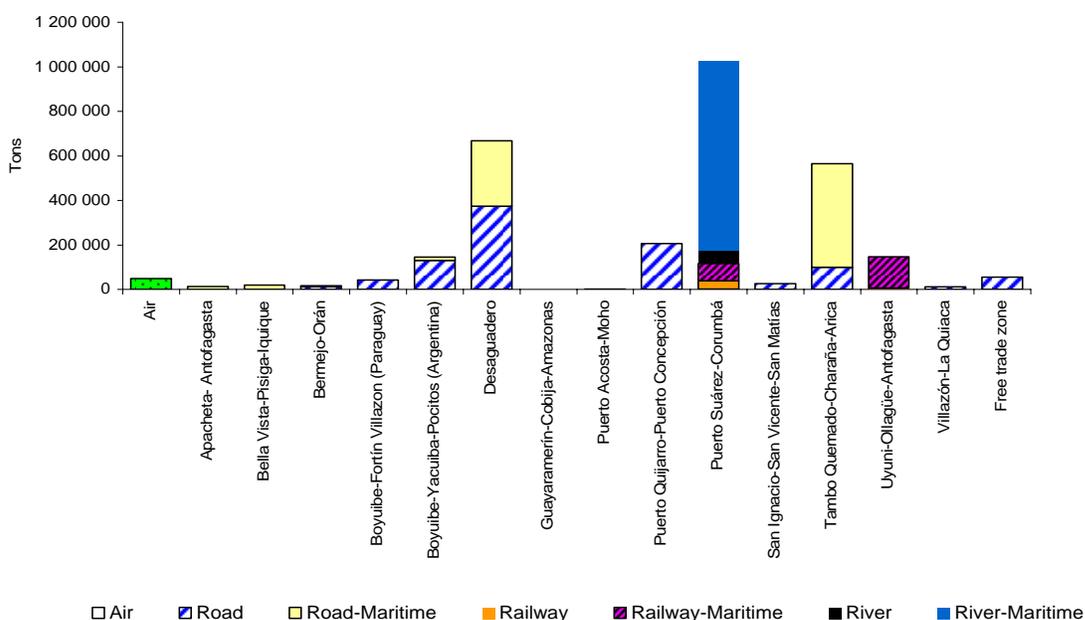
**TABLE 10**  
**BOLIVIA: IMPORT ROUTES AND EXPORT CARGOES BY VOLUME, 2006.**  
*(Kilogrammes)*

	Exports	Import	Total
Desaguadero	374 099 738	267 379.952	641 479 690
Tambo quemado-Charaña-Arica	100 223 417	517 916.749	618 140 166
Boyube-Yacuiba-Pocitos (Arg.)	130 740 578	384 629.126	515 369 704
Puerto Suárez-Corumbá	871 091	334 276.894	335 147 985
Puerto quijarro-Puerto concep.	206 273 411		206 273 411
Villazon-La quiaca	11 521 686	175 830.207	187 351 893
Bella Vista-Pisiga-Iquique	264 062	94 033.568	94 297 630
Bermejo-Orán	11 629 074	48 115.440	59 744 514
Free trade zone	56 296 390	0 000	56 296 390
Uyuni-Ollagüe-Antofagasta	440 130	44 085.735	44 525 865
Boyube-Fortín Villazon (Paraguay)	41 825 825		41 825 825
San Ignacio-San Vicente-San Matías	26 588 062		26 588 062
Guayaramerín-Cobija-Amazonas	288 649	7 815.357	8 104 006
Moho-Puerto Acosta	1 665 000	140 982	1 805 982
Apacheta-Antofagasta	388 000		388 000
Air		91 446	91 446
Yunguyo-Kasani		17 039	17 039
Postal-Correo		0 150	0 150

Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

The analysis of the modal split using the export paths depicts the importance of each path and gives a clear picture in the importance of each transport mode on these paths.

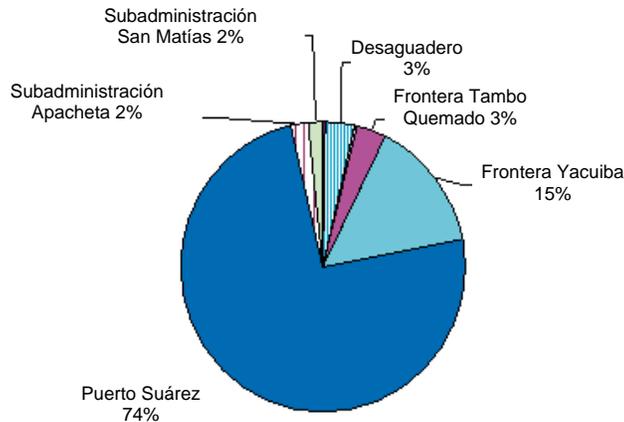
**FIGURE 7**  
**MODAL SPLIT AND EXPORT TRADE PATHS, 2006**



Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

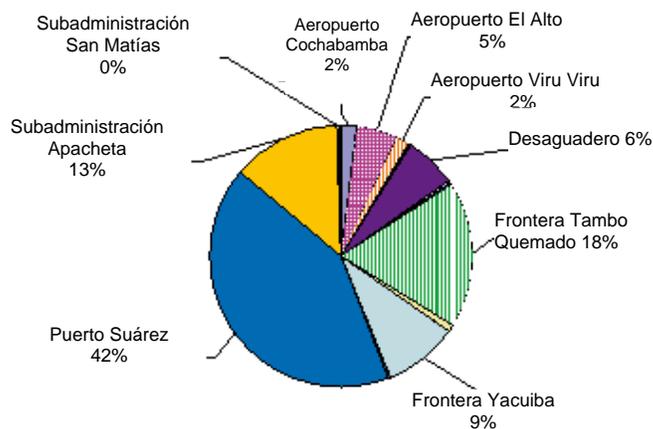
Based on data from INE, Puerto Suarez is the customs station with the greatest volume of transport movements in terms of volume and value of exports. The second most important customs stations in terms of value are Tambo Quemado and Apacheta on the Chilean border and Yacuiba on the Argentine border (see figures 8 and 9).

**FIGURE 8**  
**BOLIVIA: EXPORT CARGO MOVEMENTS THROUGH CUSTOMS STATIONS**  
**BY VOLUME, 2006**  
*(Tons)*



Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

**FIGURE 9**  
**BOLIVIA: EXPORT CARGO MOVEMENTS THROUGH CUSTOMS STATIONS**  
**BY VALUE, 2006**  
*(Dollars)*



Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

### 1.2.2 Border crossings

The well functioning of border crossings is a prerequisite for the efficiency of transport and logistics chains. The operation and functioning of border crossings in Bolivia is not adequate. Besides administrative difficulties (see section on trade facilitation) problems exist at the following border crossings:

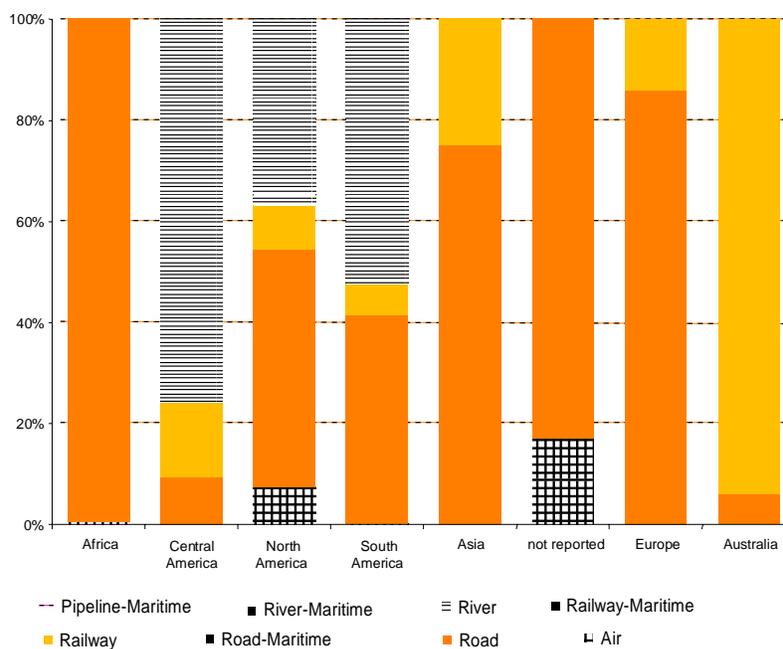
- Capacity limitations: Rivaroa–Villa Montes, Eugenio Garay–Hito Villazon, Puerto Suárez – Ladario, Corumbá, San Matías–Cáceres;
- An integrated border station is being constructed in Desaguadero;
- New facilities allowing for the implementation of integrated controls at Colchane and Pisiga are expected to be completed during the second semester of 2008.

In terms of transit to other countries the delay at the border over weekends, which was already mentioned in the previous Almaty Report, still persists. Until today it has not been possible to harmonize the opening hours at the Bolivia-Brazil border. Thus any cargo arriving after Friday afternoon usually cannot pass the Brazilian customs until the following Monday. This creates delays of up to five days. The issue has been treated at different political levels, but no solution has been found so far. A main factor is the non attendance of customs officials at the Brazilian borders. This behaviour of Brazilian customs officials affects all cross border operations on the Brazil-Bolivia border in Puerto Suárez.

### 1.2.3 Modal Split

Bolivia's modal split in international transport relies heavily on intermodal transport chains. The combination of transport modes in the transport chain varies depending on the destination and the transported goods. An analysis of INE trade data shows that the most used transport mode combination was road and maritime, followed by the combination of rail and maritime transport. Interestingly the combination of river and maritime transport was mainly used for export destined for other countries in South America (see figures below).

**FIGURE 10**  
**MODAL SPLIT IN BOLIVIA: PERCENTAGE OF EXPORTS BASED ON VOLUMES, 2006**  
(Tons)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

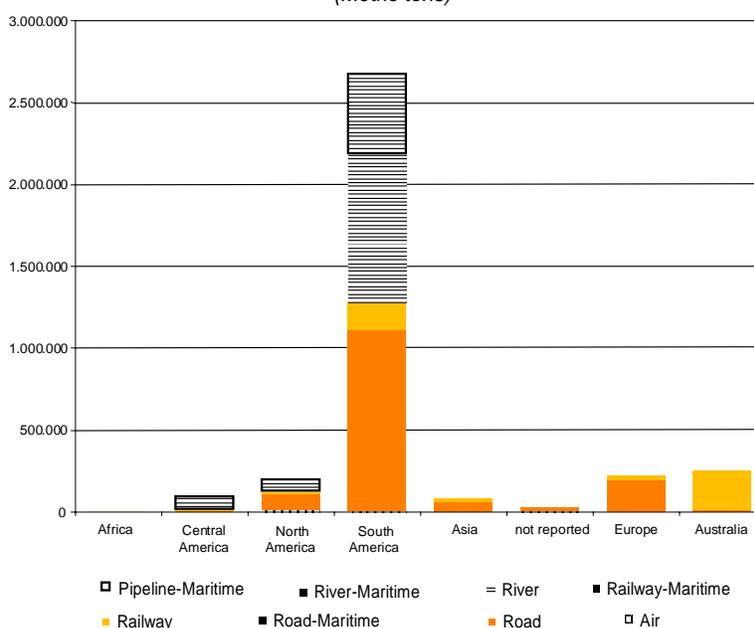
The analysis also shows that the combination of river and maritime transport is the most important one in terms of volume and thus the development of adequate port facilities and the facilitation of river transport flows should be a main objective.

In terms of value the combination of road and maritime transport and rail and maritime transport are of great significance and are highly reliant on transit facilitation. The analysis underlines Bolivia's dependence on efficient transit procedures.

The same analysis on imports does not reveal the combination of transport modes used in the transport chain. Consequently, the figures only depict the last part of the transport chain. In this regard the high dependence on road transport as a prime transport mode becomes clear. This rather unimodal dependence also provides evidence on the need to strengthen the other transport modes (rail and river).

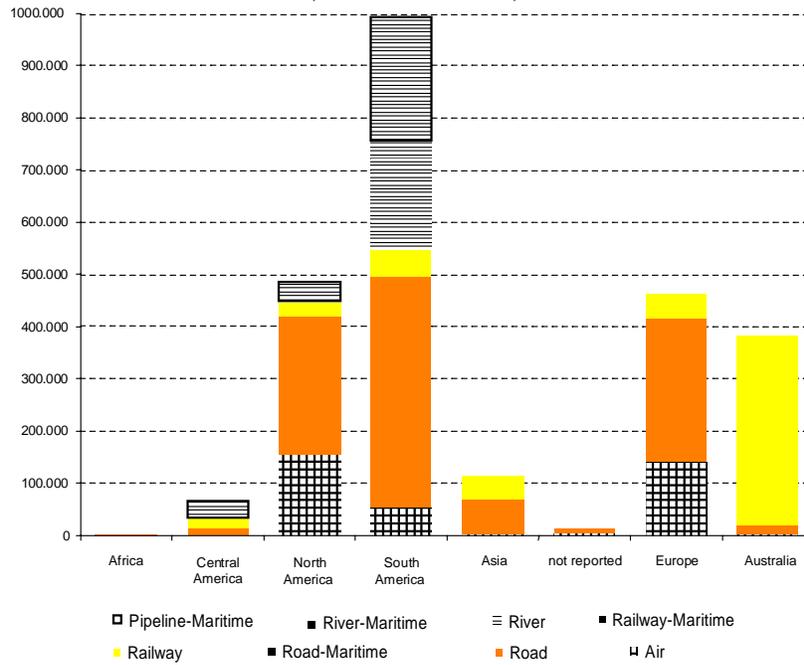
**FIGURE 11**  
**MODAL SPLIT IN BOLIVIA: EXPORTS BY VOLUME, 2006**

(Metric tons)



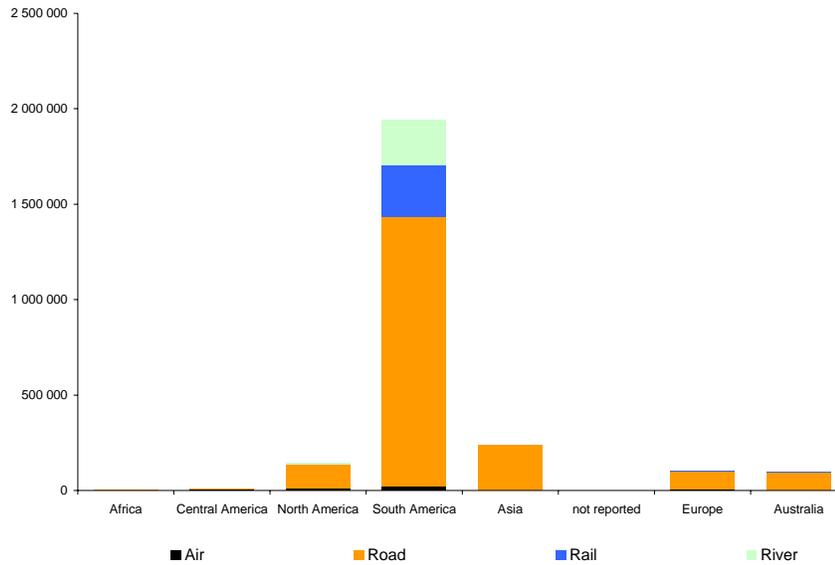
Source: Own elaboration based on INE 2007.

**FIGURE 12**  
**MODAL SPLIT IN BOLIVIA: EXPORTS BY VALUE, 2006**  
*(Thousands of dollars)*



Source: Own elaboration based on INE 2007.

**FIGURE 13**  
**MODAL SPLIT IN BOLIVIA: IMPORTS BY VOLUME, 2006**  
*(Metric tons)*



Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on information provided by the National Statistical Institute (INE), 2007.

