SEVENTH FRAMEWORK PROGRAMME

Coordination and Support Actions (Supporting)

Grant Agreement No: 233910

Project ENABLE

Stimulate Sustainable Freight Transport Systems with Latin American countries

Deliverable D1.1

Current Status of Freight Transport in Brazil and Argentina, and EU-LA Transport and Business Relations

Version:	2
Date:	September 16, 2010
Dissemination level:	PU
Deliverable code:	D1.1

PROJECT INFORMATION

Title: Stimulate Sustainable Freight Transport Systems with Latin American countries

Acronym: ENABLE

Grant Agreement no: 233910

Programme: 7th Framework Programme

Funding Scheme: Coordination and Support Actions (Supporting)

Start date: 1st September 2009

Duration: 24 months

Web site: www.enable-project.net

CONTROL SHEET

Version history					
Version number	**Total Pages**	**Date**	**Main author**	**Contributors**	**Summary of changes**
1	249	15/03/2010	RFF	UBA	-
2	306	16/09/2010	RFF	UBA	Improvement of analysis sections.

Abstract

The deliverable D1.1 of the ENABLE project documents the current situation analysis of the intermodal freight transport and logistics systems in Argentina and Brazil, of their bilateral freight transport connections, as well as of the international transport and trade relations between the Latin America and European Union. Based on the main problems, barriers, needs and priorities derived from this analysis, the research priorities for strengthening the LA and EU cooperation are outlined.

Approval		
	Name	**Date**
Prepared	RFF	01/09/2010
Reviewed	CERTH/HIT	10/09/2010
Authorized	CERTH/HIT	16/09/2010

Circulation	
Recipient	**Date of submission**
European Commission	16/09/2010

EXECUTIVE SUMMARY

Few regions in the world offer so many reasons to build a genuine alliance. The European Union (EU) and Latin America (LA) share a common history and culture, and are thus better placed to understand each other than other regions, boosting their potential for joint action considerably. The EU, now sharing a common currency amongst each 25 members, has become the largest foreign investor in LA. It is the largest donor of the region, and the primary trading partner for many countries of MERCOSUR and especially Argentina and Brazil.

The main goal of the project ENABLE - Stimulate Sustainable Freight Transport Systems with Latin American countries is to contribute to the external relations of EU with Latin American countries, specifically Argentina and Brazil, in the area of co-modal and intermodal freight transport. This goal will be served by defining and promoting to the Latin American region, European innovations and best practices that will facilitate the development of sustainable intermodal freight transport systems in the target area. Networking and partnership building actions will be employed, strengthening in this way the dialogue between Europe and Latin America, as well as fostering international cooperation between the two geographical areas.

The increasing influence of Brazil, Argentina and Mexico, the region's wealth in terms of human resources and raw materials and the increasing importance of Latin America's role in supplying the EU with agricultural products are just some of the reasons that have strengthen the partnership. On the economic front, EU is a key trading partner for LA economic and industrial development and is set to play a major role in science and technology. LA's political weight on the international stage is growing. The EU is a strong partner that can assist in the consolidation of its position within the multilateral system.

Over the last twenty years, European businesses have invested heavily in LA, as the potential for investment growth there is still strong, due to the existing opportunities, especially in the strategic sectors where European excellence has proved its mettle: information and communication technologies, the aerospace and automobile industries, engineering and metal-working, energy, environmental sciences, infrastructure and transport. European scientific research is also at the cutting edge in many sectors and has much to gain from developing the considerable potential of expertise and know-how that exists in LA, in sectors such as transport, biotechnology (biofuels), aeronautics and health.

One of the main EU's objective for the coming years is to establish an enhanced strategic partnership through a network of association agreements (including free trade agreements) involving all LA countries and liable to contribute to the integration of the region as a whole. Strengthening the strategic partnership should therefore contribute to establishing a favourable climate for economic exchanges between the two regions: in LA this could mean technology transfers, improvements in productivity, the development of its infrastructure and diversification of its markets. It is in the EU's interest on the other hand to develop and consolidate its market positions and to pursue a dynamic investment policy.

SPECIFIC PROJECT OBJECTIVES:

1. To perform a sound review and analysis of the local and regional freight transport needs, weaknesses, barriers and priorities in the target countries (i.e. Argentina and Brazil).

2. To conduct a thorough state-of-the-art review of the European technological solutions, research results, industrial innovations and best practices available in the area of co-modality and intermodality in freight transport.

3. To map the identified needs and priorities in Argentina and Brazil against the European know-how paving the way for the successful transfer of the latter to the target areas.

4. To develop a series of roadmaps including concrete actions and strategies that will facilitate the effective deployment of the European know-how to Argentina and Brazil.

5. To establish a Forum of stakeholders in Latin America bringing together all types of stakeholders of the local and regional freight transport systems. The purpose of this Forum will be multiple: debate forum, roadmaps validation mechanism, and networking and dissemination channel.

6. To perform a series of dissemination and promotion activities including Forum sessions, conferences, press releases, communication with industrial parties, as well as a web site.

The EU wishes to continue enabling access of LA exports to the European market. The generalized system of preferences offers them tariff preferences and customs duty exemptions. The online "Export Help Desk" service provides information about opportunities for accessing the European Market. The current challenge therefore is to find a way to facilitate trade and European investment in Latin America. The Commission's aim is to encourage the development of a legal climate to guarantee the predictability and security of these investments. In the WTO framework, progress on market access and common standards would allow firms to trade and invest more easily. The Commission encourages the adoption of legislative frameworks and common standards. This way, it proposes strengthening the existing regulatory dialogue with the Latin American countries on the information society. It also supports developments in air and maritime safety and the use of GALILEO, a satellite navigation technology.

Argentina is one of the most important partners of the EU. It is a big exporter of agricultural goods to the EU and also an important destination for EU investment. Europe is Argentina's second export market after neighbouring Brazil. It is part of MERCOSUR while it also participates in the EU's ongoing negotiations for a free trade agreement with that regional group.

The EU has a trade deficit of €2.5 billion with Argentina. However the EU runs a sizeable surplus in services trade with Argentina. It is also the biggest foreign investor in Argentina, accounting for about half of the FDI in Argentina, notably in the automotive sector. Europe and Argentina have a close cooperation towards the removing of unnecessary barriers to trade, especially in the mutually important area of food and health standards. They are also working on improving enforcement of rules in areas like intellectual property and investment.

On the other hand, the EU is Brazil's

biggest trading partner, accounting for 22.5% of its total trade. Brazil is also part of MERCOSUR, while it participates in the EU's ongoing negotiations for a free trade agreement with that regional group. Brazil is the single biggest exporter of agricultural products to the EU, accounting for 13% of total EU imports. Despite its size, Brazil only ranks as the EU's 10th trading partner. In terms of goods, the EU runs an overall trade deficit with Brazil of over €11 billion although it has a surplus in services trade of €500 million. It is also the biggest foreign investor in Brazil. Because the Brazilian market is relatively high protected, the EU consistently encourages Brazil to reduce tariff and non-tariff barriers, and to establish a stable regulatory environment for European investors and traders. Brazil is a key interlocutor for the EU in the on-going WTO Doha Round of world trade discussions because it is a representative of the G20 group of advanced developing countries.

The balance of imports and exports is negative in this case as well as in the case of Argentina. Main EU imports from Brazil are primary products, in particular agricultural products. However, manufactured products such as machinery and transport equipment represent almost one third of Brazilian exports to the EU. The EU exports mainly manufactured products to Brazil; machinery, transport equipment and chemicals.

The backbone of the EU's future bilateral trade relations with Argentina and Brazil will be a wide EU-MERCOSUR Association Agreement aiming at the creation of a free trade area. This agreement is currently under negotiation and is expected to provide a boost to regional trade integration among the countries of MERCOSUR and stimulate new trade with the EU by removing tariff and non-tariff barriers to trade. The MERCOSUR-EU FTA will cover, among other issues, trade in goods and services, investment, intellectual property rights (IPR) aspects including protection of geographical indications, government procurement, technical barriers to trade and sanitary and phytosanitary issues.

Until June 2004, there was gradual but substantial progress in the negotiation. However this stalled in September 2004. Since then, regular contacts have been held at both ministerial and technical level in order to explore ways on how to re-engage the process. However, the EU-MERCOSUR negotiations are linked to the WTO Doha world trade discussions and in particular to the question of market access for agriculture and industrial goods and services. Both the EU and MERCOSUR recognise that greater clarity on the outcome of the Doha discussions is necessary before an EU-MERCOSUR agreement can reach a conclusion.

Multimodal Transport Characteristics

Brazil and Argentina, being under the spotlight of the present study regarding Latin America, are situated in the American continent and together represent 54% of the Latin American territorial area.

The characteristics of the current transport of goods to the import/export points of Brazil and Argentina, with the identification of the main transport operators, the existing types of operation, the technologies involved, the customs procedures, the international trade regulations and rules, comprise the current environment which propitiate the goods exchange between the economic blocs, and serve as starting point for the sustainability analysis.

It is possible to observe that the dynamic of Brazil and Argentina export to the European Union is intense in the agricultural business field, while imports mainly include

chemicals, mechanic products and fertilizers. Commercial relations are achieved through multimodal corridors that include road, rail and waterway networks. Freight transshipment points are located in big and small ports, while the crossing of the Atlantic Ocean is achieved either through maritime routes, or in some cases, using the air transport.

The majority of the products imported in Argentina arrive in the country through maritime and road networks. With a coast covering approximately 4,000 km, Argentina has well equipped ports and wide areas for freight storage.

The multimodal network of transports in Argentina is historically consolidated by the use of extensive road routes that cross the country, added to a remarkable agglomeration of the rail network around the district of Buenos Aires. Regarding the waterways and fluvial ports the highlight is observed in the network formed by the rivers Parana, Uruguay and Plate that discharge into the Atlantic Ocean and provide connection with Brazil.

In the air sector, international freight transport is achieved by the use of aircrafts for both passenger and freight transport. The most prominent companies in the market are mostly air cargo agents that use space in commercial and cargo aircrafts of regular air transport companies. Some of these companies offer integrated services using road networks for freight transportation air transport for the operation of international cargos.

A very interesting point is that existing supply for air freight transport in most airports surpasses the demand, making the solution of road transport more attractive. Therefore, cargos are often transported through road networks up to the Viracopos Airport, in São Paulo State, and from there air transport is used for their transshipment to other countries across the Atlantic.

The extensive existing bureaucracy in the air freight sector is a major disadvantage making the particular mode of transport less competitive due to the long waiting times in customs, the freight transshipment from the aircraft to the warehouse and the posterior return to the aircrafts, among others.

Demand for air cargo in Argentina is lower than in other economies of Latin America, especially regarding exports. The main reasons that explain this phenomenon are, the characteristics of the cargo generated in the country, the existing more competitive with maritime transport (which has improved services and reduced rates), and the decade-long recommendation process of airlines which has significantly affected supply, especially for cargo originating in the provinces.

Currently, the road transport sector in Brazil and in Argentina is significantly fragmented, with autonomous truck drivers representing 65% and 70% of the total fleet of trucks of Brazil and Argentina, respectively. Besides, the average age of the fleet of trucks in Brazil and Argentina is high, accounting to 19 years in both countries and being far higher that the respective average age in the US being only 8 years. Part of the fleets cross the border between Brazil and Argentina through the road networks, avoiding this way intermodality.

Although the supply for road transport is quite high, allowing this way process to be low, the actual reality is different; paradoxically, road transport is extremely expensive (taking the set of goods transported) for the society as a whole, bringing this way o the spotlight the necessity for resolving issues in the railway transport sector.

In the road transport sector, one of the main problems is the bad condition of the road network that results to the raising of prices for freight transport. The quality of the Latin America highways is usually poor. Less than one third of the road network is in good condition, while data is not available for the whole network.

This occurs mainly due to the lack of inspection of the limit of goods transported by the vehicles, damaging this way the road infrastructure and reducing the competitiveness of the companies that respect the limits.

Brazilian and Argentinean railways are franchised, under conditions not so favorable enlargements of the rail networks, getting, both, limited to maintenance targets and equipment modernization. However increase of efficiency next to the users and growth of the transports production, has been accomplished in both countries.

These networks connect basically the respective hinterlands with their port system, predominantly moving bulk cargo related to exports. In Brazil, part of this network also serves as a way for the transport of raw material to the heavy industry, mainly in the transformation of the iron ore.

Despite Brazil and Argentina's networks are not integrated, given the different gauges near the borders, both countries do have links with the rest of their neighbours. To a limited extent, difference in gauges also affects internal connectivity. Other problems present in Brazil are the old design of curves and slopes that limit speeds, and the interface with urbanized areas, where problems as the intersections with urban roads and the occupation of the domain trips persist and then reduce the operational efficiency of the system, increasing its costs.

Maritime transport on the other hand, is the biggest responsible by the international trade movement among continents, which represent the higher fraction of the total movement of export and import both in Brazil and in Argentina. In the maritime transport a higher amount of companies exist, dealing with the logistic process than in the other modes of transport. Besides the freight shippers, there are also maritime agents, port operators and also ship owners (constructors).

The main problems associated to maritime transport are related to institutional problems such as slow operations in the ports and customs formalities, rates charged in the ports for the reshipment of products transported through waterways (not existing in the relevant transshipments using rail and road), the bureaucracy of the taxes inspection that increases the companies' costs and the rules to contract workers in the public ports which generates excessive labor costs.

EXPECTED RESULTS

1. Current status of intermodal freight transport in Brazil and Argentina, and of EU-LA transport and trade relations.

2. Handbook of European innovations, research results and best practices in the area of co-modal and intermodal freight transport.

3. Roadmaps and recommendations enabling the successful deployment of the European know-how to Argentina and Brazil.

4. Forum and Conference of intermodal freight transport stakeholders in Latin America.

Beside the problems of the maritime infrastructure, such as the silting up or incompatibility of the gauge of the access canals and bedding with the new vessels, the restricted technological resources in the port operation management cause freights to spend unnecessary time waiting to be loaded/unloaded, thus resulting to additional costs to the transport.

Moreover, in Brazil, there are also multimodal transport operators that, in practice, are represented by the big producer companies responsible for the logistics of their own freights.

In Brazil the issue of security in ports worries the port terminal operators, especially in relation to the additional costs and its impact in competitiveness. In some ports, the current procedures already include the digitalization of the documentation, however new security measures and procedures imposed to the international transport of goods after the September 11, 2001 attempts were not implemented in the majority of the ports yet. The additional costs for the implementation of the security systems, considered significant, can harm considerably the competitiveness of some ports.

In this way, it noted in the outcomes of the present study in some comments pointed out previously, that the accomplishment of the freight transport through an effectively multimodal system, lacks solutions in several areas so that it can become a reality as in the internal transport of South America's countries, especially in Brazil and Argentina and therewith, promote costs reductions and enlargement of the services, which directly affect the trade of these countries with the European Union.

ABBREVIATIONS & TERMINOLOGY

ABIOVE: Associação Brasileira das Indústrias de Óleos Vegetais (Brazilian Association of the Vegetable Oil Industries)

ABRATI: Associação Brasileira das Empresas de Transporte Terrestre de Passageiros (Brazilian International Transporters Association)

ABTI: Associação Brasileira de Transportadores Internacionais (Brazilian International Carriers Association)

ADEFA: Automotive Factories Association

AFAC: Association of Argentinean Parts Factories

AFRMM: Freight Additional Rate for Renewal of the Merchant Marine

AITT: Acordo sobre Transporte Internacional Terrestre (International Road Transport Agreement)

ALADI: Associação Latino Americana de Integração (Latin American Integration)

ALALC: Latin American Association of Free Trade

ALL: América Latina Logística (Logistics Latin America)

ANAC: Agência Nacional de Aviação Civil (National Agency of Civil Aviation)

ANTAQ: Agência Nacional de Transporte Aquaviário (National Agency of Maritime Transports)

ANTF: Associação Nacional dos Transportes Ferroviários (National Association of the Rail Transports)

ANTT: Agência Nacional de Transportes Terrestres (National Agency of Terrestrial Transports)

AWB: Air WayBill

BA: Bahia State

BCS: Border Customs Stations

BDG: Geographic Database

B/L: Bill of Lading

BNDES: Banco Nacional de Desenvolvimento Econômico e Social (National Bank of Social and Economic Development)

BR: code to identify Brazilian roads.

CAP: Common Agricultural Policy

CCE: Commission of the European Communities

CCI: Chamber of International Trade

CENT: Consultora Ejecutiva Nacional de Transporte (National Consultant Transport Executive)

CEPEA: Centro de Estudos Avançados em Economia Aplicada (Center of Advanced Studies on Applied Economics)

CESPORTOS: State Commission of Public Security in Ports

CET: Common External Tariff

CIF: Coast Insurance Freight

CNI: Confederação Nacional da Industria (National Confederation of Industry)

CNRT: Comisión Nacional de Regulación del Transporte de Argentina (National Commission for Regulation of Transport in Argentina)

CNT: Confederação Nacional do Transporte (National Confederation of Transport)

CODDET: Code of the Argentinean road segment similar to the Brazilian PNV code

CONDESUL: Road Freights Transport Industry Council of Mercosur

CONPORTOS: National Commission of Public Security in Ports

CPI: Consumer Price Index

CRT: Conhecimento Internacional de Transporte Rodoviário (Road Transport International Document)

DAC: Civil Aviation Department

DICT: Declaration of International Customs Transit

DIVIM: Merchant Marine Department

DNIT: Departamento Nacional de Infraestrutura de Transportes (National Department of Transports Infrastructure)

ECA: Economic Complementation Agreement

ECLAC: Economic Committee for Latin America and the Caribbean

ECSC: European Coal and Steel Community

EFC: Estrada de Ferro Carajás (Carajás Railroad)

EFVM: Estrada de Ferro Vitória-Minas (Vitória-Minas Railroad)

EU: European Union

EUROSTAT: Statistical Office of the European Union

FA: Ferrocariles Argentinos (Argentinean Railways)

FAL: Facilitation Convention

FCA: Ferrovia Centro-Atlântica (Centro Atlantica Railroad)

FHC: Fernando Henrique Cardoso, Brazilian president, during 1995 to 2003.

FHWA: Federal Highway Administration

FNS: Ferrovia Norte-Sul (Norte-Sul Railroad)

FOB: Free On Board

FUNCEX: Fundação Centro de Estudos do Comércio Exterior (Foundation Center for the Study of Foreign Trade)

GATT: Acordo Geral sobre Pautas Aduaneiras e Comércio (General Agreement on Tariffs and Trade)

GDP: Gross Domestic Product

GEIPOT: Empresa Brasileira de Planejamento de Transportes

GO: Goiás State

IATA: International Air Transport Association

IBGE: Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)

ICAO: International Civil Aviation Organization

ICM: International Cargo Manifest

IECP: Integration and Economic Cooperation Program

IIRSA: South American Regional Infrastructure

IL: Importation License

IMCO: International Consultative Maritime Organization

IMO: International Maritime Organization

INDEC: Instituto Nacional de Estadísticas y Censos (National Institute of Statistics and Census)

INFRAERO: Infraestrutura Aeroportuária Brasileira (Brazilian Company of Airportuary Infrastructure)

IRFT: International Road Freight Transport

IRTA: International Road Transport Agreement

ISCS: Interior State Customs Station

ISPS: Código Internacional de Segurança para navios e instalações Portuárias (International Code of Safety for ships and port facilities)

LA: Latin America

LICC: Logistic and Industrial Customs Centers

LSP: logistics services providers

MA: Maranhão State

MAGyP: Ministry of Agriculture, Cattle Raising and Fishing

MDIIT: Ministry of the Development, Industry and International Trade

MERCOSUR: Southern Common Market

MG: Minas Gerais State

MP: Ministério do Planejamento (Ministry of Planning)

MRN: Mineração Rio do Norte (Rio do Norte Mineration)

MS: Mato Grosso do Sul State

MTO: Multimodal Transport Operator

NAFTA: North American Free Trade Agreement

NFT: National Freights Transportation Association

NOS: Not Otherwise Specified

OECD: Organização para a Cooperação e Desenvolvimento Econômico (Organization for Economic Co-operation and Development)

PAC: Programa de Aceleração do Crescimento (Growth Acceleration Program)

PGO: Plano Geral de Outorgas (General Plan of Grants)

PI: Piauí State

PORTOBRÁS: Empresa de Portos do Brasil S.A (Brazilian Ports Company)

POSGAR: Posiciones Geodésicas Argentinas (Argentinean Geodesic Positions)

PND: Plano Nacional de Desestatização (National Program of Di-estatization)

PNLT: Plano Nacional de Logística e Transportes (National Plan of Logistics and Transports)

PNV: Plano Nacional de Sistema de Transporte (National Plan of Transport System)

PR: Paraná State

RCOTM-C: Seguro de Responsabilidade Civil do Operador de Transporte Multimodal – Cargas (Multimodal Transport Operator Responsability Insurance – Freight)

REMAN: Refinaria de Manaus (Manaus Refinery)

RFFSA: Rede Ferroviaria Federal S.A (Federal Rail Network Anonymous Society)

RN: National Route

RS: Rio Grande do Sul State

S.A.: Sociedade Anônima (Anonymous Society)

SC: Santa Catarina State

SECEX: Secretary of International Trade

SEP/PR: Secretária Especial de Portos / Presidência da República (Special Secretariat of Ports/ Republic Presidency)

SIRGAS: Sistema de Referência Geocêntrico para as Américas (Geocentric Reference System for America)

SIT: Secretary of International Trade

SP: São Paulo State

SPECC: Special Precinct for Exportation Customs Clearance

SUSEP/MF: Superintendência de Seguros Privados/Ministério da Fazenda (Superintendency of Private Insurance / Finance Ministry)

TEC: Common External Rate

TEN: Trans-European Networks

TEU: Twenty feet equivalent unit

TKU: ton per useful kilometer

TMDA: Annual Daily Average Traffic

TVV: Terminal of Vila Velha

UN: United Nations Organization

USA: United States of America

UTN: Universidad Tecnológic Nacional - Argentina

VAT: Value added tax

VTMS: Vessel Traffic Management Systems

WGS: World Geographic System

WTO: World Trade Organization

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ANNEXES

1. INTRODUCTION

1.1. General

The world economic growth of the last decade had as one of the most significant impacts, the increase of the demand for goods and people circulation, requiring of the transports, particularly to the international trade, enlargements of the investments in infrastructure, besides the review of the institutional and regulatory procedures of the sector.

There is a moment when the relations established by the consolidation of the world's economies "globalization", redirect the ways of practicing the trade and accomplishing the transport necessary for its customer service. The commercial relations of the big world economic blocs start to mutually feel reflections of the inefficiencies in the transports systems of their commercial partners.

In this sense, the economic policy does not happen only in the internal planning and structure of each market, but also with the preoccupation of how the customer and supplier countries must run their transports systems, in a view of intercontinental networks, whose effects of the transports costs spread among the continents.

Therewith it appears the principle of considering the means and ways of transportation as links of the productive chains and of the trade relations, and not an isolated variable which depends pure and exclusively on the governmental powers to maintain and expand itself.

The transports privatization increases in this context and in parallel the regulatory powers, which appears from the changes suffered by the world's transports policies.

Hence, the way of planning and investing in transports systems is emphasized in the private aspect, where the interests of the operators and executives of the transports sector start to have greater participations in the governmental decisions.

In this context, the study of the intercontinental transports and the specific characteristics of the transports among the economic blocs and the countries which form them, allows improving the understanding about solutions for institutional, regulatory, tariff and operational hindrances and barriers, such solutions being shared among different countries and governments, thus arising the opportunity of creating specific and perhaps permanent forums for the discussions of the transports and their practices.

The ENABLE project is in the direction of becoming a pioneer instrument of these studies and researches directed to the intercontinental understanding of the transports operations and practices, mainly in which refers to its usage for accomplishing the foreign affairs.

Hence, the studies guided by the policies established in the ENABLE project culminate with the proposition of gathering in seminars the different actors involved in the transports operations, mainly of the inter and multimodal transports, whose higher target is the understanding of how to proceed to have a sustainable transport.

Thus, the studies described in this document aim at meeting the specific part of the Enable project as for the knowledge of the commercial, institutional and of transports relations between Brazil and Argentina, and so collaborate for one of the project's stage, which classifies the trade and the transports between these two countries as essential

for the economic growth of South America and their relations towards the other countries, especially the European Union countries.

The development of the studies about goods transport between Brazil and Argentina and the characterization of the current levels of businesses, transports and technological cooperation between European Union and Latin America, focusing on Brazil and Argentina, meets one of the initial stages of the ENABLE project concerning the knowledge of the current situation of the commercial relations between the economic blocs, enabling the knowledge of the main hindrances to the growth and the development potential considering the opportunities in medium and long term.

The studies results about transports infrastructure, production and consumption, development of the commercial relations and the institutional and regulatory aspects, established under the view of transports intermodality and sustainability, establishes the bases for the other stages of the study in South America, while the identification of the current situation of the international relations and the commercial flows between the economic blocs allow that the most effective actions necessary for promoting the sustainability of the transports system be evaluated, through the use of the best practices already adopted in Europe to solve the existing and identified barriers in the Latin American transport, allowing still the stimulus to intermodality.

This report aims at taking advantage of the available secondary information and expert opinion of the project`s partner institutions. In this sense, right from the start a clarification on scope and extent possibilities is necessary. In strict terms, multimodal transportation does not yet exist in Argentina, given that the law passed on the issue isn´t yet in force. On the other hand, intermodal operations are at an initial stage, although quickly gaining ground in the market. Globally, demand for freight transport is overwhelmingly dominated by bulk cargo, so the demand potentially compatible with combined operations is minoritary, although of growing importance. This can be told from the increasing professionalization of truck firms, and from the consolidation of a number of truck companies operating fleets and establishing brands in the market. That is, this is an intrinsically private-sector process. As a consequence, data on their operations is commercial, beyond the scope of the traditional collection systems of government agencies. At the same time, academic research on engineering systems is still very much on its first steps, particularly that on transportation systems. This explains the unavailability of surveys or samples that may more or less cover one aspect thoroughly. As a partial surrogate, intensive use of data on international trade is presented. This is an available source of data that classifies transactions by mode of transport.

Aware of the availability of this issue of information availability since its conception, ENABLE is aimed at making the most out of the available knowledge, presenting each country`s freight transport basics and providing the analysis on the basis of expert knowledge of the field, and on the basis of building links with the private sector. It is particularly in such a context of initial development of the market that ENABLE will make its contribution, by means of a state-of-the-art report on intermodal transport on the basis of the performance of the transportation system.

The act of structuring the networks, their mains corridors and the logistics characteristics of transports operation, defined to Brazil and Argentina (main countries of the study's interest), allows at once analyzing the preponderant conditions which determine the issues of intermodality, multimodality and the hindrances and barriers established by the infrastructure installed, the technologies used and the practices of transports consolidated.

From the study of the production and consumption in Brazil and in Argentina, and international trade between them, are shown the institutional, tarifary and regulatory barriers which conduct the practices of transports and its working logic.

Now, the results of the studies about products export and import from the European Union by Brazil and Argentina enable the identification of the main nodal logistics systems (ports and airports) responsible for the movement and consequently for the identification of the intermodal transport access network to these points.

In this way, the detailed knowledge of the main logistics points responsible for the international trade allow that the regional particularities, areas of the performance scope (hinterlands) and particularities of each connecting point of the trade between Brazil and Argentina and intercontinental are known.

The characteristics of the current goods transport until the entry/exit points of Brazil and Argentina, with the identification of the main transport operators, the types of operation accomplished, technologies involved, customs procedures, regulation and rules of international trade, arrange the current environment that propitiates the goods exchange between the economic blocs, and serve as starting points for the sustainability analysis.

The knowledge of the transport network, the products transported, technological level applied, main administrative procedures, regulatory levels and of operational efficiency, which compose the descriptions of this document, gives conditions to subsidize the analysis on opportunities, hindrances and barriers to the trade between European Union and Latin America, represented in this study by Brazil and Argentina.

Thus, the descriptions and analysis of this report consolidate the main information and database produced in the development of the activities classified as 1.1 and 1.2 of the WP1 Stage, oriented to meet the targets established in the DOW.

1.2. Objectives

1.2.1. Analysis of local freight transport needs, requirements and barriers

The objective of this stage is to accomplish a deep analysis of the present situation of the goods transport in Brazil and Argentina. The activities to be implemented must approach two lines of action:

1. The local transport in Brazil and Argentina considering:

   Survey of the current physical macro structure of the transport networks in these countries. Study of the demand associated to these networks and the expected growth for these countries' economies. Besides, it must be considered the types of the main goods, aggregation of their transports in the main corridors, which allows analyzing future strategic scenarios for the multimodal transports and the multiproduct modeling, simulating the transport flows and costs between origins and destinations. Reviewing and analyzing the national database of production, logistics and transport, and their inter-relations.

Survey of the institutional and operational regulations to understand some of the transport barriers in these two countries better. Identifying and evaluating factors associated to the multi-function of the transports systems according to infrastructure, socioeconomic and institutional (regulation) aspects. Identifying the existence of intermodal organizations, associations or unions, as much at national as international level, which would promote the intermodality of the goods transport.

2. The transnational and transports trade between Brazil and Argentina:

   Considering the study of the transport complexity between Latin America countries, the factors and impacts related to the infrastructure, to the technologies used, the juridical and legal issues and the commercial agreements about the possibilities and perspectives of the intermodal goods transport. In this context, identifying the possibilities of transports and the main technologies necessary to permit an efficient transport of goods with a high level service in the continent, mainly between Brazil and Argentina, considering these issues according to the established ways of regulation and the economic growth trends.

1.2.2. Identification of Current Levels of EU-LA Transport Business and Technological Cooperation

The objective of this study stage is investigating the current levels of trade, transport, businesses and industrial cooperation between the European Union (EU) and Latin America (LA). This cooperation will be analyzed in several levels, such as import/export products, collaboration among the ports, the participation in common entrepreneur forums, the interchange of knowledge.

In the objective of this activity is also the analysis of the transport corridors and connections between EU-LA. Temporary indicative criteria used for the selection of the corridors to be examined in the scope of this task include:

- Corridors with origin and/or destination in Argentina and Brazil;
- Volumes of freight;
- Technology used;
- Infrastructure of the ports which serve the connection EU- LA;
- Procedures (for example, customs);
- Port hinterland.

For each corridor, it will be approached issues like port infrastructures, customs procedures, operational procedures of the terminals, technologies, freights owners, terminal operators, punctuality, damages/theft, juridical issues and the delays.

In this task it will be given special attention to the existing technological support. To reach a sustainable development, an important (and critical) point is the understanding and utilization of advanced technologies; another is the definition of the measures necessary to obtain changes of transport in a significant way. Thus, the current levels of technological development and support will be studied in a way that it can be identified the contribution of these measures. It will also be explored opportunities for the reinforcement of the entrepreneurial and industrial cooperation among the countries which made up the economic blocs in study.

2. ANALYSIS OF NATIONAL FREIGHT TRANSPORT MARKETS AND CONDITIONS FOR MULTI AND INTERMODALITY

2.1. Characterization of the Study Region

2.1.1. Latin America

The Latin America, region which comprises almost the totality of the South America and Central Continental, except for the South American countries Guiana and Suriname and the Central-American Belize, it is composed of 20 countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela. Besides these, there are more 11 territories that are not independent, therefore cannot be considered countries, but, still, Latin. There is an approximate area of 21,069,501 km^2 and with a population of over 569 million inhabitants in 2008.

Brazil and Argentina, countries that are the object of this study, regarding Latin America, are situated in this region of the American continent and together represent 54% of the Latin American territorial area.

Latin America's economy is considered underdeveloped, with great part of the population occupying the primary sector. Only some countries present significant parts of the population economically active in the secondary sector. However, it is the tertiary sector which has grown in almost all Latin America countries.

The mineral extractivity has considerable relevance in practically all the countries, although many times the exploration is undertaken for the account of foreign capital. In the oil extraction, there is a big distinction to Mexico, Venezuela, Brazil, Argentina, Colombia and Ecuador.

In general, it is a not very industrialized area, so its economy is subordinated to the agriculture and cattle raising and to the mining. Even with this agricultural dependency, the greater part of its lands is cultivated in an extensively way and it has a reduced GDP per capita.

In Latin America, few are the countries which reach a projection in the industrial activity: Brazil, Argentina, Mexico and, less distinguished, Chile. In the other Latin American countries, mainly of Central America, industries of primary products processing for exportation predominate.

The exportations of the great part of the Latin America countries are still supported in natural products, whose prices in the international market oscillate a lot, not representing a big raise of foreign currencies. One of the factors that create serious difficulties to the economic development and to the social integration of Latin America is the relative need for transport roads in good conditions.

The natural factors that affect the development of the transport systems in the region are the difficulties imposed by the relief; the predominance of the tropical climate,

characterized by frequent rains; the predominance of plateau rivers, making navigation difficult; and the density of the vegetation, almost insurmountable in some parts.

But it is mainly the lack of financial resources for the construction of modern ports and airports, big highways and fluvial floodgates, which hinders that this part of the continent present a dense road network. Among the Latin America countries, the more industrialized are, naturally, the more developed in this area, even if in all of them there are big gaps regarding means of transportation.

At the same time there is not, in Latin America, industrial and economic development of developed countries, these regions, however, still have in their territories a considerable natural reserve, which is in part being demarcated by areas of environmental protection, thus characterizing, even with all the human occupation installed, a biodiversity standing out the Amazon region and the efforts for its preservation.

There are registers of governmental efforts in the field of these countries so that the development is legally orientated to the environmental conservation and indigenous cultural preservation.

2.1.2. MERCOSUR

Considering all these aspects, it was created the Common Market of the South – MERCOSUR – which began in 1991, with the Treaty of Asuncion, signed by the presidents of Argentina, Brazil, Paraguay and Uruguay, and it was definitely instituted with the Protocol of Ouro Preto, in 1994. The Associated States of MERCOSUR are Bolivia, Chile, Colombia, Ecuador and Peru. Its existence justifies due to the commitment of the MERCOSUR with the deepening of the regional integration process.

In 2008, the MERCOSUR had a GDP of approximately 2 trillion dollars, being around 80% of this value corresponds to Brazil (United Nations Statistics Division, 2010). Then the asymmetries of markets existing in the bloc are big. This has been causing divergences inside the bloc, besides it is one of the factors that make it difficult the creation of an only currency for the economic bloc.

Paraguay and Uruguay demand economic concessions in order to compensate the asymmetries of market that they suffer. In 2006, the commercial interchange with these countries was almost 20 times lesser than the interchanges with Argentina. Nevertheless, the commercial interchange inside MERCOSUR has been favorable to Brazil because it has a commercial surplus with all the member countries (Thorstensen, 2007). In relation to MERCOSUR, Brazil and Argentina represent 95% of its territorial area and 98% of the Market's GDP. In the following table, information are presented about the area, population, GDP and GDP per capita of the four countries members of the economic bloc, with data from 2008.

Table 2.1 – Data from the States Members of MERCOSUR

COUNTRY	TERRITORIAL AREA (km2)	POPULATION (Inhabitants)	GDP 2008 (Million US$)	GDP PER CAPITA 2008 (US$)
Argentina	2,766,889	40,276,376	333,322	8,358
Brazil	8,514,876	193,733,795	1,595,498	8,311
Paraguay	406,752	6,348,917	16,100	2,581

COUNTRY	TERRITORIAL AREA (km2)	POPULATION (Inhabitants)	GDP 2008 (Million US$)	GDP PER CAPITA 2008 (US$)
Uruguay	177,414	3,360,854	32,186	9,610
Total	11,865,931	243,719,942	1,977,106	

Sources: IBGE and United Nations Statistics Division (2010). Data for Argentina does not include the area of the Argentine Antartic Sector

In terms of tarifary policy, MERCOSUR has, since 1995, a Common External Rate – TEC – which includes all the universe of products commercialized with third countries. About 9 thousand tarifary items integrate nowadays the common nomenclature of MERCOSUR, with ad valorem rates that vary, in general, from 0% to 20%, according to the category of products and the existence or not of a regional production. Besides, there is a series of customs and administrative procedures which were adopted with the purpose of assuring a higher uniformization in the application of the TEC (Ministry of Foreign Relations, 2009).

In this way, MERCOSUR tries to innovate, exposing a concept of integration conceived as a means to reach the international and regional competitiveness in the four founder countries, as well as in the other countries that may become members of the bloc. The creation of MERCOSUR is inserted in a world logic of political and economic blocs, whose experience constituted a step forward in the Latin American and European integrations.

2.1.3. Synthesis of the evolutionary dynamics of the commercial relations in MERCOSUR

MERCOSUR is the result from the modern experience of Latin American integration, whose starting point is situated in the 1940s, with the coming of the World War II and the further creation of the Economic Committee for Latin America and the Caribbean – ECLAC, created in 1948 by the United Nations – UN.

In this period, the trade among Latin America and the developed countries has suffered difficulties, what caused some countries to sign commercial agreements among themselves. This created an increase of intraregional transactions during and right after the war. These bilateral agreements, besides causing the diversification of the trade among the Latin America countries, they have made the intrablock exchanges get to 11% of the total trade in 1954 (Dathein, 2005 apud Vacchino, 1987).

A second moment to be highlighted is 1960, when the first Treaty of Montevideo instituted the Latin American Association of Free Trade – ALALC. Although ALALC does not have reached a big success, it was important because it has introduced new economic concepts and has created structures in use until today, such as customs guidelines, exceptions incorporated to the list of goods in free circulation, systems of payments and reciprocal credits (Thorstensen, 2007).

From ALALC it gets to the Latin America Association of Integration – ALADI, created by the Treaty of Montevideo of 1980, composed by 12 countries members, which also fixed new concepts and methodologies, used until today. One of them are the partial agreements, from which participate only some of the countries members, like for example, that the qualified countries like those of smaller relative economic development of the region (Bolivia, Ecuador and Paraguay) benefit from a preferential system (ALADI, 2009).

These agreements are progressive steps in the formation, in a long term, of the common Latin American market. Example of this is the Agreement of Economic Complementation, foreseen in the Treaty and adopted by MERCOSUR. The most significant step, however, was the approach between Argentina and Brazil.

The second half of the 1980s was marked by the retaking of the integration process in the two countries economically more important of South America, after the big retrocession in the beginning of the decade. This process was getting deeper successively until its amplification for Paraguay and Uruguay, through MERCOSUR. An important factor which stimulated the search for agreements was the reduction of the reciprocal trade, that was very big in the first years of the 1980s.

The total trade (exportations plus importations) between Argentina and Brazil suffered a strong drop in the first years of the 1980s, after it had increased a lot from 1975 to 1980. From 1985, the trade restarted to rise. Besides, the commercial remainders were persistently favorable to Brazil, harming Argentina. The Brazilian exportations for the neighbor country, on the other hand, were predominantly of manufactured goods, while the importations were, mostly, of primary products, tending to consolidate a standard of trade also unfavorable to Argentina (Dathein, 2005).

It stands out that this approach which occurred between the two countries culminated with the adoption of the Treaty of Asuncion, in 1991, what gave origin to MERCOSUR. This Market was constituted by the four founder partners with the purpose of being a free trade area that would turn into customs union and in the future would constitute a common market. It is appropriate to emphasize, however, that the integrationist scheme already existed in the bilateral plan, having been established in the shape of a common market since the Treaty of Integration Brazil-Argentina, of 1988.

The Buenos Aires Minute, of July 1990, decided to accelerate the rhythm of this integration process, giving characteristics of automaticity to the reciprocal liberalization of the bilateral trade. What the Treaty of Asuncion has done, in practice, was to quadrilateralize the process, keeping, in its essence, the same mechanisms and instruments of the bilateral schemes already defined in 1988 and 1990 (Giambiagi et al, 2005).

Besides the existing alliances, in which Brazil and Argentina are included, in 2000, arose from the Meeting of South America Presidents, in the city of Brasília, the initiative for the Integration of the South American Regional Infrastructure – IIRSA. In this meeting it was agreed, among the participants, the accomplishment of conjoint actions to propel the process of South American political, social and economic integration, including the modernization of the regional infrastructure and specific actions to stimulate the integration and development of isolated regions (IIRSA, 2009).

The idea of forming the IIRSA was originated from the Brazilian experience of territorial planning, known as Study of the Axles, executed by the Ministry of Planning, Budget and Management – MP – of Brazil, together with the National Bank of Social and Economic Development – BNDES – in 2000, which planned the country from regions identified for their economic interrelationship. In spatial terms, the IIRSA projects are organized in 10 Axles of Integration and Development: Andine, from Amazonas, Peru-Brazil-Bolivia, Capricorn, Guyanese Shield, South Andine, Central Interoceanic, MERCOSUR-Chile, Waterway Parana-Paraguay and from the South (MP, 2009).

Each of the axles of the Initiative was delimited from its productive vocation, which involves the economic activities currently dominant and the existing basic infrastructure, besides the potentialities to be developed having as a reference the

business view that exist for each region. The IIRSA projects portfolio is organized by axles, whose financings are from several sources of resources.

It is appropriate to emphasize that the several attempts of formation of economic blocs in Latin America had more or less successful experiences, nevertheless, they demonstrate the interest in the search for alternatives of development of the countries of the region. It is expected that, with the progress of MERCOSUR, an economic bloc is formed encircling a higher part of the Latin American countries, where several types of integration be employed, like it happens in the European Union.

2.2. Transport Infrastructure

This item presents information about air, water, pipeway, rail, maritime and road transports infrastructure, available in the Brazilian and Argentine territory. For such, these elements are represented by a georeferentiated database.

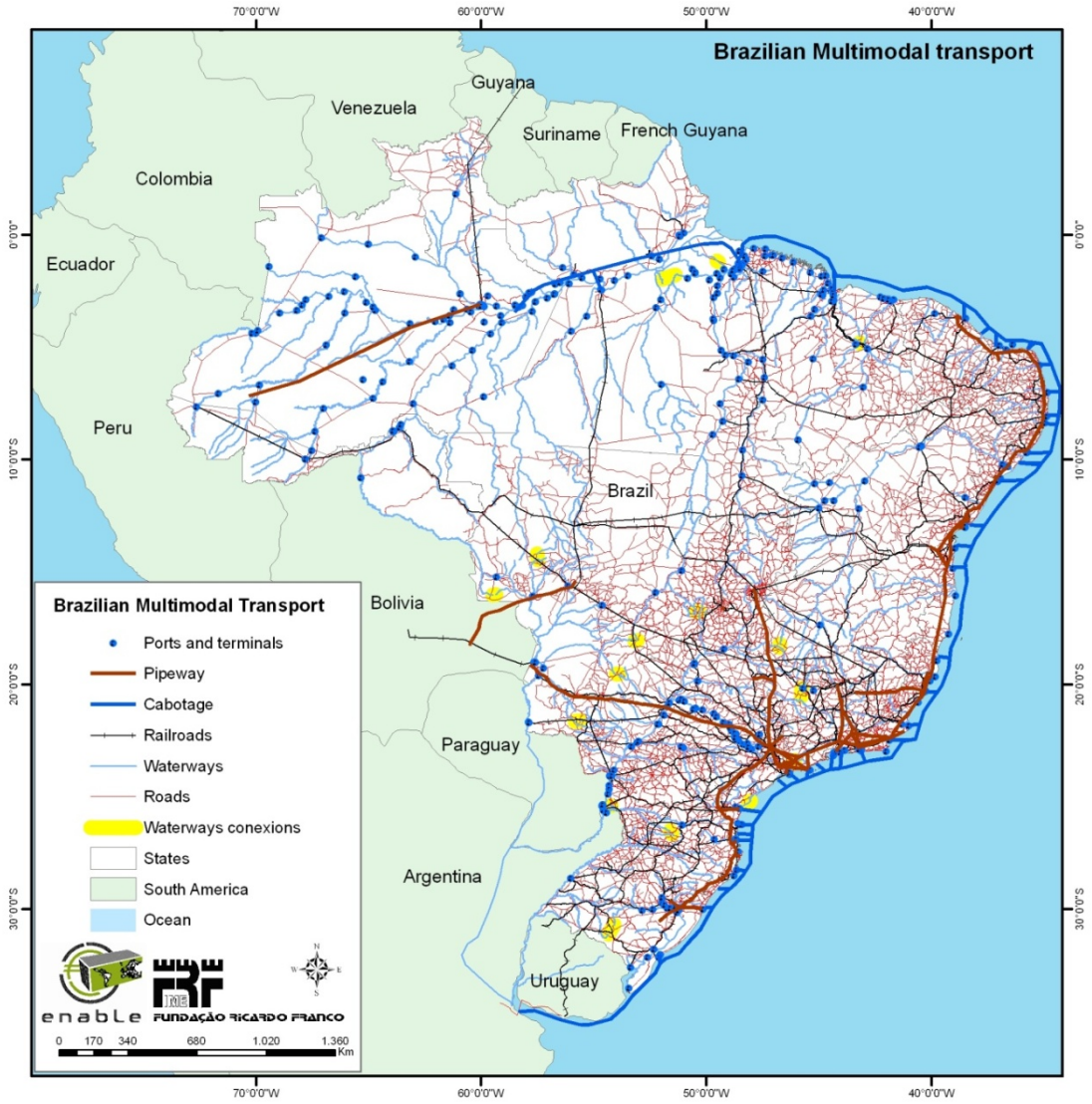
This information set, made up of areas, lines and points identification, is formed by geographic elements with the respective attributes which characterize the existing transports infrastructure in Brazil and Argentina. The files represent segment on road axles, railways, waterways, and connecting points such as maritime and fluvial ports, airport terminals, railway stations and other transshipment points, among others.

In this context, the database structure is made up of information about the freights movement and political-administrative data related to transports infrastructure between Brazil and Argentina. This information set was generated from the consultation with governmental organs and institutions responsible for the transports infrastructure in both countries.

2.2.1. Identification of Brazil's Transportation Network

The identification of the transports infrastructure is formed by information set about the Brazil's existing road system which represents the most important attributes classes of the Geographic Database – BDG structure, adding subclasses concerning the road, rail, air and waterway modals, constituting the multimodal network.

Brazil has a wide transports network with connecting points detached by the multimodal network. In this case, the multimodal connections of the Brazilian transports network, or points of freight overflow, that refers to the points of direct intermodal transference as well as to the existing structures for storage, located in the connection points surroundings or next to the producer areas, which serve for the storage of the products during the waiting period of the freight transference between the modals. Figure 2.1 shows the Brazilian multimodal network with emphasis to the road, rail and waterway systems.



Source: PNLT (2007)

Figure 2.1 – Brazilian multimodal network

The road network used in the project is the same made available during the execution of the National Plan of Logistics and Transports – PNLT, developed by the Ministry of Transports to support studies directed to the planning of transports in Brazil. The database associated to this network is found in georeferentiated digital format, segmented in predefined parts, according to indication of the National Plan of Transport System – PNV, published annually by the National Department of Transports Infrastructure – DNIT (Executor organ of the Ministry of Transports), and by the State Secretaries of Transports of Brazil. Each road segment has several attributes whose physical limitations of origin and destination are defined through codes, according to indication of the PNV in the current year. Thus, the geographical identification of the PNV sections which form the georeferentiated database of the offer of transports referring to the road modal, has as operational and of flow attributes, the results from the researches done and/or published by organs responsible for the transports, the modeling of transports and of relief definition systems, extracted from digital models of

elevation. The register about the pavement conditions and the data referring to the road operation are also obtained from governmental organs, like the registers of the "Register Video" and from the "Pavement Management", acquired by the DNIT for all the federal paved network. The road network presents information about geometry and the state of the pavement, declivity and relief, speed and jurisdiction. Figure 2.2 shows the Brazilian road network, with emphasis to part of the Metropolitan Region of the State of Rio de Janeiro and its respective segmentation according to indication of the PNV for the year 2009. In Table 2.2 it is possible to observe the extension of the Brazilian road network and the situation presented in November 2009.

Table 2.2 – Extension of the Brazilian road network in 2009

Km	PAVED	NOT PAVED	PLANNED	TOTAL
Federal	61,874	13,792	43,097	118,762
State	106,548	113,451	34,138	254,137
Municipal	26,827	1,234,918	77,382	1,339,127

Source: National Department of Transports Infrastructure – DNIT

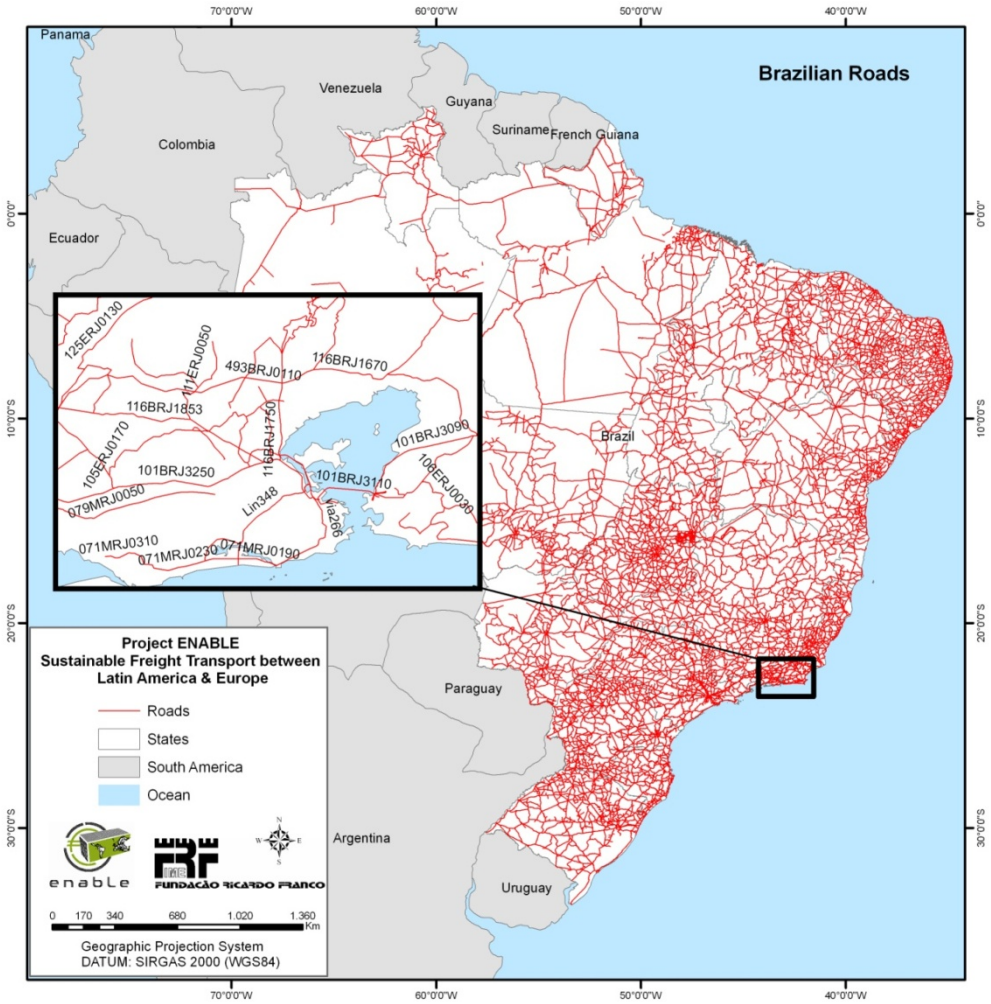


Figure 2.2 – Brazilian road network with details of segmentation PNV

In relation to the Brazilian rail network, it is important to stand out that through the National Program of Di-estatization – PND it was given the exploration of the public transport service to the private initiative, by means of contracts for freight rail transport, and contracts of leasing of the assets entailed to each of the networks originated from the di-estatization of the extinct Federal Rail Network Anonymous Society – RFFSA1. As a consequence, the volumes transported by train grow every year, providing significant economies in the freight transport of the Country.

Following the same standard of the road network data, all the rail segments were coded according to indication of the federal PNV, allowing the cadastration of the main physical characteristics of the network, from information of the Ministry of Transports and the National Agency of Terrestrial Transports – ANTT, this one responsible for the regulation and inspection of terrestrial transports in Brazil. It was necessary to review the assessed data referring to the activated or reactivated parts by the concessionaire from negotiations of contract with ANTT. Each segment contains physical characteristics of the rail parts, railway stations, equipment, operational and productivity results, according to statistical yearbooks produced by ANTT and data divulged by the concessionaires and organs linked to the operators, like the National Confederation of the Transport – CNT and the National Association of the Rail Transports – ANTF. Figure 2.3 presents the Brazilian rail network with emphasis to a part of the Metropolitan Region of the State of Rio de Janeiro.

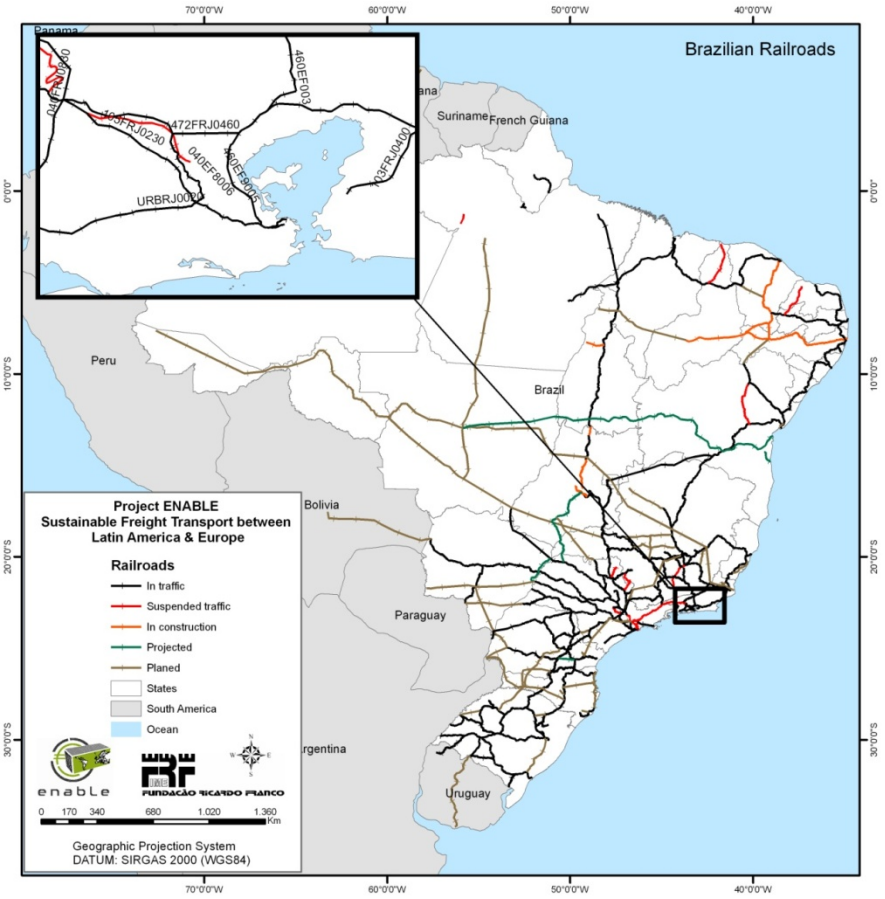


Figure 2.3 - Brazilian rail network

The Brazilian waterway network is defined by the Marine of Brazil and its codification follows the same standard of codification of the National Plan of Transports System adopted for the other ways of transportation. The physical, operational and infrastructure elements did not present significant changes in the last five years and they are reviewed according to information published by the Ministry of Transports, through the Waterway Administrations of the DNIT, National Agency of Maritime Transports – ANTAQ and by the State Secretaries of Transport, referring to the year 2009. Figure 2.4 shows the waterway network detailing, besides the information previously mentioned, data about dams and hydroelectric reservoirs.

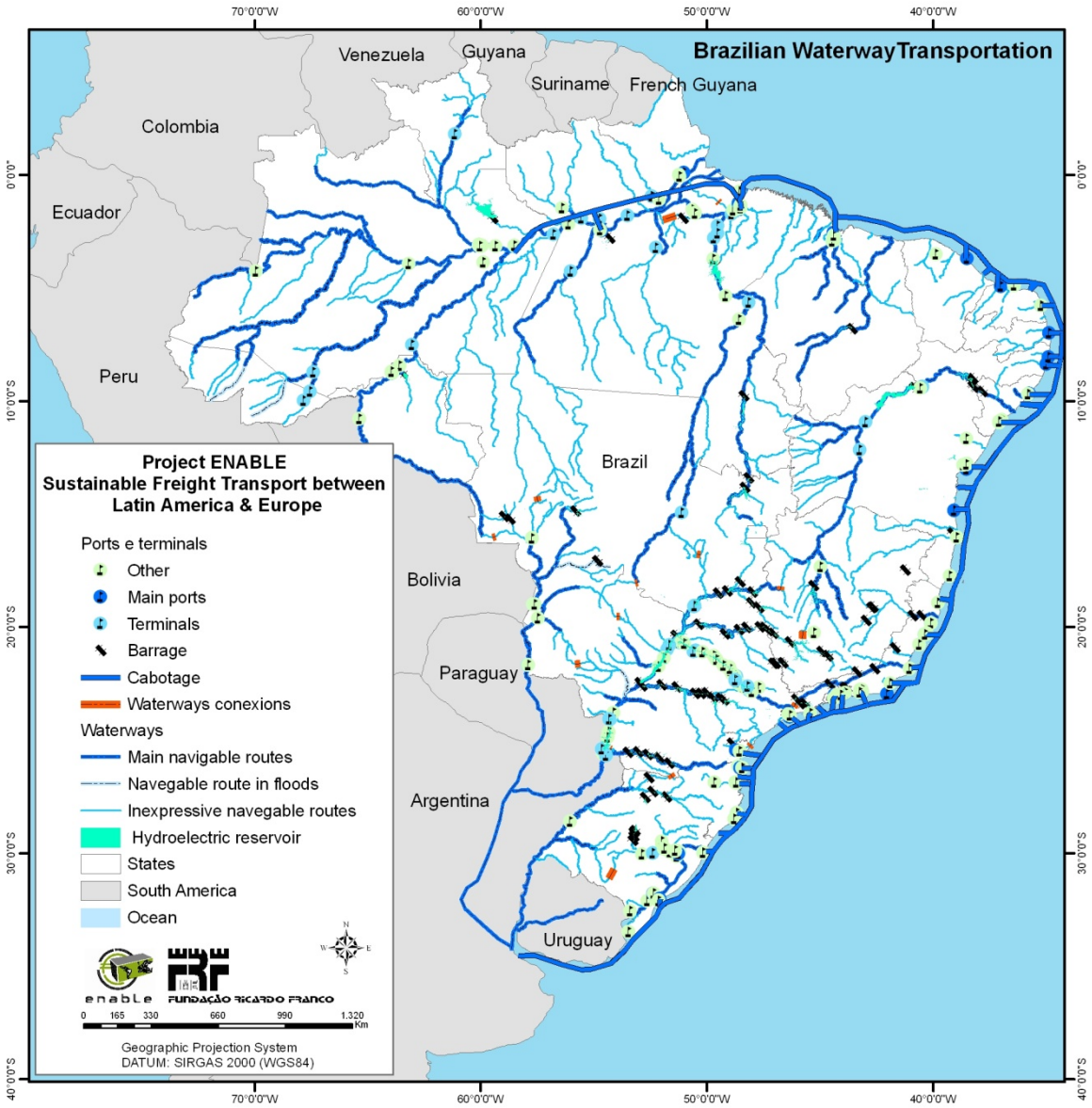


Figure 2.4 - Brazilian waterway network

The Brazilian air transport is under the responsibility of the Ministry of Defense and federal control and regulation organs like the National Agency of Civil Aviation – ANAC and the Brazilian Company of Airportuary Infrastructure – INFRAERO.

The georeferentiated air network of Brazil presents information about the main national airports with connections in all the Brazilian territory extension, as well as the geographic indication of all the aerodromes of small size. The basis has attributes about the code of the International Civil Aviation Organization – ICAO of each airport, situation of the runways pavement, volume of freight transported, and national and international connections updated according to information made available by ANAC through its air transports yearbooks. Figure 2.5 shows the national air network and the main airports.

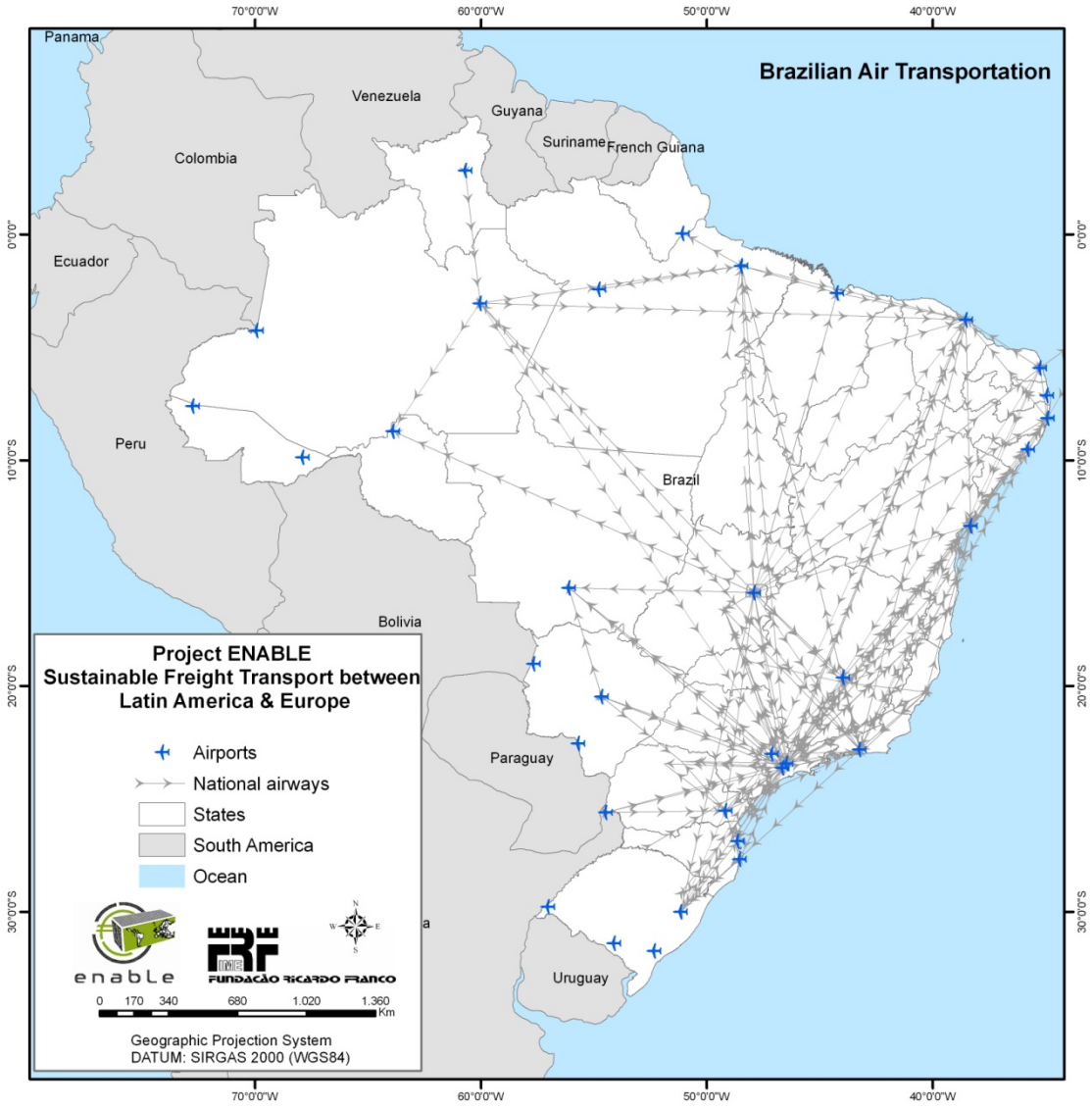


Figure 2.5 – Brazilian air network

All the modals highlighted compose the multimodal network of the Brazilian offer of transports whose connections occur through links of access and transference among the modals.

2.2.2. Identification of Argentina's Transportation Network

Argentina's transport network is historically consolidated along the development axis initially linked to rail, and previously complemented and later absorved by road transport. Regarding waterways and ports, Rosario and Buenos Aires are the country's main logistics nodes served by oceanic vessels and to a limited extent by river barges. On the Atlantic coastline, Bahía Blanca is third in importance. Figure 2.6 presents Argentina's transportation network.

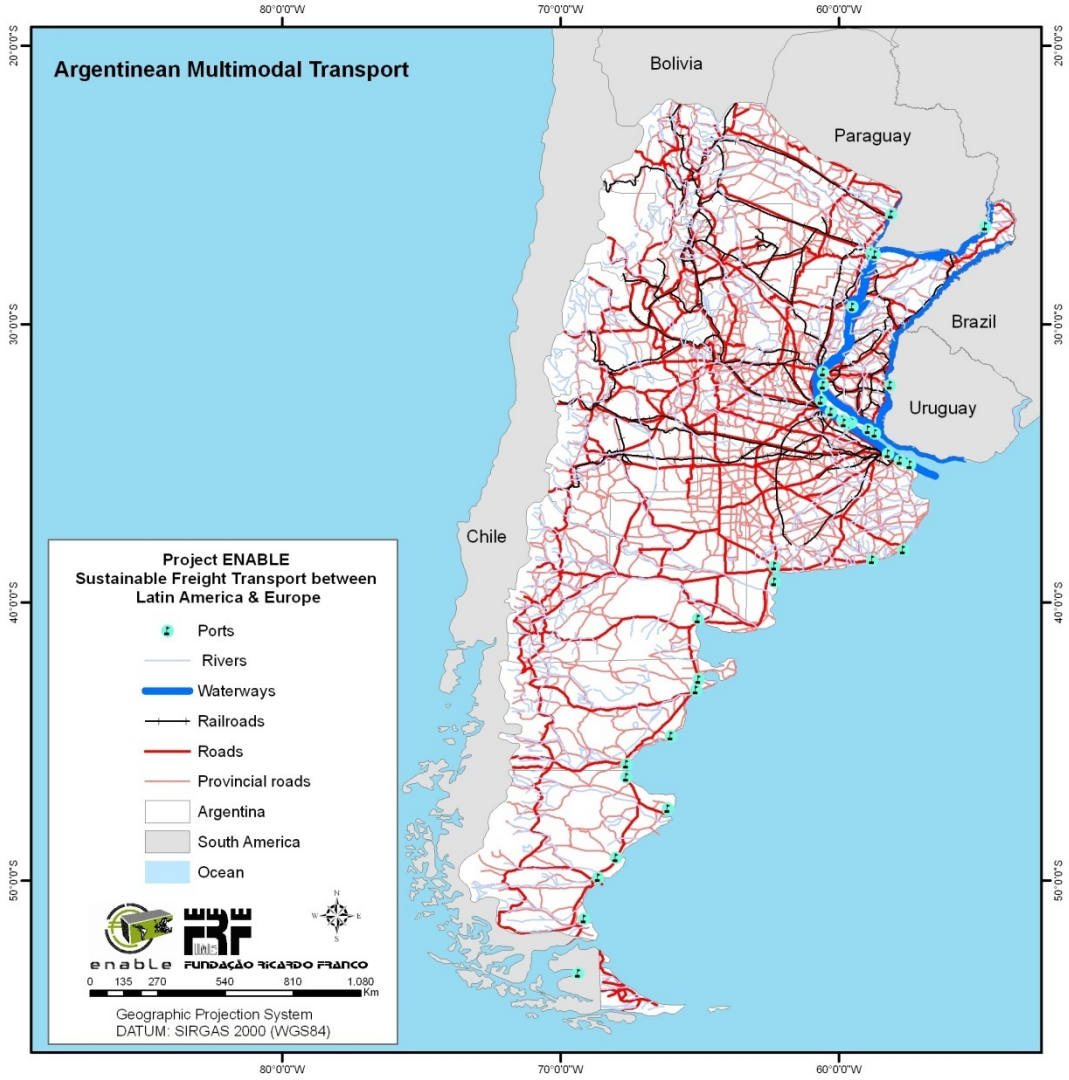


Figure 2.6 – Argentina transportation network

Argentin'as road network is formed by two-lane highways and single lane, paved links managed by different jurisdictions, although it should be said that most intercity traffic circulates on those roads under jurisdiction of the federal government (National Road Administration, Dirección Nacional de Vialidad) In addition, Argentine provinces control networks of their own, including a forther 40.000 km of paved roads and over 330.000

of unpaved roads, including rural roads. Table 2.3 presents the structure of Argentina's road network, according to data provided by DNV.

Table 2.3 – Extension of the Argentina's road network in 2002

Km	PAVED	GRAVEL	NATURAL BED	TOTAL
National	31,081	5,382	1,946	38,409
Provincial	38,797	44,786	108230	191,813
Tertiary			400,000	400,000

Source: Dirección Nacional de Viabilidad

Figure 2.7 presents roads in Argentina under federal government jurisdiction. These roads represent the country's main transport corridors.

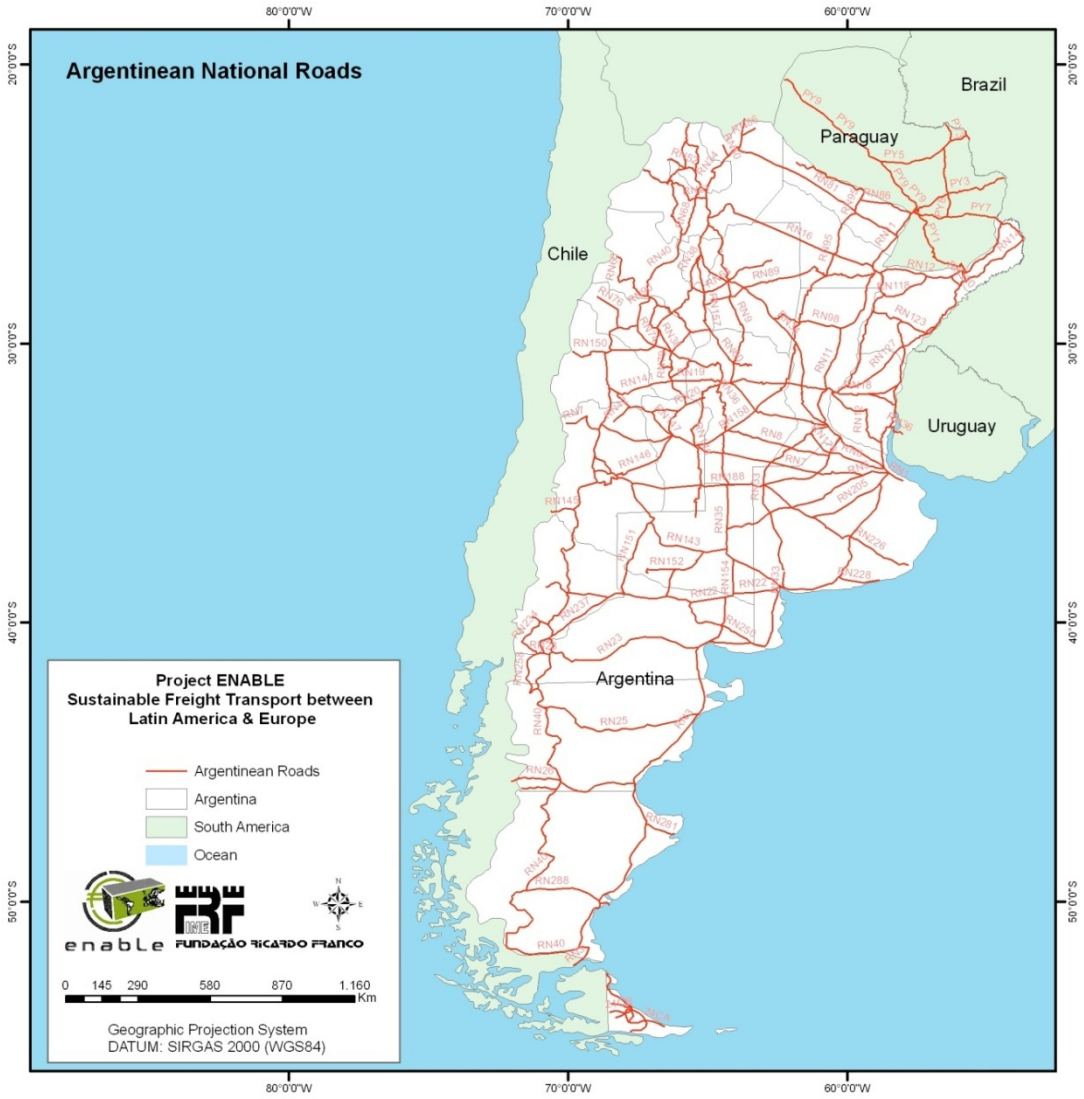


Figure 2.7 – Argentina Road network under federal jurisdiction

In relation to the rail network, it is interesting to highlight that the first Argentine railway was built in 1857, connecting 10 km among Buenos Aires and its suburbs, and suffered a great growth between 1870 and 1914 reaching 45,000 kilometers in 1914. In 1946, the Argentine government began the estatization process of the rail network, grouping all the railways in six main operational units under a single state company, Ferrocarriles del Estado Argentino, later FA – Ferrocariles Argentinos. ,. In the late 1960s, the use of the rail transport started to decline as a result of rapid expansion of paved roads and increasing unreliability of rail service. To countercat this tendency, as of 1990 Argentina's federal government launched a program of franchises to involve the private sector in freight operations.

Thus, between late 1991 and 1992 freight services on railroads were trasnferred to 4 operators; The narrow gauge netwok covering northern Argentina, though, remained under government administration. Currently, there are about 23.000 kilometers of lines available for operation, and a further 13.000 kilometers of rights-of-way that could provide additional capacity with moderate investment (School of Engineering, 2010)[1]. The sections of the network franchised to the different operators are shown in Figure 2.8.

Franchises were awarded for 30-year periods, with the possibility of an extension for another 10, which is to be decided by the goverment

[1] These figures result from the links and branches effectively used by operators out of the network assigned i the franchise contract, and are an unofficial estimation carried out at the School of Engineering.

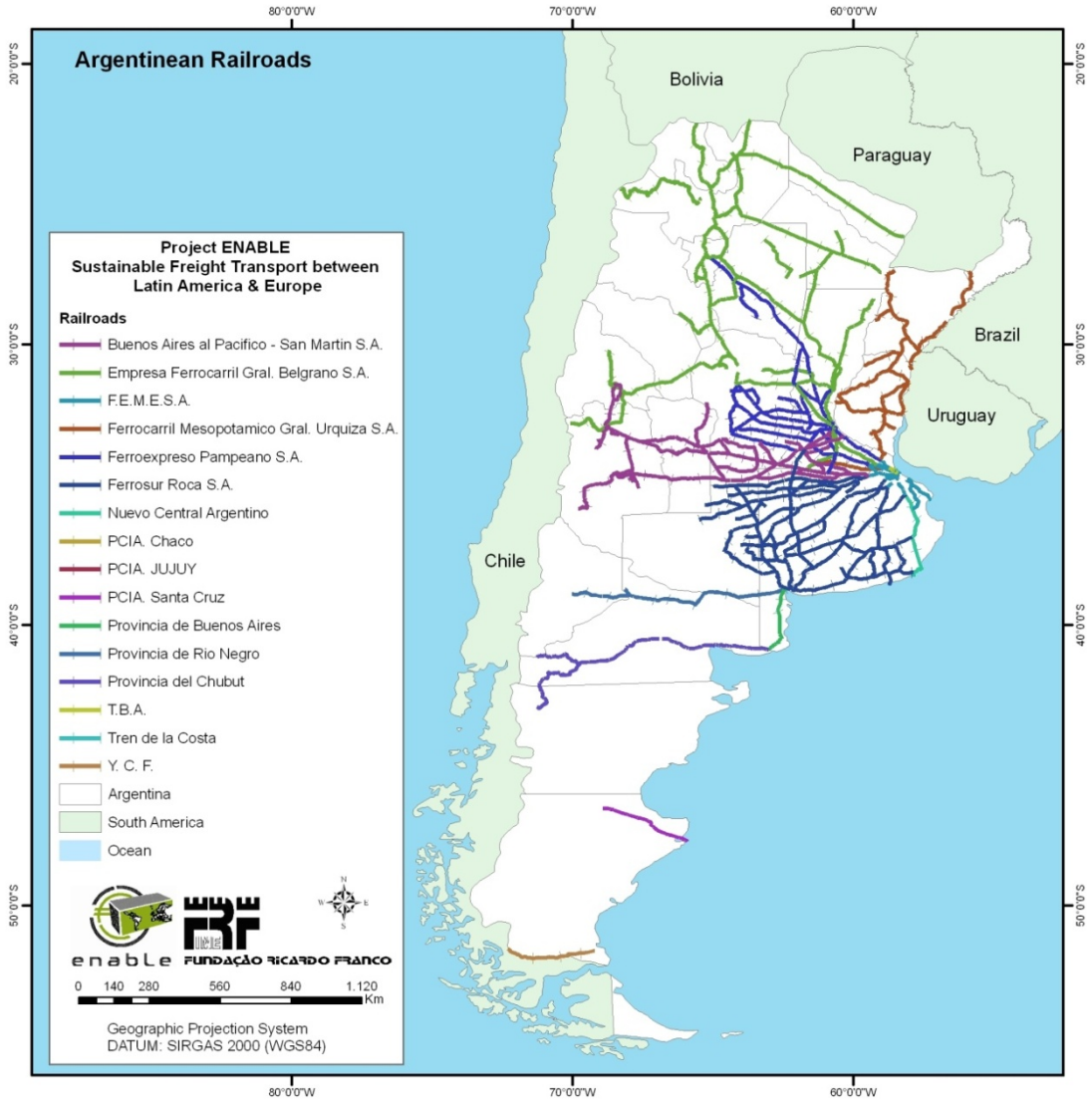
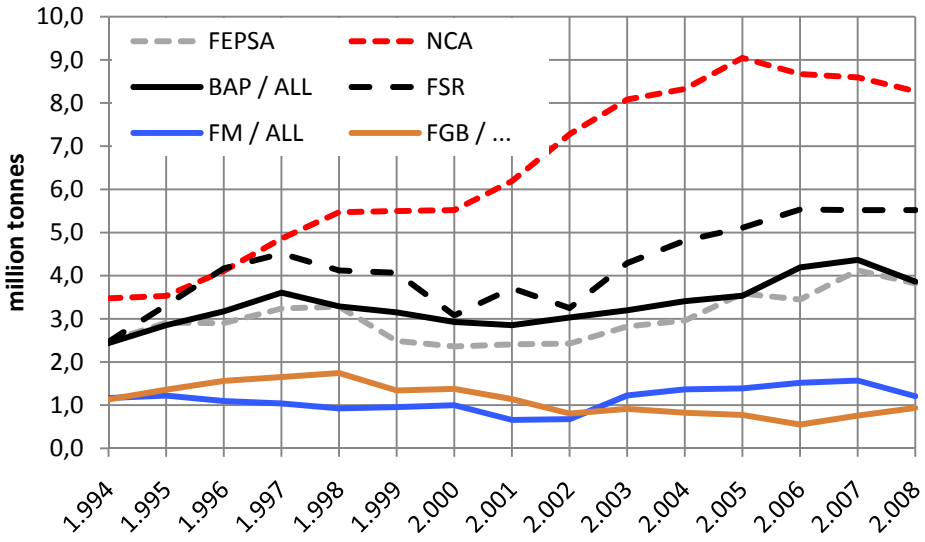


Figure 2.8 – Detail of the Argentine rail networks

Regarding the rail freight transport, it is possible to observe the temporal dynamics of the main concessions between 2004 and 2008 presented in Figure 2.9.



Source: School of Engineering (2010) on the basis of CNRT data

Figure 2.9 – Argentina evolution of the freight transported on railrodas, in tons, between 2004 and 2008

As for waterways, Argentina has approximately 3,000 km of navigable rivers,However, given the positions of rivers rather on the perimiter of the country, an especially, off the crop production areas, domestic use of waterways is limited. Most barges navigating Paraná river carry bulk cargo from Paraguay, Bolvia and western Brazil. It should be mentioned that barge traffic on Paraná river north of the city of Corrientes is still in its first stages.

Most products imported by Argentina arrive on ships and trucks. With a 4000-km long coast, Argentina is well equipped with ports and wide areas for freight storage.

Regarding the port network, Argentina, has a varietyof maritime and ports of big and medium economic relevance. Ports on rivers in operational conditions, other than those for oceanic vessels, are few and unsophisticated. Among the main ports are: the Rosario area (including private terminals at San Lorenzo and San Martín) Buenos Aires, Bahia Blanca, and Quequén/Necochea, . As secondary ports are: Campana, Zarate, San Nicolas Mar Del Plata, San Antonio, Puerto Madryn, Rio Gallegos, Ushuaia, .

Figure 2.10 presents the location of ports in Argentina.

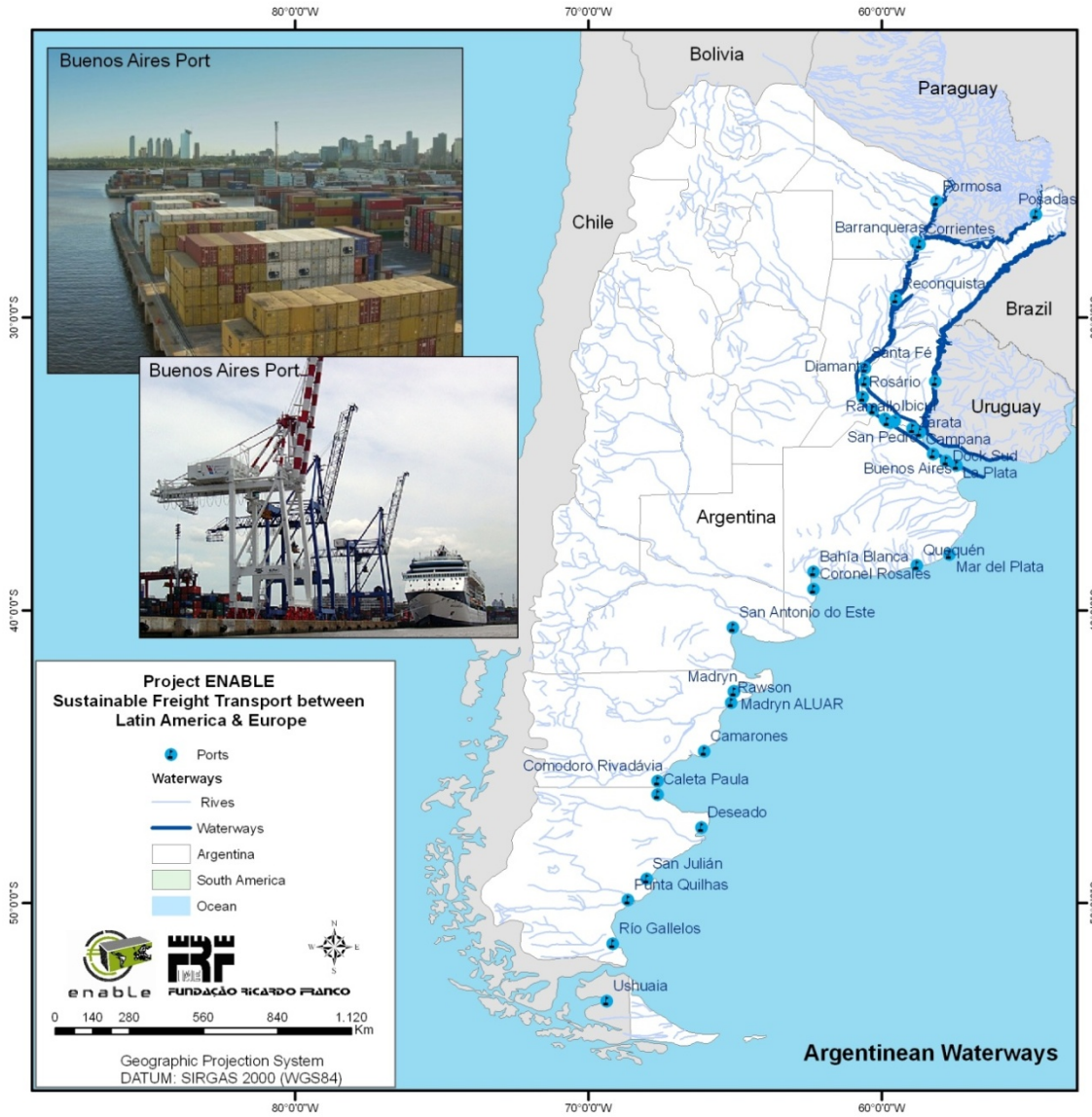


Figure 2.10 – Argentina ports and waterways

The Argentine air system counts on coverage for all the Territory being controlled by the National Administration of Civil Aviation – ANAC, that manages the services of air navigation, air space, airports and aerodromes of all the Country; regulating, inspecting, controlling and managing the civil Aeronautics activity. Figure 2.11 shows the spatial localization of the main airports and aerodromes of Argentina.

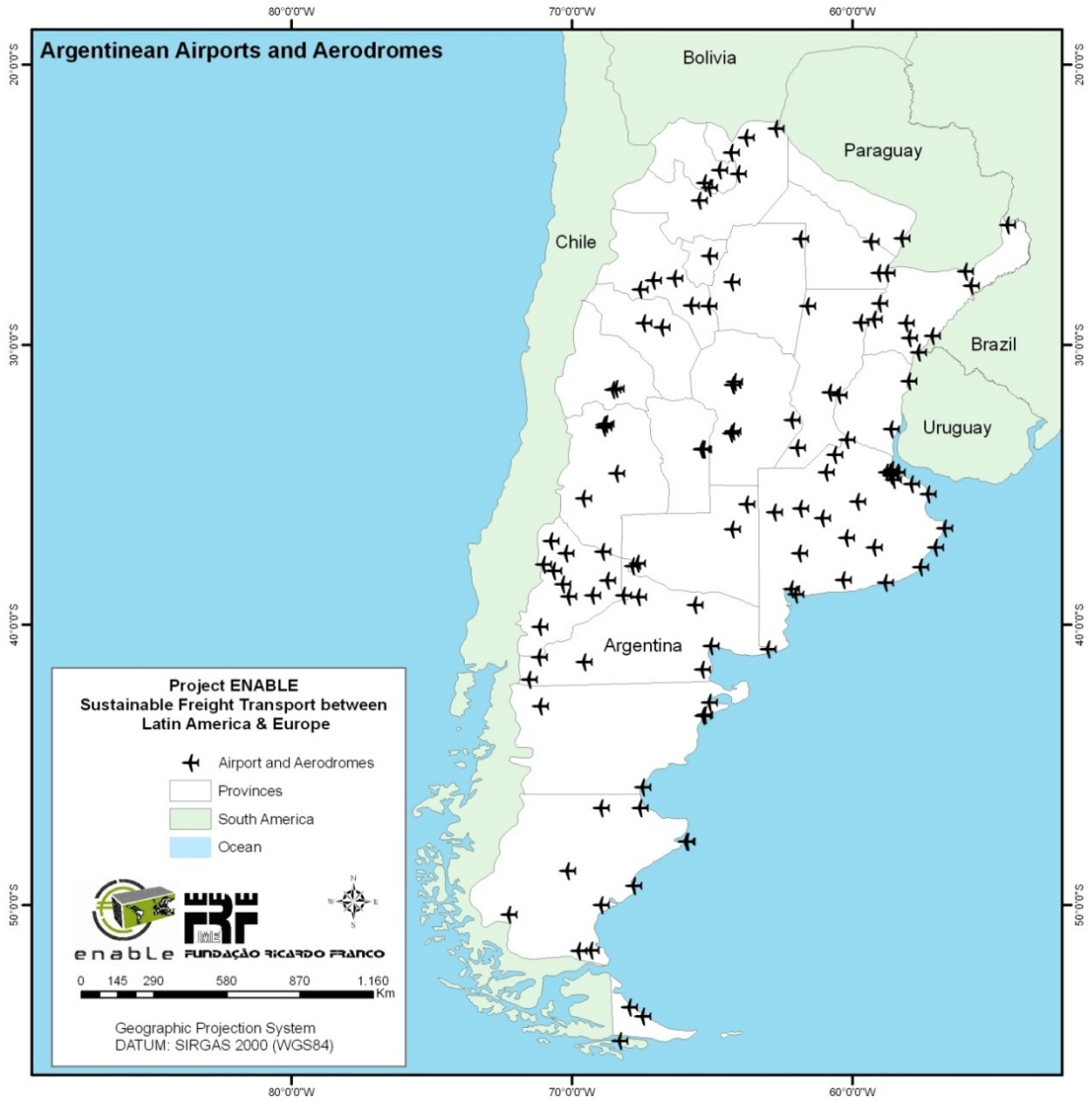


Figure 2.11 – Argentina airports

2.2.3. Identification of the Connection Network between Brazil and Argentina

The road transport between Brazil and Argentina is accomplished by companies of both countries occurring mainly through the bridge Uruguaiana – Paso de Los Libres. In 1997, it was inaugurated the bridge São Borja – Santo Tomé, over the Uruguay river, increasing the road connection between the countries. Regarding the rail connections, there are five connecting points of relevant interest. The main one is located in the twin cities of Paso de los Libres in Argentina and Uruguaiana in Brazil, connected by the Friendship Bridge. Gauges are standard for Argentina and metric for Brazil, and transfers are possible, although not frequent, at a double gauge yard in Uruguayana. This infrastructure is old and was built well before the establishment of MERCOSUR. The operator is the same on both sides of the border. The others are connection points among Argentina, Uruguay and Paraguay which enable the integration with Brazil. Figure 2.12 highlights the rail connection points previously mentioned.