### 1.2.4 Logistics Centre

In November 2007 a new law (Ley 3316) was passed to facilitate the development of a logistics centre in Oruro close to the Chilean border in order to facilitate Bolivian imports and exports<sup>6</sup>. The intermediacy of the Oruro Department in the transport corridors to the Pacific ports gives it a strategic geographic position. The logistics centre shall facilitate the consolidation of cargoes, especially smaller shipments. The Bolivian government has estimated that the operations in the logistics centre will generate around US\$ 270 million annually in terms of added values from free trade zone sales. Basically, the idea is to transfer all customs, stuffing and unstuffing, packing and unpacking operations to the Oruro Logistics centre, by creating a direct transfer of the containers from the ship via truck to Oruro, without dwell time and activities in the port of arrival. The idea is to develop Oruro as a multimodal node with direct access to the road, railway and airline network.

## 1.3. Trade facilitation

### 1.3.1 International agreements to facilitate transit to Bolivia

In recent years, the agreements listed below were signed in order to facilitate transit to and from Bolivia:

#### *Bilateral Agreements*

August 2004: General Treaty of Integration and Social Economic Cooperation to create a common market between Bolivia and Peru.

Bolivia is a signatory to a number of General System Preference (GSP) Agreements with the following countries:

United States: the current GSP has been in place since 1976 and continues until the end of 2008. The current Agreement liberates a number of industrial and agricultural products from tariffs.

Europe: Bolivia is currently partner in the Generalized System Preference–PLUS, which is provisioned for the period 2006-2015. This system replaces the earlier instrument “SPD-Droga”, increases the number of included products from 300 to 7,200, establishing also eligibility criteria in respect to international agreements, labour standards and human rights (For Bolivia see Reglamento (CE) 980/2005, 27 June 2005).

Canada: Bolivia is also part of a preferential system with Canada, which grants special tariffs for a number of products. The latest revision was made in 2004.

Japan: the GSP with Japan gives a number of tariff incentives and includes 164 countries. The eligibility depends on a number of criteria. The current system continues until 2011.

#### *Multilateral agreements and initiatives*

The European Union has contributed €133 million based on the EC Country Strategy Paper for 2002-2006. Projects have been funded principally in the improvement of national road infrastructure- Santa Cruz-Puerto Suárez (regional integration); alternative development; economic cooperation/trade-related technical cooperation; and budget support for water and sanitation. The Country Strategy Paper for 2007-2013, which will shortly be adopted by the Commission, proposes an overall of €234 million — the EC’s largest for Latin America— with three priorities: generating economic opportunities; the fight against illicit drug production and trafficking; and integrated management of river basins, which seems highly important with the Mutún Project to explore Bolivia’s iron ore resources on the eastern lowlands.

Bolivia also receives support from the programmes carried out between the EC and the Andean Community of Nations (CAN). In this context, the EC funds various programmes to support greater involvement by civil society in the regional integration process and the construction of an Andean common market by improving sources of statistical information, trade-related technical assistance, harmonisation of regulations and technical standards, competition policy and customs cooperation. Other projects are designed

<sup>6</sup> Bolivian Information Agency (ABI) [online] <http://abi.bo>.

to promote regional cooperation in areas such as disaster prevention and the fight against drugs by means of supporting the Andean observation centre on drug consumption and the control of chemical precursors.

In April 2006 Bolivia signed the “Tratado de Comercio de los Pueblos (TCP)” with Cuba, which removes all tariff and non-tariff barriers to partner countries of the TCP.

This year the Forum for Cooperation between Latin America and East Asia (FOCOLAE) has expressed its intentions to create trade mechanisms that would benefit LLDCs, such as Bolivia and Paraguay. Further developments should be monitored.

### 1.3.2 International support measures-ODA

The World Bank estimates that Bolivia has received over a third less ODA in terms of monetary value in 2005 in comparison to 2003. Japan was the biggest donor and responsible for about 50% of all ODA. A portion of around 3% of ODA is earmarked for economic infrastructure and services.

## 2. Paraguay

### 2.1. Trade performance

Paraguay’s trade shows an increasing negative trade balance. While the value of imports has grown more than threefold between 2002 and 2006, exports have doubled. This development left a trade imbalance of almost US\$ 4 billion in 2006.

**TABLE 11**  
**PARAGUAY: TOTAL TRADE**  
(Millions of dollars)

	1990	1995	1999	2000	2001	2002	2003	2004	2005	2006
Exports	959	919	741	871	990	951	1 242	1 626	1 688	1 906
Imports	1 349	3 136	1 906	2 193	2 182	1 672	2 228	3 097	3 715	5 879
Balance	-398	-2 217	-1 165	-1 322	-1 192	-722	-986	-1 472	-2 827	-3 972

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

#### 2.1.1 Structure of merchandise

Paraguay’s export is dominated by primary products, which accounted for over 70% of all exports in terms of value in 2006. The development of manufactured export (all categories) has been lethargic. Exports in these categories were not able to capture increasing market shares in the last years.

**TABLE 12**  
**PARAGUAY: EXPORTS BY PRODUCT CATEGORY**  
(Millions of dollars)

	1990	1995	2000	2004	2005	2006
Primary products	811	598	580	1 178	1 235	1 350
Manufactured goods (natural resources)	83	193	158	278	257	294
Manufactured goods (low technology)	52	101	115	122	138	183
Manufactured goods (medium technology)	11	19	10	34	39	50
Manufactured goods (high technology)	0	7	7	12	17	29
Other transactions	1	1	1	1	1	1
Total	959	919	871	1 626	1 688	1 906

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007

Soybeans (23.04%) and bovine meat (21.36%) were the main export products in terms of value in 2006; followed by maize and soybean products. The top 10 export products accounted for 76.62% of all export values. The export structure depicts the dominance of products with a low weight/value ratio.

These products are highly susceptible to transport costs, since small variations might affect the competitiveness of products significantly.

The product import structure is composed mainly by manufactured products. Especially products (e.g., fertilizer) and machinery related to agricultural production display a significant importance. In general the structure is more diversified and the top 20 products accounted for almost 46% of all import value.

### 2.1.2 Imports and exports and major trading partners

The regional distribution of destinations of Paraguayan exports displays that LAC is the main destination region for Paraguayan exports, for which exports (value) have almost doubled between 2000 and 2006. At the same time exports to the European Union have been stagnant and exports to the United States and Asia have developed slower growth rates. However, Paraguay was able to increase exports to other world regions and thus diversify its trade relations (see table 13).

**TABLE 13**  
**PARAGUAY: EXPORTS BY REGION OF DESTINATION**  
(Millions of dollars)

	1990	1995	2000	2004	2005	2006
LAC	502	598	649	966	1 046	1 131
United States	41	44	34	53	55	67
European Union	304	178	118	101	103	113
Asia	36	69	36	109	118	73
China	0	0	6	44	70	20
Japan	3	1	3	18	18	25
Other countries	75	31	33	398	365	523
Total	959	919	871	1 626	1 688	1 906

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

Paraguay received the greatest share of its imports from LAC (40.5%) and Asia (41.4%) in 2006. Since the year 2000 Asia has outnumbered LAC and was able to increase its market share from just over 20% to 41.4% in 2006. During the same period the European Union and United States lost market participation, because imports from these regions displayed a significantly lower growth (see table 14).

**TABLE 14**  
**PARAGUAY: IMPORTS BY REGION OF DESTINATION**  
(Millions of dollars)

	1990	1995	2000	2004	2005	2006
Latin America and the Caribbean	469	1 363	1 228	1 675	1 780	2 379
United States	171	392	160	111	208	353
European Union	203	346	260	205	219	323
Asia	408	949	475	956	1 187	2 434
China	0	0	251	486	716	1 475
Japan	208	272	103	330	260	648
Other countries	99	86	70	151	321	390
Total	1 349	3 136	2 193	3 097	3 715	5 879

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

The analysis of the distribution of intraregional trade destinations shows that MERCOSUR countries are the biggest receivers of Paraguayan products (US\$ 917 million). However, in absolute terms, the market share of exports to MERCOSUR has been declining since 2000. Exports to other trade blocks within Latin America do not play a significant role at all (see table 15).

**TABLE 15**  
**PARAGUAY: DISTRIBUTION OF INTRAREGIONAL EXPORTS BY DESTINATION**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
MERCOSUR	379	528	553	865	912	917
Andean Community	15	36	44	60	63	73
CACM	1	1	1	2	1	1
CARICOM	40	1	0	1	0	0
Other Latin American countries	67	32	51	38	70	140
Rest of the world	457	321	222	660	642	775

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

Imports from MERCOSUR countries have almost doubled between 1995 and 2006. However, this development was not sufficient to maintain the overall participation in Paraguayan exports in terms of value, which dropped over 15% between the year 2000 and 2006. Interestingly, the Andean Community was able to increase its market shares to US\$ 182 million in 2006.

**TABLE 16**  
**PARAGUAY: DISTRIBUTION OF INTRAREGIONAL IMPORTS BY ORIGIN**

(Millions of dollars)

	1990	1995	2000	2004	2005	2006
MERCOSUR	404	1 237	1 132	1 584	1 684	1 939
Andean Community	4	11	8	23	30	182
CACM	0	0	0	0	0	1
CARICOM	0	1	30	10	3	0
Other Latin American countries	61	114	58	58	63	257
Rest of the world	880	1 773	965	1 422	1 935	3 500

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007

Uruguay (22.04%), Brazil (17.20%) and the Russian Federation (11.95%) were Paraguay's main destinations for exports in 2006. The top 10 export destination countries accounted for 85.37% of all export values. The dominant roles of Uruguay and Brazil as destination countries underline the importance of trade corridors to these countries, especially in the case of Uruguay, which is connected directly to Paraguay via the Paraguay-Paraná River system. All land transport has to transit Argentina to reach Uruguay, which puts emphasis on the functioning of transit transport chains through Argentina. Most bulk cargoes went to Uruguay by river until 2006, but from 2007 on, large amounts began to be routed to Rosario, Argentina.

**TABLE 17**  
**PARAGUAY: TOP 10 EXPORT DESTINATION COUNTRIES**

*(Thousands of dollars)*

No.	Partner	Export Value
	World	1 906 367
1	Uruguay	420 243
2	Brazil	327 983
3	Russian Federation	227 802
4	Cayman Islands	180 228
5	Argentina	168 499
6	Chile	130 835
7	United States	66 624
8	Netherlands	41 661
9	Switzerland	34 127
10	Bolivia	29 486

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

The geographic distribution of the main trade partners for import and exports underlines the importance of overland transport corridors towards Brazil, Argentina and Uruguay and the well functioning of trade corridors connecting Paraguay and the Atlantic ports.

**TABLE 18**  
**PARAGUAY: TOP 10 COUNTRIES OF ORIGIN FOR IMPORTS**

*(Thousands of dollars)*

No.	Partner	Export Value
	World	5 878 760
1	China	1 474 675
2	Brazil	1 115 204
3	Argentina	761 991
4	Japan	647 571
5	United States	353 404
6	Switzerland	187 917
7	Mexico	178 918
8	Venezuela (Bol. Rep. of)	149 112
9	Germany	138 855
10	Cayman Islands	96 167

Source: ECLAC, International Trade and Integration Division, based on COMTRADE, 2007.

Most Paraguayan imports originated from China in 2006 (25.08%). Brazil (18.97%) and Argentina (12.96%) were the next important origins.

The analysis of trade data in terms of value gives good insight to the importance of each trade partner. However, it does not directly allow analysing the demand for transport infrastructure and transport services since these are highly correlated to the volume of the transported cargoes. These issues will be discussed in the section regarding modal split in international transport.

## 2.2 Description of transit transport infrastructure assets and bottlenecks

### 2.2.1 Infrastructure assets

#### *General setting*

Paraguay's territory includes an area of 406,750 km<sup>2</sup>. The overall border length is 3,920 km, of which 1,880 km are shared with Argentina in the south and west, 1,290 km with Brazil in the North and East, and 750 km with Bolivia in the northwest.

The north-western boundary with Bolivia, extending through the low hills of the Chaco region, was set in 1938. The boundary between the Chaco and Brazil was defined in 1927; it continues from the confluence of the Río Apa and Río Paraguay northward along the course of the Río Paraguay to the border with Bolivia. The northern border of the Paraneña region, set in 1872, follows the course of the Río Paraná, the ridges of the mountains in the northeast region, and finally the course of the Río Apa until it empties into the Río Paraguay. Paraguay's southern border with Argentina is formed by the Río Pilcomayo, Río Paraguay, and Río Paraná. These boundaries were agreed to in 1876.

#### *Road Infrastructure*

The road infrastructure coverage in Paraguay in terms of km of road per km<sup>2</sup> is low. In 2006 only 12% of the overall network was paved roads. The situation is especially critical in and close to the main agglomerations, e.g. Asunción, Ciudad del Este, etc.

The lack of road infrastructure is becoming severe as the national budget dedicated to the maintenance of road infrastructure does not cover for the needed repairs. With the help of the regional development banks Paraguay has made some significant progress in the paving of trunk roads connecting main production areas within in country.

Current road tolls do not generate sufficient revenues to create a significant contribution for maintaining road infrastructure. On the currently existing toll roads, tolls are just applied in one direction. Currently only 300 km of roads are toll roads. It has been proposed to strengthen PPPs in the road sector and concession new road infrastructure projects. However, any further concessioning and/or increase in tolls should be sensitive to the economic situation within the country to not create new barriers for lower income groups or SMEs.

Since the problem has been widely recognized new forms of infrastructure maintenance are being tried in pilot projects. The principal idea to give the responsibility of local roads to the communities, which provide the work force and can borrow the required machinery from the national government body.

The main road transport corridors in Paraguay are:

- Asunción–Ciudad del Este (Route 02 and 07)
- Ciudad del Este–Encarnación (Route 07 and 06)
- Encarnación–Pilar (Route 01 and 04)
- Asunción–Pilar (Route 01 and 04)
- Asunción–Encarnación (Route 01)
- Asunción–San Estanislao–Concepción–Pedro Juan Caballero (Route 03 and 05)
- Asunción–Mariscal Estigarribia–General Eugenio A. Garay (Route 09)

In 2005 the IDB gave Paraguay a US\$ 134 million loan to pave the main national and international transit corridors. The main links included in this project are Route 08 (Coronel Oviedo and Coronel Bogado with Encarnación on the Argentine border) and Route 10 (which connects Puerto Rosario and Salto de Guairá with the Brazilian border).

The secondary road network in Paraguay is rudimentary and obstructs the transport of commodities, causing significant delays and damage to products especially under extreme weather conditions. The not adequately developed road network also increases the wear and tear on equipment, which implies comparably higher maintenance costs.

Road transport from Paraguay to Brazil destined for the Brazilian port of Paranaguá has to overcome significant barriers:

- The lack of road infrastructure at the Paraguay-Brazil border crossing at Presidente Franco–Puerto Meira (see IIRSA section for details).
- Restrictions imposed on certain products e.g. in 2004 the government of the Brazilian state of Paraná imposed a transit stop for Paraguayan transgenic soybeans, which had a significant impact on Paraguayan soybean exports.

### *Waterborne transport*

Paraguay today has 31 ports and terminals along the Paraguay River<sup>7</sup> and 51 on the Paraná River<sup>8</sup>. Asunción, Petropar/Villa Elisa, San Antonio/Villeta y Concepción in the Paraguay River and Encarnación, Paloma/Triunfo, Tres Fronteras and Don Joaquín/Paredón along the Paraná River are accountable for most of the port traffic. Most of the national cabotage traffic is moved in the public ports. The total traffic in the period 2002-04 was 3.2, 4.4 and 5.9 million tons respectively of the all traffic, the private ports moved (without PAKSA) moved 1.8 (2002) and 2.9 (2003) million tons.

Paraguay's endeavour to solve the historic shortage of port infrastructure by granting rights to the development of private terminals along its rivers, has resulted in the appearance of about 20 private terminals, sanctioned by the private ports legislation of 2001.

Paraguay has tried to attract the private sector to invest in ports under the “Administración Nacional de Navegación y Puertos (ANNP<sup>9</sup>)”, but no progress has been made in this direction to date.

The current jurisdiction and legislative framework has given incentives to the development of private terminals, but has not contributed at all in setting up a structure that generates revenues from port users and the shipping sector which could be used as a contribution to the maintenance of the rivers (dredging, etc.). Further, terminal development has been spatially dispersed especially in the regions around Asunción. This generates inefficiencies in loading and discharging operations since ship operators quite often have to call at different terminals to load and discharge cargoes. On one hand the appearance of new terminals has created a certain level of competition between the terminals, but on the other the lack of a concise development plan has led to uncontrolled traffic flows in relation to the landside access to the terminals and to confuse traffic patterns in river transport. This leads to excessive turnaround times, increased waiting and increased transport and logistics costs.

Latest figures estimate private terminals transfer 85% of all containerized trade. The low water levels during October 2007 have brought new discussions on the development of an alternative port, which allows cargo handling throughout the year and provides sufficient draft during dry periods. ANNP favours the development of the port of Pilar, which they claim has the possibility to provide storage for 2000 to 3000 containers. However, the port does not have the necessary infra- and superstructures, which would have to be developed in competition with the private terminals. Furthermore, one of the main advantages of the private terminals is their higher level of security and currently ANNP is not able to assure a comparative level of security in its ports.

Paraguay has the biggest fleet of all the countries along the Paraguay-Paraná river system. In 2007 the fleet was composed of bulk barges operated in convoys with pusher tugs and a lesser number of container barges. Eighty per cent of the existing barges in the river fleet are very elderly and will soon complete their lifecycles and have to be replaced. At this point in time the Paraguayan steel and

<sup>7</sup> Of which most are very small ports with only local or intraregional freight movements.

<sup>8</sup> Of which most are very small ports with only local or intraregional freight movements.

<sup>9</sup> National Administration for Navigation and Ports.

shipbuilding industry does not have sufficient capacity to satisfy this predictable demand. Paraguay mainly moves soybeans and soybean flour, crude oils, wood, sugar and other semi elaborated products.

Paraguay uses the ports of Montevideo and Nuevo Palmira (Uruguay), Buenos Aires (Argentina), and Santos (Brazil), as its main export ports. Recent activities have also focused on the development of Iquique (Chile). The Chilean port is the main port for imports, after the port of Santos. The main cargo is Asian import products (electronic equipment etc.). Due to the fact that these products are non perishable and are of a relatively high value they have a high affinity to road transport for their movement to Paraguay. Trucking operations have to cope with significant trade imbalances on these routes.

The potential of river transport is not exploited at this point in time. Multimodal transport is completely absent for long distances. A recent study from Wilmsmeier (2008) analyses the potential of multimodal transport, specifically RoRo transport in the Asunción- Montevideo corridor. He comes to the conclusion that RoRo transport can offer a competitive alternative, because it would help the road transport industry to circumvent the current inefficiencies and waiting times at border crossings. However, he also states that the implementation of such a service requires a modern approach to transport, which is focused on cooperation rather than competition between transport modes<sup>10</sup>.

### *Railway*

Paraguay's historic railway infrastructure is out of use except for two exceptions. (a) a tourist train that operates with a steam engine every Sunday on a length of ca. 30 km, its starting point at the botanical garden of Asunción; (b) regular freight railway operations are performed on the few kilometres between the station at Encarnación and the border with Argentina connecting with the General Urquiza railway. The connection allows access to the whole Argentine railway network. Today it is mainly used to transport soybeans to the ports of Argentina.

The government basically disposes of no railway orientated policies. Intentions to develop a railway network which has not received any state investment for over 45 years cannot be observed. A main impediment to the development is the relatively high initial investment, especially for a country that currently has difficulties maintaining its basic road network.

### *Air transport*

Paraguay's air transport system presents a number of problems and future challenges. While the general distribution of airports and airfields seems adequate for current needs, greater challenges are induced by the absence of a national airline and the recent withdrawal of American Airlines from the Paraguayan air freight market. Further, the current infrastructure in the main airport in Asunción does not have any significant storage buildings for cold storing or temperature controlled storage. Neither is the general cargo space sufficient.

While traditional carriers have been moving away from Paraguay there seems to be some interest from other carriers (DHL, Air France etc.) that have recognized the central position of Asunción on the South American continent. These carriers have also stated that there needs to be an important demand growth to make operations viable, which would include the need to capture market shares from neighbouring countries such as Brazil.

Currently, only TAME MERCOSUR provides the possibility of air freight transport as part of the regular passenger traffic services.

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<sup>10</sup> For details see: Wilmsmeier, G. (2008): Evaluación del potencial para el desarrollo de servicios multimodales en el corredor de transporte Asunción-Montevideo. Working Paper UNCTAD/CEPAL.

### *Energy*

Paraguay has emphasized the development of hydroelectric power generation.

In 2006 Paraguay signed an ODA Loan Agreement with Japan in support of IIRSA —Assisting Hydroelectric Power Generation with the Prospect of Acquiring CERs— totalling 21.402 billion yen for the Iguazú Hydropower Station Construction Project (output: 200 MW), which utilizes the existing Iguazú Reservoir (surface area: 620km<sup>2</sup>) as well as a sub station and distribution facilities to provide linkage between the power station and the power grid, thereby contributing to the stable supply of power in Paraguay. The loan will finance the construction of the hydroelectric power station, the installation of a distribution line, and the procurement of consulting services.

While the peak power demand in the country is 1,241MW (2004), Paraguay's own installed capacity hovers as low as 216MW. Paraguay thus has to purchase power from the Itaipú Hydropower Station (12,600MW), which the country developed jointly with Brazil, in order to meet over 80% of its power demand. Buying power could become relatively expensive when covering peak demand, since the power supply is contracted on a power output volume basis with the Itaipú Hydropower Station. In addition, the buying cost is exposed to high exchange risk as the contract denominated in the United States dollar. The government of Paraguay is planning to meet peak demand by constructing its own domestic power station along with the related equipment, thereby reducing outlay for power buying and stabilizing the power supply.

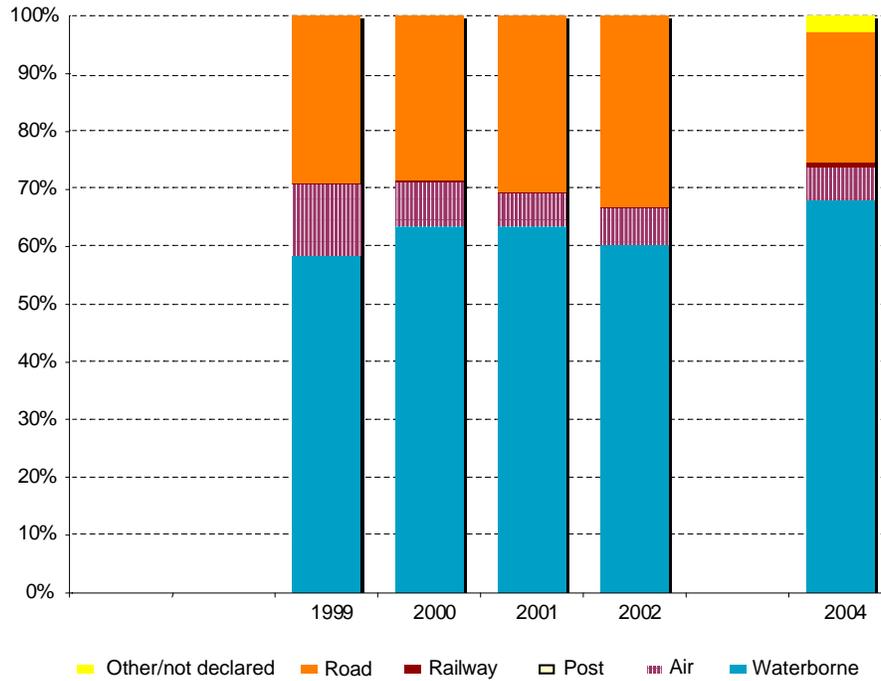
### *Modal split*

The modal split in national and international transport is an important part of the trade and transport profiles of a country. It also allows depicting the interdependencies between the use of transport modes, the physical infrastructure and the existing transport services offer.

The figures below illustrate the development of the modal split for Paraguayan imports. It can be observed that waterborne transport plays a dominant role for Paraguay's trade in terms of volume and value of products. Road transport is the second most important transport mode, while the movement of imports by railway are rather insignificant, which also reflects the lack in rail network development in Paraguay and the rudimentary connections towards its neighbour countries. Railway transport to Brazil faces the additional burden that the countries use different gauges, which requires transshipment at the border and not only the change of the locomotive, as in the connection to Argentina.

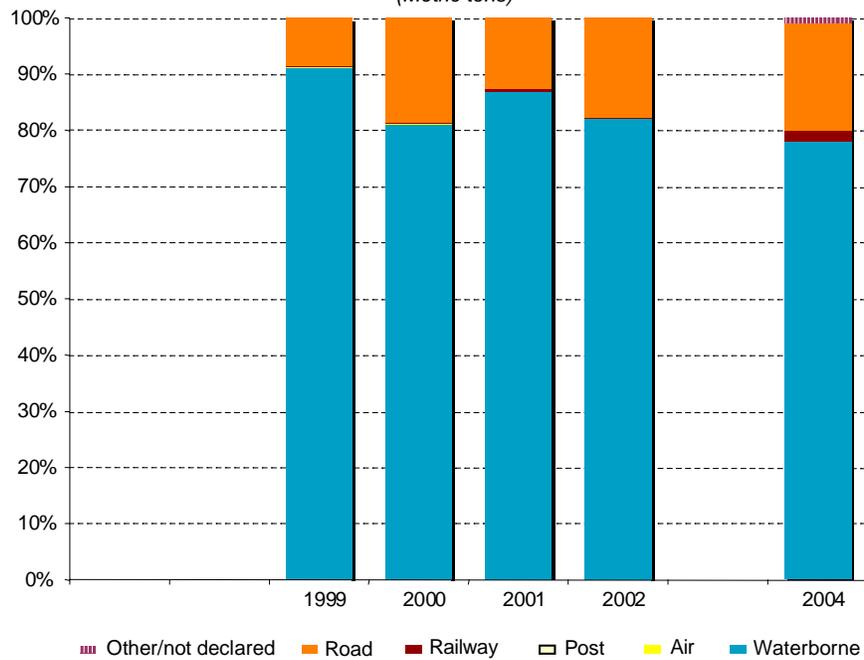
Since 2004 Paraguay has had a free warehouse at the port of Antofagasta, as provided in the agreement signed in Asunción by representatives of Paraguay and Chile on 19 August 1968. The connection between Antofagasta and Paraguay is by paved road passing through Argentine territory (the Jama Pass).

**FIGURE 14**  
**MODAL SPLIT IN PARAGUAY: IMPORTS BY FOB VALUE, 1997–2004**



Source: Own elaboration BTI various years.

**FIGURE 15**  
**MODAL SPLIT IN PARAGUAY: IMPORTS BY VOLUME, 1997–2004**  
*(Metric tons)*



Source: Own elaboration BTI various years.

### *Border crossings*

The well functioning of border crossings is a prerequisite for the efficiency of transport and logistic chains. The operation and functioning of border crossings in Paraguay is not adequate. Besides administrative difficulties (see section on trade facilitation) problems exist at the following border crossings:

- Capacity limitations: Rivarova–Villa Montes, Eugenio Garay–Hito Villazon;
- Severe congestion: Ciudad del Este–Foz do Iguazú.

## **2.3. Trade facilitation**

### **2.3.1 International Agreements to facilitate transit to Paraguay**

#### *Bilateral Agreements*

Paraguay and Brazil established a monitoring commission for bilateral trade between the two countries. In September 2007 it was agreed to reduce the level of taxes, which Brazil charges Paraguayan road transport operators. The agreement reduces the payable taxes to 40% of the charged freight rate on a gradual scale with a minimum charge of 1 300 reales. This reduces the de facto tariff from 25% to between 3% to 5% of the overall freight rate. One of the main objectives is to increase the Paraguayan participation in production chains, in the metal and automobile sectors. The parties estimated that this agreement could increase Paraguayan exports in to Brazil in these sectors up to 35%.

#### *Multilateral Agreements and initiatives*

At present, European Union-Paraguay relations are based on the 1991 Framework Co-operation Agreement and on the 1995 European Union-MERCOSUR Framework Agreement on Co-operation.

In April 2007 the European Union has recently adopted its new Country Strategy Paper EC-Paraguay (CSP), which provides a multi-year strategy for 2007-2013 with an indicative allocation for assistance of €117 million. The priority sectors agreed by the EC and the Paraguayan government are: education and economic integration (national, sub regional —MERCOSUR—, bioregional —MERCOSUR /European Union—, and international within the WTO).

The Sixth European Community-Paraguay Joint Committee was held in Asunción on 10th November 2005. The meeting covered the whole spectrum of bilateral relations. In this context the parties discussed issues of mutual interest as well as trade aspects of the bilateral relationship.

### **2.3.2 International support measures - ODA**

The World Bank estimates Paraguay received about US\$ 51 million in ODA in 2005. This is less than 10% of the ODA volumes received by Bolivia. Japan was the greatest donor of ODA. About 2% of all ODA was directed to economic infrastructure and services.



## **II. Regional, initiatives current issues and challenges ahead**

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This chapter describes the different initiatives in place in the Region (including Bolivia and Paraguay) regarding institutional arrangements and regulations related to infrastructure projects, trade facilitation and challenges.

### **1. South common market (MERCOSUR)**

The Southern Common Market (MERCOSUR) was created in Asunción in 1991 and came into effect on 29 November that year. The Ouro Preto Protocol of December 1994 established 1 January 1995 as the deadline for implementing a common external tariff (AEC). In December 1996, Bolivia and Chile jointly signed an associate member agreement with the MERCOSUR countries. The Bolivarian Republic of Venezuela is to join the MERCOSUR in 2008.

#### **1.1 Important decisions and decrees in relation to the development of Paraguay and Bolivia**

Within the last two years the following important decisions have been passed at MERCOSUR level, which aim at creating a level playing field in production chains and to reduce asymmetries between the countries.

The creation of the MERCOSUR Structural Convergency Fund (Fondo para Convergencia Estructural del MERCOSUR) (FOCEM) in

July 2006 was an important step to create a direct funding for projects that contribute towards the reduction of existing asymmetries in infrastructure amongst MERCOSUR member countries. The main aims of this fund are: structural and social cohesion, especially of smaller member states and less developed regions, support of the institutional structures and strengthening the integration process (MERCOSUR/CMC/DEC. N° 17/06). The list of pilot projects represents the stated overall aims to promote the development of smaller member states. A significant number of pilot projects are located in Paraguay. This fund is only accessible to member countries and not the associated countries like Bolivia.

The first FOCEM budget was approved on 15 December 2006 and has a volume of US\$ 114.5 million of which over US\$ 57 million are destined for projects in Paraguay, while contributing US\$ 1.25 million to setting up the fund.

The following projects in relation to the development and strengthening of transit systems have been approved as part of FOCEM:

- “Rehabilitation and improvement of Greater Asunción access and circumvention motorways”, Paraguay, with a value of US\$ 14.86 million.
- “Integral support programme for micro-enterprises”, Paraguay, with a value of US\$ 5 million.
- “Institutional Strengthening of the MERCOSUR Secretariat for the Common External Tariff Information System”, MERCOSUR Secretariat, with a value of US\$ 50 million (MERCOSUR/CMC/DEC N° 08/07).

FOCEM, disposes an annual budget of around US\$ 100 million. Unused funds will be available in the successive years for eligible projects.

In July 2007 MERCOSUR decided to create a high level working group which is currently elaborating a strategic plan to overcome the existing asymmetries within the MERCOSUR, presenting short, medium and long term objectives.

The strategic plan shall be based on a number of pillars, which all directly relate to improving the competitive position of landlocked and small economies: Especially, pillar I aims at the development and integration of the landlocked countries in MERCOSUR and focuses on the improvement of infrastructure; facilitation, expansion and diversification of exports in regional and extra regional trade and to neutralize the adverse effects of being landlocked. (For details see MERCOSUR/CMC/DEC N° 33/07 in the Appendix).