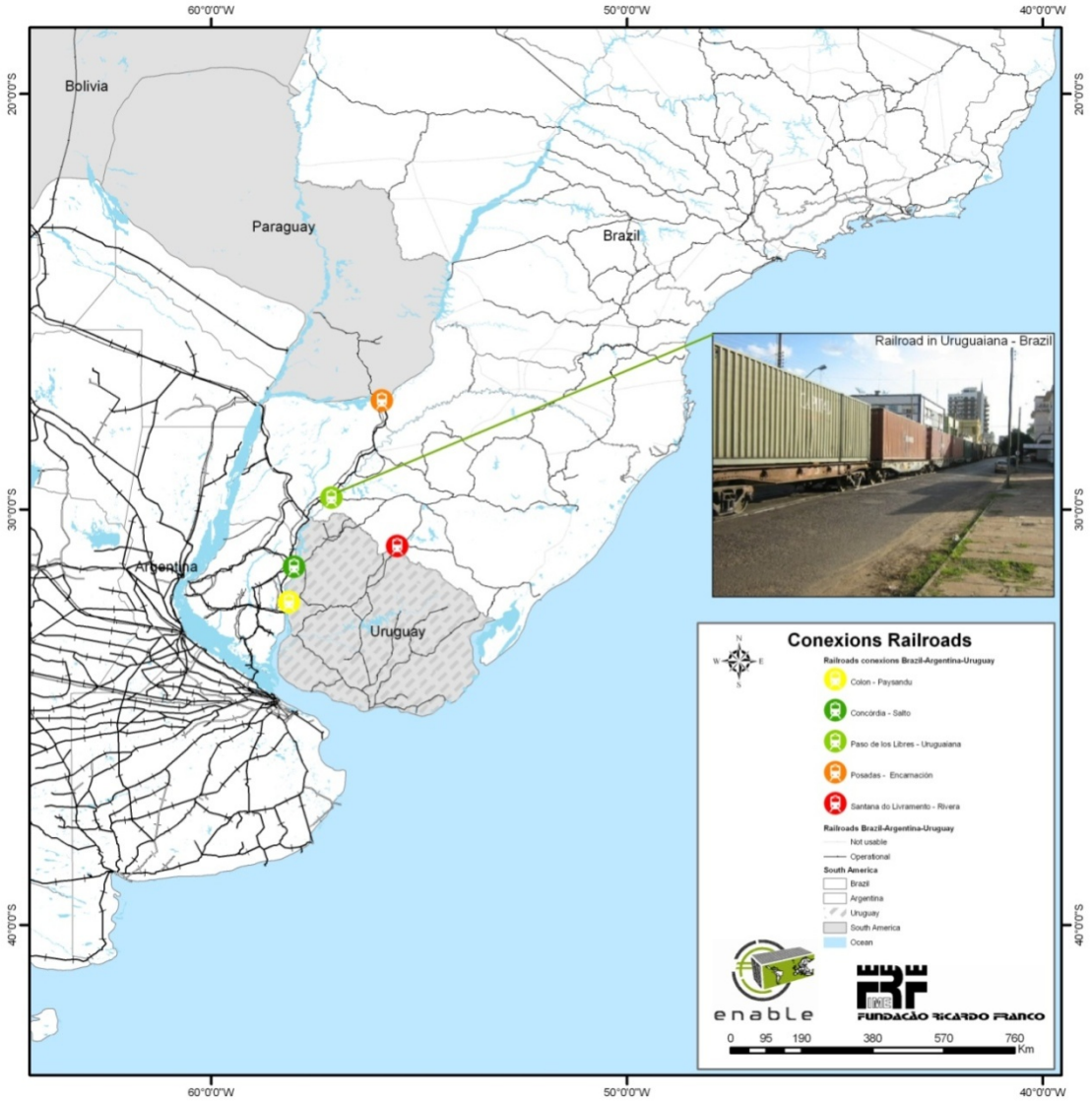


Figure 2.12 – Rail connections between Argentina and Brazil

2.2.3.1. Main Modals used in the Transport between Brazil and Argentina

The transport of goods between Brazil and Argentina occurs in most part through the road, fluvial and maritime modals. Tables 2.4 and 2.5 highlight the amount of freight transported in 2008 according to data from the Aliceweb system made available by the Ministry of Development and International Trade of Brazil.

It is possible to conclude that approximately 90% of the freight commercialized between Brazil and Argentina uses the modals previously mentioned, with emphasis to the maritime modal in both cases. The other modals present a small participation in the total account of the freight exported between the countries.

Table 2.4 – Exportation from Argentina to Brazil in 2008

TRANSPORT WAY	% THOUSAND TONS	% MILLION US$
MARITIME	72.54%	54.34%
ROAD	24.98%	42.68%
RAIL	2.08%	1.00%
FLUVIAL	0.22%	0.06%
LAKE	0.12%	0.22%
AIR	0.06%	1.69%

Source: Aliceweb, 2010

Table 2.5 – Exportation from Brazil to Argentina in 2008

TRANSPORT WAY	% THOUSAND TONS	% MILLION US$
MARITIME	62.66%	48.21%
FLUVIAL	18.93%	1.15%
ROAD	16.64%	42.77%
RAIL	1.55%	0.79%
OWN MEANS	0.12%	0.16%
AIR	0.10%	6.92%

Source: Aliceweb, 2010

2.2.3.2. Main Corridors

After the identification of the modals and freight flows between the countries, the main corridors of transports used for exportation between Brazil and Argentina were identified. In the case of Brazil, the States of São Paulo, Rio Grande do Sul, Paraná, Santa Catarina and Minas Gerais represent more than 90% of the exporter regions to Argentina. Table 2.6 shows the amount exported and its respective percentage according to data provided by the system.

Table 2.6 – Brazilian states with exportation to Argentina, through road modal, in thousand tons

BRAZILIAN STATES	EXPORTED PRODUCTS (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
São Paulo	849.93	31.4%
Rio Grande do Sul	628.03	23.2%
Paraná	462.49	17.1%
Santa Catarina	419.44	15.5%
Minas Gerais	152.20	5.6%
Others	192.81	7.1%
Total	2,704.90	100.0%

Source: Aliceweb, 2010

In Argentina, the provinces of Buenos Aires, Misiones, Mendoza, Santa Fe, Corrientes and Córdoba are responsible for the greater part of exportsto Brazil. Figure 2.13 presents pronvicial origin of Argentine exports to Brazil by road.

Table 2.7 – Argentina Origin of exports to Brazil by road, by province. Share of total.

ARGENTINEAN PROVINCES	PERCENTAGE IN RELATION TO THE TOTAL
Buenos Aires	40.4%
Misiones	14.5%
Mendoza	11.6%
Santa Fé	9.1%
Corrientes	6.8%
Córdoba	4.5%
Others	13.1%
Total	100.0%

Source: Aliceweb, 2010

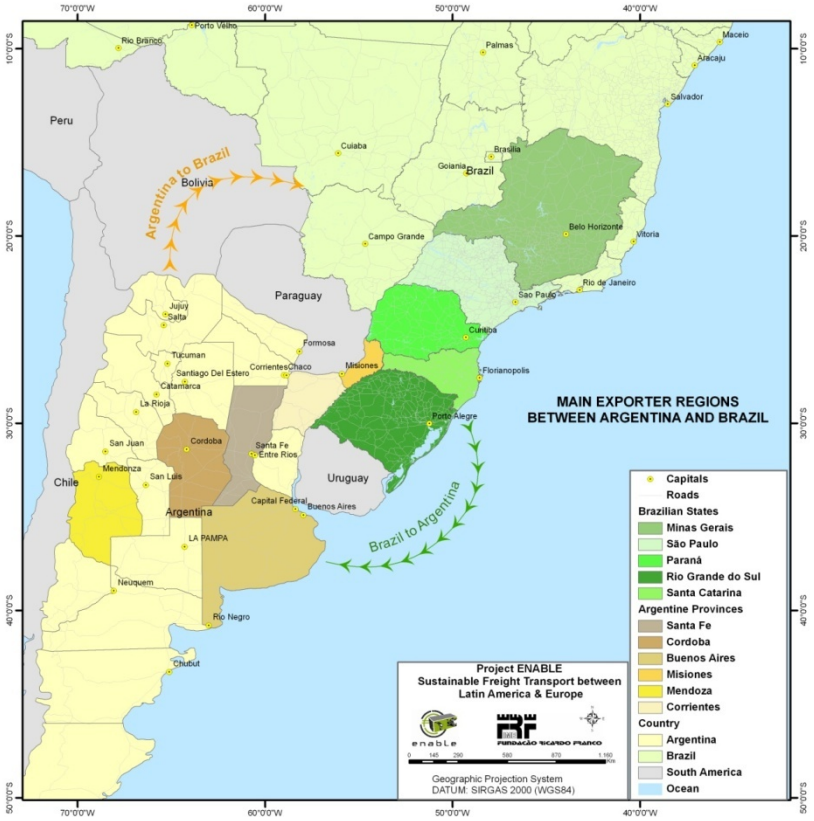


Figure 2.13 – Exporter regions between Brazil (States) and Argentina (Provinces)

After the identification of the exporter regions between the countries, it was possible to establish the main corridors used by both countries for the freight transport. Figure 2.14 shows the main corridors used by Brazil for the freight transport with destination to Argentina. The main highways used are: BR-285, BR-277, BR-153, BR-116, BR-381, BR-476 and BR-290. It is possible to identify 08 main ports used by the freight cabotage system, and the road axles that link the States of São Paulo, Rio Grande do Sul, Paraná, Santa Catarina and Minas Gerais to the border connecting points with Argentina, in the cities of Foz do Iguaçu, São Borja and Uruguaiana. Some waterway parts are also used for the transference of freight exported by Brazil.

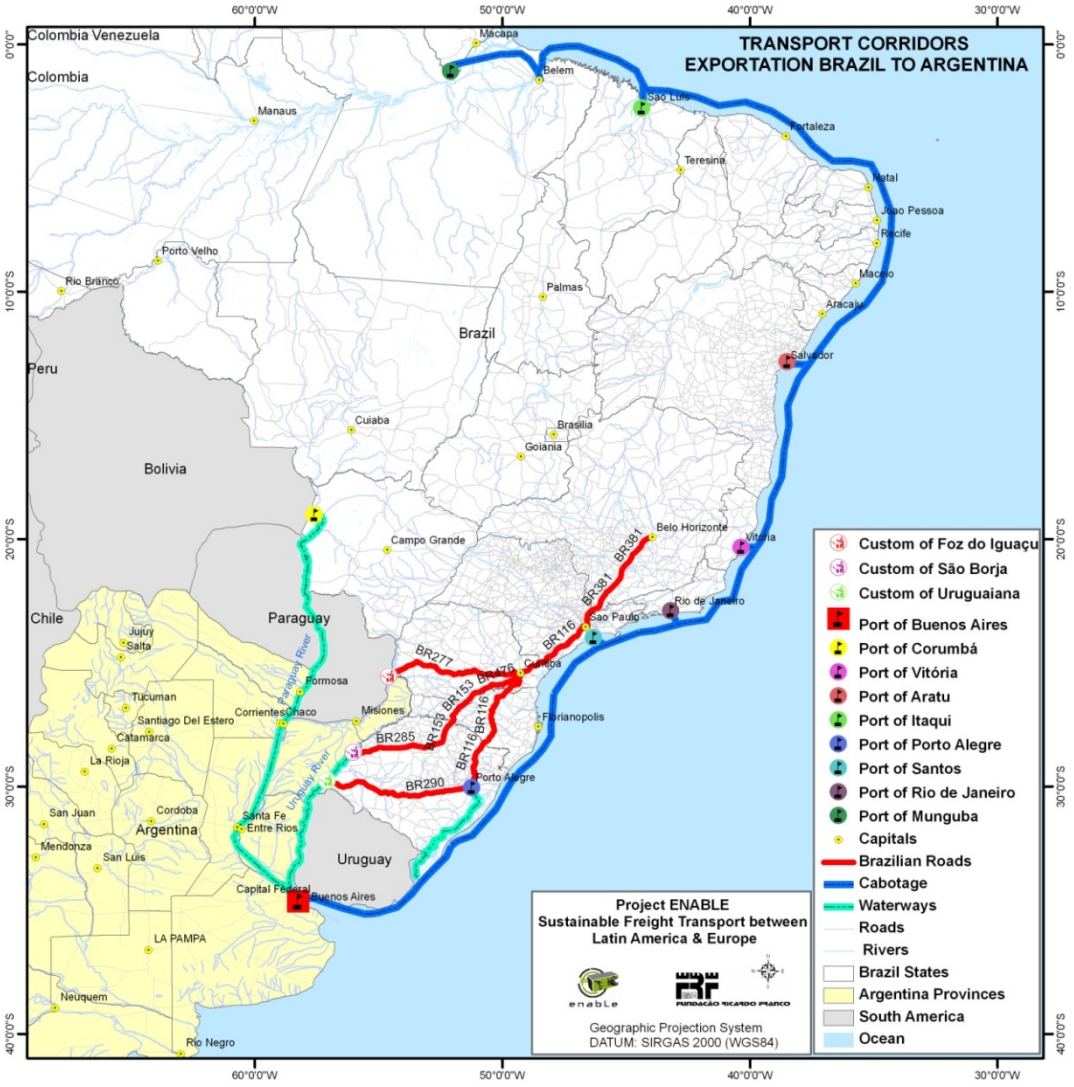


Figure 2.14 – Exportation corridors from Brazil to Argentina

Figure 2.15 highlights the corridors identified for the exportation of Argentinean products that come to Brazil. In Brazil there is a higher number of ports that receive freight from Argentina totalizing 13 points through cabotage.

The main Argentinean routes used are: RN 14, RN19-RN158-RN7, RN127. These routes go through the provinces of Mendoza, Córdoba, Corrientes and Santa Fé until connect to

Brazil through four border points, namely: Dionísio Cerqueira, Foz do Iguaçu, São Borja and Uruguaiana. It is possible to identify a waterway part which connects Porto Alegre Port to the sea as an important connection segment between the two countries.

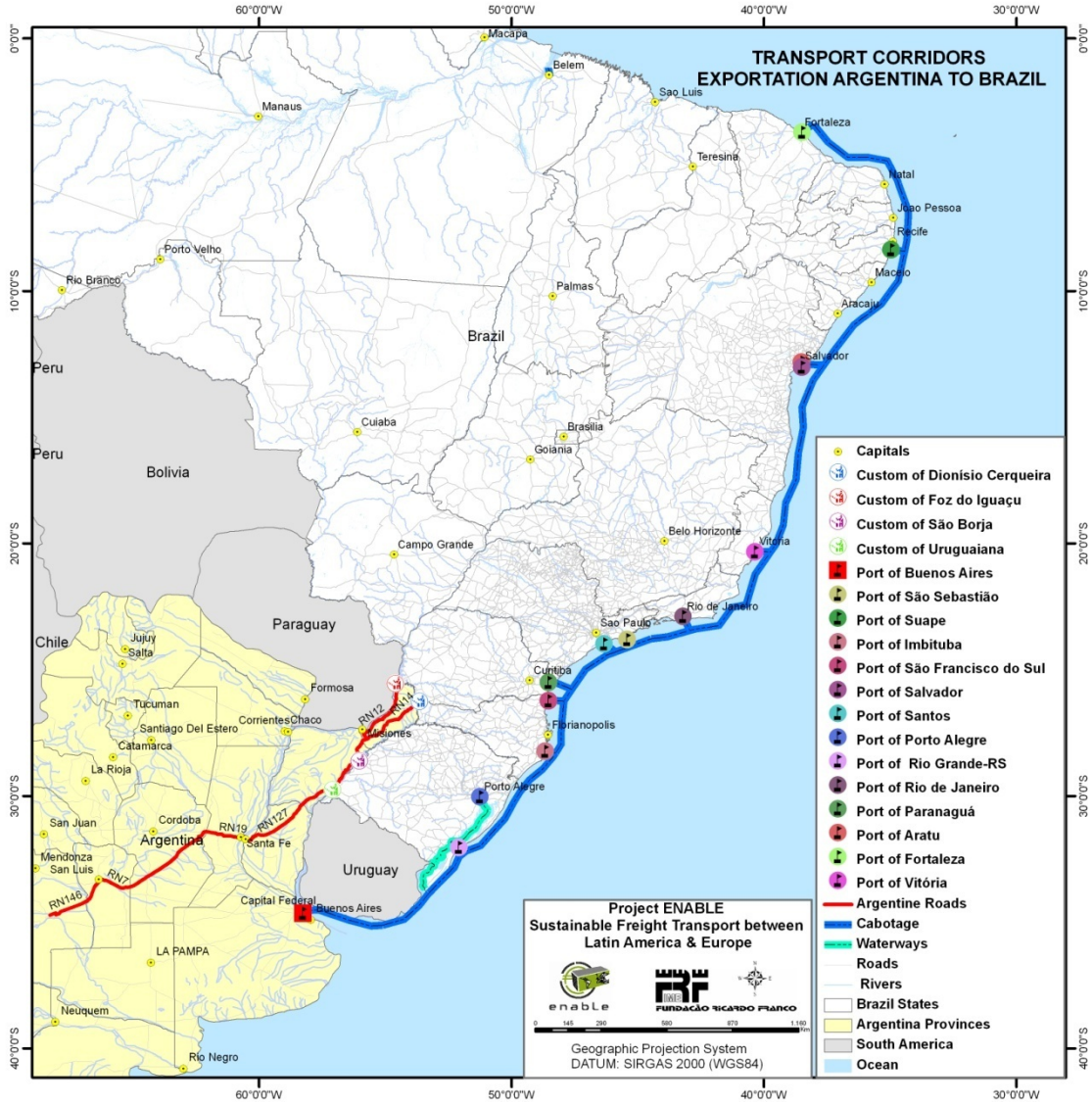


Figure 2.15 – Exportation corridors from Argentina to Brazil

On this map I suggest adding RN14 from Buenos Aires to its intersection with RN 127, and deleting RN 146, RN12, and RN14 north of Santo Tomé-San Borja

In both cases it is appropriate to emphasize that the maritime modal is used with more intensity favoring the trade between the countries.

2.3. Demand for Transport: market and intermodality

The demand for freights transport is derived from the relation between production and consumption. The transport has the function of offering goods and services in the consumption places, independently of the place where they are produced, i.e., the higher the consumption, higher must be the offer of products. It is known that in many cases, the products are not produced in the same places (areas) where they are consumed, being necessary the transit between the origin and the destination. Thus, it can be said that the transports demand is directly related to the location (distribution) of the production and consumption activities.

The freights transport represents one of the most important sectors of the world's economy, being the link between production and consumption. It can be stated that the freights transport constitutes one of the main elements of the economic activities' interaction. The transports demand can be accomplished for one or more modes (Pipeway, Waterway, Rail, Road and Air) which have specific costs factors which compensate each other, adapting to the economic aspects of the product to be transported. Nevertheless, identifying the transports demand and defining what is the best modal choice for transporting certain product is not a trivial task, for it involves the analysis of several aspects such as technique, cost, policy, etc.

In order to facilitate the visualization and improve the understanding about transports demand, next it is presented the location of the Brazilian production grouped in classes and which has greater relevance in terms of transport flow.

2.3.1. Identification of Brazil's Production

The location of the production in Brazil during many years has been related to the offer of transport. Meanwhile, the agricultural and cattle raising sectors took charge of advancing on regions where the offer of transport is still scarce, resulting in difficulties and high costs for flow of the production. Other sectors, like the mining, for example, were responsible for building infrastructures, with the main objective of transporting the own production that became important corridors of freight transport, taking development to regions "cut" by such networks.

Considering the spatial distribution of the Brazilian production, it can be seen that the industrial complexes or even the agricultural production are grouped by type, like for example, the steel poles, grains, etc. The Brazilian agricultural production, specially the soy, is concentrated in a zone which encloses the west of the states from the South region, the west of São Paulo (Southeast) until the Middle-West, reaching the west of Minas Gerais (Southeast) and Bahia (Northeast), with the Middle-West region the biggest producer. The expansion of the production in the states of Middle-West region has been the main propeller of the infrastructure construction that make the flow of production easy, mainly those able of transporting great volumes and that present a reduction in the costs with transportation.

The case of the Southeast region differs a lot from the other Brazilian regions, since this is the most industrialized and with a diversified productive structure region, however this region is the one which presents more sensitivity as for the globalization effects. Some productive sectors, aiming at reducing the costs and time spent to transport its raw material, have implemented actions that enable to increase the competitiveness of their products in the internal and external markets.

From the identification of the production and consumption points, it can be established the relation between the pairs of origin and destination, in order to know the main transport corridors. These corridors are essential for the integration of the producer and consumer regions. Some products like sugar, soy, corn, alcohol, fuels and iron ore are generators of great volumes of transports, consequently, they have a better possibility of using the multimodal transport for their movements. Another important factor in the identification of the production is related to the better location for implantation of productive complexes that aim at the reduction of the transports costs. The Brazilian production can be grouped in vegetable bulks, liquid bulks, mineral bulks, general freight and containers. From this grouping it is possible to describe the relations of production and consumption among the Brazilian regions and the foreign countries. This aggregation is based on the data produced in the elaboration of the National Plan of Logistics and Transport – PNLT, 2007.

2.3.1.1. Vegetable Bulks

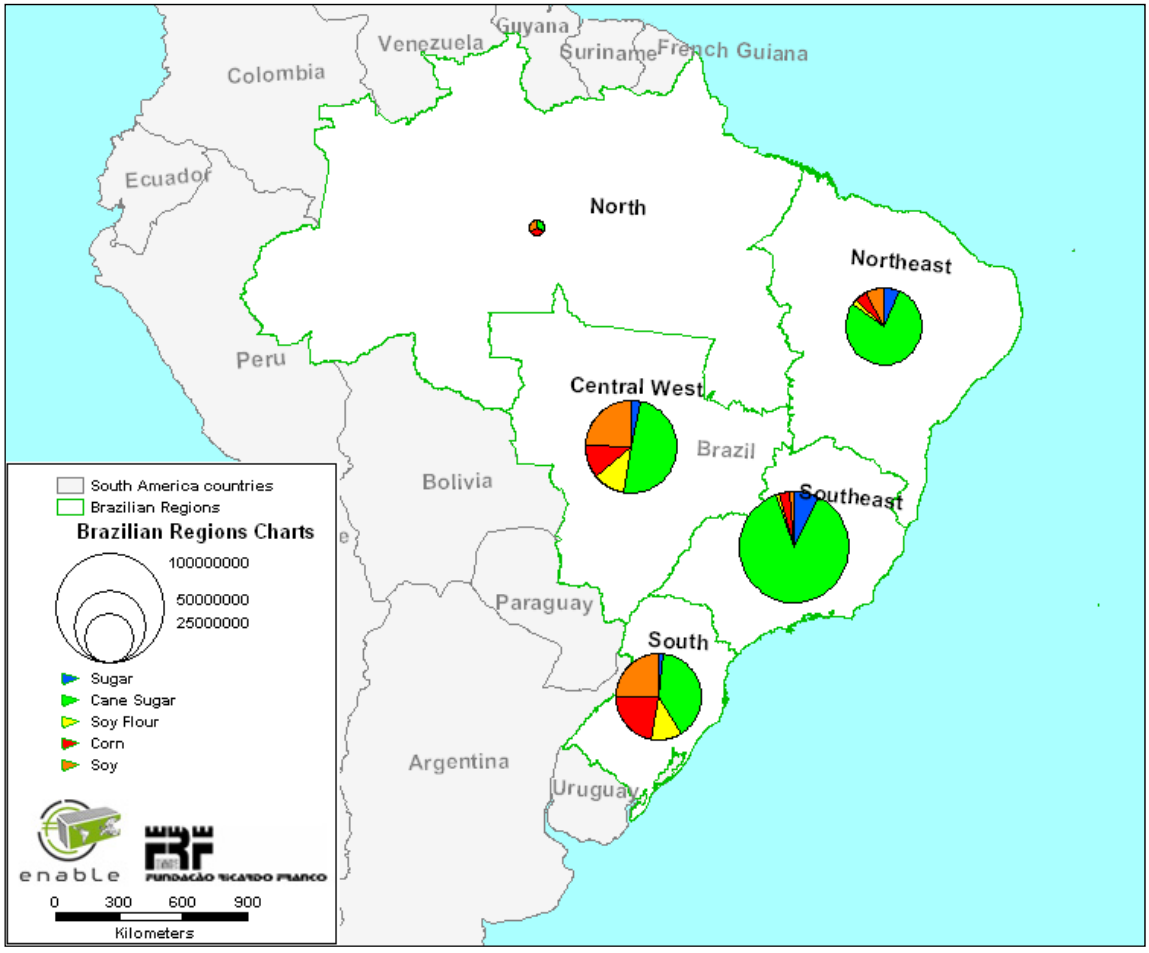
Analyzing the source of production and consumption of the vegetable bulks, it is seen that the Southeast is the region where the biggest producer and consumer markets are concentrated. The production of vegetable bulks in the North region is the smallest among the Brazilian regions, what can be justified by the predominance of the Amazon rainforest.

Table 2.8 – Source production/consumption of vegetable bulks – Brazil

	CENTRAL-WEST	SOUTHEAST	SOUTH	NORTHEAST	NORTH	EXTERIOR	TOTAL PRODUCTION
CENTRAL-WEST	63,354,450	3,474,370	2,257,510	1,365,560	751,990	20,543,830	91,747,710
SOUTHEAST	384,950	346,213,990	1,267,140	1,183,790	486,350	16,217,420	365,753,640
SOUTH	3,740	1,467,150	63,245,060	145,760	109,780	13,337,630	78,309,120
NORTHEAST	27,510	453,520	64,120	66,135,170	222,660	5,792,950	72,695,930
NORTH	19,810	26,490	75,710	102,250	2,282,870	1,372,070	3,879,200
EXTERIOR	0	0	0	3,830	0	1,660	5,490
TOTAL CONSUMPTION	63,790,460	351,635,520	66,909,540	68,936,360	3,853,650	57,265,560	612,391,090

Source: PNLT, 2007

The spatial distribution of the production of vegetable bulks vary a lot from one region to another, that is, a culture that has high production rates in the South region cannot adapt to the climate of another region. Figure 2.16 presents an example of the production distribution of the main vegetable bulks for each region of the country.



Source: PNLT, 2007

Figure 2.16 – Distribution of the production of vegetable bulks – Brazil

2.3.1.2. Liquid Bulks – Fuels

It can be said that the production of liquid bulks (fuels) in Brazil is concentrated due to the region of higher consumption of these products, that is, in the Southeast region. Observing the source of production and consumption of these products, it is seen that only the Southeast region responds for approximately 63% of the production and around 53% of all the production of liquid bulks. This is due to factors like the localization of sugar cane farming, oil extraction (Rio de Janeiro and Espírito Santo) and the presence of the biggest Brazilian oil refineries.

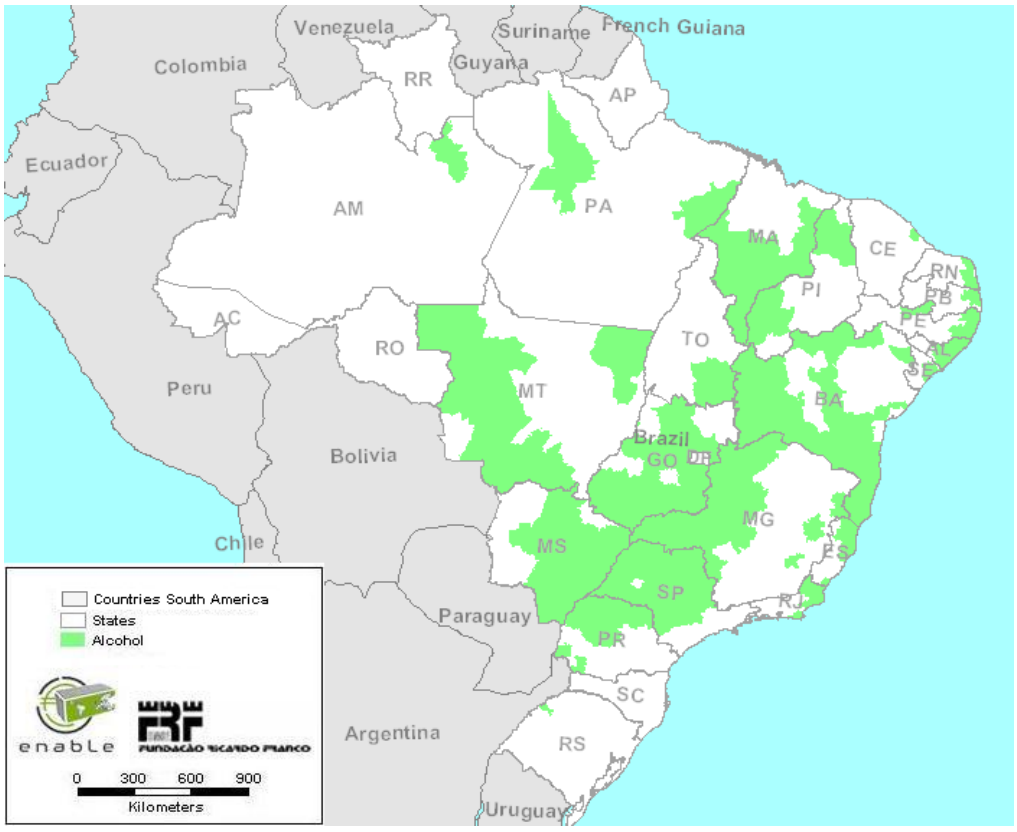
It is still observed that the Southeast region is the great supplier of liquid bulks for the other Brazilian regions. In the case of the North region, the liquid bulks consumed originated from the Southeast region correspond to approximately 40%, according to data from the PNLT, 2007. But in the Middle-West region the relation production/consumption gets to 77%, the Southeast region is the main supplier of fuels and oil by-products for this region.

Table 2.9 – Source production/consumption of liquid bulks – Brazil

	CENTRAL-WEST	SOUTHEAST	SOUTH	NORTHEAST	NORTH	EXTERIOR	TOTAL PRODUCTION
CENTRAL-WEST	1,394,950	84,250	6,110	89,230	4,640	231,680	1,810,860
SOUTHEAST	6,165,760	93,436,870	856,460	1,391,030	3,153,400	11,766,610	116,770,130
SOUTH	358,010	179,370	26,386,120	331,520	332,780	1,850,070	29,437,870
NORTHEAST	0	3,329,830	0	20,969,070	757,750	4,860,740	29,917,390
NORTH	0	1,639,470	607,540	35,550	3,761,360	24,560	6,068,480
EXTERIOR	0	282,630	9,100	794,550	33,760	0	1,120,040
TOTAL CONSUMPTION	7,918,720	98,952,420	27,865,330	23,610,950	8,043,690	18,733,660	185,124,770

Source: PNLT, 2007

Product extracted from the sugar cane smashing, it established as the main fuel derived from renewable sources. The alcohol production (ethanol) is strongly linked to the sugar production, that's why it can be assured that the production will always grow, that is, if it is more advantageous for the mill owners (sugar and ethanol producers) to produce sugar, they opt to produce what is more profitable. Like the sugar case, Brazil is the biggest ethanol exporter nowadays, and from the 18 million of tons produced approximately 16% were bound for the foreign market in 2007. The localization of the alcohol production can be seen in Figure 2.17.

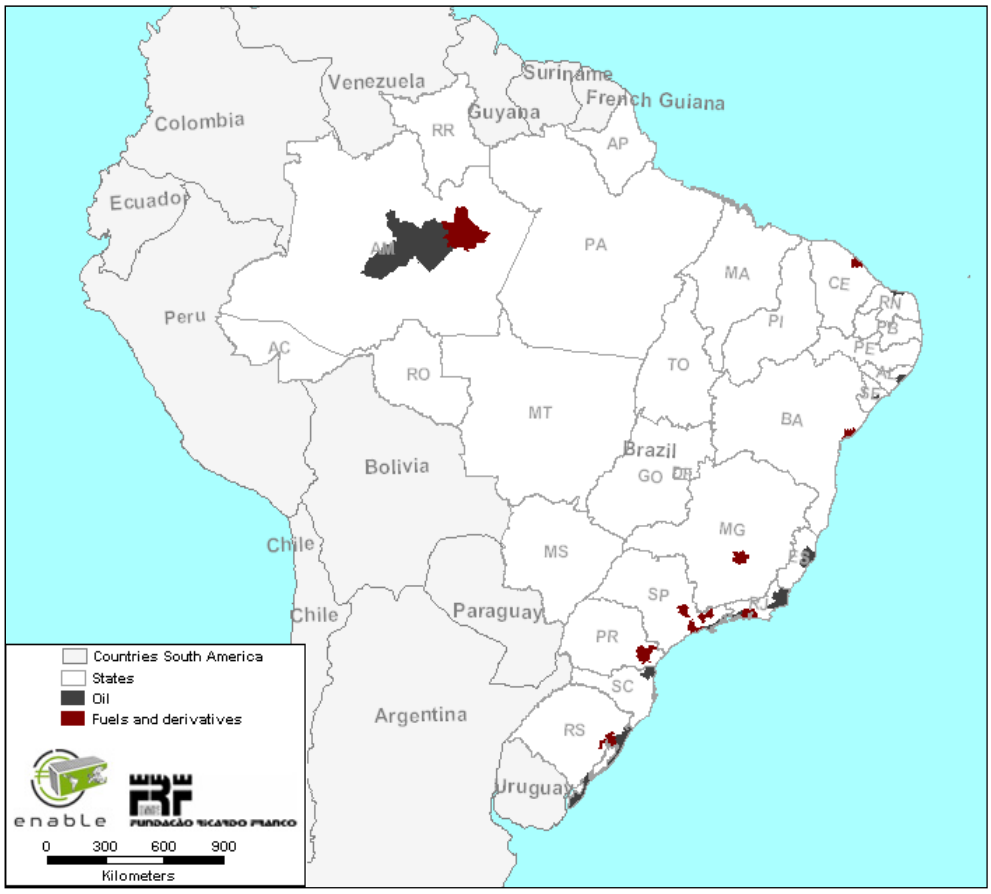


Source: PNLT, 2007

Figure 2.17 – Map of the alcohol production – Brazil

Alcohol production is concentrated in the Southeast region which responds for approximately 71% of all the Brazilian production. The Northeast region produces around 15% of the total volume. The domination of the production in the Southeast region can be justified by factors like the industrialization level and the tradition of the sugar cane mills, kept since the period of Brazil's colonization.

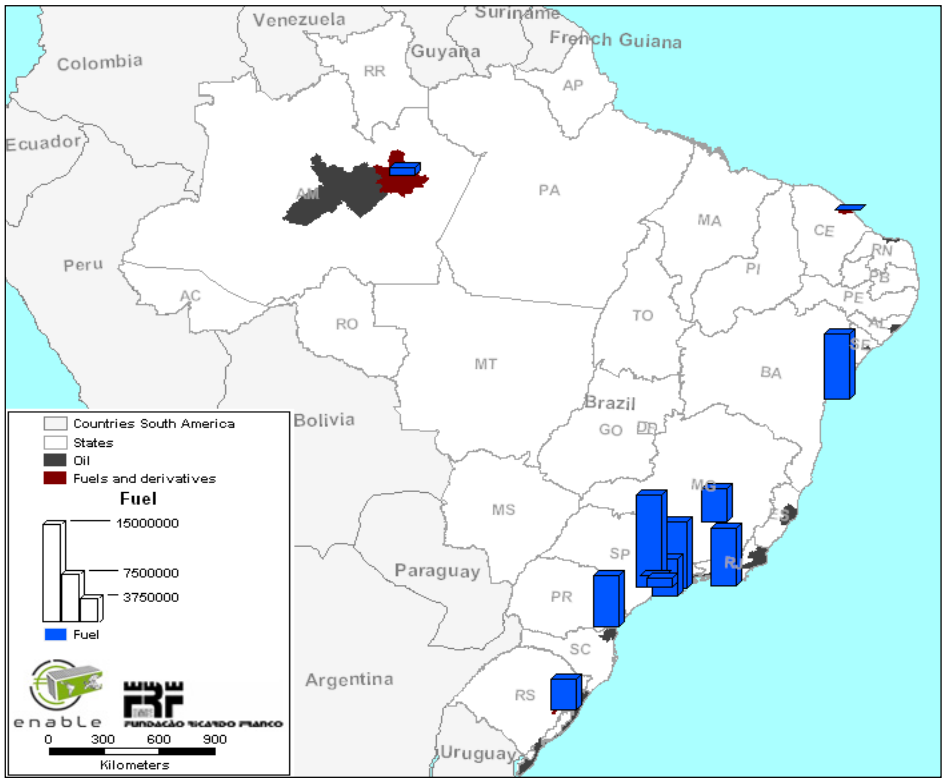
The production of oil in Brazil is an activity in expansion. The geographical localization of the production is concentrated in the Brazilian coastline, with a distinction to the regions Southeast and South, which were responsible for 66% and 22% of the production, according to data from the PNLT, 2007. In the South region, the production is located in the coastline of the states Rio Grande do Sul and Santa Catarina. The Southeast region, which is the biggest producer of the country, the production is distributed in the coastline of São Paulo, Rio de Janeiro and Espírito Santo, the two latters being the biggest producers. In the Northeast region, the production is located in the states of Bahia (main producer), Sergipe, Rio Grande do Norte and Alagoas. In the North region the production is concentrated in the central area of the state of Amazonas. The Middle-West region is the only region of Brazil that does not produce oil. Geographical localization of the producer microregions can be visualized in Figure 2.18. The gray spots indicate the microregions that concentrate the production of oil and the others indicate the production of fuels and oil by-products.



Source: PNLT, 2007

Figure 2.18 – Oil, fuels and oil by-products production – Brazil

It is highlighted the production of fuels and oil by-products. The places of refinement are, in general, located near the local of extraction and/or to the oil importation ports, which causes the absence of refinement places in the central region of the Country, except for the refinery located in Minas Gerais, as it is shown in Figure 2.19. The main oil by-products produced in Brazil are gasoline, diesel oil, aviation fuel oil and kerosene. The refineries located in the Southeast region respond for approximately 65% of the production, and Bahia is currently the center of refining of the Northeast region. For the supplying of the North region of Brazil, it is available the Manaus refinery (REMAN), with capacity of 2.5 million m^3 per year.



Source: PNLT, 2007

Figure 2.19 – Distribution of the oil production – Brazil

In Figure 2.19 it can be seen that the production in number of refineries as much as in amount of products is concentrated in the Southeast region. Another detail is that the second state (Espírito Santo) which produces more oil does not have any refinery.

2.3.1.3. Mineral Bulks

The production of mineral bulks is the one with higher concentration, that is, great productions in specific areas. This can be justified by the fact that the iron ore mines can be located in specific regions. From the products that form this group, only the manure is produced in all the Brazilian regions. The main motivation for this is due to the

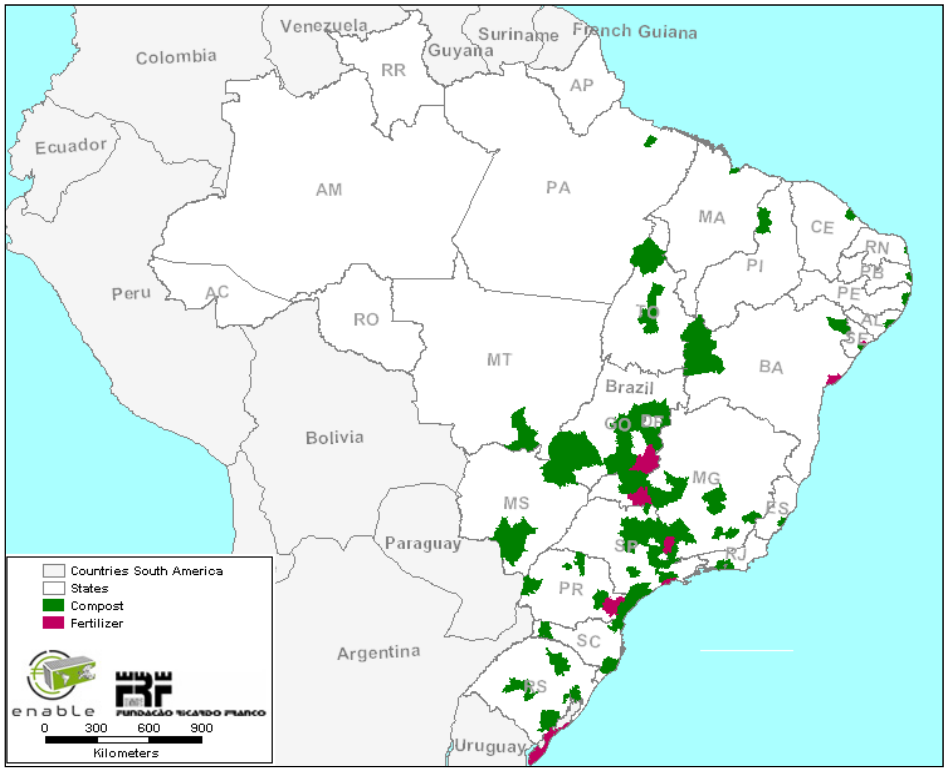
purpose for which the same is produced, that is, the product is bound for the grains production.

Table 2.10 – Source production/consumption of mineral bulks – Brazil

	CENTRAL-WEST	SOUTHEAST	SOUTH	NORTHEAST	NORTH	EXTERIOR	TOTAL PRODUCTION
CENTRAL-WEST	6,761,560	1,123,860	46,370	3,060	1,030	3,804,330	11,740,210
SOUTHEAST	1,251,640	116,923,380	806,730	380,930	23,120	146,990,290	266,376,090
SOUTH	82,080	296,080	8,207,770	45,260	36,580	0	8,667,770
NORTHEAST	801,480	343,840	74,350	3,929,260	362,530	410	5,511,870
NORTH	87,620	9,980	25,410	15,921,170	9,869,010	93,985,520	119,898,710
EXTERIOR	2,236,090	23,373,020	6,512,410	4,142,100	383,090	0	36,646,710
TOTAL CONSUMPTION	11,220,470	142,070,160	15,673,040	24,421,780	10,675,360	244,780,550	448,841,360

Source: PNLT, 2007

In the case of the manure production, the location of the production is more intense where the agricultural sector represents the greater part of the production. Figure 2.20 presents the location of the industrial plants for the production of manures (green) and fertilizers. It is observed that the number of manure plants is significantly superior to the fertilizers and it is spatially distributed in areas near the vegetable bulk producer regions like soy, corn and sugar cane.

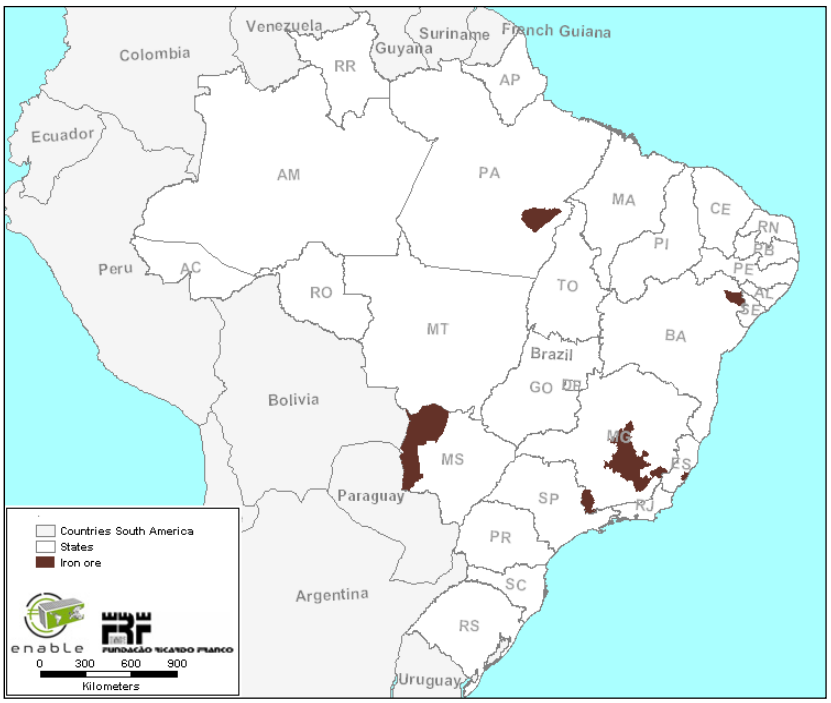


Source: PNLT, 2007

Figure 2.20 – Production of manures and fertilizers – Brazil

Regions South and Southeast produce together more than 60% of the national production and are followed by the Middle-West region responsible for approximately 21%. Summing up the production of these three regions we get close to 85%. Since the sector that demands for this kind of product is located in these regions, the industries that produce these mixtures tend to locate in areas near to the producer regions, reducing significantly the relocations of these products, being the cultures of soy, corn, sugar cane, cotton and coffee responsible for around 80% of this consumption.

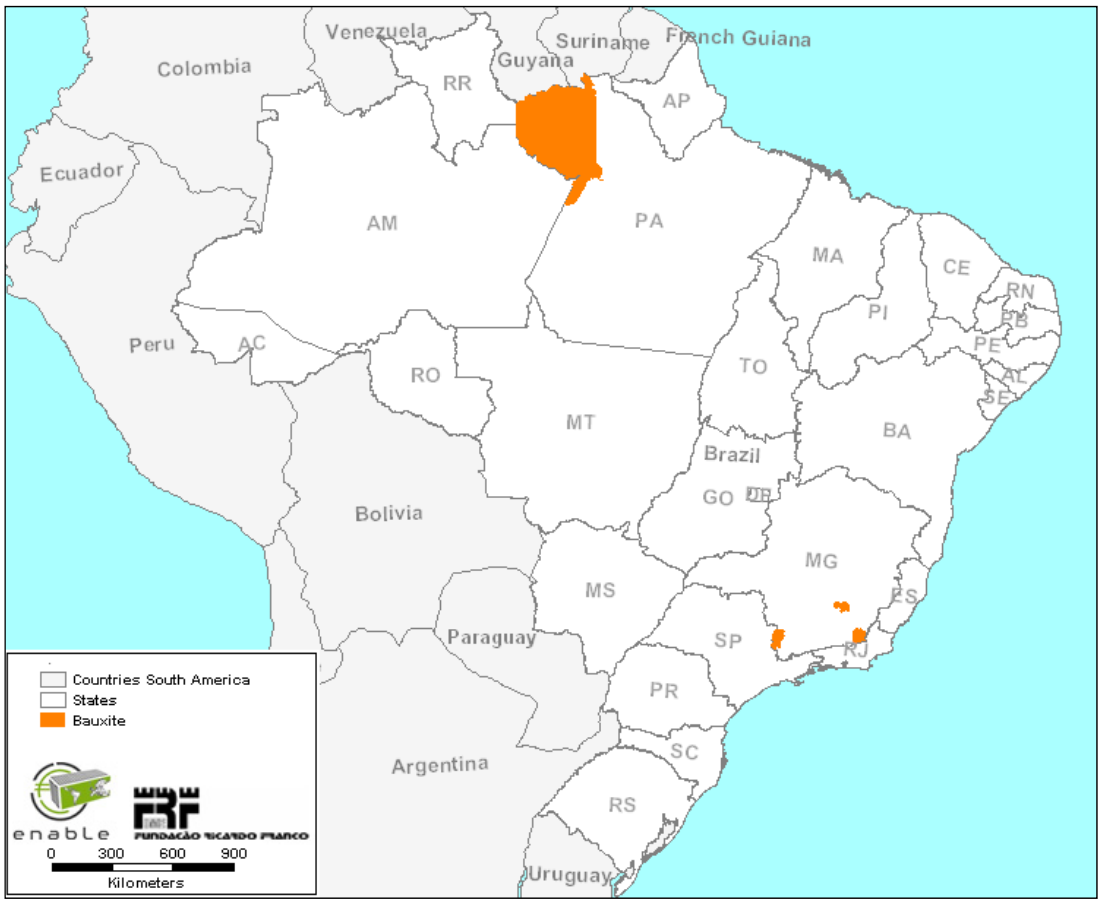
The iron ore production is located in the Middle-West, Northeast, North and Southeast regions, being the bigger mines in exploration in the states of Minas Gerais (Southeast), and Pará (North). In 2007, the production of iron ore was approximately 345 million tons, being 70% in Minas Gerais. The growth of the consumption of iron ore in the world has impelled the expansion of the mineral extraction in Brazil. The raw product serves as basis for the main components necessary for the manufacturing of cars, aircrafts, appliances, etc. Projection of the iron ore production occurs to serve the tendential scenario of external and internal consumptions that follows the growth of the steel industry production. The Brazilian production has grown in a significant way in the last years, with distinction to the exportations. The expansion of the steel industries in Brazil has enabled this value aggregation to the product. In this way, part of the production that was formerly exported as gross raw material, now passes through an industrial process. The processing of the iron ore transforms the product in metal balls which serve for the steel or iron production. The iron ore metal ball industries concentrate in the States of Maranhão and Espírito Santo and they are totally turned to the exportation. The volume produced in 2007 was around 47 million tons, being the State of Espírito Santo responsible for 90% of the total. The location of the iron ore production bases can be visualized in Figure 2.21.



Source: PNLT, 2007

Figure 2.21 – Iron ore production – Brazil

The Bauxite production is located in the State of Pará (North) and Minas Gerais (Southeast). The greater part of the bauxite production of the State of Minas Gerais is bound for the internal market and the Pará's supplies the Aluminium production, in the same State, and the São Luís (MA) production, exporting the remainders. In 2007, around 23 million tons were produced. The exportation was approximately 9 million tons, being moved in almost its totality thorugh the Trombetas port, in the city of Oriximiná, where it is located the Rio do Norte Mineration (MRN). The location of the bauxite production can be observed in Figure 2.22.



Source: PGO, 2009

Figure 2.22 – Bauxite production – Brazil

2.3.1.4. General Freight

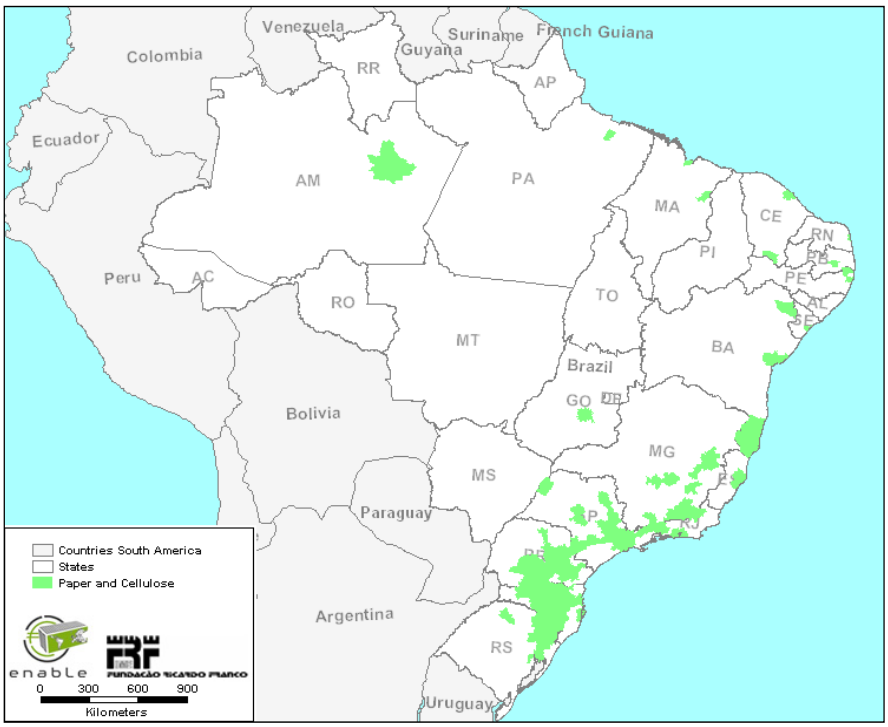
The main products classified as relevant general freight in the analysis of the international trade are: paper, cellulose, cement, wood, vehicles, soybean oil, meats, etc.

Table 2.11 – Source general freight production/consumption – Brazil

	CENTRAL-WEST	SOUTHEAST	SOUTH	NORTHEAST	NORTH	EXTERIOR	TOTAL PRODUCTION
CENTRAL-WEST	7,269,898	13,747,135	4,260,262	3,978,310	1,771,390	3,186,723	34,213,718
SOUTHEAST	121,200,525	808,792,695	262,543,214	195,122,333	77,816,839	819,806,275	2,285,281,881
SOUTH	30,200,875	192,242,050	83,821,540	49,818,468	19,960,021	163,299,224	539,342,178
NORTHEAST	12,575,071	83,324,620	27,284,867	31,303,480	9,533,176	128,246,778	292,267,992
NORTH	1,940	70,410	306,240	444,060	3,133,980	1,445,370	5,402,000
EXTERIOR	6,558,408	31,926,596	24,431,293	26,850,179	243,004	280	90,009,760
TOTAL CONSUMPTION	177,806,718	1,130,103,505	402,647,415	307,516,831	112,458,411	1,115,984,650	3,246,517,530

Source: PNLT, 2007

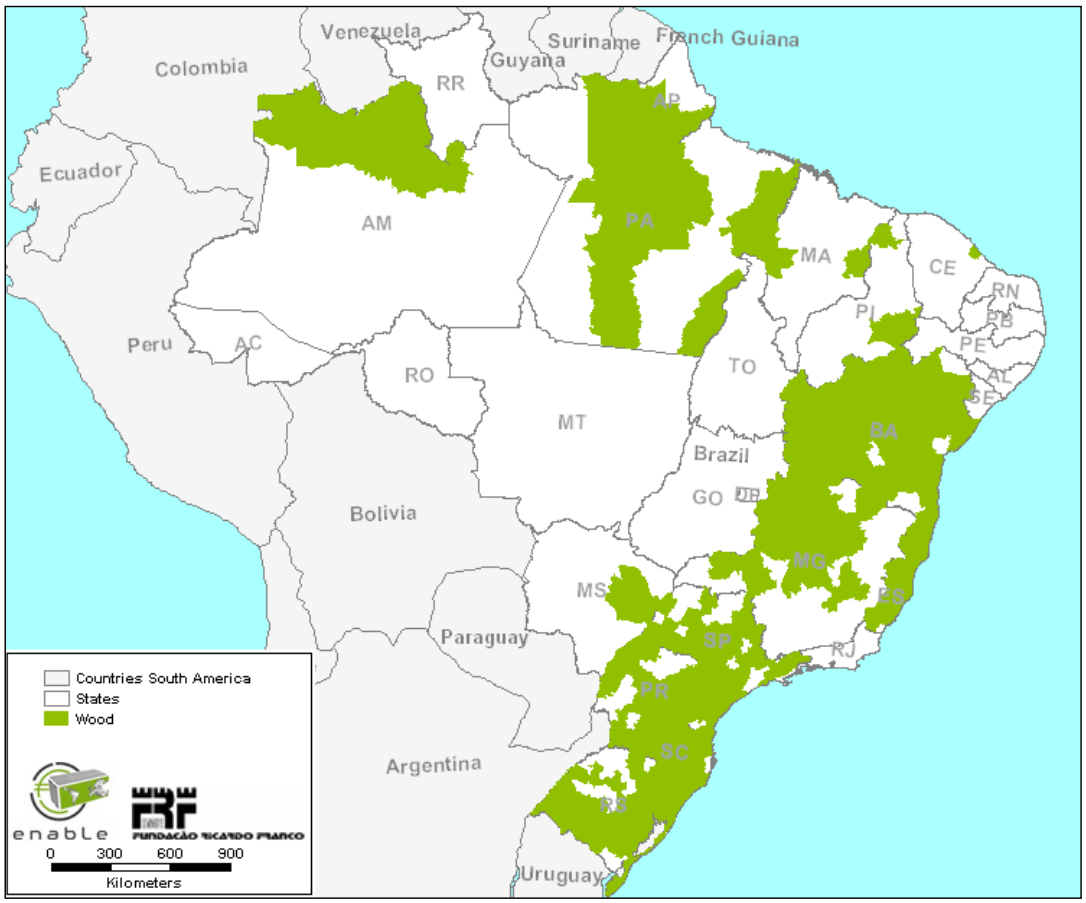
For comprising several types of industrialized products and for being the most industrialized of the country, the Southeast region is the one which responds for the greater part of the general freight. Analyzing table 2.11 it is possible to see that the mentioned region is responsible for approximately 70% of the Brazilian general freight production, with distinction to the soy oil production, where around 72% of the national production is done in the Southeast region. The paper production is present in all the Brazilian regions, however the biggest one is concentrated in the South and Southeast regions. The South region is the biggest paper producer, with around 40% of the Brazilian production. Now, the Southeast region responds for approximately 23%. Figure 2.23 shows the spatial distribution of the paper industries.



Source: PNLT, 2007

Figure 2.23 – Distribution of paper production – Brazil

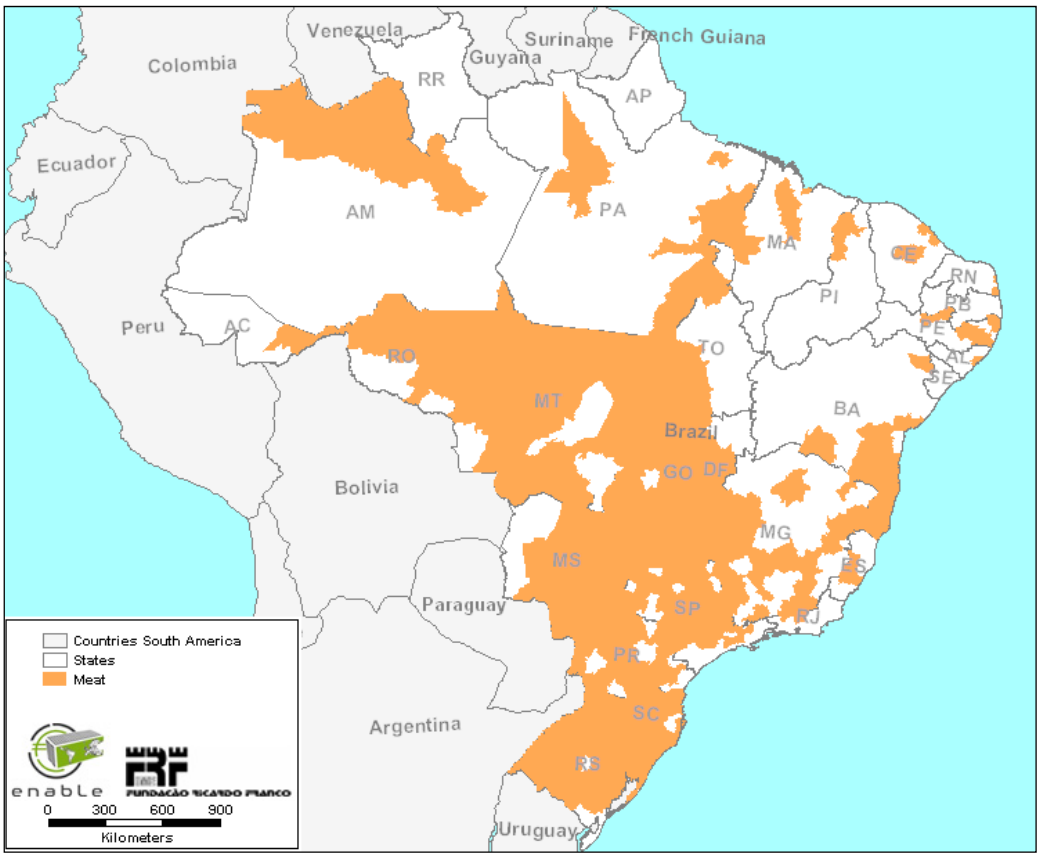
As it can be visualized in Figure 2.23, the paper producers zones are located very close to the bigger consumer markets. Wood production is related to the paper, cellulose and furniture industries, so the Southeast region appears as the biggest producer. So with the purpose of minimizing the costs with transports, the location of the production is in areas close to the big markets. The wood production still has another important characteristic which depends on the region where it is located, that is, the fine wood extraction in the North of the country has as main destination the exportation to Europe and United States, while the other regions production is bound for the internal market, as it is the case of the producers of cellulose, charcoal, etc. The location of the wood production can be visualized in Figure 2.24.



Source: PNLT, 2007

Figure 2.24 – Wood production – Brazil

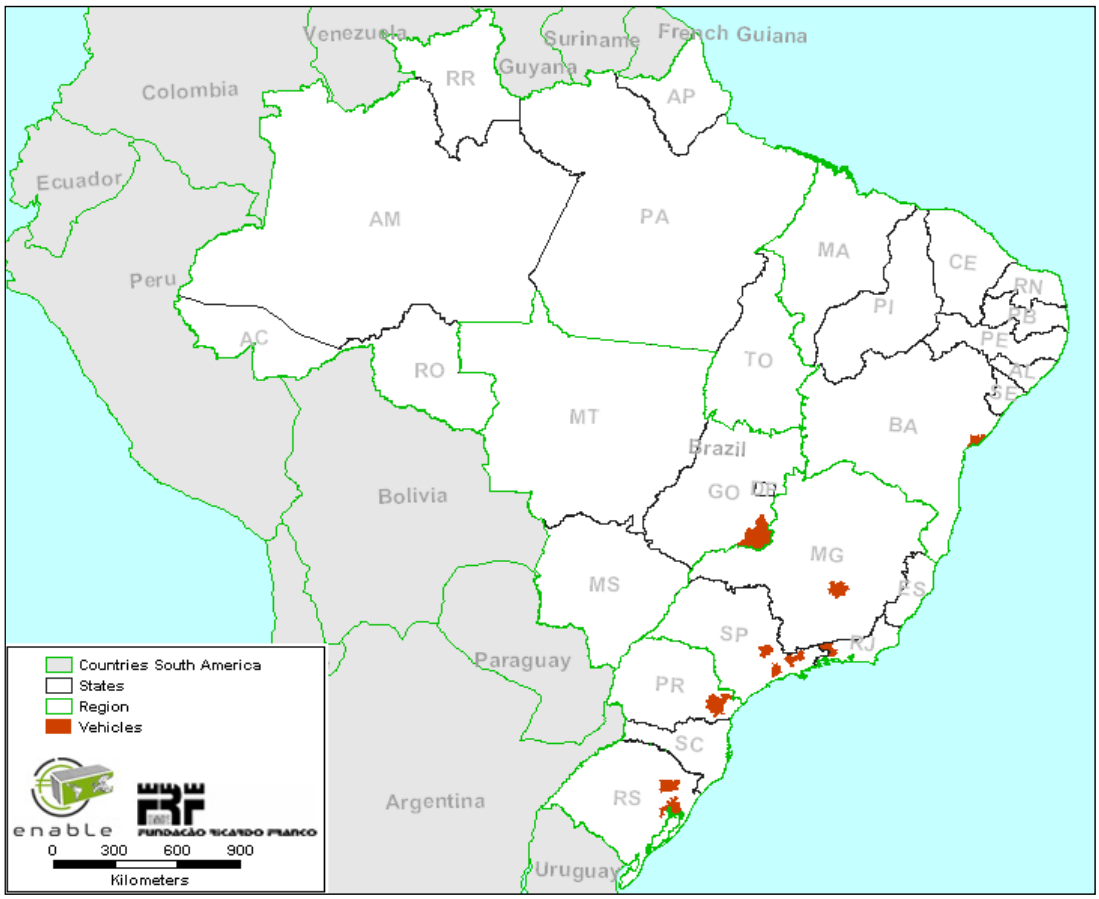
It is appropriate to emphasize that the wood production presents minimum values in relation to the other products which form the group of products classified as general freight. The production of meats and by-products is spread all over the Brazilian regions, existing some variations as for the animal species, that is, the poultry production is more concentrated in the South, Southeast and Middle-West regions. Now, the pork production is more concentrated in the South region and in the states of São Paulo and Minas Gerais. The beef production is the one with greater spatial distribution and it is present in all the Brazilian regions, some of them have as consumption region the external market, while others the production is only for the internal market. Figure 2.25 highlights the main meats producers regions. The highlighted regions are the ones which produce a volume higher than 10 thousand tons per year.



Source: PNLT, 2007

Figure 2.25 – Meats production – Brazil

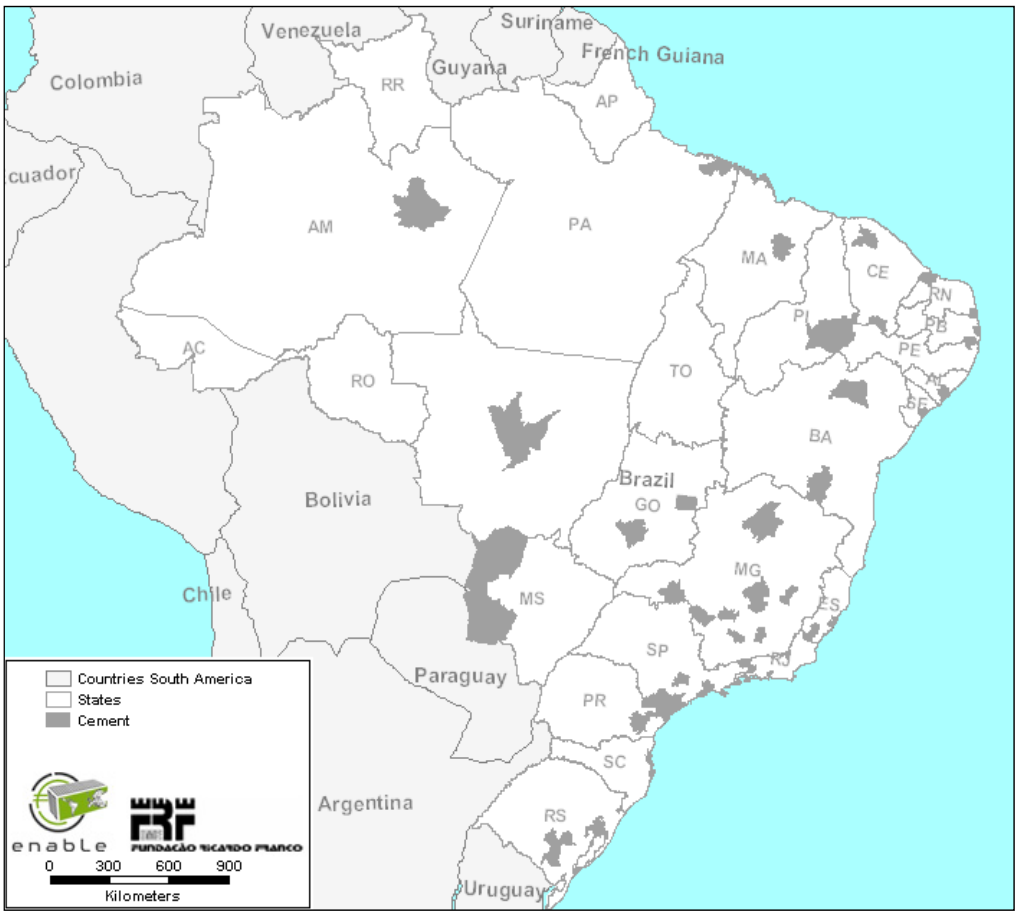
The vehicles production is located in the South, Southeast, Middle-West and Northeast regions. The Southeast region is the biggest car and trucks producer, mainly the state of São Paulo, with the region named ABC Paulista, where the main car industries of the country are concentrated. From the last decade of the 20th century, with the fiscal incentives from the other states, it has occurred a decentralization of the vehicles production. Therewith, some car industries installed in other regions, like Ford, which installed a new unit in the State of Bahia (Northeast). Figure 2.26 presents the location of the vehicles production in Brazil.



Source: PNLT, 2007

Figure 2.26 – Location of the vehicles production – Brazil

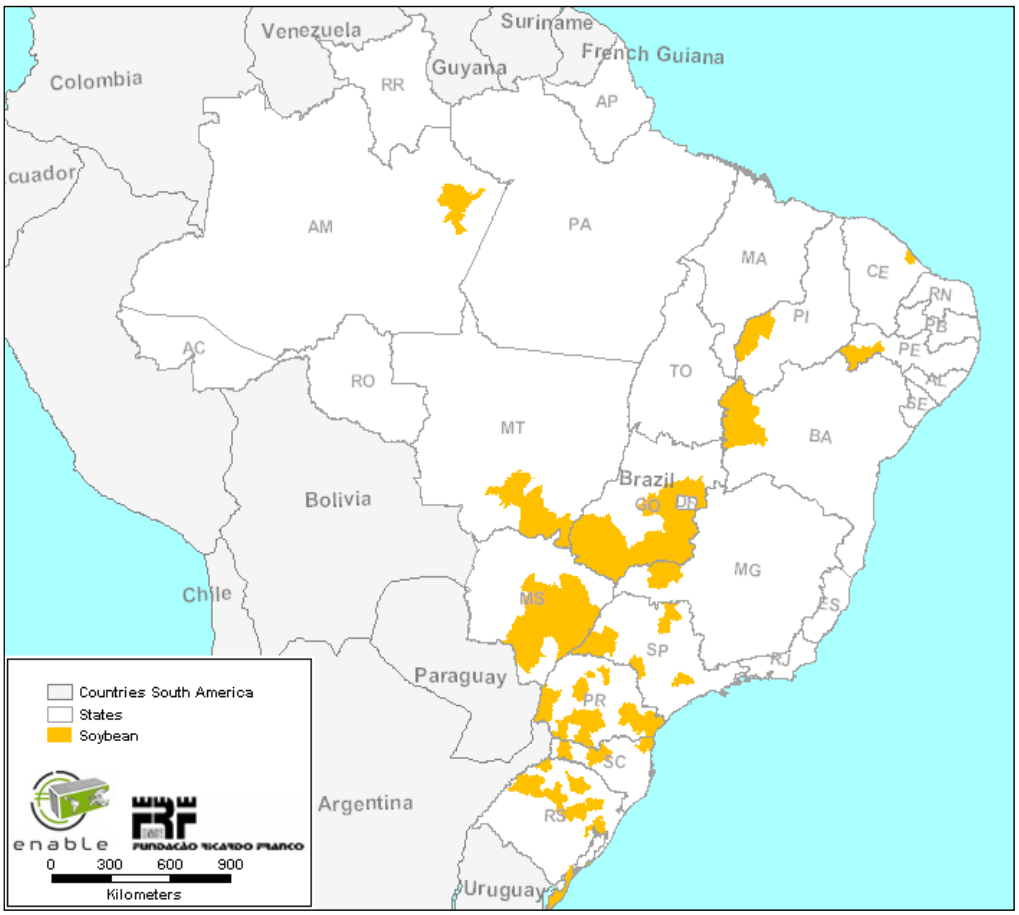
The proximity with the parts suppliers and the industrialization rate the South and Southeast regions are the big propellers for the concentration of the production in these regions. Together with the vehicles production there are the parts and accessories manufacturing complexes which are responsible for several kinds of components. The cement production is distributed through all the Brazilian regions. However, the greater part is concentrated in the South region with 42% and the Southeast with approximately 50% of the national production. The concentration of the production can be justified by the proximity with the big consumers together with the location of the main sources of raw material. The cement production of the most regions is bound for the internal consumption, the exported volumes total around 14%. Figure 2.27 shows the location of the cement production in Brazil.



Source: PNLT, 2007

Figure 2.27 – Location of the cement production – Brazil

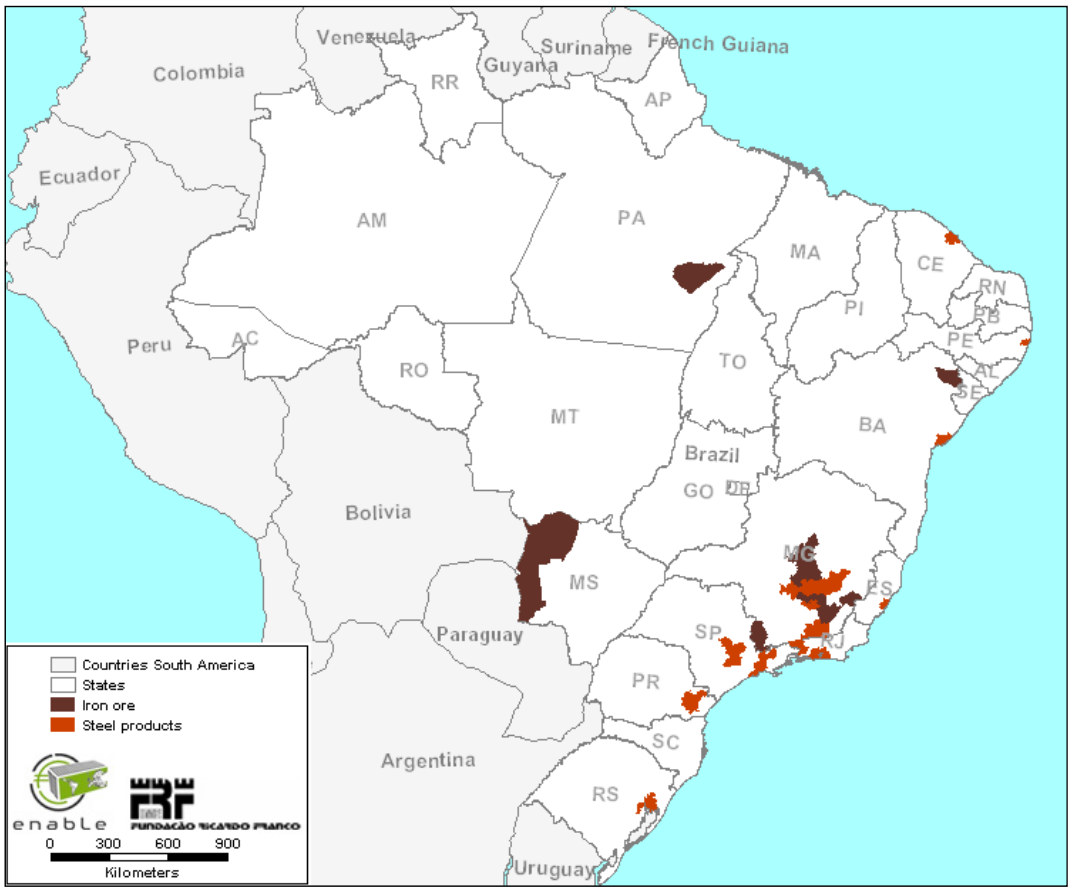
From the products classified as general freight, the soybean oil is the one which presents the greater volumes. The soybean oil production is present in all the Brazilian regions, the greater part is concentrated in the Southeast region, responsible for around 72% of the total production. The South region is the second biggest producer with approximately 16% of the total volume. Meanwhile, the expansion of the soy farming for the Middle-West and North regions of the country has impelled the installation of soybean smashing and soybean oil production industries. The exportations of the soybean oil production represent approximately 32% of the volume produced. The location of the areas where are situated the soybean oil production industries can be visualized in Figure 2.28.



Source: PNLT, 2007

Figure 2.28 – Location of the soybean oil production – Brazil

The production of steel products concentrates in the Northeast, South and Southeast regions, this latter responsible for approximately 85%, followed by the South with 11%. Among the steel products are: semi-finished steels, flat laminated steel, long steel and steel pipes. The steel products production is located close to the iron ore extraction points or ports. Like the great part of the iron ore production, it is located in the Southeast region, which also concentrates the higher percentage of steel products production. Another justification for the location of the steel industries is the proximity with the great consumers like the car industries, appliances, among others, for around 32% of all the national production stays in the Southeast region. In relation to the proximity of the steel industries with the ports, it is appropriate to say that 55% of the production is bound for the external market. Figure 2.29 presents the location of the steel industries. It is possible to observe that the Middle-West and North regions have extraction but do not have any steel industry. It is still observed that, although the South region does not have areas of iron ore exploration, there are two areas of steel products production.



Source: PNLT, 2007

Figure 2.29 – Location of the steel products production – Brazil

2.3.1.5. Container

It is possible to say that containers are products gatherers and serve to transport several kinds of products. In the last years the containers have become essential for the products exportation and importation. The process of freights unitization through the use of containers has grown significantly. Still, there is a trend of migration of several products classified as general freight until now for the containerized class of products. According to study presented in the General Plan of Grants – PGO, 2009, the main containers mover is the maritime transport. Among the main containers movers in Brazil are the Santos ports. Factors like improving the storage way and simplification in the use of the intermodality are some of the requirements that contribute for the containerization of freights.

Among the factors that have contributed most for the freights unitization process are the technological advances. These advances have provoked significant changes in the transports structures such as ports, terminals, loading and unloading equipment, etc. In the event of the benefits from the products containerization it stands out the costs reduction and loading and unloading time, reduction in the number of damages, increase of the security. Considering that, the most varied kinds of products have been transported in containers.

In Brazil, the containers movement has been restricted to the maritime ports for many years, but from the concession of the rail system increasingly more products, and in larger amount, have been transported by railways, using containerization. Some products like meats, for instance, need a special unitization called "refrigerated container", which preserves the products' quality and facilitates the use of intermodality. According to data from the National Water Transport Agency – ANTAQ, the movement of containers has been growing year after year. In the period between 2004 and 2008, the amount of containers moved in the Brazilian port terminals presented growth of approximately 30%. In 2008, the port of Santos, located in the State of São Paulo, was responsible for around 38% of the total volume. The majority of the Brazilian ports present significant growth rates, according to Table 2.12, following a world trend.

Table 2.12 – Movement of containers in Brazil

PORTS AND TERMINALS	AMOUNT OF CONTAINERS MOVED PER YEAR					VARIATION 2004-2008	PERCENTAGE IN RELATION TO THE TOTAL
	2004	2005	2006	2007	2008		
SANTOS	1,160,298	1,457,321	1,603,858	1,654,713	1,745,213	33.52%	38.36%
RIO GRANDE	339,821	393,925	356,404	356,415	359,354	5.44%	7.90%
PARANAGUÁ	224,864	245,789	290,941	341,472	340,552	33.97%	7.48%
SUAPE	84,538	108,869	116,261	158,291	293,133	71.16%	6.44%
RIO DE JANEIRO	256,759	237,020	242,223	274,187	289,059	11.17%	6.35%
ITAJAÍ	318,240	360,597	385,617	374,524	270,980	-17.44%	5.96%
VITÓRIA	145,871	168,088	192,197	203,600	197,864	26.28%	4.35%
ITAGUAÍ	87,992	127,166	177,286	162,794	196,145	55.14%	4.31%
SALVADOR	121,986	131,652	142,289	144,192	162,650	25.00%	3.57%
SÃO FRANC. DO SUL	186,147	178,111	165,168	191,722	150,013	-24.09%	3.30%
OTHERS	280,814	195,273	280,456	302,059	545,100	-	11.98%
Total	3,207,330	3,603,811	3,952,700	4,163,969	4,550,063	29.51%	100.00%

Source: Antaq, 2009

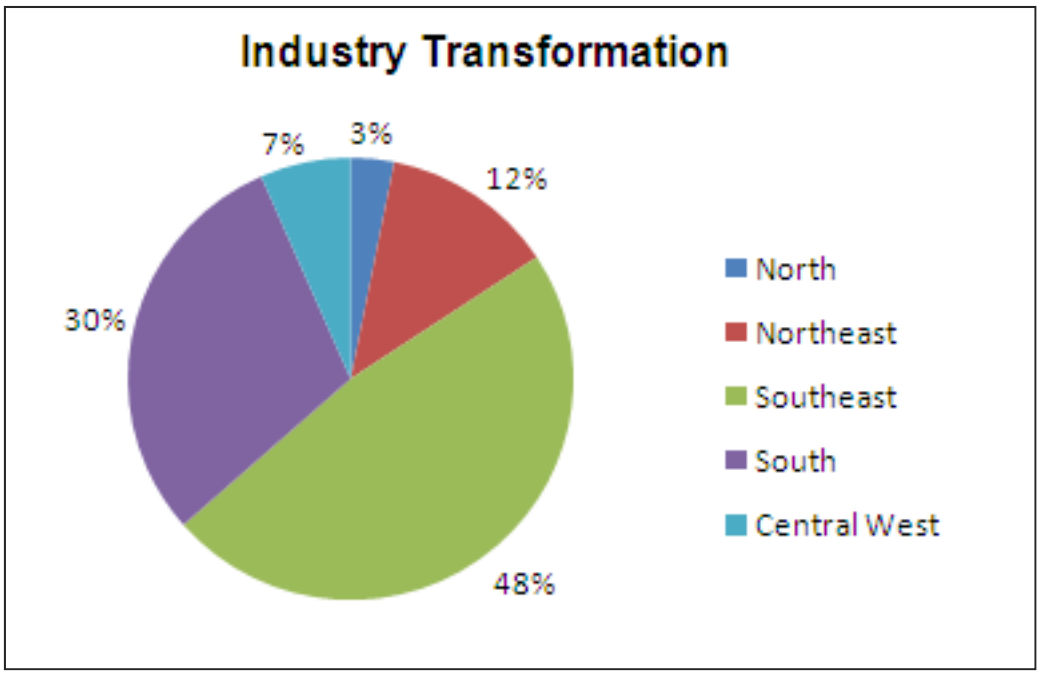
Analyzing the table, it is observed that the ports of Itajaí and São Francisco do Sul presented a reduction in the total volume moved between the base year of 2004 and 2008. Such negative variation can be justified due to the occurrence of the strong rains that happened in the region where the mentioned ports are located, causing great damages to these terminals' infrastructure, preventing the access of any vehicles and vessels.

Now, the transport of containers by railway is concentrated in the networks located in the South and Southeast regions of the country. As an example of the importance of the railways for the transport of containers, only the concessionaire ALL, manager of the rail axle that links the State of São Paulo, in Brazil, to the Province of Buenos Aires, in Argentina, moved in 2007 around 5,000 containers, but according to information of the

own operator company, punctual investments aiming at removing the obstacles existing along the railway can allow that this number is tripled in a short term.

2.3.1.6. Industrial Sector

The Brazilian industrial sector presents the bigger distortions as for the geographic location. The Southeast region, in special the State of São Paulo, concentrates the higher number of industries of the country. According to IBGE, the Brazilian industries are divided into extractive and of transformation. According to data presented by the Annual Industry Research – IBGE, in 2007 the first class represented only 3% of the total figure, while the others were part of the second group. From the main industries of transformation in produced volumes, are highlighted those which produce food and beverage, textile, cellulose and paper, pharmaceutics, oil and alcohol refinement, chemicals, vehicles, machines and equipment, basic metallurgy, rubber and plastic, etc. The great part of the industries of food and beverage production is concentrated in the Southeast and South regions. This concentration of the production is due to factors like biggest consumer market and for being until short ago the great producers of raw material for the manufacturing of such products. The distribution of the transformation industries in Brazil can be visualized in Figure 2.30. It is observed that the South and Southeast regions respond for around 78% of the Brazilian production.



Source: IBGE, 2007

Figure 2.30 – Distribution of the transformation industries in Brazil in 2007

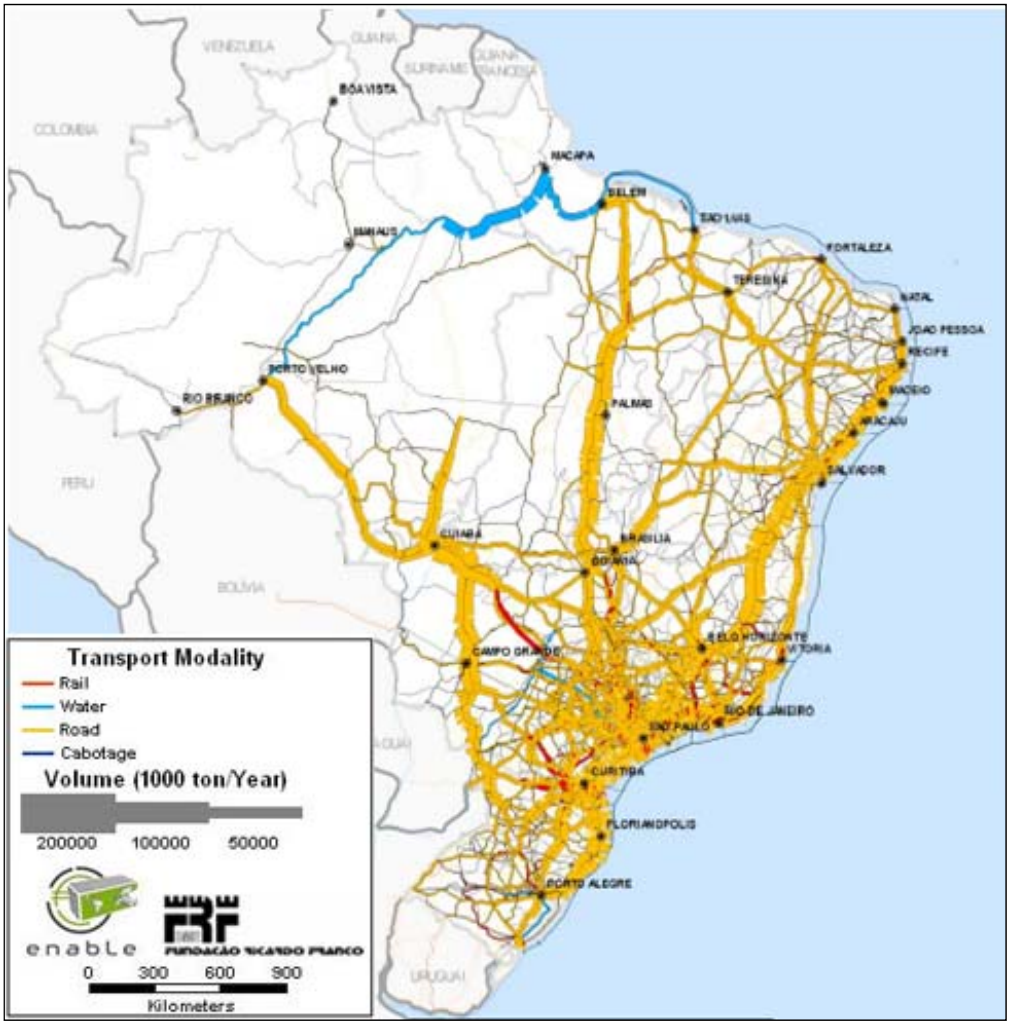
There are clusters of production of determined types of products in several regions of Brazil. The South region, for example, concentrates great part of the industries that manufacture shoes, leather and by-products. Several poles of clothing manufacturing production are spread over the Brazilian regions, in this case, some poles are specialized

producers of a determined type of fabric. Among these agglomerates or clusters there are those which produce specifically for the international trade. But it is not only the clothing manufacturing sector that has production clusters spread over the Brazilian territory. Several states, mainly from the regions Middle-West and Northeast have stimulated the creation of the most diversified industrial poles. The incentives vary from region to region, many times turned to a certain type of product, like it is the case of the pharmaceutical pole located in the city of Anápolis in the state of Goiás (Middle-West). The state of Tocantins corroborated by the expansion of the agricultural border over its territory has stimulated the implantation of soybean smashing mills for the vegetable soybean oil and its by-products. Another processing pole turned to the characteristics of the regional production is located in the state of Mato Grosso. This industrial complex is turned to the killing and beef preparation for exportation. The electronics industries concentrate mainly in the states of São Paulo and Amazonas.

2.3.2. Brazil's Flow of Transport and intermodality

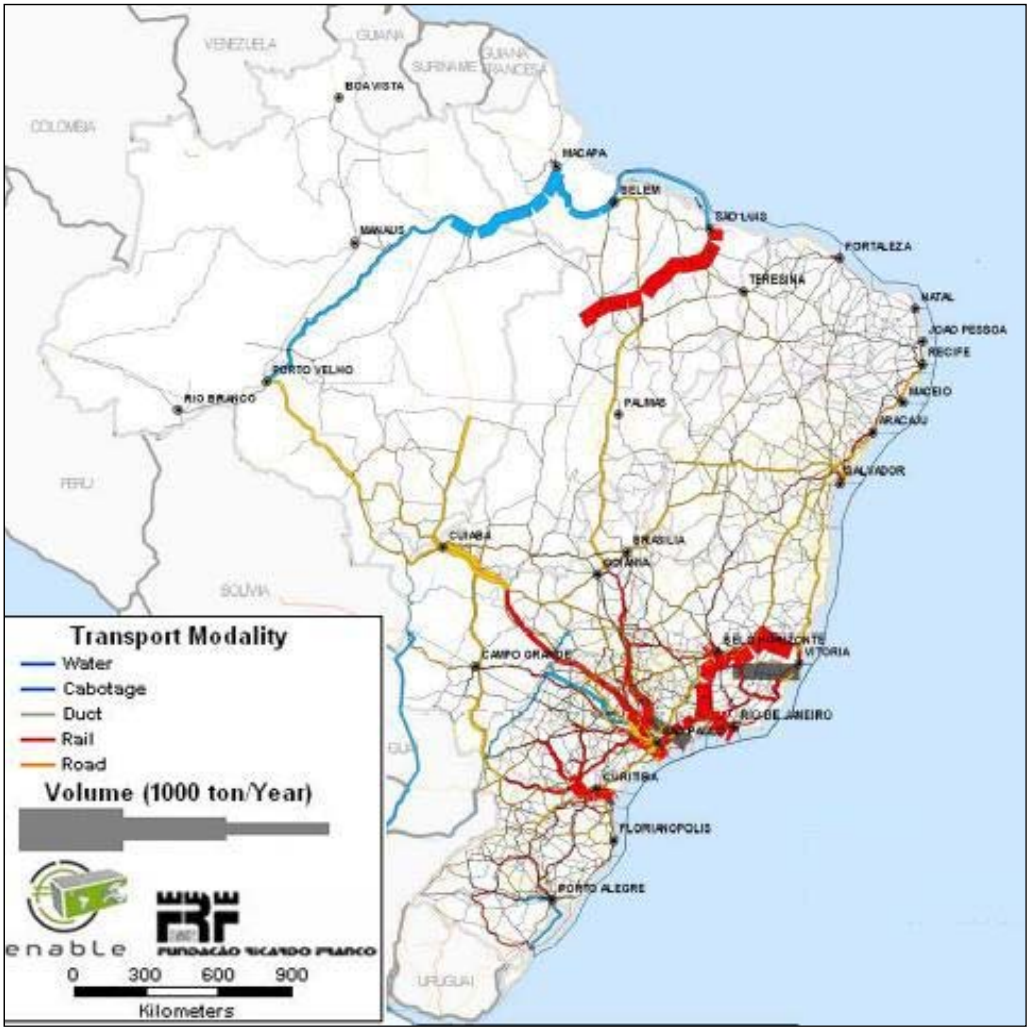
From the survey on the location of the freight producers zones and, consequently, of the demand for transports, it is had the visualization of the transport flows produced by the movement of the products towards the points where they will be consumed. With the knowledge about the offer and demand and their respective origin and destination points, it was defined the allocation of the transport flows in the rail, waterway and road modals. From these allocations it is possible to identify the main transport corridors. With the objective of improving the visualization of these flows, allocations were made by classes of products presented in item 2.3.1.

To facilitate the visualization of the freight transport flows, the maps presented in sequence refer to the general freight loading. In this case, general freight are all the following classes: general freight, vegetable bulk, liquid bulk. It was chosen to present the mineral bulks in a separate way in another map, because the volumes of iron ore transport reach high values, around 100 million tons/year, while the other products present value noticeable lower. In turn, the general freight flows are also very relevant, and are allocated in the road modal, harming the visualization of the other flows. For this reason, there will be presented maps with and without the iron ore flow and maps with and without the general freight flow. Figure 2.31 presents the general freight loading without iron ore, while Figure 2.32 present the mineral bulks without the general freight presence.



Source: PNLT, 2007

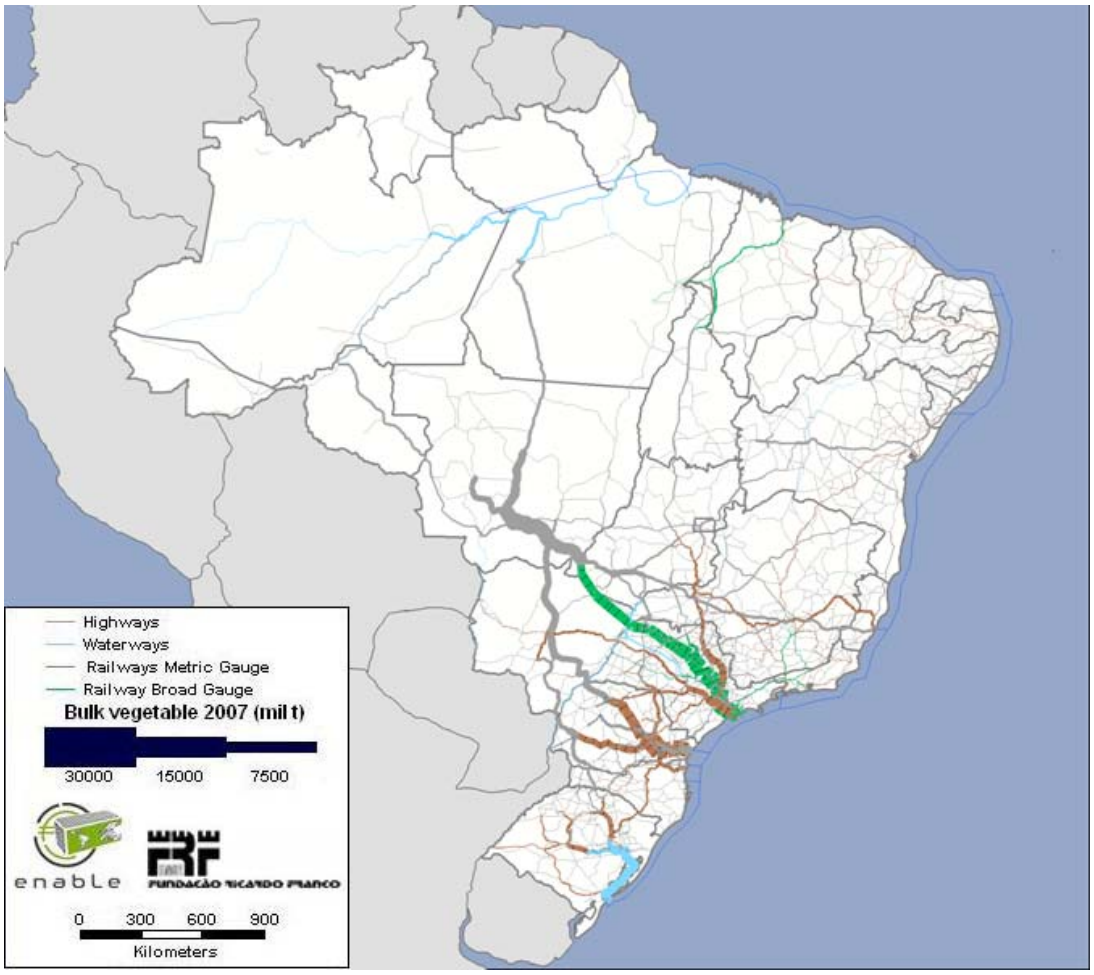
Figure 2.31 – General freight loading (without ores) – Brazil



Source: PNLT, 2007

Figure 2.32 – Loading of mineral bulks (without general freight) – Brazil

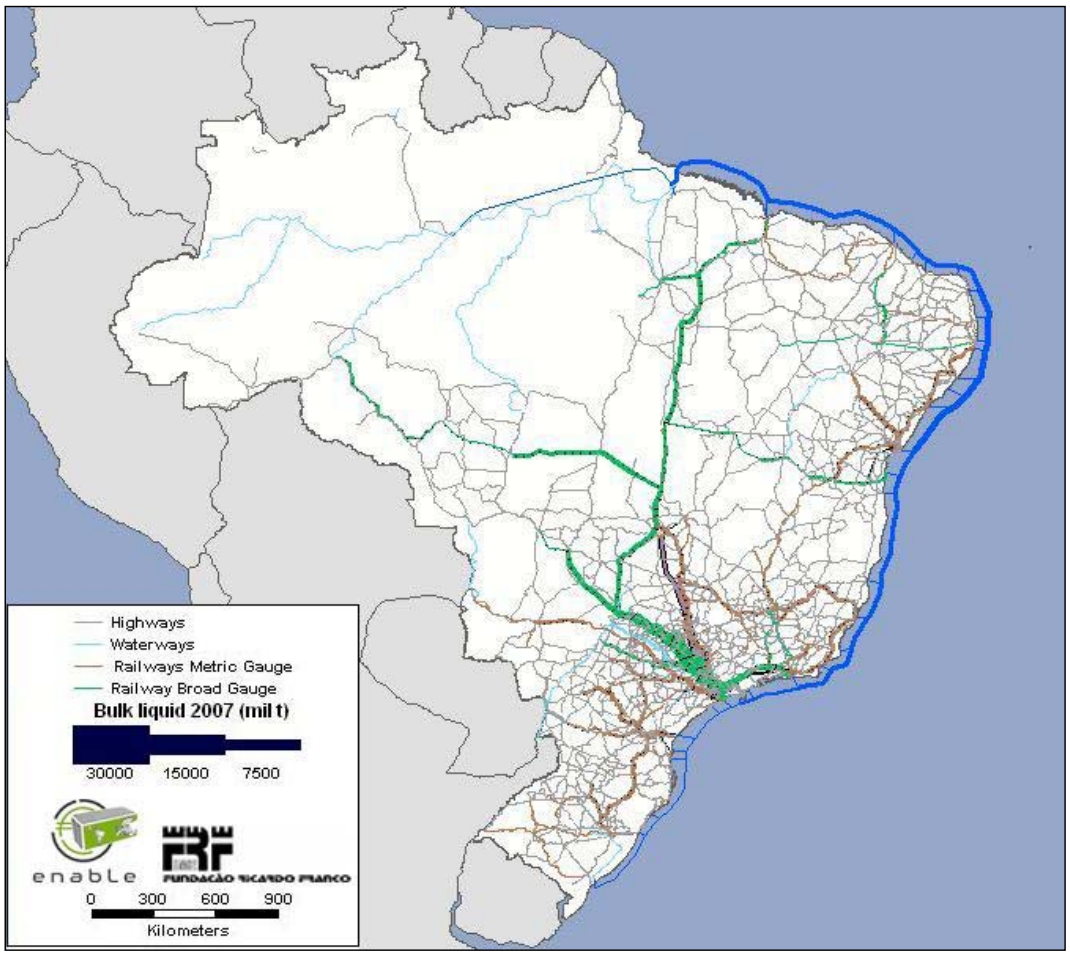
As presented in item 2.3.1 of this report, the production of the several products which compose the group of vegetable bulks is dispersed through all the Brazilian regions, and some products have greater concentration in specific micro regions, like the sugar cane. It is appropriate to highlight that for some products the consumer region does not produce enough, so it is necessary to accomplish movements of the other regions production, to meet the demand, thus generating transports flows towards these big consumer markets. Other products have as great consumer market the international trade. Figure 2.33 presents the loading of the network with vegetable bulks flows. It is observed that the flows increase in the direction of the Southeast region of the country and of the main ports exporter of this kind of bulks.



Source: PNLT, 2007

Figure 2.33 – Loading of vegetable bulks – Brazil

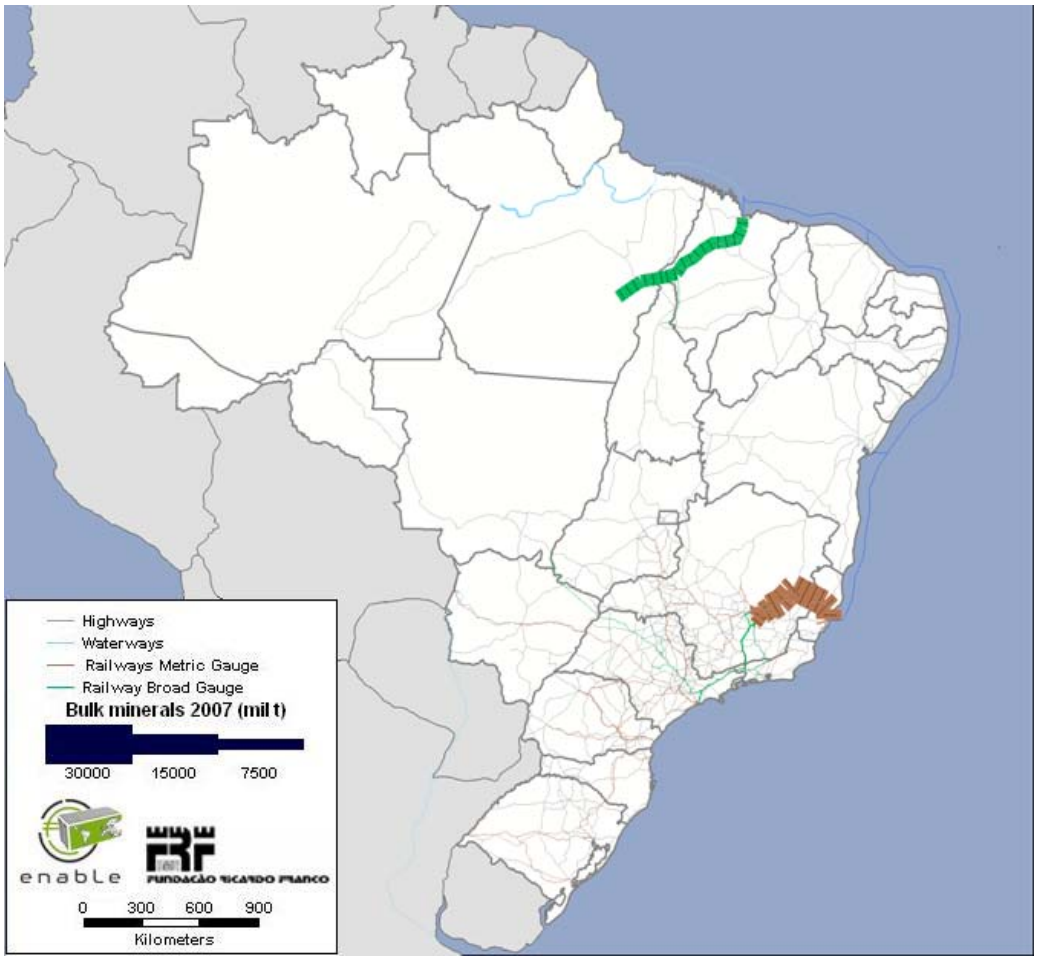
Figure 2.34 presents the loading of the network with the liquid bulks flows for 2007. It is observed that the flows increase in the direction of the Southeast region of the country and also a significant movement through the use of cabotage connecting the Southeast and North regions.



Source: PGO, 2009

Figure 2.34 – Loading of liquid bulks – Brazil

The production of mineral bulks, with distinction to the iron ore, product that is the main mineral extracted and exported by Brazil, is located in two main mines, which are linked to the ports through railways. The rail modal is the responsible for the flowing of the extraction places until the port terminals specialized in the iron ore shipping. The loadings of mineral bulks in 2007 are presented in Figure 2.35.



Source: PGO, 2009

Figure 2.35 – Loading of mineral bulks – Brazil

The loadings presented in Figure 2.35 show that the flows are concentrated in two railway axles, that is, the railway that links Carajás, in the state of Pará to the Itaqui Port in São Luis, in Maranhão, and the main railway known as Vitória – Minas, linking the ferriferous quadrilateral located in the state of Minas Gerais to Tubarão Port, in Espírito Santo. Being this one responsible for approximately 70% of ore movement of the country. The movement of iron ore is done through other ways, however with volumes much inferior to those presented for these ramifications highlighted.

2.3.3. Brazil's Transport Operation

Based on what has been described throughout the document, and added to the contributions of the participants in the Forum of stakeholders, it was possible to consolidate the main restrictions to the intermodal transport in Brazil.

BRAZILIAN PORT SYSTEM

There are evidences that the logistics costs in Brazil overcome the average observed in countries from the Organisation for Economic Co-operation and Development – OECD and even in other Latin America countries – phenomenon called Brazil Cost. The Brazilian port sector is one of the determinants of this cost, limiting the chances of the country achieve a more intense rhythm of sustainable growth. The ports are crucial links in the international trade's logistics chain, provided that 90% of Brazil's international trade is done through ports.

Brazil has currently 57 ports, being 37 public, besides 42 private terminals and three port complexes granted to the private initiative. One of the largest blocks, the expansion of the national port sector, is the *infrastructure deficiency*, mainly in ports, which compromises the sector's potential and represents an *obstacle to the growth of international trade* and cabotage in the country. To overcome this problem it is necessary to make *effect investments* directed to *port and access works*, and the *equipage of the national ports*.

However, the necessity of *investments* in port and access works is beyond the simple *costs reduction to raise competitiveness of the products transported*. In the international market and even inside the country, the ports also face competition. Increasingly the organized ports have to fight for space and, in this dispute, the access and operational and berthing capacity are some of the great differentials that the ports can offer. They are part of the set of factors which represent greater competitiveness for the ports: drafts that meet the large vessels; larger berths specialized in the freight's treatment; mechanization and automation of the freight handling; and efficient control and information systems.

The truck queues along the highways and avenues that take to the great Brazilian ports are long, especially in the periods of crop. Besides, not rare are the cases where large vessels are prevented from mooring in the national ports due to lack of berth's depth and movement bays or, if they succeed to moor, the ship owners are obliged to board with volumes below its capacity, increasing the freight's price and reducing competitiveness of ports and products.

Among the *main infrastructure problems* identified in the *Brazilian ports* are the deficits in port areas – including *construction, enlargement or recovery of berths, piers, terminals, yards,* etc. – and the need for expansion and improvement of the *land accesses*, which together are responsible for almost 90% of the amount estimated for the obstacles.

The *greatest estimated demand*, in number of works and also in estimated amount, refers to the need for *construction and maintenance of ports areas, retro areas, berths, yards, piers, breakwaters and quays.* Although the largest number of works concerns the berths and piers construction, the largest amount estimated refers to the deficiencies related to yards and terminals, which add up about US$ 4 billion in necessary investments.

Among the main ports that presented problems related to the port areas we highlight the ports of Santos, Vitória, Itaqui, Pecém and Rio Grande, which together respond by almost 40% of the identified demands. Other 34 ports also present demands referring to port areas, with amounts from US$ 10 million to US$ 470 million. It is still important to highlight that in the universe of necessary constructions, ten refer to the construction of new ports or port terminals – adding up almost estimated US$ 2.5 billion. Among these new ports, some must be especially directed to the international trade, while others will be for the flowing the production of grains, iron ore, manganese ore, pig iron and copper from the state of Pará.

As identified in the document, the category of land accesses refers to one of the largest identified demands and one of the most problematic with regard to quantification, be the number of works or the amounts of necessary investments. This difficulty faced for the works quantification comes, mainly, from the dimension and spreading of the Brazilian road network, besides the common use of roads for freight transport and urban traffic, making difficult the identification of the relevant ways for the port accesses.

The lack of efficient access ways raises the freights' price, jeopardize perishable freights and affect the ports competitiveness. In Brazil, the lack of an extensive rail network which permits the freight transport from its origin until the ports – or from the ports to the destinations – already is, itself, a factor in rising costs of the port transport.

In all the accesses, it is worth highlighting the port of Santos, whose high demand represents almost 30% of these obstacles, corresponding to highways and railways, besides ring roads which would release the freights route from confronting the urban traffic in the metropolitan area of São Paulo's capital.

One of the *most serious problems* faced by the Brazilian port sector is, undoubtedly, the issue of *depth of the access canals, berths and evolution bays*. In this context, the dredging services constitute an essential point to enable the access and mooring of large vessels, in order to broaden the commercial potential of the ports and allow them to compete in the international port system. Thirty ports have been identified by the necessity of executing dredging services, especially the ports of Suape, Rio de Janeiro, Paranaguá, Barra do Riacho, Itaguaí and Santos, whose dredging works correspond for 13.1%, 10.1%, 9.5%, 7.8%, 6.7% and 5.8%, respectively, of the volume of investments observed as necessary for the solution of the dredging obstacles.

It is noteworthy that the 11 largest ports of the country, in amounts of international trade movement, are in the list of ports which demand dredging works. Altogether, these ports make up a need for investment of US$ 800 million, corresponding to 49.3% of the necessities identified in this category.

Besides these, there are a number of *other demands* ranging from *support facilities and equipment, to the implementation of safety systems, signals, electrification and sanitation*. According to the National Agency for Waterway Transportation – ANTAQ, some of the main factors that impair the good functioning of ports are related to the deficiencies in these facilities and equipment, essential to the port operation.

Another big problem faced concerns the *internal ways to the ports*, whose bad conditions have hampered the freights movement and, consequently, the price of waterway transport.

Among the ports which demand a higher volume of investment in this category are: the port of Santos (15.2% of the obstacles), the port of São Francisco do Sul (13.0%), the port of Areia Branca (10.3%) and the ports of Itaguaí, Rio de Janeiro and Norte Fluminense, all in the state of Rio de Janeiro, which together make up 27.5% of the demands for these works.

Besides all the infrastructure problems found in the Brazilian ports, are also r*eduction factors of the sector's commercial competitiveness some institutional and bureaucratic aspects of the port functioning*. What is highlighted is the existence of a set of institutional and administrative problems which are common to the Brazilian ports. Mentioned by operators are problems such as: port infrastructure; bureaucracy and strikes, which interfere in the freights' release; lack of integration among the entities that operate in the port area; and the need for a change in habits and attitudes by the

port servers and managers, in the sense of meeting more promptly the customers' demands.

According to National Confederation of Industry Brazil – CNI (2008), among the major port complicating points indicated by the companies, except for the infrastructure ones, are especially: *bureaucracy in releasing the freights* – indicated as obstacle by *65.3% of the companies*; the *strikes* which interfere in the freights movement or release – indicated by *56.4%*; and *high costs of stowage*, *wharfage and pilotage*. Besides these, a problem often cited by the companies is the *restricted working time of customs*, which also interferes negatively in the *freights' release time*.

According to National Agency of Maritime Transports – ANTAQ, in a research with users of nine ports, besides all the problems already mentioned, it is observed the necessity of changing habits and attitudes in the treatment of port services users by the servers and managers. Moreover, the lack of integration among the entities that operate in the port area brings enormous problems to the movement of goods. The research also addresses the need to revise the agreements of the functional categories – port workers and operators – in relation to the allocation and pricing of separate labor, given the technological advance of the port operations and the degree of specialization required.

Another serious problem faced by the Brazilian port system users concerns the *average waiting time for mooring in the ports*. For container vessels this time has fallen, among 2006 and 2007, from a national average of 13.5 to 9 hours per vessel. In terms of bulks, the wait in line is even longer.

According to Lachmann Group, the desirable reality would be that in the Brazilian ports, as well as in the Port of Rotterdam, where the ship owner informs an hour in advance, following the standard procedure, and gets immediate mooring. For that, the accesses to the wharf are signalized, according to the vessels' characteristics.

The national average in 2007 for the several solid bulks was 54 hours/vessel, but the situation goes to extremes such as the case of Corex terminal, in Paranaguá, for which the waiting time for transshipment reaches 389 hours/vessel (approximately 16 waiting days). Regarding the transshipment of general freight, the average waiting times are even worse, reaching 244 hours/vessel in Maceio's public quay.

In Brazil, the berthing of vessels on arrival is far from happening, according to data from the company Alliance Navigation (2008) only 31% of the stopovers at the port of Santos, for example, waited less than 3h to moor, with 15% of the stopovers wait for more than 24 hours.

Table 2.12 – Waiting time for mooring (Port of Santos)

Wait for Mooring	% stopovers
Up to 3h	31%
3h – 6h	15%
6h – 12h	19%
12h-24h	20%
Over 24h	15%
Total	**100%**

Source: Alliance Navigation (2008)

Still according to ANTAQ, it is necessary a *greater involvement from the port authorities* that must *operate together with other organs and entities from the port environment* eliminating occasional obstacles to the services offered by the ports. Moreover, it considers the possibility of revising the distribution of freight flows among the ports, directing them to optimize the available road and port infrastructure.

Figure 2.36 – Main Limitations of Brazilian Ports

RAIL TRANSPORT

Regarding the rail mode, according to **Professor Newton de Castro**, between 1992 and 1994, the only segment of the economy that was in the National Program of Destatization when there was a transition in the government, was the rail one. The National Bank for Economic and Social Development – BNDES had a mission to carry out privatization of this sector, but the Bank has taken a path of less resistance and made a privatization in the image and likeness, in a certain way, to the own structure existing at Paulista Railway – FEPASA, at that time, with regional networks.

ANUT believes that the root of the problems presently faced by users was the fact that the railways privatizations was not supported in a specific law which would accept the peculiarities of this kind of public service, from the own applicable basic definitions,

such as dependent user, right of way, mutual traffic, captive customer etc. Therefore, what remains to base the determination of rights and obligations are the general rules contained in the law of biddings, in the concessions law and in the law which created the system National Agency for Waterway Transportation – ANTAQ / National Agency for Terrestrial Transportation – ANTT / National Department for Transport Infrastructure – DNIT / National Council for Integration of Transport Policies – CONIT.

The National Rail Transport Association – ANTF, asserts that today there are many branches that had been created by the state-owned company to connect determined points of other state-owned companies, and then some specific branches worked with an only customer, of the government's interest. Thus, the process of concession of the railway was done in batches, to include these specific branches together with branches of higher commercial volume.

According to ANUT, there is, in the rail modal, a serious concern as to the *physical safety of the freight and to combat theft*, the greater relevance issues, regarding the *regulation*, concern the clearer and more precise definition of the obligations undertaken by the concessionaires before the conceding power, and the relations of those with the users.

The creation of the independent rail operator is another important subject: allow the industrial investors, grains traders, to be able to buy their locomotive, their car and to operate in the concessionaire network, obeying the safety rules. This has been occurring in the USA for many years and successfully. In accordance with this country agency, which takes care of the safety of rail transportation, there is no problem with the small independent operators. The same rate of accidents is observed in the big concessionaires and in the small independent operators.

For ANTF, the problem is to put an independent operator, who will work in ANTF network, doing his schedule and all the scale depending on his own train. This operator uses this network, not having maintenance costs. Therefore, the only cost would be the transportation. In relation to the operators, there is no problem, since this already happens.

ANUT highlights as praiseworthy the government's initiative, to launch the Brazilian Railways Revitalization Program, in which is inserted an important regulation component, the Railways Integration and Adequacy Program. This Program sparked optimism, mainly because it constitutes an excellent opportunity to, with the users support, give ANTT real authority to supervise appropriately the concessionaires performance, in terms of the authority of right which was conferred by the law that created it.

Nevertheless, according to CNI, an area in which Brazil has much to advance is the public services regulation. Two federal regulatory agencies, the terrestrial transportation – ANTT – and the waterway transportation – ANTAQ – started to be set up at the end of the 1990s, and the third one, which is the most recent, is the National Civil Aviation Agency – ANAC. There is no culture of regulation based on technical and independent principles in relation to the government and concessionaires. The role the agencies should perform is trying to balance the power game among the concessionaire, the user and the government, but this is not been done. As an example, it is given the issue of the private terminals for container movement. ANTAQ should define the terminals location, but not a decree that says that is forbidden in the whole country. There must be economic studies, of competition, to measure if something is feasible or not, because they do not want unfair competition to exist.

Likewise in the rail sector: the independent operator will pass without paying anything, but he has to pay, even though because there is a regulatory agency of terrestrial transportation, the ANTT, this is an issue for it to solve. There is an industry which wants to buy cars, locomotives, make a leasing, and it wants to operate in the concessionaire's determined network, it needs to have this right. Now it is ANTT's function to define schedules, safety rules, if the locomotive has to be connected with the concessionaire's operation center, etc. Then if it were, we could walk for this, efficient regulatory agencies.

In the case of the independent operator, or even the right-of-way, how ANTT will regulate a situation of the agency itself does not know what is happening. In the railways concessions contracts is predicted that the regulating organ will have a "mirror" of the Operational Control Center – CCO, that is, in all the country's CCOs. There should be a "mirror" in Brasília, something simple to be done, and it is really a matter of traffic. For example, to measure what is happening in the network, not that they do not have power to intervene, but it is predicted in the concession contract and it is not been fulfilled in this part.

ANUT's main concerns on the negotiations that Will be developed around the Program mentioned are focused on the establishment of regulatory frameworks that: (i) seek, in defining criteria and rules related to mutual traffic, right-of-way and dependent user: the treatment isonomy, regularity of offer of transportation and setting of operationalization times and windows; (ii) guarantee that the capital control does not create situations of privileges and abuse in rendering service; (iii) implement effective and transparent instruments of monitoring the performance of railways by ANTT and CADE, with the users participation; (iv) institute, with the users participation, transparent criteria of establishing the "price-caps" (rule that defines the conditions under which the tariffs readjustment must be done periodically, establishing limits for the determination of the tariff values charged under distinct conditions); (v) oblige the permanently updated maintenance, at ANTT, of a register of shareholders of each concessionaire, with clear identification of the controllers, guaranteed to users, at any time, the right of accessing this register; (vi) introduce in the operational contracts on mutual traffic and right-of-way, transparent and standardized rules to: calculation of tariffs, operationalization times and windows, responsibilities about accidents, theft or loss of freight and traffic control of the freight and compositions; (vii) guarantee to the user dependent on rail transport, the mutual traffic and the right-of-way, besides the regular flow of transportation and accomplishment of the contracted program; and (viii) establish appropriate penalties for non accomplishment of the regulating rules, concession and transport contracts and continuous non accomplishment of the programming.

One of the important points for ANUT, which is not the regulation or the institutional structure, which was not addressed at the time of privatization, is *the integration of the networks and the promotion in rail transportation of longer distances*. This was one of the problems which were not covered in the model or in the legislation. In turn, the *right-of-way* issue appears as relevant and today it is being re-proposed, mainly in the expansion of the rail sector in Brazil, which has more possibility of access and interchange in this sector. ANTF, in turn, asserts that the right-of-way and the mutual traffic already happen among the operators, since they are interconnected among the networks. With the network expansion this tends to improve a little.

Besides these points that were mentioned, there are issues of *infrastructure*, the *definition of responsibility between concessionaires and government itself*: it has not been

really taken by government, nor even has a financing mechanism that promotes certain investments in capacity inside the networks.

Another topic covered in a poorly clear way in the legislation is the *tariffs issue*. The rail modal got the "monopoly of the rail operation", at least in the geographical area covered and at that time the reference tariffs of the Rail Network, which were very high, and were used as ceiling, as maximum tariff limit. But, as it was mentioned in the port case, they forgot to cover the rest of the operation such as transshipment, load and unload, car cleaning. In this way, there is a regulated sector, but the two extremes are not regulated. Besides, legislation determines that the tariffs have to be regulated with the principle of marginal cost.

Nowadays there is a very big impasse for part of the investments which still are the government's responsibility, for this one charges for a leasing and an old structure that has a high complexity and there is an obstacle that this sector may not have had the possibility of having representativeness yet, in terms of transports in Brazil.

It is a sector of intensive capital: from the concessionaire's side there is a strong pressure for investment and nothing is cheap. These are very heavy investments in *capacity and in rolling stock* and if they are not done, it continues the cycle of inappropriate vehicles and precarious productivity of its rolling stock, and as a consequence, with *high costs*.

Regarding the investments in *infrastructure*, the government should do, so the concessionaires would be responsible for the enlargement of the yards and so on. After 1997, when all the railways had already been granted, the concessionaires invested about 12 billion dollars in this network. Of course, where they invest more, there may be gains of productivity, because the *targets stipulated* in the contract are with respect to *productivity and accident reduction*.

It is necessary to reduce the obstacle of the *average speed of trains*. The rail concessionaire asserts that it does not have revenue to invest in the *critical level crossing and the invasion of the right of way,* yet the government assures that it is the concessionaire's obligation. The businessman solves these obstacles having a much higher productivity.

Some stretches are not used, though these, mostly, do not have demand for freight and the main points and hindrances for the sector are the *network expansion and the elimination of obstacles*. And all this, theoretically, is due to the government. But is some cases, the own concessionaire says that it must do something otherwise it cannot pass with the train. So, there is a limited flowing capacity to the ports due to the right of way which is invaded, because there is no specific regulation.

Regarding the highway, there is a right of way where it is determined that in 50 meters to each side of the road it cannot be occupied, in the railway case, in turn, there is not. This has never been considered and the railway has a much longer extension than several highways. Therefore, one ends up having problems with people who invade areas where they believe the trains do not pass anymore and the concessionaire does not have ways to transfer them. Thus, once more it is something that the government should do.

The ways of increasing competitiveness come with the network expansion. It is complicated to address this issue, when there is not a company which operates in the Northeast competing with a company which operates in the South. It is something hard to talk about, but if they are interconnected, they may request a right-of-way and even make a joint operation in the mutual traffic.

A major hindrance identified by ANTF is bureaucracy, the *tax system* as a whole, such as the electronic fiscal note that the government is planning to have. All the process was planned for the road modal and the governors end up forgetting a little the other modals. Although they say they have to reduce this burden on the road modal in the transport matrix, it does not work this way.

ROAD TRANSPORT

For ANUT, one of the causes pointed out with greater insistence, the *unsafety* and *inefficiency* of our road freight transport service, has been the old age and state of obsolescence of the truck fleet, which originates primarily in the activity's deficient regulation.

The fragility of the current regulation makes the access to the service exploitation virtually free; and the lack of inspection of the vehicles condition by the authority agents at the federal, state and municipal levels encourages its use indefinitely, even violating the most precarious limits of the freight safety and of respect for human life.

It is highlighted that the deficient inspection of the vehicles at the federal, state and municipal levels and the lack of a computerized register with national coverage, elements essential to an appropriate regulation, contribute decisively to the difficulty in combating freight theft and impose to the user the sole responsibility to protect its patrimony.

Another aspect of the highways regulation concerns the toll, whose model itself requires reexamination, aiming at alleviate its negative impacts on the Brazil Cost. The complaints of the relevant freight transport users usually point to the excessive number of toll stations, without the counterpart of the concessionaires in the appropriate maintenance and duplication of highways.

AIR TRANSPORT

With the increase of goods import and export and the freights transport by air inside the Country, Cumbica Airport is with its warehouses overcrowded. Large amounts of goods get exposed to sun and rain, causing delays in the industries production line and losses to the trade. The alternative for the importers has been the use of Viracopos Airport freights terminals, in Campinas. But the capacity of this airport is already close to exhaustion.

There are already signs that, with the economic stability, after a period of strong heating, the total importations reduce, but not enough to ease the freight transport in the airports located in the most industrialized region of Brazil. It is estimated that 30% of the Brazilian purchases abroad are nowadays accomplished by the drawback regime, that is, importation of inputs for the production of final goods for export. And, largely, these importations are done by air, which means that the airports' freight congestion can cause problems for the external sales. And, naturally, storage generates a cost, which varies between 3% and 13% of the freight's value, depending on the time they remain stored, even outdoors.

Infraero also assumes the need for hiring staff or authorizing overtime work of the current employees to make the clearance of goods more agile. It is expected that, therewith, be possible at least to locate all the unloaded goods, for the complaints about lost or damaged goods among the accumulated volumes are common.

Another headache for importers and custom brokers are the Federal Revenue bureaucratic hindrances. The organ adopts the system called parameterization, by which the imported goods are forwarded to three channels, green, yellow and red. For the first channel, the transit is or should be automatic and for the second may require review of documentation. The greatest difficulty is when the freight is forwarded to the red channel, which requires physical check. The cares on release are legitimate to avoid any kind of fraud. When, however, the goods go through red channel, inspection must be scheduled with the Federal Revenue, which takes ten days, at least. In an efficient system this should be done in 24 or 48 hours.

For many companies, an alternative is the use of dry ports, created to facilitate the internalization of the freight dealing and to reduce bureaucracy. For this system, the goods are unloaded in a maritime port and taken to a dry port, where the clearance is done. The State of São Paulo is the one with the highest number of dry ports (26), but there are complains as to its use. Presumably, the documentation should be checked, by the parameterization system, at the dry port, being the arrival terminal just a crossing point. Nevertheless, there is superposition of inspections.

Anyway, in case of urgency for importing or exporting a product, the companies do have to resort to the air transport, although it presents the same deficiencies that affect all the infrastructure in Brazil.

2.3.4. Identification of Argentina's Production

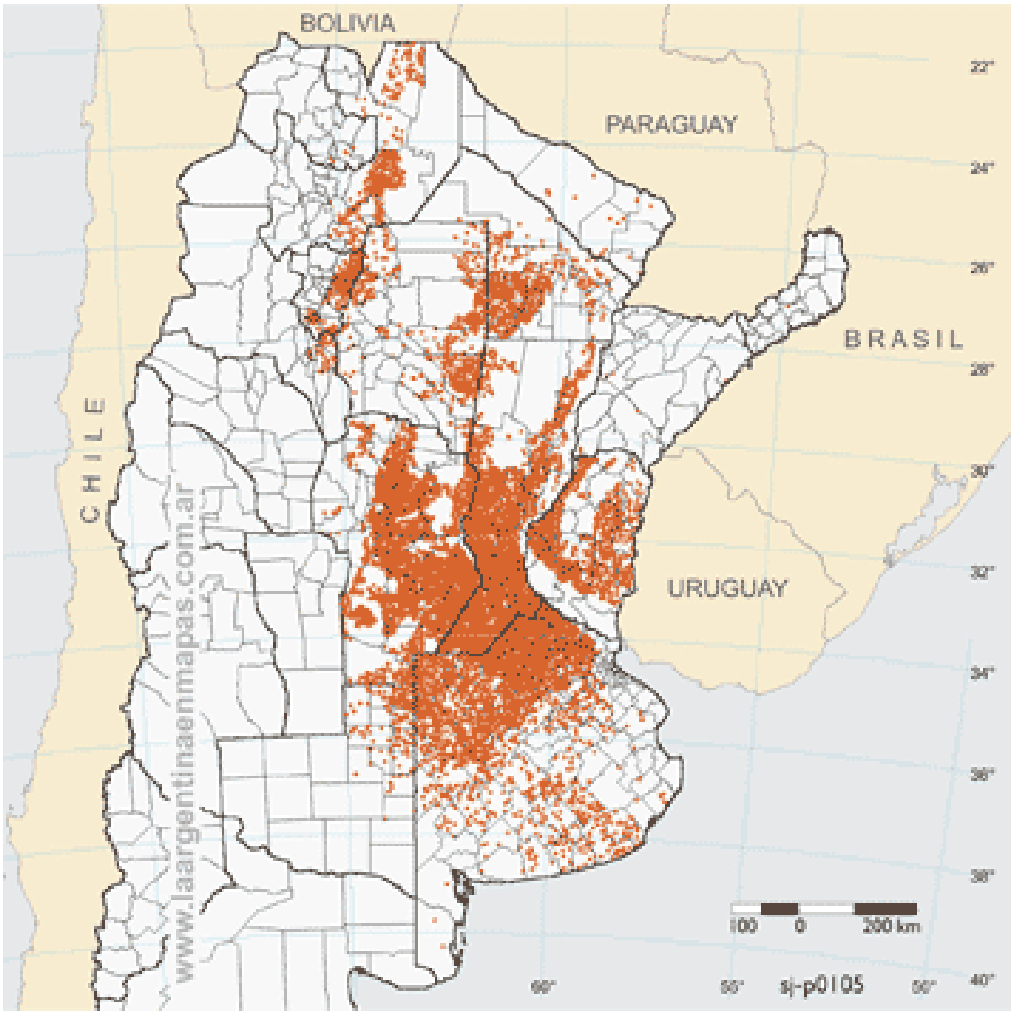
This item has as objective to identify the main products produced in Argentina, location of the production units, to what they are bound for and still to highlight what are the more relevant ones for the international trade. Analyzing characteristics like location, types of products and volumes produced in all the points, it is possible to dimension and identify the aspects which characterize the transport, what is the predominant source of transport and which investments are necessary to enlarge the offer of transport. For having a specific regional geography, the Argentinean production is concentrated in the Middle-North region of the country.. The approaching way of the products tries to group them in a way similar to that used to present the Brazilian production, that is, vegetable bulks, minerals, industrialized products, etc.

2.3.4.1. Vegetable Bulks

The agricultural and cattle raising products are grouped according to the classification adopted by Argentina's Ministry of Agriculture, Cattle Raising and Fishing – MAGyP. For its geographical position in the South-American continent, not all the Argentinean territory presents conditions favorable to the culture of vegetable bulks. Such characteristics make impossible in many cases the plantation of certain cultures in some regions, mainly those that present resistance to the cold climate of the south of the country.

Observing the map of the production distribution, it is seen a concentration of the vegetable bulks production in the north region of the country. The middle-eastern region of the country, also known as Pampa, has a temperate and humid climate, favoring the exploration of its fertile lands, so it concentrates the greater productivity of the agricultural and cattle raising sector. The vegetable bulks are classified in cereals, oleaginous products and others. Among the main cereal produced in Argentina are: rice, canary grass, barley, corn, wheat, sorghum. Now the most important cultures called

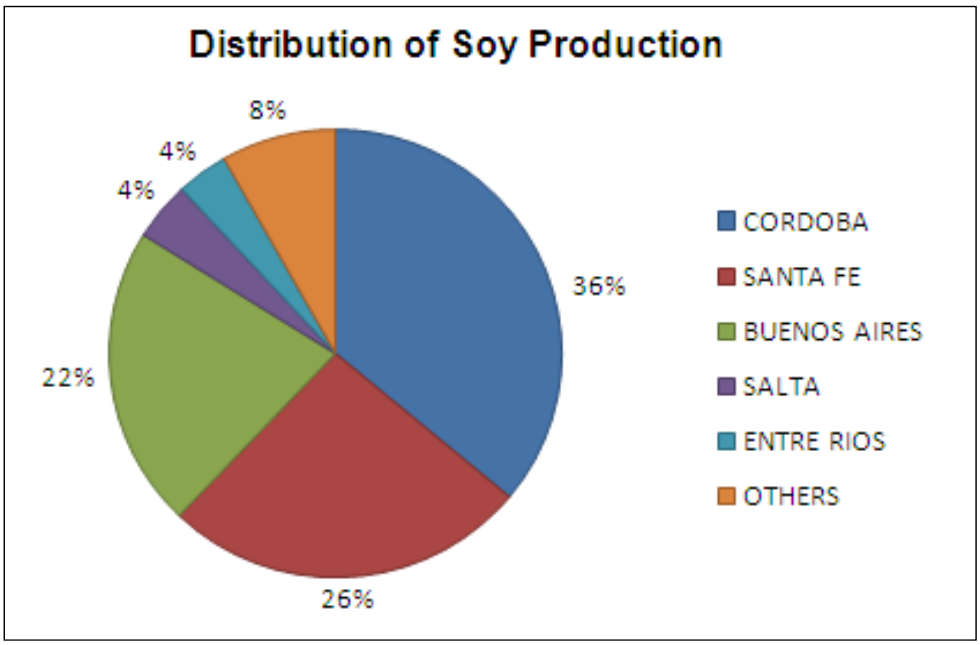
oleaginous are soy and sunflower. Other vegetable bulks are produced in lower scale like the cotton, peanuts and mate. In terms of tons produced annually, soy, corn and wheat are highlighted, corresponding to approximately 85% of all the Argentinean production of vegetable bulks. The soy production represents around 50% of the vegetable bulks volume. As well as the production, the planted area of soy is relatively that which presents the best regional distribution, that is, it is distributed in the regions Northeast, Northwest and Pampa. The main soy producer provinces are Córdoba, Santa Fé, Buenos Aires, Salta, Entre Rios and Tucumán, these ones being responsible for approximately 90% of the total volume produced.



Source: MAGyP and CONICET, 2009, 1 dot equals 2000 tons.
http://www.laargentinaenmapas.com.ar/caste/soja/soja_pr.htm#

Figure 2.37 – Argentina. Distribution of soy production. 2000-2005 average.

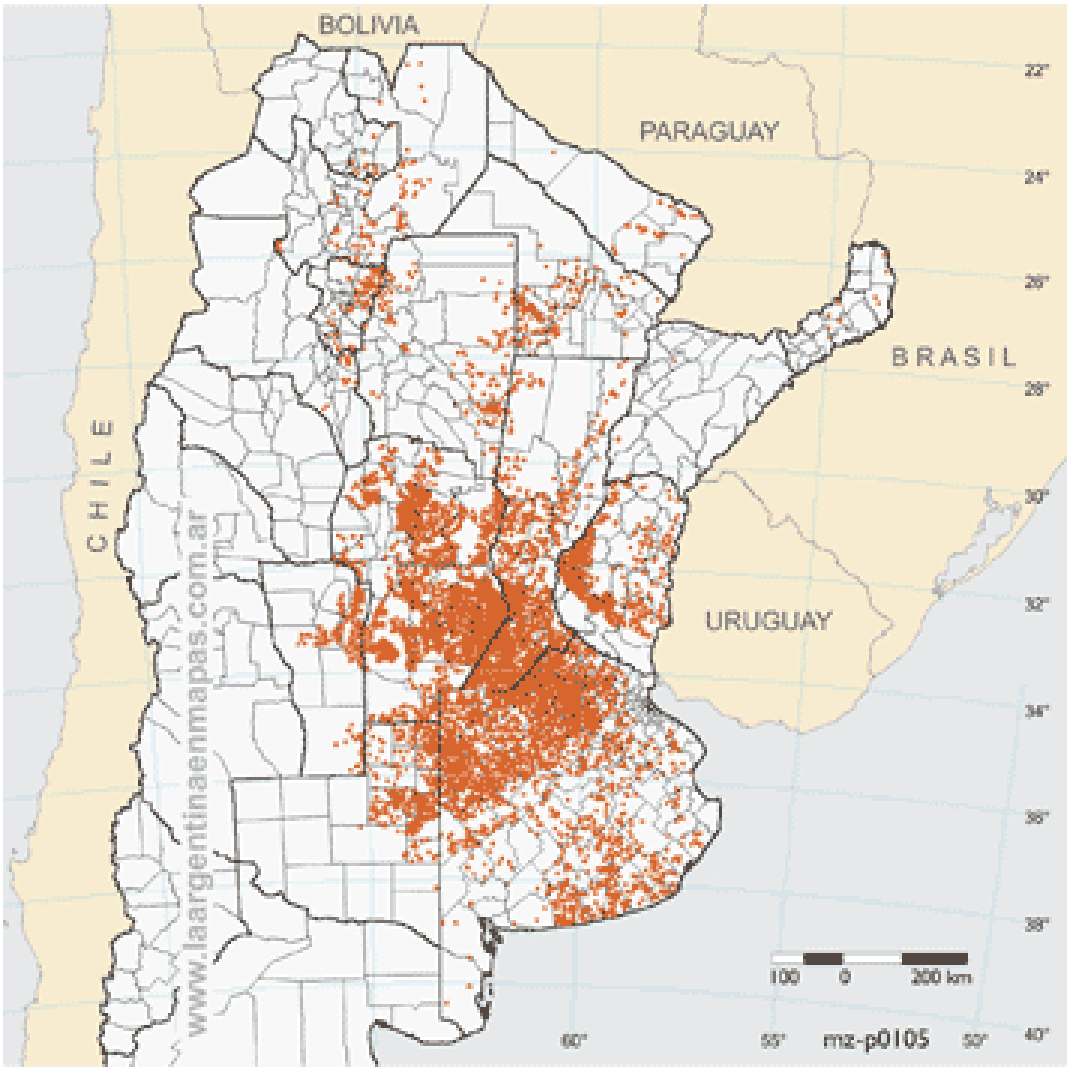
The production distribution can be seen in the graph of Figure 2.38. The information refers to the harvest 2008/2009, according to the MAGyP, 2009.



Source: MAGyP, 2009

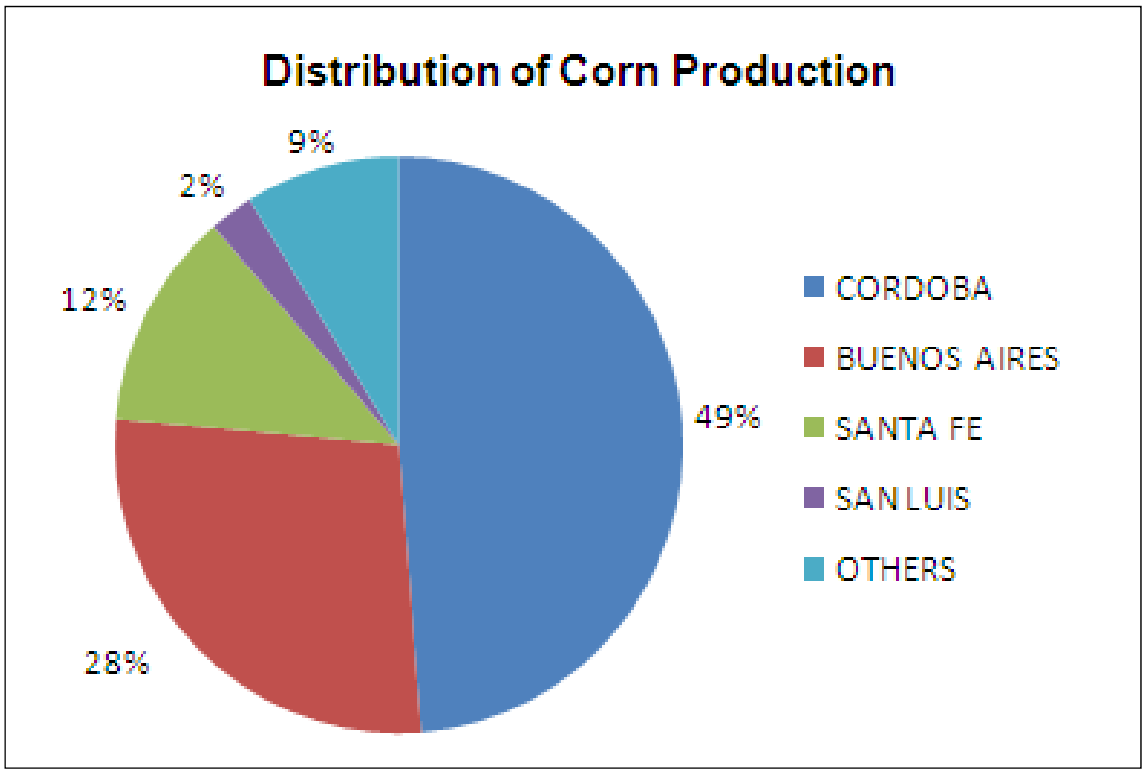
Figure 2.38 – Distribution of the soy production – Argentina

The second product classified as vegetable bulks of greater productions the corn. This product represents around 21% of all the vegetable bulks production. According to data from the Ministry of Agriculture, Cattle Raising and Fishing – MAGyP, in the 2008/2009 harvest, the main corn producer provinces were Córdoba, Buenos Aires, Santa Fé and São Luis. Figure 2.40 presents in the graph the distribution of the corn production in Argentina, 2008/2009 harvest, according to data from the MAGyP.



Source: MAGyP and CONICET, 2009, 1 dot equals 2000 tons.
http://www.laargentinaenmapas.com.ar/caste/maiz/maiz_pr.htm#

Figure 2.39 – Argentina. Distribution of corn production. 2000-2005 average.



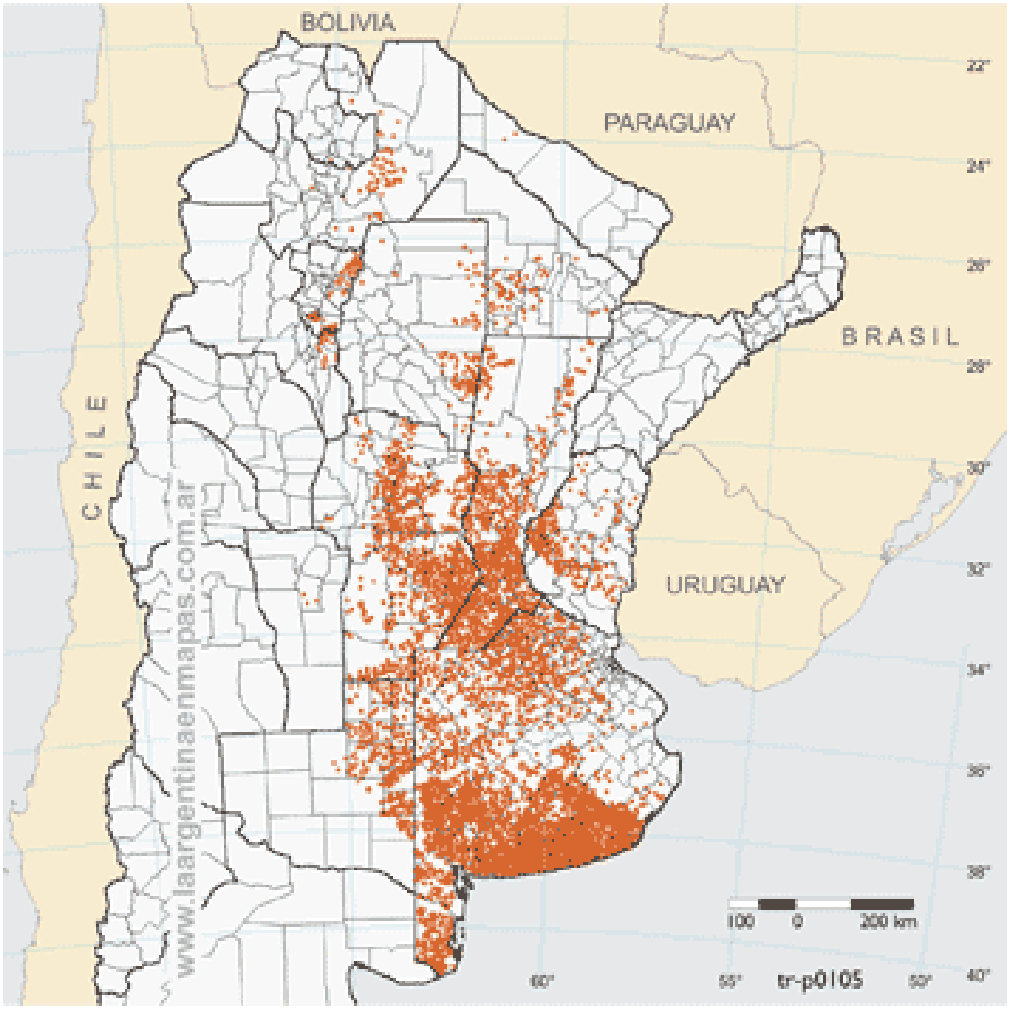
Source: MAGyP, 2009.

Figure 2.40 – Distribution of the corn production

The wheat is the third product with greater volume produced in Argentina. The wheat production represents approximately 14% of the total vegetable bulks production of the country. It can be said that the high wheat production is related to factors such as fertile land and propitious climate for the cultivation. The wheat is still among the main products in volume exported by the country.

In a way similar to the soy, the wheat production concentrates in the Northeast, Northwest and Pampa regions. The province of Buenos Aires located in the Pampa region responds for around 66% of the production.

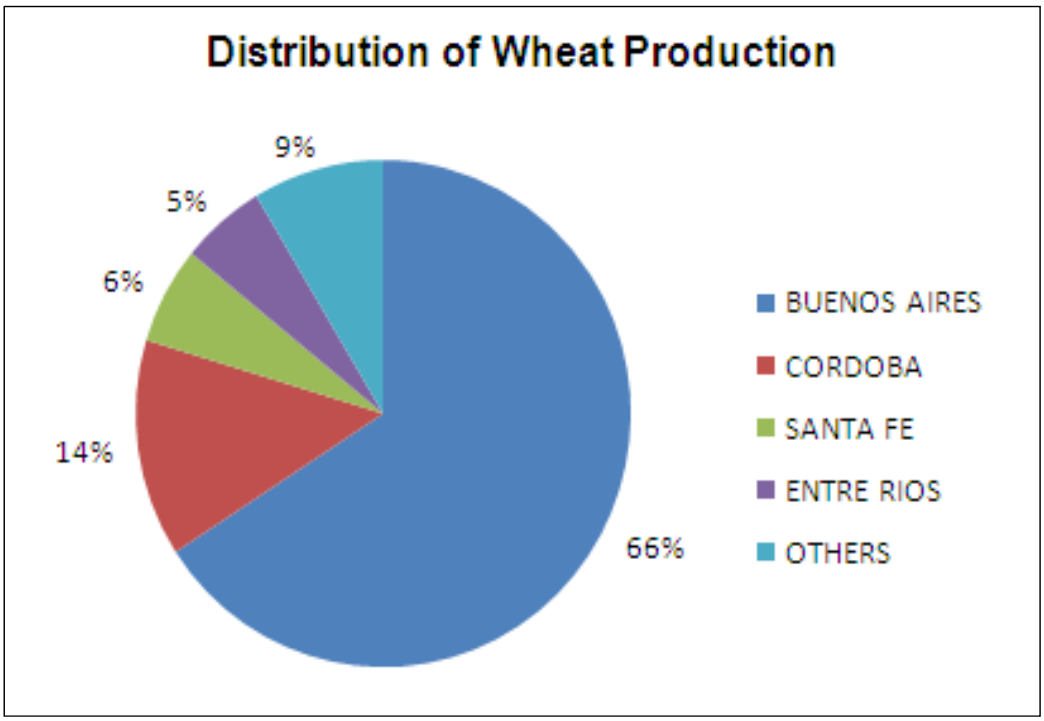
Among the factors that more contributed for the concentration of the production in the Provinces of Buenos Aires and Córdoba are the planted area with 2.9 and 1.1 million hectares and productivity of 2.7 and 3.7 thousand kilos per hectare, respectively. Other provinces present similar productivity per hectare, however the planted area is significantly smaller. Figure 2.41 presents the wheat producer provinces.



Source: MAGyP and CONICET, 2009, 1 dot equals 2000 tons.
http://www.laargentinaenmapas.com.ar/caste/cu_ce_trig.htm

Figure 2.41 – Argentina. Distribution of wheat production. 2000-2005 average.

Figure 2.42 presents the graph of the wheat production distribution. It is observed that only the provinces of Buenos Aires, Córdoba and Santa Fé respond for approximately 90% of the total production of the country.

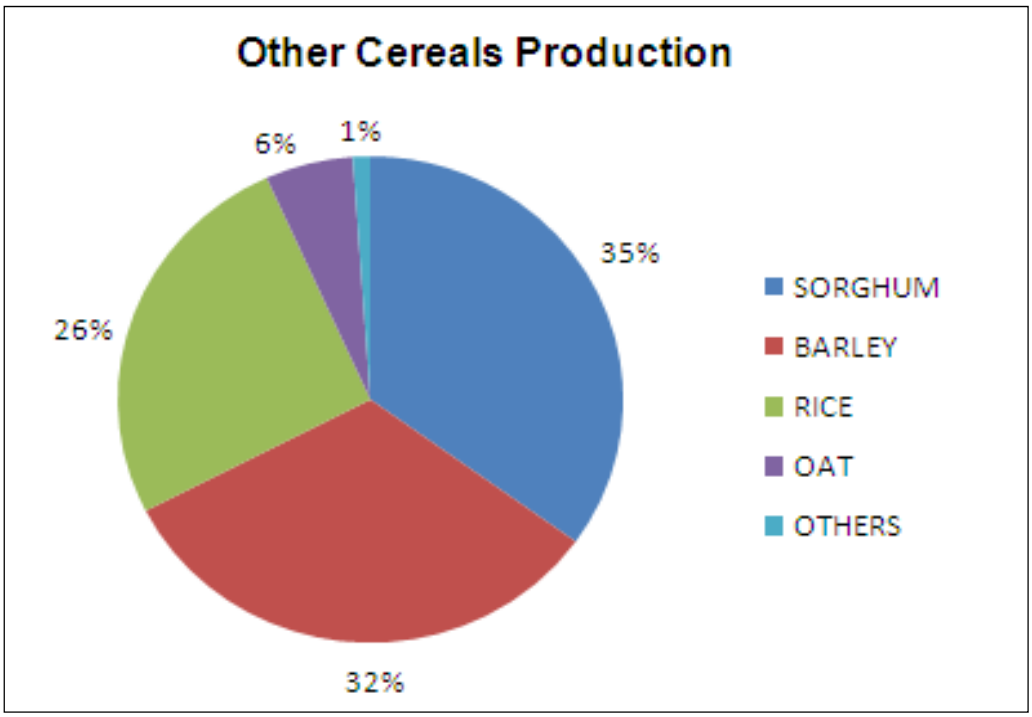


Source: MAGyP, 2009

Figure 2.42 – Distribution of the wheat production – Argentina

With the purpose of facilitating the understanding, it was opted for separating the cereals wheat and corn that present significative volumes, and analyze them in a separate way.

The cereals production like rice, barley, beans and sorghum has much lower volumes in relation to the corn and wheat. These cereals appear as products essential to the foods and by-products production. It is observed in Figure 2.43 that from the products classified as cereals (except for corn and wheat) the most significative ones in terms of tons produced are sorghum, barley and rice.



Source: MAGyP, 2009.

Figure 2.43 – Distribution of the other cereals production – Argentina

The Provinces that present the higher sorghum production volumes are Córdoba (38%), Santa Fé (18%), Entre Rios (15%), Buenos Aires (12%) and Chaco (7%). The barley production represents around 6% of the total of cereals produced, including corn and wheat, being the Province of Buenos Aires the main producer, responsible for around 97%. Now the rice production is concentrated in the Provinces of Entre Rios (43%), Corrientes (38%) and Santa Fé (12%).

The Argentinean agricultural sector produces still several products like, peanuts, mate, beans and tea. The Province of Chaco is responsible for around 60% of the cotton production, followed by the Provinces of Santiago Del Estero with 21% and Formosa with approximately 10% of the total production of the country. The peanuts production is concentrated in the Province of Córdoba, being this one responsible for around 95%. The vegetable tea and mate are produced in the Provinces of Corrientes and Misiones. According to the MAGyP, in 2007 the Province of Misiones was responsible for 85% of the mate production and for 95% of all the tea produced in Argentina. The beans production is concentrated in the Province of Salta, which respondes for around 72% of the total volume produced.

The agricultural sector of Argentina is highlighted for the high production of fruit like apricot, lemon, pear, peach, apple and grape. According to the MAGyP, in 2008 the exportations of some of these fruits occupied a distinctive place in the international place, like the lemon (1st place), pear (2nd) and concentrated apple juice (3rd). The grape production is located in the west region of the country, being the Province of Mendoza the main producer, followed by San Juan. The grape produced is bound for the internal consumption (specially the wine production) and for the exportation. According to data from the MAGyP, Argentina had in 2009 around 1000 wineries.

2.3.4.2. Minerals and Oil

The Argentinean territory has several mineral resources, great part are still unexplored, motivated mainly by the lack of an appropriate plan for exploration of the natural richnesses. The main minerals found in Argentinean land are: plumb, tin, zinc, gold, silver, copper, iron, bismuth, tungsten, wolfram, manganese, amianthus, besides gypsum and salt. The biggest mines of these minerals are concentrated in the Northwest region in the Provinces of Jujuy and Salta. The iron ore can be found in some regions of the Patagonia, more precisely in the Province of Rio Negro. Other non-ferrous minerals like cobalt, sulfur, tantalum and uranium can also be found in Argentinean ground.

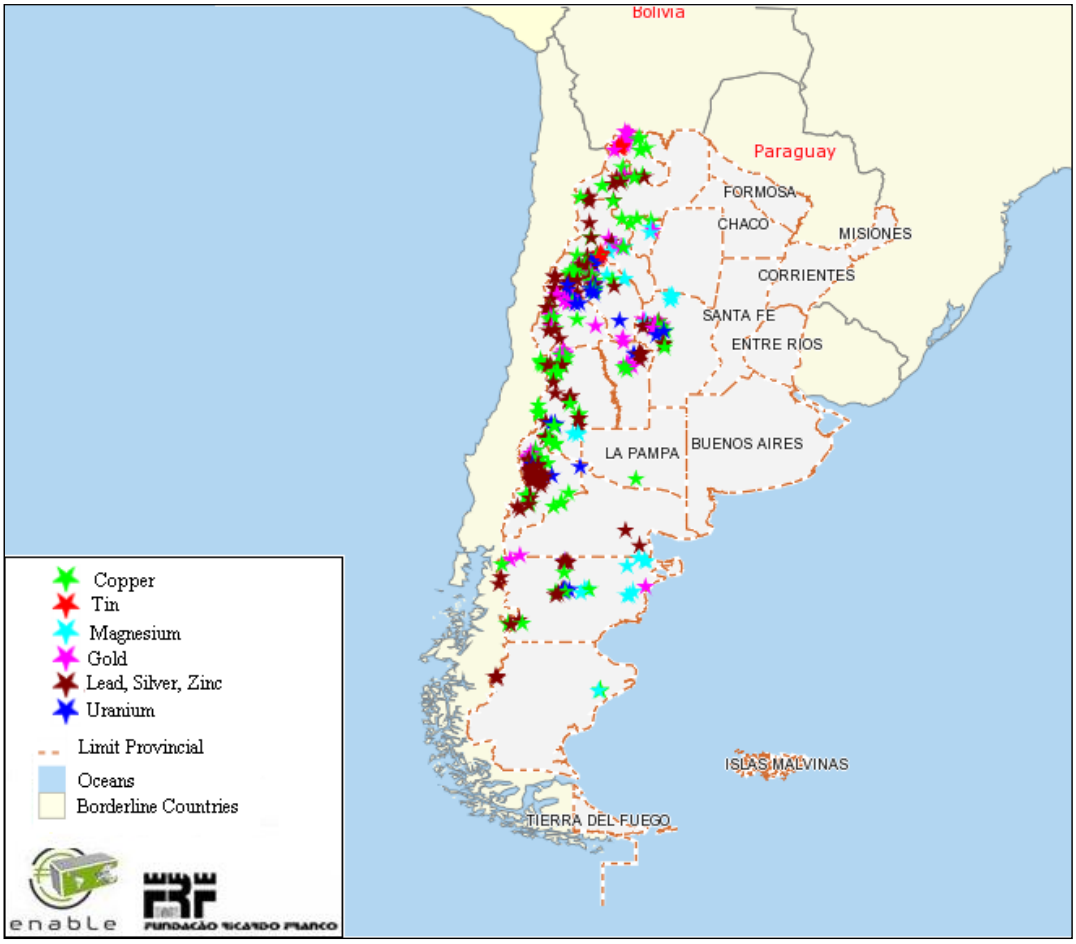


Figure 2.44 – Mineral Mines – Sec. Energy – Argentina, 2009

The oil and natural gas production is another mineral resource in growing exploration in Argentina, mainly after the concession of mines for international petroliferous companies like Repsol and Petrobras. The main oil reserves with higher productivity and production potential are located in the provinces of Chubut, Santa Cruz, Rio Negro, Neuquén and Salta. The natural gas mines concentrate near the oil reserves, and the production is transported for the main consumer or exporter centers, through modern gasoducts. Figure 2.45 presents the oil and fuel (natural gas) producer provinces. The oil extraction of the Province of Buenos Aires is located in the Atlantic Ocean, the other

wells of oil production are concentrated in the continent, most of them located in the west region of the country.

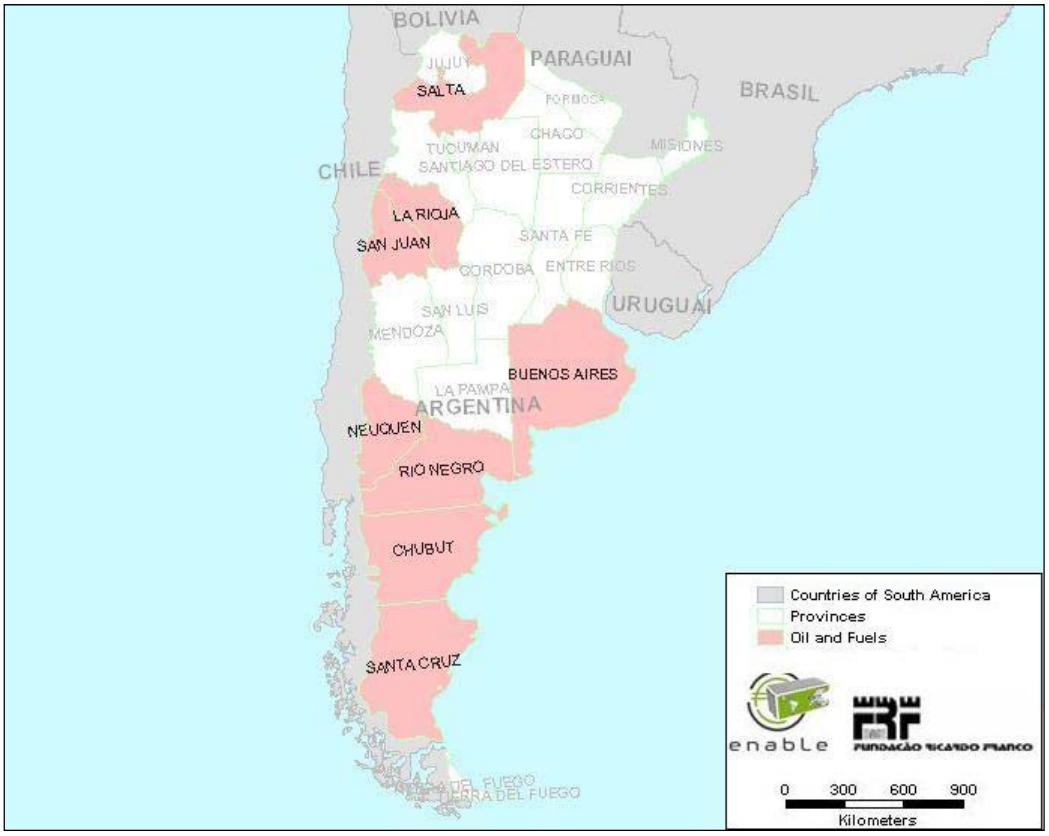
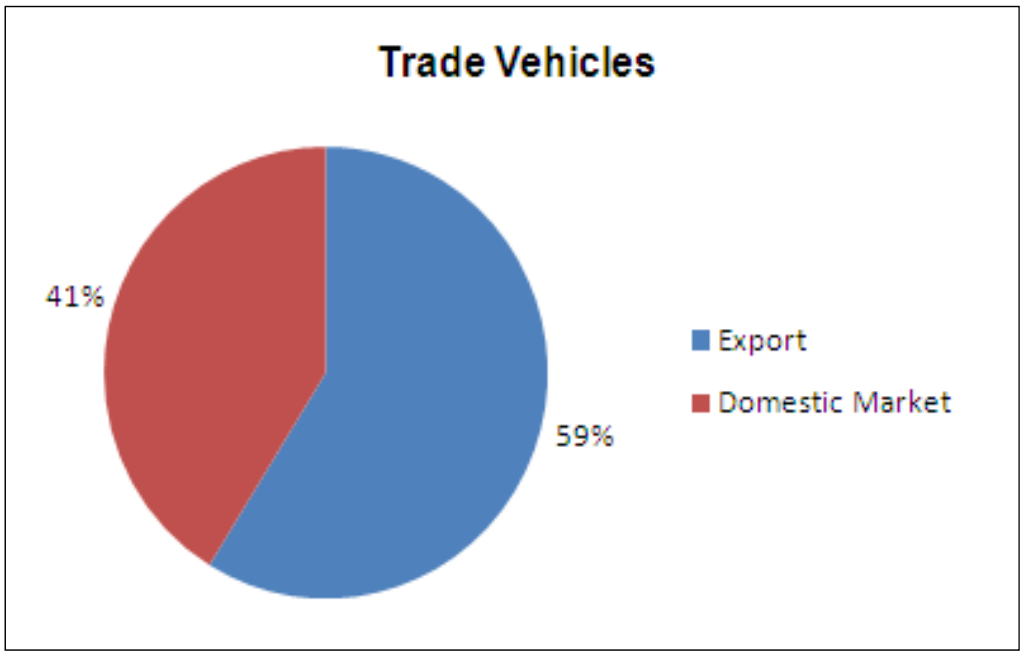


Figure 2.45 – Distribution of the other cereals production – Argentina

2.3.4.3. Industrial Sector

The manufactured products industry of Argentina stands out as one of the most important pillars of the country's economy. Among these, the car and the textile industries are the main branches of the industrial activities which more contribute to the Argentinean productive sector, being responsible for a significant part of the country's GDP. The car industry is the responsible for the greater part of the financial volumes exported by Argentina. According to data from the statistical Yearbook 2008, from the Automotive Factories Association – ADEFA, the main customer of the Argentinean cars production is the Brazilian market, being responsible for the purchase of approximately 90% of the total volume exported. It is observed in Figure 2.46 that the most part of the vehicles produced in Argentina has as main destination the international trade.



Source: Statistical Yearbook 2008, ADEFA.

Figure 2.46 – Sales of the vehicles production – Argentina

The production of parts for automotive vehicles is also a branch of activity that generates significant foreign currency credits to Argentina. The main propellers of this industrial sector are the Argentinean and Brazilian car industries. According to the Association of Argentinean Parts Factories – AFAC, the main producer centers of automotive parts are concentrated in Buenos Aires (50%), Córdoba (21%), Santa Fe (12%), and there are smaller units in San Luis, San Juan, La Rioja and Tierra del Fuego. Other sector of big relevance in Argentina is the textile industry, which with a high creative capacity in the development of projects and capacity of innovation, has reached new markets making the country a new reference center in fashion and design. The main customers are Brazil, USA, Spain and Chile. The main textile industries are located in the Province of Buenos Aires.

Table 2.13 – Argentina. Movement of containers.

	2000		2003		2006		2007	
	TEUs	share	TEUs	share	TEUs	share	TEUs	share
Buenos Aires	1.102.000	96%	953.000	93%	1.597.000	91%	1.744.400	93%
Rosario	400	0%	8.500	1%	19.900	1%	26.100	1%
Bahía Blanca	5.300	0%	9.600	1%	9.100	1%	10.300	1%
Puerto Deseado	14.400	1%	16.400	2%	25.000	1%	16.900	1%
Ushuaia	25.300	2%	13.200	1%	45.600	3%	55.700	3%
San Antonio Este		0%		0%	26.400	2%		0%
Puerto Madryn		0%	24.200	2%	24.100	1%	20.800	1%
otros	2.300	0%	1.100	0%	3.200	0%	2.800	0%

Source: School of Engineering (2010), modified

2.3.4.4. General Freight

There are several other kinds of products exported by Argentina, among them are the powdered milk production, beef meat, nuclear reactors, etc. Regarding the location of the beef meat and powder milk productions, the provinces located in the Northeast, Middle-North, and Coastline-North regions are the main producers. In the world scenario, Argentina is on the 3rd place in exportations of whole powdered milk and 7th in the commercialization of beef meat and by-products.

According to the Argentine government, in the last years the efforts done with the objective of developing the industrial sector of the country have caused an increase in the productive capacity through investments turned to the technological innovation. This technological innovation allowed, in other cases, the appearing of two important sectors for the industrial sector, biotechnology production and nuclear reactors for scientific researches. In the case of the biotechnology production, it stands out the biofuels production, market with world demand in expansion. The biofuels production has grown in a fast way when compared to other sectors of the industry. According to the Secretary of Energy of the Argentine Government, nowadays the country has 8 producer units specialized in the manufacturing of biofuels. Another important factor for the growth of the biofuels production comes from the possibility of enlarging the harvest of agriculture cultures in areas unexplored so far.

2.3.5. Argentina's transport flows and intermodality

According to a World Bank report (2006), for all types of freight trucks and roads are the most used mode in Argentina. bulk cargo from the agricultural and cattle raising sectors are the responsible for the higher volumes in tons transported. To the World Bank, some aspects of manufactured goods transport must be considered, such as:

- Certain industrial supplies can have several travels until reaching the final consumer. For example, the steel is transported to the screws producing unit, the screws are transported to the automotive accessories factory, car accessories are transported to the vehicle assembling units and, at last, the vehicles until the final sales points.
- Several products classified as consumption goods are displaced to big wholsalers and from this to the distribution centers and, next, to warehouses and, finally, the final consumer.
- A small part of the industrialized products demand special transport equipment. For example, the refrigerated freight, dangerous products, etc.

A report by the National Technological University-C3T(2007) confirms that roads move the great majority of production.. Since participation of Argentine transport companies is small in the international cargo market (source?), when observing the source of national freight companies it is seen a good approach for internal freights distribution, that is, freights that have origin and destination inside the country, by modal (Table 2.14). In general, these freights have as main origins the producer centers and as main destinations the big consumer centers of the country.

Table 2.14 – Modal distribution of the freights transported by Argentinean companies

TRANSPORT MODAL	PERCENTAGE OF TONS TRANSPORTED	PERCENTAGE OF TONS-KM TRANSPORTED
Road	96.1%	93.8%
Rail	3.7%	5.2%
Fluvial and Maritime	0.2%	0.9%
Air	0.0%	0.1%
Total	100.0%	100.0%

Source: National Technological University, C3T (2007)

Truck transport is the most frequent mode for Domestic freight movements Therefore roads and trucks integrate provinces, port and large cities. Following, a few key questions regarding the need or the feasibility of intermodal or multimodal transport are addressed, including:

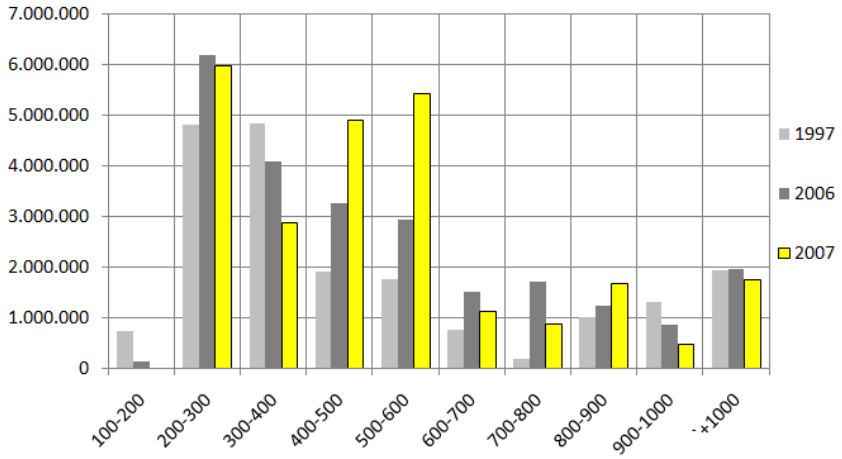
- geographical concentration of population, income and geographical concentration of agriculture and cattle raising;
- overall low density for the entire country and very low density for regions other than East-central Argentina;
- growing specialization of railroads in bulk transport and legal framework not including incentives for capital investment;
- legislation on multimodal transport in relation to legal responsibility and insurance costs.

An important point to be highlighted is the distribution of the population which concentrates on the Central-East and Northern regions of the country and consequently the provinces located in this area are the ones which present the greater needs for movements. According to official data (INDEC), Argentina's population density is low, a feature intensified by the fact that over a third of Argentines live in Buenos Aires' metropolitan area and cities around. Low population densities in other regions reduce significantly the number of long distance displacements. Density of freight flows is rather low, especially for those going the longer distances. The use of rail for manufactured products then is hampered, among other factors, by a lack of scale. Despite no specific studies have so far addressed this aspect, experience strongly indicates this may be one of the strongest conditionants for the need or the opportunity for intermodal transport. Door to door service on trucks may not only be the consequence of legal difficulties for establishing multimodal service contracts, but rather the one available option.

The spatial concentration of agriculture is another key factor (see Table 2.15 and Figure 2.48A). Most crops are raised within a 500-km radius from the main shipment terminals (mainly at the Rosario and Bahía Blanca areas).

However, the recent performance of freight operators points out the underlying possibilites for rail in Argentina, in particular in relation to agricultural bulk freight. As shown in Figure 2.47, over 50% of cargo shipped by rail corresponds to trips of less than

500KM, and to a large extent, to trips between 200 and 300 km. This is primarily due to the fact that 2 operators are controlled by production firms demanding large volumes of transport. In these two cases, the corresponding main plants of these companies are less than 300 km from their main destination. A second element to point out regarding the performance of railroads in Argentina, is the recent growth of traffic in the 400-600km range (see Figure 2.47), which has been due almost entirely to the shipment of crops (School of Engineering, 2010). Half of this growth corresponded to two rail franchises that are not controlled by an agricultural trading firm. A further analysis of these two features, high share of short trips and recent growth, are relevant in terms of multimodal transportation.



Source: School of Engineering (2010)

Figure 2.47 – Argentina freight on railroads according to distance of shipment

High share of short trips: the partial internalization of rail transport capacity by private firms has been a successful strategy. The issue of proximity, to port terminals or to Buenos Aires (partially reflected in table 2.14), as a deterrent for the use of rail has thus been counteracted. A review of the elements present in this synergy will help and understand the multimodal nature of their operations. In one of these two cases, an gricultural trader controls the railway franchise and a major terminal in the Rosario area. In the other, a concrete manufacturer controls the railway franchise and operates its own truck fleet for distribution in the Buenos Aires greater area. In both situations, a same agent coordinates the two links.

Recent growth in the 400-600 km range: for this second feature, the increase of distance emerges as an explanatory element: truck transport pays a significant penalty. But in particular, one factor played a key role: the doubling of the harvest between 97 and 07, and the consequent shortage of trucks. The existing but latent capacity on the rail network activated. To a lesser extent, this fast growth of the harvest also increased congestion in roads around Rosario, making capacitity of rail links more attractive, or at least the one option available in a short-term situation. Finally, it should be mentioned that these factors were relevant on the basis that crop traders demanding transport also own port terminals in Rosario. Again, a same agent on both sides of the counter: a link of the transport chain, the shipping terminal, is also , in this second situation, internalized

by the user. This aspect will be addressed again later on in its relation to paperwork and legislation related to multimodal operations.

It is worth noting that transport of agricultural bulk freight has managed to generate a good level of synergy between rail and ports. On the other end, however, at the rail stations where crops are shipped, rail operators do not operate either truck fleets or even storage capacity.

Under franchised operation, railroads in Argentina have increased their specialization level in crops, to over 50% of total freight shipped, up from 30-33% in the early `80s with the public operator. Speeds on tracks are on purpose kept low, saving costs, since time is not a critical attribute for bulk cargo. Rolling stock available as well is increasingly specialized for crops and bulk by-products. Needless to say, a railroad`s know-how is increasingly specialized, and it`s not implausible to assume that manufactured goods are by the day less likely to use rail: despite the number of containers has increased since the early 80s, it`s not even close to have followed the contenerization level that activity in Buenos Aires`ports suggests (table 2.15 above). Unless there is a positive policy intervention to favor the incursion of operators in the market of manufactured goods, the specialization level of rail is likely to increase hand in hand with the expected growth of agriculture. However, agriculture is an intermodally dynamic sector. It should be matter of careful analysis whether it is relevant and efficient to move manufactured goods on rail.

In the short term, it should also be noted that rolling stock availability in Argentina is limited. Operators work with a stock inherited from FA, the public operator. Although some cars have been added, the duration of the franchise does not allow for economincally feasible expansion.

On the side truck transport, the analysis of multimodal operations in Argentina is entirely different. The fragmentation of supply may be the most important feature consolidating a-driver-equals-a-transport-operator market. In this sense, a large share of demand remains unstimulated to choose multi-modal operations. This goes in addition to the issue of low-density of demand for a large part of the country. Still, some large transportation firms, owning fleets of trucks, have started to evolve into a professional business, separating truck operations from service supply. This category implies the possibility of transfers and combined operations, but supplied by a same operator. Information on transfer operations, transfer centers, quality standars[2], etc, is of commercial use and pretty unlikely to become public. However, it is also true no study to this day has attempted to request and compile the data. There have been, in contrast, at least three more or less large surveys on the demand side. Up to this point of the analysis, the transport operations, inter or multimodal, described for Argentina have in common that either it is a same agent managing two different operations, or at least the user of one link internalizes the following link. These schemes are good at avoiding the issue of complete separation between the transport operation and the provision of a logistic service that may include several links. Law n. 24.291, passed in 1998, imposes an extremely high level of legal responsibility for multimodal transport operators, that is, the agent linking sets of different transport operators. These, in turn, have legal

[2] 1)Roquero, D. (coordinator) (2003) Desarrollo de la encuesta "Infraestructura ferroviaria y equipos de operaciones intermodales". En "Libro Azul del Transporte I". FADEEAC. Buenos Aires.

2) World Bank (2006)

3) A more recent survey conducted by the Logistics area of Universidad Austral

responsibilities according to those laws specific to each technology. This aspect has particularly costly consequences in terms of insurance, or lack thereof in the insurance industry[3]. It is mainly for this issue of legal responsibility.accountability that, although passed, Law n. 24.291 hasn´t been enforced.

It is interesting to mention that over the years, port operators in Argentina, in particular those handling containers, have shown the greatest interest in solving this legal problem. This is due to the fluency to be gained in the entrance and exit of cargo from ports and customs` primary areas, if cargo would circulate with a single set of documents. In this case, the lack of multimodal operations, understood as an issue of paperwork simplification, is a restriction to the yield of capital of port operators.

Finally, the status of container use is another legal issue hampering intermodal transport. The current customs regulations state that containers are subject to temporary import procedures, and restricts its permanence to about 400 days. Since no containers are manufactured in Argentina, this acts as an additional restriction on container use outside the B.A. greater area.

In spite of all these conditions under which multimodal operations take place in Argentina, a number of components of the logistics chain have experienced a high level of professionalization over the last decades (World Bank, 2006). Maritime agents and advisors on customs procedures have evolved into freight forwarders. It is important to recognize that it`s from these two professional areas, that do not perform transport operations, that the path toward a provider of multimodal services is evolving, and not from pure transport operators. Given the lack of studies, but considering experience and anecdotical evidence, the presence of freight forwarders is unlikely to have resulted in a reduction of monetary costs. Rather, diversification of trade professionals has served as a market differentiation that has reduced uncertainty and/or time for exporters and importers. Having said this, it`s obvious Freight forwarders act in relation to international trade of medium-to-high value added merchandise. Within the domestic market, the professionalization of truck transport began decades ago, with the systematization of operations of large companies. Routing procedures and inventory management systems pioneered changes introduced to reduce distribution and warehousing costs. The transference of such practices to pure truck fleet operators came with outsourcing of logistics operations of large companies. Increasing professionalization of truck firms also came from the consolidation of a number of truck companies operating fleets and establishing brands in the market. That is, this has been and still is an intrinsically private-sector process. As a consequence, data on their operations is commercial, beyond the scope of the traditional collection systems of government agencies.