In relation to production chains it was agreed that all MERCOSUR members and associates mutually accept the processes of environmental and related certification processes. (MERCOSUR/CMC/DEC N° 14/06, see Appendix).

Currently MERCOSUR also focuses on the reform of the common external tariff to adequate the tariff system and to reduce asymmetries.

## 1.2 Future challenges

While the need to work towards structural, political and social cohesion has been recognized and first steps have been taken there is a need to drive integration, especially in the field of transport services liberalization. Currently transport services in all transport modes are significantly restricted due to the existing cabotage laws, which reserve national transport to national transport enterprises only. The cabotage laws impede efficient operation within the region in such manner that for example a Paraguayan river barge cannot carry any cargo between Argentine ports. This results in a number of empty movements, due to the imbalances in trade flows. A higher use of the loading capacities would also contribute to the reduction of transport costs (Cabotage is also mentioned in the example of induced costs in Paraguayan logistics chains). The position of the countries especially in relation to the liberalization of waterborne transport service is very conservative and for example, the benefits which can be seen in the European Union, are not perceived or ignored.

Recently MERCOSUR has started to perceive the IIRSA Initiative as an important contributor towards development in the region and talks between the two are just at a starting point.

## 2. Andean Community (CAN)

The Andean Community (CAN) was created in 1993 with the participation of Colombia, Bolivarian Republic of Venezuela, Bolivia, Peru and Ecuador. However, in 2005 Bolivarian Republic of Venezuela decided to leave CAN.

A main objective of CAN has been the integration through trade liberalization and a common external tariff. Trade liberalization was reached in 1993 and the customs union followed in 1995 (even so it was imperfect at that point in time) together with common trade norms. The customs union established a common external tariff for imports from third countries outside CAN. However it is still perceived as imperfect due to the existing special treatment of certain countries and specific products. The development of global trade has required a continuous process towards the improvement of the free trade zones and the adoption of a common external tariff in order to advance further in the integration process.

A main objective of the current programme for the deepening of commercial integration is developing the free trade zone towards a common market. In 2005 the following main activities were decided on in order to further facilitate the interchange of goods and services: customs union, strengthening of the jurisdictional and institutional framework, joint plan for investment and production development, with special programmes supporting Bolivia.

The following regulations and decisions contribute to the free circulation of goods and services within CAN and contribute to facilitation of Bolivia's trade:

- Decision No. 398 (passengers) and No. 399 (freight) establish the norms and responsibilities in international road transport.
- Decision No.288 eliminated the cargo reservation in waterborne transport within the Andean Community and allowed for a significant reduction of freight rates and a greater transport supply in waterborne freight transport.
- The member countries also grant significant liberties in the supply of regular and non-scheduled international air transport services (decision No.582) for passenger, freight and post.
- The Andean Community has also established common norms to regulated multimodal transport between the member countries (Decision No.331 and No.393). These decisions give the jurisdictional framework to strengthen and stimulate the supply and development of multimodal transport services.

The development of border spaces and border crossings is seen as essential in the strengthening and consolidation of the integration processes between the CAN member countries.

- The common political guidelines for integration and frontier development were approved in May 1999 (Decision No.459).
- In 2001 CAN facilitated the establishment, functioning, objectives and related norms, denominated "Zonas de Integración Fronterizo (ZIF)" (Decision No.501 and No.502). The ZIF allow for integrated controls in Bi-national frontier service centres (Centros Binacionales de Atención en Frontera, CEBAF). The development of CEBAF between CAN member countries is also integrated in the IIRSA projects. Latest developments include the presentation of 50 border development projects in 2007. Bolivia will benefit significantly through the realisation of these projects since they aim to reduce border crossing times and border installations. This will contribute to an easier access especially to Peruvian ports for Bolivia.

### 3. Latin American Integration Association (LAIA)

In February 1960, seven Latin American countries signed the Uruguay treaty pledging for greater economic co-operation and the facilitation of trade between these countries. After Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay signed the treaty the Latin American Free Trade Association (LAFTA) came into existence in 1961. The LAFTA was the succession of the individual attempts of the countries for import substitution. In the beginning one of the main ideas of the LAFTA was to foster the establishment of new industries, which could not be set up by one nation alone at that point in time.

The before mentioned ten countries covered by this study plus Mexico, founded the Latin American Integration Association (LAIA/ALADI) in 1980 by signing the Treaty of Montevideo, as the successor of LAFTA. ALADI oversees any bilateral trade agreements between these countries. The organization helps the creation of preferred market area in the region, with the objective to finally create a common market in Latin America. To reach these goals three mechanisms are implied:

- A preferential tariff system for products originating in the region;
- Regional pacts and policies for all member States;
- Pacts between certain member States.

The actions taken from the Association in transport matters are based on numerous Resolutions from the Ministers Council and the Representative Committee. In general the treaty of Montevideo has served as the framework to subscribe the agreements in transport issues<sup>11</sup>.

Within the framework of the Treaty of Montevideo specific agreements for airborne transport are not included. Nevertheless there exist references of declarative character or at programmatic level in several agreements of economic complementarity, which the Association tries to use to further harmonize air transport.

In relation to shallow draft water transport, ALADI examined the compatibility of the national legislations, to define a common standard for the functioning of this type of transport—especially in connection with the project of the Hidrovía Paraguay Paraná. In 1992 the countries of the Plata river basin<sup>12</sup>, signed the Agreement on River transport in the Hidrovía Paraná<sup>13</sup>. Currently, the Association is trying to promote integration by giving seminars on the importance of the river transport system and trade in the region.

As in air transport, specific agreements for maritime transport in the framework of the Treaty of Montevideo do not exist. But hardly two years after the birth of the old ALALC, the member countries created a Group of Experts in waterborne transport, which set up a first draft of an Agreement on Regional Maritime Transport, which was approved in 1966. This innovatory Agreement was never set in action. In 1989 and then in 1992 the ALADI organized two meetings of governmental experts in maritime transport, with the purpose to update the old agreement to the new regional and international realities of the sector. Currently, the Association continues the elaboration of studies to support works on this matter; with the goal to develop a framework from the sub-regional schemes and forums of integration, to reach an ampler concept than that of physical Integration<sup>14</sup>.

<sup>11</sup> See LAIA [online] <http://www.aladi.org/nsfaladi/transporte.nsf>.

<sup>12</sup> Argentina, Brazil, Paraguay and Uruguay.

<sup>13</sup> ALADI/AAP/A14TM/5 of the 26/6/92. Agreement of Fluvial Transport by the Hidrovía Paraguay-Parana (Port of Ca'ceres-Port of New Palmira), its Additional Protocols and 11 Regulations (Agreement of Santa Cruz of the Mountain range), subscribed by the countries members of the River basin of the Silver (countries members of the MERCOSUR and Bolivia).

<sup>14</sup> For further details on current cabotage regulation and the discussion see: Hoffmann, J. (2000): Transporte Marítimo y Cabotaje en América Latina y el Caribe, el caso de Chile, ECLAC, Serie DRNI 32, Santiago; de Chile, September; Sanchez, R.; Aronín, M (2002): Obstáculos a los servicios de transporte marítimo e intermodal en la región y medidas para mejorar su prestación, Estudio 151, ALADI; Sgut, M.; Marconini, M. And Petri, E. (2002): Estudio del Cabotaje en Sudamerica . IADB, Washington D.C.; and Mattos, J.; Acosta, M. (2002): Maritime Transport Liberalization and the Challenges to Further its Implementation in Chile, Annual IAME Congress, Panama 2002.

For years, the ALADI published diverse studies on road transport that have served as the basis for the adoption of agreements and to impel the convergence of the norms on this effective way of transport in South America. In this way the so called Agreement on international surface transport was passed (ATIT-Acuuerdo sobre Transporte Internacional Terrestre (AAP.A14TM.N°3) In 1991<sup>15</sup>. ATIT regulates the road and railway operations in the geographic area of: Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay and was intended to facilitate the free circulation in road and rail transport.

The Association carried out diverse studies of physical transport infrastructure with the purpose of identifying the main intraregional runners of transport and improving its physical infrastructure and operative efficiency. These works have served to support the Countries Members to define the high-priority infrastructure projects for regional integration and to implement the measures necessary to eliminate the ties that prevent the fluidity of the commerce and the transport in the region<sup>16</sup>.

In 2003 the Latin American Logistics Association was created within ALADI (Asociación Latinoamericana de Logística (ALL). The group works with the following objectives:

- To promote knowledge exchange between the associated entities;
- To analyse specific logistics topics;
- To spread knowledge in logistics by promoting round tables, seminars and publication of studies;
- To deliver teaching and capacity building in the related logistics fields;
- To support the process of creating logistics associations in Latin American countries who do not dispose of such institutions.

## 4. Regional Infrastructure Integration in South America (IIRSA)

### 4.1. The Initiative: an overview

The IIRSA Initiative was created with the main objective to strengthen the transport, energy and communications infrastructure development in South America. The initiative is driven by the vision that the physical integration of South America will contribute to a more level and sustainable development.

In order to create the possibilities of a more level development IIRSA also focuses on reduction of internal trade barriers, infrastructural bottlenecks and regulatory systems and operation which hamper the productive industries at a regional level, which shall be flanked by the development of the “open regionalism<sup>17</sup>”.

IIRSA comprises the 12 South American countries and provides coordination and interchange mechanisms between the governments at a very high level. Three regional multilateral financial bodies—the Inter-American Development Bank (IDB), Andean Development Corporation (CAF) and FONPLATA (Fondo financiero para el desarrollo del Plata)—are main contributors to the development of initiatives and the related financing instruments for the planned projects.

<sup>15</sup> ALADI/AAP/A14TM/3 of the 1/1/90. Agreement on International Terrestrial Transport of the Countries of Cono Sur (ATIT) and its Protocol AAP/A14TM/3.1 on Infractions and Sanctions, subscribed by the countries members of the MERCOSUR, Bolivia, Chile and Peru. ALADI/AAP/A14TM/8 of the 29/9/92. Agreement on Basic unified Regulation of Transit, subscribed by the countries members of the MERCOSUR, Bolivia, Chile and Peru. ALADI/AAP/A14TM/10 of the 16/8/95. Agreement on the Contract of Transport and the Civil Responsibility of the Carrier in the Transport the International of Merchandise by Road (CRT), subscribed by Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay. ALADI/AAP/A14TM/15 of the 31/5/01. Agreement of Partial Reach N° 15, to the shelter of Article 14 of the Treaty of Montevideo 1980, celebrated between the Federal Republic of Brazil and the Republic of Venezuela, The International by Highway of Passengers and Load. Transport by Pipes.

<sup>16</sup> ALADI/AAP.CE/27 of the 15/7/94. Fourth Additional Protocol of the 4/7/95 on Border Cooperation in the matter of Commerce, Facilitation of Customs Procedures and Improvement of the Networks of Transport. Subscribed by Brazil and Venezuela. ALADI/AAP.CE/35 of the 30/9/96. Protocol on Physical Integration. Subscribed by the countries members of the MERCOSUR and Chile. ALADI/AAP.CE/36 of the 17/12/96. Protocol on Physical Integration. Subscribed by the countries members of the MERCOSUR and Bolivia.

<sup>17</sup> Fuente: www.iirsa.org.

In concordance with the regional economic geographic vision, South America's trade flows are and will concentrate along certain corridors. One principal goal is to establish a common minimum standard in terms of infrastructure quality to finally support the productive sectors in each of the twelve defined axis or, as recently denominated, hubs.

The basic objectives in IIRSA are to strengthen and integrate the following areas, since they are significant drivers of economic development:

- Increase the added value in the productive sectors;
- Information Technologies;
- Convergence of norms and regulations;
- Coordination between the public and private sector.

The current transformations in the productive sectors have created a greater demand for basic organization and strategic cooperation and stakeholders are in search to improve efficiency, quality, flexibility and speed of the activities to maintain competitiveness in the regional and global markets<sup>18</sup>. The “Implementation Agenda based on Consensus 2005-2010” comprises a first set of 31 integration projects agreed upon by the countries on the basis of the results achieved during the territorial planning phase of the IIRSA Project Portfolio. Due to their characteristics, they have a high impact on South American physical integration (mostly “anchor projects” and related ones). This Agenda of 31 strategic projects was approved by the IIRSA Executive Steering Committee in November 2004 and submitted to the South American Presidents at the Cusco Summit, in December 2004. The total provisioned investment is US\$ 6 921 billion. US\$ 1 714 billion are projected for projects that have a direct impact on the development of the transport system development in the LLDCs<sup>19</sup>.

**TABLE 19**  
**PROJECTS OF THE IMPLEMENTATION AGENDA BASED ON CONSENSUS 2005-2010**

No.	Projects	Hub	Millions of dollars	Countries
7	Northeast Argentina Gas Pipeline	MERCOSUR-Chile	1 000.00	AR (BO)
8	Building of the Salvador Mazza-Yacuiba Binational Bridge	Capricorn	10.00	AR-BO
9	Presidente Franco-Porto Meira New Bridge and Border Center	Capricorn	55.00	PY-BR
10	Building of the Pailón-San José-Puerto Suárez Road	Central Interoceanic	444.80	BO (BR-CH-PE)
12	Infante Rivarola-Cañada Oruro Border Crossing	Central Interoceanic	1.20	BO-PY

**(continuos)**

<sup>18</sup> Fernando Sánchez Albavera, Recursos Naturales e Infraestructura CEPAL Santiago, 21 octubre 2004.

<sup>19</sup> A list and description of the projects with direct impact on South America's LLDC can be found in the appendix.

**Table 19 (concluded)**

13	Building of the Cañada Oruro-Villamontes-Tarija-Estación Abaroa Road (first stage)	Central Interoceanic	60.00	BO (PY)
14	Toledo-Pisiga Road	Central Interoceanic	93.00	BO (CH)
15	Rehabilitation of the Iquique-Colchane Road	Central Interoceanic	37.00	CH (BO)
16	Rehabilitation of the El Sillar Leg	Central Interoceanic	2.50	BO (BR-CH-PE)
17	Desaguadero Border Center	Andean	7.50	BO-PE
30	Exports through Postal Services for SMEs	ITCs	2.50	All countries
31	Implementation of a Roaming Agreement in South America	ITCs	0.40	All countries
	Total		1 713.90 6 921.10	

Source: IIRSA 2007.

Thus it has to be stated that at this point in time none of the projects related to Paraguay have passed the preparatory phase. In the case of Bolivia a number of projects are being carried out as can be seen in the following section.

## 4.2 Transport infrastructure projects related to transit in Bolivia and Paraguay

This section describes the projects listed in IIRSA with relevance to the development of Bolivia and Paraguay. The projects directly related to these two countries are described in the table 20.