Having completed the description of the relevance and difficulties for multimodal operations, it is necessary to repeat that Argentina´s logistics costs are among the highest in the American continent. In section 4.1 a number of issues regarding transport infrastructure and congestion will be addressed. Regarding logistics operations, it should be pointed out that a large share of such costs are not related to a lack of intermodality or multimodality, but rather to congestion. The spectacular growth of agriculture has

[3] For a thorough analysis of this issue see: Zuidwijk, A. (coordinator) (2005). Development of intermodal transport in Argentina. In "Blue book of transport II". FADEEAC. Buenos Aires. (Desarrollo del transporte intermodal en la Argentina. En "Libro Azul del Transporte II". FADEEAC. Buenos Aires). In particular section 2, Briefing by the Customs expert group, and the following Insurance Briefing.

overwhelmed expansions of roads and ports in the greater Rosario area. Growth in urban congestion in Buenos Aires has offset savings obtained by port modernization and contenerization. This have been very visible processes and have received most of the attention from users and transport operators. This visibility of infrastructure problems, and the lack of hard quantitative data on logistics operations have concentrated the search for savings in infrastructure. Some additional attention is placed on customs bureaucracy, but no specific attention has been directed at multimodality itself. This adds to the features of demand described at the beginning of this section. In this sense, a better knowledge of successful practices is a crucial element for a more sophisticated debate.

Exports and mode choice

Table 2.15 shows the recent evolution of agricultural exports. The meteoric growth of agriculture and the importance of the greater Rosario area can be clearly recognized.

Table 2.15 – Argentina recent evolution of agricultural exports per port area – Crops and by products

YEAR	BAHÍA BLANCA	BUENOS AIRES	RAMALLO	GREATER ROSARIO
1993	2.593.237	616.515	0	13.321.328
1994	3.288.653	724.478	201.043	13.599.360
1995	4.187.997	1.047.300	149.498	16.148.087
1996	3.081.504	852.761	68.831	18.697.478
1997	4.395.256	1.449.498	80.355	19.562.093
1998	6.547.656	1.288.256	93.990	26.268.997
1999	4.577.628	1.004.714	0	27.039.603
2000	5.092.722	830.211	8.925	30.736.990
2001	5.325.512	662.893	0	33.096.317
2002	4.506.612	248.891	0	32.976.390
2003	5.319.405	433.968	0	36.264.601
2004	5.437.177	258.022	0	35.708.175
2005	8.083.198	374.773	684.758	43.153.322
2006	6.668.672	437.456	1.194.142	41.456.059
2007	8.083.173	439.797	1.345.645	50.961.928

Source: on the basis of data from MAGyP – Ministry of Agriculture, Cattle Raising and Fishing of Argentina.

Table 2.16 – Mode share for exports from Argentina

TRANSPORT MODAL	PERCENTAGE OF TONS TRANSPORTED	PERCENTAGE OF TONS – KM TRANSPORTED
Road	9.1%	1.1%
Rail	0.1%	0.01%
Fluvial and Maritime	90.7%	98.7%
Air	0.1%	0.1%
Total	100.0%	100.0%

Source: UTN C3T (2007)

Table 2.16 show the prevalence of bulk cargo, biasing the analysis toward sea transport, reffered to in the previous section. A separate comment should be given to the extraordinarily low share of rail. There are straight connections to three countries, plus the transference-dependent connection to Brazil. Railroads in northern Chile are strongly specialized in bulk cargo from mines, and the operator of northern Argentina´s network has specialized in crops, well above the 50% average level of the system. Nevertheless, a small but steadily growing flow of cargo between northern Chilean ports and Paraguay exists, as well as a bi-directional flow to and from eastern Bolivia. These two segments correspond to containerized cargo travelling very long distances, and integrating into intermodal or multimodal operations at the extremes of the rail segment. Flow of higher added value cargo from central Argentina to Brazil could also take advantage of railroads. Despite the divergence in gauges at P.d.Libres/Uruguayana, both railroads are being operated by the same logistics company. This could be useful for trade flows between central Argentina and southern Brazil, not reached by sea transport. Reluctance of demand to combined operations (World Bank, 2006) may be one of the main explanatory elements in this last case.

To have an idea of Argentina´s internationl trade spatialdynamics, Table 2.17 presents an estimation of export cargo flows according to origin– destination/transshipment point..

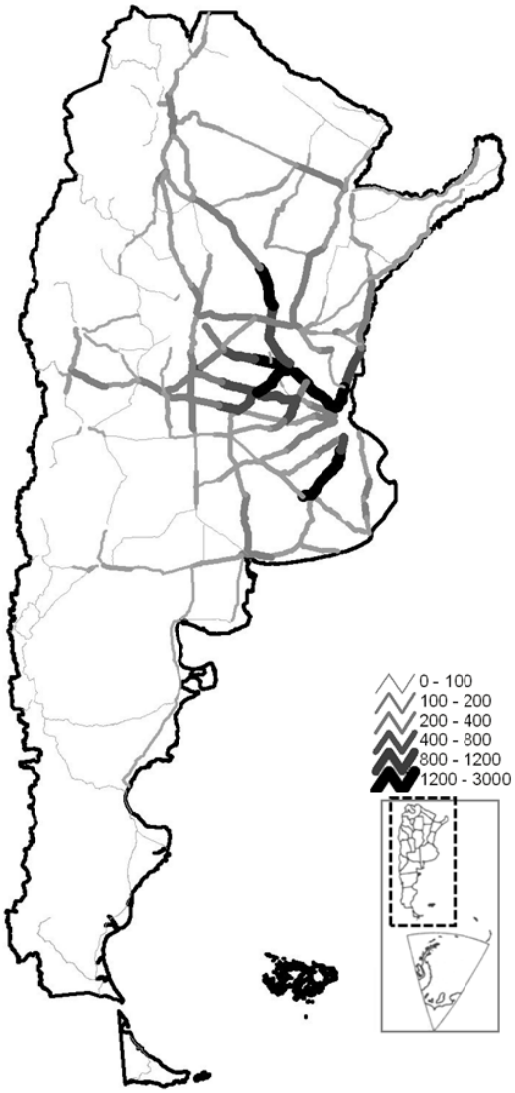
Table 2.17 – Argentina export cargo flows according to origin-destination-trasnsshipment point

EXPORTATION FLOW ORIGIN / TRANSSHIPMENT POINT		THOUSAND TON	PRODUCTS	%	% ACCUMULATED
1	Santa Fé – Gran Rosário	21,623	Cereals and by-products	39	39
2	Córdoba – Gran Rosário	11,734	Cereals and by-products	21	59
3	Buenos Aires – Bahia Blanca/Necochea	10,841	Cereals and by-products	19	79
4	NEA – Gran Rosario	1,784	Cereals and by-products	3	82
5	Buenos Aires – Zarate/Campana	1,690	Chemicals, metals, vehicles	3	85

EXPORTATION FLOW ORIGIN / TRANSSHIPMENT POINT		THOUSAND TON	PRODUCTS	%	% ACCUMULATED
6	Buenos Aires – Puerto de Buenos Aires	1,652	Cereals and by-products, chemicals, metals	3	88
7	NEA – Paso de los Libres	1,167	Cereals, wood pulp, paper, chemicals	2	90
8	NOA – Gran Rosario	948	Cereals and by-products	2	92
9	NEA – Puerto de Buenos Aires	485	Wood pulp, meat, tobacco, coffee	1	93
10	Cuyo – Cristo Redentor	485	Beverages, paper, canned goods, sugar	1	93
11	La Pampa – Bahía Blanca/Necochea	429	Cereals and by-products	1	94
12	Santa Fe – Cristo Redentor	380	Cereals, meat, dairy, vehicles	1	95
13	NOA – Zarate Campana	353	Fresh fruit, vegetables	1	95
14	NEA – Zarate/Campa	314	Paper, fresh fruit	1	96
15	Buenos Aires – Cristo Redentor	266	Cereals and by-products, chemicals	0	97
16	NOA – Paso de los Libres	262	Cereals and by-products, vegetables	0	97
17	NEA – Cristo Redentor	228	Coffee, cereals, meat	0	97
18	Cuyo – Puerto de Buenos Aires	222	Canned goods, vegetables, beverages and fresh fruit	0	98
19	NOA - Puerto de Buenos Aires	203	Tobacco, sugar	0	98
20	Santa Fe – Paso de los Libres	202	Dairy, car parts, metals, vehicles	0	98
21	Santa Fe – Puerto de Buenos Aires	174	Meat, dairy	0	99
22	NOA – Cristo Redentor	158	Cereals and by-products, sugar	0	99
23	Cuyo – Gran Rosario	152	Cereals and by-products	0	99
24	La Pampa – Paso de los Libres	131	Cereals and by-products	0	100
25	Cuyo – Paso de los Libres	79	Fresh fruit, vegetables, chemicals	0	100
26	Córdoba – Puerto de Buenos Aires	77	Meat, dairy	0	100
27	Buenos Aires – Paso de los Libres	47	Chemicals	0	100
28	Córdoba – Paso de los Libres	27	Dairy, vegetables	0	100
Total		56,116		100	100

Source: World Bank, 2006

Available truck traffic statistics include, without dissagregation, in-transit flows crossing Argentina to and from third party countries, which is of great importance (see Figure 2.48 B). For example, in 2004 an estimated 500.000 tons of merchandise exchange between Brazil and Chile were registered at Paso de los Libres' customs checkpoint. Figure 2.48 presents traffic volume on federal roads


0 - 100
100 - 200
200 - 400
400 - 800
800 - 1200
1200 - 3000

Annual daily average of vehicles registered. A) on the left, trailers, proxy for crop transport. B) on the right, semitralers, including transport of higher added value merchandises and in-transit international traffic.

Figure 2.48 – Argentina truck traffic on federal roads.

Besides the ports highlighted in Figure 2.48, there are still other exportation points of the Argentine production, being the main one located in the border with Brazil (Paso de los Libres – Uruguaiana). This point is the main terrestrial point of Argentina's international trade. The ports and border posts, where the freight passes through customs as in the exportation processes as in the importation processes, are considered freight transshipment points. The main freight transshipment points, by type of freight and sense of movement, in the Argentina's international trade operations are:

Table 2.18 – Main transshipment points of exportation and importation – Argentina

KIND OF KNOT	TRANSSHIPMENT POINT	SENSE OF MOVEMENT	CHARACTERISTIC
Bulk Port	Bahia Blanca/Necochea	Importation	Predominates bulks, mainly fertilizers deriving from the United States
		Exportation	The predominant shipping mode is bulk. Low average value of the exportations
	Gran Rosário	Exportation	
		Importation	Predominates the ores importation
	San Nicolas	Importation	From the products imported by this point, 79% are ores. Low aggregate value of the freights
General freight and containers port	Puerto de Buenos Aires	Importation	Great diversity of imported products with high aggregate value
		Exportation	Great diversity of exported products. The predominant shipping mode is container. High average value of exportations. Most used ports for sending of goods to Europe and Asia
	Zarate/Campana	Exportation	
	La Plata	Importation	The main imported products are hydrocarbons and alcohol. Second product are machines. Products deriving from Brazil, Chile and United States. High aggregate value products
Border Post (terrestrial)	Cristo Redentor (Mendoza)	Exportation	Main passageway point of the exportations to Chile. Strong unbalancing between exportations and importations. Used for bilateral trade Chile-Brasil, Chile-Uruguay e Chile-Paraguay. Medium aggregate value of the freights
		Importation	The fresh fruit concentrate more than 45% of the total volume imported. Importation of high aggregate value machinery
	Paso de los Libres (Corrientes)	Importation	Paper, carton, plastics and minerals represent 50% of the imported volume. Medium aggregate value of the freights. Important role (in value) in the aluminium and textile manufactures
		Exportation	Main passage point of the exportations with final destination in Brazil. Important for the bilateral trade between Chile-Brazil. High aggregate value of the freights
	Iguazu-Santo Tome (Misiones)	Exportation	Important participation in the trade between Argentina and Brazil. Medium aggregate value of the freights
Fresh Fruit Exportation Port	San Antonio Oeste	Exportation	Specialized in the freight generated in Rio Negro

Source: World Bank, 2006

2.3.6. Main Transports Flows between Brazil and Argentina

Changes in trade between Brazil and Argentina follow, in general rules, the dispositions of the global economic relations, that is, when there is a world economic crisis, these countries have falls in their relations and when there is a growth, they also intensify their relations. Nevertheless, there are peculiarities in the trade between Brazil and Argentina that can be translated as "barriers" and that arise from scenarios of protective political interest and nationalistic policies, as the divergences among issues established by the own rules of MERCOSUR. In this way, the variations in the trade relations between Brazil and Argentina pass not only through issues of price, production, consumption and trade variations, but also through uni-or bilateral political issues.

The goods negotiated and transported in these countries vary in territorial diversity and distribution, as much in Brazil as in Argentina. According to the Annexes 1 and 2, there are lists of products classified by the Brazilian international trade system, which permits to evaluate such diversity. Based on the information from Brazil's Secretary of International Trade, it is possible to evaluate the commercial relations between these countries, considering the exportations and importations registered in the system of Brazilian control.

Right away, in terms of evaluation of the quantitative and financial evolution between these two countries, it is seen that Brazil rose progressively the amount of exported products, while the opposite had inversely a steep fall in the last decade, as it is shown by the graph of Figure 2.49.

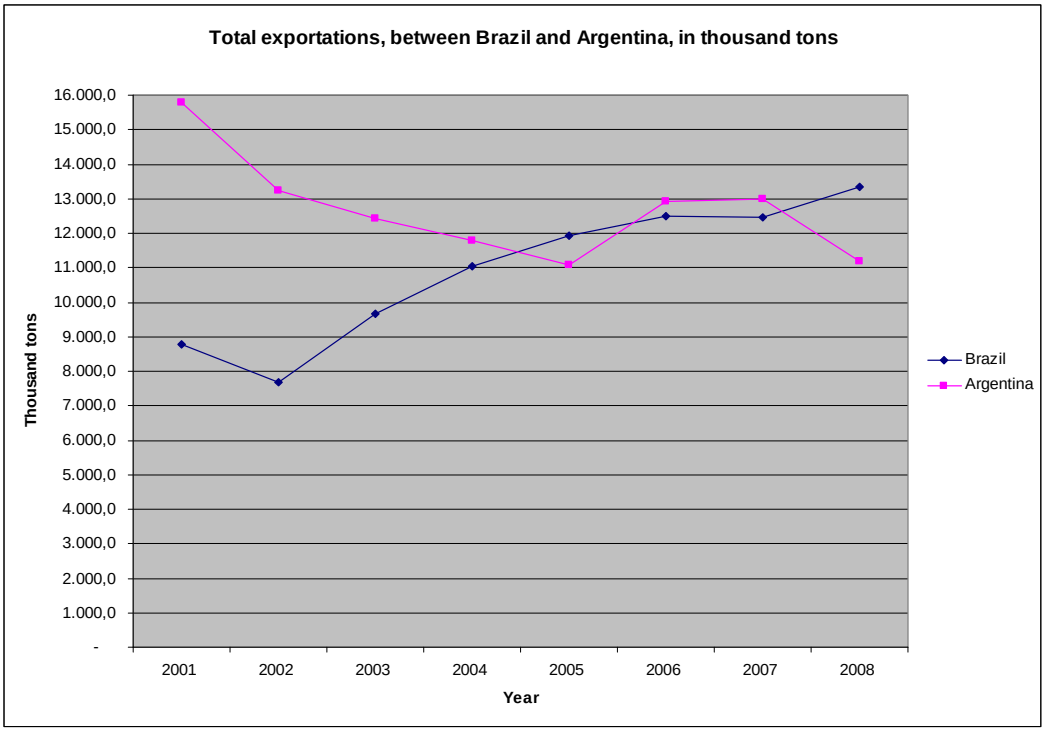


Figure 2.49 – Variations in the amounts exported and imported between Brazil and Argentina

However, in face to the fall of the exportations in Argentina, the financial value of these importations presented a significant growth, what indicates, in a first analysis, a trend of the Argentinean product of raising its aggregate value. Now the financial increase of the Brazilian exportations to Argentina follows the increase of the amount of goods commercialized, what does not permit, a priori, to state about an increase of the aggregate value in the Brazilian product, like that of Argentina. The graph of Figure 2.50 present curves of monetary growth of the exportations between Brazil and Argentina.

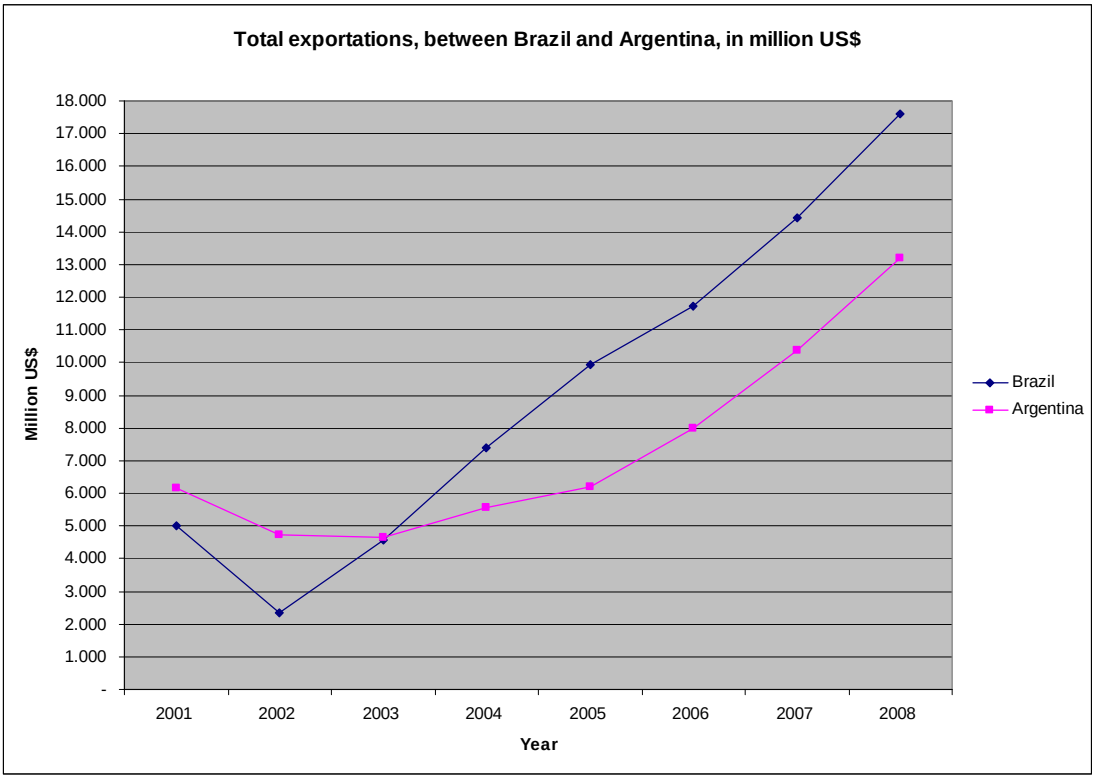


Figure 2.50 - Variations of the monetary values practiced in the trade between Brazil and Argentina

When the values of the graphs presented for 2009 are expanded, it is clearly obtained a commercial drop, resulting from the economic reflexes of the world crisis and from some issues of protective policies, used as economic measures in face to their own effects.

The exportations from Brazil to Argentina are quantitatively comanded by the products classified at SECEX as: minerals, slags and ashes, with participation in percentage, for example, in the last 3 years of 48.37% of the total of commercialized goods. In second place, in the same period, are the exportations of: fuels, oils and mineral waxes, with a percentage of 8.77%. Thus, only these two groups of products pertaining to the mineral and liquid bulks, correspond for more than 57.00% of the total of products exported to Argentina. These products have their transport executed predominantly by the maritime and fluvial modal, what puts navigation in the first place in the logistics and transportation process in the exportation of products from Brazil to Argentina. Table 2.19 presents the other percentages related to products exported from Brazil to Argentina.

Table 2.19 – Amounts exported from Brazil to Argentina – period from 2007 to 2009

PRODUCT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Minerals, scorias and ashes	16,176.29	48.37%
Mineral fuels, mineral oils, etc. Mineral waxes	2,933.72	8.77%
Inorganic chemicals, etc.	2,086.54	6.24%
Fused iron, iron and steel	2,000.95	5.98%
Automotive vehicles, tractors, etc. Its parts/accessories	1,736.26	5.19%
Paper and carton, works of cellulose, paper, etc. Paste	1,309.68	3.92%
Plastic and its works	1,267.90	3.79%
Organic chemicals	972.14	2.91%
Nuclear reactors, boilers, machines, etc. mechanical products	505.18	1.51%
Fused iron, iron and steel works	426.20	1.27%
Ceramic products	385.10	1.15%
Rubber and its works	288.96	0.86%
Others	3,355.88	10.03%

Analyzing the Table 2.20, it can be observed that the products that are in the thrid and forth places in amounts of exportations from Brazil to Argentina are heavy industry products and are linked to the transformation of raw material like iron ores and oil (chemical sector). These products correspond to almost 70% of all the commercialized products. In the fifth place, the exportation of automotive vehicles and car parts also arise as elements from Brazil's automobilistic industrial park which is included in the heavy industry. When added up to these percentages of the other products presented in Table 2.20, excluding the item "Others", it is seen that the heavy industry and the chemicals still contribute significantly to the exportations from Brazil to Argentina.

In financial terms, however, the leadership of the Brazilian exportations to Argentina goes to the sale of cars and car parts, with a percentage in total relation of 29.76%. The industrial machines that do not exceed in terms of quantity 1.51% of the tons exported, occupy the second position in the financial collection of the products delivered by Brazil in Argentina, equivalent to 11.19% of the sales. The main product in amount exported from Brazil to Argentina, that is, the minerals, scorias and ashes, in terms of financial

revenue is equivalent to only 2.54% of the total of commercialized resources in the last 3 years with Argentina. Table 2.21 in the sequence allows to analyze the percentage of the distribution of the revenues obtained with the sales for Argentina, in relation to the total resources obtained by the exportations of Brazil for these countries, during the mentioned period.

Table 2.20 – Values of the exportations from Brazil to Argentina – period from 2007 to 2009

PRODUCT	AMOUNT (MILLION US$)	PERCENTAGE IN RELATION TO THE TOTAL
Automotive vehicles, tractors, etc. Its parts/accessories	13,333.36	29.76%
Nuclear reactors, boilers, machines, etc. Mechanical products	5,013.43	11.19%
Machines, equipment, electric material and its parts	4,675.38	10.43%
Mineral fuels, mineral oils, etc. Mineral waxes	2,663.92	5.95%
Plastic and its works	2,298.43	5.13%
Fused Iron, Iron And Steel	2,036.29	4.54%
Organic chemicals	1,224.19	2.73%
Minerals, scorias and ashes	1,139.21	2.54%
Paper and carton, works of cellulose, paper, etc. Paste	1,087.67	2.43%
Fused iron, iron and steel works	1,081.93	2.41%
Rubber and its works	1,009.22	2.25%
Inorganic chemicals, etc	816.67	1.82%
Several products from the chemicals industries	742.85	1.66%
Shoes, gaiters and similar products and their parts	551.51	1.23%
Others	7,133.48	15.92%

In relation to the source of transports, specifically for the two main products in terms of exported amounts, there is the predominance of the maritime and fluvial modals, according to Table 2.21.

Table 2.21 – Source of transports of the exportations of minerals, scorias and ashes from Brazil to Argentina – period from 2007 to 2009

WAY OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL

Maritime	10,018.44	61.93%
Fluvial	6,034.78	37.31%
Rail	75.29	0.47%
Road	47.76	0.30%
Air	0.02	0.00%

In the same way, the source of transports of exportations from Brazil to Argentina of the products classified as: mineral fuels, oils and waxes predominates almost exclusively the maritime transport, there is not in this case the use of waterways, as presented in Table 2.24.

Table 2.22 – Source of transports of the exportations of mineral fuels, oils and waxes from Brazil to Argentina – period from 2007 to 2009

WAY OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Maritime	2,917.78	99.46%
Road	15.91	0.54%
Air	0.03	0.00%

However, considering the two more profitable main products in the exportation from Brazil to Argentina, there are in the case of: automotive vehicles, tractors, etc, parts/accessories, a predominance of the maritime modal, but with a significant transport done by the road modal, as described in Table 2.23.

Table 2.23 – Source of transports of the exportations of automotive vehicles, tractors, etc, parts/accessories from Brazil to Argentina – period from 2007 to 2009

WAY OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Maritime	1,014.75	58.44%
Road	711.63	40.99%
Rail	5.61	0.32%
Air	4.23	0.24%
Own means	0.03	0.00%

In the case of the exported products: nuclear reactors, boilers, machines, etc. mechanic products, the road modal plays an essential role in their transportation and it is complemented by the maritime modal, as presented in Table 2.24.

Table 2.24 – Source of transports of the exportations of nuclear reactors, boilers, machines, etc. mechanic products from Brazil to Argentina – period from 2007 to 2009

WAY OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Road	372.64	73.76%
Maritime	128.63	25.46%
Air	3.64	0.72%
Own means	0.25	0.05%
Rail	0.03	0.01%

In this context, in terms of transported tons, the predominance of the maritime modal in the exportations from Brazil to Argentina happens through factors associated to the territorial dimensions of Brazil, the origin of the exported productions (hinterlands) and the types and amounts that take to the use of the Brazilian port system in the sending of the goods in the trade with Argentina. This fact is demonstrated by the graph of Figure 2.51, where it can be seen that in the evolution of the source of transports for the exported products from Brazil to Argentina, the maritime modal predominates in relation to the others.

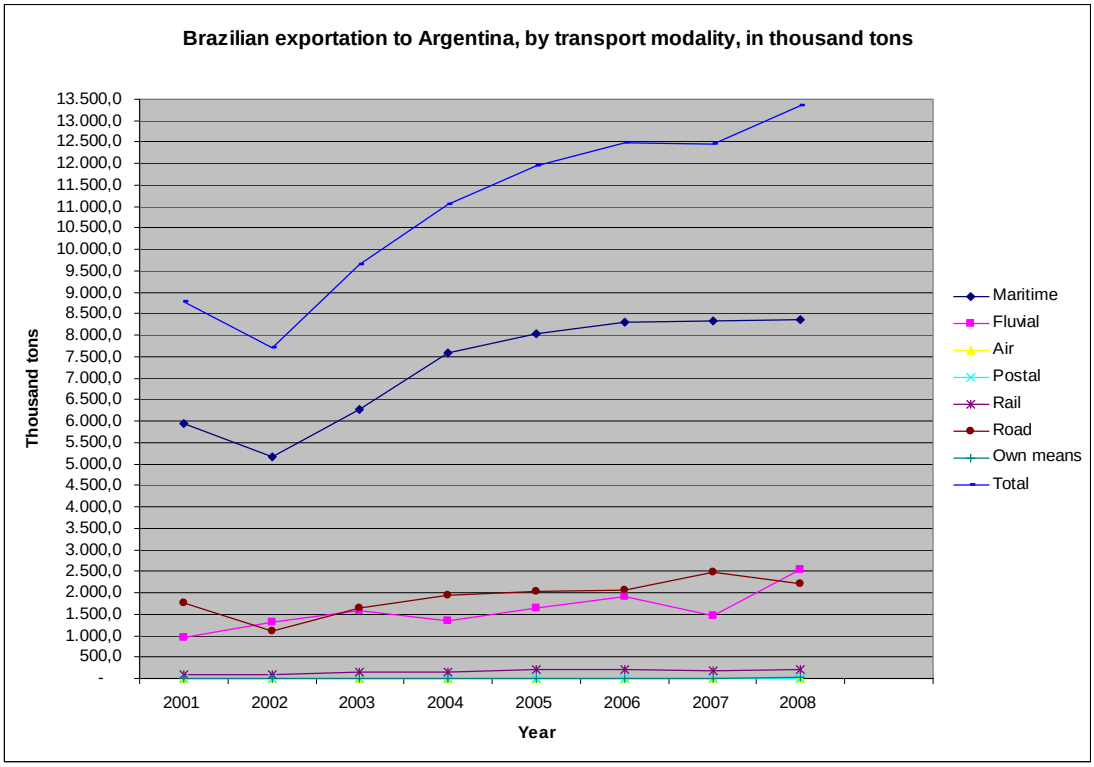


Figure 2.51 – Evolution of the source of transports for the products exported from Brazil to Argentina

However, in terms of values of exportation associated to the products transported, the road modal presents itself so relevant as the maritime modal, even if in amounts it is significantly smaller and equivalent to the fluvial. Such fact is shown in the graph of Figure 2.52 where it can be observed that practically it exists as equivalence between the maritime and road transports, when it comes to monetary values associated to the freight transported.

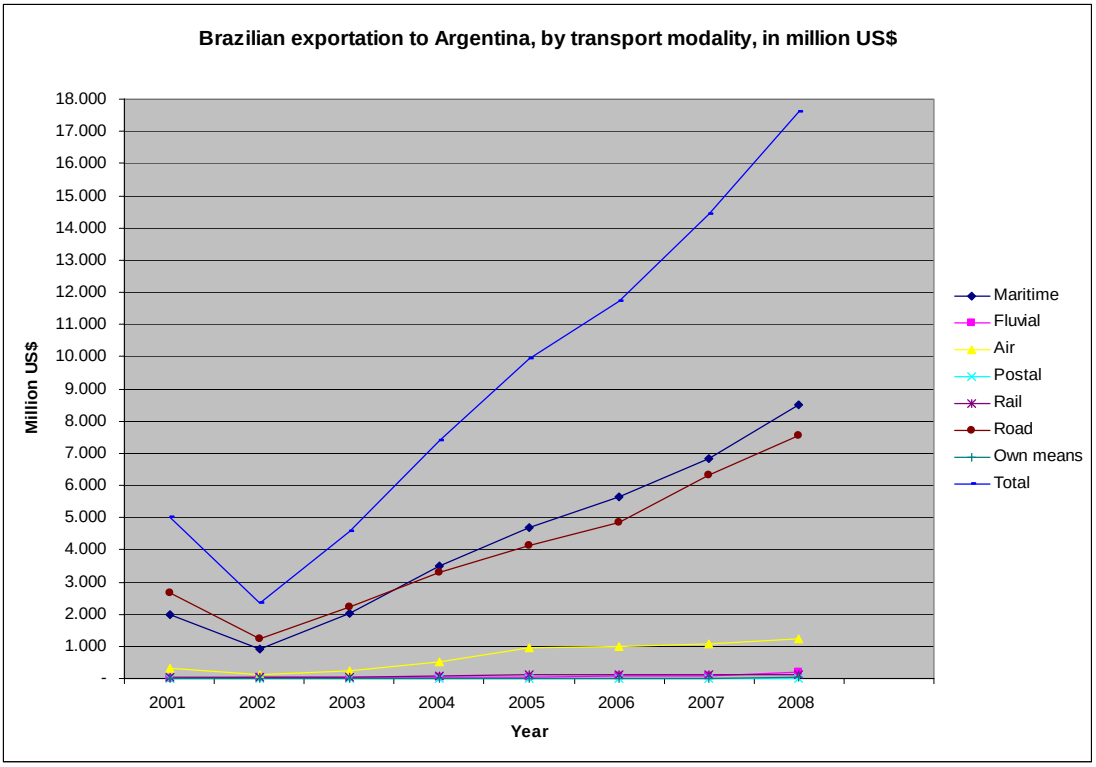


Figure 2.52 – Evolution of the source of transports for the values of the products exported from Brazil to Argentina.

Considering the opposite, it is observed by the previous graphs and tables that are highlighted in the transports of the exportations from Brazil to Argentina, the maritime, road and fluvial modals, while the monetary flows associated to the products exported concentrate on the first two modals, being relevant to emphasize the significance of the air modal when analyzed under this angle. On the opposite way, in the exportations from Argentina to Brazil, there is the product: cereals, commanding this trade in a percentage equivalent to 41.64% in relation to the total of exported products, considering the trade in the last three years. Secondly, the exportation mineral fuels, oils and waxes appear with 21.71% followed by the trade of millings, malt and starch, with 8.17%, totalizing these three groups of products more than 71.53% of all the exportations practiced with Brazil. So it can be verified that the leadership of the Argentinean exportations to Brazil is commanded by the industrialized food products.

Table 2.25 presents the percentage of distribution of the products exported from Argentina to Brazil.

Table 2.25 – Exports from Argentina to Brazil –2007 2009

MODE OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTOF TOTAL
Cereals	14,723.55	41.64%
Mineral fuels, mineral oils, etc. mineral waxes	7,676.56	21.71%
Milling industry products, malt, starches, etc.	2,890.22	8.17%
Automotive vehicles, tractors, etc. Its parts/accessories	1,243.72	3.52%
Plastic and its works	1,148.31	3.25%
Horticultural products, plants, roots, etc. edible products	985.21	2.79%
Fruits, citrus and melons peel	678.85	1.92%
Inorganic chemicals	563.45	1.59%
Wood, charcoal and wood works	553.50	1.57%
Manures or fertilizers	506.71	1.43%
Preparations of horticultural products, fruits, etc.	503.47	1.42%
Salt, sulfur, grounds and stones, gypsum, lime and cement	449.48	1.27%
Pastes of wood or fibrous materials	367.36	1.04%
Organic chemicals	358.46	1.01%
Others	2,706.49	7.66%

The clear difference between the importations and exportation from Brazil with Argentina is that the information is based on the purchase of food products and the exportations in the sale of primary products, of supplies for the industry and industrialized products. The information presented make clear that Brazil does not buy from Argentina electrical machines, industrial motors, and other kinds of equipment, but on the contrary, it exports these kinds of products to Argentina. From Brazil to Argentina leave products from the chemicals, cellulose and metallurgic industries, while Argentina delivers predominantly agricultural products.

It is highlighted that the cars importation is a relevant trade between the two countries. In Brazil as much as in Argentina this product is the most profitable one in the exportations. As demonstrated by the values represented in Table 2.26, the leadership of the exportations to Brazil is due to the automotive vehicles followed by the products classified as mineral fuels, oils and waxes and cereals.

Table 2.26 – Values of the exports from Argentina to Brazil –2007 -2009

MODE OF TRANSPORT	AMOUNT (MILLION US$)	PERCENTAGE IN RELATION TO THE TOTAL
Automotive vehicles, tractors, etc. Its parts/accessories	11,645.78	33.33%
Mineral fuels, oils, etc. Waxes	4,811.22	13.77%
Cereals	3,719.33	10.64%
Plastic and its works	1,965.59	5.62%
Nuclear reactors, boilers, machines, etc. Mechanical products	1,453.24	4.16%
Nuclear reactors, boilers, machines, etc. Mechanical products	1,202.35	3.44%
Several products from the chemicals industries	941.10	2.69%
Rubber and its works	649.13	1.86%
Fruits, citrus and melons peel	588.59	1.68%
Horticultural products, plants, roots, etc. Edible products	547.46	1.57%
Organic chemicals	540.52	1.55%
Preparations of horticultural products, fruits, etc.	518.28	1.48%
Machines, equipment, electric material and its parts	450.52	1.29%
Fish, crustaceous, mollusk and other aquatic invertebrates	368.58	1.05%
Milk and dairy, eggs, natural honey, etc.	365.18	1.05%
Others	5,176.99	14.82%

With the information from the previous Tables, it is observed that the product cereals, which represents the higher percentage in terms of tons exported from Brazil to Argentina, it does not lead the revenues of these exportations. It is important to highlight that the source of transports of the exportations from Argentina to Brazil, the product cereals is practically concentrated in the maritime transport, according to values presented in Table 2.27.

Table 2.27 – Mode share for cereal exports from Argentina to Brazil – 2007-2009

MODE OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTOFTOTAL
Maritime	14,034.54	95.32%
Road	518.32	3.52%
Rail	100.81	0.68%
Fluvial	69.78	0.47%

As well as for Brazilian exports to Argentina, mode share for mineral fuels, oils and waxes exports from Argentina to Brazil show an overwhelming predominance of maritime transport, having in this case, a small fraction of the tons exported by waterways, as presented in Table 2.28.

Table 2.28 – Mode share for the export of mineral fuels, oils and waxes from Argentina to Brazil –2007 -2009

MODE OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTOF TOTAL
Maritime	7,326.85	95.44%
Pipeway	225.71	2.94%
Road	102.27	1.33%
Rail	16.77	0.22%
Fluvial	4.95	0.06%

For the product, automotive vehicles, tractors, etc, parts/accessories, the distributions of the source of transport of the exportations and importations between Argentina and Brazil are equivalent, the maritime modal predominates, complemented significantly by the road transport, as shown in Table 2.29.

Table 2.29 – Source of transports of the automotive vehicles, tractors, etc, parts/accessories from Argentina to Brazil – Periods from 2007 to 2009

WAY OF TRANSPORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Maritime	674.63	54.24%
Road	567.24	45.61%
Air	1.84	0.15%

Such as in source of transport of the Brazilian exportations to Argentina, in the exportations from Argentina to Brazil it also predominates the maritime transport in terms of amounts exported, nevertheless the road transport being so important as this one if analyzed in terms of monetary values. The graph shown in Figure 2.53 demonstrates the predominance of the maritime modal, complemented by the road modal.

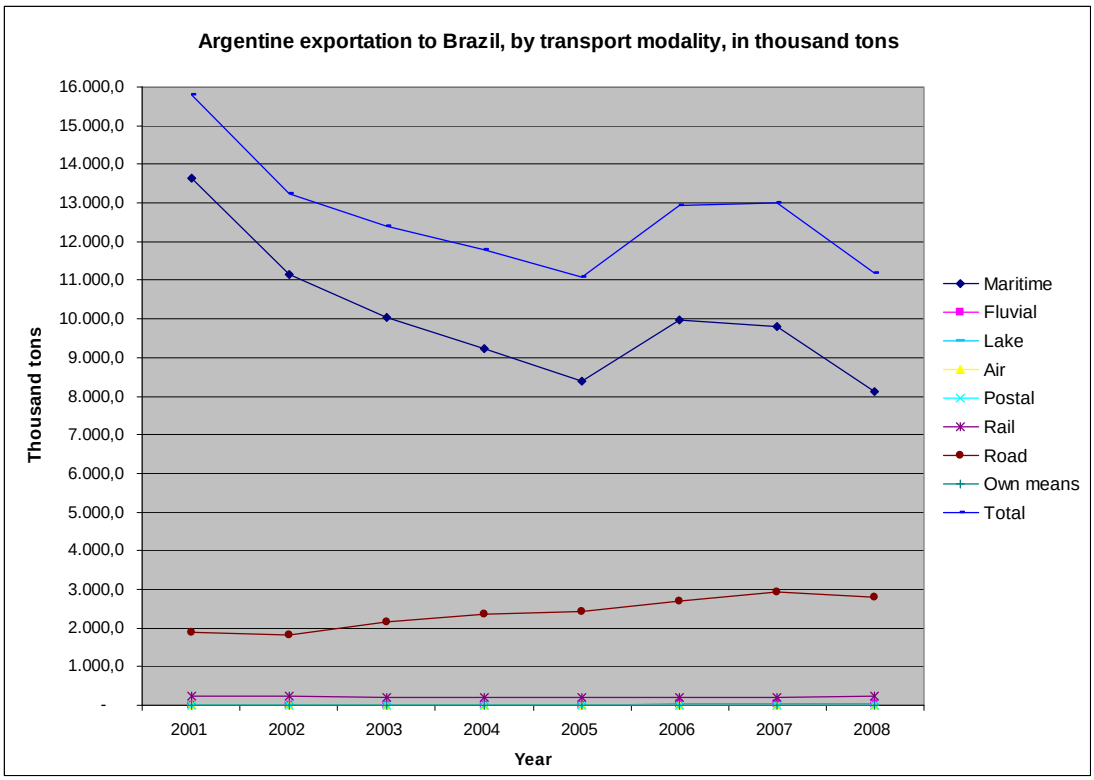


Figure 2.53 – Evolution of the source of transports for the products exported from Argentina to Brazil

In comparison to the evolutional dynamics of the transport by modal in terms of tons transported, it is verified that there is a drop of the exportations from Argentina to Brazil, while on the contrary it occurs a growth of sales from Brazil to Argentina. Even with this reduction of the exportations from Argentina to Brazil, the values of this relationship have a positive growing rate, making clear that the products sold to Brazil have a growing raise of aggregate values, according to the graph shown in Figure 2.54. It is still seen in Figure 2.53, that as in the source of exportations from Brazil to Argentina, in terms of exported monetary values, the products sold from Argentina to Brazil make the road modal as relevant as the maritime one and these modals practically lead almost the totality of these exportations.

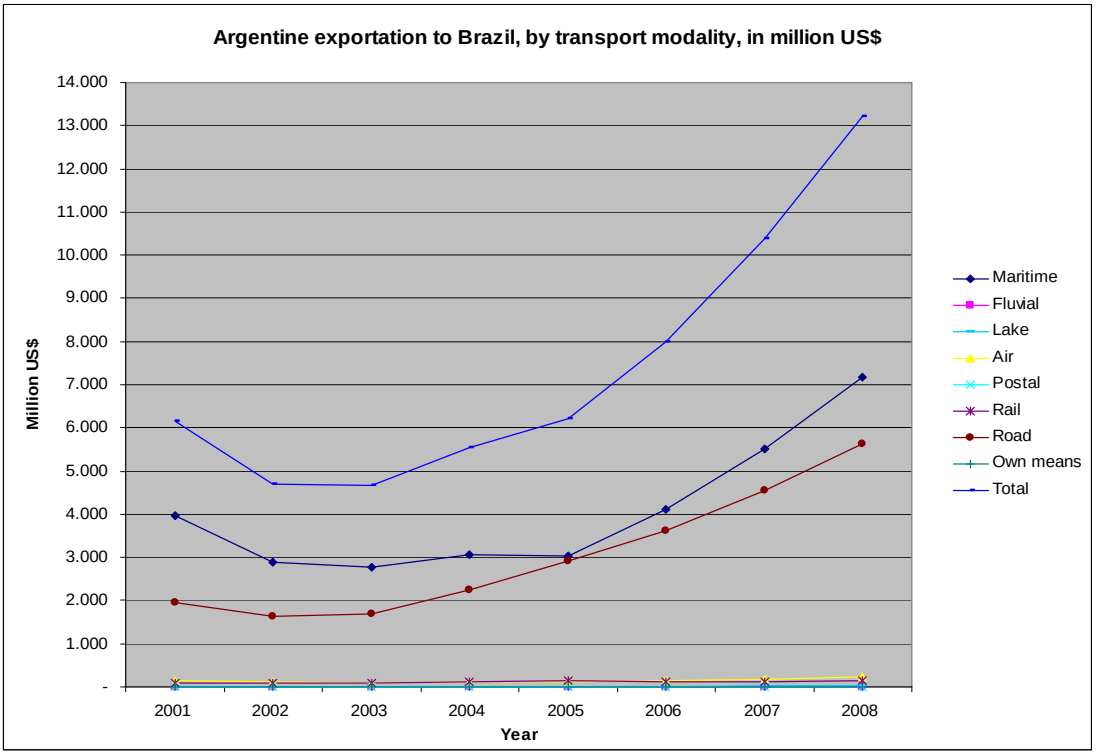


Figure 2.54 – Evolution of the source of transports for the values of the products exported from Argentina to Brazil

It is important to highlight that, for the total of commercialized goods between these two countries, due to Argentina's drops and Brazil's growth, during the last eight years analyzed (before the world economic crisis), the tons transported between these two countries presented a not very significant growth, as it is presented in the graph of Figure 2.55. For the growth rate of the tons of commercialized products between Brazil and Argentina, the average growth rate was 0.26% per year, having, nevertheless a maximum rate of 10% per year.

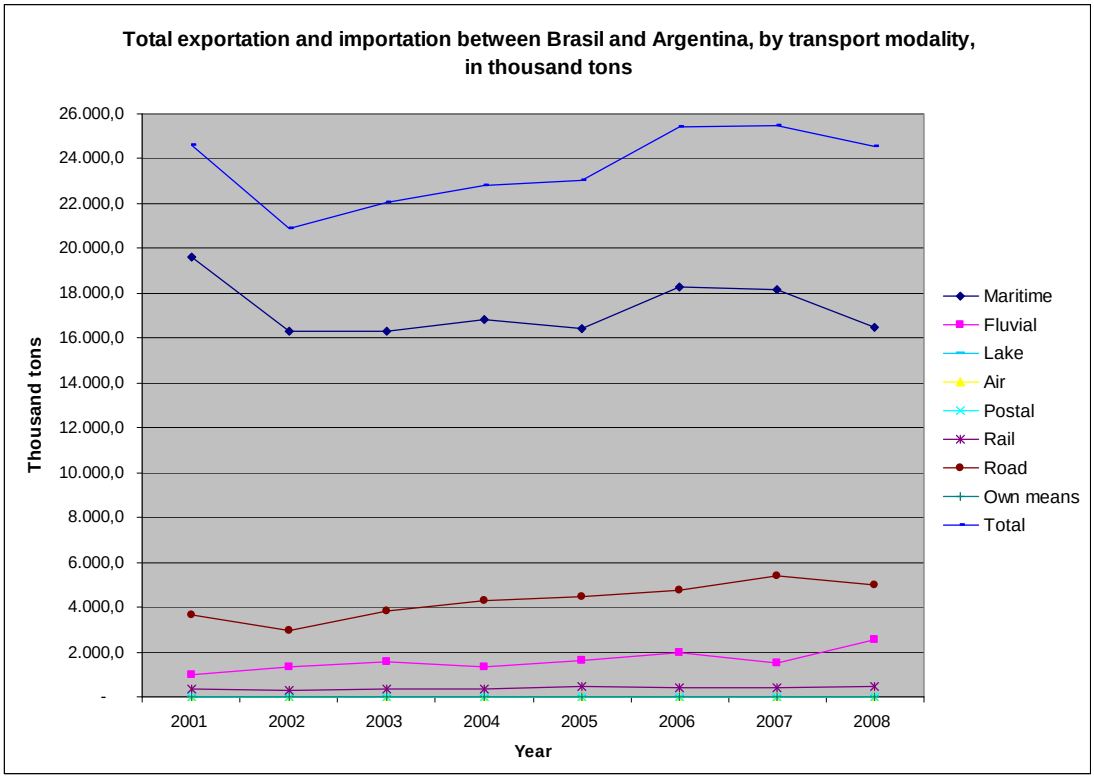


Figure 2.55 – Evolution of the source of transports for the total of products commercialized between Brazil and Argentina

However, if the growth of the commercialized amounts did not present an evolutional dynamics with significant growth, in monetary terms the growth of the commercial relations was expressive, and as expected, it was leaded by the maritime and road modals, as presented in the graph of Figure 2.56. In average terms, the growth rate of the financial movement in the trade between Brazil and Argentina was approximately 18.7% per year, having a maximum rate of 40% per year.

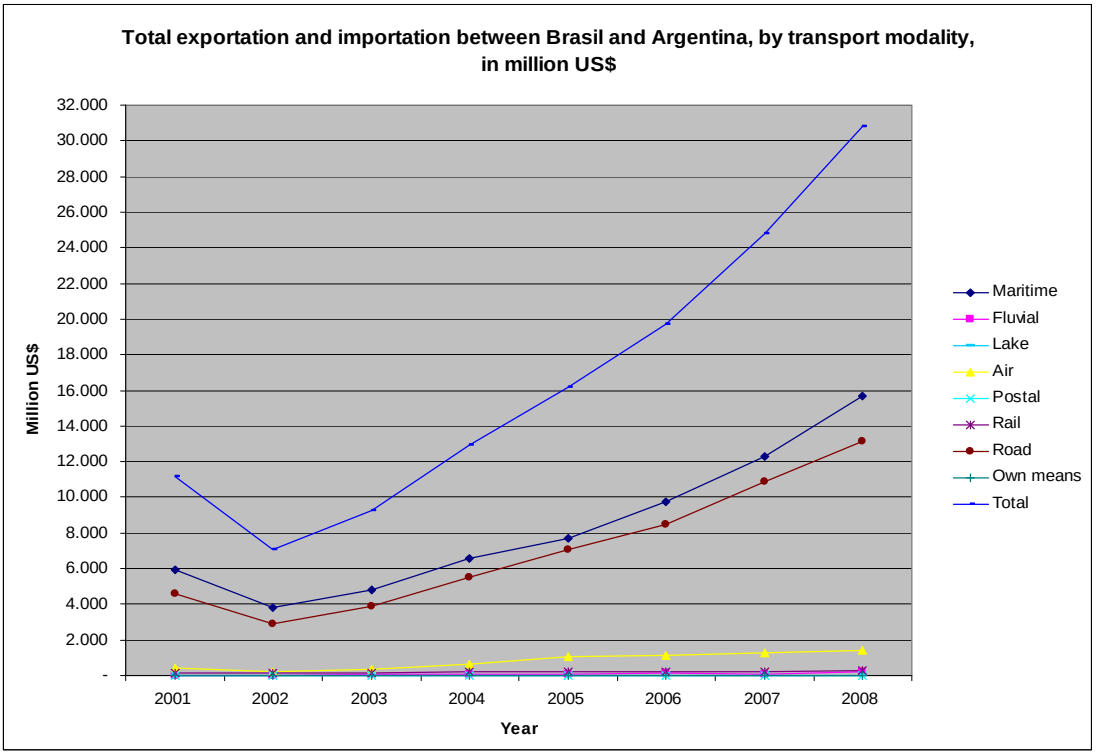


Figure 2.56 – Evolution of the source of transports for the total of products commercialized between Brazil and Argentina

From what was shown, it can be noted that in terms of transports for the trade between Brazil and Argentina, the maritime and road modals are essentially predominant and on them falls the relevance of the analysis of operation, logistics and investment, mainly for short and medium term actions. The functioning of these transports affects the most part of the products commercialized between these two countries, as it can be evaluated with the information of Table 2.30.

Table 2.30 – Source of transports of the international trade between Brazil and Argentina, evaluated for the period from 2007 to 2009

TRANSPORT WAY	% NET WEIGHT
Maritime	67.04%
Road	21.82%
Fluvial	9.00%
Rail	1.63%
Pipeway	0.33%
Air	0.08%
Lake	0.05%
Own means	0.04%
Total	100.00%

In this context, for short and medium term plans, the air and mail modes are presented as promising, the first one being highlighted, as it can be analyzed in monetary terms in the graph of Figure 2.53, whose values overcome the fluvial and rail modals.

It stands out that the fluvial/lake transport is presented as an option for reducing the transports costs, mainly for movement of commodities, and the growth of its use, in this trade, arises as an element that can allow in a medium term integrated planning, a more intensive use of the inter- and/or multimodal transport, with reduced investments if compared to other modals. Brazil has intensified the fluvial modal use for its exportations, as it demonstrates the graph in Figure 2.57.

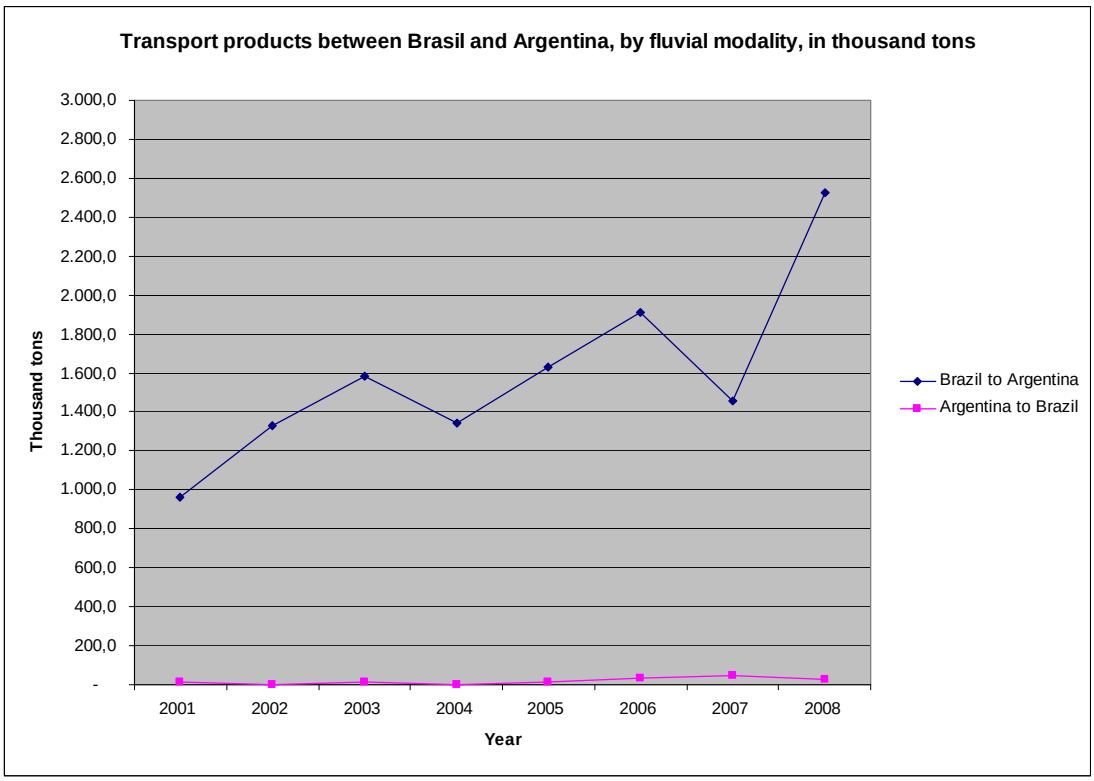


Figure 2.57 – Evolution of the transports of products commercialized between Brazil and Argentina by the fluvial modal

By the analysis of Figure 2.57, it is clearly seen that the exportations from Brazil to Argentina by fluvial modal have significant use growth, while the opposite does not present significance in terms of tons transported when compared to the total of exportations from Argentina to Brazil, and also in terms of use growth in these movements. The rail transport, nevertheless, does not present in terms of monetary values associated to the commercialized goods, a significant element for the transport of goods between Brazil and Argentina, fact that is related to the differences of equipment and railways installed and operated in these countries. Even though, the intensification of this modal use can, in a long term, for certain groups of products, mainly for those that can reduce their logistic costs by the packing and transport through containers, in long term plans actions and investments, it would be relevant the contribution of this modal in the reduction of the transports fees.

The Graph of Figure 2.58 demonstrates that Brazil has intensified significantly its use in this last decade to execute the transport to Argentina and that currently the goods movement by this modal, in the two ways of trade, are practically equal.

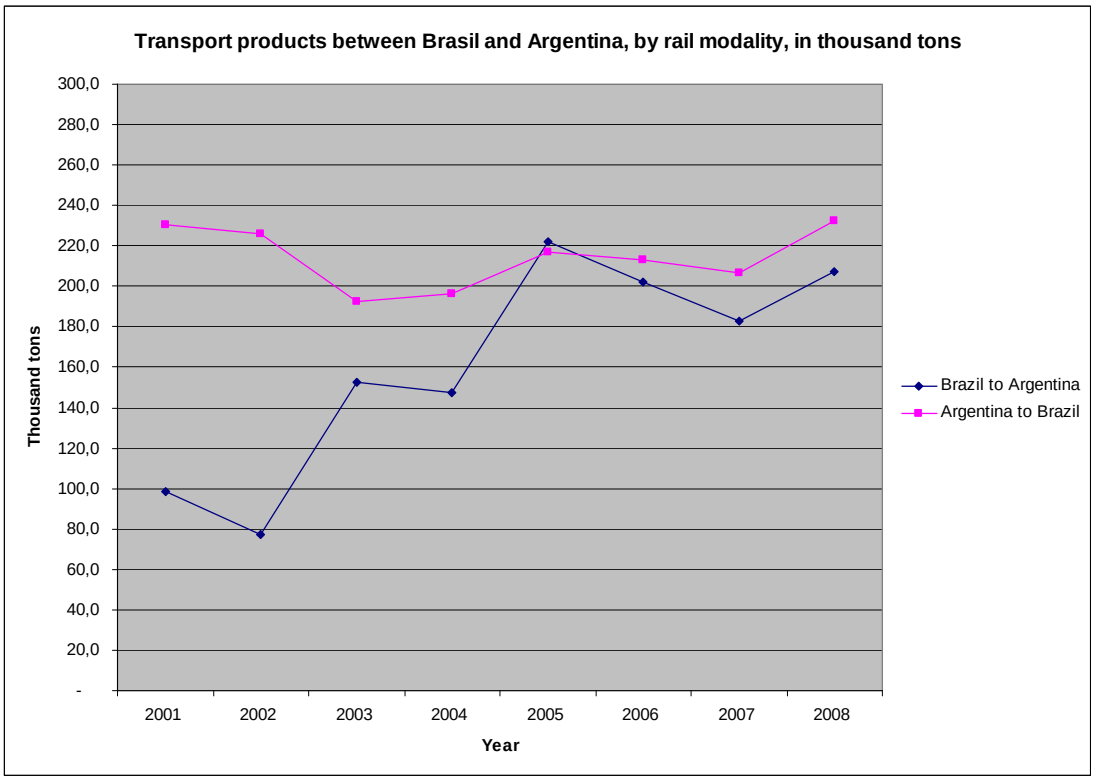


Figure 2.58 – Evolution of the transports of products commercialized between Brazil and Argentina by the rail modal

It is appropriate to highlight that investment in this modal, in connection projects of Brazil with Argentina, has many technical, economic and regulatory issues that are in need of deep studies and validations of these projects propositions, and so its planning become more efficient is scheduled for a long term scenario.

2.4. Operational Characteristics in the Freight Transport in Brazil and Argentina

2.4.1. Institutional and Regulatory Aspects in Brazil

In Brazil, the reform in the transports sector is related to several factors, that cause several obstacles in the commercial exchange, for example, fiscal crisis and the movement of the State's role redefinition in the economy, the need for adequacy to the needs of the consumer markets, in which became more determinant the issues related to the quality of the supplies and products, delivery term, technical assistance and innovations. In this sense, the country has started to direct in the elaboration of new

productive processes, in a way that these processes can bring improvements and conditions to serve these consumer markets, as much in the national as in the international ambit, greatly stimulating its economy.

There is an implementation of new technologies, new regulatory and institutional structures, juridical-administrative and operational practices, in the transports sector, providing considerable margins in terms of competitiveness. There is a trend in the organization of the transports services industry that has changed a lot, in a way to increase the efficiency of their operational interfaces, mainly in the integration of these companies with operators, through strategic alliances. This integration of the multimodal rendering services systems, where rail, road, port, air and navigation companies, with intensive use of modern means of communication, has only been possible due to an elimination of a big amount of regulatory hindrances to the fusion of different modal companies and to the free competition for new markets, enabling a reorganization of the services based on the users best interests. Thus, as in other countries of the world, the regulation is in the governmental agenda, for the private sector strengthens its role in the accomplishment of public policies in infrastructure determinant areas. Due to these privatizations in the transports sector, there was a structural change in terms of productive axles and institutional configuration of the sector.

Although, when it is about International Relations, the international trade among Brazil and other MERCOSUR countries has developed substantially, it will be necessary a transports system compatible to this market, becoming indispensable for the maintenance of competitiveness of the participant economies and, mainly, to guarantee the perpetuity of these commercial relations. It is necessary to create an institutional and regulatory array which permits the attraction of private capitals for infrastructure projects, as showed in Table 2.31.

Table 2.31 – Brazilian regulatory mark in the transports sector

AGENCY	LAW
ANTAQ (National Agency of Maritime Transports)	Law n. 10.233, from June 5, 2001
ANTT (National Agency of Terrestrial Transports)	Law n. 10.233, from June 5, 2001
ANAC (National Agency of Civil Aviation)	Law n. 11.182, from September 27, 2005
DNIT (National Department of Infrastructure and Transports)	Law n. 10.233, from June 5, 2001
SEP (Special Secretary of Ports)	Law n. 11.518, from September 5, 2007

Thus, when it comes to national transport in Brazil, there is the Ministry of Transports, ratified by the Law n. 9.649, from May 27, 1998, whose powers are: road, maritime and rail transports national policy; merchant marine, ports and navigable ways and participation in the air transports coordination. In the field of its competences, the

Ministry of Transports has, in its current transports governmental policy, the purpose of raising the investments levels in the sector, modernizing the institutional structures and decentralizing the actions and responsibilities, previously concentrated on the federal sphere, in the sense of disundertaking the State from the function of services provider and operator. Thus, it competes to the Ministry of Transports:

- the formulation, coordination and supervision of the transports policies;
- the participation in the strategic planning, the establishment of implementation directives and the definition of the investments programs priorities;
- the approval of the grants plans;
- the establishment of directives for the Brazil's representation in the international organisms and in conventions, pacts and treaties referring to the means of transportation;
- the formulation and supervision of the execution of the policy referring to the Merchant Marine fund, bound for the renewal, recovery and increase of the national merchant fleet, in articulation with the Ministries of Treasury, of International Trade and Industry Development, and of Planning, Budget and Management;
- the establishment of directives for the chartering of foreign ships by the Brazilian navigation companies and for the release of the prescribed freights transport.

Its organizational structure is presented as follows.

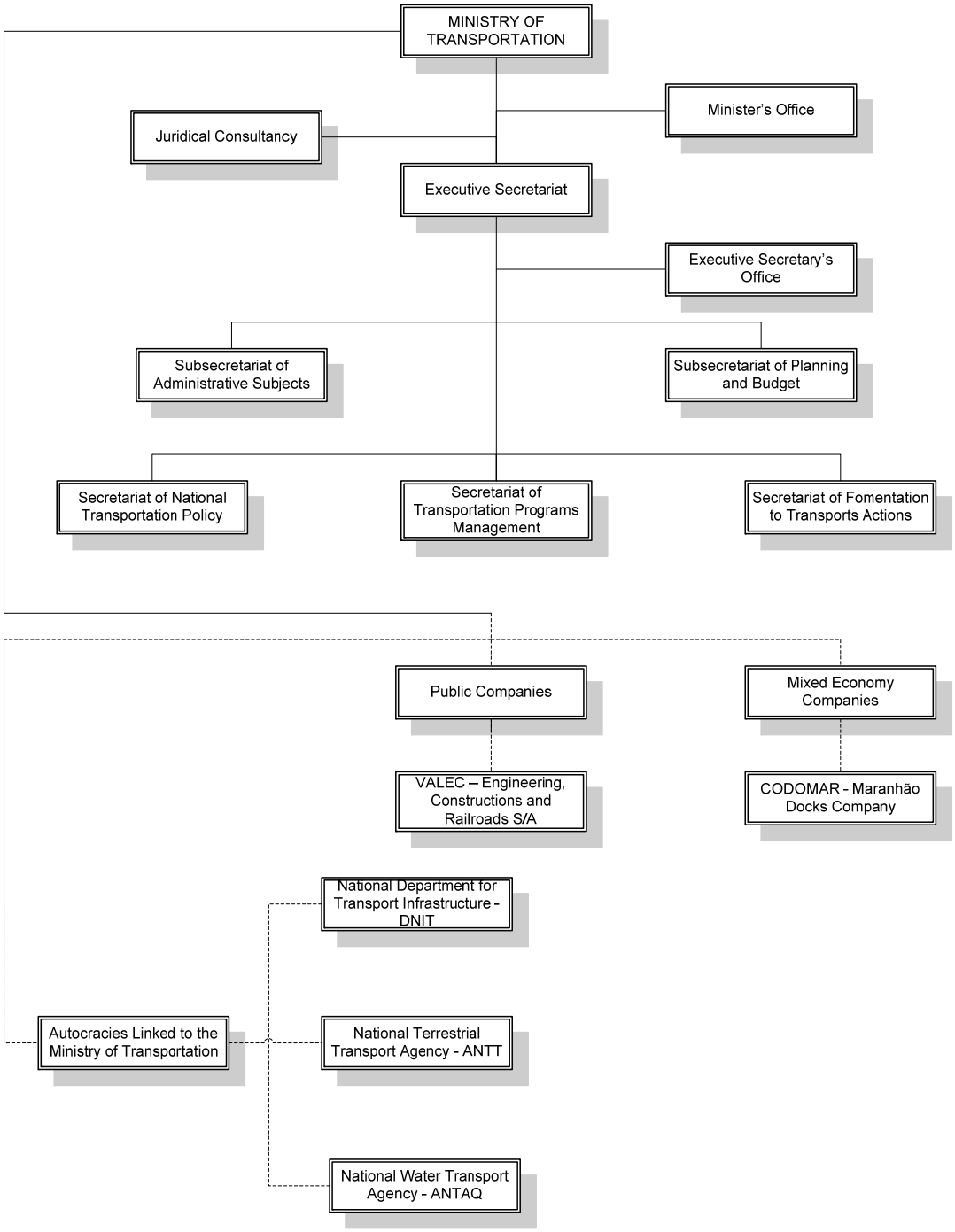


Figure 2.59 – Organizational structure of Brazilian Ministry of Transportation

Due to this and in coherence with the policy adopted, after two years of intense debates between the Ministry of Transports and the National Congress, it was created the Law n. 10.233, from June 5, 2001 which, among other arrangements, settles the reorganization of the maritime and terrestrial transports, creates the National Council of Transport Policies Integration, the National Agency of Terrestrial Transports (ANTT), the National Agency of Maritime Transports (ANTAQ) and the National Department of Transports

Infrastructure (DNIT). Therefore, the current law focus on the coordination, standardization and supervision attributions and defines the structure and the competences of the several agents related to the respective sector, constituting itself in the new legal mark, in which will guide the transports infrastructure and operation management in the national field. Still, inside the organizational structure of the Ministry of Transports, it must be highlighted the creation of the DNIT (National Department of Transports Infrastructure), federal autarchy, linked to the respective ministry, having as responsibility the implementation, in its acting sphere, the policy established for the infrastructure management of the Transports Federal System, under the Ministry of Transports jurisdiction, and it comprises the operation, maintenance, restoration, capacity adequacy and enlargement through the construction of new ways and terminals, according to the applicable legislation and the directives established by the Law n. 10.233 from June 5, 2003 and in the regulation approved by the Decree n. 4.749 from June 17, 2003.

Regarding the issue related to the maritime and port system, after the National Congress approval, it was sanctioned the Law n. 11.518, from September 05, 2007, thus consolidating the Special Secretary of Ports of the Presidency of the Republic (SEP/PR), which has already been created, through the Provisional Executive Order n. 369 from May 07,2007. The creation of the SEP/PR appeared as a reflex of the priority attributed by the Federal Government to the sector, which moves annually 700 million tons of the most varied goods and respond for approximately 90% of the Brazilian International Trade. With the appearing of the SEP/PR, it was created a new model of management of the port sector, that has among its objectives the implementation of Brazilian port terminals in the same level of competitiveness of the other countries of the world, so reducing the "Brazil's Cost". Among the attributions and competences of the Special Secretary of Ports is the formulation of policies and directives for the sector's fomentation, besides the execution of measures, programs and projects to support the port infrastructure development, with budgetary and Growth Acceleration Program (PAC) investments. And also competing the participation in the strategic planning and the approval of the grants plans, all this aiming at the security and efficiency of the freight and passengers maritime transport of the country. The Special Secretary of Ports of the Presidency of the Republic, through the Decree n. 6.116 from May 22, 2007, presents the following organizational structure:

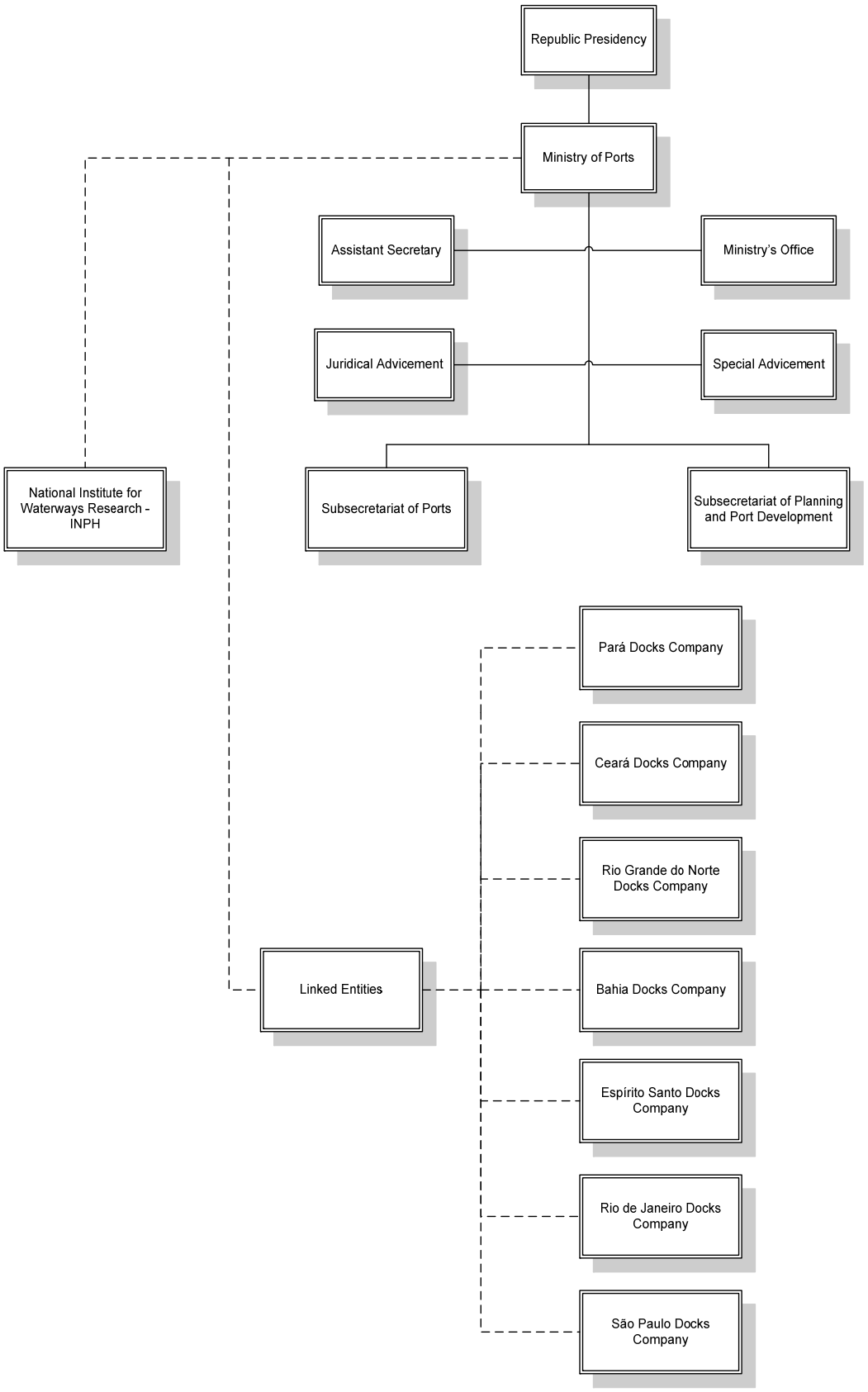


Figure 2.60 – Organizational structure of Brazilian Special Secretary of Ports

Besides, with the consolidation of the sector's regulatory mark, it will try to stimulate the free initiative and attract more private investments, discharging the tax burden in the customs areas field and the availability of the port public sectors and promoting a model of management ruled by results previously defined.

2.4.2. Institutional and Regulatory Aspects in Argentina

When talking about transport system in Argentina, it is about a system which presents its greater concentration in the road modal, that is, considering that this represents a significant weight in the transport sector, for having 85% of the passengers transport and more than 70% of the freights transport, due to the lack of access to other types of transports. Argentina has also entered with strength in the reform process of the State, mainly based on a wide privatizations program. And one of the characteristics of this program developed by Argentina is the extent of its accomplishments, that is, it gives a wide focus on the transports sectors, and the distinct services which have a relation with this same sector.

In 1989, this reform process of the State had its initial mark with the concession process, impelled by the approval of the Public Companies Restructuration Law. This law has as a purpose the reduction of the public Deficit and the reactivation of the Argentinean economy, through a strong participation of the private sector in important economic sectors, and also of the public services. As in Brazil, one of the reasons that took to this Argentinean State Reform were, exactly, the budgetary and fiscal issues which hindered its development. In the same pitch, there were some privatizations, mainly in the air transport sector, with the privatization of Aerolíneas Argentinas. Thus, due to these privatizations, the government saw the necessity of searching a control and a more rigid inspection, having in view to make to public machine more efficient. As a consequence, there were significant changes which were products of successive contractual renegotiations, among them the creation of the regulatory agency of the rail system, the National Committee of Transport Regulation, through the National Executive Power's Decree n. 660 in June 1996. To the transports infrastructure, it was conceded a great part of the national road network, approximately 10,000 km under the toll system, then the big cities access networks, and, recently, the road network remainder, under a financing system tied to the fuel tax.

In the general aspect, the concessions were being established under distinct regulatory regimes ways, carrying substantial differences for each segment, for some were derived from contractual renegotiations between federal government and the concessionaires. However, all this regulatory issue has several obstacles, for, besides there being few regulation organs, there is a scarce degree of autonomy and independence in relation to the political power. And moreover, to the detriment of the urgency of this state reform, the Argentinean government was impelled to execute countless and distinct privatizations of the transports sector, which incurred in a fragmentary approach in relation to the treatment of each of these privatizations, making it not to give the due treatment to the transport and infrastructure sectors. The Secretary of Transportation the Republic Argentina, presents the following organizational structure:

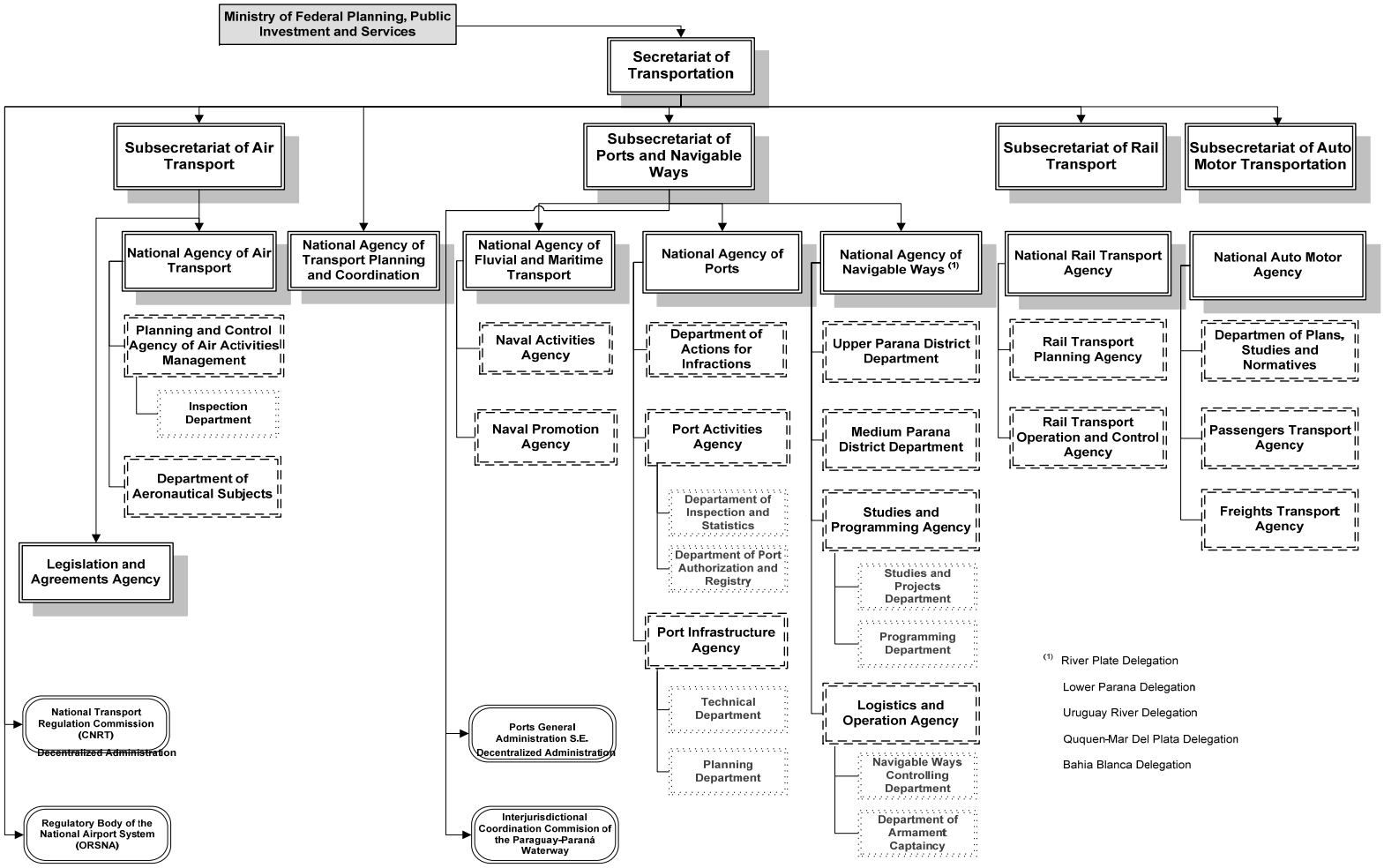


Figure 2.61 – Organizational structure of Argentinean Secretary of Transportation

2.4.3. Institutional and Regulatory Aspects in the Transport Between Brazil and Argentina

An important issue regarding the regulatory reforms in Brazil and in Argentina is that in both countries there was a crisis, where the resources more and more scarce made them to search means to get out of that situation. Both countries went for a more active participation of the private sector, transferring this responsibility to the private in search of improvement and efficiency in sectors linked to the infrastructure and transports, having as the only responsibility the regulation of these activities. Nevertheless, the great issue that needs more care and deep analysis is the issue of the regulation preceding the privatizations, because it is of essential importance an organized regulatory basis to, eventually, transfers it to the private sector. These disparities originated in the privatizations processes make the problems created by the new regulating organs become very considerable, contributing to innumerable discussions on its real importance inside a system as a whole. If the objective is to regulate, in a more efficient way, besides the simple inspection of the already existing concession contracts, and that precede the creation of these regulatory agencies, it will be necessary the regulation by market and not the regulation by isolated concessions. With no doubt, a transport system really efficient and integrated requires a network where highways, railways and waterways are physically and institutionally linked, providing, in this way, a correct performance by the regulatory organisms, creating true sectorial policies, putting an end to the predatory competition. Still, it is noticed a lack of integrating view of the transports system, for, as Brazil as Argentina have regulatory organs not very autonomous and politically independent, presenting a low level of coordination. Another very important issue that stands out in these two countries is the concessionaires pressure, with valid contracts, in view of the precarious existing regulating structure.

For the regulation to become efficient and effective it is necessary an interinstitutional integration, with the participation of all stakeholders involved in the process (government, population, private sector, operators, regulators…), since the problems are faced in a systemic way and, for so, making the new agencies to develop solutions also in a systemic way. The regulating agencies have to develop ways that make them integrative and that, at last, meet the private initiative, government and users wishes. Therefore, it is notorious the participation of these agencies in the present scenario, only correcting that for its respective “success”, it should be mounted institutional structures and mechanisms, where it can be expressed interest from the parts involved.

2.4.3.1. International Trade Operations

The International Trade has as main sources the Conventions, Treaties, Agreements, International Protocols, like the Vienna Convention, Protocol of Ouro Preto, Maastricht Treaty, Montevideo Treaty, Bilateral Committee of Trade, Agreement of Economic Complementation n.14, Agreement of Regional Reach, among others. Among these, the most important is ATIT, International Terrestrial Transport Agreement (Acuerdo de Transporte Internacional Terrestre), signed by Argentina, Bolivia, Brazil, Chile, Paraguya and Peru in 1989, a derivation of the Latinamerican Association for Integration, ALADI its acronym in Spanish. All negotiations and practical implementations, even those within Mercosur, are based on this instrument. In this sense, it is a minimum standar on

which further negotiations are built. A thorough analysis of ATIT`s applications and prospects for further development can be found in Corcuera Ibañez (2005)[4]

Another source related to the international trade transactions is the source came after the Customary or Consuetudinary Law, the practices and commercial uses of determined mercantile sectors, known as the New Lex Mercatoria. These commercial actions derive from the voluntary and continued adoption of the same procedures by the generality of the economic commercial operators. However, several organizations which represent the commercial communities take charge of uniformizing the commercial procedures, elaborating appointments which will incorporate, with the same effectiveness of the legal rules, like the Incoterms case, the Uniform Rules on Contractual Warranties and of the Documentary Credits. There is also the contracts-type, or Standards, which will be contracts regulations or formulas, standardized with several points in common, differentiating in the particularities of each branch of trade. Usually, they are elaborated by international organizations or associations that will search a standardization of the commercial practice. There is the Arbitral Jurisprudence, mainly that one arisen from important institutions of international arbitration like Paris Chamber of International Trade, called CCI. There is still, as a source of the international trade law, the national sources or the internal law which are States's unilateral acts that substantially affect the international trade. In this sense, there are in our Federal Constitution of 1988, the main fundamentals of the Regulating State in the transports sector, through the article 1st, section IV, article 5th, section XIII and article 170, caput, section IV. When stuck to the constitutional subject, the air navigation, the airport infrastructure, the maritime transport among Brazilian ports and national borders, or that overcome the limits of the own State, considered territory and the maritime, fluvial and lake port activity, integrate the activities appearing in the competences attributed to the Union, in the terms of the article 21, section XII, subheadings "c", "d" and "f", otherwise let us see it:

> *Art. 21. It competes to the Union: XIII – to explore, directly or through authorization, concession or permit: c) the air, aerospatial navigation and the airport infrastructure; d) the rail and maritime transport services among Brazilian ports and national borders, or that traverse the State or Territory limits; f) the maritime, fluvial and lake ports.*
>
> *Besides this, we can find in the articles 22, 177 and 178 of the FC/88:*
>
> *Art. 22. It competes privately to the Union to legislate on: I – civil, penal, processual, electoral, agrarian, maritime, aeronautic, spatial and employment law; XI – directives of the national policy of transports; X – ports regime, lake, fluvial, maritime, air and aerospatial navigation; XI – traffic and transport.*
>
> *Art. 177. Constitute Union monopoly: IV – the maritime transport of the national origin gross oil or of the basic oil by-products produced in the country, well as the transport, through ducts of gross oil, its by-products and natural gas from any origin; § 4th The law that institutes contribution of intervention in the economic domain related to importation activities or oil commercialization and its by-products, natural gas and its by-products and alcohol fuel must meet the following requirements: II – the resources collected will be bound for: c) the financing of transports infrastructure programs.*

[4] Corcuera Ibáñez, A. (2005) El Acuerdo de Transporte Internacional terrestre del cono Sur de América. En "Libro Azul del Transporte 2". FADEEAC. Buenos Aires.

> *Art. 178. The law will regulate the arrangement of the international transport, observe the agreements signed by the Union, met the principle of reciprocity. Unique Paragraph. In the arrangement of the goods transport the cabotage and the interior navigation could be done by foreign vessels.*

Due to the article 178, two rules of important relevance were edited, there be: a) Law n. 9.432, from January 8, 1997, which settles the maritime transport arrangement and gives other steps; b) Law n. 10.233, from June 5, 2003, which settles the maritime and terrestrial transport restructuration, creating the National Council of Transport Policies Integration, the ANTT (National Agency of Terrestrial Transports), the ANTAQ (National Agency of Maritime Transports) and the DNIT (National Department of Transports Infrastructure), and gives other steps.

On our part, we understand the lex mercatoria does not have the status of a new law. The customary principles, institutions and rules arisen from the traders community, though they have relevance for the international businesses life, they do not have autonomy before the state laws, rather being bound for complementing them in the presence of the concrete case.

There is no questioning on the importance represented by the uses and customs for the international trade. Nevertheless, we cannot consider them part of a new anational law for lack of legitimacy. So much so such uses and customs can only exist if the State recognizes their validity. From the confrontation among rules from the lex mercatoria and the state law, this one will always prevail. The lex mercatoria cannot exist out of a juridical arrangement that serves as support. The international arbitration, its main vehicle of diffusion, cannot be unaware of the state system, be as organized structure, or as applicable rule.

2.4.3.1.1. Procedures, Taxes and Legislation in Brazil

All the international Trade operation is accomplished by the Ministry of Development, Industry and International Trade, created by the Provisional Executive Order n. 1.911, of July 29, 1999, having, among its competences, the International Trade policies, regulation and execution of the programs and activities related to the International Trade, such as the applications of the commercial defense mechanisms, in the participation in international negotiations in the International Trade.

All the issues related to the operations, procedures for exportations and importations from the International Trade are regulated by the Decree n. 32, of December 04, 2009 and Decree n. 34 of December 16, 2009, respectively, from the Secretary of International Trade – SECEX, whose competence is:

I – formulating political proposals and international trade programs and establishing rules necessary for its implementation;

II – proposing measures, in the fields of the fiscal and currency hedging, financing, recovery of credits to exportation, insurance, transports and freights and commercial promotion policies;

III – proposing directives that articulate the use of customs instrument with the general objectives of the international trade policy, as well as proposing aliquots for the importation tax, and its fluctuations;

IV – participating in the negotiations in international agreements or conventions related to the international trade;

V – implementing the commercial defense mechanisms; and

VI – supporting the exporter submitted to investigations of commercial defense abroad.

When talking about the tributary issues, it is competence of the Secretary of Federal Revenue of Brazil, which is a singular, specific Organ, subordinated to the Ministry of Treasury, performing essential functions to the State. It is responsible for the taxes administration of the Union's competence and those incidents about the International Trade. Among its competences, there is the taxes administration of the International Trade and customs.

The taxes on the International Trade are those related to the exportation and importation and clearly have extrafiscal function, for they do not aim at the financing resources collection, but at the production of economic effects by the behaviors induction that is wished from the agents that act in the economy. They are true economic policy instruments. They can, however, have their aliquots changed by the Executive Power, that is, they can be increased or decreased without depending on the National Congress.

TAX ON IMPORTATION

It is the tax of federal competence. It is adopted in the exchange policy of the country. Its purpose is more economic than properly financial. It aims at the national product protection in view of the competition in the international market, stimulating the internal production for the creation of the highest number of foreign exchange credits as possible. Its collection is done by the customs or customhouse departments.

Fact Generator of the Tax on Importation

It is fact generator of the importation tax the entrance of foreign products in the Brazilian territory, except for the tourists' luggage for personal use and consumption.

For the configuration of the generating fact, the following elements are indispensable:

a) that the product be foreign;

b) that the product crosses the Brazilian frontiers and be inserted here;

c) that remains in the Brazilian territory for internal use or consumption or to be improved, adapted or incorporated to the national richnesses.

Calculation Basis

In the present tributary system, the CNT (National Rate Code), there are two kinds of calculation basis:

a) **the product's price:** it is the normal price, or, in case of not appearing in the table of official way, it is adopted the similar product price in sale and in free competition conditions. Usually, it is taken as basis the price of the commercial invoice;

b) **the unit of measure:** is used to measure, weigh or count the product, the volume, etc., the value of tax per meter, per kilo, per unit, among others.

Aliquots

Three aliquots are currently adopted:

a) **specific:** consists of a rate (a certain monetary value) for each unit of measure, which serves as calculation basis, adopted to measure, weigh or count;

b) **"ad valorem":** consists of a percentage rate on the products price, which is used on the normal sale or buying (in the case of auction) price value;

c) **mixed:** there are cases in which apply, cumulatively, both aliquots, that is, the specific and the "ad valorem" ones. This occurs with determined foreign products considered harmful to the social-economic policy. It intends to settle the foreign goods in inequality position in relation to the national similar ones. As an example of the application of the mixed aliquot, beverages in general and the tobacco. Such products do not interest to the country for being vehicle of future expenses with the population health.

Flexible Rate (Rates Flexibilization)

By the circumstance of the importation tax be more a regulating instrument of the international trade and the exchange policy than a means of collecting revenues, the Constitution expressly permits that, in the limits and conditions of the law, the Executive Power can graduate the aliquot in the minimum and maximum of the flexible rate, falling to the Congress to rate those minimum and maximum limits. The raise of the aliquot can be employed as much in the importation as in the exportation, in order to avoid the dumping.

Categories of Imported Products

There are four categories of imported products, namely:

a) **general category:** products are grouped without taking into consideration its origin or the protectionist intention. The income aims only at improving the public revenue, without worrying about facilitating or cohabiting the importation, for example, the production and the generic consumption goods for which there is no sufficient supply in the internal market;

b) **special category:** are the products involved with protectionist sense. They are the restricted consumption goods, superfluous items and others of any mature, whose supply to the internal market is sufficient. The special category products suffer incidence with high rates. Examples: perfumes, clothing, appliances;

c) **controlled category:** this category products are imported by certain people, this happens because its use is very restricted. They are guns, ammunitions, explosive material (searched mainly by mining companies), cocaine's raw material (employed in the pharmaceutical industry);

d) **prohibited category:** stern engine with power superior to 3 HP to be used in vessels, with no exceptions.

The general and special categories suffer changes between the crop and intercrop periods.

TAX ON EXPORTATION

It is the federal competence tax. It is the fiscal tax that falls on goods or products manufactured or produced in the country and sent to a foreign country. It is, therefore, of opposite aspect to the importation tax.

Fact Generator of the Exportation Tax

The generator fact is not the juridical business of the exporter's purchase and sale to the foreign country, but the material fact of the exit of national, or nationalized product to another country, whatever is the object of the sender. It is not important if it is about the sender's donation or goods, except for the cases of personal effects, luggage, etc.

Deductions of other Taxes on the Exported Goods

The National Rate Code establishes that the taxes that fall directly on the exportation operation will be returned to the exporter through credits to the taxes if due, so that they are deducted from the exportation tax.

Variable Scale

But, in the variable scale, the tax will follow the price raising in the external market, making up for it or even disappearing, in case of low quotation. This measurement aims at the defense of the products in the external market and also of its consequences in the payments balance of the nation.

Passive Subject

At first, it is who dispatches the goods by shipping to its foreign destination, or even who takes it with him/her. Usually, it is the dealer who acquires national products to sell them to the foreign market places. It can be the producer, industrialist or trader himself/herself, or, still, the dealer himself/herself in the foreign country, following the goods or using agents, institutors, etc.

Modalities of Exportation

a) **Direct:** the exportation is direct when the industrial establishment or producer issues the sale fiscal note addressed directly to the addressee abroad, based on commercial contract.

b) **Indirect:** it is considered indirect exportation when the industrial establishment or producer issues the sale fiscal note (with the specific exportation purpose) to a buyer addressee in Brazil, who works as a commercial mediator that, on his/her turn, will issue the fiscal note addressed to the foreign buyer. In this case, the exportation will be considered indirect to the manufacturer and direct to the exporter mediator.

Main Commercial Clauses

a) **Clause C.I.F. (Cost, Insurance and Freight):** establishes the principle that it is the seller's responsibility or obligation to deliver the goods to the buyer, in the place this one has his/her establishment or in the destination port, being the seller's responsibility the expenses with transport and insurance, that are included in the price of the goods sale.

b) **Clause F.O.B. (Free on Board):** this clause will give the seller the responsibility of delivering the goods on board, by the stipulated price, with the expenses of freight and insurance at the buyer's cost. In this, the goods, until it is on board, travels on the seller's own risk. And, as soon it is done, that is, the goods are on board, the seller will be free from his/her obligation, the goods then traveling on the buyer's own risk.

INSTITUTES LINKED TO THE INTERNATIONAL TRADE

Drawback

It consists of the operation through which a company imports foreign raw material for manufacturing products finished here in Brazil. Ended the operation, these products return to the foreign country. In synthesis, it is the devolution to the foreign country of the industrialized products resulting from the raw material came from there and, consequently, the refund of the importation tax amount previously paid on occasion of the raw material entrance in Brazil.

Dumping

It consists of the exportation stimulation, through below cost prices, i. e., beneath the products common price, in an artificial value, causing even losses to the exporter, in the capture of bigger external markets, even in a competition disloyal to other countries. To fight the dumping, there is the remedy that is the own importation tax. When a country is selling certain abuse through this institute, it can burden more the imported product, for if this product has a cheap price, in clear disloyal competition to the national product, the exchequer can and must increase the rate incidence, rising it until it equals the price to that practiced in the international market.

Zollverein

It is a customs union. It is a contractual agreement between two neighbor countries, by which they conventionalize in the sense of do not pay taxes in the international transactions between themselves, establishing a total or partial franchise customs, relatively to their respective exported and imported products.

Temporary Franchise

It is the non incidence of the importation tax through a period of time, due to determined circumstances, regarding as the goods as personal use and consumption objects. The circumstances that can determine the temporary customs franchise can be: propaganda, tourism, exhibition, etc. Nowadays, it is common the franchise in relation to

international samples fairs of products that aim at the cultural or technological development, the propaganda, etc.

The Free Trade Zone or Duty Free

This is how the zone of a territory of the country is called, where it does not exist any customs charge, with importation license for all or determined products originated from some or all countries. The Free Trade Zone, also known as Duty Free, aims at providing the maritime trade in port of the country conceding the benefit of exemption or the non incidence of rate, as well as incrementing the importations to supply and develop certain needy regions. The Manaus Free Trade Zone, created in 1967, is an area of importation and exportation free trade and of special fiscal incentives, established with the purpose of creating, in the Amazon inland, an industrial, commercial and agricultural and cattle raising center, endowed with economic conditions which permit its development, in view of the local factors and of the great distance where are the centers consumers of its products.

2.4.3.1.2. Procedures, Taxes and Legislation in Argentina

Argentina is one of the most important countries of the Southern Cone, and this is due to the fact of the same having a continental surface of approximately 2.8 million km2, with an estimated population of 40 million inhabitants and GDP, at current prices, of US$ 324 billion (2008). After the economic crisis that reached Argentina at the end of 2001 and beginning of 2002, when the country has changed its monetary policy, refraining from using the currency convertibility system in relation to the dollar. Thus, after suffering a steep drop in 2002, the GDP registered an increase in the growth rates during the period 2003 – 2008. The unemployment rate for 2008 was 7.9%, which represented an increase of 0.3% in view of the previous period rate. The CPI (Consumer Price Index) registered an increase of 8.5% in 2007 and 7.2% in 2008, according to official statistical data provided by the INDEC – Instituto Nacional de Estadísticas y Censos (2010a).

Argentina's international trade, as much for exportations as for importations, has presented good growth perspectives, mainly in the period of 2008, which determined a positive balance in the Commercial Balance. Another aspect that was crucial to the favorable environment was the financing to the Argentinean exportations, such fact happened due to the lack of access to the international credit, as well as the hindrances to the exportations and the exchange control by the Central Bank.

The expansion was also provided by the advance of the primary products and agricultural and cattle raising manufactures, thanks to the favorable evolution of their prices and to the collocation of the agricultural production remainders among others in which Argentina has in its list of exported products, items like: soy, corn, wheat, automotive vehicles, gross petrol oils, sunflower oil, copper ore and its concentrated products, biodiesel (INDEC, 2010b). Despite the will of establishing an economic integration between Argentina and Brazil, mainly regarding their customs relations being from former times, as a matter of fact, the first step was only achieved, after the signature of the Declaration of Iguaçu, in 1985, where the two countries started to show they were ready to accelerate the bilateral integration process.

In 1986, they gave one more step towards the above-mentioned integration, with the signature of the "Minute for Brazil-Argentina Integration", where it was created the Integration and Economic Cooperation Program – IECP. Such Minute is based on the

principles that futurely would delimit the creation of the "Treaty of Asuncion", that is, flexibility, gradualism, symmetry and dynamic balance, in the sense of providing a more uniform sectorial integration. In 1988, the two countries signed the "Treaty of Integration, Cooperation and Development" that had as an objective to determine a free trade area in a period of 10 years. Thus, it was signed 24 Protocols about varied subjects, for example: wheat, maritime transport, terrestrial transport, capital assets, and industrialized food products, among others. More apex of Brazil-Argentina integration only happened in July 1990, with the signature of the "Minute of Buenos Aires", in which it reduced the term in four years and a half and had as objective the search for a common market. In the same year was signed the Economic Complementation Agreement n.14 (ECA 14), incorporating the 24 protocols, which constituted a system of references further adopted, in the Treaty of Asuncion.

In 1995, when MERCOSUR was implemented, the trade among Argentina and the cited Economic Bloc started to be ruled by the Economic Complementation Agreement n. 18 (ECA 18), for it would involve the other countries members of the MERCOSUR, once the (ECA 14) would only involve Argentina and Brazil. Regarding the procedures adopted in Argentina for exportation, many access rules follow the same standards established in the MERCOSUR agreements. Notwithstanding, some access rules to the Argentinean market, like the customs procedures, phytosanitary rules are regulated by the same legislation of Argentina. Argentina, as well as Brazil, has an informatized system, where are registered information related to the documentation that sustains all the international trade operations.

The system users have conditions to execute all the procedures for the goods import and export, in this sense it must declare the type of freight, value, amount, brands, origin, sources and rate positions of the goods to be imported or exported, as well as the type of transport, importer/exporter data, customs transport agent and customs dispatcher and, finally the kind of operation. Since the system evaluates the information inserted in the system, the same determines the liquidation of the rates and taxes which record the product importation and exportation operations. Thence, the system establishes the administrative circle, that is, the selectivity channels for the clearance of the operation. The rules and procedures, as well as its updatings and alterations, can be checked on the site: http://infoleg.mecon.gov.ar. The dispatcher's intervention in the customs clearances is compulsory since he/she is appropriately registered.

The clearance and storage terms in relation to the withdrawal of goods dispatched for consumption will vary according to the means of transportation to be used, for example: if the utilization is by aquatic way, the term will be 5 days starting from the next day after the beginning of the unloading. Resolution 1.132/2001 establishes the maximum term of 45 consecutive days, renewable for a similar period, for the permanence of goods, although not nationalized, in customs warehouse.

Concerning the taxation, when the products are proceeding from the countries linked to MERCOSUR, usually the same are exempted of tax. Meanwhile, the Brazilian goods that do not have such privilege are the ones included in the sugar rate regime. The Decree n. 2.275/1994 established, in its article 11, an importation tax of 20% for these products of interzone, extrazone origin. Afterwards, the Ministry of Economy of Argentina, by right of the Resolution 457/1999 gave a percentage preference of 10% for the MERCOSUR's products that, applied to the 20% tax, results in a two points preference, that is, a residual aliquot of 18%. Diverse is the rule involved behind the rate issues, namely: Decrees n. 797/1992, n. 2.275/1994, n. 389/1995, n. 108/1999; Resolutions n.

3.543/1992, n. 1.552/1993, n. 741/1995, n. 778/1995, n. 457/1999 and n. 743/2000, 1.609/2003,

It is appropriate to highlight that by right of the agreement signed in December 1994, concerning MERCOSUR, for effect exclusively of the trade between Brazil and Argentina, the goods effectively produced in the Manaus Free Trade Zone and in the Special Customs Area of Tierra del Fuego benefit from the Common External Tariff or the national importation taxes exemption, when applicable. Thus, by right of the Decision MERCOSUR/CMC/DEC n. 8/94 it establishes that State Members apply the Common External Tariff to the goods derived from the commercial, industrial free trade zones, from export processing zones and special customs areas. In this sense, in 2008 Argentina got to be Brazil's third partner in the query commercial flow. Inside MERCOSUR's view, in the moment when Argentina accomplishes great strategies in the sense of increasing its external sales, it starts to be the first market in which Brazilian companies of several sectors and sizes throw themselves in search for new exportation challenges.

One of the effects of higher importance in the aspect of Argentina-Brazil economic integration is the contribution in the business cooperation operations and in the direct investments flows between these countries. That is, there is a strong dynamics in the representation of these agreements and also in the distribution, productive complementation, franchises, in the formation of joint ventures, participation in the companies' capital, strategic alliances, and, mainly, for the conjoint projects of investments. It is demonstrated, in so far, clear the importance of this commercial interchange between Argentina and Brazil, for after the constitution of the Southern Common Market (MERCOSUR), the two countries have presented an excellent growth since 1991. This wide program of commercial liberalization allowed removing the barriers and rate and non-rate hindrances to the interzone trade. There was the creation of the CET (Common External Tariff), essential for the creation of an integration regional space, that so to speak, has in the binomial Brazil-Argentina its greater importance and dynamism.

2.4.3.1.3. Logistic Carriers and Operators

Due to the economic diversity, there is a varied demand of transport services in the Country. In these services are included since the road, rail, waterway transports and storage, until complex services, like logistic management, stocks control and clearance of cargo. The lower aggregate value products demand more simple services and the preoccupation with the transport cost is higher than the preoccupation with the transit time. Even though, there is more and more demand for trustability of the services and integration among the different stages of transport in order to reduce the freights transference times, mainly in port terminals.

The industrialized products, due to the higher stock costs and to the need for integration between the supply and production chain, require more sophisticated services. In this case, the companies transfer to logistic operators part or even the totality of the collection, packaging, expedition and distribution tasks of their products and supplies. For this reason, the road transport companies are gradually aggregating to their portfolio additional services, as to meet their customers' new necessities as to attract new markets for their products.

It is increasingly more common the establishment of operational partnerships among the sector's companies so that it increases the range of services offered and meets their

customers' demands. These partnerships occur as among traditional transporter companies as among logistic operators and the traditional transporters. The existing partnerships are more common among the services companies than among the freight demander. Issues as the fear of market loss and the lack of integration among the producers make, usually, that it does not exist an integrated participation in the transport.

With this, mainly in sectors where the production is spread, as the case of the furniture industry, the companies cannot usufruct the gains as in terms of transport rates negotiation as in delivery terms, that would be possible if the acted together. These problems are especially significant in freights for exportation, as through the waterway transport, as through the air transport. The consolidation of freights would enable the increase of the frequency of flights or the clearance of containers.

Regarding the operation way, we can classify the transport and logistics agents in two categories: the traditional contractors (freight transporters and terminals operators), who search for operational excellence, and the logistic operators, who search for value aggregation to the service. In the first category are the companies which offer the traditional services of transporting goods between the origin and destination places and the freight terminal operators. In the second are companies which offer more sophisticated services, usually integrated with transport and storage activities.

The traditional transporters are those who look for operational excellence in the services they offer to their customers, trying to maximize the functional expertise in a limited range of transport and storage services, in which they long for being the best ones of the market. Now, the logistic operators offer services which aim at aggregating value to the products. Among the mains services offered are the storage, dispatching and distribution of final products and the management of all the process from the factory to the consumer, including assembling and packaging.

The general trend of outsourcing these services through logistic operators can be observed by the hiring of logistic operators by big companies. Another way of transport outsourcing is for the FOB sales, very used in the shoes sector exportations, in which the buyer appoints the freight dispatcher, in the case the logistic operator, who takes charge of the product collection in the factories, of the goods consolidation and shipment, many times keeping stocks in their warehouses. Although there are logistic operators who only do administrative activities, most of them are companies derived from the freight transport field which started to incorporate new products to their customers.

2.4.4. Main Obstacles in the Transports Operations

The deficiencies appointed in the transport services are mainly related to the networks infrastructure conditions, to the integration points among them, to the deficiencies of offer and institutional problems. The transport operation in Brazil is based on the road modal and, in this context, big truck transport operators predominate in the trade activities inside the country and to the South America countries.

In the road modal, one of the main problems is the roads conditions that end up raising the prices for the transport value. This occurs mainly due to the lack of inspection of the limit of freights transported by the vehicles, what damages the road structure and reduces the competitiveness of the companies that respect the limits.

The rail transport on its turn, for the international commercial relations inside the continent, is today almost exclusively operated by América Latina Logística – ALL, which

holds the concession of the railway network of connection with the south of the country, pathway of the most of the freights with destination to neighbor countries. The ALL, which, besides operating the rail system, also plays the role of intermodal transporter, for it acts in the road transport area, offering house-to-house transport and intermodal terminals. The other operators play important role in the international trade when it is accomplished with countries from other continents since the Brazilian railway network is completely directed to the connections from the continent center to the Brazilian ports.

The main problems related to the rail transport are related to the railway network which has gauges different from the neighbor countries ones and from some national networks too, the old design with curves and slopes that oblige the speed reduction, and the interface with urbanized areas, where problems as the intersections with urban roads and the occupation of the domain trips persist and then reduce the operational efficiency of the system, increasing its costs. Some logistic operators still consider that the offered capacity of the rail services in Brazil is beyond the needs, making the freights not competitive enough with the road modal.

In the air sector, the international freight movement is accomplished as in mixed aircrafts, which carry passengers and use the holds for freight, like in cargo aircrafts. The companies that stand out in the market are mostly agents of air cargo, that use spaces in commercial and cargo aircrafts of regular air transport companies. Some of these companies offer integrated services using the road transport for freight transportation between its origin or to its destination and the airport terminals which operate international cargos. One of the main points observed is that the offer of freight air transport in most airports is lower than the demand, making the freight most of times be transported through road until the Viracopos Airport, in Campinas, São Paulo, where are concentrated the cargo flights with origin or destination to out of the country.

The maritime transport on its turn, is the biggest responsible by the international trade movement among continents, which represent the higher fraction of the total movement of exportation and importation as in Brazil as in Argentina. In the maritime transport it is observed a higher amount of companies associated to the logistic process than in the other modals, there are, besides the freight shipper, the maritime agent, port operator and also the ship's owner (constructor). The main problems associated to the maritime transport are related to institutional problems, like: slowness of the port and customs formalities; the rate charged in the ports in the reshipment of products transported by waterways, that do not fall on the products transported by rail and road; the bureaucracy of the taxes inspection, which increases the companies' costs and the rules to contract workers in the public ports which generates excessive labor costs. Besides, the problems with maritime infrastructure like silting up or incompatibility of the gauge of the access canals and bedding with the new vessels, restricted technological resources in the port operation management, make the freights to spend unnecessary time waiting for loading/unloading, also resulting in additional costs to the transport.

There are still the multimodal transport operators that, in practice, in Brazil, are represented by the big producer companies responsible for the logistics of their own freights. It is possible to notice interest from the freight demanders in the utilization of multimodal transport alternatives. The higher use of multimodality bumps in issues as the lack of trustability of the transport noticed by the industry in the rail and waterway transports due to the networks conditions, fluvial port terminals and the lack of ships, wagons and locomotives, mainly in the periods of agricultural crop. Not less important is the perception of these demanders that the transport operators in these modalities do

not internalize the logistics procedures and instruments, in its wider concept. Recently, this panorama has started to change, with increasing transports projects and logistics of higher aggregate value products in railways and waterways. Besides the freight transporters and agents, the transport sector still relies on the warehouse operators, responsible for the products storage during the customs processes and also in the transport wait when there is modality change.

2.5. Logistics Infrastructure System

The transports system in a certain territory is made up of the offer of infrastructure (ways) and services (vehicles operation), considering all the transport modes available that serve to a certain demand for movement among parts of this region and among this and other regions. A first characteristic of the offer of transports is that it is about a service and not about goods, therefore, it is not possible to imagine its use when there is a demand higher than its capacity, that is, given to its capacity and opportunities of operation, a transport service must be "consumed" when and where it is produced, otherwise, its benefit is lost (ORTÚZAR e WILLUMSEN, 2008).

Considering still that the transports operations are accomplished by different companies and people, and that depend on a same road network to accomplish these operations, the quantitative and qualitative understanding which demands these operations and the capacity of the road systems of supporting such movements is the essential basis for the sector's planning in medium and long terms. Thus, the identification of each transports system sectorially analyzed depends on integration with specific analysis on intermodality.

2.5.1 Considerations about the Brazilian Port System

The Port Modernization Law, number 8630, of February 25, 1993, defined new competences for the public and private sectors in the construction and operation of the country's port infrastructure, among them:

- The private sector became responsible for equipping the port – including the investments in the equipment necessary for the terminals operation and the installations' recovery and conservation, and operation of the freights loading and unloading areas;
- The public sector kept the responsibility for the port infrastructure's construction and maintenance, including dredging and terrestrial accesses projects, environment and security projects and infrastructure projects, besides the port's fiscalizing and promoting function.

Despite of the Brazilian ports situation has presented considerable improvement in the last ten years, still persist legitimate preoccupations with the possibility of exhausting the operational capacity for lack of elementary investments in works as the dredging for gauge maintenance, improvement of the terrestrial (road and rail) and maritime accesses (deepening dredging of the access channel), as well as the gauge's increase of the leased terminals' quay in public ports (Port Authority's obligations).

2.5.2 Brazilian Ports Capacity Limits

The accessibility infrastructure to the Brazilian ports is one of the most relevant subjects for the national economy, since the logistics obstacles greatly affect the international trade, which demands research in the universities and discussion among the various segments of the several responsible modals, such as road, rail and water modals. Unfortunately, the infrastructure crisis that occurs in the transports and logistics sector of the international trade is related to the port problems, still is not researched enough by the Brazilian centers of excellence.

The capacity of a port is due to a series of variables: areas available for freight storage, productivity of the moving equipment, capacity of the terrestrial and maritime accesses, gauge of the quay which determines the standard of use of the vessels etc. When the physical limit of the available area is reached, resources are transferred to equipment and systems, with the objective of increasing the operation's productivity without increasing the available area, changing the production function. The same happens when the inversions are bound for enlarging the number of docks and the accesses, allowing to the terminals increasing the production scale. As the volume moved as the Brazilian port productivity have increased a lot in the last years. Thus, the freights movement in some Brazilian ports is above the acceptable average, which is 50% of the capacity.

Table 2.32 – Obstacles in the Brazilian Ports Exportation

LEVEL OF THE PORTS USE	
Itajaí (SC)	97%
São Francisco do Sul (SC)	93%
Rio Grande (RS)	91%
Santos (SP)	80%
Vitória (ES)	63%

Source: CMA-CGM, 2006.

It is very difficult to determine the port capacity limit without previously appealing to a series of hypothesis about the evolution of the several variables. For instance, few technicians of the sector foresaw that the strong expansion of the Port of Santos would be possible without great increases of the port area. In fact, the expansion must be credited to the efficient combination of several improvements, such as: the operation's improvement, the increase of the equipment and systems productivity, the operational integration and the products diversification.

Despite the risk of the ports immediate saturation being momentarily low, the issue must be addressed carefully. The vessels movement growth rate (4.7% per year on average, for the long course), for example, has been much lower than the transported volume growth rate (average rate around 20% per year) (MARCHETTI and PASTORI, 2006). The point to be focused is that, in spite of the vessels flow increasing at rates inferior to the moved volume, the lead time can increase and incur in additional fines for demurrage, which will burden the operation cost if there are not new investments in the access port infrastructure and in the gauge of the docks, as well as in the operation productivity, due to the strong trend of increase in the vessels' size.

At the moment, the most urgent challenge for many Brazilian ports are the dredging works to facilitate the vessels access, with a distinction to the ports of Santos,Paranaguá, Itaguaí, Rio de Janeiro, Recife and Salvador, besides the fluvial port of Parintins, in the Amazon River. The main obstacle to the works is that many Docks Company present financial deficit, which causes difficulties in the dredging works financing. The expansion of the port sector depends on integration with the investments in the terrestrial access modals, mainly for the appearing of new port structures.

2.5.3 Restrictions to the Railroads Operators and their Port Accesses

The highways as well as the railways give access conditions to the Brazilian maritime ports. These ports, independently of being public or private, accomplish their operations for serving the maritime transport (long course navigation and cabotage), through the rendering of private services, in leased or own areas. The rail sector still necessitates adjustments in the shared operations of the existing networks. This issue is a crucial point for the insertion of new operations in the sector. Therefore, the railways expansion must consider such aspect. It can be even necessary investments to increase the capacity of the present networks, mainly for sections of accesses to the ports, as premises of technical feasibility.

The Southern and Northeastern states rely on an only railroad concessionaire offering access to their ports: the ALL and the CFN, respectively. In the Southeastern Region, the Port of Santos is the most privileged one, for it permits the access through more than one railroad operator, namely: MRS, Ferroban, Ferronorte, Novoeste, FCA and, now, the ALL. In the Port of Rio de Janeiro, around 70% of the freights are transported only through two railroads, the MRS and the FCA, which move, mainly, steel products, sugar and containers. The other 30% transported by road are mainly made up of general freight and containers. In the Port of Itaguaí, the percentage of freight transported through the rail modal is also very high, through the rail access in large gauge (1.60 m), branch line Japeri/Brisamar, operated by MRS. Although the large gauge line serves to the most important part of the port, it is desirable the existence of metric gauge so that the freights can reach directly greater consumer market, notedly the State of Minas Gerais, through FCA.

The rail access to the Port of Angra dos Reis is accomplished in metric gauge, through the branch line Barra Mansa/Angra dos Reis, operated by FCA. Angra dos Reis is the exporter of steel products and granite, from the south of the States of Rio de Janeiro and Minas Gerais, and the north of the States of Goiás and São Paulo. It is also wheat importer to furnish the Sul Fluminense Mill. FCA also gives access to the ports of Vitória, Rio de Janeiro, Aratu and Salvador and, recently, Santos. Inputs and agricultural products are the main products transported by this company. MRS also has access to the ports of Santos, Rio de Janeiro and Itaguaí. Lately, the containers transport by MRS increased 25%, although still below the potential, even if it is about the biggest railroad operator in the containers transport. The main products transported by MRS are ores and steel products,

The Companhia Ferroviária do Nordeste (CFN) has access to the ports of Itaqui, Pecém, Fortaleza, Natal, Cabedelo, Recife, Suape and Maceió. In the Southern Region, the ports of Rio Grande (RS), Porto Alegre (RS), Estrela (RS), Paranaguá (PR) and São Francisco do Sul (SC) rely on ALL's rail access. The inputs and agricultural products are the main freights transported by ALL, with a distinction to the soy bran. Thus, the existence of different railroad operators in the same regions, which offer access to the nearest ports,

opens up the possibility as for competition for freights as for the interconnection among the operators. Nevertheless, these possibilities have been little explored by the railroad operators and by the railroads regulators.

Besides the low freights traffic among the different operators' lines, there are difficulties as for the rules for the operators conjoint operation in the rail accesses to the ports. Over the last years, measures have been implemented for the purpose of facilitating the operations among railroads, with distinction to:

- Resolution 895, of May 15, 2005, from the National Terrestrial Transport Agency (ANTT), settling procedures of mutual traffic operation and right of passage, aiming at the railroad system integration; and
- In 2000, in the Port of Santos was constituted a company – Portofer – for operating around 200 km of railroads in the port's area. Codesp signed with the railroads consortium which has access to the Port of Santos – Brasil Ferrovias and MRS Logística – a leasing contract for the port's installations, equipment and railways operation and maintenance, for the period of 25 years. Consequently, there was a reduction from a hundred to fifty hours in the permanence time of the wagons in the port. The access regulation of the different railroad concessionaires to the Port of Santos areas is still problematic, but many advances can still be obtained.

Besides these measures, some punctual interventions are necessary, like: the construction of railroads U-turn in certain cities, like São Paulo, Belo Horizonte and Cachoeira de São Félix; the improvement of the access infrastructure to the ports; the elimination of passageways in level (viaducts and tunnels), total land requirement impediment and the construction of footbridges in the urban areas; and the resettlement of families derived from the encroachments. Among these inversions, the most relevant one is perhaps the construction of the north section of São Paulo's Rail Ring, able to foment the competition among the Port of Santos and the ports of Rio de Janeiro and Itaguaí, which present higher idleness in relation to Santos. The north section of São Paulo's Rail Ring must link Campo Limpo and Engenheiro Manoel Feio and avoid that trains cross the city of São Paulo. The work involves the construction of a mixed gauge line, which will allow the passage of metric gauge and large gauge trains with extension of 63 km. In short, the main problems pointed to the Brazilian port system can be enumerated as follows:

- Limitations on the access channel and need for constant dredging for bed deepening;
- Several road railways restrictions/bottlenecks still persist in the accesses to the ports;
- Low level of investments from the Port Authorities in the last ten years: by right of the Ports Law, the public investments were limited to port infrastructure, being beyond the sector's needs, chiefly concerning dredging; a solution must be given to this problem; and
- Restriction of the Docks Companies' investment capacities due to the commitment of the revenues with notedly labor and actuarial liabilities.

It also concurs for this situation the fact of the Brazilian port system bears, nowadays, two distinct realities – the specialized terminal one and the pier for public use one:

- The specialized terminals obtained productivity gains as a direct consequence of the equipment modernization and the adoption of more efficient methods and processes of freights movement. It can even be stated that they are

comparable, in efficiency, to the foreign terminals of same capacity and may excel them when certain punctual issues are solved, such as the problem of the detached work teams' dimension required to the Labor Management Organs – OGMOs, accesses improvement, greater feasibility of the cabotage system, etc.;

- The situation in the public pier, administered by Docks Companies, in many cases, is of obsolescence and bad condition of the equipment and installations, which requires interventions to change, in time, such scene.

On the other hand, it must have special attention the possibility of future commitment of the loading capacity, once the port system should be already promoting inversions in docks with appropriate depth in the public ports terminals, with improvements and increases of the capacities of the terrestrial and maritime accesses. The preoccupation as for the maintenance of the port capacity vis-à-vis the exigencies of the expected demand is of essential importance to the country. To this purpose is suitable to reinforce an issue of primordial importance: the existence of self-sustainable and financially healthy Docks Companies, with efficient administrative management, turned to the port's development, is an essential factor to the development of the Brazilian port system. Another factor which, many times, represents restriction to the good functioning of the port is the degree of efficiency and interaction of the necessary bureaucracy in the international trade operations. In this way, it is registered that while the great majority of the ports and terminals operate continuously, 24 hours a day, almost all the port agents operate only in working time.

It is appropriate to remember that the transport modals in the country have a notorious unbalance, with still limited participation of the railways and waterways in the freights transportation in general, although the perspective of participation in the rail modal of the transport matrix in Brazil is growing, as the cabotage one, in benefits to the port operations. It is registered that the investments in port, rail and road infrastructure – mainly the access to the ports one – must be a priority to promote greater efficiency of Brazil's transport matrix and avoid the ports' congestion. It is expected the operational costs reduction, greater accessibility (of vessels and terrestrial transports) to the ports and, consequently, the reduction of the ship waiting time, in benefits to the growth of the national competitiveness.

In the transports sector, the technological changes are presented not only as modifications of the physical standards of the systems capacity, but also by improving the associated technologies, mainly in the information technology area. Among the most relevant technological changes, it is appropriate to highlight the unitization process of freights classified as general. The technologies of freights unitization (containerization) create opportunities for a transports logistics market.

The commercial freights ships receive constant technological modifications and enlargement of their dimensions in the search for economicity for the costs of the transport per transported unit. It results in the need for adequacies in the ports infrastructure to serve this evolution. The technology creates opportunities as for the terrestrial modals as for the navigation trade. This is intensified besides the international trade in the event of an incentive to the process of internal supplying, mainly in what is transported through cabotage.

Factors linked to the insertion of the communication and associated technologies also appear in the sector as modifications of its functioning and, consequently, create new relations among the actors involved, and that in essence are linked to the concepts of systems with economic efficiency. The use of information technologies in the transport operations is essential for the competitions to stimulate the best customer service to the

user. The agile and dynamic dissemination of the information on the transports services offer creates opportunities and changes in the customer service standards, which influence and benefit its accomplishment.

In this context, and not only for the freights transport, the technological renewal of the systems and equipment of support to the management of the air, maritime, rail and road traffic, increasing its efficiency and competitiveness, arises as a need for modernization of the world markets. That stated, it can be dome the following general considerations for the freights transport sector: the enlargement of the containers use tends to transfer to the railways part of the general freights transport moved through the highways, which demands the expansion of the rail sub-networks; this enlargement creates opportunities for the installation of new intermodal logistics centers; the information technology enables higher precision in the control of times and routes associated to the freights, integrating the transport in a productive chain, with costs reduction; and the combination of logistics centers with information technology can take to new concepts of logistics and transports, generating optimizations of the routes among cities and regions, and those accomplished through the urban ways.

2.5.4 Brazilian's Air Transport System

The air transport in Brazil has been growing in the last 10 years, with new companies and new routes emerging, as in the domestic (regional and national) as in the international sections. With the growth of passengers' transportation, the freights transport is also developed, for the companies, in general, use the same aircrafts to transport passengers and freights. Around 70% of the air freights are transported in mixed flights and the other 30% in freight aircrafts (ABSA, 2007). In the country, from the active companies, out of the 25 that operate regularly, 20 accomplish the freights and passengers transport (ANAC, 2008). Besides these, there are 5 air freight companies. In spite of this, the freights movement only represents 0.4% of the national transport matrix, for being about transporting high aggregate value products, in most of the cases.

Now the airport infrastructure, national and worldwide, has been going through adjustments in the last years, due to: the reduction of the urban areas when there is the need for enlarging freights and passengers terminals; the growth of the aircrafts dimensions; the environmental exigencies increasingly rigid; among others. The current Brazilian airport infrastructure is made up of 67 airports administered by Brazilian Airport Infrastructure Company – INFRAERO and by approximately 3.5 thousand aerodromes. Besides INFRAERO, which represents the Federal Government, the aerodromes can be managed by the States, Cities and private owners. Brazil's airports have 34 Freight Logistics Terminal, in 32 airports, administered by INFRAERO, as shown in Figure 2.62. The main terminals in freights concentration in the country are located in the International Airports of São Paulo/Guarulhos, Viracopos/Campinas, in São Paulo, and International Airport of Manaus and of Galeão, in Rio de Janeiro.

Figure 2.62 – Location of the Freight Logistics Terminals – Brazil

For the fact of Brazil being a country of continental dimensions, with the population irregularly distributed through the territory, in some regions the air transport is the only option of access. The great existing bureaucracy for the air freights is a disadvantage of the use of this transport mode, due to the waiting time in the customs, the freights transshipment from the aircrafts to the warehouses and the posterior return to the aircrafts, among others (RODRIGUES, 2005). Even though, it stands out that Brazil has the main conditions to be one of the greatest air services supplier in the world, considering its territorial extension which retains potential market with good airport infrastructure and very experienced air companies. For such, the policy formulation and the reformulation of the regulating actions to serve them are essential elements in the future strengthening of the sector.

2.5.5. Argentinean's Logistics Infrastructure System

The air transport of freights in Argentina has a scarce representation in the country's international trade transport. In dollars, its participation was 12.5% in 2002 and fell to 9.1% in 2005. In the same year, measured in tons, did not get to 1%.

The chemicals (pharmaceutical), textile, processed leather and electrical machinery represented, in terms of dollars, 80% of the exports through the air modal in 2005. The main destinations of the Argentinean exports through air are the United States (32%), Europe (28%) and Brazil (15%), reflecting the strong correspondence among the participation of the air cargo until these locations due to the frequency of the passengers commercial flights, which are used to accomplish the freights transportation (WORLD BANK, 2006). It stands out that the offer of transport of the air cargo in Argentina is, largely, a residual offer. As for the air companies the priority is the passengers transport, first it is determined the maximum amount of passengers in each flight and then it is defined the cargo that can be transported. It is estimated that 90% of the export air cargo is transported by passengers' airplanes, while 30% of the import air cargo is done in freight aircrafts. Currently, 23 national and international companies perform in the air cargo market (TCA, 2010).

Regarding the imports, considering the total transport through the air mode, between 2000 and 2005, this represented 70% of the total movement, measured in dollars. Besides reflecting in the variations of the economic cycle, the imports through air have stimulated the evolution of the total imports. In the same period, the participation of the air mode has remained stable, around 20%. The legal regime of the freights air transport in Argentina does not represent restrictions to the market development. The rates can be freely determined and there are no bilateral or multilateral agreements restrictive to the freights movement. A decisive variable for the freights' air market development is the presence of an efficient infrastructure. The legal monopoly of storage and manipulation of export and import goods, granted during the concession of the National Airports System, has improved the services quality, compared to the services rendered before the concession.

Despite the fast reaction of the offer, the demand for air cargo in Argentina is lower than in other economies of Latin America, especially regarding the exports. The main reasons that explain this phenomenon are: the reduced scale of demand, the characteristics of the cargo generated in the country and the competition with the maritime modal (which has improved the services and reduced the rates). In short, the weak development of the freights air transport market in Argentina is explained by the characteristics of demand, which in last instance is the reflection of the Argentinean exports composition, which has mostly found in the maritime transport an efficient and economic way (WORLD BANK, 2006).

2.6. Analysis of the Opportunities, Obstacles and Barriers to the Trade between Brazil and Argentina

Considering the parities established by MERCOSUR, mainly for the trade and transports between Brazil and Argentina, the natural question that must be asked is: "*what is missing to Brazil and Argentina consolidate themselves as a potential source of big flows of capital attraction in the shape of investments?*" And the answer clearly is: "*macroeconomic foreseeability and appropriate business climate, with application of logistic mechanisms and integrated transports*."

In fact, Brazil and Argentina have been characterized, over the last 15 to 20 years, by the enormous difficulty of the economic agents and of the individuals in general in

foreseeing the future and making plans with a minimum security. In the Brazilian case, we had the high inflation of over 200% per year until 1986; five unsuccessful stabilization plans in the following five years; the confiscation of the Collor Plan in 1990; real interest rates of 22% per year in the first FHC Government; the uncertainties associated to the Mexican crisis in 1995, Asian in 1997, Russian in 1998, Brazilian in 1999, Argentinean in 2001 and again the uncertainty, this time electoral, in 2002, with two threats of the return of the inflation, in 1999 and 2002/2003.

Now, in Argentina, ; the high inflation during all the 1980s; several stabilization plans also unsuccessful; three outbreaks of inflation between 1989 and 1991; the threat of the end of convertibility in 1995; the return to this same atmosphere during the period 1999-2001; a chaotic way out of it in 2002; GDP contraction for 4 consecutive years between 1998 and 2002; and more the Bonex plan and the moratorium of the external debt. Even with the inflation rates relatively lower in the last years, the countries did not get to create an environment of full stability yet, understood as a situation in which the citizens are confident in the future and in the respect to what the Northamericans and British denominates rule of Law (prevalence of the legal rules) and the rules duration.

It is understood that in this last decade, with the democratic strengthening of both countries and the natural growth of their economies, the trade between Brazil and Argentina started to be done more naturally, thus characterizing the real advance for a real free trade zone, inside the concept established among them and the other countries members of the MERCOSUR.

It is understood that in the trade accomplished among MERCOSUR countries and particularly between Brazil and Argentina, the rate and legal issues result in barriers and obstacles as much as the dynamics of the transports systems in operation.

In this way, it stands out in relation to the first aspect mentioned that the MERCOSUR, after executed the transition stage in the period 1991/1994, came into operation in 1995, with a common external tariff (CET) whose full legality is foreseen to 2006. Meanwhile, the countries-members have, at times, taken initiatives that “perforate” the TEC, based on macroeconomic arguments.

For such, they have searched their partners’ approval, which almost invariably end up countersigning the demands for those measures. Nevertheless, the costs of this additional protection have been, in general, taken by the interested country, allowing to avoid regional conflicts due to these measures, which flexibilize the rigidity in the CET application imposed by the customs union.

From 2001, the changes in the rates promoted by the Argentinean government, mainly on capital assets, followed by the Uruguayan government, have provoked discussions about a contingent rate reform in the MERCOSUR or, even though, the replacement of the present customs union by a free trade zone, what would permit to each country-member autonomy in the conduction of its commercial policy. Particularly in the trade between Brazil and Argentina, unilateral measures, historically practiced by both countries, have significantly affected the evolution of the commercial relations. These issues interfere in the advance of the commercial relations, and to a certain extent can be classified as impediments to the trade between these countries. As for the aspect related to the transports systems, main focus of this report, it can be assured that the dynamics of the transports operations of each country appear to a certain extent as barriers to the commercial relations.

In this context, and considering the geographical characteristics, as Brazil as Argentina concentrate its economy regionally, considering that their dimensions and distances

among consumer markets influence in the decision about the transport modal (Junior, 2007). This choice falls predominantly on the road modal, be for the historical policy of these countries for the roads privatizations as main means of transportation, be for the facility of freights capture, in both countries, it prevails the truck's use. Currently, the road transport sector in Brazil and in Argentina is significantly fragmented, with autonomous truck drivers representing 65% and 70% of the total fleet of trucks of Brazil and Argentina, respectively. Besides, the average age of the fleet of trucks in Brazil and Argentina is high, 19 and 19 years respectively, if compared to the 8 years, in the United States (Junior, 2007). Part of these fleets crosses the border between Brazil and Argentina, by the facility of the road transport system, so avoiding the intermodality. This condition of the road transport of goods has an excess of offer, making the freight value to be low, however, paradoxically, the road transport is extremely expensive (taking the set of goods transported) to the society as a whole, therefore there is also the necessity of solving as much the freights rail transport problem, as the road one (Junior, 2007).

Currently, the Brazilian and Argentine railways are conceded, and such concessions did not promote (for they were not foreseen) enlargements of the rail networks, getting, both, limited to the infrastructure maintenance targets, equipment modernization, increase of the efficiency next to the users and growth of the transports production, which to a certain extent was reached by the freights rail system of Brazil, what cannot be said, to the same extent, on the freights rail system of Argentina. These networks serve basically to the national connection with the maritime port system of each country, for the predominant transport of bulks turned to the exportation. In Brazil, part of this network also serves as a way for the transport of raw material to the heavy industry, mainly in the transformation of the iron ore. Thus, the rail connection between Brazil and Argentina, when it occurs, it necessarily passes through transshipment of freight, due to the differences of gauges existing in these countries' networks. Effectively, the rail axle that links both countries happens, for the Brazilian side, through the city of Uruguaiana, in the State of Rio Grande do Sul with Paso de Los Libres, in the Province of Corrientes, by the Argentine side.

This confirms, in terms of terrestrial transport, that not only by the excess and facility of the road operation and transport in these countries, but the lack of infrastructure and integration of the other transport networks between Brazil and Argentina, strengthen the intensive use of the road modal, and the increase of the transports costs associated to it. It is appropriate to highlight that the designs of these networks are old, they have innumerable interfaces with urban areas, resulting in average speeds of the trains below the world standards, and their interconnections with the port systems that, in general, is inserted in urban areas around the ports, need investments for enlargement and improvements.

In Argentina, freight transport has recovered significantly, reaching the highest levels of activity in 5 decades. Regarding the fluvial and lake system, that end up integrating itself in the existing waterway corridors, the transports policies do not favor the use of this modal, and the rail concessions do not have effectively necessity of using it, using up on their own tracks, the contracted transport services.

Debates on the increase of investments in rail, and in Brazil also waterways, are commonly associated to the speeches of transports costs reduction. It is appropriate to say that such measure, given the territorial conditions, of transport production, consumption and opportunity is true for certain kinds of products. For some kinds of goods and their production characteristics and trade, the road, air or mail modal

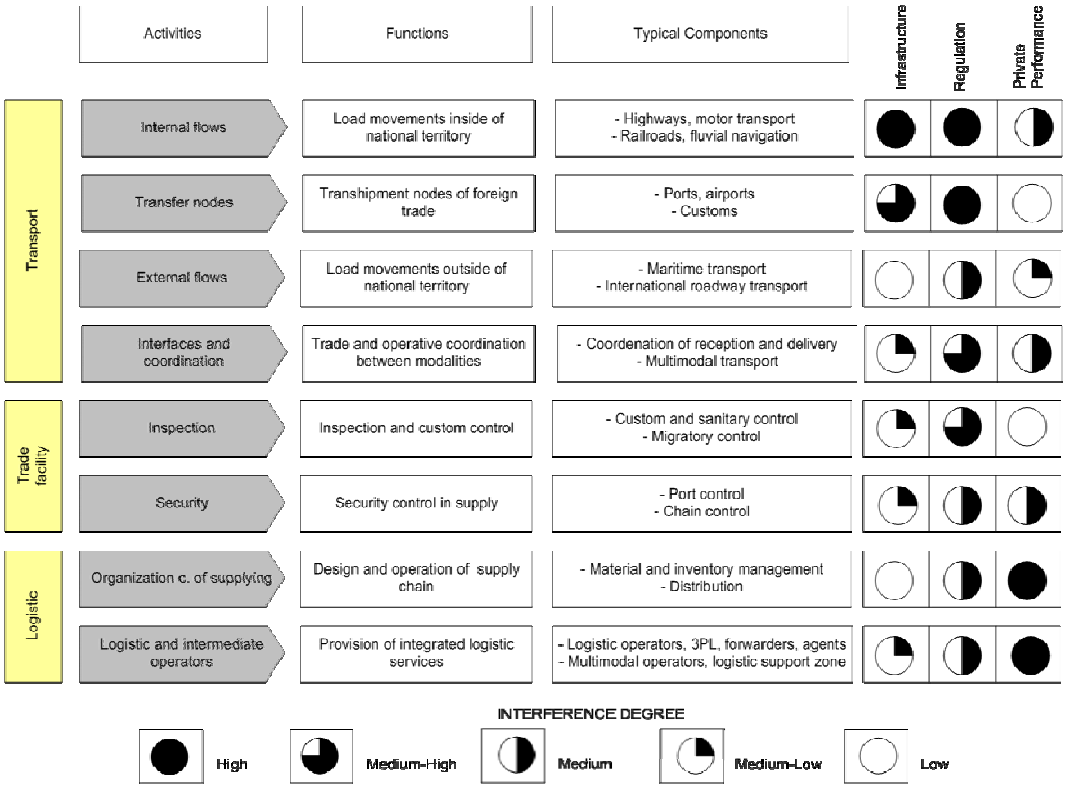
becomes effectively more economic. In this context, in terms of transports between Brazil and Argentina, it is understood that the changes in the sources of transports by group of goods is the best way of producing, in a long term, effective benefits as for the transports services costs.

Another preponderant factor in the optimization and intensification of more economic transports modals and the increase of the unitized freight operations, that is, the increase in the use of containers, not only through the maritime modal, but mainly through the terrestrial and waterway modals. In the commercial relations of Brazil as much as of Argentina, the evolution in the use of container are also showing the limitations of the maritime structures, not only by the number of containers transported but also for the need for enlargement of the ships and consequently the logistic mechanisms and the port infrastructures in the maritime services of Brazil and Argentina.

According to a World Bank study (2006), the Argentine rail system currently handles about 75,000 TEUs/year, that is roughly 5% of TEUs goinf trough port terminals around Buenos Aires. As mentioned above, traffic recovery has been a consequence of the expansion of agriculture. This has re-positioned rail infrastructure around the *Rosario* area, which is one of the biggest vegetable oils production centers in the world. Rail traffic, as well as plans for capacity expansion, are mainly related to Rosario. As much as Rosario bulk shipments, port terminals the greater Buenos Aires` area 90% of container shipments.

Thus, considering that such aspects mentioned to Argentina are repeated in Brazil, as for the bulks as for the containers transport, the lack of investments and modernization in the rail-port systems produce raise of the transports costs for the international trade of these countries, also reducing the competitiveness of the railways in relation to the road transport services.

Reinforcing the previous observations, it is still taken as basis the World Bank concept (2006) about the physical movement of goods, which suggests that this is conditioned by several factors summarized in three groups: (i) transports infrastructure and services, (ii) companies organization, and (iii) the public sector organization regarding the commercial facilitation and the security of the international trade flow maintenance. Each of the defined groups contains several components, that relate in a systemic way, as it is shown in Figure 2.60 In this Figure can be identified the main activities comprised by each of the components, the main functions and the typical elements that integrate each activity. This concept of the factors involved in the flow of goods show that the analysis and proposals should not be limited to the obstacles that the infrastructure may present, but also should consider the rules and procedures that rule the services, and that the performance of the logistic system in the country obey as much the public sector as the private sector acting. The Figure 2.63 shows, in each of the defined activities, the incidence that the infrastructure provision, the rules and regulations and the performance of the private sector have on them. It is possible to observe still the diversity of instrument of public and private category that converge to define the logistic system competitiveness. Frequently it is considered only the infrastructure supply as determinant factor, putting aside the multiplicity of factors involved.



Source: WORLD BANK, 2006

Figure 2.63 – Conditioning activities of the international trade freight movement

In this context, it is possible to divide into two the kinds of barriers to the trade between Brazil and Argentina, that is, those related to the deficiencies of the terrestrial transports systems of each one of these countries that interfere in the ports functioning and, consequently, of the maritime transport, responsible for the greater part of the goods transported among them; and the issues of the networks modal integration that links Brazil and Argentina border by land and navigable ways.

In relation to the multimodality, besides the two kinds of barriers mentioned, there is a third element that is associated to the transports as much as to the legal issues not solved in the legal framework that rules MERCOSUR relations and the other existing agreements of Brazil and Argentina with other countries yet.

It is about the rate policies practiced by these countries, that besides needing for a general reform, do not permit for the commercial transactions, even if characterized the multimodality practice, the exemption of taxes in the transports which avoids the bi-taxation.

The freight transference, even with an only list of freight, does not necessarily avoid that doubled taxes be paid. Thus, one of the most relevant aspects for reducing the barriers in the intermodal transport in the South America continent is related to the institution of fiscal rules that permit the practice of inter and multimodality, without the doubled fiscal charge for the freight transferences.

Soon, even if investments are applied in the transports systems to improve the capacity of the ways and increase the conditions for the practice of multimodality, the fiscal aspects on the transports services can inhibit considerably such practice. After all these considerations, related to multimodality practices in Brazil and that has similarity with Argentinean transportation, in showed aspects, Table 2.33 resumes main obstacles and barriers, identified in results of this study.

Table 2.33 - Main Obstacles and Barriers

ASPECTS	DESCRIPTION	HINDRANCES AND BARRIERS
Legal	Even with the multimodal legislation published since 1998, with the edition of Law n. 9611, only in 2005 the multimodal transport operators - MTO became qualified to operate through the National Terrestrial Transport Agency - ANTT.	Even with the formulation of all these laws and the homologation in Brazil of 357 multimodal transport operators - MTO, from which 142 are authorized to perform in the trade of the MERCOSUR member countries, none of them operates with the issue of an only document, due to the hindrances caused by the tarifary policy effective in Brazil.
	Law n. 9611 defines the performance scope (national or international) defining the freights multimodal transport's document issue, which characterizes the contract and the operation regulation.	
	Law n. 9611 was regulated by Decree n. 3411 in 2000, where it was established the regulation for the multimodal transport operators - MTO qualification.	In this context stands out the international freights transport where the Brazilian Federal Revenue authorizes only the customs dispatcher, registered as physical person to proceed with the legal channels for the clearance of cargo, which incapacitates the MTO who is registered as juridical person.
	With the creation of the National Terrestrial Transport Agency - ANTT, the Decree n. 3411 was changed by Decree n. 5276, in 2004, and complemented by Resolution ANTT 794, also edited in 2004, which defines the need for consulting the other transport regulating agencies to manifest about occasional hindrances.	
	The multimodal transport operator, originally qualified in Argentina, Paraguay and Uruguay, has to present to the National Terrestrial Transport Agency - ANTT, driving license in the origin Country, as well as certificate of legal representation in the Brazilian territory.	To this issue is added the fact of a multimodal transport operator not be recognized by the Central Bank of Brazil yet, which hinders that this execute operations directly with foreign countries, for the impossibility of registering financial remittances from foreign countries.
Tributary	The multimodal freight transport has its main characteristic based on the issue of only one transport document, named: Multimodal Cargo Transport Way Bill - CTMC, foreseen in Law n. 9611 of 1998.	Even with the legal support and multimodal transport regulation, it is around the document Multimodal Cargo Transport Way Bill - CTMC, that are the hindrances to multimodality, highlighting the state bi-taxation (unconstitutional practice), with the tax on circulation of goods and services, with the CTMC issue and the fiscal document Transport Way Bill for each modal involved in a multimodal transport.
	The Multimodal Cargo Transport Way Bill - CTMC depends, in Brazil for its use, on the regulation by the National Council on Treasury Policy - CONFAZ, so that it is recognized as a fiscal document, which was achieved in 2003. Notwithstanding, the regulation has not excluded the obligation of issuing the Transport Way Bill - CT, for each modal, separately, involved in a multimodal transport operation.	Another relevant fact is the inexistence of definition of which rate must be adopted for the tax on circulation of goods and services.

ASPECTS	DESCRIPTION	HINDRANCES AND BARRIERS
Regulation	The Decree n. 5276 preconizes that the responsibility for the multimodal transports operators - MTO homologation is under the responsibility of the National Terrestrial Transport Agency - ANTT, whose conditions for qualification are defined by Resolution ANTT 794.	The role of the regulation in the adjustment and/or repactuation of the concessions' contracts were not dealt yet to support the multimodal transport operations, i.e., there are no movements from the regulatory agents to promote actions directed to the conceded infrastructure considering the adequacies and enlargements of the integration centers to increase the possibilities to the practice of multimodality.
	The concession of almost the totality of the freights transport rail network, whose contracts do not foresee obligations to the installation of terminals to enlarge the modal integration have not gone through adjustments and/or repactuation to support practices of the multimodal transport.	
Transport Infrastructure	Defined in terms of ways, by the National Road System, which is equivalent to the national transport network, which includes the ways of all the terrestrial and water modals existing in Brazil.	The inexistence of the fluvial navigation in most of the Brazilian waterway segments inhibits the options to the multimodality.
	The intermodality system is characterized by the logistics terrestrial terminals of freights transshipment, customs, ports and terminals, maritime and fluvial, fuel distribution centers by pipes, among others, characterized by specific points.	The stagnation of the distribution and extension of the national railway network limits the options of integration of this modal with the other modals and mainly with the road modal.
		The operational conditions of the maritime port system, mainly concerning the terrestrial and port retro area accesses, inhibit the increase of the intermodal integration which affects the multimodality.

3. IDENTIFICATION OF CURRENT LEVELS OF EU-LA TRANSPORT BUSINESS AND TECHNOLOGICAL COOPERATION

The Strategic Partnership among the European Union – EU and the Latin America – LA countries was signed in Rio de Janeiro in 1999. Natural allies with strong historical, cultural and economic liaisons, both regions collaborate closely at the international level and keep an intense political dialogue at all levels – regional, sub regional (Central America, Andean Community and MERCOSUR) and also increasingly in the bilateral plan. The political priorities of the EU in relation to the Latin America were defined in the document "The European Union and the Latin America: a partnership between global protagonists" (2009), it is given more attention to issues as: macro economy and financial subjects; environment, climatic changes and energy; science, research and technology; migration; and, finally, employment and social issues (CCE, 2009). The political dialogue with the Latin America countries was reinforced thanks to the organization of five Conferences between European Union – Latin America//Caraíbas (Rio de Janeiro – 1999, Madrid – 2002, Guadalajara – 2004, Viena – 2006, and Lima – 2008). The European Committee's proposal of a renewed strategy bound for reinforcing the strategic partnership between European Union and Latin America intends to intensify the political dialogue between the two regions, stimulate the economic and commercial exchanges, encourage the regional integration and the fight against the inequalities and better adapt its development cooperation and aid policy to the Latin American realities (CIEJD).

3.1. Objectives Cooperation between the European Union and MERCOSUR Economic Blocs

The relations between the European Union and MERCOSUR are based upon the text of the Interregional Framework Cooperation Agreement signed in Madrid, on December 15, 1995. Into effect since July 1999, the document establishes the negotiation bases of a future Association Agreement between EU and MERCOSUR. The Agreement has as objective to conduct to the liberalization of the trade of goods and services, according to the rules established by the World Trade Organization (WTO) and reinforce the cooperation and political dialogue between the two blocs (CIEJD). The respective document comprised objectives of approach and cooperation in the several economic areas, namely: trade, environment, transports, science and technology, among others.

To go on with the respective agreement, it was necessary to create a basic institutional structure, in the meaning of facilitating the meeting of the objectives brought up, composed of the Cooperation Council which will supervise the agreement execution; by the Cooperation Mixed Committee (executive organ of the agreement) and by the Commercial Subcommittee (technical organ in charge of negotiating the future commercial liberalizations). Several meetings were accomplished between these two economic groups, as much in the economic as in the political plan. The first meeting of the Mixed Committee between European Union and MERCOSUR, occurred on June 11, 1996, in Brussels. The Commercial Subcommittee between these groups gathered in

Brazil on the days 5 and 6 of November, 1996. In Brussels, 1998, the IV Meeting of the Commercial Subcommittee, put on the agenda the diagnosis of the relationship between the two groups, technical requirement that would antecede the evaluation and definition of a negotiator mandate for future demands on a deepening of the Agreement's objectives.

The respective project, properly approved contemplated the development of a political partnership, as well as the strengthening of the cooperation activities, and more, the creation of a free trade zone, in which it should consider the sensitivity of determined products, so that they could meet the rules established in the World Trade Organization (WTO). Nonetheless, the issues discussed generated divergences from the European Union, chiefly by France, which questioned about the opening of the European agricultural market to MERCOSUR products, and still, claimed problems of strategic relations of the European Union negotiations, remaining, only, the European proposal of mandate until June 1999.

In that time, State and Government Chiefs of MERCOSUR and European Union, launched several negotiations on the issue of the commercial liberalization between MERCOSUR and European Union, highlighting, the approach of positions between the two regions. The subjects of the negotiation would comprise the agricultural, industrial and services sectors. Furthermore, the two groups would adopt the principle of the Single Undertaking, where the aforesaid Agreements derived from these negotiations would be implemented together by these both together, excepting the sensitivity of certain products and services.

In November 1999, by means of a meeting of the Cooperation Council and the Conjoint Council, foreseen in the Framework Agreement between European Union and MERCOSUR, they gathered to talk not only about calendar, but also, about the structure and methodology of the negotiations. During the first meeting of the MERCOSUR – European Union Cooperation Council, it was taken notice of the results aimed at the negotiations for the definition of the calendar, methodology and structure of the negotiator process of the Interregional Association Agreement, so that, at last, the negotiations could come into operation. Due to this meeting, it got clear, once more, the position of France regarding the agriculture, this has caused the MERCOSUR – European Union Birregional Negotiations Committee participation just to decide about the subject.

Even though the results have been promising, in the final text there was no hint with respect to the negotiations in the agricultural sector. In their conclusions, the subjects were divided into three groups: Political Dialogue, Cooperation and Commercial Issues. In the commercial area, three technical subgroups were created, namely:

- GT1: Trade of goods, including tariff and non-tariff measures, verification of conformity, antidumping, compensatory measures, origin rules and customs procedures;
- GT2: Services, intellectual property and investments;
- GT3: Governmental purchases, competition and solution of controversies.

For all these divergences occurred and for more that the European Union has inspired the creation of the MERCOSUR, it is proper to recognize the deep differences between these economic axles. The main reason of this antagonism is the fact of the MERCOSUR would preconize the installation of a common market, through a customs integration and a free circulation of the goods and people, while in the EU would have the purpose of economic and monetary union, besides the achievement of an economic and political integration. Other distinct determinative factors which took to the association where

from the Europe side, it would fall on the post war conjuncture and in the Southern Cone the globalization and interdependency conjuncture.

There are still the structural and organic factors in which MERCOSUR is based on the principle of the inter governability and the juridical and functional equality of the Member States while the European Union is based on the institutionalism and in the principle of the proportionality and functional inequality of the Member States. It is required, talking about a geopolitical reality in the current world, the adoption of long extension and depth measures in the integration process, since the two regional blocs are in advanced stages of consolidation, that is, the European Union is already organized, reinforced with the incorporation of the Eastern Europe countries, and MERCOSUR, in accelerated proceeding in the transformation and solidification process, becoming strong with the possible ingress of Chile and Bolivia.

On the business field, it is highlighted the phenomenon of globalization, which will allow the opening of barriers for the accomplishment of new businesses, under the rules settled by the WTO and OECD, mainly. In this same standard, the economic relations between these economic blocs are remarkable, and that grow narrower and narrower, allowing a development process of these regions, with growing potential for businesses. Actions that aim at the cooperation between these blocs are getting more intense, and, in this way, Brazil will be able to play an extremely relevant role, for having greater influence in MERCOSUR.

The commercial relations of MERCOSUR with the European Union depend on the negotiations for access to the market in the agricultural and cattle raising sector of the called Doha Round of the World Trade Organization. Then the necessity for reducing this protectionism, eliminating the technical, fitosanitary barriers and the curtailment by means of the unsuccessful import quotes, and, mainly, the issues of the subsides conceded by the developed countries to the production and exportation of the agricultural and cattle raising products. Several specialists in international trade illustrate clearly this subject that demonstrates the retreat of Europe and United States, when it is about the commercial liberalization process, market access and the elimination of the WTO and OECD technical barriers.

The situation tends to aggravate, since in 2004 there was the ingress of 10 new countries (Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) in the European Union. Even though the economic weight of these countries do not represent a very big volume in terms of representativity of the GDP, there will be an increase of the competitiveness degree, mainly in the agricultural and cattle raising sector. These new Member States of the European Union will receive a financing package of about €5 bi, just in the rural sector development, still having access to the Common Agricultural Policy – CAP and to the measures of market protection.

For over four years, the MERCOSUR and European Union negotiators have been defining the work plan to define the framework agreement to format the Free Trade Area between the two blocs. Among other subjects, it stands out: access to goods market, including the agricultural and cattle raising products (more important subject for the MERCOSUR); definition of the methods and modalities for the negotiation of services; consolidation of the texts in technical rules and regulations, defense of competition, general regime of origin, intellectual property, customs procedures and solution of controversies; business facilitation, evaluation of the implementation of Madrid's Action Plan (access to markets); definition of methods and modalities for the negotiation of governmental purchases and investments; rules, chapters of goods, commercial defense, services, electronics and investments; cooperation to the development; sketches of

proposals for a normative framework for the agreements in wines and spiritual beverages; exchange of impressions about methodology for impact evaluation about the sustainability; European Union enlargement impact.

It is urgently necessary to pull down barriers in the European Union for the products derived from MERCOSUR, since these barriers represent 30 kinds of rate defenses and several quotes of protection. In April 2004, the European Union presented proposals to MERCOSUR countries, in the meaning of serving the interest areas, mainly of Brazil and Argentina, in relation to the agricultural and cattle raising sector, involving bovine, swine and chicken meat, dairy products, dissolvable coffee, fruit juice, anhydrous alcohol ethanol and sugar, agreeing to rise the import quotes, rise the preference margins for MERCOSUR products or gradual reduction of the rates.

Another opening given to MERCOSUR countries is the access to the market of services and investments, autonomous services and the possibility of opening supermarkets from the MERCOSUR countries in the Region. Nevertheless, on the other hand, Brazil, Argentina, Paraguay and Uruguay would have to accelerate the reduction terms of the rates of products like electronics and telecommunications and the opening of financial services. It will be important to analyze in details the proposal, which products are included, terms of exemption, among other information and get prepared to the next meetings, knowing that the negotiators intention is to close the deal until October 2004. Therefore, even having interest and good will from the European Union member countries, there is a need of the business sector for analyzing in a coherent way the proposal of the export quotes increase, for imperiously, having an agreement in accepting such conditions, there could be serious consequences in the negotiations of the agricultural and cattle raising products in the WTO's Doha Round.

3.2. Cooperation between the European Union and MERCOSUR Economic Blocs

It is because of its territorial extension and for the wide diversity of natural resources that Brazil has an outstanding situation in the global scenario. Brazil so assumes an outstanding position also in relation to MERCOSUR, having a strong and lasting commitment among its members. It is noticed a growing development of the MERCOSUR which strengthens at each day the ties among the South American countries, even having diplomatic problems of MERCOSUR and to its capacity of promoting the interregional trade with other region of the world.

From the 1990s, Brazil has tried to externalize itself, opening doors for new possibilities of business with other countries, through a solid external policy, sustained in the logics of assuring the competitive insertion of Brazil in the world. In the last years, Brazil has become a protagonist increasingly important at world level and an essential interlocutor for the EU. This is demonstrated with accuracy when Brazil signed with the European Union, in 1992, an Agreement of third Generation, with clauses more complete than the ones established in the old Framework Cooperation Agreement.

The establishment of a strategic dialogue EU-Brazil has constituted one of the main objectives of the 3rd Portuguese Presidency of the European Union Council's program, made real in July 2007, in the first Conference EU-Brazil. Brazil is, therefore, the last of the "fast growth economies" (more than Russia, India, China and South Africa) to gather with the EU in a conference that launches a new framing of the relations between

European Union and Brazil as a strategic partner that can equally potentialize the strategic birregional relationship EU-LAC and MERCOSUR (CIEJD). This new Agreement aims at increasing the cooperation in the commercial, scientific and technological fields, foreseeing the possibility of consultations about commercial nature subjects of both parts interest.

On December 22, 2008, occurred the second Conference EU-Brazil in Rio de Janeiro. The leaders debated global subjects (as the strengthening of the multilateral system, climatic changes and energy and objectives of development of the Millennium and fight against poverty), regional situations and the strengthening of the bilateral relations. It was still adopted the conjoint action plan – "framework" for concrete actions of the strategic partnership for three years. The EU is the biggest partner and investor in Brazil. It is also the greatest actor of cooperation in this country, namely in the academic area, in the Amazon's defense, in the fight against social exclusion and in technological initiatives (CIEJD).

The EU relations with Brazil are regulated by the Framework Cooperation Agreement between the European Economic Community and the Federative Republic of Brazil – signed on June 29, 1992 – and by the Scientific and Technological Cooperation Agreement between the European Community and the Federative Republic of Brazil (2004). Regionally the relations are conformed by the partnerships of the EU with Latin America and MERCOSUR. The EU is the first foreign investor in Latin America, the first financing entity of the region and, also, the first commercial partner of numerous countries, namely the MERCOSUR's. In 2007, occurred the Conference of the EU with Brazil, during the Portuguese Presidency of the EU Council. In December 2008 happened the second Conference (CIEJD).

Brazil has, moreover, a balanced and diversified international trade, as much in terms of destination and origin of the interchanges, as the composition of the guidelines. In 1996, 28% of the Brazilian exportations were addressed to the European Union, 22% to the NAFTA, 21% to South America and around 20% to Asia. The manufactured goods, among them even aircrafts are included, constituted around 55% of our exportations in 1996. The semi manufactured goods represented around 22% and the raw material around 23% of the total exportations. The sum of the exports and imports, in this same period, between Brazil and European Union, passed from US$ 14.7 bi in 1988 to US$ 31.7 bi in 1998, which represents a growth of 116%. Nevertheless, this growth happened in an unbalanced way between the two institutional partners.

The Brazilian imports of communitarian products grew 492% from 1988 (US$ 3.5 bi) to 1998 (US$ 17.05 bi) while the Brazil exports to the EU grew only 33,5% from 1988 (US$ 11 bi) to 1998 (US$ 14.7 bi). In 1999 the Brazilian imports fell to a degree of US$ 15.2 bi and the exports remained steady in US$ 14.1 bi, generating a commercial balance to the EU of around US$ 1 bi. According to FUNCEX (2000), in the period starting in 1993, year when it is launched the Brazilian commercial opening process, until 1999, the growth of the Brazilian imports derived from the EU was around 153% (US$ 6 bi in 1993; US$ 15.2 bi in 1999).

Such distortion of the trade flows' behavior between Brazil and European Union happens for the following reasons:

- Concerning the European Union exports, for the recovering of the Brazilian growth with an opening process and a favorable exchange of currency;
- Concerning the Brazilian exports, that in that time, Europe presented a low economic growth, not happening European market opening in sectors where

Brazil was competitive and, still, for the smaller dimension of the inter companies trade and for the higher complexity of the European market, presenting, therewith several rate barriers.

Brazil presented a period of ups and downs concerning the trade with the European Union. It was verified that in the period from 1988 to 1998, a drop trend towards the commercial balance of Brazil with the European Union, except in the period 1993 – 1994, when it was verified a significant increase of the commercial balance of 29%, that is, a jump from US$ 3.3 bi to US$ 4.3 bi. In the subsequent period, however, it would be registered the highest fall of the Brazilian commercial balance, as this would pass from the US$ 4.3 bi in 1994, to US$ 0.7 bi in 1995, that is, a sharp drop of 117%. As a consequence, these deficits, in the period 1995 – 1998 would continue to fall quickly. In 1999 this same deficit drew back, due to a setback of the importations of products derived from the European Union, as well as a slight increase in the volume exported by Brazil (FUNCEX, 2000).

Regarding the internal issues, the problems are similar. There is no interaction and neither a coordination of the economic policy instruments typical of more advanced stages of integration, not allowing, still, that egalitarian conditions of access to the European common market products arising from the countries incorporated to the agreement were guaranteed, bringing together the difficulties in its competitive position, and consequently, strengthening the asymmetry between these blocs' economy.

Another factor extremely important is the ingress of foreign capital in Brazil, which has grown exponentially, arising from several countries like USA, Canada, Japan, Korea, Chile, Taiwan and from the own European Union. There is, actually, a natural search from Brazil and the Southern Cone countries for a legitimate space, which allows joining the capacity of cooperation with the rest of the world, with the clear objective of searching the sustainable development. Nowadays Brazil counts on an important increase of qualities and attributes, which grant a new international profile. We have accumulated many conquers on which the Brazilian diplomacy only three or four years ago could not rely. The idea we have and the world is passing is that Brazil is becoming a big capacity country, becoming one of the most important countries of the economic and commercial axles of the developing world. This view clearly shows that Brazil represents an important and reliable political actor, able of defining trends and influencing decisively in the big international issues. Thanks to the inflation control and with the unquestionable support of the population, it is that the country has demonstrated every day its external image and credibility in its policies and its economic model.

Another important impact of the inflation is the country risk which reduced a lot, contributing for a qualitative and quantitative increase of the foreign investments in the country. The economic and commercial liberalization has been implemented since the beginning of the 1990s. There is a generalized feeling that these policies serve to many complementary purposes: offering more options, lower prices and better quality of the goods and services to the consumers; increasing the competition and productivity of the Brazilian economy; keeping the level of offer, to alleviate inflationary pressures; and permitting more direct investments, addressed to that strengthened market. But the fact is that we still have a long journey ahead until we fully achieve such objectives. The commitment with the commercial liberalization is evident. The import rates reduction, the economic stabilization and the privatization of state companies, in combination with the monopolies opening, provide important opportunities of businesses to the

international capital, increasing the interest for Brazil, multiplying the economic agreements and, therefore, getting much more negotiation power in our international relations. It falls to the Brazilian government to adopt more agile and effective measures in the meaning of avoiding and protecting these disloyal trade practices. This problem has been occurring since the 1990s when Brazil opened its economy to the international trade, putting an end to all the protectionist display which was not replaced by appropriate instruments to make head against the new reality of the freer and regulated by multilateral rules international trade.

3.3. International Trade Barriers in Bilateral Agreements

In the past, Brazil's economy has been marred by high inflation and instability. Recently, however, a major reconstruction of the economy has occurred including the privatization of a number of public agencies, the reduction of market barriers, the provision of a stable currency, and the attraction of foreign investments and foreign currency by maintaining high real interest rates. However, these reforms have resulted in large fiscal deficits for the central government and have contributed to a negative trade balance. In order to work toward a balanced fiscal budget, the government has instituted limitations on spending that has severely reduced discretionary spending, which may have long term consequences with an under-investment in infrastructure.

In hopes of reducing trade deficits, a number of trade barriers, including tariffs, quotas, duties, import licensing, and discriminatory governmental policies have been instituted. Each of these policies has led to significant barriers to trade. For example, tariff rates as high as 70 percent on some goods (including automobiles, motorcycles, and shoes) have made imported goods very expensive and reduced the demand for these goods. Quotas have also been used to reduce trade barriers for certain industrial goods (including automobiles) and on informatics products.

Other government policies that have created strong barriers are the sanitary and phytosanitary standards for agriculture products including chicken, beef, and sheep. Trade in the service industry has been limited by foreign capital restrictions provided under the 1988 Constitution. Furthermore, foreign legal services including accounting, management consulting, architectural, and engineering have been hindered by forced local partnerships and limitations on foreign directorship. Together, these policies have created significant barriers of trade to one of the largest Latin American economies.

The Brazilian government has also tried to reduce the trade deficit by encouraging exports through a subsidization policy. The Brazilian government has offered incentives such as tax and tariff exemptions for equipment and materials imported for the production of goods for export. Other incentives include excise and sales tax exemptions on exported goods, excise tax rebates on materials used in manufacturing export products, interest rate guarantees that allows exporters to gain financing rates that at world market rates, and incentives that allow exporters to be exempt from certain taxes.

On a positive note, Brazil has been part of a number of trade agreements. For example, Brazil is part of the Southern Common Market (MERCOSUR) partners, which has caused Brazil to lower their tariffs with member countries that averaged 14 percent in 1995.

Other agreements have been in the works with other Latin American countries that should reduce the barriers among Latin American countries.

Argentina has experienced strong growth in their economy in the last decade as the result of their efforts to reduce inflation and creating a stable currency. With its transition to a more market based economy, Argentina has created a more open economy with less barriers to trade. Argentina, along with a number of South American countries, established the MERCOSUR Agreement in 1991 with common tariff rates that ranges from 0 to 20 percent for different goods. This and other agreements involving Argentina have helped reduce the average tariff rates to all countries to less than 10 percent and has helped abolish the import licensing system. As part of these agreements, greater flexibility in the financial service industry has also occurred.

However, a number of barriers still exist. In addition, heavy tariffs and quotas have been established for specific industries including the automobile assembly industry. In order to become a truly open economy, these issues need to be addressed. A number of trade barriers have been employed in order to protect industries, to raise revenue, and to counter the barriers erected by other foreign countries. These barriers create a distortion of relative prices across countries and, consequently, distort individual consumption patterns and lower individual welfare.

Tariffs have been a means of protecting domestic industries and creating revenue for centuries. A tariff is really nothing more than a tax placed on goods imported into a country. Today, the average tariff rates across goods and across countries are between 10 and 15 percent and are not a significant source of revenue for most countries. However, tariffs still present a significant barrier to trade among nations. A quota, also referred to as a quantitative restriction, is a policy tool to restrict trade by placing a ceiling on the amount of a product that can be imported during a given period. As a result, the restriction will create artificially high prices on goods and reduce the amount of competition within that industry. A variation of the quota system is a voluntary export restrictions. An exporting country is asked to restrict their exports under the threat of explicit restrictions and trade barriers.

In general, the goods that have quotas placed against them are goods that the country does not have a competitive advantage in and yet they produce them. Because the country does not have a competitive advantage in the goods, the cost of producing the goods will be higher than the cost of other countries, and therefore, the selling price will be higher than the world price of the goods. In the end, consumers are the ones who suffer the consequences by paying higher prices for the goods that have restrictions placed on it. A duty is a tax imposed on imported goods by the customs authority. It is often applied as an ad valorem tax and is either based upon the value of the good or the weight or quantity of the good. A duty has a similar effect as a tariff in that it raises the price of imports and distorts the relative price of goods and consumption patterns. Therefore, duties create a consumer welfare loss.

Many third world countries try to be protective of their unstable and struggling economies. Therefore, they want to be self-reliant as much as possible to encourage their domestic industries. In an attempt to protect their domestic industries, third world countries will often create exchange rate barriers to reduce the flow of foreign currency, which reduces the ability of a country to purchase imports. Consequently, residents will be forced to purchase goods from domestic producers which creates an artificially diversified domestic economy that produces a number of goods for which the country does not have a competitive advantage. As a result, consumers will have to pay

a higher price on goods and services and resources will be diverted away from industries for which they have a competitive advantage.

Dumping occurs when a producer sells a product in a foreign market at prices below that of their own domestic market. Dumping could be just a strategy of a producer (predatory dumping practices), or it could be the result of foreign government subsidies. This will not only enable a domestic producer to crack the foreign market, it may, eventually, drive out competition in that foreign market.

Subsidies come in the form of grants, concessionary loans, loan guarantees, and tax credits that are provided by a government to provide financial benefits on the production, manufacturing, and distribution of goods or services to foreign markets. Once again, these subsidies distort the relative price of goods and distort individual consumption patterns. Furthermore, it is an anti-competitive practice that restricts the ability of foreign producers to compete in a worldwide market. Subsidies have been widely used in the agriculture industry.

Policies that are recognized as countervailing polices of trade can become protectionary policies as well. Trade policies such as anti-dumping, safeguards, and countervailing duties can be used to restrict trade and actually hurt free trade when these techniques are abused. When one country tries to retaliate against another country by using these policies, they can also create an escalating trading war that hurts consumers and producers of each country.

Many countries use what is referred to as "price bands" to restrict the importation of agriculture products. Price band is a policy instituted by the government that calculates the price range of a product from a time series analysis of international prices for that product. For example, a government may examine the prices of a product for a 60 month time period. Out of these prices, a portion of the highest and lowest prices will be eliminated. The remaining highs and lows establish the price band. If a particular country has low prices for a good because of excessive supply, their goods will have a higher tariff rate assessed to the product.

Beyond dealing with traditional barriers to trade based on tariffs and other protective measures related to policy trade issues, it is necessary to pay attention to other less visible "trade facilitation" issues such as transportation costs. The following numbers and conclusions are extracted from the Inter-American Development study: 'Uncloggin the Ateries. The Impact of Transport Costs on Latin American and Caribbean Trade':

Most Latin American countries transport costs are significantly higher than tariffs for both, import and exports, and considerably higher than those of developed economies such as Europe or the United States. This difference is mainly explained by factors related to infrastructure efficiency such as port or airport efficiency. The low degree of competition between carriers and inefficient transportation systems nationwide, including increased traffic congestion in major metropolitan areas also contribute to the high costs.

A 10% decrease in freight costs and tariffs would boost LA countries' imports by 50% and their exports by more than 60%. Even more, lower trade costs not only increase trade volume, but also produce sizeable gains in the diversity of goods being traded. That lowered transport cost would result in the increase of manufactures exports in Brazil, Chile, Colombia, Ecuador and Uruguay. In Argentina, in the other hand, the largest effect would be felt in minerals and metals export. In Bolivia, Paraguay and Peru, most of the gains would be in agricultural exports.

Putting transport costs at the center of the region's trade agenda will produce great gains in volumes and diversification of trade. To do this it is necessary to overcome inefficient transport networks and dysfunctional logistics which hurt LA countries' trade.

3.3.1. Customs Procedures

The growth of the trade flows among the countries members of MERCOSUR, as well as the continuity of the negotiations and technical meetings in the several areas of negotiation, there are still many problems and obstacles to the consecution of the objectives proposed, which demand the continuity of the studies and discussions for the implementation of measures of normative and operational nature and their respective internalizations by the countries which integrate the economic bloc looking for a greater facilitation of the operations for the consecution of the political and economic objectives of the countries integrating this market.

The International Freights Road Transportation in the scope of the Southern Cone is ruled by the International Road Transport Agreement – IRTA, which is about the aspects pertinent to the international transport by roads, railways, and the procedures related to the customs, migration, insurances subjects and general dispositions of the system operationality. The IRTA in Chapter I – General Dispositions, in its Article 10, establishes that the transport of goods accomplished under the international customs transit regime will be done according to the rules established in its Annex "Customs Subjects". In the Annex are defined the rules and procedures for the exercise of the customs controls by the Member States. In the set of the non-tariff barriers are included the hindrances so that the international transport of goods and products happens in a fast, safe way and at reduced costs. The obstacles to the facilitation of the road transport among the countries members of MERCOSUR, in a wide view, involve aspects as: documentation; inspection procedures; working hours; obligatoriness of the customs transport agents intervention; and little use of the house-to-house International Cargo Manifest/Declaration of International Customs Transit – ICM/DICT.

A survey done by the GEIPOT (2001) allowed better evaluating the critical issues of the Brazilian terrestrial border posts of São Borja/Santo Tomé; Uruguaiana/Paso de Los Libres; and Santana do Livramento/Rivera. In order to talk specifically about the low level of use of the house-to-house ICM/DICT, surveys were made next to the Federal Revenue Office in São Paulo, as well as the following ISCSs: Dry Port, Guarulhos/SP; Banrisul General Warehouses, Canoas/RS; and Multi General Warehouses, Novo Hamburgo/RS. The surveys of the GEIPOT (2001) were made through the accomplishment of interviews with workers of the inspection organisms and of the administration of the Border Customs Stations – BCS and ISCS, with dispatchers, with representatives of the associations of class and freight vehicles drivers.

The obstacles identified which involve the foreign organisms had the responsibility assigned to the Common Market Council, MERCOSUR supreme organ whose function is the political conduction of the integration process. In the other cases are shown the Brazilian organisms more directly involved with the problem. Table 3.1 presents the characterization of the obstacles identified in the execution of the international transport in the MERCOSUR scope, specifying the scope of its solution: if legal, institutional or operational.

Table 3.1 – Characterization of the obstacles

IDENTIFIED OBSTACLE		NATURE OF THE OBSTACLE		
SPECIFICATION	**CHARACTERIZATION**	**LEGAL**	**INSTITU-TIONAL**	**OPER-ATIONAL**
Documentation	Incomplete	-	Yes	-
	Incorrect filling (weight, numeration, etc)	-	Yes	-
	Delay in the presentation by the dispatchers	-	-	Yes
	Incompatibility among the operations register systems of the Member States	-	Yes	Yes
	Excess of documents and information	Yes	Yes	-
	Non-fiscal character of the ICM/DICT	Yes	-	-
	Complexity (amount of documents and information)	-	-	Yes
	Lack of standardization	-	-	Yes
	VAT	Yes	Yes	-
	Federal Revenue IL (Importation License)	Yes	-	Yes
	Certificate of Sanitary Conditions of Product Origin (Ministry of Agriculture)	Yes	-	Yes
Working hours	Working hours of the inspection organisms	-	Yes	Yes
	Bank working hours	-	Yes	-
Inspection	lack of integration among the intervenient organisms	Yes	Yes	-
	Insufficient staff	-	Yes	Yes
	Action of the inspection team	-	Yes	Yes
	Inappropriate installations/equipment	Yes	Yes	Yes
	Lack of harmonization of the control services	-	-	Yes
	Organisms involved in the operations	Yes	Yes	Yes
Use of the ICM/DICT	Non operationalization by the Member States	Yes	Yes	-
	Ignorance of the advantages of use	-	Yes	Yes
	Action of the inspection team	-	Yes	Yes
	ICM/DICT Transporter company can issue form (Inst. Normative nº 56 of August 26, 1991 – Federal Revenue)	Yes	Yes	Yes
	Obligatoriness	Yes	Yes	Yes
Dispatchers	Time: delay in communicating the incomplete documentation	-	-	Yes
	Costs: taxes and rates	Yes	Yes	-

Source: GEIPOT (2001)

The service in the border posts, in the working days, has a number of office hours of 12 hours for the Federal Revenue and 8 hours for the other organisms, what meets the resolution n. 77/99 of the Common Market Group. On Saturdays, Sundays and holidays

there is no uniformity in the working hours of the border posts visited. In Santana do Livramento, for example, there are no business hours in any of these days.

It must be considered that the Member States of MERCOSUR agreed upon the commitment of trying to establish the service "24 hours, 365 days" in the border posts (Recife Agreement, Chapter XI, Article 20th). This has been, in part, achieved, for the empty vehicles and under the house-to-house ICM/DICT. Meanwhile, it is considered that the target defined in the Recife Agreement must be rethought, being necessary that before undertaking efforts for its implantation surveys and more detailed analysis are accomplished, which permit to better approach the issue of the establishment of more appropriate working hours for the service in the MERCOSUR border posts.

What was agreed by the Member States in the Recife Agreement, also establishes that the inspection organisms, as much national as foreign, should look for the compatibilization of their working hours. This issue seems to be the one which most becomes evident as effectively an obstacle to the frontier facilitation in the road transport in the MERCOSUR scope, and whose solution could reflect fast and positively on the agilization of the customs clearances. It is understood that the solution of this obstacle passes through a more effective action by the Secretary of the Federal Revenue, assuming its responsibility of coordination of the customs control operations, looking for, next to the other intervenient organisms with this control, a fast solution for the elimination of the obstacle.

Anyway, the issues related to the period and working hours in the border posts must pass through a discerning and detailed evaluation of all the customs control process, contemplating the distribution of the vehicles arrival frequency, the distribution of the freights frequency and nature, the determination of the solicitation index of each of the inspection organisms and in what hours, the determination of the average time spent for each of the intervenient organisms (public and private) involved in the customs clearance process. In this way, it is understood that researches should be developed which permitted to follow a significant sample of the clearance operations in representative border posts. It is still necessary to obtain next to the transporter companies the comprehension of their logistics difficulties so that they are fit into the working hours of the bank agencies in the customs stations.

The main issue is the lack of integration in the inspection process. Here, as in the working hour's issue, it is believed that the solution also passes through a more effective action by the Secretary of the Federal Revenue, assuming its responsibility of coordination of the customs control operations, obtaining next to the other intervenient organisms with this control a fast solution for the elimination of the obstacle. Besides, it is also necessary that surveys are promoted to evaluate in details the formalities inherent to the customs clearance process, so that it can be identified in which stages the lack of integration can be contributing to the generation of excessive delays in the process, as well as such integration could be effectively implemented.

3.4. Identification of the Volume of Trade between Europe-Brazil and Europe-Argentina

The identification of the freights movement between Brazil-Argentina and European Union was accomplished based on the information available in the database of the Secretariat of Foreign Trade – SECEX, of the Ministry of Development, Industry and

Foreign Trade – MDIC, ALICEWeb system and ALICEWeb MERCOSUL system, besides the data available through the Statistical Office for the European Commission – EUROSTAT, statistical organization of the European Union, and in the National Institute of Statistics and Census – INDEC from Argentina.

Between 2000 and 2008, the value of the goods exports from the EU to Brazil grew 56%, while the imports almost doubled. This took to the deficit in the trade in goods between EU and Brazil, of 1,8 billion euros in 2000 to 9,5 billion euros in 2008. The value of the goods exports from the EU to Brazil reduced from 12 billion euros in the first semester of 2008 to 9,3 billion euros in the same period of 2009, and the imports fell from 17,5 billion euros to 12,6 billion euros.

As a result, the commercial deficit of the EU with Brazil decreased, reaching 3,3 billion euros in the first semester of 2009, compared to the 5,5 billion euros in the same period of 2008. The fall registered in the trade's value of EU with Brazil, between the first semester of 2008 and same period of 2009, follows a line with general trend of reduction in the total volume of the EU's international trade during the same period.

The growth of the trade in goods of Brazil with the EU remained around 2% between 2000 and 2008. In the first semester of 2009, the Brazil's participation in the total trade of the EU was 1.8% for the exports and 2.1% for the imports. In 2008, Brazil was the tenth commercial partner of the EU, in terms of euros.

The trade in services of the EU with Brazil is expanding. In 2008, the EU exported 9 billion euros in services to Brazil, while the imports grew 6,1 billion euros. To better understand this growth, the difference between export and import was 0.6 billion euros in 2006, 1,6 billion in 2007 and 2,9 billion in 2008. The surplus in 2008 is due mainly to the transport (1 billion euros), royalties and licensing rates, construction and trip services (0.4 billion euros each). In 2008, Brazil was responsible for around 1.5% of the extra total of the EU's trade in services.

With the knowledge of the imports and exports and their respective origin and destination countries, it is possible to verify by mode and origin/destination point the volumes and products commercialized among the Latin America countries, focus of this study and the European Economic Bloc. From this information it is possible to identify the main transport corridors.

3.4.1. Volumes of Freight Commercialized between Brazil and European Union

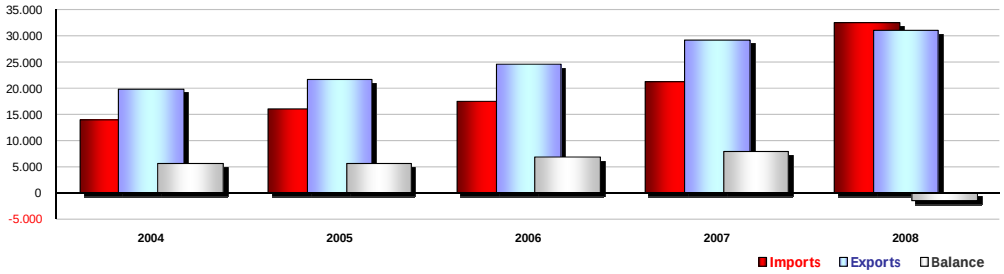
The data of the commercial evolution between Brazil and European Union are presented in Table 3.2 and Figure 3.1. We can observe a positive balance in the commercial balance since 2004, with a slight increase and fall in 2008, becoming negative in this last one.