**TABLE 20**  
**CURRENT STATUS OF IIRSA PROJECT IN SOUTH AMERICA'S**  
**LANDLOCKED COUNTRIES, 2007**

Hub	Corridor	Key project(s)	Investment (millions of dollars)	Status (end 2007)
Andean Hub	Connection Peru-Bolivia (Huancayo –Ayacucho –Tarija –Bermejo)	Binational border station (CEBAF) in Desaguadero	7.5	To be finished or with concrete progress by 2010

(continuous)

Table 20 (continuation)

Capricorn Hub	Salta–Villazón–Yacuiba–Mariscal Estigarriba	Construction of binational bridge between Salvador Mazza–Yacuiba and border station	10.0	To be finished or with concrete progress by 2010
		Paving of Tartagal–Misión La Paz–Pozo Hondo	190.0	Not known
		Road Abapo–Camiri (connection Santa Cruz–Yacuiba)	104.5	Not known
		Paving Route 9–Neuland–Pozo Hondo	Not known	Not known
		Border station Pozo Hondo (Paraguay)	1.5	Not known
	Asunción–Paranagua	New Bridge between Puerto Presidente Franco–Porto Meira with border station (Brazil–Paraguay)	55.0	To be finished or with concrete progress by 2010
		Concesión–improving Route 2 and 7 (Asunción–Ciudad del Este)	136.0	Not known
		Construction railway between Asunción and Ciudad del Este	297.5	Not known
		Transmission line (500 KV) between Asunción and Itaipu	125.0	Not known
	Presidente Franco–Puerto Iguazu–Resistencia	Optimization of the node Neembucu Bridge and River Bermejo	40.0	Not known
		Improvement of the bridge Posadas–Encarnacion	15.0	Not known
		Construction railway line between Presidente Franco and Pilar	438.6	Not known
		Construction of the bridge Presidente Franco–Puerto Iguazu and border station	30.0	Not known
		Construction Route 8 between Caazapa and Coronel Bogado	90.0	Not known
	Central Interoceanic Hub	Chile–Bolivia–Paraguay–Brazil	Construction bridge Carmelo Peralta–Puerto Murtinho	N/A
Construction road Carmelo Peralta–Loma Plata			85	Public investment currently in study of feasibility
Fibre optic connection Puerto Murtinho–Loma Plata			N/A	Profiling
Improvement Mariscal Estigarriba Airport			N/A	Profiling
Gas-themoelectric project Bolivia–Paraguay			N/A	Profiling
Border crossing Peralta–Port Murtinho				Profiling
Border crossing Rivarola–Canada Oruro			N/A	Feasibility
Hub	Corridor	Key project(s)	Investment (millions of dollars)	Status (end 2007)
		Road construction Canada Oruro–Villamontes–Tarija–Estacion Abaroa	366	In execution financed by CAF
		Border crossing Ollague–Collahuasi	N/A	Profiling
		Road improvement Santa Cruz–Villamontes		Finished
		Paving of the route Potosí–Tupiza–Villazon	216-217	In execution financed by CAF and PROEX
		Geothermal project Laguna Colorada	160	Feasibility
	Santa Cruz–Puerto Suarez–Corumba	Border crossing Puerto Suarez–Corumbá	N/A	Profiling
		Concession road and rail link Motacucito–Puerto Busch and port operation	N/A	Revision
		Fibre optic cable between Santa Cruz and Corumbá	N/A	Profiling

(continuous)

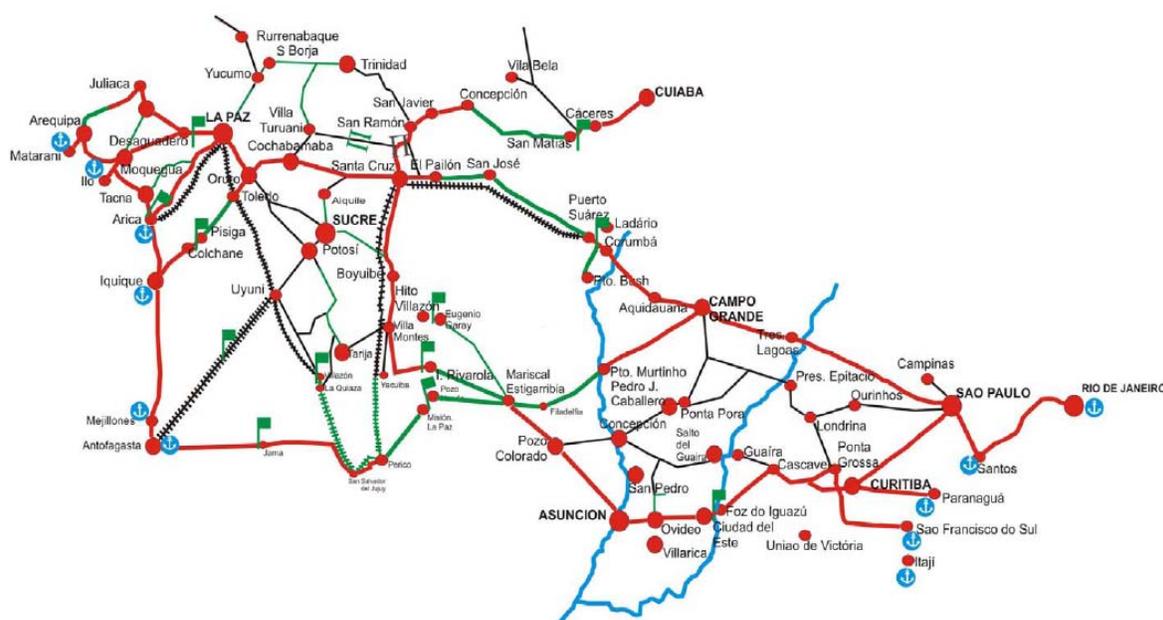
**Table 20 (concluded)**

	Santa Cruz–Cuiaba	Road construction Pailon–San José–Puerto Suárez	460	In execution
		Border crossing San Matías	N/A	Profiling
		Road construction Concepcion–San Matías	N/A	First part finished
		Banegas Bridge	N/A	Feasibility
		Paving of the Banegas–Okinawa bridge	N/A	Maintenance work
	Paving Porto Limao–San Matías	N/A	Finished on the Brazilian side, profiling on the Bolivian side	
	Pacific connection	Road Oruro–Pisiga	93	In execution, various funding agencies
		Border crossing Pisiga–Colchane	N/A	In execution
		Road rehabilitation Iquique–Colchane	37	Public sector, feasibility
		Road rehabilitation Arica–Tambo Quemado	15	Studies finished
		Road rehabilitation El Sillar	N/A	Studies finished
		Road paving Cochabamba–Santa Cruz	N/A	In execution
		Bridge rehabilitation–La Amistad	N/A	Finished
	Railway link–Aiquile–Santa Cruz	N/A	Feasibility	
	Peru–Brazil–Bolivia	Rio Branco–Cobija–Riberalta–Yucumo–La Paz	Binational bridge–Mamore River	N/A
Road Guayaramerin Riberalta/Yucumo–La Paz			387	N/A
Road Cobija–EL Chorro–Riberalta			80	N/A
Road Cobija–Extrema			28	N/A
Border Crossing Bolivia–Peru			2	N/A
Border Crossing Brasileira–Cobija			2	N/A
Madeira–Madre de Dios–Beni		Hydroelectric plant Cahuela–Esperanza	1200	N/A
		Binational Hydroelectric plant (Bolivia–Brazil	2000	N/A

Source: IIRSA 2007.

The map below depicts the existing transit infrastructure network related to the main trading corridors of Paraguay and Bolivia. The flags indicate the infrastructure network points that are not functioning and are not developed to an adequate level. The map depicts clearly that the greater number of network insufficiencies are related to access to and from Bolivia.

**MAP 3**  
**MAIN TRANSIT TRANSPORT INFRASTRUCTURE NETWORK BOLIVIA AND PARAGUAY**



Source: IIRSA 2007.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

### 4.3. Challenges

The number of projects listed in the IIRSA project book is extensive. However, the key has to be seen in the status of the projects. The table in the previous section illustrates that just very few projects are in execution or have been finished. The greatest number is still in the profiling phase.

The IIRSA Initiative has made a significant contribution for the development of infrastructure in the region. However, the question remains, if the initiative in the medium run is more than a “functional gathering” of the countries to use newly created funding schemes. While the “functional” aspect is the strength of the initiative on the one hand, because it made it possible to bring the 12 South American states together and agree on bilateral projects for the first time in history. The functional aspect bears the possibility that IIRSA will remain a project booklet, which lists a number of infrastructures for specific funding schemes on the other hand.

A further challenge, especially for the landlocked countries, is the consequence with which the transit countries will continue to develop their infrastructure networks all the way to the borders. It also has to be mentioned that a significant amount of positive impacts from infrastructure development will be lost if the countries do not solve their national regulatory and institutional inefficiencies. E.g. Continuation of lengthy border controls will most probably eliminate the greatest share of gained benefits of high quality road infrastructure.

## 5. Paraguay-Paraná river system

Bolivia and Paraguay are connected to the Paraguay-Paraná River system, which provides access to the seaports in the River Plate Delta: Buenos Aires and Montevideo for containerized cargo and Rosario, Nuevo Palmira, etc. for the movement of bulk cargoes. Paraguay’s main export products are bulk cargoes and therefore require a transport system, which allows generating economies of scale in the

trade operations. Due to the lack of dredging and signalling in the upriver regions of the river system today significant barriers exist in terms of maximum draft for ships and stable water depths. Currently, the persistent drought has reduced the maximum draft to about 6ft in the region of Asunción (October 2007) Further the lack of signalling impedes night navigation on the river.

### **5.1. The Paraguay-Paraná inland waterway**

The “Hidrovía” is a plan by the five countries of the River Plate Basin to convert the Paraguay and Paraná rivers into an industrial shipping channel. Under the original plan developed in 1997 by the “Hidrovía” Inter-Governmental Commission (CIH), with support from the Inter-American Development Bank and the United Nations Development Programme, river alterations including dredging, rock removal, and structural channelling would have taken place at hundreds of sites along the 2,100 mile river system, from Cáceres, Mato Grosso, Brazil to Nueva Palmira, Uruguay. The Pantanal, the world’s largest tropical wetlands, would not have been protected under the project.

The two original studies for this project were rejected by the countries involved in the agreement. Brazil has insisted that no interventions be made upriver from Corumbá, for environmental protection reasons.

The fate of the Hidrovía is still uncertain. The Andean Development Corporation (CAF) has provided the CIH with US\$ 940,000 for new studies, to complement the original studies. The findings have been accepted but are not binding upon the countries. The main criticisms of the study refer to its institutional and legal components and, to a lesser degree, to technical aspects; however, it contains substantially fewer interventions than the previous study. The countries are thus taking the new study as a reference for conditions of navigability and have set up a technical coordination commission to advise on final decisions.

While the physical problems of the Hidrovía Paraguay-Paraná are studied in detail, there has been no significant progress in the removal of these physical obstacles. The elimination of physical barriers is estimated to cost around US\$ 60 million. The execution of these activities is delayed due to a mixture of lack of political interest, lack of financial resources, lack of adequate dredging equipment and finally the concerns related to the environmental impact on the water regimes in the Pantanal.

The Hidrovía as such does not operate in the region north of Santa Fe, Argentina, but here continues to be a river that is navigable without assistance. Signalling along the river north of Santa Fe is rudimentary and existing signalling is often removed or misused.

Further, the existing regulations require foreign ships to use national pilots of the country in which they navigate; for example, ships not carrying the Paraguayan or Argentine flag require Argentine pilots in the Argentine river stretches.

A further impediment to the development of trade along the river is the existing reservation of national cargo transport, which impedes foreign flagged ships to provide cabotage services e.g. within Argentina.

Although the Hidrovía Paraguay-Paraná regulations are agreed upon, some of the countries have not incorporated them into their legal frameworks and in many cases they are not applied or enforced. It is now a year since the organs of the Hidrovía last met.

Map 4 shows the main ports along the Paraguay-Paraná river system and also illustrates Bolivia’s and Paraguay’s main river system and the access to main ports in Argentina and Uruguay.

**MAP 4  
HIDROVÍA PARAGUAY-PARANÁ AND PORTS**

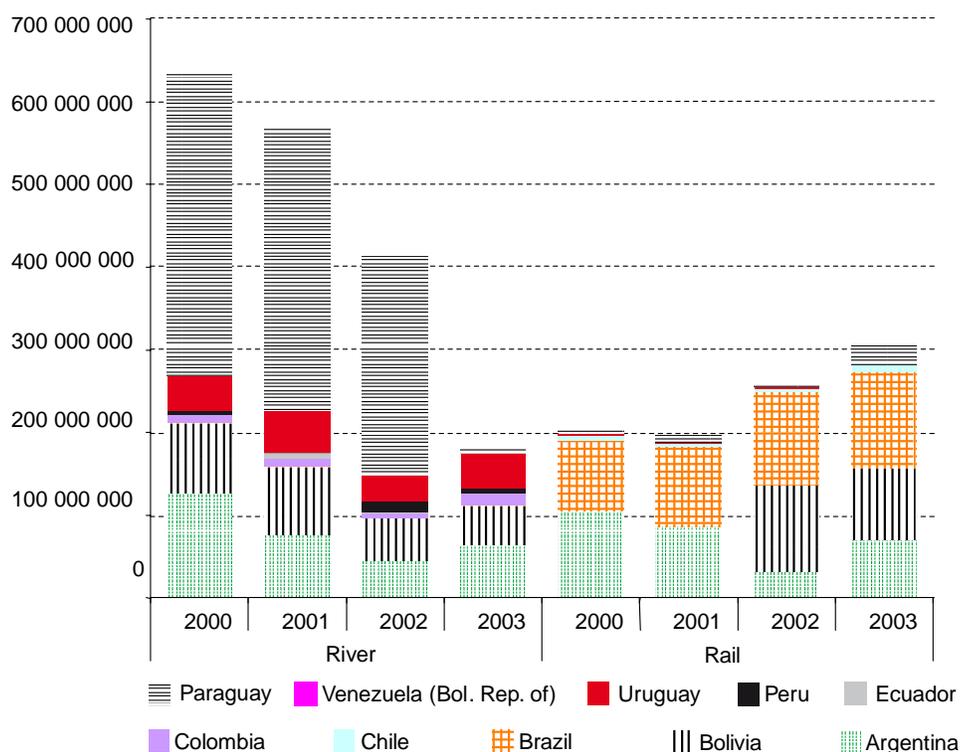


Source: ALAF (2000): Diagnóstico del Transporte Internacional y su Infraestructura en América del Sur (DITIAS): Transporte ferroviario. Montevideo. Uruguay  
 Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

**5.1.1 The role of river and railway transport: a comparison**

The comparison of the use of river and railway transport in intra-South America transport shows the significance of these modes for Paraguay (especially river transport) and Bolivia.

**FIGURE 16**  
**ROLE OF RIVER AND RAIL TRANSPORT IN REGIONAL TRADE 2000-2003, VALUE FOB**  
*(Dollars)*



Source: Author, based on BTI, ECLAC. The data from Paraguay does not show the full extent of modal use due to data insufficiencies.

The Hidrovía Treaty has eliminated cargo reservation in the trade between the signing countries (Argentina, Uruguay, Paraguay, Brazil, and Bolivia); the cargo reservation remains untouched for cabotage traffic for all transport modes at national level<sup>20</sup>.

## 5.2 Challenges

The final realization of the proposed dredging and deepening in the identified locations are expected to reduce transport costs on the river by up to 33%. These savings can vary according to the shipping route and the use of ports for loading and discharge. Under optimum conditions these savings can reach up to 50% in comparison to the costs today.

In order to avoid the politicization of activities related to works on the Hidrovía- Paraguay-Paraná the works should be passed to a private operator, who will be granted a concession for a defined period. The concession should also include the development of a differentiated charging scheme for traffic along the Hidrovía, which allows the sustainable development of transport flows on the river system.

From the financing perspective a joint effort of all five countries is necessary. The works will require an initial subsidy and continued annual subsidy during a defined take-off period in order to attract new cargoes. Traffic projections signalize that it is necessary to speed up the decision making process and project

<sup>20</sup> Law N° 269 of 13 December 1993 ratified the Agreement of Fluvial Transport on the Paraguay- Paraná inland waterway (Hidrovía), including the six additional protocols. The objective of this agreement is to facilitate navigation and longitudinal commercial fluvial transport in the Hidrovía Paraná-Paraguay and it establishes the dispositions available for navigation, commerce and transport of goods and persons using the Hidrovía. Also, Paraguay subscribed bilateral agreements with Argentina. Apart from the Hidrovía Agreement, there are no other bilateral agreements in matters of river transport between Paraguay and Brazil.

implementation in order to be able to respond to current and future increase in demand. Further, the traffic projections provide certainty of the medium and long term economic viability of the proposed works.

Current projections estimate a traffic volume of around 50 million tons for 2024 (see table 21).

**TABLE 21**  
**TRAFFIC PROJECTION HIDROVÍA PARAGUAY-PARANA UNTIL 2024**

	Unit	Period 2002	2024
Total cargo	Ton	8 153 484	18 152 484
Dry Bulk	%	47,7%	47,9%
Petroleum and derivates	%	25,7%	18,4%
Minerals	%	15,6%	19,9%
Cement	%	5,2%	6,5%
Wood	%	2,7%	4,9%
Container	%	2,8%	2,1%
Other	%	0,2%	0,2%
Total	%	100,0%	100,0%
Average growth rate	%		3,7%

Source: COINHI: HIDROVÍA PARAGUAY- PARANÁ: Estudio Complementario, 2005.

The total initial costs for the proposed river infrastructure works vary between US\$ 40 million and US\$ 95 million. Annual maintenance costs are estimated in the range of US\$ 16 million to US\$ 27 million.

At this point it is important that the five countries proactively turn towards decision making and not to further divert attention on pre-feasibility studies. This includes the implementation of detailed environmental impact studies and starting of tendering processes for the engineering works. This, however, depends significantly on the political will of the countries and might require an external mediator to drive forward the development.

The final realization of the works would provide the following benefits:

- Minimum draft of 8 feet between Puerto Quijarro and Santa Fe.
- Canal breadth of 110m in the trajectory Corumbá–Santa Fe and 60m in the Canal Tamengo.
- Enabling movement of convoys of the following characteristics:
  - Santa Fe–Asunción: length 319m, breadth 60m; equivalent to a convoy 4x5 + push barge.
  - Asunción–Corumbá: length 290m, breadth 50m; equivalent to a convoy 4x4 + push barge.
  - Canal Tamengo: convoys 2x2 + push barge.
- 24 hour navigation.

### 5.3 Remaining issues

For the preparation of the necessary jurisdictional framework for the realisation of the water infrastructure works at national and international level, it is important to take into account the following:

- It is important to develop a charging mechanism, which allows the maintenance and development of the necessary water infrastructure works without discrimination of specific user groups. This includes definition of differentiation scheme in terms of trajectories, ship types etc.
- Specific discrepancies between private sector operators and the administration and different government agencies can be found in relation to ship inspections (safety, drug trafficking, customs). While the private sector sees the current level of inspections as a barrier to efficient

service provision, the administrations have been able to prove a continuously high level of substandard shipping. Further, there seems to be a lack of understanding and detailed knowledge of certain standards (e.g. additional Protocol of the MARPOL agreement on double hull standards for liquid bulk ships) in the private as in the public sector.

- Cooperation between the private sector and the public organizations and administrations needs to be strengthened. Integrated committees including private and public sector representatives with decision making power should be put in place to drive decision making processes related to trade and transport facilitation along the Hidrovía Paraguay-Paraná.
- The national cargo reservation as written in the “Acuerdo de transporte fluvial” is outdated under today’s standards and does impede traffic generation and efficient and effective operations on the Hidrovía.

## 6. Challenges ahead

The cooperation and active interchange between the different initiatives is at a rather basic stage. It is basically determined by sending information and reports and sometimes meetings are attended jointly. It has to be said that there is significant space for improvement in the cooperation. Further, there is no direct effort to coordinate the different initiatives towards a greater complementarity, neither are the complementarities perceived by the stakeholders in all cases.

Within these initiatives in Latin America there is no specific attention to the problems of landlocked countries or specific development programme.

The current programmes mainly focus on the elimination of asymmetries between the countries. Since Bolivia and Paraguay are among the poorest countries in the region they receive more attention in these programmes as well.

The introduction of FOCEM within MERCOSUR is a significant step, because for the first time in history in MERCOSUR this scheme provides direct funding between countries at multilateral scale.

Transit issues for the landlocked countries usually have been dealt with at bilateral level. IIRSA could be used as a platform to discuss transit issues at a multilateral level. Especially issues of standardization, regulation and policies should be included in the discussion on infrastructure development as they build the framework for the functioning of all transport services.

The topic of inter- and multimodal transport has only been addressed at a superficial level and no solutions have been implemented; e.g., the use of tractors from different countries on the same trailer in road transport.



### **III. The costs of being a landlocked country**

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This chapter describes how adversely the condition of being landlocked affects Bolivia and Paraguay regarding the costs of their international trade and logistic related issues. At the same time a benchmarking of their logistic performance shows the main shortcomings compared to their neighbouring countries.

#### **1. General introduction to transport costs**

High international transport costs will adversely affect the competitiveness of landlocked countries through the following channels.

Firstly, for countries like Bolivia and Paraguay, the higher international transport costs, the more firms will have to pay for imported intermediate goods and the less they will receive for their exports, *ceteris paribus*. Secondly, countries with higher international transport costs are potentially less attractive to foreign investment in export activities. Thirdly, for exporters of primary products, such as Paraguay and Bolivia, higher international transport costs reduce the rents earned from natural resources thereby lowering aggregate investment and thus growth. Fourthly, relatively higher international transport costs increase the price of all imported capital goods, which reduces investment, the rate of technological transfer and thus reduces economic growth.

Transport costs can assume two meanings. From the transport supplier's point of view, it is the cost of the factors of production required to produce the transport service. From the consumers of transport perspective, it is the cost of utilising the service. It is also useful to examine who is the hirer of transport services, and at which point during the transit process certain decisions are made about who bears the costs.

Limão and Venables (2000) study the determinants of transport costs, and show how they depend both on a country's geography, and on its level of infrastructure. The main results were, firstly, that infrastructure —both own infrastructure and that of landlocked countries and transit routes— is a significant and quantitatively important determinant of transport costs and of bilateral trade flows. For example, improving destination infrastructure by one standard deviation reduces transport costs by an amount equivalent to a reduction of 6,500 sea km or 1,000km of overland travel. Secondly, being landlocked raises transport costs by around 50% (for the median landlocked country compared to the median coastal economy). However, improving the infrastructure of the landlocked economy from the median for landlocked economies to the 25th percentile reduces this disadvantage by 12 percentage points, and improving the infrastructure of the transit economy by the same amount reduces the disadvantage by a further 7 percentage points. Thirdly, combining estimates from transport cost data with the trade data they were able to compute the elasticity of trade with respect to transport costs; it was shown to be high, at around -2.5. This means that the median landlocked country only has 30% of the trade volume of the median coastal economy. Improving infrastructure to the 25th percentiles raises this to over 40%.

Detailed analysis of international transport costs is sparse. Wilmsmeier (2003) analyses the determinants of international transport costs in South American trade for different transport modes. He finds significant evidence that good landside infrastructure connections and high border permeability contribute to lower transport costs, especially for road transport.

## **2. International trade and transport costs comparison**

### **2.1 Bolivia**

The analysis of international trade costs for Bolivia shows that the country in average faces elevated international trade costs to all world regions. It can be observed that in comparison trade costs to North America have declined in the period between 1997 and 2004. However, average trade costs to other Latin American countries have increased over the same period. Trade costs to Europe have developed at a rather stable level in the respective period.

The table below shows that there exists a high variation in trade costs in relation to the mode of transport, the country and the product. The figures on road transport costs depict the elevated costs in certain trade relations. Especially the elevated costs for imports from Peru and Chile inform on potential inefficiencies in the system.

**TABLE 22**  
**BOLIVIA: FREIGHT AND INSURANCE COSTS FOR IMPORTS, 2000**  
*(Percentages and dollars)*

Imports to ...	Airborne		Waterborne		Other and not declared		Rail		Truck		All Modes	
	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons
Argentina	11.26%	1 03891	2.65%	161.11	n/a	n/a	n/a	n/a	4.32%	24.86	4.77%	29.94
Brazil	3.79%	739.01	20.78%	249.28	n/a	n/a	10.99%	33.16	4.47%	6.96	8.29%	25.04
Chile	5.05%	915.56	15.70%	270.35	1.78%	46.22	14.14%	105.16	9.29%	81.27	9.38%	87.12
Colombia	13.65%	2 068.60	9.24%	44.42	5.22%	113.88	n/a	n/a	3.64%	88.68	8.68%	48.34
Ecuador	12.74%	2 546.73	9.04%	34.05	n/a	n/a	n/a	n/a	n/a	n/a	9.24%	36.71
Paraguay	10.98%	1 107.22	3.87%	126.43	n/a	n/a	n/a	n/a	5.81%	140.80	8.74%	504.41
Peru	9.55%	941.97	6.82%	88.24	5.34%	587.80	n/a	n/a	15.19%	46.96	13.40%	50.29
Uruguay	12.61%	1 793.26	6.54%	6.01	4.67%	759.44	n/a	n/a	10.89%	86.13	10.11%	32.96
All Countries	7.77%	1 056.22	8.69%	45.35	5.18%	113.07	11.40%	37.35	10.52%	43.81	9.68%	46.25
Main SITC one-digit Commodity Groups												
Food and Live Animals (0)	25.43%	810.58	10.20%	30.81	5.28%	114.61	11.08%	46.88	9.74%	41.97	9.49%	40.64
Beverages & tobacco (2)	18.60%	927.81	10.29%	40.02	n/a	n/a	15.52%	33.39	12.19%	41.36	12.30%	40.87
Classified Manufactures (6)	9.10%	1 025.38	4.54%	106.96	3.86%	98.26	1.61%	46.71	9.08%	34.52	6.67%	48.15

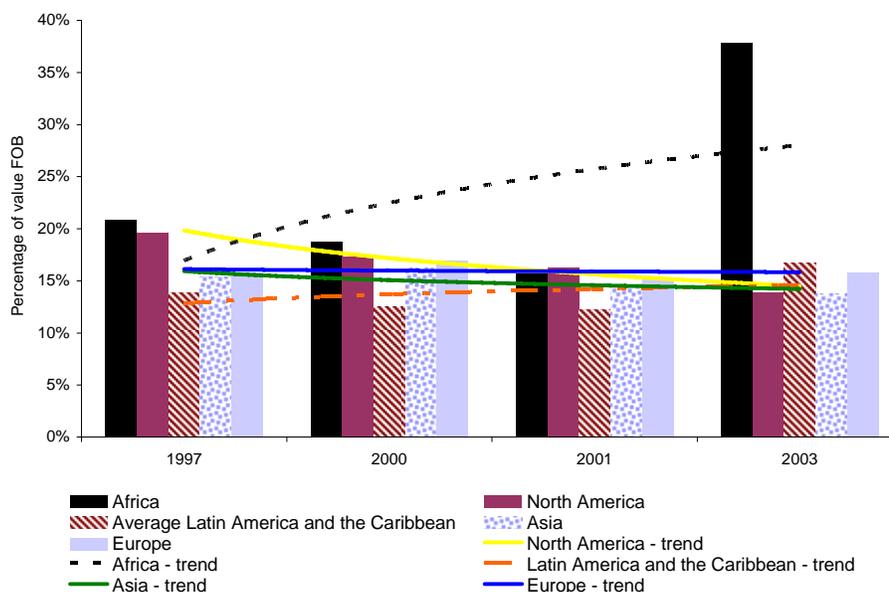
Source: BTI 2002. Note: All Imports excluding SITC 3 Commodity Group Products and excluding imports from Bolivia and Bolivarian Republic of Venezuela.

In interviews, representatives from the export industry argued that river and rail transport offer the least costly means of export. However, a calculation of transport costs based on the provided figures shows that the differences between pure road transport and intermodal transport are relatively small.

Exports from Puerto Suárez to Buenos Aires and Montevideo are estimated to cost around US\$ 49/ton. The transport from Santa Cruz to Puerto Suárez depending on the mode of transport costs, ca. US\$ 22/ton by rail and ca. US\$ 32/ton by road.

If the cargo is transported between the same origin and destination (Santa Cruz–Buenos Aires) by road only the costs are estimated to be around US\$ 72/ton.

**FIGURE 17**  
**ESTIMATE OF TRANSPORT AND INSURANCE COSTS TO BOLIVIA, BY REGION, 1997 TO 2003**



Source: Own elaboration based on BTI various years.

The interviews also revealed that travel time using rail and river between Santa Cruz and Buenos Aires is about 17 days, meanwhile transport by truck needs 3 to 4 days. There are no statistics available on the variation of travel times due to delays, physical infrastructure problems etc.

The numbers presented and the perception also shows that the cost of time in transport has not been internalized in the perception of the exporters and currently no cost is associated to time.

Statistics on transport costs, travel times and over costs are poor or simply not existing. The absence of reliable data has also spurred myths on travel times and the effect of existing barriers to trade on transport.

## 2.2 Paraguay

Transport costs for imports to Paraguay are lower as in the case of Bolivia. An interesting observation is that the average transport costs for waterborne transport per ton were higher than for road transport (see table 23). This raises the important questions on the competitiveness and efficiency of the individual transport modes.

**TABLE 23**  
**PARAGUAY: FREIGHT AND INSURANCE COSTS FOR IMPORTS, YEAR 2000**  
*(Percentages and dollars)*

Imports to ...	Airborne		Waterborne		Other and not declared		Rail		Truck		All modes	
	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons	CIF-FOB CIF	CIF-FOB tons
Argentina	3.61%	1 052.51	10.29%	14.75	47.21%	5 962.96	14.14%	73.14	4.16%	10.52	6.71%	12.94
Brazil	3.98%	781.35	4.21%	11.09	0.00%	n/a	n/a	n/a	2.49%	4.61	2.66%	5.11
Chile	12.74%	974.83	8.70%	25.95	n/a	n/a	n/a	n/a	7.02%	128.48	7.24%	117.01
Colombia	9.28%	2 897.79	11.93%	143.50	10.53%	130.61	n/a	n/a	n/a	n/a	10.95%	138.87
Ecuador	3.17%	4 082.07	25.39%	n/a	n/a	n/a	n/a	N/a	n/a	n/a	3.39%	321311
Peru	4.10%	2 494.28	11.02%	25.38	19.79%	179.68	n/a	N/a	33.13%	109.35	10.89%	25.86
Uruguay	5.51%	686.89	2.12%	58.40	8.29%	546.94	n/a	N/a	4.53%	39.56	4.54%	43.13
All Countries	5.80%	1 067.28	9.16%	17.34	10.56%	76.87	14.14%	73.14	3.56%	8.41	4.91%	11.18
Commodity groups												
Food and Live animals (0)	23.51%	751.30	10.73%	25.01	18.00%	184.93	n/a	n/a	3.57%	10.53	5.08%	14.26
Crude materials exc. Fuel (2) Products (5)	21.35%	43.89	9.27%	14.01	10.39%	74.42	n/a	n/a	3.84%	5.30	5.75%	8.24
Classified manufactures (6)	10.12%	1 082.03	2.59%	49.35	n/a	n/a	14.14%	73.14	3.41%	16.23	3.35%	17.70

Source: BTI 2002.

Note: All Imports excluding SITC 3 Commodity Group Products and excluding Bolivian and Venezuelan Imports.

### 3. Logistics costs

Beyond pure trade costs, logistics costs are of increasing importance, because management in global trade structures has developed towards thinking in processes rather than tariffs. Further, final distribution costs in many logistics chains make up a major part of the total transaction costs. An analysis by CARANA 2005 analysed the logistics costs for a number of Paraguayan transport chains. The study found that total logistics and transport costs (as percentage of F.O.B) for the studied transport chains and products reach up to 19.7 percent. The CARANA study estimated the induced logistics over costs for the selected corridors and products to be about US\$ 145 million, or the equivalent of 1.88% of GDP in 2005.

The extrapolation of these figures to all trades led the authors to the conclusion that the effect of logistics over costs is equal to US\$ 327 million per annum, equal to 4.26% of GDP in 2005. These figures demonstrate the significant impact and burden Paraguay has to carry to participate in the global market and directly affects its competitiveness in trade. These costs of inefficiency have a direct impact on the export sector, because the extra costs have to be saved at other points of the transport chain. Also, due to competition from similar export products from other countries, selling prices are rather fixed to external market conditions, and cannot be modified to consider the inefficiency costs.

On the other hand the costs of inefficiency are directly passed on to the end consumers for imported cargo. This impedes investment in the country.

CARANA further identified the main parts of the logistics chain that induce logistics over costs:

- Preparation: cargo consolidation, packing, warehousing, etc;
- Overland transport: national overland freight rate from the production site of the exporter to the port and other costs during this process;

- Port: waiting time, operational costs, entrance and exit to the port;
- Customs: activities linked to customs activities and related agencies. These include obligatory certificates and inspections by the state of the customer;
- Waterborne transport: waterborne freight rate and related expenses for insurance, handling and port services, in this case river and maritime freight rates.