Table 3.2 – Brazil, Trade with the European Union (millions of euro, %)

PERIOD	IMPORTS	VARIATION (%, y-o-y)	EU SHARE of TOTAL IMPORTS (%)	EXPORTS	VARIATION (%, y-o-y)	EU SHARE OF Total EXPORTS (%)	BALANCE	TRADE
2004	14,160	**11,2**	**25,9**	19,859	**19,5**	**25,5**	5,699	34,019
2005	16,154	**14,1**	**25,2**	21,810	**9,8**	**22,9**	5,656	37,963

PERIOD	IMPORTS	VARIATION (%, y-o-y)	EU SHARE of TOTAL IMPORTS (%)	EXPORTS	VARIATION (%, y-o-y)	EU SHARE OF Total EXPORTS (%)	BALANCE	TRADE
2006	17,690	**9,5**	**22,4**	24,693	**13,2**	**22,6**	7,004	42,383
2007	21,392	**20,9**	**22,6**	29,349	**18,9**	**25,8**	7,957	50,741
2008	32,600	**52,4**	**21,5**	31,217	**6,4**	**23,5**	-1,383	63,817

Source: EUROSTAT (2010)



Source: EUROSTAT (2010)

Figure 3.1 – Brazil, Trade with the European Union (millions of euro, %)

In Figure 3.2, we have the evolution of the commercial balance results in million dollars for the products importations of the European Union by Brazil in the last 3 years. And in Figure 3.3 is the evolution of the Brazilian exportations to the European Union in the same period.

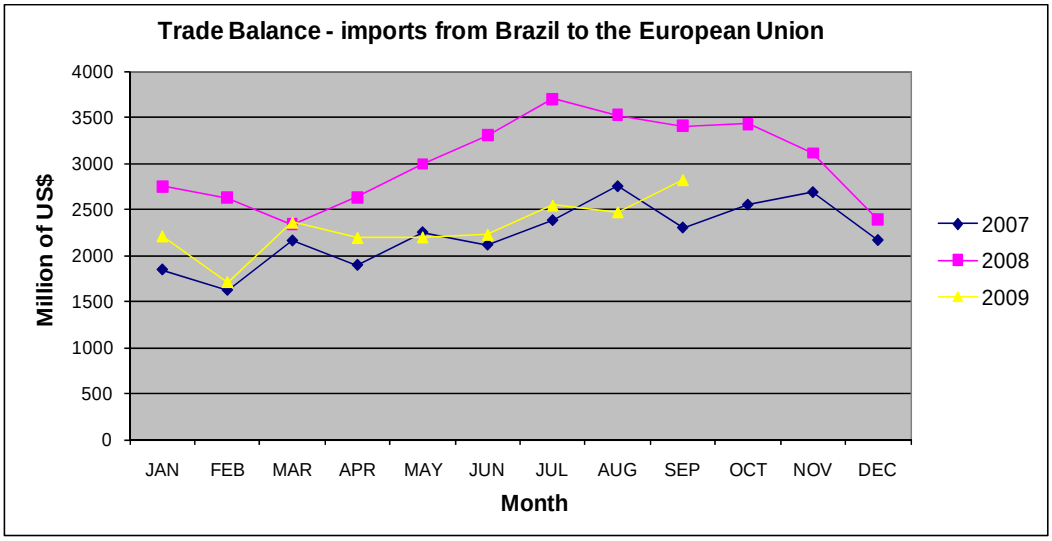


Figure 3.2 – Value of the importations by Brazil from the European Union

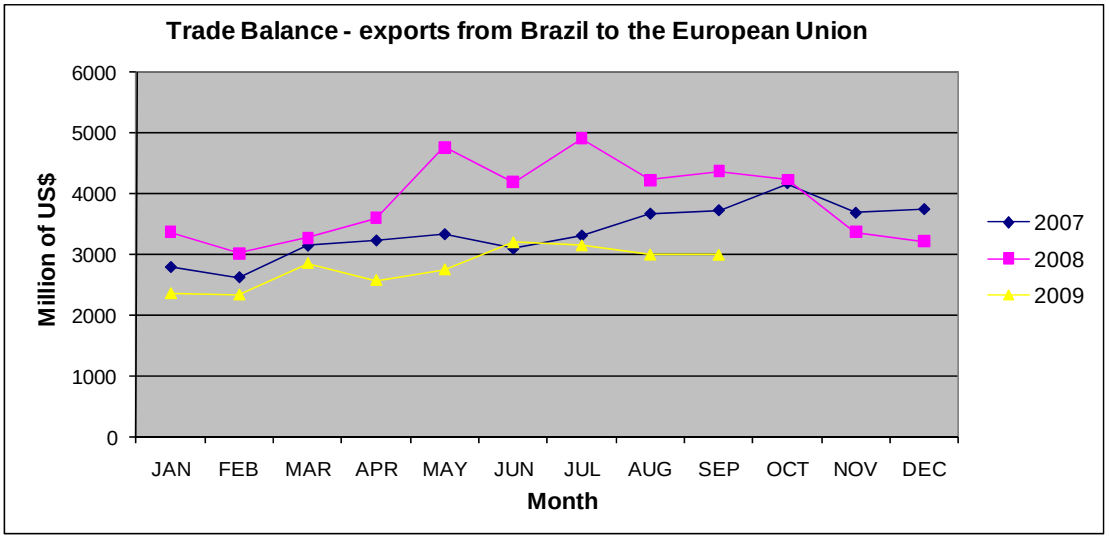


Figure 3.3 – Value of the exportations from Brazil to the European Union

It is also noted that in 2008 the level of importations exceeded 2007 and also the one observed until September 2009. Now in the exportations, the indexes of 2008 were higher only in period from May to July. In comparative terms, it can be seen in Figure 3.4, that the values of dollars are a little higher in the exportations than in the importations in the years 2007 and 2008, and that in 2009 these values are very similar, reducing the positive results of the commercial balance. In Figure 3.5 and Figure 3.6, it can be observed respectively the volumes in tons of products imported and exported by Brazil from the European Union and the aggregate value (US$/ton) of the exported and imported products.

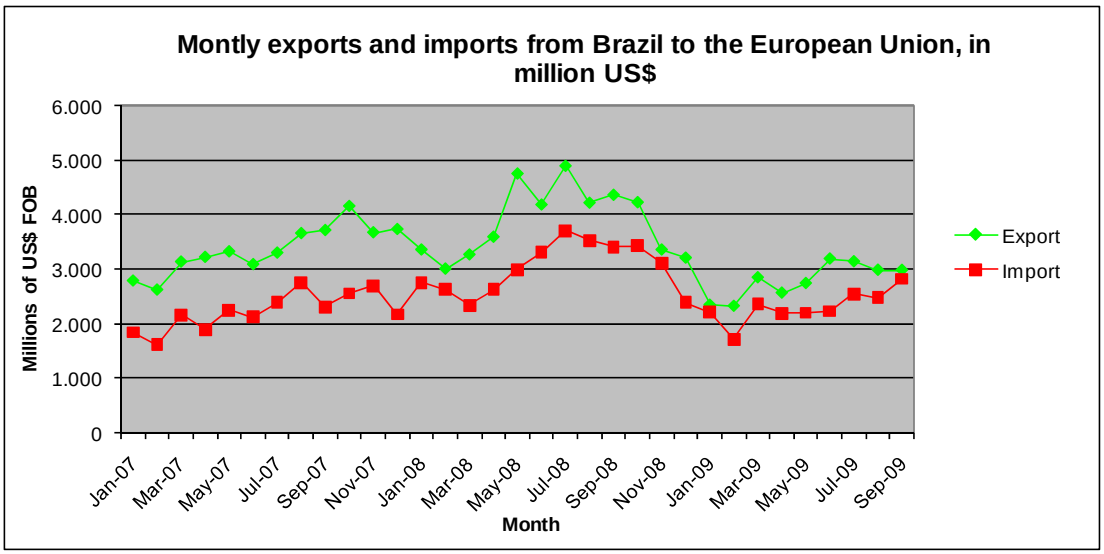


Figure 3.4 – Value of the exportations and importations from Brazil to the European Union

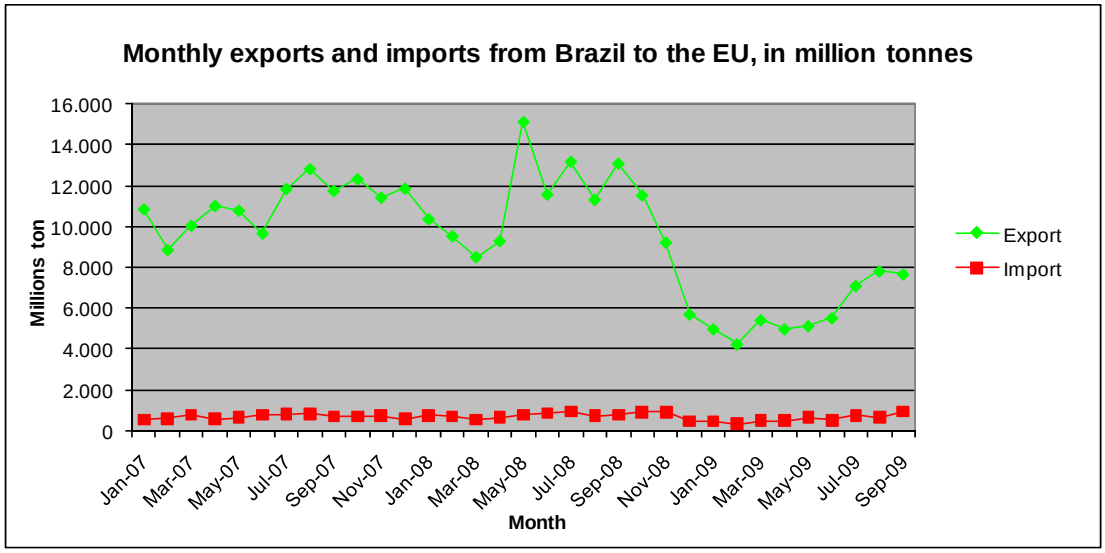


Figure 3.5 – Volume of the exportations and importations from Brazil to the European Union

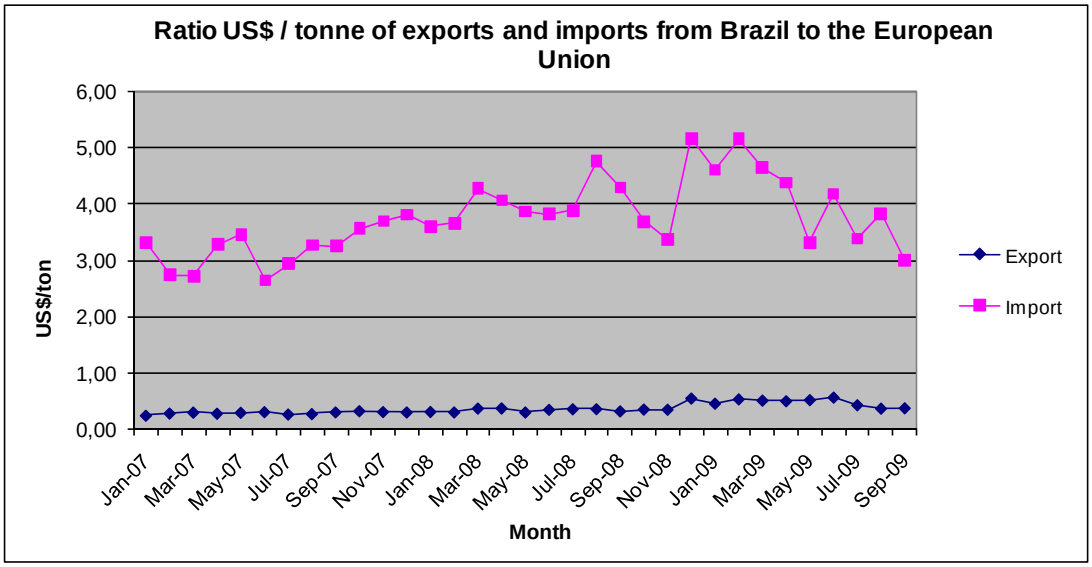


Figure 3.6 – Aggregate value of the exportations and importations from Brazil to the European Union

From the analysis of the graphs, it can be concluded that the products exported by Brazil, for being products with lower added value, they concentrate in supplies for industrial production and commodities. This can be confirmed when observing the Table 3.3, which presents the ranking (in million euros) of the most exported products by Brazil from the European Union. In the table it can be seen vegetable and mineral products as the most commercialized ones by Brazil.

Table 3.3 – Brazil exports to European Union – EU trade with the world and EU trade with Brazil – ranking by trade flows in 2008

EU IMPORTS FROM…				
SECTIONS	**WORLD**	**BRAZIL**		
		Millions of euro	**Share of total**	**Share of total EU imports**
MINERAL PRODUCTS	473,911	8,570	24.1%	1.8%
VEGETABLE PRODUCTS	39,780	6,175	17.4%	15.5%
PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO	33,758	5,452	15.3%	16.1%
BASE METALS AND ARTICLES OF BASE METAL	111,013	2,955	8.3%	2.7%
MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT	326,614	2,129	6.0%	0.7%
VEHICLES, AIRCRAFT, VESSELS AND ASSOCIATED TRANSPORT EQUIPMENT	99,552	1,951	5.5%	2.0%
PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; PAPER OR PAPERBOARD	15,412	1,670	4.7%	10.8%
PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES	113,238	1,494	4.2%	1.3%
LIVE ANIMALS; ANIMAL PRODUCTS	18,908	1,102	3.1%	5.8%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK	12,112	902	2.5%	7.4%
PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF	39,500	545	1.5%	1.4%
FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS	15,072	504	1.4%	3.3%
RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF	11,653	502	1.4%	4.3%
ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS	8,032	491	1.4%	6.1%
MISCELLANEOUS MANUFACTURED ARTICLES	38,498	275	0.8%	0.7%
ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIAL	10,989	191	0.5%	1.7%
NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES	34,536	166	0.5%	0.5%
TEXTILES AND TEXTILE ARTICLES	80,472	118	0.3%	0.1%
OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION	47,966	117	0.3%	0.2%
WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES	20,492	116	0.3%	0.6%
ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF	864	21	0.1%	2.5%
TOTAL	**1,552,373**	**35,554**	**100.0%**	**2.3%**

Source: EUROSTAT (2010)

Now in the sense of importation, where the aggregate values of the products are higher, it can be noticed that they must be about the already industrialized products. In Table 4.3, it is possible to observe that, for the main products (in value) imported from the European Union are machines, vehicles and equipment.

Table 3.4 – Brazil imports from European Union – EU trade with the world and EU trade with Brazil – ranking by trade flows in 2008

EU EXPORTS TO…				
SECTIONS	WORLD	BRAZIL		
		Millions of euro	Share of total	Share of total EU exports
MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT	390,812	9,075	34.4%	2.3%
VEHICLES, AIRCRAFT, VESSELS AND ASSOCIATED TRANSPORT EQUIPMENT	185,454	4,558	17.3%	2.5%
PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES	181,062	4,472	17.0%	2.5%
BASE METALS AND ARTICLES OF BASE METAL	100,307	1,979	7.5%	2.0%
PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF	48,923	1,344	5.1%	2.7%
OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION	55,921	1,058	4.0%	1.9%
MINERAL PRODUCTS	85,609	628	2.4%	0.7%
PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; PAPER OR PAPERBOARD	27,421	456	1.7%	1.7%
PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO	42,843	365	1.4%	0.9%
ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIAL	16,871	302	1.1%	1.8%
TEXTILES AND TEXTILE ARTICLES	36,272	272	1.0%	0.8%
NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES	31,270	210	0.8%	0.7%
VEGETABLE PRODUCTS	17,489	209	0.8%	1.2%
ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS	3,184	160	0.6%	5.0%
WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES	20,313	157	0.6%	0.8%
MISCELLANEOUS MANUFACTURED ARTICLES	22,614	153	0.6%	0.7%
LIVE ANIMALS; ANIMAL PRODUCTS	15,642	128	0.5%	0.8%
RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF	9,780	27	0.1%	0.3%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK	9,439	19	0.1%	0.2%
FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS	6,283	14	0.1%	0.2%
ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF	1,928	6	0.0%	0.3%
TOTAL	1,309,435	26,354	100.0%	2.0%

Source: EUROSTAT (2010)

3.4.2. Volumes of Freight Commercialized between Argentina and European Union

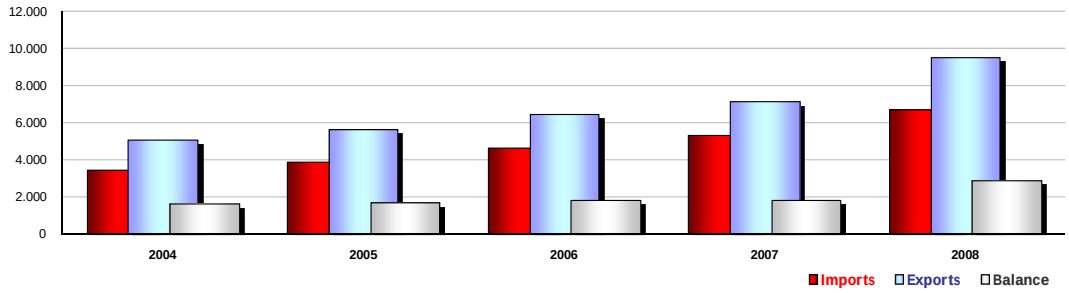
Analyzing the commercial relation between Argentina and EU, it is seen that in the last years the interchange of products has presented growth. The data about this commercial evolution is given in Table 3.5 and in Figure 3.7, where are presented the values of the Argentinean balance of trade in relation to the trade with the European Union. In the

figure it is possible to notice the growing positive result of the balances of trade, which reach the credit balance of €16.267 million in 2008.

Table 3.5 – Argentina, trade with the European Union (millions of euro, %)

PERIOD	IMPORTS	VARIATION (%, y-o-y)	EU SHARE OF TOTAL IMPORTS (%)	EXPORTS	VARIATION (%, y-o-y)	EU SHARE OF TOTAL EXPORTS (%)	BALANCE	TRADE
2004	3,428	**38.6**	**19.2**	5,059	**-6.1**	**18.2**	1,631	8,488
2005	3,921	**14.4**	**17.1**	5,637	**11.4**	**17.3**	1,715	9,558
2006	4,651	**18.6**	**17.3**	6,472	**14.8**	**17.6**	1,821	11,124
2007	5,332	**14.6**	**17.4**	7,143	**10.4**	**18.0**	1,811	12,475
2008	6,691	**25.5**	**18.3**	9,575	**34.1**	**18.9**	2,884	16,267

Source: EUROSTAT (2010)



Source: EUROSTAT (2010)

Figure 3.7 – Argentina, Trade with the European Union (millions of euro, %)

The evolution of the results of the commercial balance in million dollars for the products importations by Argentina from the European Union are presented in Figure 3.8, and the evolution of the Argentinean exportations to the European Union in the last 3 years are in Figure 3.9.

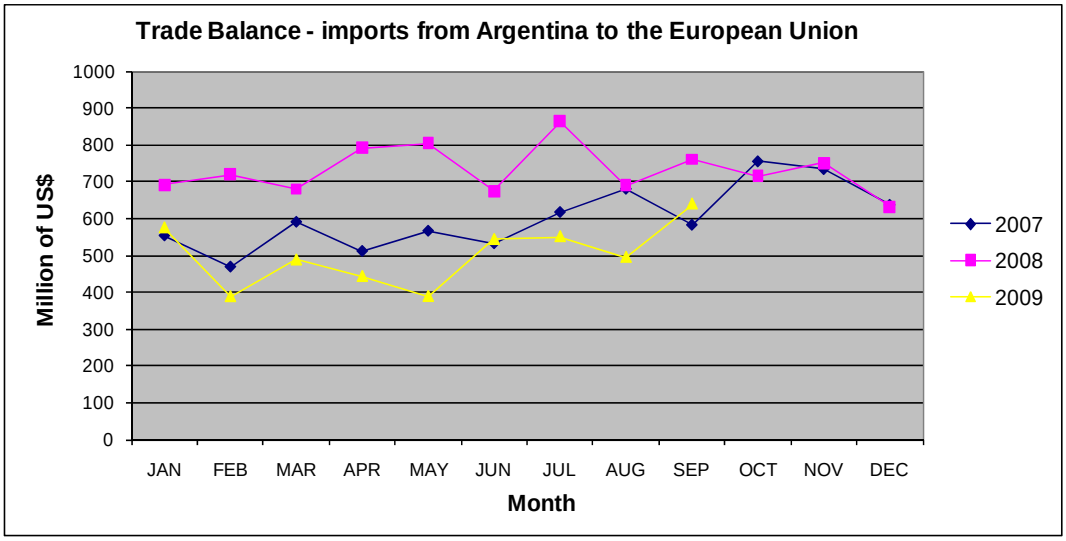


Figure 3.8 – Value of the importations from Argentina to the European Union

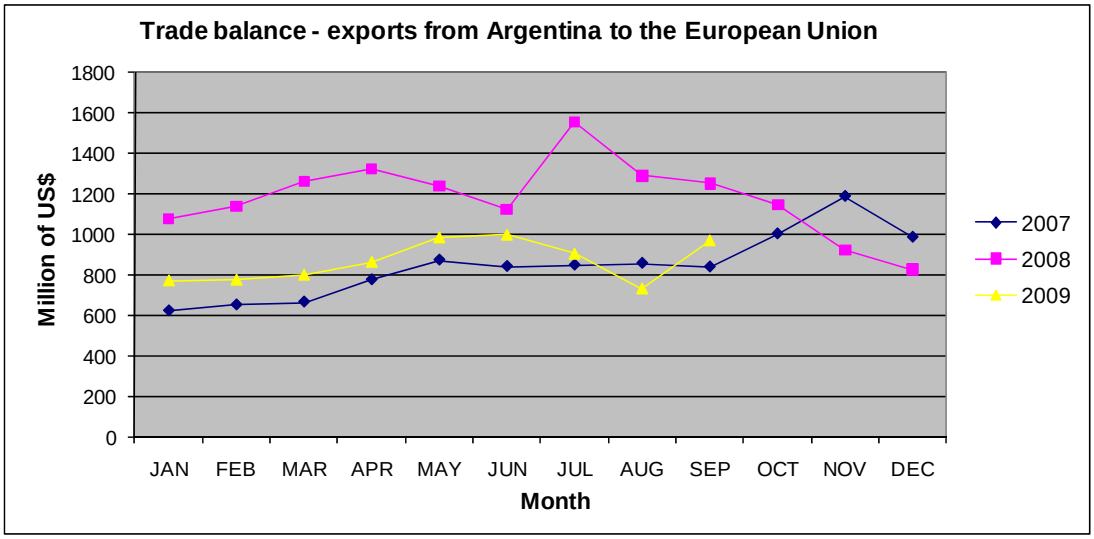


Figure 3.9 – Value of the exportations from Argentina to the European Union

From January to September 2008 the level of importations exceeded the levels observed in 2007 and 2009. Meanwhile, in the rest of the year, the values of the importations in 2007 and 2008 were approximately the same. Now in the exportations the indexes of 2008 were higher until October 2008, with some months getting closer of the values of the other years presented, and with lower values than in November and December 2007. In Figure 3.10 it can be seen that the values of dollars commercialized are higher in the exportations than in the importations and, that in 2008, that difference is even higher, increasing the positive results in the commercial balance in that year.

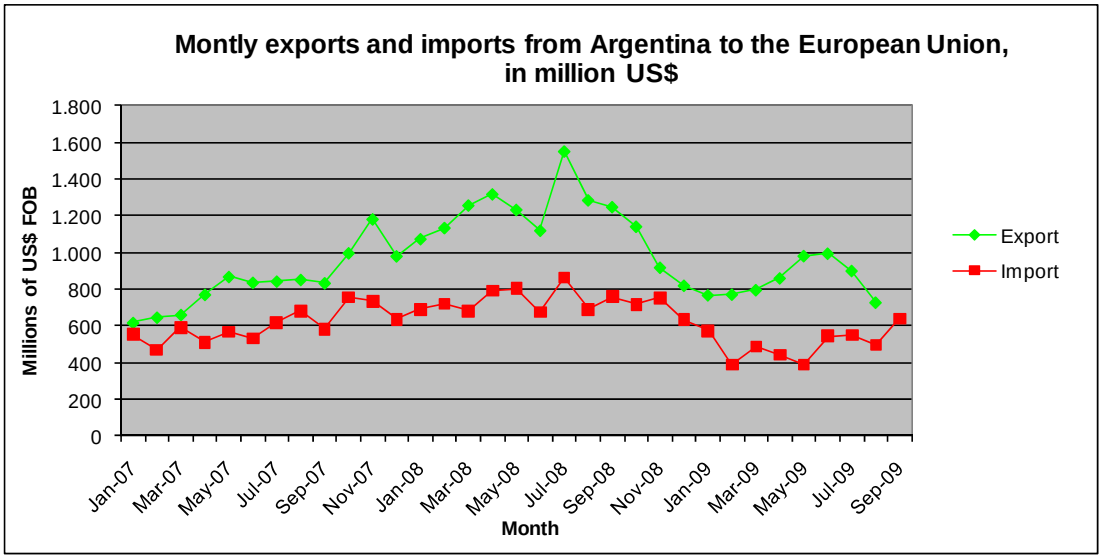


Figure 3.10 – Value of the exportations and importations from Argentina to the European Union

When comparing Argentina's exportations with Brazil's, in terms of commercialized values, Brazil presents values very superior to those observed in the Argentina's exports (Figure 3.11). The same is observed in relation to the importations accomplished by Brazil, volumes very superior to those accomplished by Argentina (Figure 3.12).

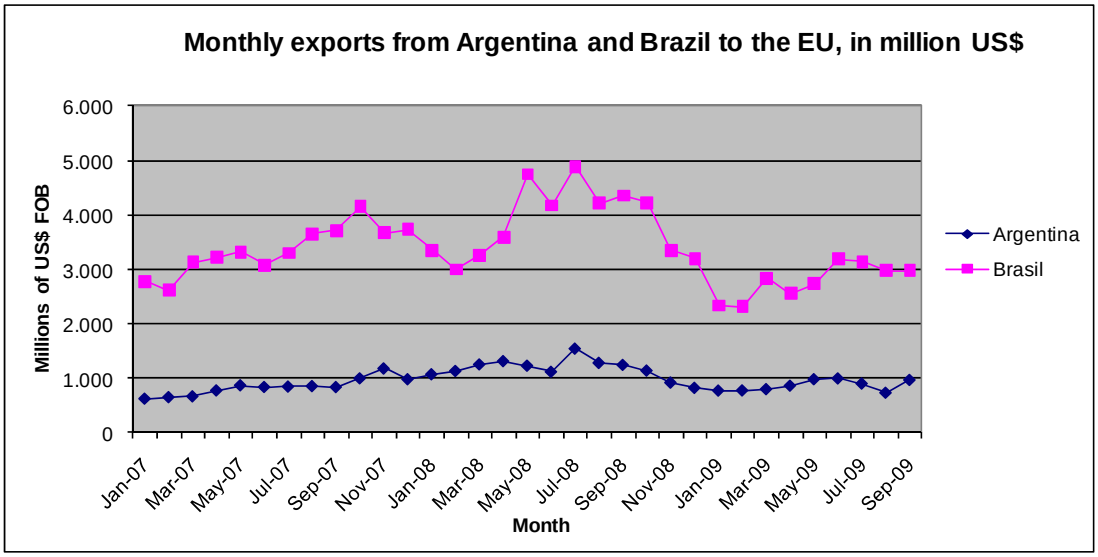


Figure 3.11 – Value of the exportations from Brazil and Argentina to the European Union

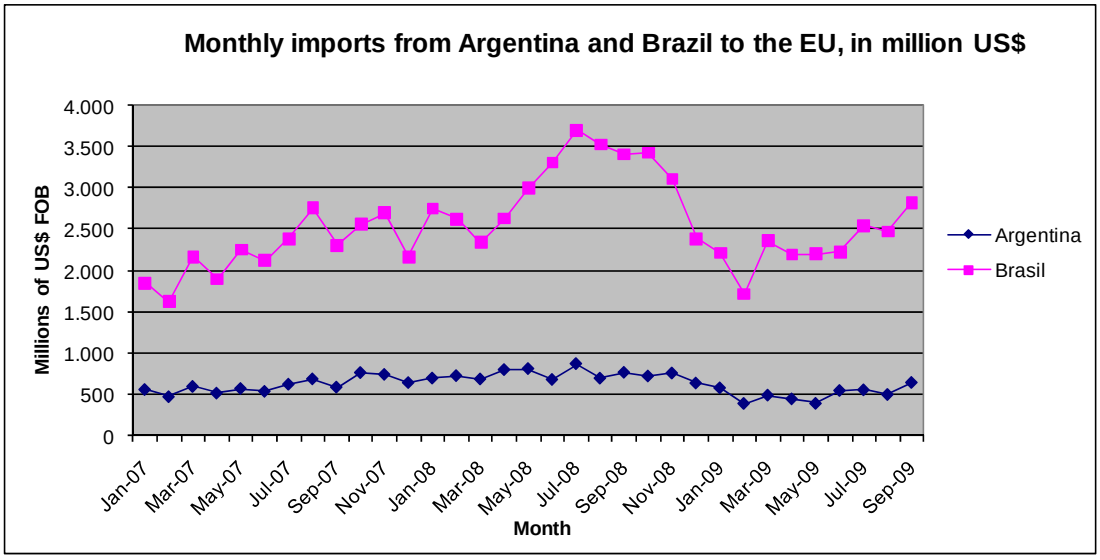


Figure 3.12 – Value of the importations from Brazil and Argentina to the European Union

The volumes in tons of products imported and exported by Argentina from the European Union and the added value (US$/ton) of the products exported and imported are presented respectively in Figure 3.13 and in Figure 3.14.

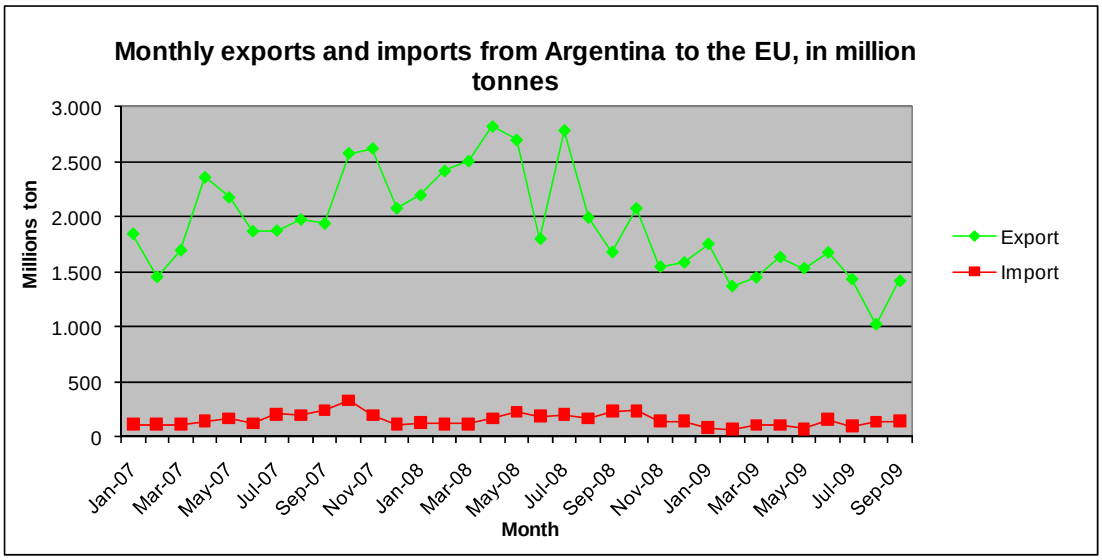


Figure 3.13 – Volume of the exportations and importations from Argentina to the European Union

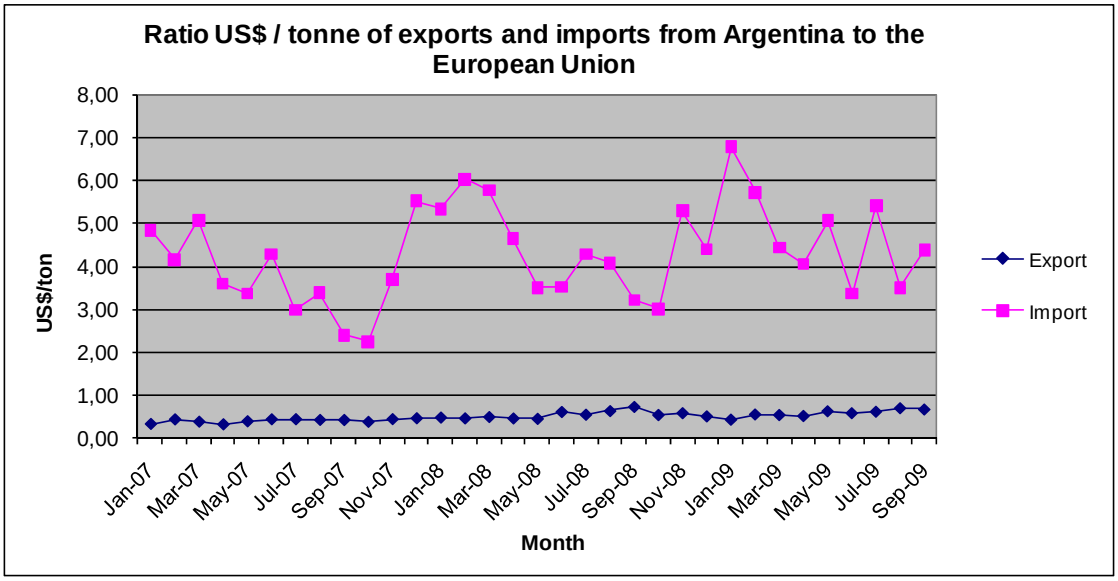


Figure 3.14 – Added value of the exportations and importations from Argentina to the European Union

Despite the volumes of the exported products by Argentina being higher than the products imported, the difference in terms of tons is very lower than the one observed in the Brazilian commercial balance of the same period, which can also be observed in Figure 3.15, which presents the volumes exported by the two countries, and in Figure 3.16, which presents the volumes imported.

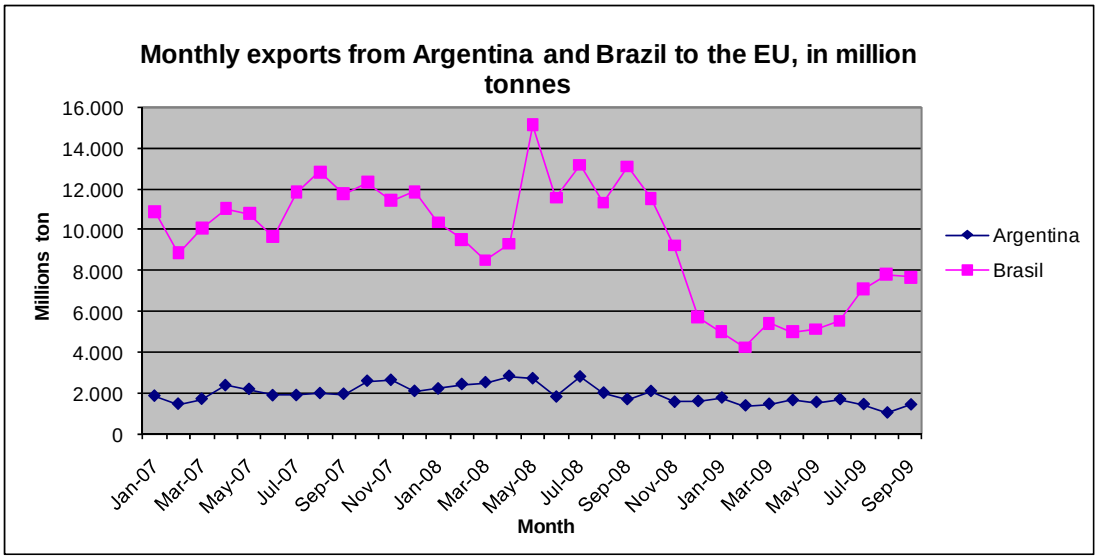


Figure 3.15 – Volume of the exportations from Brazil and Argentina to the European Union

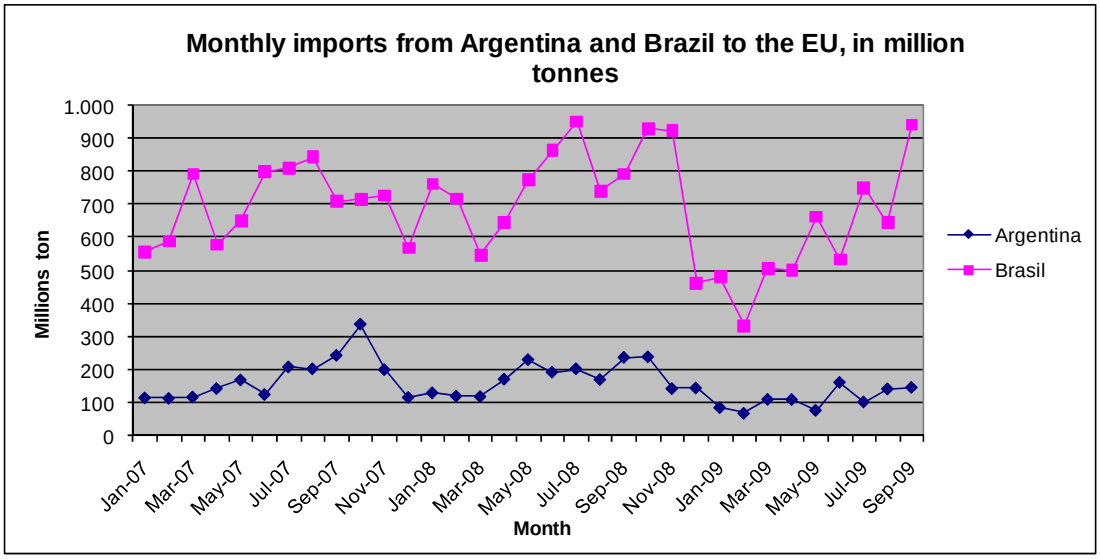


Figure 3.16 – Volume of the importations from Brazil and Argentina to the European Union

Nevertheless, results similar to Brazil's it is observed in the exportation by Argentina of products with lower aggregate value, and in the importation of products with higher aggregate values, indicating the same distribution of categories of products in the trade flows of Argentina with the European Union. In Figure 3.17 it can be observed that in the case of the importations, the products present similar aggregate value, with small variations in some periods.

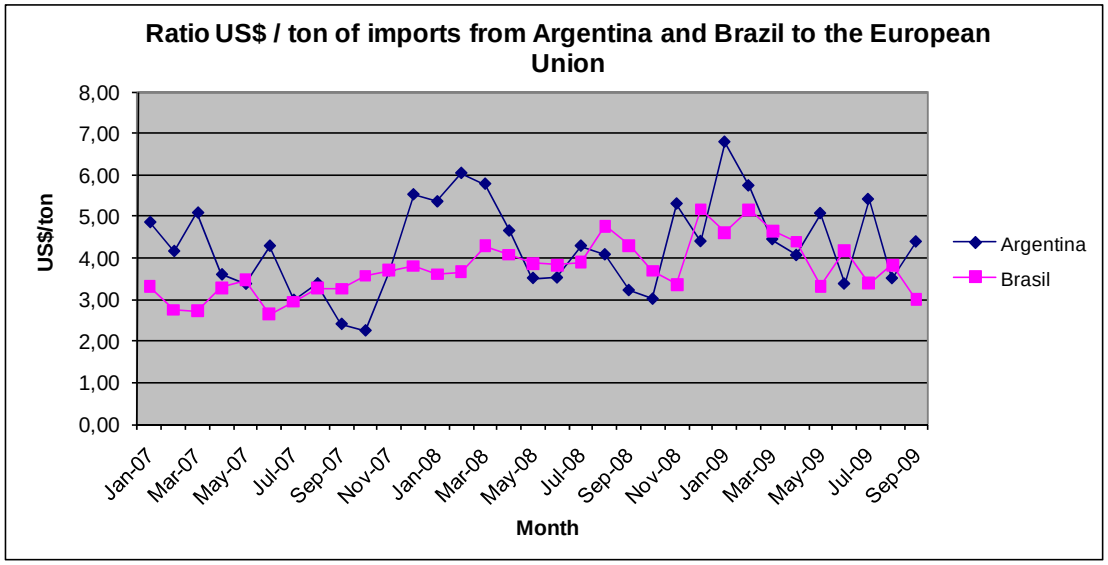


Figure 3.17 – Aggregate value of the importations from Brazil and Argentina to the European Union

In Table 3.6 it is possible to observe that the most important products in terms of value, imported from Argentina to the European Union are industrialized products like machines, chemicals and vehicles.

Table 3.6 – Argentina imports from European Union – EU trade with the world and EU trade with Argentina - tanking by trade flows in 2008

EU EXPORTS TO…				
SECTIONS	WORLD	ARGENTINA		
		Millions of euro	Share of Total	Share of total EU Exports
MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT	390,812	2,043	33.6%	0.5%
PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES	181,062	1,115	18.3%	0.6%
VEHICLES, AIRCRAFT, VESSELS AND ASSOCIATED TRANSPORT EQUIPMENT	185,454	1,100	18.1%	0.6%
BASE METALS AND ARTICLES OF BASE METAL	100,307	384	6.3%	0.4%
PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF	48,923	293	4.8%	0.6%
OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION	55,921	223	3.7%	0.4%
PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; PAPER OR PAPERBOARD	27,421	194	3.2%	0.7%
MINERAL PRODUCTS	85,609	166	2.7%	0.2%
MISCELLANEOUS MANUFACTURED ARTICLES	22,614	72	1.2%	0.3%
ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIAL	16,871	67	1.1%	0.4%
PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO	42,843	66	1.1%	0.2%
TEXTILES AND TEXTILE ARTICLES	36,272	60	1.0%	0.2%
WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES	20,313	49	0.8%	0.2%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK	9,439	48	0.8%	0.5%
VEGETABLE PRODUCTS	17,489	31	0.5%	0.2%
NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES	31,270	25	0.4%	0.1%
LIVE ANIMALS; ANIMAL PRODUCTS	15,642	16	0.3%	0.1%
ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS	3,184	9	0.1%	0.3%
ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF	1,928	7	0.1%	0.4%
RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF	9,780	6	0.1%	0.1%
FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS	6,283	3	0.1%	0.0%
TOTAL	1,309,435	6,086	100.0%	0.5%

Source: EUROSTAT (2010)

However in the exportations, as it is observed in Figure 3.18, the Argentinean products overcome in US$/ton the values of the Brazilian products, what it points to the exportation of less primary products than Brazil's.

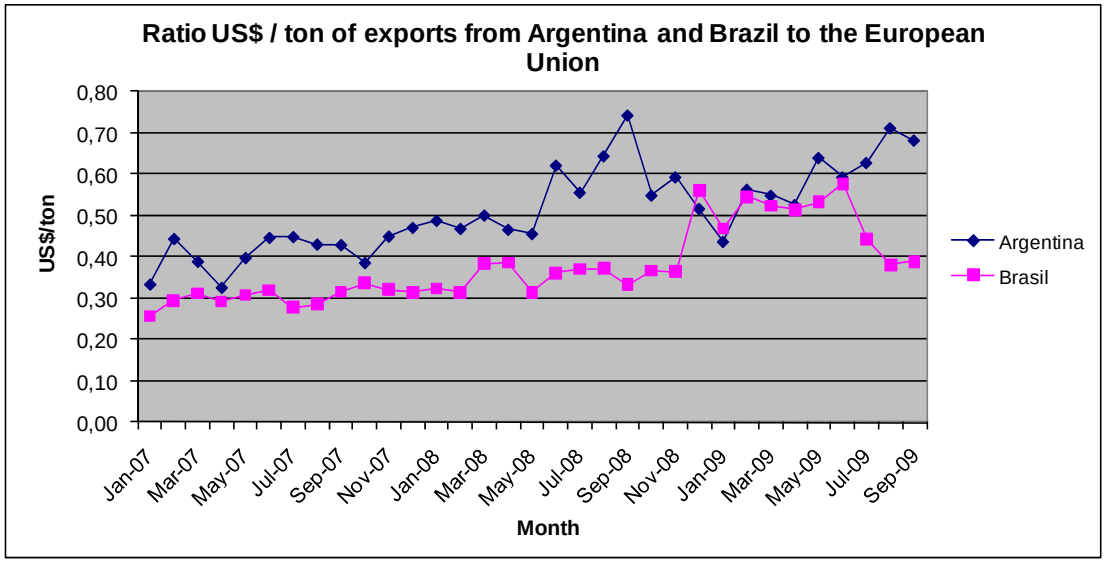


Figure 3.18 – Aggregate value of the exportations from Brazil and Argentina to the European Union

Table 3.7 presents the ranking of products exported from Argentina to the European Union. It is observed that the most important products in terms of value are the manufactured products, animal origin products, and vegetable products.

Table 3.7 – Argentina Exports to European Union - EU Trade with the World and EU Trade with Argentina - Ranking by Trade Flows in 2008

EU IMPORTS FROM…				
SECTIONS	WORLD	ARGENTINA		
		Millions of euro	Share of Total	Share of total EU Imports
PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO	33,758	4,296	40.8%	12.7%
VEGETABLE PRODUCTS	39,780	2,108	20.0%	5.3%
LIVE ANIMALS; ANIMAL PRODUCTS	18,908	1,290	12.2%	6.8%
ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS	8,032	763	7.2%	9.5%
MINERAL PRODUCTS	473,911	430	4.1%	0.1%
VEHICLES, AIRCRAFT, VESSELS AND ASSOCIATED TRANSPORT EQUIPMENT	99,552	369	3.5%	0.4%
PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES	113,238	351	3.3%	0.3%
BASE METALS AND ARTICLES OF BASE METAL	111,013	251	2.4%	0.2%
RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF	11,653	201	1.9%	1.7%
MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT	326,614	177	1.7%	0.1%
TEXTILES AND TEXTILE ARTICLES	80,472	83	0.8%	0.1%
WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK	12,112	58	0.5%	0.5%

EU IMPORTS FROM…				
SECTIONS	**WORLD**	**ARGENTINA**		
		Millions of euro	**Share of Total**	**Share of total EU Imports**
PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF	39,500	49	0.5%	0.1%
WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES	20,492	17	0.2%	0.1%
PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; PAPER OR PAPERBOARD	15,412	15	0.1%	0.1%
OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION	47,966	14	0.1%	0.0%
MISCELLANEOUS MANUFACTURED ARTICLES	38,498	11	0.1%	0.0%
ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIAL	10,989	10	0.1%	0.1%
NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES	34,536	7	0.1%	0.0%
FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS	15,072	3	0.0%	0.0%
ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF	864	1	0.0%	0.2%
TOTAL	**1,552,373**	**10,534**	**100.0%**	**0.7%**

Source: EUROSTAT (2010)

Due to the volumes commercialized, and types of products, it is possible to establish which transport modes are more appropriate for the transport, and then, to establish the most important transport modal corridors in each one of the countries analyzed.

3.4.3. Infrastructure of Logistics Support and Transport

When analyzing the development process of the national economies in Latin America and their relation to the European Union, it is observed the necessity of understanding the spatial dynamics of the main internal corridors, between Brazil and Argentina, and external, of these countries with the European Union, which are responsible for the goods and products flow. The set of geographical information was built based on the offer of transports model of each country, through consultations to information from Brazil's Ministry of Transportation and Ministry of the Development and International Trade, and Argentina's Secretary of Transportation, belonging to the Ministry of Federal Planning, Public Investment and Services, and to the Ministry of Agriculture, Cattle Raising and Fish.

South America has extensive fluvial systems, of which three are the most important ones: the Amazon river (Peru, Colombia and Brazil), the La Plata river (Uruguay-Argentina) and the Orinoco river (Venezuela). The Amazon river is the third most extensive river of the world, its basin comprises a surface superior to 5.8 million kilometers square. The navigable parts of the Amazon river and its tributaries provide an extensive system of water distribution ways used mainly to transport materials to develop the basin's land.

The La Plata Basin includes the de La Plata river, the Paraná river, Paraguay river and the Uruguay river. More than 100 fluvial ports are found in this fluvial system, with a total volume of 110 million tons of products transported per year. From this amount,

around 30 percent refers to grains and 20 percent to general freight, including 1.4 million TEUs. The Orinoco river, which crosses Venezuela and Colombia, transports mainly natural resources, like iron, aluminum, bauxite and oil (FHWA, 2003).

It is possible to observe that the dynamics of Brazil and Argentina exportation to the European Union is intense in the agribusiness field, as well as it is expressive the importation in terms of chemicals, mechanic products and fertilizers. The commercial relations occur by the use of multimodal corridors that adopt road, rail, waterway axles and freight transshipment points in big and small ports, crossing the Atlantic Ocean through maritime routes, or in some cases, using the air modal.

In the items 3.4.3.1 and subsequent ones until item 3.4.3.6 of the present report are presented the main national transport corridors used by Brazil and by Argentina, respectively, for the accomplishment of the intercontinental trade with the European Union. This indication based on georeferentiated elements is one of the bases for the identification of the main commercial obstacles between Latin America and Europe, because it permits the spatial visualization of the routes used for the freight transport, representing an important support in the indication of the improvements between the trades Latin America – European Union.

3.4.3.1. Export and Import Terrestrial Corridors between Brazil and the European Union

For being a continental dimensions country, Brazil has important road, rail and waterway corridors that make the liaisons of the production zone with the border posts and export/import ports. For the enlargement of the Brazilian commercial relations with neighbor countries and other continents, it must be considered that are necessary high investments for the enlargement and maintenance of the infrastructure of support to the international trade. Furthermore, the ports and borders posts also need investments and more efficient procedures to give dynamism to the operations and to provide the increase of the international trade activities.

For the ENABLE project were considered the corridors of access to the international trade connection points, the main products exported and imported by Brazil to/from the European Union. In the case of the Brazilian exportation, seeds and grains, agricultural supplies and ore are the more relevant products, representing 73.2% of the total exportations. The Table 3.8 highlights the products that summarized 87.9% of the total exports from Brazil to the European Union in 2009, according to data from the Aliceweb system, provided by the Ministry of Development and International Trade.

Table 3.8 – Main products exported from Brazil to the European Union, in tons (2009)

PRODUCT	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL TONS
Ores, scorias and ashes	37,131,220.92	48.96%
Residues and wastes from the food industries	9,643,657.86	12.71%
Oleaginous seeds and fruit, grains, seeds	8,760,615.77	11.55%
Mineral fuels, mineral oils and mineral waxes	5,030,489.17	6.63%

PRODUCT	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL TONS
Wood pastes or cellulosic fibrous matters	3,385,250.84	4.46%
Preparations of horticultural products, of fruits	1,391,903.99	1.84%
Salt, sulfur, lands and rocks, gypsum, lime and cement	1,316,659.48	1.74%
Others	9,186,086.39	12.11%
Total	75,845,884.42	100.00%

Source: Aliceweb system – Ministry of the Development and International Trade of Brazil (2010)

The identification of the main products enabled mapping the corridors adopted for the clearance of cargo in the Brazilian territory, until the main national ports, with destination to the European Union countries. In Figure 3.19, it can be observed the corridors (highways and railways) and ports used for the flowing of ores bound for the European Union. The map also highlights the main cities which have iron ore mines in 2005, according to indication of the National Department of Mineral Research – NDMR. The map highlights the road corridor that transports, mainly, iron ore from the State of Pará by the Carajás Railway for export through the Ponta de Madeira Terminal belonging to Port of São Luís, in the State of Maranhão. The other corridors are concentrated in the Southeast Region and transport ores derived from the State of Minas Gerais to the Tubarão Terminal, in Port of Vitória, and by Sepetiba Port, through the Vitória Minas Railways, MRS-Logistics, and a part of the Centro-Atlântica S.A. Railway. At last, there is a road corridor composed by highways BR-262, BR-381, BR-116, BR-101 and BR-458. All the segments used are paved with some parts duplicated. The greater difficulty for the transit through this corridor is observed due to the region's relief, which shows up very rough due to the geomorphologic formation known as Sea Mountain Ridge.

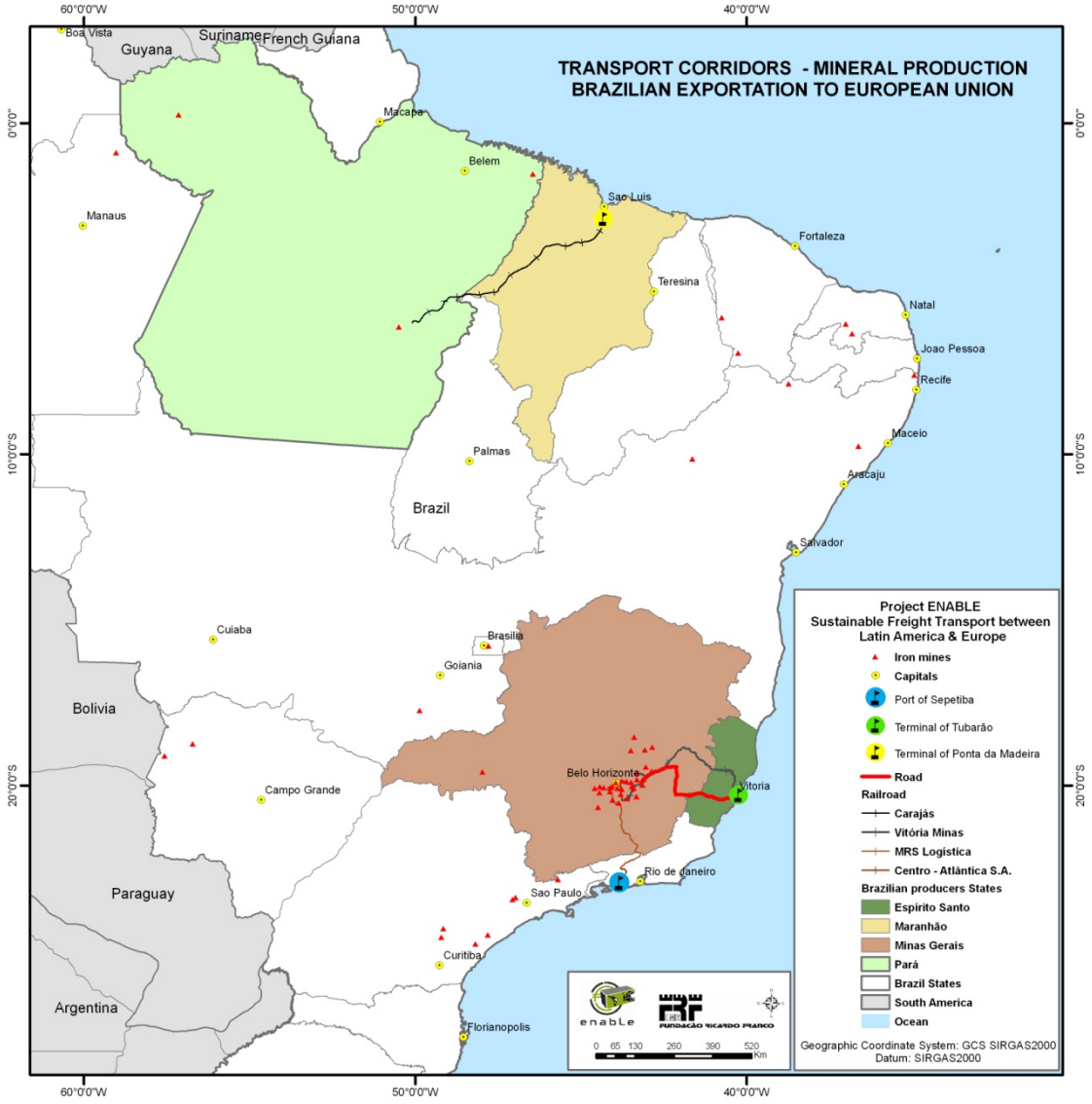


Figure 3.19 – Transport corridors for the ores export from Brazil to the European Union

The flowing of grains, especially of soy, for constituting a soy complex (grain-bran-oil), represents one of the most important national commodities, being responsible for the capturing of exchange currency in the international market of about US$ 9.0 to US$ 10.0 bi in the last years, according to the Brazilian Association of the Vegetable Oil Industries – ABIOVE (2007). According to the Center of Advanced Studies on Applied Economics – CEPEA (2007), the agribusiness participation in the Brazilian gross domestic product (GDP) is becoming outstanding: in 2005 its contribution in relation to the GDP was around 28% (that is, US$ 299 bi). Of this total, around 70% (US$ 209 bi) correspond to the agriculture's agroindustrial chains, including the grains. Considering the analysis of the logistics points present in the geographical basis of the national road network, the main highways that flow the Brazilian soy production to the European Union are:

- South and Southeast: linking the producer centers to the Port of Paranaguá (PR), BR-376 (PR) and BR-277 (PR and RS); linking to the Port of Rio Grande

(RS), BR-386 (RS) and BR-153; in the Southeast region, there are several highways among them are the BR-050, linking the Minas Triangle to São Paulo, and the BR-101 (SC and SP).

- Middle-West, South and Southeast: linking the producer areas from Mato Grosso to the Port of Paranaguá (PR), BR-163; interconnecting Mato Grosso and Mato Grosso do Sul to Rondônia and to the Port of Santos (SP), BR-364. Besides these, there are also: the BR-153, linking Tocantins, Goiás and São Paulo and the Southern States; and BR-060 (MS and GO).
- Northeast: interconnecting the production from Bahia to the Port of Salvador (BA), BR-430 (BA) and BR-415 (BA); linking to the Port of Itaqui (MA), BR-135 (BA and MA). Now, the production from Piauí and Maranhão flows through BR-230 (PI and MA) until Estreito (MA), where there is a connection with the North-South Railway, which links to the Carajás Railroad, from where it follows to the Port of Itaqui, in São Luís (MA).

Besides the road modal, it is convenient to distinguish the main railways used in the grains flowing:

- América Latina Logística (ALL): acts in the South region for flowing the production from the North of the State of Paraná to the Port of Paranaguá.
- Brasil Ferrovias: company made up of three railways – Ferronorte (interconnecting Mato Grosso to the Port of Santos), Novoeste (linking Mato Grosso do Sul to the Port of Santos) and Ferroban (acting in the states of São Paulo and Minas Gerais). According to data from the Ministry of Transportation (2007), the movement of soybeans of the three railways in 2004 was around 10.9 million tons, especially concentrated on Ferroban, which alone transported 6.5 million tons.
- Ferrovia Centro-Atlântica (FCA): acts mainly in the States of São Paulo, Minas Gerais and Goiás. According to the Ministry of Transportation (2007), it transported approximately 3.5 million tons of soy in 2004.
- Estrada de Ferro Vitória-Minas (EFVM): acts in the States of Minas Gerais and Espírito Santo. In 2004, transported 3.8 million tons of grains (Ministry of Transportation, 2007).
- MRS Logística S.A. (MRS): actingin the States of Minas Gerais, Rio de Janeiro and São Paulo, in 2004 had a movement of soy around 5.2 million tons, according to the Ministry of Transportation (2007).
- Ferrovia Norte-Sul (FNS) and Estrada de Ferro Carajás (EFC): act mainly in the states of Tocantins Tocantins, Pará, Maranhão and Piauí. The volume of soy transported in 2004 was around 850 thousand tons (Ministry of Transportation (2007).

Figure 3.20 highlights the main terrestrial corridors and the ports used in the grains flowing with destination to the European Union. It is possible to observe the utilization of the road and rail modals, which run through the Country in radial axles, transporting the agricultural production, intensely concentrated in the Middle-West Region, in direction to the 10 main ports used fro grains export, highlighted in the Figure.

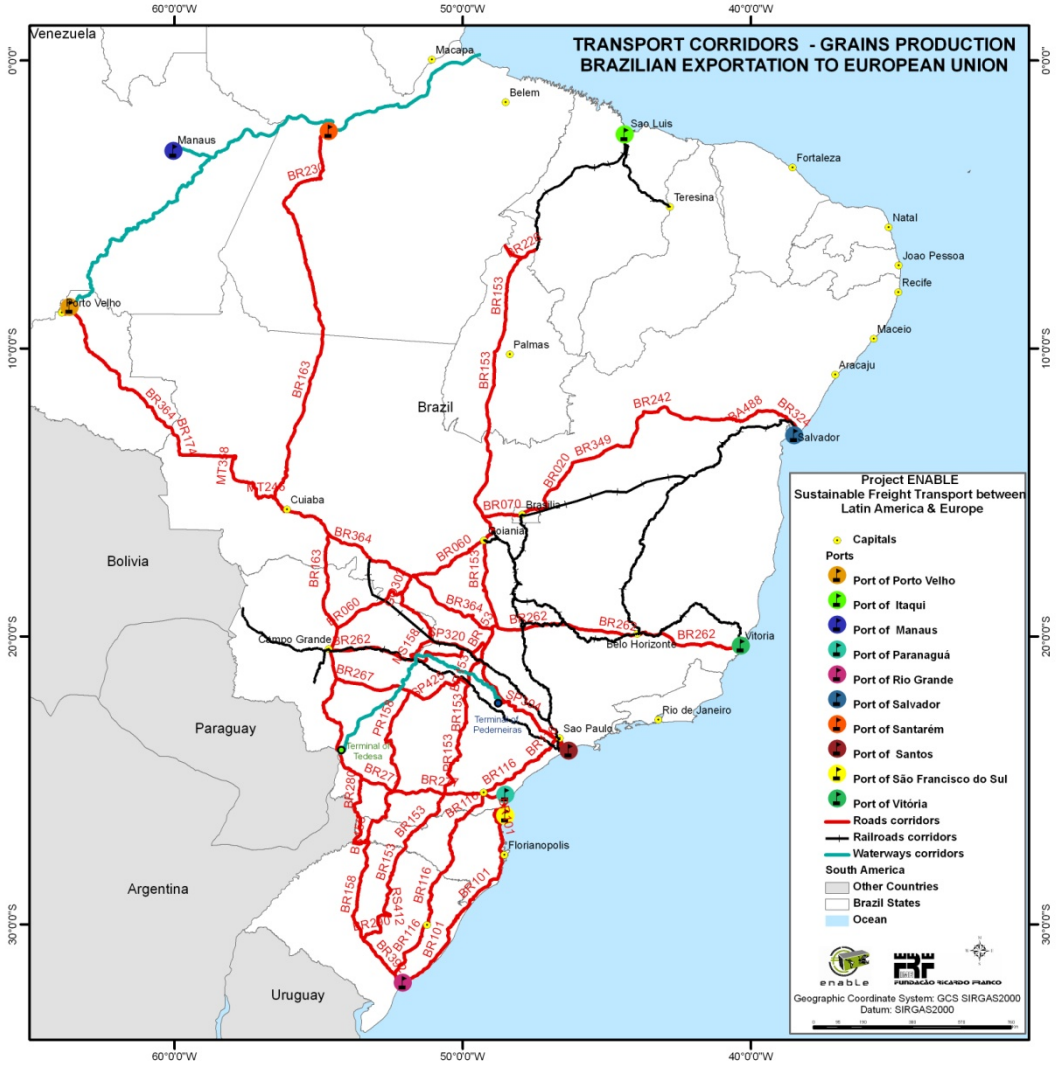


Figure 3.20 – Transport corridors for the grains export from Brazil to the European Union

Figure 3.21 highlights the Brazilian road corridors responsible for the transport of fodder and agricultural supplies bound for the European Union. In this case, the network adopted for spatial analysis is very similar to that used for the grains flowing, however it is more concentrated in the Middle-South part of the Country. The rail network is responsible for the transport of a great part of the production of fodder and agricultural supplies and it uses some parts conceded under the responsibility of the Railway Vitória Minas, MRS-Logística, América Latina Logística and Ferrovia Centro Atlântica.

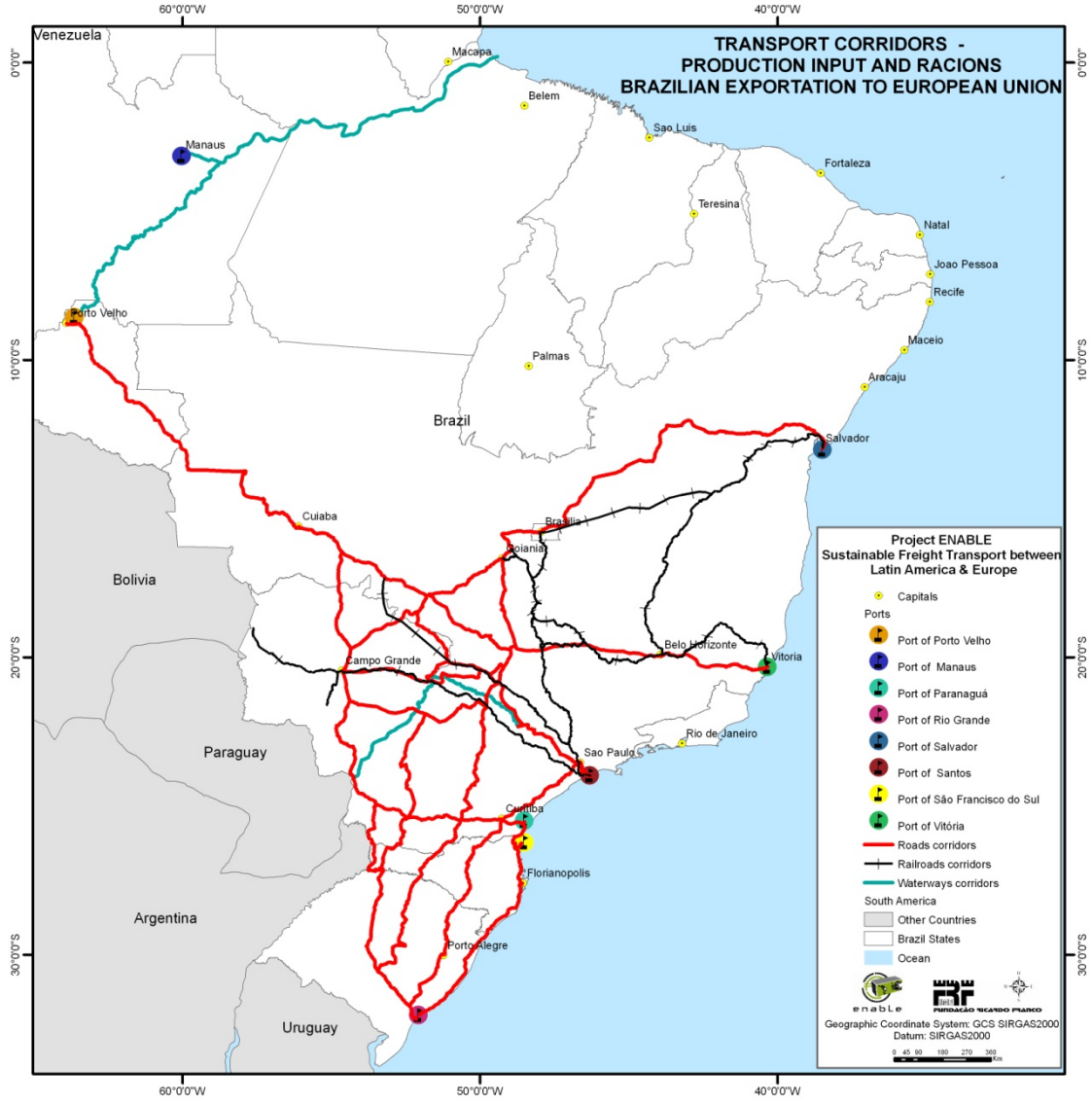


Figure 3.21 – Transport corridors for fodder and agricultural supplies export from Brazil to the European Union

The main transport corridors in Brazil responsible for the exportation of grains, ores, supplies and fodder to the European Union can be observed in Figure 3.22.

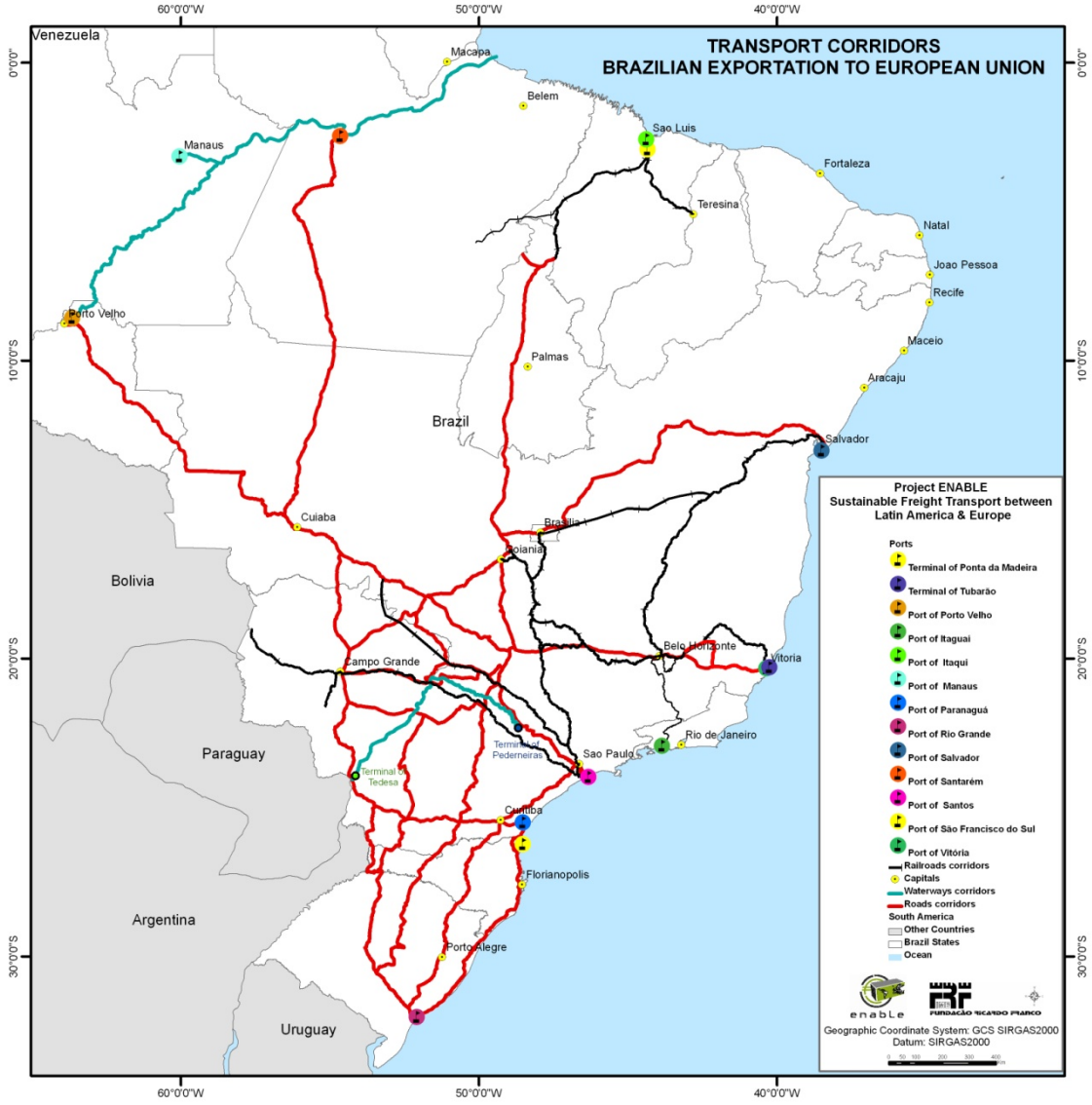


Figure 3.22 – Transport corridors for the ores, grains and agricultural supplies export from Brazil to the European Union

The main Brazilian Ports which export goods to the European Union are presented in the Table 3.9. It is observed that Vitória, São Luís and Rio de Janeiro are the main exporter ports, with 60% of the participation. This is due to the fact that the iron ore is exported through these ports, for in terms of exported products, in dollars, the most significant ports are Santos and Paranaguá, with 25.19% and 9.97% of the total, respectively.

Table 3.9 – Main Brazilian Ports which export goods to the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Vitória	19,515.29	25.73%
São Luís	15,134.41	19.95%
Rio de Janeiro	11,110.21	14.65%
Santos	9,631.45	12.70%
Paranaguá	5,785.50	7.63%
Rio Grande	2,436.81	3.21%
Salvador	1,747.77	2.30%
Manaus	1,677.68	2.21%
Macaé	1,337.10	1.76%
Santarém	1,237.39	1.63%
São Francisco do Sul	1,063.31	1.40%
Munguba	1,001.24	1.32%
Others	4,167.72	5.49%
Total	75,845.88	100.00%

In the case of the importations derived from the European Union to Brazil, it can be highlighted the Brazilian demand for mineral fuels, manure and fertilizers and inorganic chemicals, representing 48.76% of the total Brazilian imports. It is emphasized that these inorganic products are used in the manufacturing of industrial gases, of manure and fertilizers, and their intermediates. Table 3.10 highlights the main products and amounts imported in tons.

Table 3.10 – Main products imported from the European Union to Brazil, in tons (2009)

PRODUCT	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Manures or fertilizers	2,135,039.69	27.39%
Inorganic chemicals	918,070.33	11.78%
Mineral fuels, mineral oils, mineral waxes	746,905.73	9.58%
Nuclear reactors, boilers, machines, mechanical products	378,452.66	4.86%
Paper and carton, cellulose, paper, etc paste works	360,935.75	4.63%
Salt, sulfur, lands and rocks, gypsum, lime and cement	351,695.04	4.51%
Molten iron, iron and steel	343,200.04	4.40%
Organic chemicals	332,422.47	4.27%
Plastics and its works	311,150.17	3.99%

PRODUCT	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
automotive vehicles, tractors, their parts/accessories	238,193.09	3.06%
Milling industry products, malt, starches	203,556.40	2.61%
Molten iron, iron or steel works	196,190.18	2.52%
Several products from chemical industries	157,014.01	2.01%
Others	1,121,025.57	14.38%
Total	**7,793,851.14**	**100.00%**

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

The main Brazilian Ports that receive the products imported from the European Union can be observed on Table 3.11. It is possible to conclude that the Ports of Santos, Paranaguá and Rio de Janeiro are responsible for receiving 58.7% of the imports derived from the European Union.

Table 3.11 – Main Brazilian Ports that receive products imported from the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Santos	2,756.60	35.37%
Paranaguá	1,195.21	15.34%
Rio de Janeiro	573.92	7.36%
Rio Grande	486.79	6.25%
Vitoria	426.29	5.47%
São Luís	391.16	5.02%
Belém	224.19	2.88%
Itajaí	213.66	2.74%
Recife	196.09	2.52%
São Sebastião	190.91	2.45%
Aratu	189.16	2.43%
Sepetiba	144.87	1.86%
Porto Alegre	134.31	1.72%
Suape	106.28	1.36%
Imbituba	98.18	1.26%
Maceió	82.81	1.06%
Outros	383.43	4.92%
Total	**7,793.85**	**100.00%**

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

Regarding the Brazilian importation of manures and fertilizers derived from the EU, 07 Ports are responsible for 90.5% of the ingress in the Country. They are: Paranaguá, Santos, Vitória, Rio Grande, Porto Alegre, Maceió and São Luís (Port of Itaqui). Table 3.12 shows the total imported, in tons, through the mentioned Ports.

Table 3.12 – Ports that receive importations of manure and fertilizers, derived from the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Paranaguá	723,495.70	33.89%
Santos	429,590.05	20.12%
Vitória	270,522.20	12.67%
Rio Grande	219,464.89	10.28%
Porto Alegre	129,608.60	6.07%
Maceió	82,808.77	3.88%
São Luís	77,428.60	3.63%
Others	202,120.89	9.47%
Total	**2,135,039.69**	**100.00%**

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

Figure 3.23 highlights the transport corridors used for the transport of manures and fertilizers imported from the European Union in the Brazilian territory.

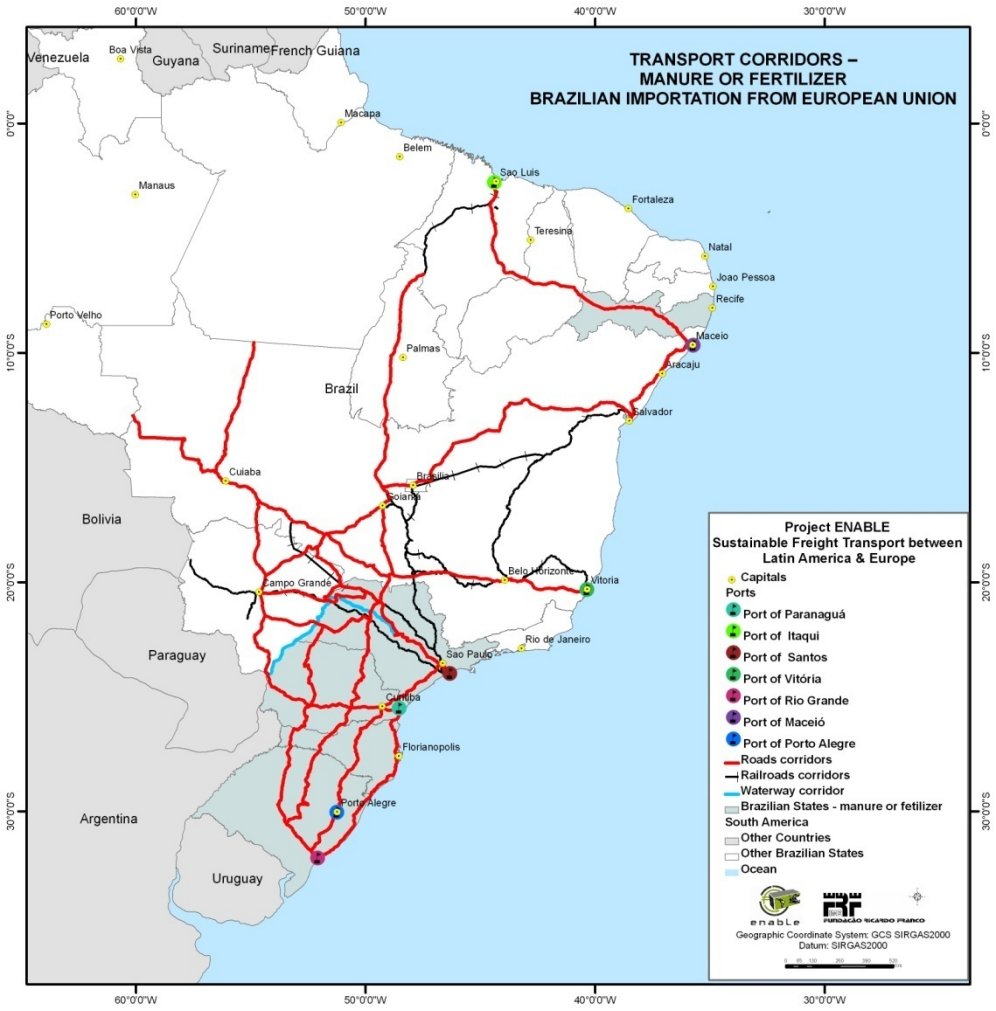


Figure 3.23 – Transport corridors for importation of manures and fertilizers derived from the European Union to Brazil

It is important to emphasize that more then 50% of these products importation comes to Brazil through the Ports of Paranaguá and Santos. The manure or fertilizers importation from the European Union occurs in 20 States of Brazil. From this total, 11 concentrate 75.8% of the total imports in tons, as observed in Table 3.13.

Table 3.13 – States that receive importations of manures or fertilizers derived from the European Union, in tons (2009)

BRAZILIAN STATE	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Paraná	361,578.49	16.94%
Rio Grande do Sul	350,835.36	16.43%
Minas Gerais	309,900.10	14.51%
São Paulo	299,144.28	14.01%

BRAZILIAN STATE	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Mato Grosso	165,800.44	7.77%
Goiás	131,283.03	6.15%
Others	516,498.00	24.19%
Total	2,135,039.69	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

As for the importation of mineral fuels, it is accomplished mainly through the Ports of São Luís, Rio de Janeiro, São Sebastião, Santos, Aratu and Aracaju, as shown in Table 3.14.

Table 3.14 – Ports that receive importations of mineral fuels, derived from the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
São Luís	263,217.34	35.24%
Rio de Janeiro	112,604.66	15.08%
São Sebastião	102,164.47	13.68%
Santos	99,654.46	13.34%
Aratu	87,764.63	11.75%
Aracaju	31,790.62	4.26%
Others	49,709.54	6.95%
Total	746,905.73	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

Figure 3.24 highlights the transport corridors used for the transport of mineral fuels imported from the European Union to Brazil.

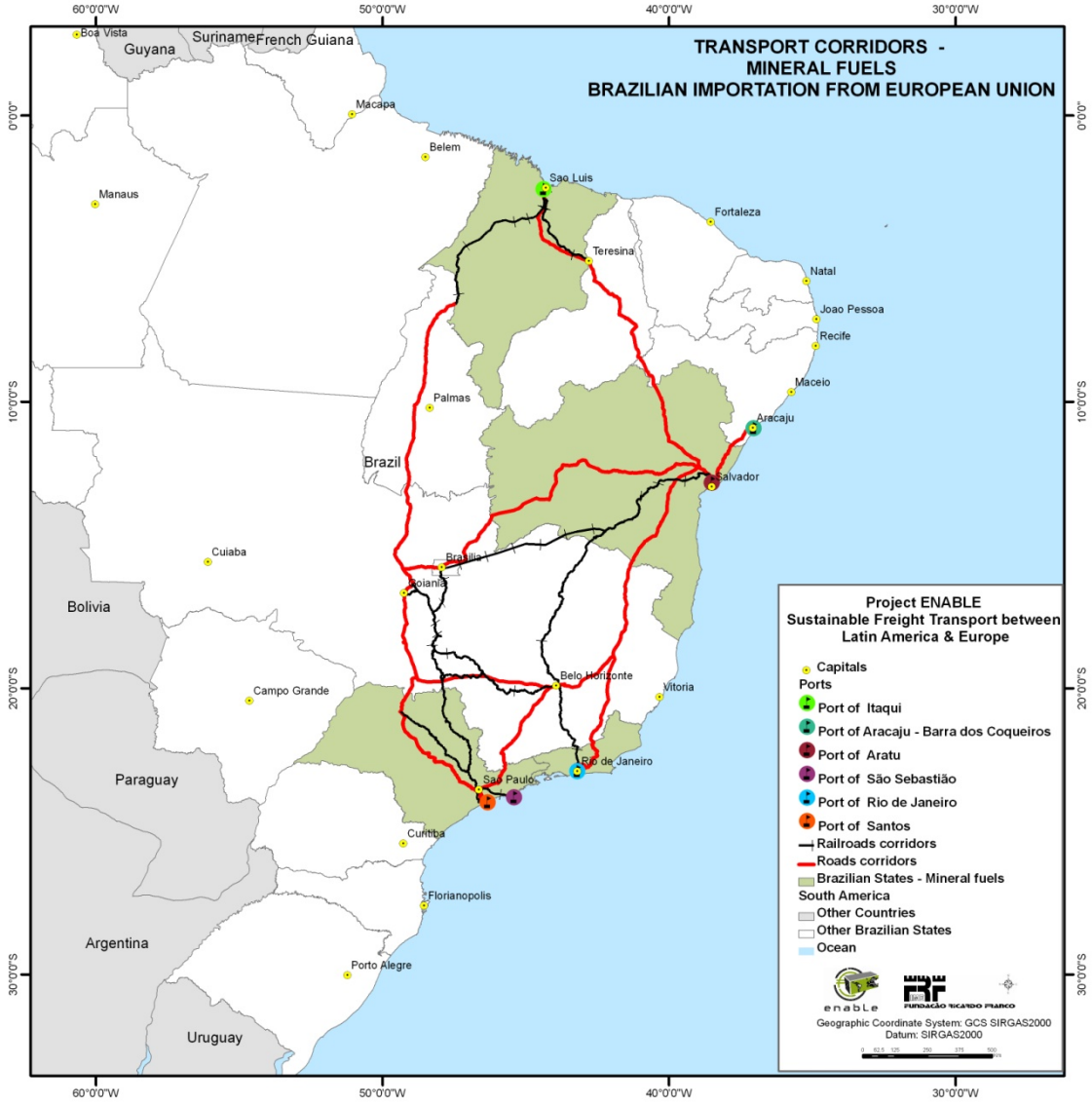


Figure 3.24 – Transport corridors for the importation of mineral fuels derived from the European Union to Brazil

The States that more import mineral fuels from the European Union can be observed in Table 3.15. It is possible to observe that 89.5% of the importations are accomplished by the States of Maranhão, São Paulo, Rio de Janeiro and Bahia.

Table 3.15 – States that receive importations of mineral fuels derived from the European Union, in tons (2009)

BRAZILIAN STATE	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Maranhão	263,216.84	35.24%
São Paulo	201,827.29	27.02%
Rio de Janeiro	111,894.05	14.98%
Bahia	91,901.08	12.30%
Others	78,066.46	10.45%
Total	746,905.73	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

The importation of inorganic chemicals, on its turn, is accomplished through the Ports of Santos, Paranaguá, Rio Grande, Imbituba, São Sebastião and Recife, which represent 93.5% of the port importations to Brazil, derived from the European Union. Table 3.16 shows the totals imported by the above mentioned Ports. The Port of Santos is the most important, for it is responsible for 42.8% of the inorganic chemicals imports.

Table 3.16 – Ports that receive importations of inorganic chemicals derived from the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Santos	393,407.71	42.85%
Paranaguá	139,544.19	15.20%
Rio Grande	134,337.21	14.63%
Imbituba	73,765.14	8.03%
São Sebastião	62,769.58	6.84%
Recife	50,436.83	5.49%
Others	63,809.67	6.95%
Total	**918,070.33**	**100.00%**

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

Figure 3.25 highlights the transport corridors used for the transport of inorganic chemicals imported from the European Union in the Brazilian territory.