Table 24 shows the high impact of over costs in overland transport. Overland transport is responsible for over ¼ of all logistics over costs. The causes are related to waiting times at borders and the impact of these times on inventory, opportunity and personnel costs as well as the loss of productivity in relation to transport equipment.

Further, costs are induced by road infrastructure deficiencies, related product damage and loss and the high costs of delays in the sanitary certification (especially frozen meat products). These factors account for one fifth of all over costs.

**TABLE 24**  
**DISAGGREGATED COSTS IDENTIFIED, 2005**

Process	Impact (millions of dollars)	Percentages
Cargo preparation	30.95	21
Overland transport	38.40	26
Port	24.94	17
Customs	22.81	16
Waterborne transport	24.85	17
Management of payments	4.29	3
Total	146.24	100

Source: CARANA 2006.

The burden provoked by the lack of dredging and buoying/signalling along the rivers is estimated to be around 17% of all over costs, which is equal to almost US\$ 25 million annually.

The study identifies that a significant impact is generated by customs organization and management, especially in ports. The study argues that institutional inefficiency is a main contributor to inefficiency and thus impedes trade by generating significant additional costs within the transport chain.

The results presented in the CARANA study give a basis to demystify the existing opinions on reasons for Paraguay's lack of competitiveness in international trade and clearly identify the causes for the existing excessive logistics costs. However, it should be kept in mind that the CARANA study is based on the analysis of only a number of logistics chains and gives a first and important insight in the structure of Paraguay's trade costs.

The results contribute significantly towards the identification of activities needed to improve Paraguay's competitiveness within regional and global markets.

The ten most important causes provoking over costs in transport chains as identified by CARANA are laid out in the following table.

**TABLE 25**  
**PARAGUAY: THE TEN GREATEST SOURCES OF ADDITIONAL TRADE COSTS, 2005**

Ten most important additional costs	Total impact (dollars)
Border crossings	38 404 015
Delays in port access	19 556 645
Lack of dredging (river)	19 377 896
Time losses due to road infrastructure deficiencies	16 615 336
Time losses en the issuing of sanitary certification	7 232 951
Visas	6 801 600
Product damage and losses in road transport	5 085 551
Delays in payments	4 291 192
Cabotage laws	3 491 037
Expenses—charges freight forwarder	3 331 490
Subtotal	124 187 713

Source: CARANA 2005.

The ten most important over costs are responsible for over 90% of all identified over costs by CARANA. Especially, the inefficiency at border crossings implies a burden to international trade that requires urgent action. Further, the costs generated by lack of infrastructure and efficiency related to river transport on the Paraguay-Paraná River impose a significant barrier to trade.

As demonstrated in figure 12 and figure 13, river transport is the principal transport means for imports and exports. Since problems already persist at the current level of trade in terms of port access and the utilization of the river (lack of signalling and dredging) the current system can definitely not sustain further development and thus implies a significant barrier to development. Without doubt the Paraguayan port sector has undergone significant developments in the last years (see infrastructure section); however, based on the results from CARANA, the engendered additional costs were around US\$ 19.6 million (2005). Additionally the lack of signalling and dredging imposed additional costs of the same magnitude (US\$ 19.3 million).

## 4. Logistics performance

Beyond cost and time taken to deliver goods, the predictability and reliability of supply chains is increasingly important in a world of just-in-time production sharing. Costs related to hedging against uncertainty can have significant influence on the competitiveness of a product. Equally, cost and quality of logistics are determined not just by infrastructure and the performance of public agencies, but also by the availability of quality and competitive private services.

### 4.1 Benchmarking

The main studies available to measure trade facilitation and logistics performances are the Doing Business Report and the Logistics Performance Index (LPI<sup>21</sup>) from the World Bank. Both studies rely on surveys. The Doing Business study has included trade related topics for the last three years and the LPI has been published for the first time this year.

The studies give general indications on the current situation of import and export activities and benchmark the situation with other countries at world level. The Logistics Performance Index (LPI) and its indicators provide the first in-depth cross-country assessment of the logistics gap among countries.

Drawing on the first-hand knowledge of logistics professionals worldwide, it provides a comprehensive picture of supply chain performance—from customs procedures, logistics costs, and

<sup>21</sup> The Logistics Performance Index is based on a survey of operators on the ground worldwide (global freight forwarders and express carriers), providing feedback on the logistics “friendliness” of the countries in which they operate and those with which they trade. They combine in-depth knowledge of the countries in which they operate with informed perceptions of other countries with which they trade, and experience of global logistics environment. Feedback from operators is supplemented with objective data on the performance of key components of the logistics chain in the home country, data collected for 100 countries.

infrastructure quality to the ability to track and trace shipments, timeliness in reaching destination, and the competence of the domestic logistics industry (Arvis et al. 2007).

A drawback is that these studies rely partly on external subjective opinions and do not display the “real world” situation within the countries, which have a great number of facets depending on the sector, used transport mode, local knowledge etc. Nevertheless, especially the Logistics Performance Index provides an overview on the performance in Logistics operations (with a maximum score of 5), which can be used as a starting point for more in depth analysis within each country.

The LPI measures performance along the logistics supply chain within a country and has three parts:

- Perceptions of the logistics environment of trading partner countries
  - Efficiency and effectiveness of Customs and other border procedures,
  - Quality of Transport and IT infrastructure for logistics;
  - Ease and affordability of arranging shipments;
  - Competence in the local logistics industry (e.g., transport operators, customs brokers);
  - Ability to track and trace shipments;
  - Domestic logistics costs (e.g., local transportation, terminal handling, warehousing); and
  - -Timeliness of shipments in reaching destination.
- Information of the logistics environment in the home country of operation
  - Direct freight costs;
  - Quality of transport and IT Infrastructure;
  - Competence in the delivery of input services logistics operators need;
  - Performance of the clearance process of exports and imports;
  - Constraints affecting logistics performance;
  - Trends.
- Real time-cost performance data for country of operation
  - Number of border agencies;
  - Customs performance indicators (time release, inspection data, possibility of review for imports);
  - Percentage of damaged shipments;
  - Lead times to export and import (based on best 10%, median 50% and worst 90% of shipments<sup>22</sup>).

Bolivia and Paraguay are ranked as number 107 and 71 of a total of 149 countries.

The comparison between Bolivia and Paraguay with their neighbouring countries displays some of the main shortcomings. Bolivia has the lowest scorings in all categories in comparison to its neighbouring countries. Paraguay presents higher scorings than its main trading partner Uruguay.

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<sup>22</sup> For details see Arvis et al (2007).

**TABLE 26**  
**INTERNATIONAL LPI - COMPARISON**

Country	LPI (Max. 5)	Customs	Infrastructure	International shipments	Logistics competence	Tracking and tracing	Domestic logistics costs	Timeliness
Chile	3.25	3.32	3.06	3.21	3.19	3.17	2.68	3.55
Argentina	2.98	2.65	2.81	2.97	3	3	2.84	3.5
Peru	2.77	2.68	2.57	2.91	2.73	2.7	3	3
Brazil	2.75	2.39	2.75	2.61	2.94	2.77	2.58	3.1
Paraguay	2.57	2.2	2.47	2.29	2.63	2.67	3.13	3.23
Uruguay	2.51	2.29	2.38	2.4	2.45	2.57	2.78	3
Bolivia	2.31	2	2.08	2.42	2.17	2.38	2.53	2.81

Source: The World Bank, 2007.

The detailed results of the LPI are presented in the table below. However, based on the interviews with stakeholders in Bolivia and Paraguay some of the presented results seem questionable (e.g a customs clearance time in Bolivia of 0.5 days). Further, the charges for import and export of containers are rather unlikely to be similar due to the prevailing trade imbalances in both countries under study. A detailed analysis of these topics would deliver important further insights. Detailed analysis should also take into account the different performances at border crossings; also depending on the performance in the neighbouring country.

**TABLE 27**  
**DOMESTIC LPI - COMPARISON**

	Uruguay	Peru	Paraguay	Chile	Brazil	Bolivia	Argentina
Customs clearance (days)	1.73	1.58	5	1	5.85	0.5	1.59
Lead time export, median case (days)	5	1.68	1	2.83	3.42	4	2.95
Lead time import, best case (days)	2.24	2.74	4	1	3.11	3	2.39
Lead time import, median case (days)	5	4.36	4	3.16	7.05	4	4.05
Number of border agencies exports	2.5	3.25		2.5	5.67	1	3.32
Number of border agencies imports	3.5	3.2	10	2.5	6	1	2.85
Possibility of a review procedure (%)	100	25				100	8
Typical charge for a 40-foot export container or a semi-trailer (US\$)	670.82	420.45	1000	273.86	908.56	2000	486.78
Typical charge for a 40-foot import container or a semi-trailer (US\$)	670.82	707.11	1000	273.86	1 144.71	2000	633.75
Rate of physical inspection (%)	11	7	100	4	13	6	19

Source: LPI, World Bank, 2007.

The “Doing Business” study 2008 presents figures in the duration and costs of export and import procedures. As can be seen for both countries a main factor is the preparation of documentation, which in the case of Bolivia requires over two weeks for exports and imports. The time costs for this excessive duration in terms of storage costs, waiting times etc are not calculated.

**TABLE 28**  
**BOLIVIA: TRADE ACROSS BORDERS, "DOING-BUSINESS" INDICATORS**

Nature of Export Procedures (2007)	Duration (days)	US\$ Cost
Documents preparation	15	
Inland transportation and handling	7	1 000
Customs clearance and technical control	1	35
Ports and terminal handling	1	75
Totals	24	1 110
Nature of Import Procedures (2007)	Duration (days)	US\$ Cost
Documents preparation	29	100
Customs clearance and technical control	2	55
Ports and terminal handling	1	75
Inland transportation and handling	4	1 000
Totals	36	1 230

Source: Doing Business 2008, The World Bank.

Paraguay shows a significantly better performance regarding the time required for the preparation of documentation. In the case of Paraguay, inland transportation presents a main factor in terms of time consumption, as does port and terminal handling. These figures underline the described drawbacks in transport operations in the analysis above, but as the Logistics Performance Index can be seen as indicative and need further detailed study as done for Paraguay in the CARANA study (2005).

**TABLE 29**  
**PARAGUAY: TRADE ACROSS BORDERS, "DOING-BUSINESS" INDICATORS**

Nature of Export Procedures (2007)	Duration (days)	US\$ Cost
Documents preparation	7	250
Inland transportation and handling	18	200
Customs clearance and technical control	5	150
Ports and terminal handling	5	120
Totals	35	720
Nature of Import Procedures (2007)	Duration (days)	US\$ Cost
Documents preparation	5	350
Customs clearance and technical control	3	150
Ports and terminal handling	10	150
Inland transportation and handling	15	250
Totals	33	900

Source: Doing Business 2008, the World Bank.

The table below shows the necessary documentation for import and export procedures in Bolivia and Paraguay.

**TABLE 30**  
**DOCUMENTATION FOR IMPORT AND EXPORT PROCEDURES**

Bolivia	Paraguay
Export	Export
Certificate of origin	Bill of lading
Collection order	Certificate of origin
Commercial invoice	Commercial invoice
Customs export declaration	Customs export declaration
Export license (from CAMEX)	Export license
Inspection Report from Fuerza Especial de Lucha Contra el Narcotráfico	Foreign exchange authorization
Packing list	Inspection report
Technical standard/health certificate	Packing list
	Transit document

(continuous)

**Table 19 (concluded)**

Import	Import
Bill of lading	Bill of lading
Certificate of origin	Cargo release order
Commercial invoice	Certificate of origin
Customs import declaration	Commercial invoice
Customs transit document	Consular invoice
Import license	Customs import declaration
Packing list	Inspection report
	Packing list
	Tax certificate
	Terminal handling receipts

Source: Doing Business 2008, The World Bank.

## 4.2 Cost evaluation of international transport, logistics performance and the impact on Paraguay and Bolivia

The available figures on international transport and trade costs provide clear indications that Bolivia and Paraguay have to cope with restrictions imposed by elevated costs in terms of international competitiveness of their export products. At the same time the countries have to pay higher prices for import products, which has a direct impact on the investment in machinery and other import products.

However, elevated international transport costs are common for all South American countries in comparison to countries in other world regions.

As the CARANA study exemplifies a main source of over costs is related to regulatory and institutional issues, which contribute to the inefficiency in transport operations.

Infrastructural issues play an important role, and a significant number of studies and ideas exist to solve these infrastructural bottlenecks.

Even though customs operations in general have been improved they continue being a significant barrier to trade, because the coordination of border procedures between customs and other agencies has not improved in the same manner or not at all. As Arvis et al (2007) suggest policymakers should look beyond the traditional trade facilitation agenda, which focuses on road infrastructure and information technology in customs, to also reform logistics service markets and to reduce coordination failures, especially those of public agencies active in border control; the realisation of these is impeded largely by institutional inefficiency, absence of long term strategic frameworks, lack of administrative capacities and short term oriented politicised decision making. This creates a vicious cycle, which is present in both countries, that holds back development and creates a high risk environment, adverse for investments especially in national small and medium enterprises.

The above mentioned situation demands a more integrated, comprehensive approach to reforms all along the supply chain. Indeed, there are strong synergies among reforms to customs, border management, infrastructure, and transport regulations because reforms usually reinforce each other. Bolivia and Paraguay so far have worked with a piecemeal approach in these areas and therefore long-lasting improvements have not been reached so far. Thus it has to be stated that these reforms need to go hand-in-hand with synchronized activities in the transit countries, which adds further complexity to the already existing challenges.



## **IV. Key challenges and activities in relation to the Almaty programme: trade barriers and trade facilitation**

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This chapter indicates the activities which Bolivia and Paraguay have identified and included in their government strategies, future plans on regional integration, key infrastructural bottlenecks and cross-border trade facilitation problems and challenges, all in relation to the Almaty Programme.

### **1. BOLIVIA**

#### **1.1 Government strategy and future plans on regional integration**

Bolivia and Chile established a Chile-Bolivia Political Consultation Mechanism (Mecanismo de Consultas Políticas Chile–Bolivia) based on the bilateral agenda “sin exclusiones” (without exceptions) in 2006. The work of this group is based on 13 points. The main points regarding transport and transit issues are named below. This group is an important instrument to strengthen the dialogue between the two countries and in development of mutual trust:

- Border integration:
  - Border committee;
  - Agreement on the cooperation between customs and policy development against smuggling;
  - Integrated border controls in Visviri-Charana; Chungara-Tambo quemado and Colchane-Pisiga are under discussion and trials have brought good results. Plans also include the construction of necessary infrastructure to create a joint customs complex.
- Free transit:
  - Working group on the analysis and propositions of criteria for port pricing;
  - Inclusion of the port of Iquique in the network of foreign ports that grant special treatment and rights for Bolivian transit cargoes;
  - Integrated transit system (SIT) is aimed to also include export cargoes besides import cargoes.
- Physical integration:
  - Rehabilitation of the Arica-La Paz Railway. Currently the environmental impact studies for the rehabilitation are under way;
  - Revision of the ATIT, Southern Cone Countries International Land Transport Agreement (Acuerdo de Transporte Internacional Terrestre de los Paises del Cono Sur).
- Economic complementarity:
  - Enhancing of bilateral trade relations;
- Maritime access:
  - This topic is under discussion.

In order to diversify the export gateways Bolivia has strengthened its efforts to improve access to Peruvian ports.

## 1.2 Key infrastructural bottlenecks

The evaluation of the physical infrastructure and transport services supply situation reveals the following key infrastructural bottlenecks and activities.

- Improvement of the road network in such a way that:
  - It provides a higher resistance to natural disasters;
  - Decision making processes are speeded up and that a clear framework exists to regulate the presentation and realization of projects, because the current structure of road financing with its unclear separation between national and regional responsibilities, impedes infrastructure development;
  - Supervision and administration of road construction projects need to be reviewed. The existing differences in road construction costs in different tenders are not always justifiable referring to differences in road layout and geographic location factors. Cost and quality control need to be implemented providing strict supervision on all infrastructure projects.
  - The project to upgrade the road network between Oruro and Pisiga is very important to further diversify trade corridors, as it will provide better accessibility to the port of Iquique.