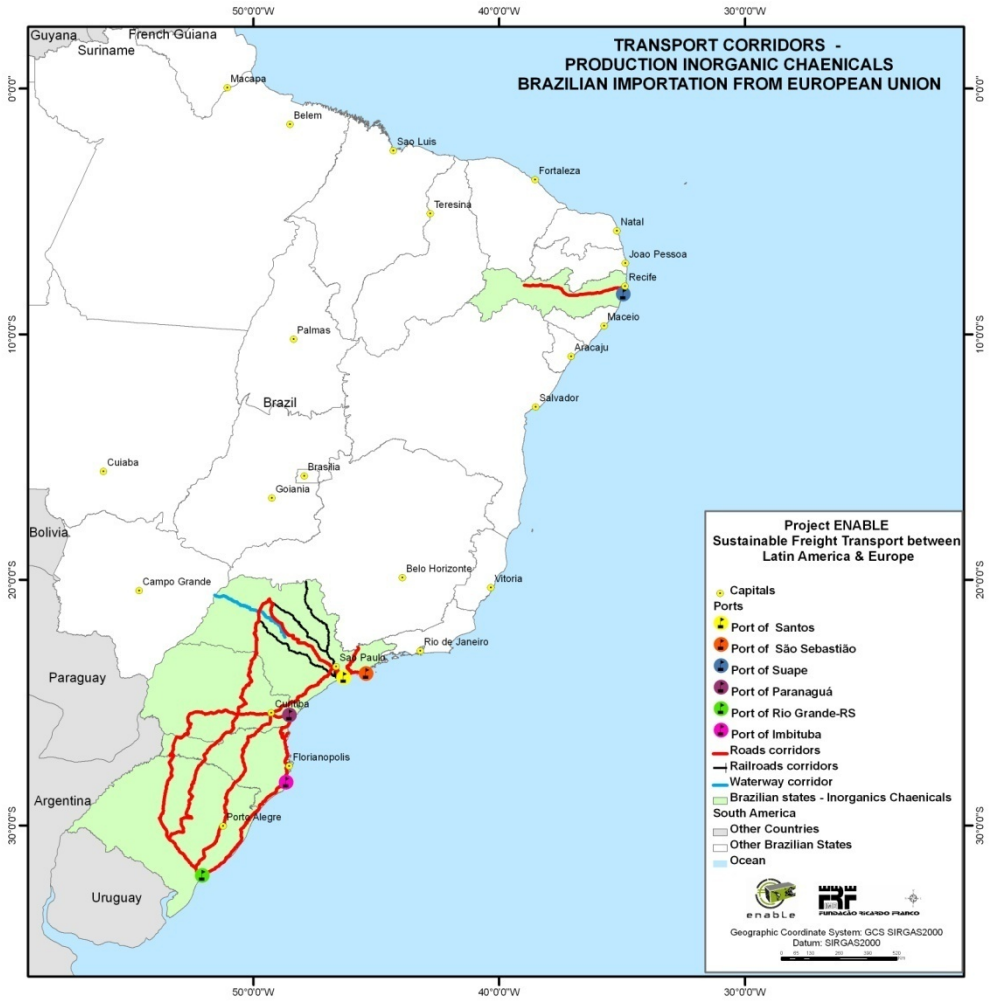


Figure 3.25 – Transport corridors for the importation of inorganic chemicals derived from the European Union to Brazil

In Table 3.17 it is possible to identify the States which more import inorganic chemicals from the European Union. The States of São Paulo, Rio Grande do Sul, Paraná, Santa Catarina and Pernambuco, totalize 91.4% of the total imports.

Table 3.17 – States that receive importations of inorganic products, derived from the European Union, in tons (2009)

BRAZILIAN STATE	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
São Paulo	441,514.39	48.09%
Rio Grande do Sul	143,272.07	15.61%
Paraná	109,790.75	11.96%
Santa Catarina	92,127.99	10.03%
Pernambuco	52,818.03	5.75%

BRAZILIAN STATE	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Others	78,547.10	8.56%
Total	918,070.33	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

It is important to highlight, still, the importation of nuclear reactors, boilers and machines, employed in the industry and agriculture, such as: turbines, generators, engines, pumps, machines and equipment of agricultural use, presses, among others. These products come to the country through the ports of Santos, Paranaguá, Rio de Janeiro, Rio Grande, Vitória and Itajaí. In spite of representing 5% of the total amount of imported products in tons, it represents 24.6% of the financial movement of what was imported from the European Union to Brazil. Table 3.18 shows the totals exported through each port.

Table 3.18 – Ports that receive importations of nuclear reactors, boilers and machines derived from the European Union, in tons (2009)

PORT	AMOUNT (THOUSAND TONS)	PERCENTAGE IN RELATION TO THE TOTAL
Santos	187,658.20	49.59%
Paranaguá	41,452.70	10.95%
Rio de Janeiro	39,263.35	10.37%
Rio Grande	19,246.39	5.09%
Vitória	15,628.66	4.13%
Itajaí	13,179.74	3.48%
Sepetiba	9,354.58	2.47%
Suape	9,346.90	2.47%
Others	43,322.14	11.45%
Total	378,452.66	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

Figure 3.26 presents all the corridors used in the Brazilian territory for importation of products derived from the European Union.

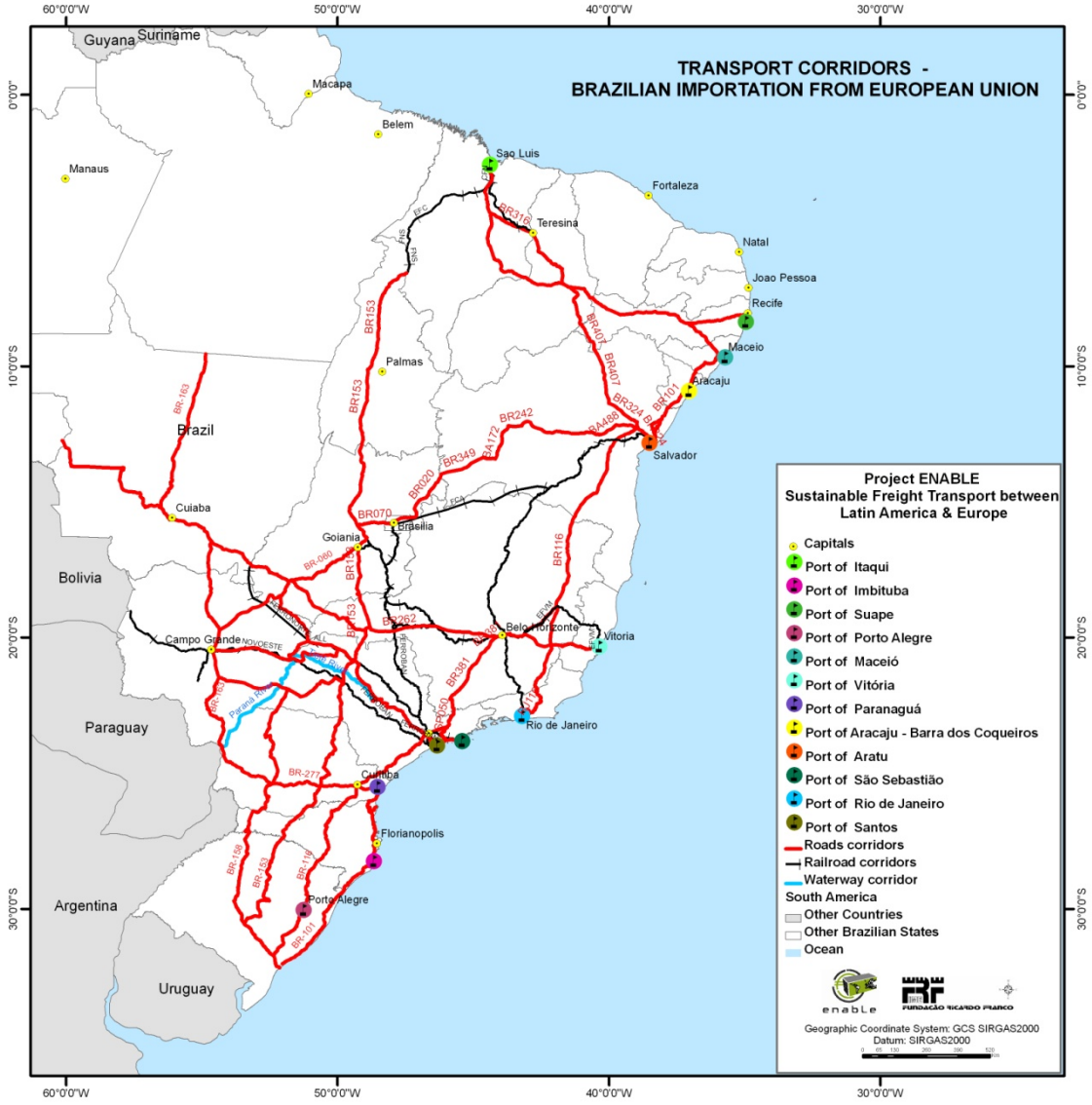


Figure 3.26 – Corridors of importation from the European Union to Brazil

Besides the terrestrial corridors previously mentioned, are highlighted the mains maritime corridors used for the freights transport between Brazil and the European Union. Item 3.4.3.2 highlights the main waterways used for imports and exports in the North and Southeast Regions of Brazil.

3.4.3.2. Maritime Corridors of Exportation and Importation from Brazil to the European Union

As main maritime corridors used for exportation and importation bound for, or derived from the European Union, are considered the waterways of Madeira and Paraná-Tietê. It is appropriate to emphasize that these waterways were represented in the Figure 3.22, together with the Brazilian highways, railways and ports, and that in this item are highlighted in detailed Figures. Madeira Waterway is located in the North Region of the country and it is used mainly for the transport of grains arising from the States of

Rondônia and Mato Grosso that come by Road to the Porto Velho Terminal (Rondônia). Figure 3.27 presents this corridor in the North Region of Brazil, used for the flowing of the products to Brazilian ports, which link the country to the European Union.

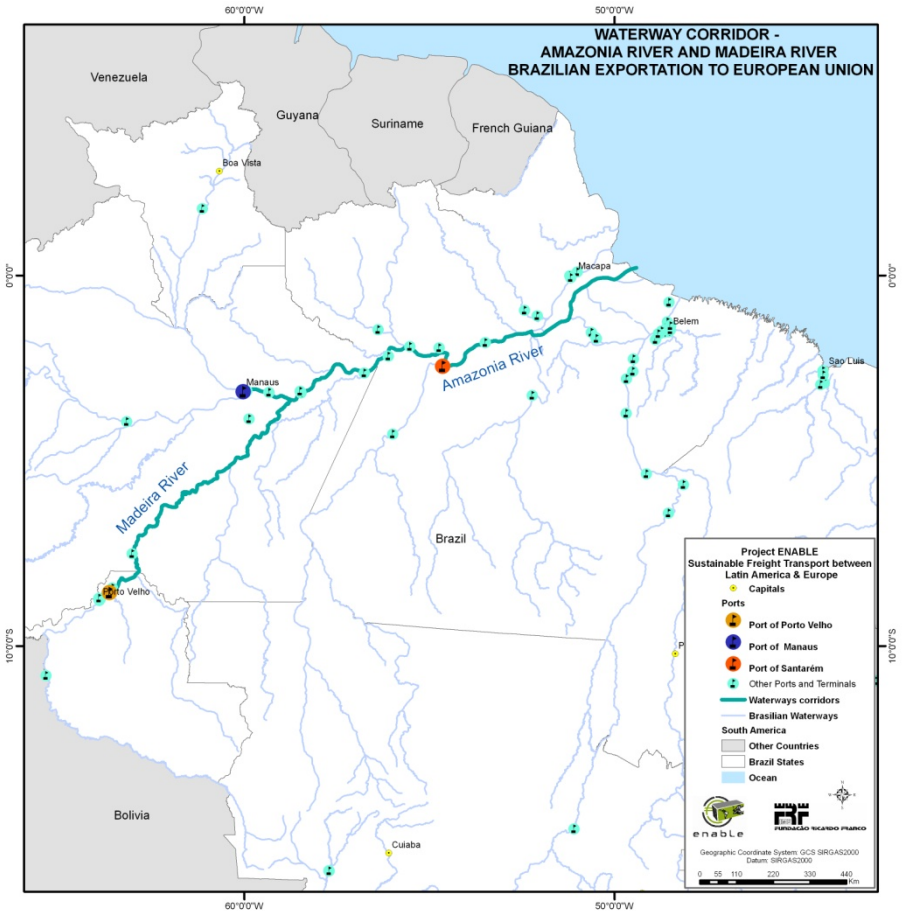


Figure 3.27 – Maritime corridor for exportation bound for the European Union in the North Region of Brazil

Paraná-Tietê Waterway is used for the transport of grains from the Middle-West Region (mainly from Goiás) to the Waterways Terminals Pederneiras and Panorama, in São Paulo, following from these to the Port of Santos, according to Figure 3.28. The same journey is made for the importation of industrialized chemicals imported from the European Union.

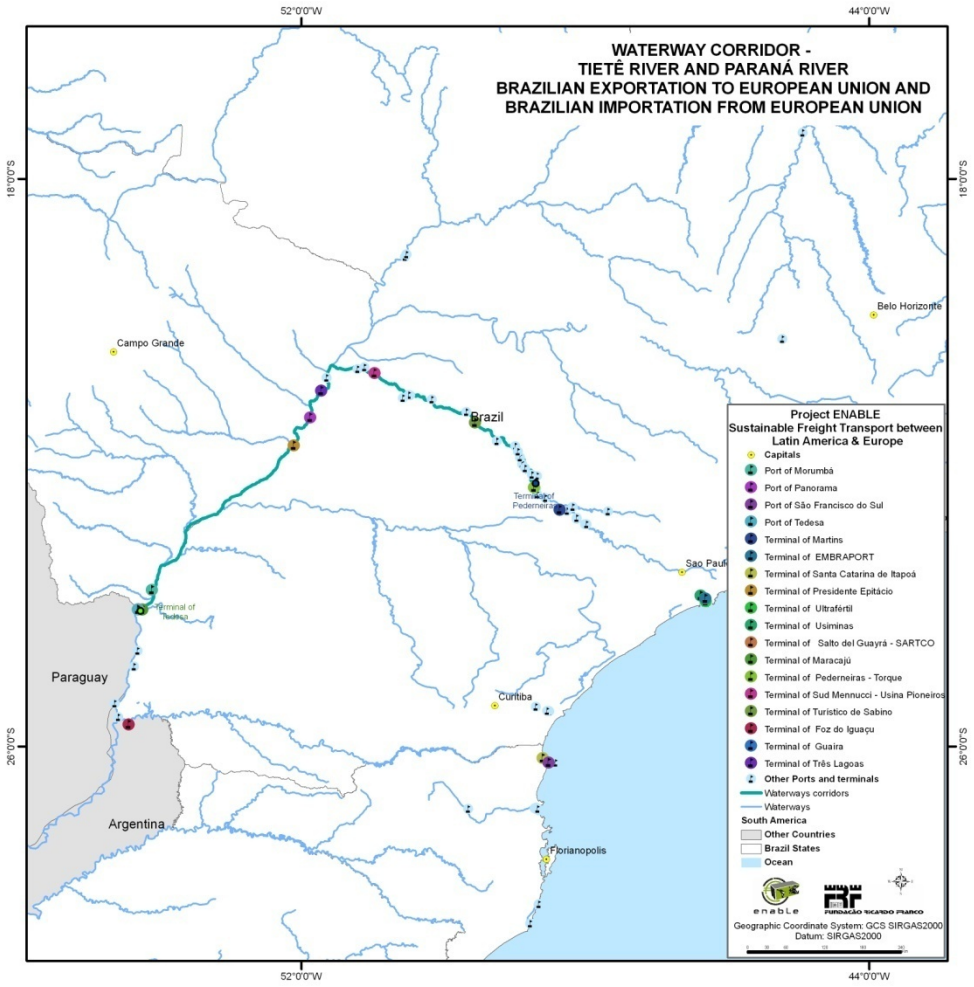


Figure 3.28 – Maritime corridor for exportation and importation between Brazil and the European Union through the Waterway of the Rivers Tietê and Paraná

It is appropriate to highlight that the information used for the delimitation of the corridors were obtained with the Ministry of Transportation of Brazil and Ministry of Development and International Trade, complemented by consultations with the Maritime Transports National Agency.

3.4.3.3. Customs and of Support Installations in Brazil

The main customs precincts in Brazil are: airports, military basis, Logistic and Industrial Customs Centers – LICC, port installations, free trade shops, border points, organized ports, dry ports, Special Precinct for Exportation Customs Clearance – SPECC, administrators of express dispatches, administrators of International postal dispatches, silos and tanks.

In relation to the present work, it deserve distinction the customs installations of border posts, between Brazil and Argentina, and the organized ports and the airports, which are detailed in the sequence.

Table 3.19 highlights Brazil's main customs installations referring to the border points with Argentina and surroundings, according to data from the Secretary of Federal Revenue in 2010.

Table 3.19 – Customs installations in Brazil

STATE	CITY
Paraná	Capanema
Paraná	Foz do Iguaçu
Paraná	Foz do Iguaçu
Paraná	Santo Antonio do Sudoeste
Rio Grande do Sul	Bagé
Rio Grande do Sul	Barra do Quaraí
Rio Grande do Sul	Chuí
Rio Grande do Sul	Jaguarão
Rio Grande do Sul	Porto Xavier
Rio Grande do Sul	Quaraí
Rio Grande do Sul	Santana do Livramento
Rio Grande do Sul	Uruguaiana
Santa Catarina	Dionísio Cerqueira

Source: Secretary of the Federal Revenue of Brazil (2010)

Figure 3.29 highlights the main customs installations of Brazil referring to the border points with Argentina and surroundings of Brazil.

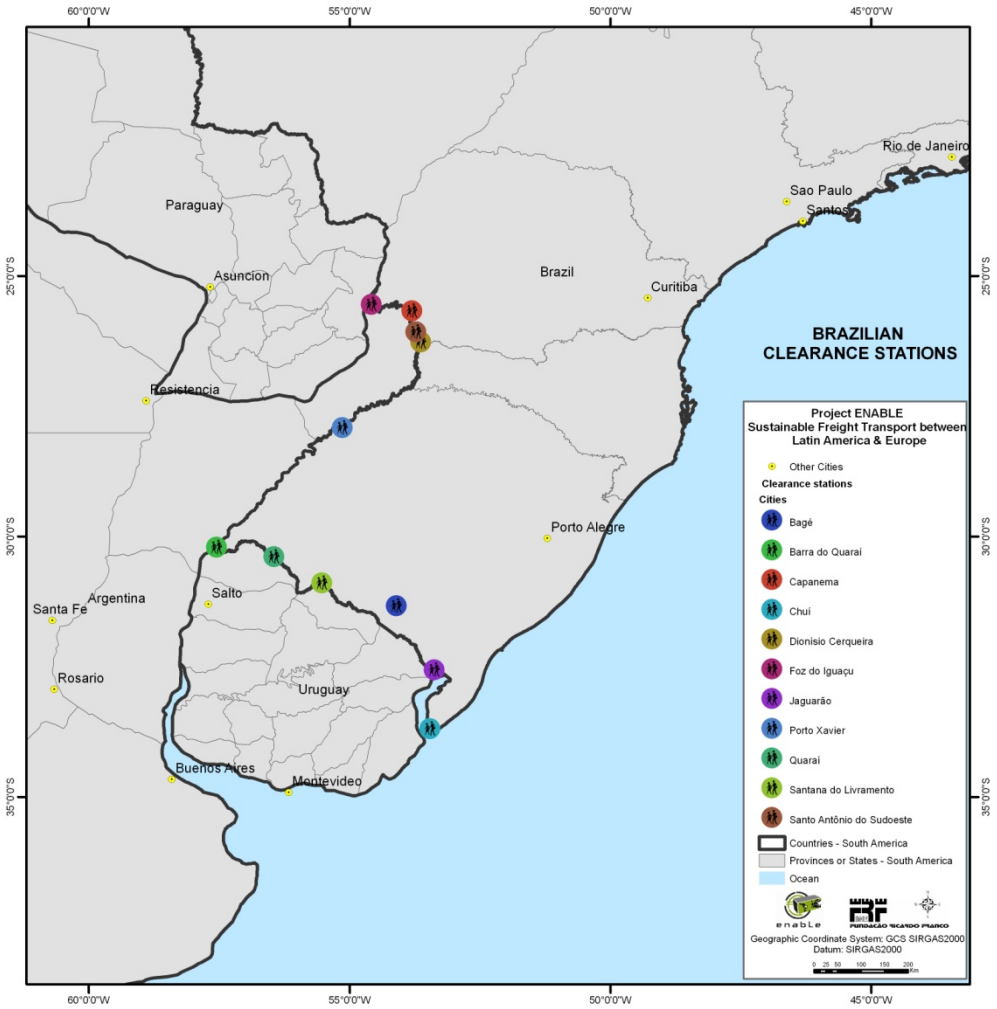


Figure 3.29 – Brazilian customs

Source: Secretary of the Federal Revenue of Brazil (2010)

Table 3.20 shows the maritime port installations of public use of Brazil, referring to the ports with export and import to the European Union.

Table 3.20 – Maritime port installations of public use, of Brazil

STATE	CITY
Alagoas	Maceió
Bahia	Candeias
Bahia	Ilhéus
Bahia	Salvador
Ceará	Fortaleza
Espírito Santo	Vila Velha
Espírito Santo	Vitória
Maranhão	São Luís

STATE	CITY
Paraíba	Cabedelo
Pernambuco	Ipojuca
Pernambuco	Recife
Paraná	Antonina
Paraná	Paranaguá
Rio de Janeiro	Angra dos Reis
Rio de Janeiro	Arraial do Cabo
Rio de Janeiro	Itaguaí
Rio de Janeiro	Niterói
Rio de Janeiro	Rio de Janeiro
Rio Grande do Norte	Areia Branca
Rio Grande do Norte	Natal
Rio Grande do Sul	Rio Grande
Rio Grande do Sul	Tramandaí
Santa Catarina	Imbituba
Santa Catarina	Itajaí
Santa Catarina	São Francisco do Sul
São Paulo	Guarujá
São Paulo	Santos
São Paulo	São Sebastião

Source: Secretary of the Federal Revenue of Brazil (2010)

It is important to emphasize important points of support to the trade between Brazil and Argentina and the airports and terminals listed in Table 3.21.

Table 3.21 – Airports and freight terminals used in the trade between Brazil, Argentina and European Union

STATE	CITY
Acre	Cruzeiro do Sul
Acre	Rio Branco
Alagoas	Maceió
Amazonas	Manaus
Amazonas	Tabatinga
Amapá	Macapá
Bahia	Porto Seguro
Bahia	Salvador
Ceará	Fortaleza
Distrito Federal	Brasília

STATE	CITY
Espírito Santo	Vitória
Goiás	Goiânia
Maranhão	São Luís
Minas Gerais	Lagoa Santa
Mato Grosso do Sul	Campo Grande
Mato Grosso do Sul	Corumbá
Mato Grosso do Sul	Ponta Porã
Mato Grosso	Várzea Grande
Pará	Belém
Paraíba	Bayeux
Pernambuco	Petrolina
Pernambuco	Recife
Piauí	Teresina
Paraná	Foz do Iguaçu
Paraná	Londrina
Paraná	Maringá
Paraná	São José dos Pinhais
Rio de Janeiro	Cabo Frio
Rio de Janeiro	Campos dos Goytacazes
Rio de Janeiro	Rio de Janeiro
Rio Grande do Norte	Parnamirim
Roraima	Boa Vista
Rio Grande do Sul	Porto Alegre
Rio Grande do Sul	Uruguaiana
Santa Catarina	Florianópolis
Santa Catarina	Joinville
Santa Catarina	Navegantes
Sergipe	Aracaju
São Paulo	Campinas
São Paulo	São José dos Campos
São Paulo	São Paulo

Source: Secretary of the Federal Revenue of Brazil (2010)

The spatial analysis of these points contributed to the qualification stage of the study referring to the problems existing in the borders posts, related to the transport operation and to identify the agents involved and responsible for the functioning of these posts.

3.4.3.4. Terrestrial Corridors of Exportation and Importation between Argentina and the European Union

Great part of the products exported from Argentina to the European Union is formed by industrial wastes, cereals and fruits, as it can be observed in Table 3.22.

Table 3.22 – Main products exported from Argentina to the European Union, in tons (2008)

PRODUCT	AMOUNT (THOUSAND US$)	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL TONS
Residues and wastes from the food industries	4,531,025	16,237,175	62.13%
Cereals	1,082,374	5,049,186	19.32%
Fruits, citrus and melons peels	867,546	1,018,626	3.90%
Oleaginous seeds and fruits, grains, seeds	228,746	317,088	1.21%
Fish and crustaceans, mollusks and other aquatic invertebrates	914,217	299,054	1.14%
Ores, scorias and ashes	643,318	283,935	1.09%
Mineral fuels, mineral oils, mineral waxes	89,597	176,998	0.68%
Wood, charcoal and wood's works	60,908	174,562	0.67%
Meats and giblets, comestibles	998,578	118,321	0.45%
Milk and dairy, poultry eggs, natural honey	143,257	54,084	0.21%
Smoke (tobacco) and its manufactured substitutes	157,786	47,212	0.18%
Coffee, teas, malt and spices	12,032	13,736	0.05%
Plastics and their works	48,519	12,607	0.05%
Rubber and its works	20,781	4,570	0.02%
Milling industry products, malt, starches	432	777	0.00%
Cotton	1,091	580	0.00%
Others	4,304,610	2,325,903	8.90%
Total	14,104,818	26,134,415	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

The first two items add up to 82% of Argentine exports to the EU, and they are originated within the area resulting from the sum of figs. 2.36, 2.3XX and 2.39. They correspond mainly to soybean sub-products of very low value added and other primary ffod products. Flows pictured in Figure 2.48, left, provide a very good sample of the spatial pattern of these good`s transport and their convergence to port terminal in Rosario. Argentine ports chanelling cereal exports are listed in Table 3.23. The importance of Paraná river´s lower section, where Rosario`s terminals are, is clearly

recognizable. However, this waterway works mainly as an extension of the Atlantic Ocean and not as a typical river used by barges.

The great majority of fruits can be assumed to correspond to apples and pears shipped through San Antonio Oeste port. This is another example of a trader internalizing transport capacity: the Italian company trading this merchandise in the low countries owns the port. As for the fifth item in table 3.22, shipments correspond to production of European firms, Spanish to a large extent. A proportion of these fish and curtaceans are exported in containers using on of the two regular services between Montevideo and ports in southern Argentina. Overall, the overwhelming majority of argentine exports to the EU has little or none added value requiring thus unsophisticated transportation. However, as noted above, there is a tendency from trading companies to control at least a part of the transport chain.

Table 3.23 – Main Argentinean ports that more export cereals to the European Union, in tons (2008)

PORT	VOLUME, IN TONS (2008)	PERCENTAGE IN RELATION TOTHE TOTAL VOLUME
San Lorenzo./S. Martin	11,260,404.48	44.93%
Rosario	6,935,051.00	27.67%
Bahia Blanca	3,468,264.00	13.84%
Necochea	2,122,609.00	8.47%
Ramallo	560,920.00	2.24%
Lima	240,767.00	0.96%
San Nicolas	189,103.00	0.75%
San Pedro	125,734.00	0.50%
Diamante	95,900.00	0.38%
Buenos Aires	55,794.00	0.22%
Villa Constitucion	10,000.00	0.04%
TOTAL	25,064,546.48	100.00%

Source: Ministry of Agriculture, Cattle Raising and Fish of Argentina (2010).

Rosario and San Lorenzo/SM should be added and labeled "Greater Rosario". Figures for the ports of San Nicolás, San Pedro, Diamante and Villa Constitución reflect rather episodical shipments and not steady or consolidate use, and they should be omitted for the sake of clarity from this table and all other reflecting agricultural shipments.

The Argentinean ports responsible for the oleaginous products export can be checked in Table 3.24.

Table 3.24 – Main Argentinean ports that more export oleaginous products to the European Union, in tons (2008)

PORT	VOLUME, IN TONS (2008)	PERCENTAGE IN RELATION TOTHE TOTAL VOLUME
San Lorenzo./S. Martin	2,921,490.00	25.98%
Bahia Blanca	2,841,635.00	25.27%
Rosario	2,641,038.00	23.49%
Necochea	1,080,315.00	9.61%
Ramallo	611,542.00	5.44%
Lima	573,979.00	5.10%
San Pedro	258,556.00	2.30%
Diamante	208,430.00	1.85%
Buenos Aires	107,016.00	0.95%
TOTAL	11,244,001.00	100.00%

Source: Ministry of Agriculture, Cattle Raising and Fish of Argentina (2010)

The production of residues and wastes from the food industries, 45% of the Argentinean exports to the European Union, also follows the same corridors than the cereals and oleaginous seeds. Figure 3.30 highlights the main Argentinean corridors responsible for the freight exportation to the European Union, comprising the road, rail and waterway modals. Among the main national routes used for the transport of goods are: RN-226, RN-153, RN-33, RN-188, RN-127, RN-07, RN-34, RN-16 and RN-81. In this case, were considered only the national routes, for representing the corridors of greater representativity for the Argentinean national transport. Meantime, it is important to emphasize that the provincial and local routes are also relevant connecting axles among the Argentinean producer areas and these national routes, which take to the ports, used for the production's flowing, including to the European Union.

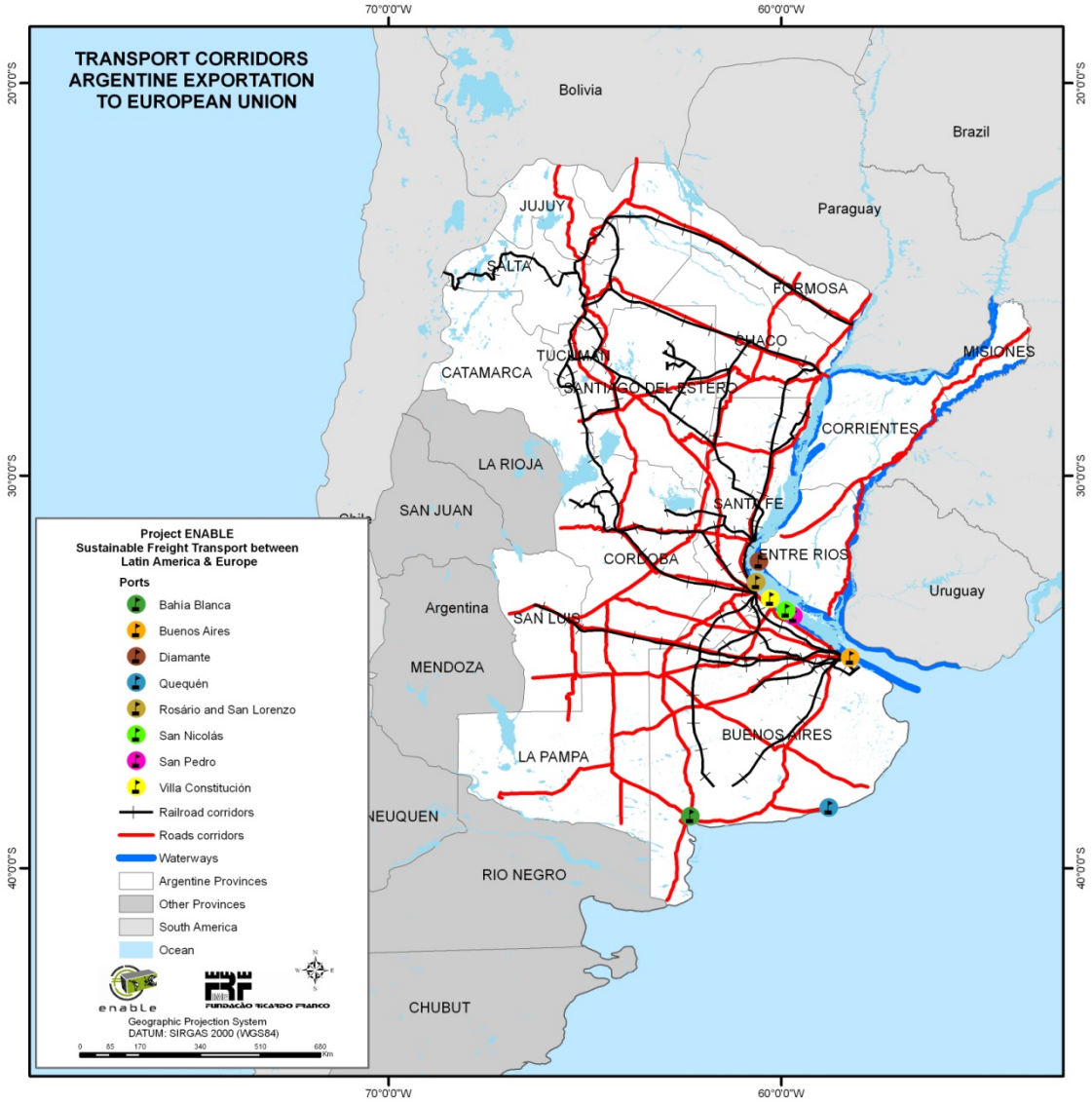


Figure 3.30 – Transport corridors of the Argentinean exportation to the European Union

Except one, all rail operators carry large amounts of soybean to Rosario. As for exports from the European Union to Argentina, it can be highlighted the demand for the same products imported by Brazil. The main difference is in the amount imported according to the demand observed. In this case the importation of mineral fuels represents 17.83% of the total imports arisen from the European Union, followed by manures and fertilizers with 14.59% of the total and inorganic chemicals representing 11.35%. These products together summarize 43.76% of the Argentinean total imports arisen from the European Union. Table 3.25 shows the freight imported concerning the products mentioned referring to the year 2008.

Table 3.25 – Main products imported by Argentina, derived from the European Union, in tons (2008)

PRODUCT	AMOUNT (THOUSAND US$)	AMOUNT (TONS)	PERCENTAGE IN RELATION TO THE TOTAL TONS
Mineral fuels, mineral oils, mineral waxes	335,055	371,956	17.82%
Manures or fertlizers	149,238	304,472	14.59%
Inorganic chemicals	175,767	236,882	11.35%
Paper and carton. cellulose, paper paste works	233,842	206,875	9.91%
Nuclear reactors, boilers, machines, mechanic products	2,005,579	119,468	5.72%
Molten iron, iron and steel	177,839	100,297	4.81%
Automotive vehicles, tractors, their parts/accessories	949,119	90,653	4.34%
Plastics and their works	321,574	82,981	3.98%
Several products from the chemical industries	249,996	72,517	3.47%
Molten iron, iron or steel works	198,125	61,698	2.96%
Salt, sulfur, lands and rocks, gypsum, lime and cement	26,127	55,336	2.65%
Milling industry products, malt, starches	3,086	3,494	0.17%
Others	3,949,001	380,386	18.23%
Total	8,774,348	2,087,015	100.00%

Source: Aliceweb System – Ministry of the Development and International Trade of Brazil (2010)

The corridors used for the transport of the goods that arrive to the Argentinean territory run through similar routes to those used by the corridors for exportation, with small differences as it can be observed in Figure 3.31.

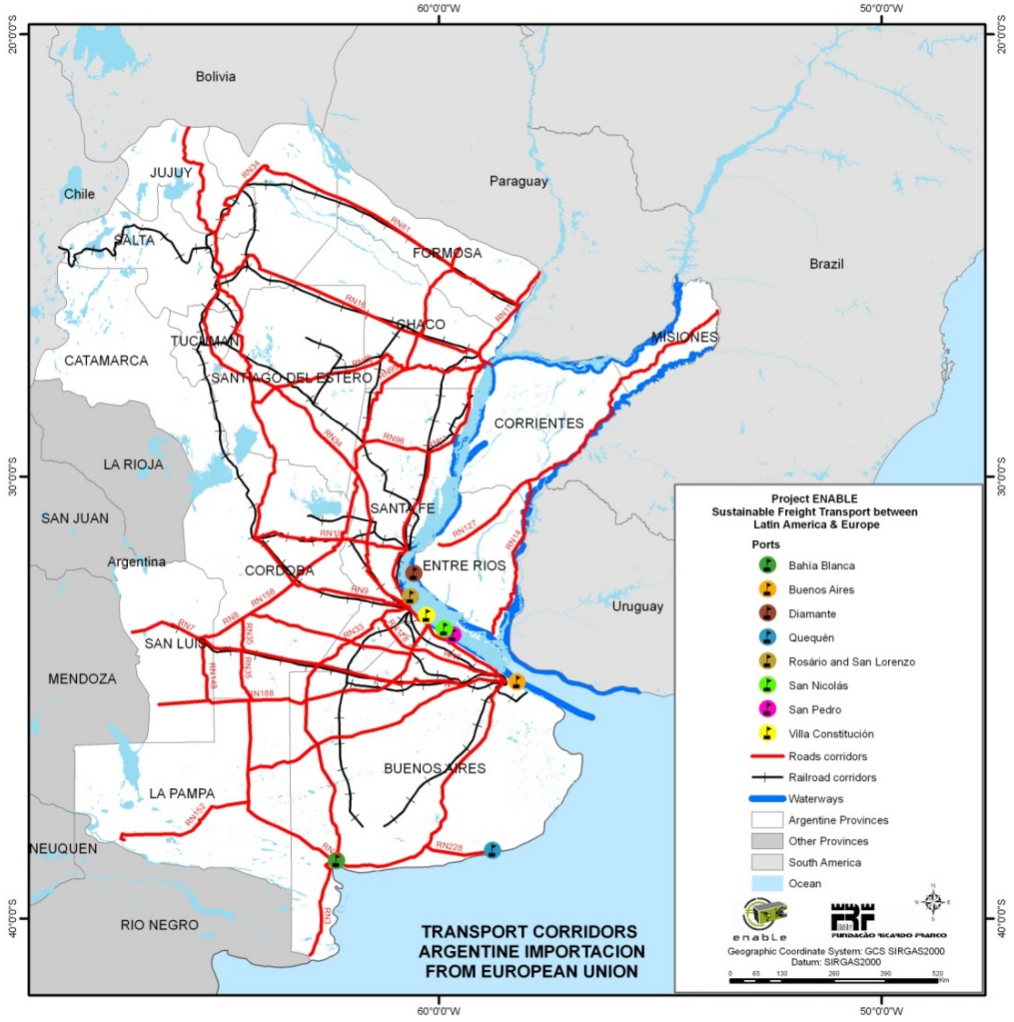


Figure 3.31 – Transport corridors of the Argentinean importation of the products derived from the European Union

3.4.3.5. Waterway Corridors of Exportation and Importation between Argentina and the European Union

The main Ports used for the exportation and importation between Argentina and the European Union are: Buenos Aires, Bahia Blanca, Quequén, Complexo greater Rosario, and Zárate-Campana, as observed in Figure 3.32.

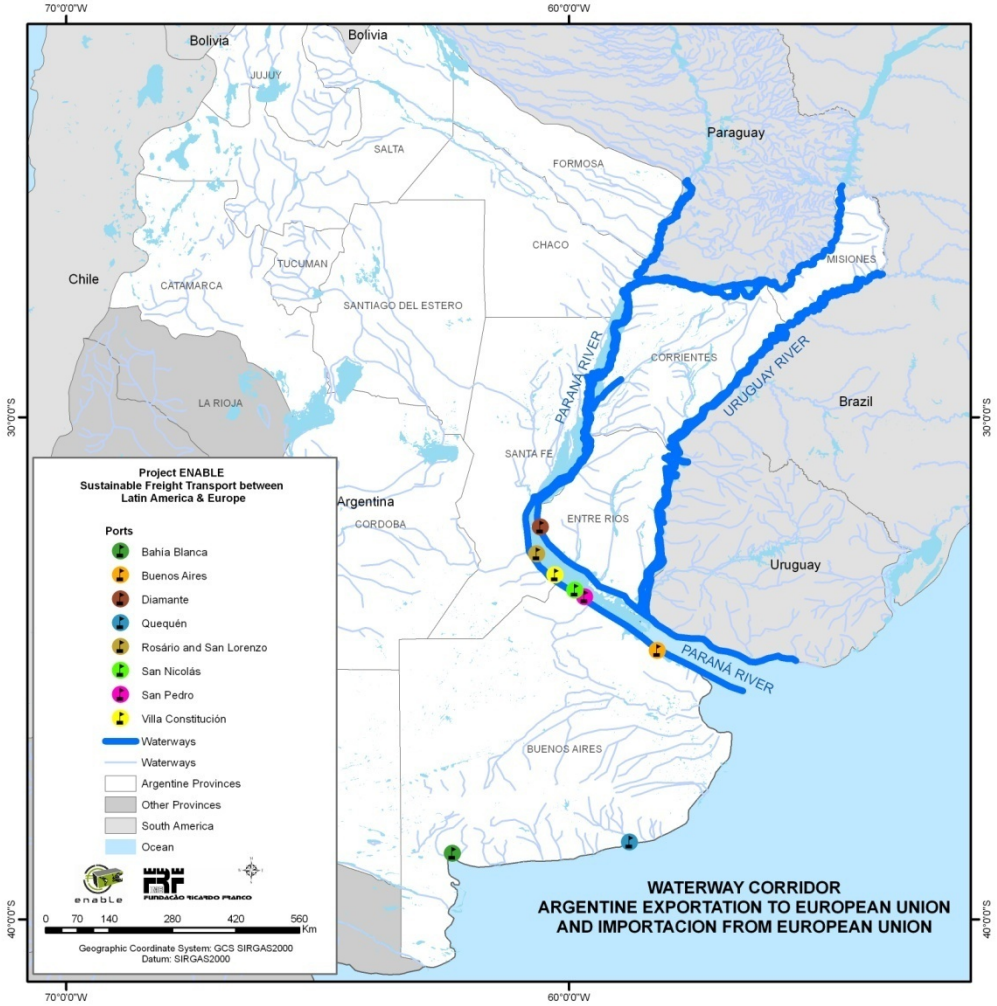
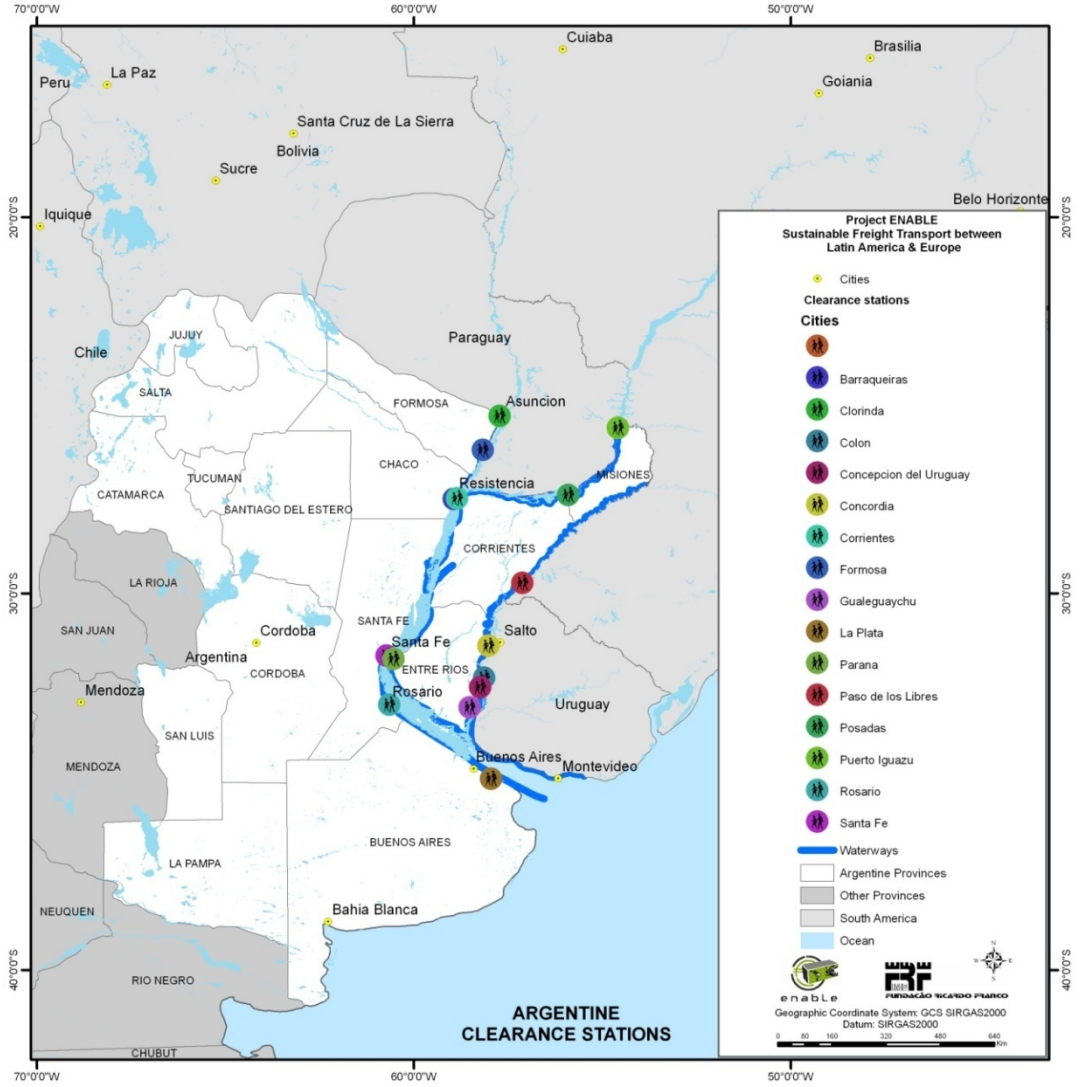


Figure 3.32 – Waterway transport corridors for exportation and importation between Argentina and the European Union

3.4.3.6. Customs and of Support Installations in Argentina

Based on information derived from the Integral Information Center to the International Trade the main Argentinean customs installations were georeferentiated, which stands out for the importance concerning the international trade with Brazil. Figure 3.33 presents the geographical location of these logistic points.



Source: Integral Information Center to the International Trade, 2010

Figure 3.33 – Argentine Customs posts

The knowledge about tariff and non-tariff obstacles to the trade of goods and services allows growth of the trade flows between Argentina and Brazil. In the set of the non tariff barriers are included the impediments to the international transport of goods happen in a fast, safe way and at reduced costs.

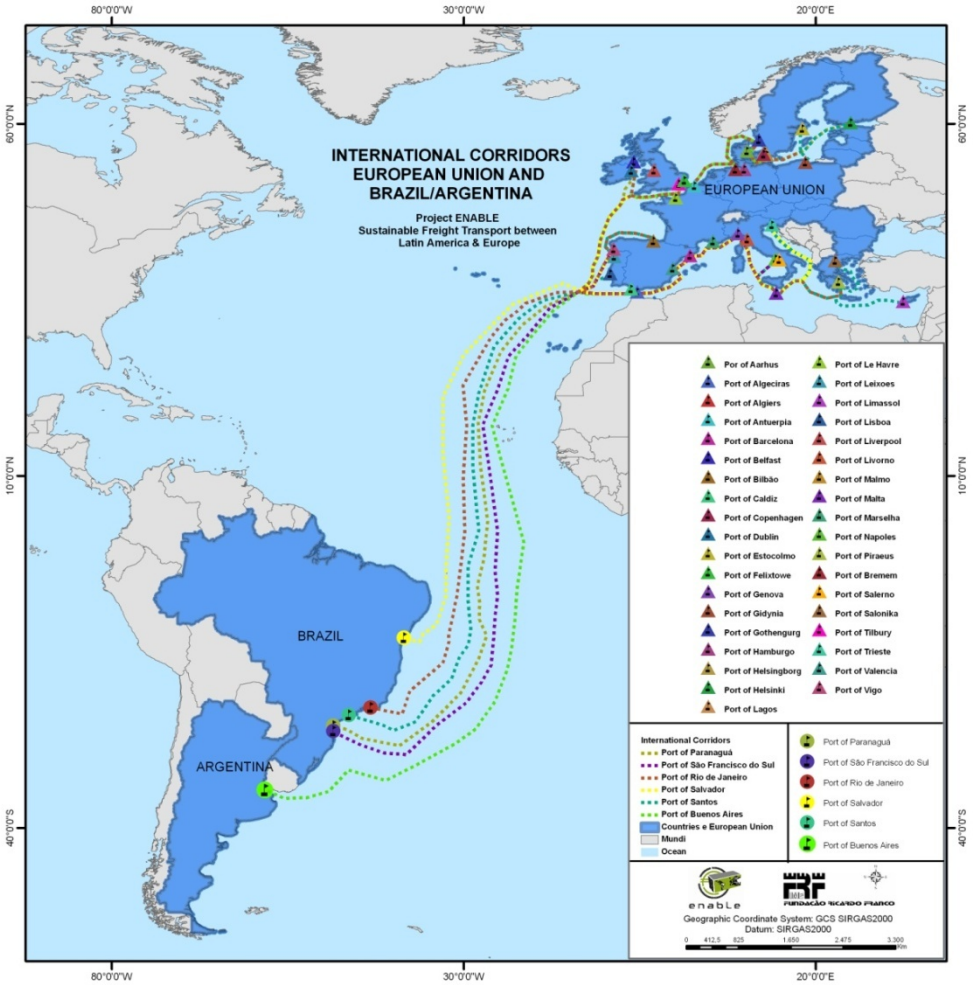
3.4.4. Intercontinental Transport Corridors

The maritime transport way is one of the most important modals for the development of the industry and the logistics, presenting an enormous potential for commercial expansion between Brazil, Argentina and the European Union. Its importance is directly linked to the multimodality, to the generation of new jobs, to the increase in the freights movement in the involved countries and to the strengthening of the logistics sector in the international market. The commercial relations among the mentioned actors can be

better evaluated when it is used geotechnologies for the elaboration of transport routes and corridors in intercontinental scale.

3.4.4.1. Main Connections

After the analysis of the internal corridors in Brazil and Argentina, were identified the intercontinental corridors from the data obtained at the main logistics operators of freight transport. The spatial analysis of the commercial relations between Brazil, Argentina and the European Union countries can be better observed after the identification of the ports with closer commercial relation between the two continents, specifically Brazil, Argentina and the European Union. Figure 3.34 highlights the main routes and ports in Brazil, Argentina and the European Union countries permitting to analyze the logistics points with improved intercontinental relation.



Source: Maritime Guide (2010)

Figure 3.34 – International corridors of maritime transport between Brazil, Argentina and the European Union

The map was elaborated based on the Table 3.26 which details the relations among ports in each Country of the logistics network.

Table 3.26 – Main intercontinental maritime corridors among Brazil, Argentina and European Union

COUNTRY	EUROPEAN UNION PORTS	BRAZILIAN PORTS					ARGENTINE PORT
		Paranaguá	Santos	Rio de Janeiro	São Francisco do Sul	Salvador	Buenos Aires
Alemanha	Bremen	x					
				x			
						x	
			x				
	Hamburgo	x					
				x			
						x	
			x				
Belgium	Antuerpia	x					
			x				
Cyprus	Limassol		x				
Denmark	Aarhus	x					x
				x			
			x				
	Copenhagen					x	
			x				
Spain	Algeciras		x				x
	Barcelona	x					x
						x	
					x		
	Bilbao	x					x
				x			
			x				
	Cadiz					x	
			x				x
	Valencia	x					x
				x			
						x	
					x		
			x				
	Vigo			x			x
						x	
			x				
		x					
Finland	Helsinki	x					
			x				
France	Le Havre	x					
				x			
						x	
			x				
					x		
	Marselha		x				
Greece	Piraeus	x					

COUNTRY	EUROPEAN UNION PORTS	BRAZILIAN PORTS					ARGENTINE PORT
		Paranaguá	Santos	Rio de Janeiro	São Francisco do Sul	Salvador	Buenos Aires
				x			
						x	
			x				
	Salonika		x				
Ireland	Belfast	x					
	Dublin	x					
			x				
Italy	Genove	x					
				x			
			x			x	
					x		
	Livorno	x					
			x				
	Naples		x				
	Salerno	x					
			x				
	Trieste					x	
			x				
Malta	Malta	x					
			x				
Poland	Gdynia			x			
			x				
Portugal	Leixoes	x					
						x	
			x				
					x		
	Lisbon	x					
			x				
United Kingdom	Felixstowe		x				
	Liverpool			x			
	Tilbury	x					
			x				
Sweden	Stockholm		x				
	Gothenburg	x					
				x			
			x				
	Helsingborg		x				
	Malmo		x				

Source: Maritime Guide (2010)

The five Brazilian ports and the Argentinean port, presented in the previous table, were defined for being hub ports in the respective countries, for they concentrate several goods that are bound for the European Union. Thus, the six most important ports have their information shown in Table 3.27.

Table 3.27 – Information of freights movement in the hub ports of Brazil and Argentina (2008)

PORT	AMOUNT BULK SOLID (TONS)	AMOUNT LIQUID BULKS (TONS)	AMOUNT GENERAL FREIGHT (TON)	TOTAL AMOUNT (TONS)	EXPORTATIONS TO EUROPEAN UNION	PERCENTAGE IN RELATION TO TOTAL
Santos	35,419,219	14,379,147	33,517,821	83,316,187	11,120,589	13.35%
Paranaguá	20,246,890	3,971,813	9,799,513	34,018,216	7,892,993	23.20%
Rio de Janeiro	1,985,727	11,375,049	6,442,806	19,803,582	830,601	4.19%
São Francisco do Sul	4,181,015	9,349,877	3,455,889	16,986,781	1,680,551	9.89%
Salvador	2,713,684	3,515	3,120,060	5,837,259	1,818,433	31.15%
Buenos Aires	118,700	1,824,900	10,802,100	12,745,700		

Source: NWTA, ALICEWEB and PUERTO BUENOS AIRES (2010)

From Table 3.28, it is possible to identify which European countries more received exported products through the main Brazilian ports that form the intercontinental corridors.

Table 3.28 – Main ports with movement among Brazil and the European Union countries, in tons (2008)

PORT	COUNTRY	AMOUNT IN TONS	% IN RELATION TO TOTAL
Santos	Holland	3,830,918.59	34.45%
	Belgium	1,755,445.48	15.79%
	Spain	1,599,259.84	14.38%
	France	1,016,436.90	9.14%
	Germany	700,072.52	6.30%
	United Kingdom	575,764.40	5.18%
	Others	1,642.692.00	14.77%
	Total	11,120,589.72	100.00%
Paranaguá	Holland	1,977,007.99	25.05%
	France	1,599,199.76	20.26%
	Germany	1,379,784.90	17.48%
	Spain	717,401.79	9.09%
	Italy	676,281.10	8.57%
	Belgium	431,587.23	5.47%
	Others	1,111,731.02	14.09%
	Total	7,892,993.79	100.00%
Rio de Janeiro	Italy	265,449.36	31.96%
	Holland	180,668.12	21.75%
	Germany	112,884.70	13.59%

PORT	COUNTRY	AMOUNT IN TONS	% IN RELATION TO TOTAL
	Spain	83,112.66	10.01%
	United Kingdom	56,825.37	6.84%
	France	47,877.41	5.76%
	Others	131,660.82	10.09%
	Total	830,601.03	100.00%
Salvador	Germany	637,127.04	35.04%
	France	286,000.71	15.73%
	Holland	238,573.08	13.12%
	United Kingdom	213,804.92	11.76%
	Portugal	163,233.75	8.98%
	Spain	97,283.02	5.35%
	Others	182,411.03	10.03%
	Total	1,818,433.55	100.00%
São Francisco do Sul	Holland	439,420.55	26.15%
	Italy	357,033.61	21.25%
	Spain	264,207.63	15.72%
	Germany	165,447.89	9.84%
	Portugal	150,809.99	8.97%
	France	97,453.89	5.80%
	Others	206,178.26	12.27%
	Total	1,680,551.83	100.00%

Source: ALICEWEB (2010)

In this way, it is observed that Holland, Germany, Italy, United Kingdom and France are the countries which concentrate the receiving of these products. Nevertheless, it is known that the Brazilian exportations are not bound only for these countries. So, it is possible to notice that the ports of the countries mentioned are hub to Europe. To analyze what is exported from these countries concentrator of freights to Brazil from these countries, it is presented in the Table 3.29, which shows to which ports are sent the products imported in Brazil.

Table 3.29 – Main European countries with hub ports of exportation to Brazil in relation to the Brazilian ports, in tons (2008)

COUNTRY	PORT	AMOUNT IN TONS	% IN RELATION TO TOTAL
France	Santos	256,152.69	40.05%
	Rio de Janeiro	71,448.04	11.17%
	Paranaguá	57,944.64	9.06%

COUNTRY	PORT	AMOUNT IN TONS	% IN RELATION TO TOTAL
	São Francisco do Sul	9,365.84	1.46%
	Salvador	4,838.25	0.76%
	Others	239,799.95	37.50%
	Total	639,549.41	100.00%
Germany	Santos	1,216,484.74	54.99%
	Rio de Janeiro	177,036.89	8.00%
	Paranaguá	120,249.34	5.44%
	São Francisco do Sul	28,585.54	1.29%
	Salvador	27,235.22	1.23%
	Others	642,635.27	29.05%
	Total	2,212,226.99	100.00%
Holland	Santos	235,509.97	28.92%
	Paranaguá	156,420.93	19,21%
	Rio de Janeiro	14,737.72	1.81%
	Salvador	8,203.05	1.01%
	São Francisco do Sul	1,564.76	0.19%
	Others	397,828.19	48.86%
	Total	814,264.61	100.00%
Italy	Santos	317,659.75	39.55%
	Rio de Janeiro	191,116.31	23.80%
	Paranaguá	29,094.96	3.62%
	Salvador	14,175.97	1.77%
	São Francisco do Sul	7,626.00	0.95%
	Others	243,458.58	30.31%
	Total	803,131.57	100.00%
Spain	Santos	370,797.65	35.58%
	Paranaguá	130,815.35	12.55%
	Rio de Janeiro	51,827.69	4.97%
	Salvador	6,769.75	0.65%
	São Francisco do Sul	2,251.76	0.22%
	Others	479,604.86	46.02%
	Total	1,042,067.06	100.00%
United Kingdom	Santos	134,791.40	28.87%
	Rio de Janeiro	53,363.73	11.43%

COUNTRY	PORT	AMOUNT IN TONS	% IN RELATION TO TOTAL
	Paranaguá	42,804.91	9.17%
	Salvador	14,687.74	3.15%
	São Francisco do Sul	2,196.48	0.47%
	Others	218,966.30	46.91%
	Total	466,810.56	100.00%

Source: ALICEWEB (2010)

With this table's results, it is appropriate to emphasize that besides the internal corridors of Brazil and Argentina, it is necessary to know the functioning of the hub ports, which are essential parts in the dynamics of trade among these two American countries and the European Union.

3.5. Technological and Cooperation Characteristics between Economic Blocs

Globalization is, with no doubt, the key point for the development of all the relations existing among several countries. It is a process by which there is an interaction, an economic, social, cultural and political symbiosis. It is a fact generated by the incessant search of the capitalism for forming a global village, where all this was only possible thanks to the development of the technology and the means of communication. This process will define the manner how these countries are going to interact, taking into account the economic, social, cultural and political aspects. The modern globalization arose eagerly at the end of the World War II, where all the nations involved reached a consensus that it was extremely important for the planet's future the creation of diplomatic and commercial mechanisms to approach more and more these countries. Thence it was born the United Nations, starting to appear the concept of ECONOMIC BLOCS, like for example, the creation of the European Coal and Steel Community – ECSC.

This intense search for new markets made several countries to open their doors to the world with the ingress and egress of other countries' products, fulfilling the growth of the liberalism economic ideology. One of the biggest beneficiaries of this world integration was BRIC, constituted by (Brazil, Russia, India and China), presenting large economy turned to the exportation, great capacity of the internal market and determining more and more its space in the world scenario.

When talking about globalization, it is sure that the same impacts all the society's areas, mainly concerning the communication, international trade and freedom of movement, in different levels of intensity, due to the level of development and interaction of the nations involved.

With the arrival of the internet, the communication process with the rest of the world has become of extreme necessity and simplicity. But this process was only possible thanks to agreements and protocols among distinct private entities of the

telecommunications area and governments from all over the world. This has allowed a flow of information exchange and new technologies never seen before in all the humanity. Another extremely important issue is the universalization of the access to the means of communication, to the detriment of technological innovation, permitting that all the classes have access to the several means of communication, contributing for the development and welfare of the world population.

In this present stage of the globalization, it is verified clearly that the international trade growth rate is much more significant than the production growth rate, in such a way that it can give the importance of the international trade in the dynamics of the national economies. It is seen that the capital flows, as well as the means of communication experience an original expansion and develop at a terrific speed. The information flows demonstrate every day the inexistence of political borders, creating a virtual space that ignores any kind of obstacle.

At the same time of these happenings relations among specific countries are arising, with convergent objectives, and from these partnerships arise the supranational economic blocs, that through several diplomatic legal instruments (treaties, conventions, agreements, protocols...) or even through the own dynamics of the economic flows, in the meaning of facilitating the goods and services circulation among them. This trend of regionalization is strongly noticed in the European Union and MERCOSUR.

At first sight the globalization and regionalization trends seem to be contradictory and disaggregating, but in fact they complement each other while the regional megablocs offer to the transnational corporations vast internal markets unified, guaranteeing a wider market in the economic scale and, still, facilitating the capitals centralization. The international trade growth among economic blocs, the commercial competitiveness among several countries is closely linked to their production and commercialization costs, and this has demanded effective connections among the suppliers chain. So, the Information Technology has become one of the main resources for the improvement of these international commercial relations.

The improvement of the Information Technologies is changing the concept of transports, mainly the freights transport and, therewith it is affecting directly all the logistics and of transports chain all over the world. Due to the urgency to fit the global needs, governmental sectors and private initiative from all the world have gathered strengths in the search for programs of improvements and adequacies in the logistics and transports area, through the use of the Information Technology. The use of Information Technology in the freights transport sector will influence positively, so that it will give more dynamics to the transit operations, increasing the security one, reducing the energy consumption and the environmental impacts. The organization and analysis of these technological characteristics will give us a correct dimension of the Information Technology importance for innovation and optimization of the current and promising environments of collaborative businesses.

In the last years the Brazilian participation in the world market has increased significantly. The country does, nowadays, businesses with approximately 20 economic blocs and exports for over 120 countries. Meantime, the technological relation and the Brazilian standard of specialization in the international trade can highlight some facts:

- The greater participation in the Brazilian exports is of primary commodities (40% of the total exported), for not presenting any aggregate value, which follow the medium technological intensity products (18% of the total). And for

comparison purpose, the participation of the commodities in the world exports is only 13%;

- Together it can be verified that the products of high and medium technological intensity represent a little more than 30% of the total exported by the country, against 60% of the participation of these products in the world exports; and
- Approximately 45% of the Brazilian exports of products involving high technology have as destination the North American and Canadian markets, while the remainder is bound for the Latin America countries (DE NEGRI, 2008);

Thus, making a comparative analysis about the specialization of the Brazilian trade, it indicates that the country has total conditions of exporting high technology products to competitive markets and not only to the Latin America countries. And on the other hand, the countries so-called developed export to Brazil medium and high technology products, what makes Brazil to export much more products of low aggregate value (Commodities).

It is to emphasize the importance of the technological innovation as a decisive factor, not of the Brazilian exports, but the exports as a whole, for the results obtained point to the following conclusions:

- The innovation itself increases a lot the chances of a company to become exporter, than the diffusion of technologies already existing in the Brazilian market;
- The innovation in creating new products, of good quality, has greater positive influence, so that a company can export;
- The factors directly related to the product's quality have assumed more relevant position in the determination of the international flows of trade. Therefore, despite Brazil being a very competitive country, but with its guidelines of exportations with high participation in Commodities, it is necessary to grow a lot in terms of technological innovation, but even though, continuing to have an important role in the external insertion of the Brazilian companies; and
- At last, given the importance of the innovation on the exporter performance of the companies, what it is intended to demonstrate is that Brazil is a developing country able of exporting products of greater technological intensity. There are Brazilian firms able of inserting competitively in markets more intense in technology, whose international standards of competition are more strongly based on the development of new products.

Brazil has two groups of exporters, in which they differentiate for the technological standards and for its external performance. In the first group are the companies which have high degree of differentiation in the aspect "technological innovation", presenting greater indicator of efficiency and succeeding to get inserted in the international market more easily. In the second group are the organizations specialized in standardized products, of low aggregate value (Commodities). This group is not so innovative, not having levels of efficiency and with low participation in the international market. Nevertheless, this second group has been the main responsible for the commercial surpluses obtained by the Brazilian economy in the last years. In this context it is verified that the technological innovation issue contributes largely to the competitiveness of Brazilian companies in the international scenario. Pointing out that

the impact of the technological innovation is not restricted solely and exclusively to the products more intense in the use of technology, on the contrary, innovative companies export more than their non innovative congeners.

Brazil has advantage concerning the commodities, for these products of low technological intensity have innovations in the processual aspect, differentiating only in the cost, that is, the standard of competition of Brazilian institutions in the international market is ruled by the innovation in more efficient productive processes and that guarantee better quality to the product or that have lower costs. Brazil still has to run through a long journey in high aggregate value products, with the constant use of innovative technology, in the sense of expanding its competitive field, since the Brazilian external performance in high technology products consist of the innovations of process. This is notorious when it is verified the disparity between the competitive standards of national companies and the competition standards adopted in the international market of these products. But, in fact, the importance of the technological capacity is being kept in check, by the developing countries. Apparently, it is already observed that in Brazil the idea that such technological capacity does not concern only the use, by the productive system of the country, the machines and more advanced production processes available in the world market, the famous technological modernization, used as a justification for the evident reversion of the industrial policy and opening of the international market. It is related, chiefly, to the capacity of the society in responding, in generating and introducing innovations which allow competing in the world market patterns, based on productivity gains deriving from them.

A useful way of defining the technological capacity in the context "Brazil" would be the capacity of its productive system of introducing technological innovations, stopping producing only low aggregate value products, but producing goods and services that corporify and consubstantiate new knowledge. This knowledge consists, in great part, of new scientific discoveries, or inventions of new ways of using these principles, for meeting the human needs.

Such ways tend to consubstantiate in new, and usually more sophisticated goods and services, new equipment, methods and processes which permit to control those strengths and/or use them for the production, be of the new goods and services above mentioned, or others, produced so far through less efficient techniques.

But the technological capacity can become manifest, also, in the generation and introduction of incremental innovations – i.e., adaptations and improvements in products and/or processes already existing from the enlargement of the domain, the society, technical and scientific principles that determine their functional and economic properties.

For this concept of technological capacity applied to the international trade be inserted in each country, it is necessary the development of measures turned to research and development. Thus, it gets easy to understand that the efforts for overcoming the obstacles to the self sustainable development have to pass necessarily for an intense process of development of this capacity.

This demands high investments in the called technological scientific system in the universities, research centers and laboratories, what has already been done, nonetheless, not in the way it should have been done.

Thanks to the own private initiative, composed of companies linked to Research and Development, that through a dynamic productive sector, in the incessant search for

survival and profitability are stimulated and even forced to introduce new processes, goods and services.

Important to point out that Latin American governments have been allocating big efforts in the sense of motivating this partnership university-company in the activities related to research and development through fiscal incentives. The big problem is that most of these beneficiaries are precisely transnational companies, which develop these activities internally.

What is now left over, is that the neoliberal government give the due respect, not only to the importance of technological capacitation, as an indispensable condition for the development, but also, its true nature, and the incapacity of the market forces, of making them to advance, mainly, in a globalized world.

3.5.1. Technological Improvement of procedures

Brazil as Member-state of the SOLAS Convention, since May 25, 1980 through the Legislative Decree n. 11/80. even though its promulgation had occurred only by the Decree n. 87.186 of May 18, 1985, took on the commitment on implementing the ISPS Code, which came into effect in July 2004.

The ISPS Code establishes determined rules that make the vessels and port installations more secure. Among the measures adopted we can highlight the following:

- Establishment of close control of ingress and egress of people and vehicle in the port installations;
- Delimitation of the port perimeter;
- Installation of vigilance system of the limits of the port and pier perimeter;
- Necessity for registering people and vehicles that ingress in the port installation.

The Code prescribes, still, that a vessel before coming to the port must inform the last 10 ports which visited and if any of these is certified according to the Code, additional protection measures may be adopted, such as inspecting the vessel, put it in quarantine, etc., what will cause delay in the vessel's operation resulting in serious losses. Keeping in mind that the international maritime trade is a highly competitive sector, the vessels which may do it would start to avoid ports that are not certified according to the ISPS Code. Right after the ISPS Code coming into effect, the International Maritime Organization – IMO created a site where can be checked the port installations that own certification.

In Brazil the vessels certification is accomplished by the Maritime Authority (Brazil Marine) and the port installations certification by the National Commission of Public Security in Ports, Terminals and Navigable Ways – CONPORTOS, in which participate the Ministries of Justice, Defense (Brazil Marine), Treasury, External Relations and Transport.

In order to an installation can be certified the Code prescribes that it must be done a Risk Evaluation, which is submitted to the State Commission of Public Security in Ports, Terminals and Navigable Ways – CESPORTOS. After its approval it is elaborated a Security Plan, which is also submitted to the CESPORTOS for approval. Once implemented the actions of the Plan, the CESPORTOS, some times with the participation of the CONPORTOS, performs the inspection and if the port security is acceptable it is issued the Accomplishment Declaration. After the Declaration the installation is included

on the IMO's site as certified, which gives the international disclosure on its new situation.

Brazil, nowadays, is extremely deprived of complete, agile, secure and reliable information about the management activities practiced by the port authorities under its supervision, hampering extraordinarily the elaboration of an effective planning. The Project Ports Without Paper is the result of studies accomplished by technicians remaining of the extinct Empresa de Portos do Brasil S.A. – PORTOBRÁS and that nowadays, part of them, is designated to the Special Secretariat of Ports of Republic Presidency – SEP/PR, providing specialized services at the Subsecretariat of Port Planning and Development and at the Subsecretariat of Ports. The Project is constitutes one set of six systems and a portal: ports data concentrator; intelligent freight – intelligent logistics chain; governmental systems – mean area; operational systems – end area; VTMS – Vessel Traffic Management Systems; system of performance evaluation (indicators); and portal of ports information.

All these systems are vital to achieving the objectives to which the Project Ports Without Paper set out. Notwithstanding, the Ports Data Concentrator and the Portal of Ports Information are the first and essential systems to be developed with priority. It was idealized to be an informatized and integrator project, as it will promote the data communication among the several intervenient beings in the port process, consenting or not, without interfering in their systems which will make part of this integration, preserving all its aspects inherent to the secrecy and security of the information produced in it.

Basically, the Ports Data Concentrator will be initially fed with the information contained in the documents defined by FAL – Facilitation Convention of the IMO – International Maritime Organization, adopted by the majority of the countries, the maritime navigation companies and ports of expression in the world port scenario, besides the additional information which will be suggested by the consenting governmental organs and the port community entities. This information will be available to these participants of the data concentrator that, in their manner, will process it with their own informatized systems or other means of processing, having, only, to feed the concentrator database, making it available, to whom it concerns, its acquiescence or exigencies for such.

3.5.2. Characteristics of Transports Operators

In the beginning the transports service was offered by familiar businesses and were restricted only to transporting the product, without worrying about other aspects that involve the logistic chain. For many years the producer companies were responsible for transporting their production until the consumption points. Over the years has arisen the figure of the transporter who became responsible for the products distribution, being some of these specialized in determined kinds of freight, like for example, the vehicles transporters.

The growth of the freight road transport as much in Brazil as in Argentina was impelled by the implantation of the automotive industries in South America around the 1950s of the 20th century. Such expansion provoked the arising of several companies specialized in freights road transport, therewith, several products so far transported by other ways of transport like the rail modal started to use it.

The process of incentives to the freights transport through road, allied to the lack of investments in other transport modes, mainly rail and maritime modes, made Brazil and Argentina to become extremely dependent on the road modal, causing an enormous unbalance in the transportation matrix.

Aspects as technological advances and the globalization have provoked significant changes in the organizational structures and the transport sector does not differ from the others, since the change of focus by the so far called transporters that now are known as logistics services providers – LSPs. The arising of logistics operators brought a new concept for the transport sector companies that started to worry about other aspects like storage, distribution, service quality, information, etc.

In Brazil the changes started with the process of privatization of the national rail system, begun from the 1990s of the 20th century and were impelled by the implantation of Real Plan in 1994, which brought stability to the Brazilian economy, enabling investments and greater opening of the market with the international trade. The attention given to the logistics services provided by the companies has as main responsible factors, the globalization and the need for reducing the costs. Made to order and personalized services, information technologies, and increase of the management capacity, among others, are some of the factors that differentiate the logistics services providers from the old way of doing products transport.

In the primordiums of the freights transport the companies had a geographic limit for acting with regional aspect, that is, the freights were taken to specific wholesale centers and from there arrived to the commercialization places, usually through the wholesaler's own transport. The logistics service providers have aspects that characterize them in logistics Operators and freights Agents. In the case of the logistics Operators the responsibility for the transport, storage and occasional transshipments belongs to a company, which can do it through its own means or third parties'. Now the freights Agents are those who only negotiate the freights from their origins until the respective destination, being the transport, independently of the modal to be used, storage tasks are done by third parties, that is, the agents are managers that are in charge of all the process of purchase and sale of goods and services.

The conventional logistics operators operate only one transport modal, usually are traditional road transporter companies, which is increasingly more scarce, for the services offered frequently do not meet the demand's needs. The demand for logistics operators able of operating all the logistic chain has grown in a significant way in Brazil, that's why, in the last years, great part of the companies that provided only transport services started to offer the other services of the supplying chain. Several companies which provide logistics services have tried to gather to others with broader knowledge in order not to be taken to total failure, which would mean the end of their activities.

The geographical dimensions of Brazil and its strategic position in the continent make the country a provider of logistics solutions to South America. These factors allied to the logistics costs favor the utilization of more than one transport mode for transferring several kinds of products. Nevertheless the use of more than one transport mode in Brazil runs into serious problems like the tradition of the companies in operating the road modal, lack of infrastructure for transshipment in strategic regions, political power of the road sector, etc. The utilization of more than one transport mode can result in significant reductions in the logistics costs for determined kinds of products, for example, vegetable bulks. The products internationally commercialized are the most susceptible ones to the utilization of more than one transport modal. In this case, the

services provided by logistics operators with international acting are essential for the reduction of the total costs.

In the case of the freights with origin and destination inside the country, as much in Argentina as in Brazil, most of the logistics operators concentrate their operations in the road modal, being that the use of other modals is restricted to the specific freights like grains, sugar, meats, fuels, etc. The freights agents differ from the logistics operators, that is, the responsibility of the agent is not transporting (physically) the product as it does the operator. Therefore a freights agent can use one or more operators to meet the demand of determined customer. In Brazil some freights agents are also logistics operators, offering the house-to-house transport service for the most varied products, independently of the origin and destination. The companies classified only as freights agents in Brazil have as main focus the accomplishment of operations that involve international trade, be it for importation or exportation of products. As much the logistics operator as the freight agents have recoursed to the technological advances for obtaining better results in their operations. Such technologies try among other things to propitiate greater security, guarantee observation during all the chain, facilitating movements in transshipment yards, warehouses or distribution centers.

Despite the advances achieved and the agreements settled among the governments of the countries that compose the MERCOSUR, in practice many companies have found several difficulties to execute their activities. According to the Brazilian International Carriers Association – BICA, bureaucratic obstacles that started to be dealt with as diplomatic problems have withdrawn several operators of the international road transport of freights among the MERCOSUR countries. Among the difficulties faced by the Brazilian operators are physical characteristics as maximum height permitted, maximum length permitted, etc.

In the case of the maximum height permitted for trucks in Brazil it is 4.30 meters, while in Argentina, for example, the maximum height is 4.1 meters. According to reports from the BICA, it was signed an agreement at the end of the 1990s of the last century, in which it was established that the measurements (height, width and length) would be the same for all the countries involved, however what it is observed in practice is that these rules are not being obeyed, causing several losses for the bilateral trade between the countries.

The majority of the transport operators in Argentina are concentrated on the road sector. According to C3T (2007), the road freight transportation system of Argentina is formed by a group of companies which execute their activities by means of trucks. In the face of the heterogeneity of the products and the necessity for greater flexibility, it can be stated the freights sector in Argentina has a strong dependence on the road sector, increasing in many cases the costs with logistics operation. The definition of the best option of transport for determined product must be given by a company specialized in this kind of service, however this is not always possible when it is about the Argentinean transport operators. The definition of which type of vehicle must be employed in the products transport depends on aspects related to the distance, volume, delivery terms, offer of transport, etc. The transportation matrix of freights movement shows that the road sector is responsible for around 90% of the total freights transported in the country.

With the objective of raising some important characteristics of the freights transport sector of Argentina, researches were done about the operation of the freights transport by road, according to the report in C3T (2007). According to data from that research the road freight transport sector was responsible for over 2.9% of the country's GDP, while

the rail sector responded only for 0.09% in 2005, still according to the research presented by C3T. In 2005, according to C3T (2007), the national road freight transport operators were responsible for almost 97% of the total movement of goods, the responsibility for the other 3% being done by the rail, maritime and air modals. When considering the international freight transport the participation of the road transport is considerably inferior, that is, it responds for less than 10% of the total volume transported, now the Fluvial and Maritime modals are responsible for around 90% of the international trade movements of the country, C3T (2007).

Table 3.30 presents some information obtained from the CNRT and CENT that characterize the road freight transport operators. In this table it is observed that from the total of operators researched, around 81% are registered as autonomous or proper. Usually, these transporters are owners of their own vehicles and responsible for all the procedures necessary for the fulfilling their contracts. This is evident in the crossing of the number of vehicles per operator, where in average is around 1.2. When the operator is registered as a transport company the medium size of the vehicles fleet is superior to 6. For the transport companies which operate in international scope the average fleet of vehicles is almost 11 per operator.

Table 3.30 – Amount of vehicles per operator

	TOTAL OF REGISTERS	PROPER TRANSPORT	TRANSPORT COMPANIES	
			TOTAL	INTERNATIONAL
Operators	231,216	187,253	43,963	2,129
Amount of vehicles	491,605	219,200	272,406	22,892
Vehicles/Operator	2.1	1.2	6,2	10.8

Source: C3T (2007)

The distribution of the fleet per operator is significantly unproportional in relation to the operators' classification. While the operators registered as companies represent 19% of the total, the fleet declared by the same companies' sums around 55% of the total registers. It is still observed that from the total amount of vehicles registered only 0.05% is qualified to accomplish international transport.

According to data of transports production in Brazil, the road modal is responsible for approximately 60% of the freights moved in the country. The importance of the sector for the economy is expressed by the volumes transported and by the range in all the Brazilian regions. According to data from the National Agency of Terrestrial Transports – ANTT, organ responsible for the regulation of the sector, the number of companies which operate in the road modal is growing year after year.

Table 3.31 presents the number of registers made by ANTT until the last day of 2008. It is observed that approximately 84% of the total registers and 58% of the vehicles fleet belong to the class of the autonomous freight operators. Great part of these operators concentrate in the smaller cities located in the interior of the country, where the big companies do not provide their services or do it with limitation. It is still noticed that the autonomous operators have on average a little more than one vehicle per register, so strengthening the thesis of providing services for familiar tradition.

Table 3.31 – Total of transporters, per category, registered

CATEGORY	REGISTERS ISSUED	VEHICLES	VEHICLES/ TRANSPORTER
Autonomous	811,433	1,031,370	1.3
Company	157,300	746,079	4.7
Co-operative	730	6,800	9.3

Source: ANTT (2008)

The companies registered at ANTT as road freight transport operators represent around 16% of the registers with 42% of the total vehicles registered. Considering the number of vehicles per road freight transport operators companies, it is seen that on average these have approximately 5 units. A sector that has been growing and presenting significant results is the transport co-operatives, as it can be seen this category has on average almost 10 vehicles per register. The co-operatives are in fact a grouping of autonomous transporters that gather to provide services, aiming at the reduction of their operational costs and, as a consequence, the increase of the income. In Table 3.32 are data about registers of grants conceded to the operators of the International Road Freight Transport – IRFT.

Table 3.32 – Concession of Grants for the International Road Freight Transport

INTERNATIONAL ROAD FREIGHT TRANSPORT	
TYPE OF GRANT CONCEDED	**AMOUNT**
Originary Licenses	141
Complementary Licenses	160
Permits for Occasional Trips (foreign companies)	272
Permits for Occasional Trips (national companies)	142
Change of fleet of the registered companies	7,057

Source: ANTT (2008)

The obtainment of grants concessions for the IRFT must be subject to the rules defined by ANTT through the Resolution n.363, of November 26, 2003. According to this resolution the grants are classified into:

- Originary License: is the permit to accomplish international terrestrial transport, granted by the country with jurisdiction on the company that fills in the requirements stipulated in the International Road Transport Agreement – IRTA, in the international agreements of road freights transport, in the Brazilian legislation and in the present resolution.
- Complementary License: is the act promulgated in Brazil, through which ANTT, meeting the terms of the AITT and other international agreements of road freight transport, authorizes companies from other countries to the providing

and operation of international road freight transport service, as well as ingress, egress and transit of their vehicles in the Brazilian territory, in the points of customs inspection.

- Permits for Occasional Trips: it is that license conceded for the accomplishment of a trip not characterized as regular or permanent service providing and are divided into national and foreign companies.

Table 3.33 presents the distribution of the companies and fleet registered at ANTT in 2008 to operate the International Road Freight Transport. It is observed that the fleet distribution is inversely proportional to the number of companies registered, that is, the Brazilian companies operators of the IRFT sum up around 33% of the total registers, being responsible for approximately 65% of the available fleet.

Table 3.33 – Distribution of the companies and fleets for the IRFT

NATIONALITY	COMPANIES	FLEET
Brazilian	33.5%	65.3%
Foreign	66.5%	34.7%

Source: ANTT (2008)

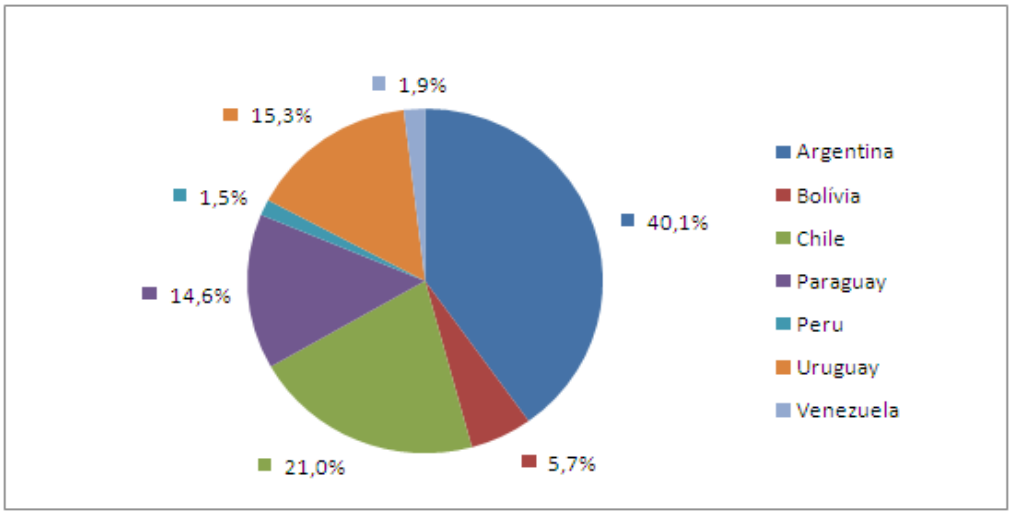
Table 3.34 presents the number of Brazilian companies qualified to accomplish International Road Freight Transport, through destination countries. It is observed that the operating fleet registered is significantly high, being on average approximately 97 vehicles per company.

Table 3.34 – Total of Brazilian companies qualified for the International Road Freight Transport, per destination country

BRAZILIAN COMPANIES QUALIFIED (PER DESTINATION COUNTRY)							
	Argentina	**Bolivia**	**Chile**	**Paraguay**	**Peru**	**Uruguay**	**Venezuela**
Companies	482	68	252	175	18	184	23
Fleet	43,917	6,365	26,003	25,652	1,714	18,663	1,085
Vehicles/Company	91.1	93.6	103.2	146.6	95.2	101.4	47.2

Source: ANTT (2008)

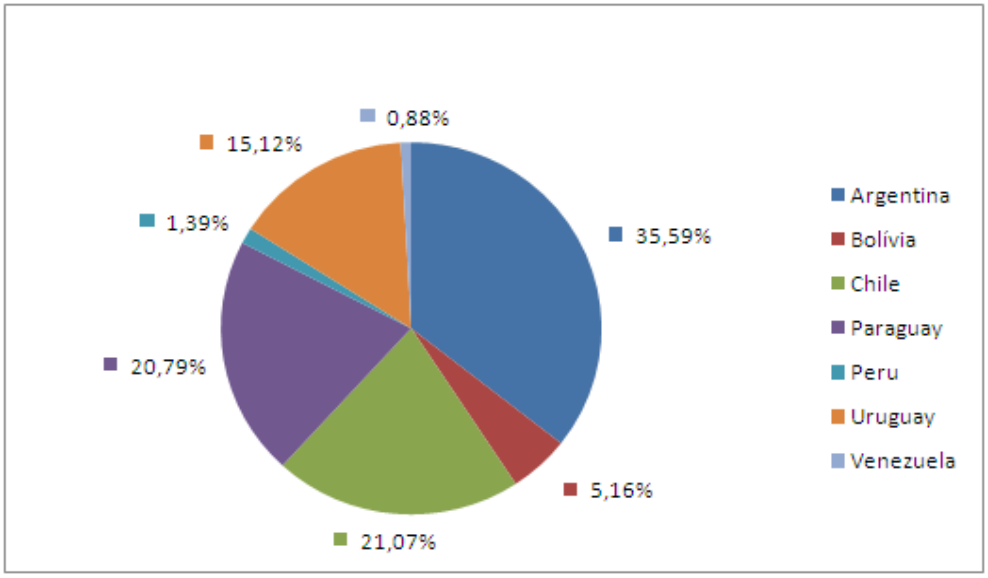
When analyzing Figure 3.35, it is noticed that the number of IRFT operators which provide service in the scope of the countries members of MERCOSUR is superior to 90% of the total companies qualified. It is appropriate to emphasize that only companies qualified to operate the transport between Brazil and Argentina represent more than 40%.



Source: ANTT (2008)

Figure 3.35 – Companies qualified for the International Road Freight Transport, per destination country

When analyzing Figure 3.36, it is noticed that the distribution of the fleet per destination country is very similar to the distribution of companies, presented in Figure 3.35. It is still observed that the fleet made available by the companies qualified to operate the transport between Brazil and Argentina corresponds to more than 35%.



Source: ANTT (2008)

Figure 3.36 – Distribution of the Fleet of companies qualified for the International Road Freight Transport, per destination country

Table 3.35 presents the number of foreign companies qualified to accomplish International Road Freight Transport in Brazil per origin countries. It is observed that

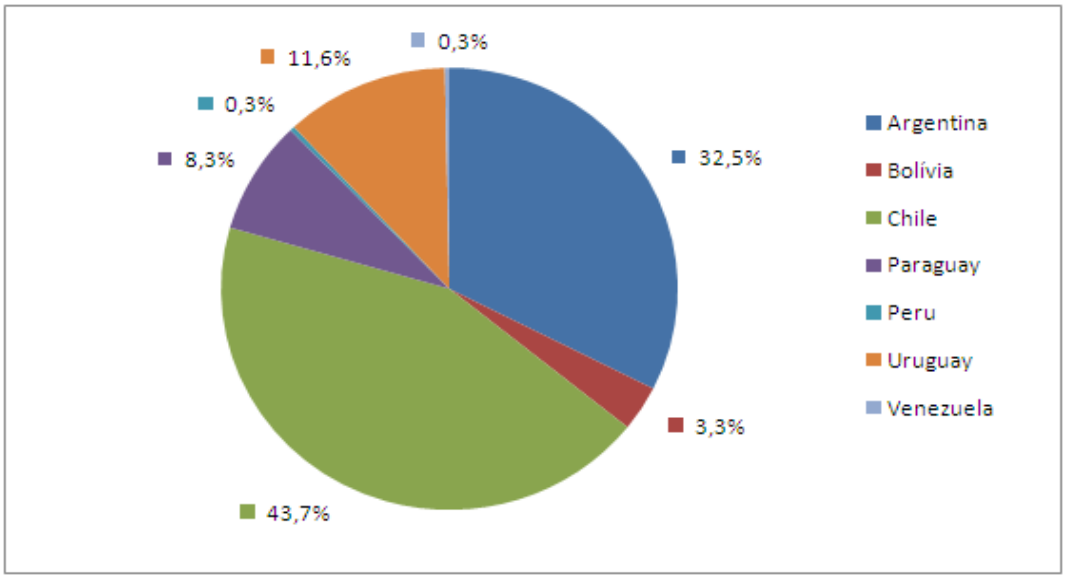
the average fleet registered is approximately 37 vehicles per company, very inferior value when compared to the Brazilian companies' fleet that operates the IRFT.