- The physical barriers obstructing navigation on the river system on Bolivian territory and along the Paraguay-Paraná River system need to be reduced.
  - On Bolivian territory the construction of Puerto Busch and the necessary hinterland infrastructure are an option to circumvent physical barriers northwards to Puerto Suarez.
  - Intensive cross border cooperation between Bolivia, Brazil and Paraguay should be developed to solve the physical barriers beyond Bolivia's national boundaries jointly. However, this is highly dependent on the political willingness of each of these countries.

### 1.3 Key cross-border trade facilitation problems and challenges

#### 1.3.1 Protection and facilitating development of logistics transport chains

- Development of integrated border controls in Brazil-Bolivia borders
  - Guajamerin/Guaja-Mirim;
  - Cacéres–San Matías;
  - Corumba–Puerto Suárez.
- Bolivia–Chile: Agreement on establishing integrated border controls (2007).
- Bolivia is emphasizing interest to facilitate transit through Peruvian ports (Ilo and Matarani). At the same time Bolivia is working on establishing a customs agent (planned for November 2007) in Iquique to facilitate free transit of cargoes through that port based on the 1904 Treaty. The full facilitation is to take effect in June 2008.
- The Government of Chile has set up a regime of free transit for Bolivian cargo at the port of Iquique and arrangements are being made for a Bolivian customs office to be installed there.

#### 1.3.2 National key issues

Trade facilitation can greatly boost intra-regional trade, but its implementation in practice requires capital investment, capacity building and regulatory and institutional arrangements of which a significant lack is visible in Bolivia.

- Public officials at national and regional level need to consult frequently with the private sector with regard to aspects of trade facilitation that affect their performance, and also to have a better understanding of the different strategies and alternatives that can be carried out. Especially, vertical consultation is underdeveloped.
- The organization of round tables with relevant experience in the different transport and trade sectors is a priority, as frequent changes of institutions and removal of public officers impede the development of a long term strategy and implementation of projects.

The following are key points for public-sector actors:

- The politicization of trade facilitation and transit discussions should be avoided;
- Co-ordination between ministries should be improved, and officers need to know clearly who is in charge of the final decision-making process.

### 1.3.3 Institutional bottlenecks

Main barriers for the facilitation of trade for Bolivia are asymmetries in the visions at various political levels:

- Asymmetries and divergent interests of regional and national governments in Bolivia as well as in the transit countries:
    - e.g. the development of the La Paz–Arica railway link;
    - e.g. working hours at Brazilian customs offices.
  - Unilateral interests at national level from Bolivia on trade facilitation;
  - Divergent interests between the national government and trade sector especially related to infrastructure investment;
- Raising objective public awareness on transit issues.

### 1.3.4 Priority activities

Beyond investment in infrastructure, documentation and regulatory mechanisms need to be upgraded so as to render a facilitated service to the business sector. Activities to develop should include the organisation of a Private Sector trade round table Chile-Bolivia, with the following primary objectives:

- Understanding and capacity building on port operation and port development for Bolivia's importers and exporters. This also includes knowledge and information development explaining the implications on trade activities of port privatization as a global development;
- Creation of an information and knowledge centre on import–export procedures, tariffs, port prices etc. as a bilateral initiative, because the current portals are rather underdeveloped;
- Detailed analysis of logistics costs and over costs in the current transport system.

## 2. PARAGUAY

### 2.1 Government strategy and future plans on regional integration

Paraguay has committed itself to participate actively in the further integration the region and thus to strengthen its competitive situation in the global market. The government has strengthened the participation in the IIRSA in MERCOSUR and LAIA. The institutional situation within the country, however, does not permit a more proactive role in the regional activities due to the superposition of decision making powers and disperse institutional structure with a partly insufficient information flow and lack of cooperation.

Recently Paraguay has realized that an improvement of its situation in relation to its transit countries first needs internal improvements, such as the development of relevant regulations and laws related to the assurance of a better functioning of its transport services, revenue flows for the use of infrastructure and to reach internationally acceptable standards and norms in the whole transport sector. However, these necessary developments are not perceived as equally important throughout the whole public institutions.

In general, the region needs to overcome historic animosities between countries. As long as traditional prejudices persist in the political, public and the general public, the integration and facilitation of transport will continue to be difficult.

Furthermore, the perception that the development of infrastructure is enough to improve development, must be left behind.

An urgent step to strengthen sustainable development would be to improve the educational sector and to professionalize stakeholders in all sectors, especially in the trade and transport sectors.

On project level, the UNCTAD/ECLAC project, M4, has to be mentioned as an overly successful and effective tool to address transit issues between Paraguay and Uruguay and to contribute to the development of the Asunción–Montevideo transport corridor. UNECLAC has worked as the implementation agency. The success of the project originates from the effective management by the local project organizers, the involvement of private and public sectors in an environment open to discussion and with clear goals towards the solution of existing problems.

The implementation of Paraguayan projects in IIRSA's Agenda of Consensus can be seen as a major step towards the implementation of the proposed projects.

The outcomes of the M4 Project have been recognized by the IIRSA in its annual meeting in Montevideo in November 2007. The hope is that the recognition of the project's activities contributes to the continuation of project efforts in terms of information exchange and a tool to addressing logistics problems in a bilateral private-public sector forum in Asunción and Montevideo.

Paraguay's initiative to propose a revision of the ATIT has been successful and the discussion on how to update the Agreement is now under way.

As laid out above, Paraguay is being part of many cooperation areas with neighbouring countries starting from infrastructure to trade and investment facilitation. Trade facilitation is a substantive part of preferential trade agreement. Trade facilitation covers not only transport and transit issues and customs modernization, but simplification of import-export procedures as well. While the legislation for most trade- and transit-related activities is regulated by MERCOSUR, the level of according implementation is unsatisfactory at national level as in the transit countries.

Within the Ministry of Public Works a Logistics round table has been established, which is complemented by the private sector transport and logistics groups which is embedded in the National Chamber of Trade and Industry.

Nevertheless, a significant number of problems remain unsolved.

## 2.2 Key infrastructural bottlenecks

The evaluation of the physical infrastructure and transport services supply situation reveals the following key infrastructural bottlenecks and activities:

- Absence of dredging and maintenance of the river infrastructure (especially Paraguay-Paraná)
  - Impact:
    - Each foot less in draft is equal to 100 tons less cargo. This is equal to US\$ 18,000 less revenue per foot/convoy. In October 2007 the draft was 6ft instead of 9 to 10 ft.
  - Activity:
    - Stabilize navigation channels along the river based on the identified project.
  - Barriers:
    - Shortage of dredging equipment. The public sector does not provide equipment or service;
    - Only one dredge is available in Argentina for the whole Paraguay-Paraná River. Lengthy bureaucratic procedures are required to obtain/rent the dredge from Argentina for use in Paraguay;
    - Missing implementation of CIH agreements and treaty.
- Lack of cold storage facilities in ports and airports;
- Lack of storage facilities for dangerous goods in ports and airports;
- Disperse port terminal development in Asunción:
  - Impact:

- Low productivity in port operations due to disperse terminal structure, which induces multiple calls in the Asunción region. Lack of port superstructure limits port movements to 14 moves/hour;
- Lengthy turnaround times in ports.
- Hinterland access and port terminal capacity shortages in Brazilian ports:
  - Impact:
    - Long waiting times for port access and schedule unreliability;
- Capacity restriction on road bridge to Brazil:
  - Impact:
    - Bottleneck for road transport flows, railway option is not included in the bridge project; even so the greatest flows are bulk cargoes.
- Paraguay still has a cargo reservation law (Ley N°295/71) which reserves 50% of all import and export cargo to ships running the Paraguayan flag. This law requires to apply for a “waiver” to ship cargo in a foreign flagged and in the absence of national shipping services capacity. Additionally, law N°160/93 establishes a payable tariff for the facilitation of waterborne transport services, which is payable to the Merchant Marine, independent of the flag of the vessel.
  - Impact:
    - Existing regulation creates over costs of three types:
      - Cost for issuing the import/export form and certificate;
      - Inventory and opportunity costs related to the waiting time (between 24 and 72 hours);
      - Costs for the customs agent and the maritime agency.
  - Solution:
    - Paraguayan liberalization of flag reservation or reorganization and automation of waiver issuing.

## 2.3 Key cross-border trade facilitation problems

### 2.3.1 Protection and facilitating development of logistics transport chains

Certain attitudes demonstrated thus far towards Paraguay by transit countries may restrict that country's export development potentials.

One case is the prohibition of the transit of transgenic soybeans through the Brazilian region of Parana in 2004 at a point in time when 70% of all Paraguayan soybean production was transgenic and the logistics chains for exporting these products had been well established using Brazilian ports<sup>23</sup>.

Other examples show that border controls, such as sanitary certificates, depend on the perceived need for inspection rather than generally established rules. For example, during a recent tomato shortage in Argentina, Argentine traders bought large stocks in Paraguay for export. During the high-demand period sanitary certificates were not checked. However, as soon as the demand had normalized and Argentine products were available again, more rigorous controls were restored.

- Border crossings:
  - Bureaucracy - the preparation and provision of the documentation for customs is lengthy;
  - Lack of harmonization of vehicle standards leaves room for discriminatory vehicle controls of Paraguayan trucks on the Brazilian and Argentine border.
  - In trade with Argentina excessive controls for transit cargo but not for cargo destined for Argentina. Economic loss is estimated to be up to 30% of the freight rates.

<sup>23</sup> <http://badicc.eclac.org/controversias>.

### 2.3.2 National key issues

Trade facilitation can greatly boost intra-regional trade, but its implementation in practice requires capital investment, capacity building and regulatory and institutional arrangements which are significantly lacking in Paraguay.

The general public needs to become more aware, as the public and private sectors have, of current development needs in order to deal with the following issues:

- Superposition of public sector institutions;
- Capacity-building in the public sector and authorities;
- Development of adequate legal framework for trade and transport;
- Paraguay has signed various agreements to respect specific standards and procedures e.g. multimodal transport within MERCOSUR, but lacks a proper national legislation to do so;
- Lack of capacity-building is also reflected in the underperformance of the industrial sector in terms of growth rates and contribution to GDP.

For instance, in a number of interviews the lack of political willingness and vision beyond election periods, as well as the usual discontinuation of strategies after election, constitute major impediments to development of the transport system.

The modernization of customs regimes is another aspect. In the light of regional integration, fiscal revenues tend to decline. While customs should facilitate trade, however, customs regulations must still prevent the smuggling of goods and ensure proper control of cross-border trade flows to avoid various loopholes. New investment is deemed necessary in terms of customs clearance, goods inspection, and data collection and processing.

- Import and export of containerized cargoes requires a series of 19 administrative steps to retrieve the container from the port, not including the administrative procedures related to the cargo. These procedures take at least 48 hours.
- The implementation of the Information system SOFIA by the national customs authority, has not substituted the provision of the paper work which implies excessive costs for duplicate work.
  - Solutions:
    - Incorporation of an electronic payment system;
    - Real time information on the documentary status of imports and exports;
    - Elimination of parallel physical documentation requirements;
    - Automated approval system in real time.

### 2.3.3 Regulatory issues

The following regulatory issues should be addressed and discussed profoundly at inter-ministerial and intersectoral level:

- Absence of a “White Paper” for transport at national level;
- Absence of a “White Paper” for transport at MERCOSUR level;
- Absence of national regulatory framework for multimodal transport, but agreement signed at MERCOSUR level;
- Absence of a distinct regulatory framework for railway transport;
- Outdated laws in relation to environmental standards and management (Law for contamination of water resources dates from 1927);
- Efficiency at borders is restricted due to internal documentation requirements. Documentation is not integrated or generated electronically (e.g. SENACSA):

- SENACSA, National Service for Animal Quality and Health, (Servicio Nacional de Calidad y Salud Animal) has a separate control at the border, which is not integrated with the other border controls. There is no electronic documentation, which makes the preparation of documentation lengthy and is one building brick more to the excessive documentation requirements.
- The rules from the 1991 CIH Agreement are not really applied, lack of supervision of due implementation gives ground to discriminatory activities on river transport.
- Dispute on the implementation of international standards on the Paraguay-Paraná river system.

### **2.3.4 Institutional bottlenecks**

- Conflicts of interest between regional and national governments and between different governmental bodies;
- Divergent interests between the national government and trade sector especially related to infrastructure investment.

### **2.3.5 Organizational and socio-economic impediments**

- Need to sensitize the public on transport issues;
- Need for continuity in long term strategies in order to solve infrastructure and trade-facilitation problems;
- Restricted administrative capacity in the public sector:
  - Absence or low level of management qualifications;
  - High fluctuation of personnel.
- Training of responsible staff is necessary. Need for high quality educational offer in the transport sector field:
  - Lack of formalized knowledge of logistics operations and transport services.
- Several issues related to infrastructure development are “over studied” what is needed is the constructive and sustainable implementation of solutions in a medium to long term strategy, providing tangible short term results (see M4 Project as example);
- Poor coordination and organization of ship owners in terms of logistics operation and organization of cargo handling in the container business (ships spend up to four days loading and discharging cargo in different terminals in the Asunción area).

### **2.3.6 Priority activities**

Beyond investment in infrastructure, documentation and regulatory mechanisms need to be upgraded so as to render a facilitated service to the business sector:

- Analysis of the institutional responsibilities and regulatory powers in order to eliminate redundancies of responsibilities and ineffective governmental procedures;
- Review of regulatory framework in the port sector and waterborne transport sector. In order to establish a functioning framework in order to generate mechanism under the user pays principle, which allow an efficient management of the navigational system (maintenance, investment etc.);
- Need for an enactment of relevant and enforceable legislation so as to lead to a successful implementation;

- Intersectoral programme on the development and enhancement of the Paraguayan fleet in order to anticipate shortages of shipping capacities:
  - Establishing of a industry round table including: national and foreign ship builders, trucking companies, and ship operators with interest in joint ventures to develop ship building capacity with Paraguay (see project proposal).
- Continuation of the M4 Project. This project aims at reduction of costs in export in the Asunción–Montevideo corridor. The programme has been initiated and led by UNCTAD and is supported by the Paraguayan and Uruguayan foreign trade offices, the Logistics Round Table for external trade and the Network for investments and Exports (Rediex) from the Ministry of Industry and Trade. At this stage the project specifically aims to solve bureaucracy, excessive documentation requirements and other regulatory barriers for Paraguayan containerized import and export cargoes which are handled through the port of Montevideo. The project also collaborates directly with the ANNP port and Villeta (public port) and the private terminals Fénix, Caacupemí and Terport. The M4 project ends in December 2007 and has managed to deliver tangible results and a constructive and open forum for discussion at a bilateral level, which should be continued to solve remaining challenges as the opening of transit containers by Argentine and Uruguayan customs officials.
- Extension and strengthening direct interaction and collaboration between the private sectors—bilateral round table based on the positive experience of the current M4 project. These activities should address the following topics at a national and bilateral level:
  - Collaboration in river transport development, implementation of measures;
  - Implementation and framework development to reduce logistics over costs;
  - Development of an action plan on the protection of logistics chains in transit countries.
- Addressing of discriminatory practices at MERCOSUR level and round tables.
- The activities should be focusing in complementing and strengthening existing activities:
- “Logistic Round Table” from the chamber of industry and trade, which is also involved in the M4 project development of trade between Montevideo and Asunción;
- Promotion of Iquique as an import centre for Paraguayan cargo and the development of free trade zone for Paraguayan transit cargoes in Iquique and Antofagasta;
- Strengthening FOCEM at MERCOSUR level;
- Recommendations on how to make facilitation and regional trade agreements more effective:
  - Sectorial and national interests should be reviewed and subdued to the regional interest, wherever feasible;
  - Public awareness should be activated.

Finally, both Paraguay and Bolivia must review the current lack of integrality in the design and implementation of their infrastructure, transport and logistic policies.



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