Table 3.35 – Total of companies qualified for the International Road Freight Transport, per origin country

FOREIGN COMPANIES QUALIFIED (PER ORIGIN COUNTRY)							
	Argentina	**Bolivia**	**Chile**	**Paraguay**	**Peru**	**Uruguay**	**Venezuela**
Companies	392	40	528	100	4	140	4
Fleet	13,594	1,202	7,349	4,980	92	2,858	352
Vehicles/Company	34.7	30.1	13.9	49.8	23.0	20.4	88.0

Source: ANTT (2008)

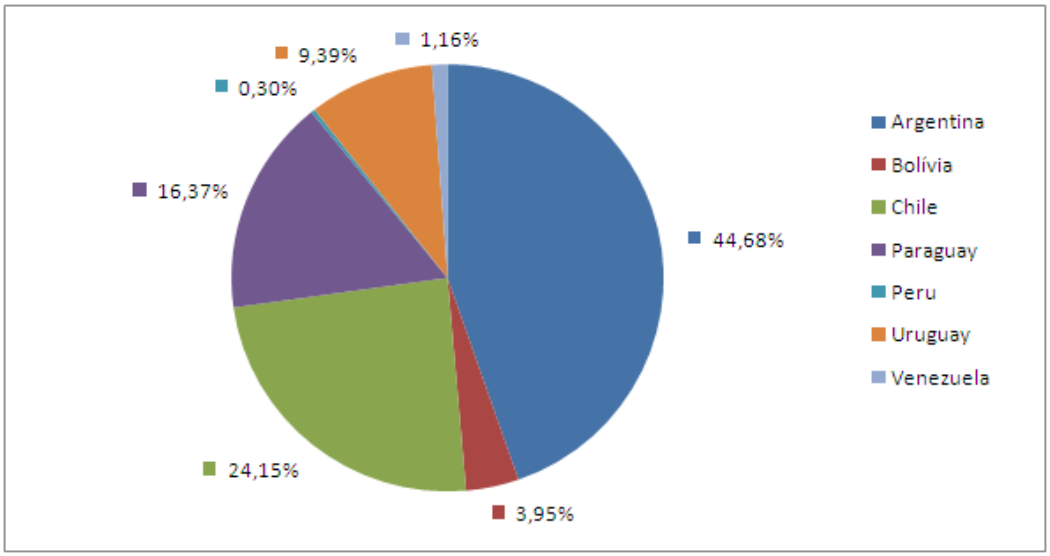
When analyzing Figure 3.37, it is seen that the number of foreign companies qualified that operate the IRFT between Brazil and Argentina, corresponds to approximately 33% of the total registers of ANTT.



Source: ANTT (2008)

Figure 3.37 – Distribution of the Fleet of companies qualified for the International Road Freight Transport, per destination country

When analyzing Figure 3.38, it is observed that the fleet made available by the foreign companies qualified for the IRFT which has Argentina as the origin country, represents approximately 45% of the operators registered at ANTT.



Source: ANTT (2008)

Figure 3.38 - Distribution of the fleet of the companies qualified for the IRFT, per origin country

It is appropriate to emphasize that the expansion of the international road freight transport is influenced mainly by the International Road Transport Agreement – IRTA, celebrated among Brazil, Argentina, Bolivia, Chile, Paraguay, Peru and Uruguay in 1990 and the Resolution n.58 of the Common Market Group – MERCOSUR of 1994. Other factors as the lack of rail structure and characteristics of the freights commercialized among these countries have impelled the growth of this transport modality among South American countries.

In the attempt of balancing the Brazilian transportation matrix and with the objective of facilitating the use of more than one transport modal, causing the debureaucratization of the logistics operation, the Brazilian Government approved in February of 1998 the Law n. 9.611, which disposes about the Multimodal Freights Transport and gives other arrangements.

According to the National Agency of Terrestrial Transportation – ANTT, the Multimodal Freights Transport is the one that, ruled by an only contract, uses two or more transport modalities, since the origin until the destination, and it is executed under the only responsibility of a Multimodal Transport Operator – MTO. It can be defined as MTO the juridical person contracted as main agent for the accomplishment of the Multimodal Freights Transport, since the origin until the destination, using own means or by contracting third parties, this being possible to be a logistics operator, freights agent or both. The MTO takes the responsibility for the execution of these contracts, for the losses resulting from the loss, damages or harms to the freights in his/her custody, as well as those deriving from delay in the delivery, when there is a term agreed. Besides the transport, it includes the collection services, unitization, deoxidization, consolidation, deconsolidation, movement, storage, freight delivery to the receiver and customs clearance.

According to ANTT among the main advantages in the use of the Multimodal Transport in Brazil are:

- More appropriate contracts of purchase and sale;
- Better use of the capacity available in the transportation matrix;
- Use of modals combinations more efficient energetically;
- Better use of information technologies;
- Scale gains and negotiations of the transport;
- Better use of the infrastructure for the support activities, such as storage and handling;
- Utilization of the international experience of the transport as much as the bureaucratic and commercial procedures;
- Reduction of indirect costs.

According to data from the ANTT, in 2009, Brazil had 357 multimodal transport operators registered and consequently, with legal conditions to act as much national as internationally, as showed in Table 3.36. From these MTO, around 40% are able to accomplish operations in the extent of the countries members of MERCOSUR.

Table 3.36 – Multimodal Transport Operators in Brazil, 2009

STATE	AMOUNT	% PER STATE
SP	174	48.74%
RJ	56	15.69%
PR	26	7.28%
MG	17	4.76%
RS	16	4.48%
SC	12	3.36%
AM	11	3.08%
PA	11	3.08%
CE	5	1.40%
DF	5	1.40%
BA	4	1.12%
PE	4	1.12%
MT	3	0.84%
AC	2	0.56%
GO	2	0.56%
MA	2	0.56%
AL	1	0.28%
ES	1	0.28%
MS	1	0.28%
PB	1	0.28%
PI	1	0.28%
RN	1	0.28%
RO	1	0.28%
Total	**357**	**100.00%**

The MTO model adopted in Brazil has presented some advances in these 10 years of existence however, in relation to the effective operationalization of the multimodal system there are several barriers to be overcome. Among them are fiscal aspects that involve double taxation, indefinition of inspection and control of the documentation. Among the main operators of Multimodal Transport in Brazil stand out companies with the purpose of specific transportation like: Log-IN Logística and Transpetro. Log-IN is a company of the Vale group and it operates the multimodal transport of the company through their own fleet, having as main customer the Vale itself. According to the own Log-In data, the company has 16 units in Brazil and in Argentina operating a fleet composed of seven vessels for the coastal navigation, the port terminal of Vila Velha – TVV and two terrestrial intermodal terminals located in Uberlândia (MG) and in Camaçari (BA), besides Express Train and road transport services.

Transpetro is a company linked to Petrobrás responsible for the transportation of fuels of the Brazilian petrol company. To accomplish the transport it uses the own or outsourced fleet and it operates in the maritime, pipeway, rail and road modals. Besides the transportation the company provides services of fuels storage and natural gas processing. These operations make Transpetro the biggest navigation company of Latin America, leader in the fuels logistics and transport sector. The operational numbers of the company impress, being billions of liters of fuels annually transported through a network of 7 thousand km of oilducts, 5.4 thousand km of gasoducts, 20 terrestrial terminals, 27 maritime terminals and a fleet of 52 oil tankers, according to data from December 2009. In the face of the operational results obtained by the organizations qualified to operate the multimodal transport, it can be said that there is a huge way to be run through towards the effective multimodality. In the case of Brazil several operations considered as multimodal are in fact intermodal operations.

3.6. Analysis of the Opportunities, Obstacles and Barriers to the Trade between Latina America and Europe

In the face of the continental dimensions of the main countries of Latin America, it is essential to assure greater mobility and fluidity in the interregional articulation and integration, as well as of the producer centers to the consumer markets. It is notorious that the lack of planning and effective policies regarding the transports are an obstacle to the development of the regional and international trade, thus, it is vital the creation of new alternatives and intermodal connections structured in the cooperation among the road, rail and waterway modals.

Then, it is increased the competitiveness, reduction of the final price of the products, generation of new jobs and the increment of the income and the consumption power of the population. The intermodality favors the appearing of new distribution centers and freights storage, creating goods convergence points in the space.

The capacity of transporting people and goods with quickness and efficiency at a low cost is one of the European Union's central principles of the transports logics, since it is an essential aspect for the existence of a dynamic economy and a united society. The transports sector is responsible, in great part, for the solidification and integration of the European Union, while it employs workers in various activities, like terminals operation,

organizational logistics, services providing, equipment and means of transportation maintenance, loading, unloading, freights movement, among others.

The opening of the borders and the availability of a circulation system and transports with state-of-the-art technologies have offered to the Europeans social mobility, high quality material and imaterial. The goods are flown in a fast and effective way from the productive units to the centers of demand, breaking the national frontiers. In the face of this view, it is appropriate to emphasize that Brazil is far beyond the European Model, harming the national trade and economy.

The elimination of the obstacles to the trade and to the circulation among different countries which compose the economic bloc has increased the volume of the transport of low, medium and long courses of goods and passengers. Such fact is in full ascension with the ingress of several countries from the East of Europe in the European Union, raising the intra-bloc consumer market. Countries like Germany, France and Holland have an optimized transports network, with emphasis to the rail and waterway modals, assuring great fluidity in the freights and people movement.

Thus, the European Union has contributed very intensely to the diffusion of the intermodal transport, through the search for the elimination of the physical, juridical, bureaucratic and technical obstacles to fluidity.

Besides, the European Union promotes great projects of transports infrastructures and logistics: the called Trans-European Networks – TEN. Among the prioritarian projects, there are: elimination of strangulation points in the main fluvial ways of Europe; regulation and greater fluidity in the traffic in the parts of the navigation of the Europe's southern coastline; continuous maintenance and modernization of the main European railways lines; and public-private partnerships and investments for development of the intermodality.

Although there are possibilities which contemplate the use of more than one modal in the freights transport in Brazil, these initiatives still collide with precarious and obsolete infrastructures, in the logics of transports excessively by road, in the lack of investments, inefficiency of the ports and terminals for integration of the modals, besides the ineffective logistics of distribution and storage. It is good to emphasize still that the scarcity of state's projects and planning are barriers to the expansion of the intermodality in the country.

The products predominantly transported via fluvial and intermodal are those of low aggregate value and, among them, the commodities, such as iron ore, grains and by-products. So, for these to be more competitive it is essential an efficient and cooperative transports system, for the cost of flowing has a direct reflex in the final price of the goods in the external and internal markets.

In the face of globalization and the incitement of the international competition, more and more it is tried to obtain the reduction of the transports costs and the greater reliability in the service provided, consequently the use of the intermodality arises as a great opportunity for the macroeconomic growth and overcoming the obstacles which intensify the transports costs, like precarious and obsolete infrastructures, lack of investments and modernization, inefficient means and ways of transports, etc.

The Brazilian case reflects the incipience concerning the intermodality and the lack of investments and policies to make feasible the restructuration of the transportation matrix in the country, since it is essential for the macroeconomic growth and for the interregional articulation. The transports costs, on its turn, harm all the productive chain and hinder the creation of new jobs and the income generation to the population.

In the same way, MERCOSUR faces serious economic problems and transport-related problems. The issues related to the customs procedures include lack of coordination among the border agencies, which cause excessive delays in the freights processing. Although the development of infrastructure is a priority, the dependence on concessions for the transport services providing, it restricted the investment in new highways and railways. Besides, the existing concessions, due to the types of contracts established, in general, limit the action of the concessionaires to maintenance of the infrastructure and not in the enlargement of it.

Due to the condition of the transport networks in most of the Latin American countries, it is observed the vulnerability of the trade related to the current conditions of the transports systems. With the ports located in big urban centers, the accesses by road are frequently congested during great part of the day. The bad condition of the railways and the subutilization of the rivers and transport of coastal waters contribute to the increase of the trade in not reliable and, many times unsafe, conditions of road circulation.

Problems referring to the deficiency of the transport infrastructures for the facilitation of the international trade are observed as much in Brazil as in Argentina, both with their transportation matrix strongly based on the road modal. The quality of the Latin America highways is usually poor. Less than one third of the road network is in good conditions, in most of the countries for which there are data available. Actually, only two countries are above this threshold: Argentina, in 80%, and in Guatemala, in 75% (World Bank, 2007). In Brazil, according to CNT (2009) only 31% of the federal highways are in great or good condition. And since few data are available for the state, rural and local roads which compose the rest of the network, the conditions seem to be even worse, with only 8% in good conditions in Peru and Ecuador, for example. The pavement rates are also low: in 1999, 27 percent of the roads in Latin America and the Caribbean were paved.

The improvement of the navigable rivers and its use to access the maritime ports is an investment of great importance for many South American countries. Not only because the fluvial transport is many times more economic, but also because the system of water distribution ways can also provide direct access to the ports, without having to make use of the inland surfaces overloaded by the terrestrial transport systems. For some areas of South America, like the inland parts of Brazil and Paraguay, the efficient use of fluvial transport can permit the development even faster of the agricultural (mainly soy) and mineral resources exploitation. With direct access to the ports of Argentina, Uruguay and South of Brazil, the commodities increase their connections with the world market at better costs.

The full utilization of the port terminals is many times hampered by the existence of strangulation points in the existing transport system – especially near the ports – and that have to be eliminated by means of planning from which participate the port authorities and the entities responsible for the rail and road modals. At the same time, the deficiencies existing in the maritime accesses must be solved by the port authorities. The increase in the resources application in infrastructure is vital to the acceleration of the sustainable development.

Investments that prioritize the maintenance, recovery and enlargement of the port infrastructure can result in greater competitiveness and dynamism for the ports, reducing the costs of the maritime transport and contributing to the country's development. It is necessary investments in dredging operations to deepen the access canals to the terminals bound for receiving bigger vessels. This propitiates the increase of productivity and the capacity of freight movement. The port processes depend on a

series of agents to make feasible all the activities necessary to the consecution of the exportation, importation and cabotage. There is the involvement of governmental organs, agencies, authorities and private companies. Each one of these actors tries to organize in the best way to put into effect their processes, even though without the necessary level of integration with the other beings of the Federal Government and of the Port Community. Study carried out in the Brazilian port sector pointed the existence of integrated processes. Meanwhile, these meet, only, the specific necessities of determined port, not having the so desired uniformization of documents and procedures in the ports (SEP, 2009).

There are still operational aspects that, in general, influence negatively in the performance and quality of the port processes, such as: inexistence of information or difficulty in obtaining them; problems of communication and flow of information; redundancy of information; non-standardized procedures, systems and documents; lack of appropriate operational security; and redundancy of database. The issue of security in ports worries the port terminal operators, especially in relation to the additional costs and its impact in competitiveness. In some ports the current procedures already include the digitalization of the documentation, however new security measures and procedures imposed to the international transport of goods after the September 11, 2001 attempts were not implemented in the majority of the ports yet. The additional costs for the implementation of the security systems, considered significant, can harm considerably the competitiveness of some ports.

On the other hand, it is still observed an excessive circulation of papers – types, copies, comings and goings, signatures, conferences etc. – for the accomplishment of the activities involved in the port process and many tasks done manually, trying not appropriate ways of communication, historic files in paper and disintegration of information among the automated subprocesses. All these aspects influence negatively in the efficiency of the port operations, whose installations can, even though, be the most modern and advanced, with deep waters in levels of the best ports of the world for the access, the evolution and mooring, but that will not be competitive due to the inappropriate and undesired old-fashioned and excessive bureaucracy that, certainly, will delay the required clearances.

Still, regarding the bureaucratic procedures and aspects, it is also observed obstacles to the facilitation of the international transport in the road sector among the countries members of MERCOSUR, involving aspects as: documentation; inspection procedures; working hours; obligatoriness of the customs transport agents intervention; and little use of the house-to-house International Cargo Manifest/Declaration of International Customs Transit (ICM/DICT). Regarding the documentation, what is appointed as obstacle is the lack of standardization of the documental exigencies by the Member States, as well as its complexity, as much with respect to the quantity of documents as the amount of information necessary to fill them out. Concerning the inspection procedures, it is appointed as obstacle the lack of harmonization of the control and of support services provided by the organisms involved in the customs control operations, including multiplicity of interventions and incompatibility of days and working time of the organisms involved. As for the working hours it is appointed as obstacle the limited period for the accomplishment of the clearances, being the claim of the private agents involved with the road transport that it proceed quickly so that the clearances can be done during 24 hours, in the 365 days.

Regarding the obligatoriness of the customs transport agents intervention, it is professed that this contributes as much to rise the time spent in the clearances, as to rise

the cost of the international transport operations. Finally, it is placed as obstacle to the agilization of the international transport the low level of the use ICM/DICT, contributing to the overburden of the services in the border points, having as consequence the raise of the time and the costs of the international transport operations in the MERCOSUR scope.

The Road Freights Transport Industry Council of MERCOSUR – CONDESUL, the National Freights Transportation Association – NFT and the Brazilian International Transporters Association – BITA are practically unanimous in pointing solutions for these obstacles that are guided in the following directions:

- simplification and harmonization of the documental exigencies;
- implantation of the integrated control, uniform and simultaneous in all customs (border and inland);
- establishment of the apt working hours from 9h to 21h, in the 365 days of the year, for all the intervenient organisms, in all formalities, with no cost for the users;
- eliminate the intervention of the Customs Transport Agents and intermediates; and
- privilege the use of the ICM/DICT, through the minimization of the organisms interventions in the frontier, the implantation of the uninterrupted service of the vehicles under the ICM/DICT (24 hours, 365 days a year), as well as the increase of the number of the Interior State Customs Station – ISCS and of the appropriate capacitation of these.

Although it had happened a decline in the tariff rates among the countries, a number of other barriers, many times take the place of the tariff. These barriers include exigencies of licensing, the practices of governmental purchases, technical norms and rules of national content. As any other kind of barrier, these requirements reduce the level of competition in the market and create artificially the higher prices reducing the consumers' welfare. Thus, the government can make the system personalized, complex and onerous, hindering the importations.

The basic objective of the implantation of the Southern Common Market – MERCOSUR – was creating means for the amplification of the national markets, aiming at accelerating the economic development process of the member countries Brazil, Argentina, Paraguay and Uruguay – but it depends, fundamentally, on the elimination of all the tariff and non-tariff obstacles to the goods and services trade and on the harmonization of the respective macroeconomic policies of the signatory countries, according to the conditions made explicit in the pertinent documents.

In the same way, the bilateral agreements of Brazil, Argentina and the own MERCOSUR with the European Union, although they bring facilities to the trade among the countries and economic blocs, when creating competitiveness with the national products, they force the creation of mechanisms of market protection that can make the benefits not be obtained in an equivalent way by the parts. Thus, the reduction of the costs and minimization of the barriers and hindrances to the local trade enables the higher competitiveness with foreign countries and brings greater conditions of the markets' opening in a really free way.

High transport costs in Latin America and the Caribbean undermine trade and have a detrimental effect on the productivity of the entire economy. It means that it favors inefficient companies and hinders the growth of the most competitive producers,

according to a study by the Banco Interamericano del Desarrollo (BID).Transportation costs account for more than four times the tariff costs in Latin America and the Caribbean, which implies the existence of a large trade barrier than tariffs.

The freight costs in Latin America and the Caribbean are much higher than elsewhere in the world. The difference in shipping between Latin America and the United States and Europe is the lack of efficiency in ports and airports infrastructure. The low degree of competition between carriers and inefficient transportation systems nationwide, including increased traffic congestion in major metropolitan areas also contribute to the high costs.

Next, they are listing the main problems identified between Latin America and Europe both commercial and logistics.

Table 3.37 – Logistics problems

Logistics problems	
BRASIL-EU	**ARGENTINA-EU**
General transport model	
Lack of State's transport/logistics projects and planning	
Road focused transport model	
Lack of policies and investments to change road transport share	
Ports	
Deficient Port Development Plans in Latin American countries	
Port access congestion problems at different Brazilian ports	Port access congestion problems: *(ex: The Buenos Aires port accounts for 90% of container movements, but their main difficulty is the land accessibility)*
Poor rail-port integration at different Brazilian ports	Poor rail-port integration: *(ex: Buenos Aires does not have direct rail connection to the docks and transport by truck is exposed to heavy urban traffic congestion.[5])*
Lack of cooperation between main actors (public and private) in port operations and international trade	
Poor port performance and quality	
Road	
Brazil currently has a network of 1.6 million	The road network coverage is sufficient to access most of the centers of production and

[5]Infraestructura del Transporte de Cargas en la Argentina: http://www.edutecne.utn.edu.ar/transporte/infraestructura.pdf

Logistics problems	
BRASIL-EU	**ARGENTINA-EU**
km of roads of which only 10% are paved. Inland and the northern areas are the most devoid of federal highways.[6]	consumption, but the main difficulties in the state register tertiary network deficit, lack of maintenance of much of the secondary system, and the difficult access to major ports.[2]
Rail – Intermodal transport	
Bad railway condition: *The country's rail infrastructure is quite poor and backward. Maintenance conditions are precarious. The delineation between two points is a path equal to 30% higher on average than road transport and the average speed of trains below 30 km / h (80 km / h American trains), because of grade crossings. According to the National Association of Rail Shippers (ANTF), is a step every 1.5 km, and in this part the velocity is reduced to 10 km / h.*[1]	Bad railway condition :T*he railroads state and some bridges do not allow reaching average speeds above 30 km / h, which limits the possibility of becoming train competitively for the products transport.2*
Lack of intermodal terminal network: *Missing modern terminals that allow store and distribute products quickly and. For the transportation of manufactured products, these facilities do not exist, so this type of goods does not use rail transport.*[1]	Lack of intermodal terminal network
There is not a single proposal to set up logistics zones in South America. Efforts are focused on operational improvement centers or transport systems or development of new infrastructure classic. On the other hand, recognizes Sabrià, basic services are so poor that the operators and users have difficulty understanding the concept of ZAL.[7]	
Currently, the rail network is still very small compared to the size of the country. Comprises about 29.706 km of tended, 2.000 locomotives, 70.000 wagons, and is responsible for only 23% of all freight. (Over 50% of cargo corresponds to a single product: iron ore).[1]	
Inland shipping / Short sea shipping – Intermodal transport	
Poor use of inland waterways. Need of investments and infrastructural developments.	

[6] Informe Sectorial Infraestructuras. Mayo 2007. Oficina Económica y Comercial de la Embajada de España en Brasilia http://www.oficinascomerciales.es/icex/cda/controller/pageOfecomes/0,5310,5280449_5285066_5287111_4082413_BR,00.html

[7] http://www.insight.iese.edu/doc.aspx?id=00401&ar=4&idioma=1

Logistics problems	
BRASIL-EU	**ARGENTINA-EU**
Lack of liberalization in Short Sea Shipping services between LA countries.	
Air transport	
It should do work on expansion and improvement of terminals and other airport facilities to overcome the traffic congestion problems that are bearing[8]	
Customs and other inspection bodies	
Lack of coordination	
Paper-based procedures and lack of standardization	
Poor introduction of information technologies to simplify procedures and control	
Lack of flexibility (s.a. working or service hours)	
Slow and heavy procedures to deal with security requirements	

Table 3.38 – Commercials problems

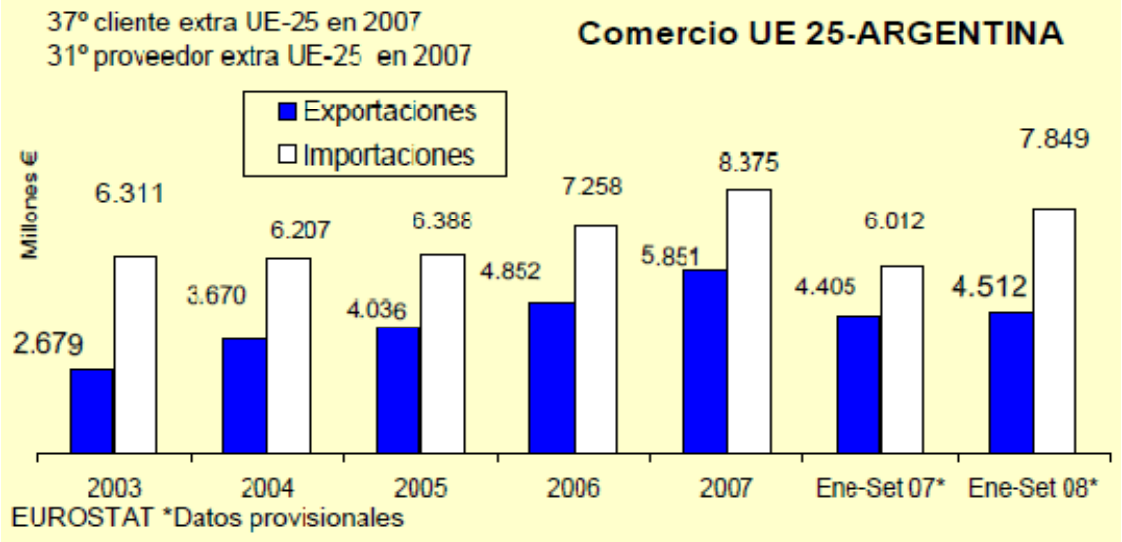
Some commercial problems	
BRASIL-EU	**ARGENTINA-EU**
Despite the existence of a Double Taxation Agreement Spain-Brazil (CDI), from November 14, 1974, there are Spanish companies that have seen their profits are double taxed.[9]	The strengthening of the euro together with the devaluation of the Argentine peso has meant that European products in general have lost a lot of competitiveness.
Tremendous slowness and excessive bureaucracy Brazilian Administration, which has come to be called "Brazil Cost."[10]	The average tariff in Argentina is high (ranging between 0% and 27%, but in sensitive products such as textiles applies 35%). In addition to these input taxes, imports are subject to a number of additional fees. The main ones are the VAT to 21%, 9% as advance

[8] Oficina Económica y Comercial de España en Brasilia. Brasil. Perspectivas y oportunidades: http://www.oficinascomerciales.es/icex/cma/contentTypes/common/records/viewDocument/0,,,00.bin?doc=4152934

[9] http://www.barrerascomerciales.es/Fichas.aspx?ver=2008/0301

[10] http://www.oficinascomerciales.es/icex/cma/contentTypes/common/records/viewDocument/0,,,00.bin?doc=4206881

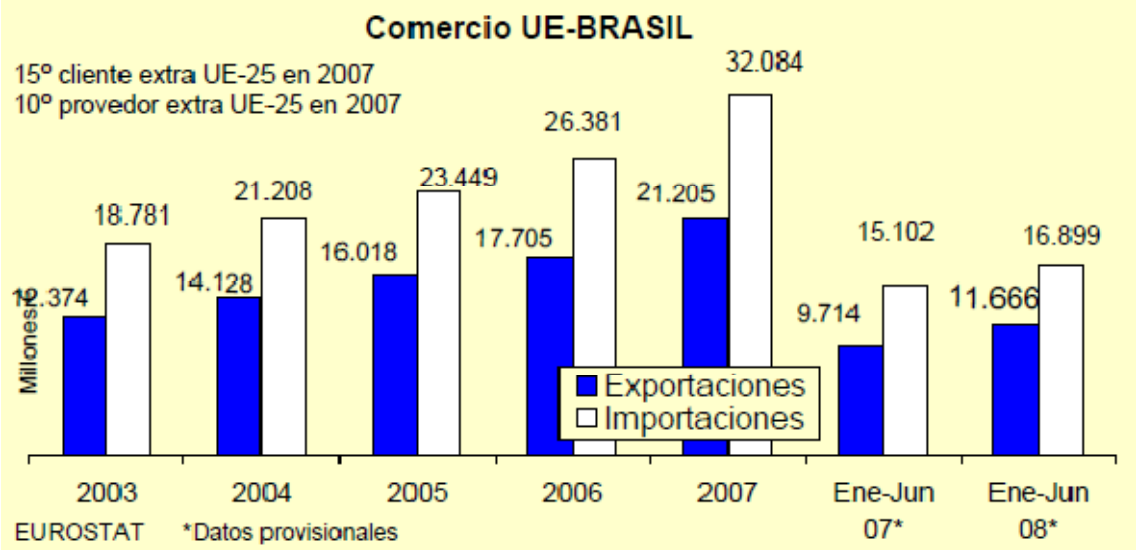
Some commercial problems	
BRASIL-EU	**ARGENTINA-EU**
	payments of VAT on goods for consumption, and 3% by way of advance payment of Income Tax.[11]
	To protect the domestic industry the Government has developed protectionist measures as the expansion of non-automatic import licensing new products such as textiles, footwear, toys, appliances, tires and so on.4



Source: ICEX

Figure 3.39 - EU-Argentina trade

[11] IVEX: Instituto Valenciano de la Exportación: www.ivex.es



Source: ICEX

Figure 3.40 - EU-Brasilian trade

Beyond dealing with traditional barriers to trade based on tariffs and other protective measures related to policy trade issues, it is necessary to pay attention to other less visible "trade facilitation" issues such as transportation costs. The following numbers and conclusions are extracted from the Inter-American Development study: 'Uncloggin the Ateries. The Impact of Transport Costs on Latin American and Caribbean Trade':

Most Latin American countries transport costs are significantly higher than tariffs for both, import and exports, and considerably higher than those of developed economies such as Europe or the United States. This difference is mainly explained by factors related to infrastructure efficiency such as port or airport efficiency. The low degree of competition between carriers and inefficient transportation systems nationwide, including increased traffic congestion in major metropolitan areas also contribute to the high costs.

A 10% decrease in freight costs and tariffs would boost LA countries' imports by 50% and their exports by more than 60%. Even more, lower trade costs not only increase trade volume, but also produce sizeable gains in the diversity of goods being traded. That lowered transport cost would result in the increase of manufactures exports in Brazil, Chile, Colombia, Ecuador and Uruguay. In Argentina, in the other hand, the largest effect would be felt in minerals and metals export. In Bolivia, Paraguay and Peru, most of the gains would be in agricultural exports.

Putting transport costs at the center of the region's trade agenda will produce great gains in volumes and diversification of trade. To do this it is necessary to overcome inefficient transport networks and dysfunctional logistics which hurt LA countries' trade.

Focusing on ports, besides infrastructures improvements many other things can be done to improve ports efficiency. One of the main aspects around port activity is the participation of a big number of different actors both, public and private. Cooperation, coordination and integration between these actors is a key issue and initiatives such as Single Windows schemes and/or paperless procedures could facilitate and make more

efficient the interaction between actors. Information technologies and the development of Port Community Systems could play a central role around this.

Cabotage or short sea shipping development would also contribute to improve and reduce transport costs. Latin America cabotage transport is not well developed. This affects both regional and international transport, and contributes to the increase of road transport what leads to other congestion and pollution problems. Main barriers to short sea shipping development is related to different restrictions to operate in the internal market such as flag, crew, property or ship construction requirements. Liberalization of short sea shipping would lead to the elimination of extra costs due to waiwers (bilateral agreements between countries regulating loading licenses for not national ships), and it would also lead to an increase in the frequency and quality of the service as well as the reduction of costs due to a greater competiton. The process followed in the European Union for short se shipping liberalization could serve as an example for Latin America.

Another common problem around ports and maritime transport in LA countries is the lack of a clear port development model and the need to define or review national development plans. Many Latin America countries have introduced privatization schemes at ports without a clear defined model and need a revision in order to aligne ports development with transport policies and strategies.

In resume, it should be underlined that main transport/logistic lacks or barriers in EU-LA trade are those affecting transport costs mainly related to infrastructures deficiencies, legal issues and administrative procedures which are widely treated along the deliverable.

Table 3.39 – Main problems and barriers

Area	Main problems and barriers
GENERAL TRANSPORT MODEL	Lack of State's transport/logistics projects and planning
	Precarious and obsolete transport infrastructures
	Road focused transport model
	Lack of policies and investments to change road transport share
PORTS	Deficient countries' Port Development Plans
	Ports and terminals inefficiency
	Ports congestion
	Ports access problems
	Port-city integration problems
	Poor rail-port integration
	Poor port performance and quality
	Lack of cooperation between main actors (public and private) in port operations and international trade
CUSTOMS AND OTHER INSPECTION BODIES	Lack of coordination
	Paper-based procedures
	Poor introduction of information technologies to simplify procedures and control
	Lack of flexibility (s.a. working or service hours)
	Slow and heavy procedures to deal with security requirements
	Lack of standardization
INTERMODAL TRANSPORT	Bad railway conditions
	Poor use of inland waterways
	Lack of intermodal terminal network
	Poor rail-port integration
	Lack of freight villages with modern facilities to store and distribute products

Besides infrastructures improvements many other things can be done to improve ports efficiency. One of the main aspects around port activity is the participation of a big number of different actors both, public and private. Cooperation, coordination and integration between these actors is a key issue and initiatives such as Single Windows schemes and/or paperless procedures could facilitate and make more efficient the interaction between actors. Information technologies and the development of Port Community Systems could play a central role around this.

4. DEFINITION OF RESEARCH PRIORITIES BETWEEN EU-LA

Based on the analysis of the freight transport needs, requirements and barriers, current levels of business cooperation and technological development, as well as the trade and transport corridors between EU-LA, the research objectives and priorities, which could enhance the quality and impact of research efforts by building critical mass in transport and by promoting collaboration among the concerned parties are presented in this chapter.

In this item are highlighted the main aspects related to transport infrastructure and services in Argentina and Brazil, such as restrictions to the services development and operation and which are the necessities of improvement in the country's transport, in relation to the international trade. The information presented was based on the World Bank document: "Argentina: the challenge to reduce the logistics costs before the growth of the international trade", of 2006 and the Project of Investments in Brazil – PIB, of 2008, and other important references.

4.1. Main restrictions in Argentina

Among the main obstacles of the Argentinean transport can be highlighted congestions in hub ports, the low participation of the rail transport and the problems faced in the international road transport and in the multimodal transport.

- Congestions in the hub port of agricultural products near Rosario

The Gran Rosario region, which constitutes one of the greatest poles of vegetable oils production of the world, attracted, in 2005, 58% of the Argentinean exports volume (and 31% of its value). In face of the strong growth of the flows for this region in the last years, port facilities and capacity of Paraná river have been this was not followed by investments on road and rail links leading to the area.. Despite the three two-lane divided highways converging at Rosario, congestion has increased dramatically with serious impacts on logistics costs, including the externalities on the urban environment and safety. The problem is clearly identified, the private sector and the authorities have identified projects to solve them, but its implementation is lengthy. The private sector has advocated for a road-rail project named "Ring Road" (circunvalar), which has a high degree of acceptance in the logistics community and the city and federal government. However, the project still awaits engineering development and funding. Congestion on roads leading toBuenos Aires`port terminals

Container ports in the Buenos Aires greater area face the congestion and lack of space of the city itself[12]. Therefore this problem requires a much more complex strategy than Rosario. However, a number of infrastructure projects would provide relative segregation for trucks going to the different terminals. In addition to this, the continuation of the tendency to descentralization is likely to signicantly reduce both

[12] Lascano, M. (2007). Road access to Buenos Aires`ports: an unrecognized problem. In "Blue book of transport III". FADEEAC. Buenos Aires. (Accesos del sistema portuario Buenos Aires: un problema no reconocido. En "Libro Azul del Transporte III")

direct and undirect costs related to cargo moving within urban congestion. Container operations in La Plata, scheduled to begin in 2011, will offer the chance to fully avoid urban congestion. Space available around this new terminal is also likely to favor the location of warehouses and headquarters of logistics operations, besides the port operator, Exolgán, which already is a major logistics player. One last issue regarding port operations in Buenos Aires is the draft for ships. The river Plate´s main channel is already dredged to 34 feet, and a further two-feet depth has already been scheduled and funded by the federal government. All of Buenos Aires`ports, except Zárate[13], have 30 feet berths and La Plata, at least in the short-term, will not do any better. The limited participation of the rail mode in the freights transport

Although, as mentioned, railroads have been carrying the highest tonnages in 50 years, the available network should allow for greater growth. Recent growth actually masks the sharp cargo loss transported by the narrow-gauge network covering northern Argentina, where a large share of the recent expansion of agriculture has happened. This network also includes same-gauge links with Bolivia and Chile. Recent growth in the rest of the network has happened in dependency with the available resources granted to operators. The reformulation of the current franchises could mean the onset for a second stage of growth.

- The delays in the international road transport

The waste of time in the international freights road transport corresponds to several reasons which go beyond the road infrastructure and the performance of the border controls, and include the operations of transport companies and services. Studies indicate that a truck spends, on average 107 hours in the way between São Paulo and Buenos Aires, what would be possible to do in 60 hours. Part of the delay is due to the lack of synchronization in the customs times and fitosanitaries, and to a performance, in some occasions deficient, from these organisms and to same failures in the infrastructure. Great part of the delays are also due to the private sector organization, since the transport companies use the border posts as a stopping place, benefiting from the available installations and security.

- The reduced development of the multimodal transport

The combination of the transport modes (intermodality) and the act of contracting transport services of several modes, under the responsibility of an only responsible person (multimodality), which are practiced in an increasing way in the most developed economies, has a reduced development in Argentina. The main causes are of normative order, particularly the restriction to the free circulation of containers (the permanence of containers in the country is limited to a few days, which makes it difficult the deposit of these when empty), the lack of synchronization in the limits of responsibility of the distinct transport modes, and the lack of regulation of the Multimodal Transport Law, passed in 1998 and not valid yet. The lack of infrastructure for the containers transshipment and the reticence of some operators to combine different transport modes also contribute for the little use of multimodality. There are operational restrictions of transshipment in Argentinean ports and therefore, a relevant quantity of movements is accomplished in other countries' ports. Thus, opportunities are lost, increasing the costs in a direct and indirect way. The maritime transport of containers increasingly involves the transshipments between the origin and the destination port, as

[13] Zárate, however, is restricted in the ship sizes it can receive due to the presence downsteam of a major bridge on a curved stretch of Paraná de las Palmas river branch.

a result of the routes configuration and the commercial alliances that has made navigation companies to search for greater efficiency. Currently, one in each three containers is object of transshipment between its origin and destination port.

4.2. Main restrictions in Brazil

Among the main obstacles of the Brazilian transport can be highlighted congestions in ports, in rail transport and the problems faced in the multimodal transport.

- Congestions in ports

The Brazilian port activity requires investments in maintenance and deepening of the access channels and their mooring areas, as well as the expansion, through the enlargement of the activities in the existing ports, the installation of new ports in the Brazilian coast, mainly to adapt to the evolution of the operating commercial fleet. The deepening dredging and enlargement and construction of "berths" for the ships' anchoring stand out in the port works, they are the main needs for investments in the improvements of the terrestrial accesses to the ports.

In a study elaborated by Brazilian executives from the French operator CMA-CGM (2006), third maritime transport in the world, where it is calculated an index that measures the dimension of the ports obstacles that Brazil will have to face to keep the international trade growth in the next years, it follows that some of the main country's ports are using more than 90% of their freights movement capacity. Thus, the most urgent challenge for many Brazilian ports are the dredging works to facilitate the ships' access, with a highlight to the Ports of Santos, , Paranaguá, Itaguaí, Rio de Janeiro, Recife, Salvador, besides the Fluvial Port of Parintins, in the Amazon River.

On the other hand, the view of the regulation on the port system has caused, in the last years, delay in the grant of new areas of the maritime trade exploration. With the Decree n. 6620/08 this situation starts to be inverted by the necessity of renewal of the private investments in the construction of maritime infrastructures (private terminals). This policy consolidates when it is published the General Grants Plan of organized ports and private use maritime terminals, developed by ANTAQ and approved by Regulation 257, of September17, 2009 of the Special Secretariat of Ports – SEP.

The technological change, through investments in the merchant marine, occasions improvements in the port productivity, but demands, in parallel, the investments in the installed capacity. Changes in the pattern of competitiveness, mainly determined by the specialization of some ports, are also characterized as pillars for the investments in the port sector, engendering new actors and changes in the geography of future investments. The effects of the investments, in this way are reflected in the increase of competitiveness, modernization, productivity and GDP generation.

In the port sector it stands out the need for administrative review and strategic planning, the review and updating of the development and zoning plans – PDZs, the planning of actions to be developed in the scope of the companies' grants plans, based on the PDZs, the accomplishment of economic and environmental feasibility studies and engineering projects for works linked to the Docks Companies expansion plans and the habitual accomplishment of studies for dimensioning the costs and port rates.

It is important to highlight that, for the evolution of the dimensions of the ships currently operating in the merchant marines, the Brazilian ports, in general, need for

investments in their maneuvers areas and access channels, associated to mooring terminals and equipment modernization. In this aspect, the improvements of the road and rail accesses are, aside, issues of intermodality that affect the efficiency of almost all the Brazilian ports.

- Congestions in waterways

The Brazilian fluvial transport is currently offered and operated in a reduced way, in relation to the natural potential installed. The lack of investments for improving the sections with existing operations and qualification of others, besides the construction of logistics terminals of connection with the highways and the railways, are to a certain extent related to the inexistence of a governmental strategic plan of investment for expansion of the inland navigation in Brazil.

The National Road Plan officially registers more than 40 thousand kilometers of navigable ways, with the total extension of the fluvial-lake superficial water being approximately 63 thousand kilometers. Considering that these ways are natural and for their use they demand specific works for qualification to the navigation. For the functioning of several waterway segments, one of the main necessities is the construction of sluices. The investments in the waterways depend, for their effectiveness, on the guarantee of transposition of levels provided by the sluices. Therefore, they are the key elements so that the projects in this sector have a guaranteed success.

Concerning the environmental issue, if on one hand the inland navigation causes less impact than in the other modals, on the other hand the works necessary for this transport have several hindrances. The slowness in the issue of environmental licenses makes impossible the navigability of waterways and its expansion in Brazil. As the investments in this modal have never been considered a priority, besides the scarcity of resources, dams and special works (road and rail bridges) hinder the waterway transport in some segments where it still occurs. The bridges demand in some waterway segments for passing their spans, additional time in the transports, due to the detachment maneuvers of the convoys. Thus, the investments for the inland navigation lack not only those directly applied in the waterway works, but also in re-structuration (of spans enlargement and/or reinforcement of the bridges' pillars). To these investments must be associated those which allow the freight having access to the waterway transport, and which depends on accesses through terrestrial ways to ports and fluvial terminals.

For the inland navigation, the hindrances to the maintenance and expansion are simply summed up in the lack of an appropriate political strategy, considering that it must be included in the political guidelines the following aspects:

- Access to credit for the fleet renewal;
- Appropriate conditions of support to the activity;
- Practice of interest rates compatible to the regional market;
- Equationing through regulation or Sectorial Policy, for the correlation between the increase of the fuel's cost and the regional market;

In this context, among the policies for enlarging the waterway transport, the investment and incentive to the qualification and increase of the qualified labor force, associated to investments of the naval and construction industries linked to the sector is essential for the consolidations of the investments in the modal.

- Road transport

The grains' productivity in Brazil have been increasing, although, it is harmful for businesses because of deficient planning of Government about roads. Besides that, there are problems related with warehousing, that affects whole transport systems.

- Rail transport

The rail freights transport could contribute more in the trade competitiveness through a higher participation in the internal transport of bulks and containers.

- International road transport

As occurs in Argentina, in Brazil, the waste of time in the international freights road transport corresponds to several reasons which go beyond the road infrastructure and the performance of the border controls, and include the operations of transport companies and services.

4.3. Necessities and perspectives for the development of the international trade in Argentina

According to the World Bank study, five objectives must be reached so that the logistics performance of the international trade is improved. These topics are presented next.

- Assure the services capacity and quality in the key points of the national logistics

It must be increased the capacity and efficiency in these points, which include the bulks hubs near Rosario and the containers hubs in Buenos Aires terminals, serving their terrestrial and waterway accesses, and considering the externalities about the urban area.

Besides, the deepening of Paraná river´s lower section, between Rosario and the openAtlantic Ocean is of extreme importance for both hubs, since it will allow the access of higher dimensions vessels, according to the world market trends.

- Promoting the efficiency of the internal freights transport through the modal integration

The freights road transport, which is essential for the logistics efficiency, although it has improved in the last years, faces the challenges of increasing its offer, improving its professionalization process and reducing the externalities, meeting the existing technical rules.

The existing potential must be benefited to improve the efficiency of the internal freights transport, promoting a modal distribution, facilitating the integration and multimodality, and contributing to obtain more modern and specialized services.

- Encourage and facilitate the binational and regional terrestrial transport, in the border posts and in integration corridors

The projections accomplished suggest high growth rates for the regional exports, to which it must be added the imports and the passage traffic. The increases of capacity must be analyzed with criterion of integrated corridor, considering together the border

posts, the internal corridors which serve them (road, rail, etc.), the ports and maritime routes, using tools appropriate to the planning. It must, still, expand the border posts to integrate the control in an only physical and functional scope, and propitiate some changes in the operational modalities of the transport companies.

Regarding the rail participation in the regional trade, there are projects which will contribute to reduce the use of the road border posts.

- Offer support to the small and medium companies and to the logistics operators

The small and medium companies, especially from the countryside, must be supported so that they have an efficient management of their logistics chains, from the knowledge of new optimization techniques of the supplying chains and organization of the organizational logistics.

The performance of the logistics dispatchers and operators in Argentina has been good, and it can consolidate as a competitive business, from active policies of support to the diffusion of good practices, helping the sector's private organisms and associations.

- Accelerate the processes of international trade's documentation and inspection

It must be modernized the international trade documentation processes, especially in the ports, propitiating information systems of the port community which simplify the procedures. It must be carefully evaluated the practice of inspections in ports and border posts, so that their requirements are met without delaying the trade's flow.

4.4. Necessities and perspectives for the development of the international trade in Brazil

- Ports

From the mapping of the key issues it is possible to identify which spaces must be filled by the public policies to promote the waterway and port sectors development, considering their dynamism in Brazil. The key issues here pointed out are five:

a) Public investments

- Consideration of projects that present studies of technical engineering, economic and financial pre-feasibility and environmental impact;
- Exclusively directed to the port infrastructure, according to the capacitation and development stage of the port and its region of influence;
- Preferably oriented to the ports "inducing" and promoting the development of their area of influence, strongly supported by economic and social justifications;
- Interventions requiring financial resources for the ports "induced" by the trade and by the businesses developed in the respective regions of influence, must be supplied and financed by the granted regional spheres directly benefited;
- Dredging of deepening and maintenance of the ports, will occur under the technical support, preceded by hydrologic and environmental studies, also, presentation of the financial feasibility and indication of the economic merit;

- The application of the resources derived from the tarifary income must be assured and enough to guarantee the restitution of the public assets used.

b) Revitalization of the ports areas and facilities

- Leverage for new investments generators of patrimonial incomes for the port, allowing the enlargement and improvements of installations and berths, with increase of the offer of capacity and improvement of the operational performance;
- Generation of port and urban benefits, changing the soil's occupation and usage, with improvement of the relations port-city;
- Promotion and appearing of diversified leisure, cultural, social and commercial activities, with retaking of the degraded areas and return of the city dweller population at the water margins;
- Improvements of the city dweller life's quality, besides the great valorization of all the patrimony involved in the project, public as well as private, including the vicinity.

c) Grants for exploration

- Concessions and commissions, under the commitment of investing in the port infrastructure;
- Leasing of port areas and installations, under the contractual clauses to invest in improvements of the operational and the port equipment installations;
- Authorizations for construction and enlargement of the Private Use Terminals, for movement of third part's freights, are important instruments for the increase of the offer of capacity and necessary for the success of the modeling of the port activities' exploration in Brazil, with efficiency and effectiveness;
- Fully qualified ports located in regions with advanced stage of consolidated development, must afford, by their own, their necessities of expansion and improvements;
- Maintenance of the port basic infrastructure is responsibility, direct or indirect, of the Port Authority, being the private initiative responsible for the operational installations and by the port equipment.

d) Dredging services

- Dredging services in the public ports must be oriented to the interests of the businesses developed in each port and totally compatible with the maritime traffic and with the characteristics of the existing port installations and must be immediately planned;
- Deepening dredging in the ports will occur under the technical support, preceded by hydrologic and environmental studies, also presentation of its financial feasibility and indication of the economic merits of each project;
- The intervention programs of deepening dredging and of maintenance must be linked to the activities and constant projects of each port's PDZ;
- Maintenance dredging must be permanent initiative of the Port's Administration, financed by own and specific tarifary income.

e) Management of the port activities

- Free competition environment, with freedom in the rendering of services and in the job market, in the Area of the Organized Port;
- Qualification and competence of the permanent personnel develop the multifunctional age and increases the specialization of the workers categories for the benefit of the services rendered in the public use ports and in the private use terminals;
- Development of the condominium management, shared and participative with all the port community, since the planning of the actions until the execution, control and results evaluation stages.

In parallel to the policies of investment and regulation, the insertion of technological changes as much in the infrastructure as in the evolution of the fleet used, must be in such a way that it does not conflict with these two firsts and acts effectively as a modernization element of the national planning and regulation.

- Waterways

In terms of investment, the government should assure in a direct way or through concession to the private initiative, the navigability conditions of the rivers, access conditions to the terminals and the establishment of terminals with appropriate capacity for freights and passengers movement (mainly in the Amazon region where this is the most used means of transportation).

The integration of freights movement for using of a future route of a bioceanic connection, establishing an option of using the ports of the pacific coast for exporting to the East, points out as to the necessity of qualification of the waterway system for serving this route, as the necessity of competitiveness increase of the Brazilian maritime ports to guarantee the competitiveness. For this, it is necessary the adequacy of the regulation and inspection criteria and the guarantee of the legal conditions so that the results are convergent with the propositions described for the sector's policy.

It is concluded that the expansion of the port and waterway sector must be oriented according to aspects presented, taking into account the necessity of integration among the public actors, the propositions of projects, the initiatives of the private sector which has a strong participation in the sector, the market interested in rendering the service operations of the waterway transport, maritime of long course and of cabotage, the policies of existing loans for the maritime sector and the possible changes in the matrix of Brazilian transportation, which can bring reductions of rates and consequently economy for the country.

4.5. Summary of barriers and research priorities

As stated previously, two types of barriers can be identified in the international trade relations in Brazil and Argentina, the physical and the regulatory barriers. The physical barriers are associated to the deficiencies and limitations of the terrestrial transports systems infrastructure present in each of the countries involved, directly affecting the ports and, at last, the maritime transport, responsible for the higher volumes of products transported between them and of all the intercontinental movement. Now, the regulatory barriers involve all the fiscal procedures of circulation of goods and, hampering, chiefly the modal integration in Brazil and Argentina.

Regarding the multimodal transport, it still must be observed, besides the two types of barriers mentioned, a third obstacle associated to the transports and to the legal issues

that still need to be solved, in the structure that regulate the MERCOSUR relations, as well as the other agreements in effect of Brazil and Argentina with other countries. These hindrances are related to the tarifary policies practiced by the countries involved, which besides needing a general reformulation, do not enable to the businesses, yet characterized the practice of multimodality, the disobligation of some taxes falling on the transports, in a way to avoid the bi-taxation.

The identification of the tarifary and non-tarifary barriers imposed to the trade of goods and services allow for the actors involved presenting solutions which result in growth of the commercial flows between Brazil and Argentina. Analyzing the set of non-tarifary barriers, it is observed that it is made up of elements, which prevent that the international transport of goods and services occurs in a safe, swift way and at reduced costs.

According to what was exposed, it can be stated that the reduction of the existing barriers in the multimodal transport in the South American continent, passes through the institution of fiscal rules, which enable the practice of the inter and multimodal transport, without the bi-taxation, which currently fall upon the freights transshipment among the modals.

Problems identified as physical barriers are made up of aspects which characterize the transport infrastructures and refer to the deficiencies that, if resolved, will facilitate not only the integration of the MERCOSUR countries, especially Brazil and Argentina, both with transportation matrix strongly dependent on the road mode.

Despite the use of more than one transport mode with an only waybill being possible in Brazil, this practice is not common yet. Such practice is limited by the precariousness and obsolescence of the transport infrastructures, the extreme dependence, the predominantly logic of road transports, the lack of investments, the inefficiency of ports and terminals which serve as integration point among the modals, allied to the unproductivity of the logistics' distribution and storage sectors. It is still appropriate to observe that the lack of new government projects and plans able to minimize and in some cases extinguish the barriers that limit the expansion of the use of intermodality in the country.

The condition of the existing transports networks in the majority of the Latin American countries has caused vulnerability in the commercial relations among the countries, as internal as externally, due to the conditions of the current transport systems. Among these problems are:

- Location of ports in great urban centers.
- Port terminals with road accesses frequently congested for long periods daily.
- The utilization of the waterway mode (waterways and cabotage) coupled with the abandonment of the long rail transport system, which contributes significantly to the predominance of road transportation, leading to unreliability and often insecure.

The full utilization of the port terminals is often hampered by the existence of limitations on specific points on the existing road network - especially in areas near ports - that need to be removed through planning involving the port authorities and bodies responsible for rail and road. A project investment of resources to consider the main deficiencies in the transportation sector, especially in infrastructure is critical to recovery and accelerating the development of form following the concept of sustainability.

The goods transported by river or use intermodality, are usually those with low added value and, among them, the commodities such as iron ore, grains and dairy products. Therefore, for these have a greater market competition, is essential to have an efficient transport system because the cost of disposal reflects directly on the final price of products in domestic and export markets.

The clearance of the rivers that lead to expansion of the waterway is of fundamental importance for several South American countries, since such interventions are designed to facilitate the access of inland waterway ports. This is due, not only for the economy in this water transportation that is often more economical, but also the ease of access to ports without the use of roads that in many cases are overwhelmed.

In some areas of the South American continent, including the region comprising the basins of the Tiete-Parana-Paraguay, the use of water transportation can result in accelerated development, in particular farm (mainly soybeans) and mineral resources . By allowing direct access to the ports of Argentina, Uruguay and southern Brazil, commodities, facilitate their connections with foreign trade at low cost.

Among the questions raised about the customs procedures are lack of synchronization between the border agencies, which cause significant increase in processing time (clearance) of cargo. Despite the recognition of the competent authorities that investments in infrastructure are needed to boost development in most South American countries there is a strong dependence of the utilities that provide transportation services, which in turn have their investment portfolio concentrated in the modal rail and road. In Brazil, in general the existing concessions, allow utilities to be limited to maintenance of infrastructure and not on the increase of services.

From the general considerations on the problems involving the transport in Latin America, specifically Brazil and Argentina are the main themes proposed research for each sector. The following table summarizes the transport system, the key issues.

Table 4.1 – Summary of barriers and research priorities

TRANSPORTATION SYSTEM	TYPE OF BARRIER	BRAZIL	ARGENTINA
Air transport	Infrastructure	Problems with size of runway airport that hinder direct cargo flights to other continents, forcing the use of Airport of Viracopos.	Limited articulation between the domestic and international air transport markets due to the two-airport system in Buenos Aires.
	Operational	Brazil as a hub port in Latin America for transit cargo.	Small amount of exports with a profile compatible with the use of air transport.
		Transportation provision for air cargo is limited, since most of the cargo is transported by passenger aircrafts.	Higher costs of maritime transport (2005-07) have coincided with apex of air sector crisis. Currently, much lower costs of maritime transport are a strong disincentive.
		Provision of air cargo at most airports is less than demand, causing the load in most cases be transported by road to an airport that concentrates cargo flights to and from abroad.	Number of flights offered in the domestic market is still (March 2010) below the level of 1998, when touristic destinations are excluded.
	Institutional and Regulatory	Additional charge for storage and wharfage charges on import.	Rapid and subsequent changes in the domestic air market over the last decade. Operators have appeared and disappeared from the market, including changes in ownership that have blocked the consolidation on the cargo market.
Road transport	Infrastructure	General road conditions are poor and bad.	Capacity problems in metropolitan highways leading to the ports of Rosario and Buenos Aires. Expansion of capacity around Rosario is urgent, as well as expansion of parking and waiting facilities for trucks.
	Operational	Lack of supervision of the limit loads carried by vehicles, which hinder the road structure and reduce the competitiveness of companies within the limits.	Lack of supervision of the limit loads carried by vehicles, which hinder the road structure and reduce the competitiveness of companies within the limits.
	Institutional and Regulatory	Excessive bureaucracy in international transport.	Excessive bureaucracy in international transport.

Rail transport	Infrastructure	Transposition of rail freight through the São Paulo city could be facilitated by the "ring rail" in São Paulo state.	Inherited infrastructure. Coverage is good (density of demand in the south of the country isn´t likely to justify additions). Bringing new branches into service should be carefully assessed to avoid compromising current density of use.
		Need of warehousing areas and parking coordinated with port operation.	
		Interface with urban areas, where problems, such as intersections with city streets and occupied the tracks of the field, persist and thereby reduce the efficiency of the system.	Rail access to terminals in greater Rosario needs urgent expansion and adaptation. This issue is key for greater use of the entire railroad network. Railway access to Buenos Aires is clogged by the operation of metropolitan passenger services.
		Bi-oceanic rail corridor needs to be promoted.	
		Guidelines for railway expansion in the Midwest.	Rail access to the new container port in La Plata, equally inherited, should receive attention.
		Rail access to the port of Sepetiba.	
		Rail network which has different sizes of gauges of the neighboring countries and some national meshes well.	Good rail links from Argentina to northern Chile, Eastern Bolivia and Paraguay, but underutilized. Rail connection to Brazil dependent on transfer at rail yard at Uruguayana given the different gauges.
		Track former curves and ramps that require speed reduction.	
	Operational	Intensify use modal rail to stimulate the rail and road integration.	One issue that should receive more attention is the possibility to develop a management system to allow for shared infrastructure use of different cargo operators. One port operator has shown interest in expanding to rail operations.
		Low use rail for freight between Brazil and Argentina.	
	Institutional and Regulatory	Existing concessions, given the types of insurance contracts, which generally restrict the activities of the concessionaires to maintain the infrastructure.	Extension of the current franchise schemes, or transition into a new model with greater emphasis on long term investments to adapt and renew inherited infrastructure.
Waterborne (Ports and Inland Waterways)	Infrastructure	Construction of logistics terminals for connecting waterways to the highways and railroads.	Need for strengthening the former river ports that where important in the past, especially on the upper section of Paraná river.
		Need for construction of locks.	
		Enlargement of openings and / or strengthening of the pillars of bridges.	Dimension problems of channels. Some stretches of Paraguay river should be adapted to reduce sharp curves and increase safety.
		Access by road and rail networks to ports and inland terminals.	
	Operational	Shipping is not competitive enough with the road system.	
		Need to improve existing operations with snippets and excerpts of qualification with potential operation.	

	Institutional and Regulatory	Delays in issuing environmental licenses hinder the navigation potential of waterways.	Intermittent reluctance of Mercosur members to facilitate navigation of the upper section of Paraguay river. Potential market for bulk transport on waterways is likely to be significantly larger but linked to international traffic rather than domestic.
		The reinforcement of tax to the ports for products transported by waterways; it is not imposed on the goods transported by rail and road.	
		Rules for hiring of manpower in the public ports that generates excessive labor costs.	
Waterborne (Ports and Maritime Long Course and Cabotage)	Infrastructure	Problems in land access are critical to port operations.	Problems in road access and highways links in metropolitan areas of Rosario and Buenos Aires.
		Problems in access routes, such as maintenance and deepening of channels and berths.	Berths of container ports around Buenos Aires cannot yet fully accommodate 5500 TEUs ships already operating.
		Studies for economic and environmental feasibility of new port areas.	Lack of storage containers.
			Problems in access routes.
	Operational	Much of the operation in stuffing and stripping of containers is in port, which hinders the operation modes, facilitated by the unitization of cargo.	Weak coordination procedures for receiving and delivery of container terminals in exports. Potential for technology applied to customs controls and procedures.
		Feeder service loads with Argentina.	Legal definition of containers as transport equipment, although recently improved, still confusing.
		Use of inland ports.	Port of Buenos Aires area is considered a regional hub.
		Waterway transport of bulk minerals and the Paraguay River to Argentina.	Difficult to accommodate the new vessels spokesman containers.
			Road congestion around main ports (greater Rosario and Buenos Aires).
	Institutional and Regulatory	Lack of clear definition of the model of private participation in port terminals in both the public ports and outside the port area.	
		Legal restrictions on cabotage by foreign vessels.	
		Leasing areas and facilities.	
		Review and update development and zoning plans– PDZs.	
		Strategy deployment of new ports; no guideline that limits competition and complementarity between existing ports and new ports.	
		Issue of port security concern to operators of port terminals, especially in relation to additional costs and their impact on competitiveness.	

		Problems of communication and information flow at ports.	
Warehousing and border crossing	Infrastructure	Lack of points of primary and secondary storage nodes with logistics to ensure the time scale of rail bulk solids and liquids.	Size's restriction of the parking lot of the Cristo Redentor border.
		Support structure of intermodal terminals in the "road ring" of São Paulo State.	
	Operational	Lack of adequate operational safety.	Incipient congestion at border posts.
			Incipient development of logistics zones.
	Institutional and Regulatory	Non standard systems and documents.	
		Opening hours at border posts insufficient or inadequate to the needs.	
		Lack of harmonization of control services and support provided by organizations involved in the operations of customs control.	
		Minor use of the International Cargo Manifest / Customs Transit Declaration International.	

5. CONCLUSIONS

This last chapter presents a more in-depth view of the main transportation barriers and hindrances of the transportation systems in Brazil and Argentina, added with the key viewpoints of the stakeholders that participated in the two forums that took place in both countries. In this way, the key results of the analysis presented previously are matched and strengthened with the opinions of the stakeholders.

5.1. Specific issues in Brazil

5.1.1. General hindrances towards intermodality

In a country of continental characteristics as Brazil, intermodality and multimodality (involving the integration of the road, rail, maritime and waterway means of transportation) should be already consolidated. However the growth of multimodality in Brazil is still very inhibited towards the urgent necessity of the companies in reducing costs and increasing its logistics efficiency. After all, multimodality is no longer an alternative to become an essential requirement so that the companies become more competitive in the national or international scene.

For this, it is necessary that both government and private initiative work together to solve the problems which involve each mode. In the rail sector, for instance, investments are necessary for the expansion and conservation of the already precarious rail network (which make, in determined sections, the average speed of trains to be below 15 km/h), in the operationalization of the North-South section and in transshipment points. These measures can serve as an incentive to transform railways into a mode that brings positive feedback (and not negative, as it is currently) to the investors, just as occurs in countries where this is the main means of freight transport.

In the current Brazilian scenario, it is observed that in the absence of institutional reforms in the public segment of the sector and in keeping the current regulating uncertainty for new private investments, it can be expected a strangulation of the international trade, in that it is already observed limitations of capacity.

It is expected that the public sector consolidates a regulatory framework which stabilizes the effective space of the private operation in the sector, so that the country can increase ports productivity, propitiated even by a greater participation of global companies – port operators and ship owners – in the ports of Brazil, promoting competition in the sector.

It is widely acceptable in Brazil that intermodality is necessary for a more effective logistics sector. More careful planning and pro-action is necessary in the different transport modes, among them waterway, cabotage and rail. To have an idea, the logistics model of Brazil is still excessively focused on road, which corresponds for about 60% of all the volume transported, besides being the second more expensive one, after air transport. Not to mention that the country still has more than 70% of its highways in bad condition.

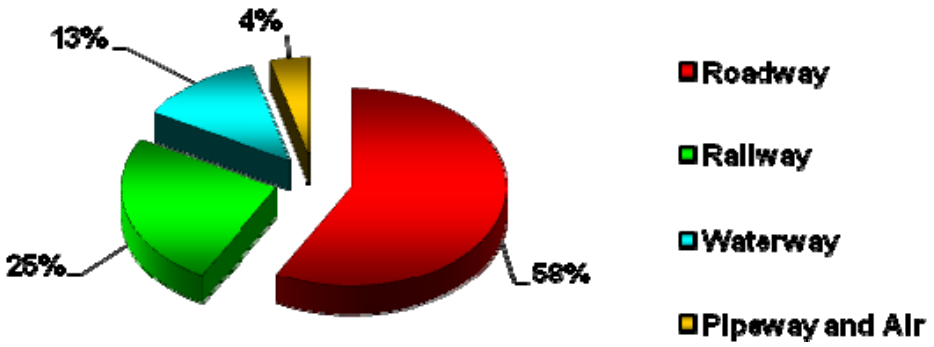


Figure 5.1 - Brazilian Transport Matrix (2009)

The existence of obstacles that propitiate the use of multimodality in the general freight transport of the country consists of several factors. The first one concerns the choice of the appropriate mode of transport. The choice of the mode, made by companies using the country's logistics system, is not always the most appropriate. This happens due to the lack of knowledge about entrepreneurial logistics and mainly about the application of the total logistics cost theory. The choice of the appropriate mode for the transportation of a product requires the application of mathematical models, which in many cases is unknown by the decision maker.

The lack of infrastructure is also a hindrance related to the advance of the multimodal transport operations of the country. The deficiencies occur in several components forming the multimodality of the country, such as short airport runways, deficient air traffic control, lack of berths in ports, drafts below the needs, lack of railways to meet the market demands, not to mention the needs for construction and maintenance of the country's highways.

The way that port terminals and rail networks were privatized, not foreseeing competition is also a hindrance, for it repassed to the private initiative a monopoly that used to be public. The lack of competition and consequently the demand of these monopolies take these operators to a comfort position.

In these cases, the gains of competitiveness were obtained through the costs reduction, when they exist, difficultly are repassed to the users. Besides, the amount of transport companies, except for the road one, is restricted. There is the existence of low number of operators, inhibiting competition and as a consequence proportioning tariffs with mark-up above the expected.

In air transport there are in practice only three companies (TAM, Gol and Variglog), in the coastal navigation also three (Docenave, Aliança and P&O), in rail the situation is even worse, for each network belongs to only one operator.

Disregarding the factors mentioned above can take the modes transportation matrix to stagnation; however much depend on infrastructure.

5.1.2. Investments by public & private sector in infrastructure

- *Decree n. 6.620/2008 which establishes the new Grants Plan of the port sector points to a new delegation model of the port terminals to the private initiative, but the way has not been determined by the government yet*

In the last two decades, the Brazilian port sector has suffered important changes. In particular, Law n. 8.630/1993 (Port Modernization Law) and the Decree n. 6.620/2008 meant important route changes for the sector's policy, especially with regard to the port's use and administration. It is important to observe that there was a clear definition for the activities allowed to the port operators and the types of concessions. There are three types of movement activities in the port facilities for private use: i) own freight, in port terminal for exclusive use; ii) mainly own freight and, on a subsidiary and occasionally, of third parties, in port terminal for mixed use; and iii) passengers, in port facility for tourism.

The delegation under which the ports operate differs according to the legal profile of the port facility, if public or private. The public ports may be operated on concession to public or private company, through prior bidding. Now the port facilities for private use solely depend on authorization by the government to operate. It is important to highlight that the authorizations are precarious legal concepts, when compared to the concessions. According to Law n. 8.666/1993, the obligations imposed to the operator under the concession regime are greater than to those under the authorization regime.

For a certain period, between the Port Modernization Law (1993) and the issue of the Decree n. 6.620/2008, there was a great volume of discussions about the profile of the operations in the private ports. The conflicts arose from two understandings completely distinct about the terminals for mixed use: some companies understood that it would be possible to install private terminals for mixed use only to move freight from third parties or to predominantly move freight from third parties, as if they were public terminals. In the opposite direction, there were those who proposed that the private terminals for mixed use should have as main function the movement of own freight, acting with freight from others only in an accessory way, to use its idle capacity, minimize costs and make the operation more efficient, resulting in benefits to the own operator.

- *The Decree n. 6.620/2008 introduced a barrier in the model of private exploitation of port terminals*

Actually, allowing private terminals to operate exclusively with freights from others would impose a dishonest competition to the public ports, once these are subject to a more restrictive legal regime and, consequently, less propitious to the agility for the decision making. It would not be desirable restricting the operation of the private terminals to the movement of own freight either, once it would hinder the chances of new comers to act in this market.

The Decree n. 6.620/2008 ratified that the private terminals must principally operate with the freights from its own owner, and, residually, with the freights from others. It also allowed that the private companies may require the opening of a bidding process to lease a public terminal in an existing port or to obtain the concession of a new port.

So, it would be more appropriate that any request for authorization for a private terminal was followed by a bidding process for granting, opening the possibility of other people interested in the products movement through that terminal also have access to

the coastal area. If there were no third party interests, the initial investor would get the concession of this terminal at a considerably low cost, similar to an authorization. Anyway, this terminal would be public, not restricting the future possibility of third parties freight movement. Although it is legally possible to request an authorization for the construction and operation of a terminal for private use, Development and Zoning Plan, by the Decree n. 6.620/2008, can restrict the possibility of constructing a terminal for private use in collective interest area.

- *The new model was not explained explicitly by the government and thus it blocks the operation of private terminals by third parties*

In the issue of intra-port competition, a restriction would be the own ambiguous position of the port administration, while first operator qualified by Law and qualifier of new operators. Moreover, there are definite limits of scale and minimum size of terminals and facilities, which restricts the sustained expansion of the number of competitors in a same area of operation, considering the types and volumes of freight involved. Furthermore, Decree n. 6620/2008, when limiting movement to the own freight and, only on an alternative and eventual, of the third parties, in the port terminal for mixed use, it greatly restricted the possibility of new competitors.

Users' opinion:

The Federation of national Associations of Ship Brokers and Agents – FENAMAR, asserts that it is necessary that the structured society open a discussion with the government so that it is defined a state policy. Currently the private sector discusses restricted items such as the Decree n. 6.620/2008 (General Plan of Grants), the exemption law of the Freight Additional for Merchant Marine Renewal – AFRMM, that is, small pieces which are part of the transportation, but that is to promote specific items, and not to think about Brazil and in society as a whole.

According to FENAMAR, Brazil competes with itself, because there are important ports of Brazil which are 10 to 15 years without investments. The port of Santos has currently started the dredging and it was more than 10 years without this kind of intervention. In turn, the port of Cabedelo, which is small, but that needs a dredging that costs approximately US$ 83,000 to make the access of ships feasible, the service does not occur, because the project of this port was done by opposition.

- *There is no institutionalized model for public investments*

The National Confederation of Industry – CNI points that the National Council for Integration of Transport Policies – CONIT, an official structure, should be the stage for these discussions. It was created in 2001, however there was the first meeting in November 2009 and the second one was in February 2010. Of the approximately 10 ministers who have a seat at the Council, only the ministers of Transportation and the Special Secretariat of Ports were present, the others sent representatives. Thus, this is a measure of the importance that the government gives for the integration of transport policies. In the second meeting no minister was there, only the Executive Secretaries and other representatives were there, and they did not invite the private sector to participate either.

According to ABTP, the Decree n. 6.620/2008, in force since October 2008, which has the objective of regulating the sector, contains items that generate market dissatisfaction, not only for extrapolating Law n. 8630/93 (Ports Law), but also for making investments in the port sector difficult. The decree, instead of exempting the leased terminals (e.g. mandatory in hiring separate workers), made new investments in Private Terminals for Mixed Use impracticable, causing the strong reaction from the majority of the sector's companies. The volume of containers moved in Brazil doubles every 5 years, also increasing the amount and size of the vessels that operate in the Brazilian Coast. Although it presents some positive items (e.g. National Dredging Program – PND), in general, the decree is ineffective for the development of the Port Sector, weakening the private initiative and strengthening the centralization. According to ABTP, for Brazil to develop the Port sector, it is important to examine the decree carefully.

According to ANUT, the Decree n. 6.620/2008 classifies freight from others for authorization purposes to create private terminals for mixed use in disagreement with what the ordinary legislation settles.

ANUT considers critical items in the decree the changes in the concept of own freight and third party freight, affecting existing and future terminals; the authorizations for the Port Authorities to accomplish storage services, that can result in unfair competition or conflicts with the leased terminals; the changes about the rules to hire separate labor, which affects the negotiations between terminal and separate workers; and the exigency that the postponement of the leasing contracts only occur by "Justification", what generates legal uncertainty to the tenants.

5.1.3. Port policies

Regarding the offer of freight port movement services, it can be seen from a first institutional division that classifies the terminals inside and outside the organized ports area. Until 2003, the official data distinguished the movements in "At the Pier" and "Out of Pier". In 2004, the data are presented as movements in the "Organized Port" and in "Private Use Terminals – TUP".

The distinction between the movement in the Organized Port and in the TUPs allows a first approach for the offer qualification. The TUPs are, usually, linked to specific logistics chains of agro industrial companies, so representing the most detached from public investment offer's segment. This detachment is, nevertheless, partial, in so far as the TUPs often use public facilities, such as waterway and inland protection and access, maintained and run by public institutions, which can lead to payment of tariff (in the waterway case). In turn, inside the Organized Ports, the private activity, from Law n. 8.630/93, happens through construction, reform or expansion of port facility, depending on the leasing contract, or on authorization from the competent authority, when dealing with private use terminal.

Another feature is the strong concentration of the TUPs offer. In fact, the 10 main terminals concentrate more than 80% of the movement, with great predominance of iron ore, petroleum and by-products, coal and steel products. According to the Docks Company for the State of São Paulo – CODESP, the concentration ratio for the 20 main terminals reaches 98.3%. This concentration is also observed in the offer and operation of container terminals, in organized ports. In 2009, the terminals of port of Santos moved 2.25 million TEUs, about 37% of the national total, being that, of this total, 79% was moved in only 3 terminals (Tecon-1, Terminal-37 and Terminal-35). These three

terminals are run by two companies. Santos Brasil runs Tecon-1 (47% of port of Santos' containers) and Libra Terminais runs T-35 and T-37 (20% and 12%, respectively, of port of Santos' containers). About 70% of the containers movement in Brazil occurs in the terminals of five ports, located in the Southern and South and the 10 biggest ones concentrate 88% of the total.

- *Participation of the outsourced container terminals*

The model of public wharf operated by private initiative terminals is repeated in several ports of the United States and Europe. In force since 1993, with the approval of the Ports Modernization Law, it brought great advances for the Brazilian port system. The competition of the private terminals has stimulated the efficiency in the ports with public administration.

The growth of some Brazilian ports in the last ten years is impressing. The financial transactions of Port of Itajaí, in Santa Catarina, for example, have grown 328% in the last decade. The movement of containers has an even higher increase: 454%. "We are the origin and destination port of the fastest growth of Americas", said the executive director of the port. Itajaí is the only municipal port of the Country, a condition which contributes for its good performance.

Despite the growth, the Port of Itajaí also suffers with the typical deficiencies of public ports. Its draft, for example, has only 11 meters, but with the National Dredging Program it will be deepened to 12 meters. The port moves very diverse freights, including textiles, frozen chicken, electric compressors, paper and cellulose. Another obstacle is the lack of space, a problem which has led customers to operate across the river, in Portonave private terminal, opened in October last year.

- *The "regulating gap" which involves the operation of outsourced container terminals generates uncertainties for private investments while the regulating model is not solved by the government*

Regarding the regulatory issue of the Brazilian ports, it is important to highlight that Decree n. 6.620/2008 has defined three possibilities of participation of private and/or public sectors in its promotion and development: i) concession/grant of organized ports through bidding; ii) leasing of port facilities by bidding, since members of the General Grants Plan; and iii) grant of authorization for construction and operation of port facility for private use.

At this point, the decree ratified that the private terminals must operate primarily with the freights of its owner and, secondly, with the third party freights. A relevant point refers to the tariff structure determined by the port authorities. It was found that the difference among the structures – established by each Port Authority – makes it difficult the comparison by the port's customer, who gets obliged to elaborate studies about the cost of mooring in different ports, in view of the large tariff variations. Moreover, the results indicated that the element cost of port service may have a significant influence on the customers' decision regarding the port use. When analyzing the impacts of the port sector on the national economy, it was possible to note that it goes beyond the transport for the international trade, influencing the products competitiveness, the internal trade (cabotage), the jobs etc.

Portonave is the protagonist of one of the biggest controversies in the segment. The terminal would be operating only third party freights, when, by law, the private ports for

mixed use are obliged to operate only their own freights. The Brazilian Association of Container Terminals for Public Use – Abratec has already questioned in court Portonave's performance, claiming unfair competition. The case is in the Supreme Court, but the Special Secretariat of Ports has announced that it will create, by a decree, a new model of concession for the construction and operation of ports without restrictions to the own freight volume.

Alliance Navigation, controlled by Hamburg Süd, is Tecon Santa Catarina shareholder, a private container terminal which must be concluded at the end of the year and which has as another shareholder Portinvest Participations, partnership of Batistella group and Logística Brasil – investment fund managed by BRZ Investimentos.

Located in Itapoá (SC), the terminal will become a freights concentrator port for Hamburg Süd and Alliance in the South of the country, but the idea is that the terminal also serves other ship owners. For being a private terminal, but which will move third party freight, Tecon Santa Catarina is one of the projects whose operation is questioned from a regulatory viewpoint by the privatized terminals in the 1990s, which operate as private for public use.

The fact is that, according to ABTP data, the terminals for private use already account for 70% of the freight moved in the Country. "Only the Vale and Petrobrás ports represent 300 million out of 730 million tons moved in 2007". The difference is that the operators of the terminals located in public ports are waiting for the federal government investments to increase productivity. "The economy is growing and there is room for new ports."

Users' opinion:

Decree n. 6.620/2008, according to CNI, is ineffective because the Confederation considers that there must be a private terminal for containers movement. The decree seems to have been created to prevent having private terminals for container movement. That is, to move container is necessary to go to the public port and lease an area, that is a very big restriction.

For CNI, if there was a proven unfair competition, fact that generated the mentioned decree, the National Agency for Waterway Transportation – ANTAQ has the role of regulating. Nevertheless, this "unfair competition" must be proven, for the competition is not established only because there are contractual obligations in the public port operation, such as grant payment and devolution of that area at the end of the leasing period. This cannot be a justification not to be able to, in the whole country, have private terminal for containers movement.

In Lachmann Group's opinion, the total freedom to install container terminals may be predatory. They ask the following question: "is it necessary a largest extension of quay to operate container or it is possible to transform the current terminals, which have a very low gate flow, into gate flows compatible to market benchmarking"?

5.1.4. Port and other terminal performances and costs

From 1993, after the Port Modernization Law, there has been an increased competition and consequent costs reduction. Significant gains in the port sector were registered until 2000, nevertheless after this date there was costs stabilization. According to ANTAQ's

data, presented in section 2.3, the transfers of productivity gains for users stopped in the last 10 years.

To have the necessary profitability and pay the concession with the high agio they were bought with, the port operators need to have profitability over the accessory services. So, they dedicate the area for all these services: storage of the import containers, clearance of these import containers cargo inside the primary area and the transportation to the final consignee.

For Lachmann Group it is reprehensible to tergiversate on the charge of extra rates that affect the cost, such as auxiliary users' services, almost demanded by the subsidiaries, container painting, for example, practices not only of the port terminals, but also of the rail transport concessionaires.

When the concession edicts were issued regarding the privatization of the port sector after Law n. 8.630 from 1993, these predicted that all the freight storage, all the accessory services would be done inland, and not in the primary zone. However, all the groups which won the biddings in 1996, 1997, dealt with the equation: paying the maximum to the government and charging the minimum from the user. This has resulted, three years later, in a change of rules, which was bringing to the primary zone all the freight storage. For this reason, currently, there is this entire zone focused mainly on the accessory products.

For Lachmann Group, this point is a very serious obstacle in Brazil, the ports depend a little on the port operation and a lot on the accessory services, that's why there is no integration, with freights going inland where there are industries and final consignees of these freights, because these accessory services are done inside the primary zone, including the clearance.

It is also noteworthy that, in that topic, the current asymmetry of costs among terminals inside and outside the port area, fundamentally determined by the fact of the non obligation of these last ones to use independent associated workforce. On the other hand, terminals located in consolidated public port areas can use infrastructures of common use and several services, by tariff payment, without the necessity of significant fixed investments. It should be also noted that the organized port area came to be defined by presidential decree, although the inexistence of regulating criteria defined for the establishment of these port areas has been maintained.

Users' opinion:

According to CNI, one of the biggest problems for port efficiency is in the own ports' administration. Thus, it considers necessary to transfer the public ports administration to the private initiative, for only then there will be an efficient ports' administration. The Special Secretariat of Ports recent attempt to make the Docks Companies administration professional was a demonstration that the government is trying to solve the problem, but was ineffective and apparently the Secretariat itself observed that.

According to ANUT, the problems are practically restricted to the ports with public management, whose terminals are operated by the private initiative. "In these public quays, the outlook is of obsolescence, uncertainty, inefficiency and high cost". In most private terminals the scenery is totally different, with efficiency compared to the best ports of the world. Ponta da Madeira, Vale's terminal located in Maranhão, has a draft of 23 meters in one of its piers, able to receive vessels with capacity to transport 364.8 thousand tons.

In Hamburg Süd's view, it is not possible to have a satisfactory operation in Brazilian ports yet so that the vessels can make the routes in a planned way. And this occurs due to difficulties related to the lack of appropriate infrastructure in some ports, said Hamburg Süd's representative: "Our storage capacity in the ports is exhausted and we suffer delays in some places, such as Paranaguá (PR)". And he added: "We have problems of storage capacity in Santos, which affects productivity."

According to what Hamburg Süd's superintendent director and Alliance Navigation said, "We are reviving a situation of ports congestion", congestion that is also related to the bad weather in the winter. But in Europe operate under bad weather conditions in most of the year, and even though there are ports in the Netherlands, Belgium, France and Germany that are market reference. In Brazil, the port closes due to the weather, but as in some cases the terminals productivity is not good, the vessels queue takes a long time to be served. The result is that vessels have to stay longer. The delay has impact on the next vessels and this process even leads to the cancellation of stopovers to keep the itineraries.

For Hamburg Süd, the expansion done by Santos Brasil, the country's main container terminal, in Santos, was important, but not enough. It also points that Libra group, also in Santos, does an exemplary work with the available infrastructure, but it is not the ideal yet. The problem's solution, according to him, is more investments in the ports and the access roads. "Much time was wasted discussing the regulatory framework [of ports] when the focus should have been on how to make investments to meet the growth that would arise after the crisis. The crisis was a good moment to invest, but it was not appropriately explored", they said.

- *Problems with Pilotage*

Regarding the workforce, CNI demonstrates concern with the existence of a workforce monopoly. According to the Confederation, the ideal is that each terminal or ship owner could hire its pilot, however the current system does not work like that. There is a market reserve of pilots, and the legislation supports this situation and thus promotes the increase of inefficiency.

For Lachmann Group, pilotage is not a complicated issue, for it does not exist a regulating organization, and there are monopolies in all countries of the world. It is understood that the pilots will cost less and will have conditions to offer a safer service, which is the main requirement, for they guarantee the navigation safety. Nevertheless, there is not in Brazil a regulating judge, which could be the Marine itself, to assist the negotiations between the ship owner's and pilots' trade union, because this service cannot be interrupted, otherwise there will not be navigation. According to Fenamar, there are annual or biannual negotiations on the fares to be charged and the Marine is officially the judge in the negotiations. When there is an impasse, it feels constrained in arbitrating because 99% of the pilots are Marine's ex-employees. On other words, the law exists, but it is not applied. So who pays is the ship owner, for even recognizing that the prices are abusive, it ends up transferring the cost to the freight, making the final consumer pay for the lack of regulation.

- *Lack of training of workforce by the Merchant Marine*

The Ministry of Labour is a "great absent in the port life's scenery". The "monopoly" of the detached workforce is one of the hindrances for the efficiency of the ports. "The

individual work is useful because it gives economic stability to the port activity, subject to productivity cycles. The problem is that, unlike the other countries, where it is complementary, in Brazil it is a monopoly." José Ribamar also criticizes the action of the Port Authority Councils, according to him, used by many representatives as "a forum to solve private problems". The CAPs, created by Law n. 8.630/93 – called Port Modernization Law -, are formed by representatives of the federal, state and municipal governments, port operators, workers and users of the port services.

Lachmann Group points out that this is a very serious point, for it is one of the main hindrances in Brazilian navigation. There are only two education centers for Merchant Marine officers training and it is expected the construction of a third center. Until the end of 1990s about 600 officers were trained per year. In 2008, less than 200, and currently they are around 300. To make the situation worse, they point out that there is a law that obliges ship owners that charter foreign vessels who will stay a long period in the Brazilian coast, to use a number of Brazilian crew and this after certain months gets to a significant amount and holds this contingent of officers, who nowadays is scarce, on board foreign vessels. Furthermore, it is not possible "to import" these professionals.

Fenamar highlights that while the government does not promote the training of new professionals, it imposes a regulation that requires 50% of the crew to be Brazilian in the foreign vessels moored; crew many times poorly trained and does not know the on board equipment.

- *Bureaucracy of 14 ministries demands 112 vessels' documents*

Bureaucracy is very strong and it is a structural obstacle that the port area suffers. The shipping agent in releasing the vessel deals communicates, on average, with 20 intervenient departments of different organizations, government's authorities, involving freight, crew, docking and undocking of the vessel, which obligatorily passes by this agent. According to the Special Secretariat of Ports – SEP an average of 112 documents are required from all the vessels that embark and disembark in the country, accounting for 935 pieces of different information, many times filled in several copies and duplicated for different organizations.

To address this serious barrier, the government started the implementation of the Port Without Paper project, whose main objective is to eliminate the necessity of this daily mountain of papers. Only in the Port of Santos, the biggest of the country, 3,773,800 sheets of paper exists annually, whose weight reaches 17.4 tons, according to Federal Service of Data Processing – Serpro estimate.

The target is to introduce this project in the other 23 ports. When it is working at satisfactory speed, from 2011, SEP estimates that the waiting time of a vessel in the Brazilian ports could drop around 25%. Thus, the average waiting time of a vessel to have its procedures released can leave the level of 5.4 days – according to World Bank survey – and get to three days.

To reduce even more this time – the government wants to get to 1.5 day in 2022 – it will be necessary to convince the public organizations to reduce bureaucracy once and for all. The Port Without Paper took two years to be implemented – it was formalized by decree in March 2008. The most difficult stage was to form partnerships with six main federal organizations, which operate in the ports.

One example of bureaucracy: when coming into the country, the crew of a vessel needs to identify for the Marine Command, for the Federal Police, for Anvisa, besides pass to

the Federal Revenue the declaration of unaccompanied baggage. Now, it is enough to put the data once in the system.

The project foresees a single digital database, which will permit that the information inserted can be distributed to the customs and inspection systems of each agent, avoiding repeating the transmission. All the system users are satisfied with this initiative, as the first step to put this hindrance to an end.

Log In Logística Intermodal's Ports director also praises the project, and remembers that bureaucracy hinders even the cabotage among the Brazilian ports. According to him, a freight that leaves from Salvador to Rio, for example, is obliged to pass through customs and be inspected by Anvisa, as if it came from abroad. The Port Without Paper must eliminate this problem.

According to the port operators, there are interests contrary to the implementation of the "Port Without Paper" and for this reason, it will hardly have the consent of all actors so as to be able to be put in operation without a major effort to change legislation and the regulation processes. The public organizations, responsible for the bureaucracy do not want to lose power and their stamping right – alerts the president of the Brazilian Association of Port Terminals – ABTP.

5.1.5. Investments in the port sector

Data from the National Cargo Transport User's Association – ANUT show that great part of the resources budgeted for the transport infrastructure has not been started yet. Only in 2007, the volume of resources authorized by the federal government for the Ministry of Transportation would be US$ 6 billion, in view of US$ 1.87 billion of proof of expenses – less than 31% of the total. "The government is wasting time and the biggest problem is the inability of execution. It publishes that will spend millions, but it cannot spend even half of what has pledged", says an ANUT executive.

Despite the criticism, for almost 20 years in the port sector, ANUT does not fear what many call "logistics blackout". "Whatever happens, it will always be possible to move freight, in a more or less efficient way, more expensive or cheaper." He remembers that, in the beginning of the 2000s, Brazil exported around US$ 56 billion and nobody believed that the existing port system would permit to double the value in three years, as the government projected. Today, the volume is already higher than US$ 150 billion and, according to ANUT, the ports have conditions to absorb a growth similar to the last years until 2011, without great cost increases. "What distresses us is that we would be even better if our logistics sector was more competitive. We are missing the opportunity of raising Brazil to a much higher economic level."

Regarding dredging, one of the most significant fields of public investment, the bill approved in the Congress in 2003 determined that dredging was the Union's responsibility. This device, however, was vetoed by conflicts with the privatization model at that time. In 1999, decree of the Ministry of Transportation defined that the dredging was the docks' responsibility. In 2003, another decree determined that the responsibility was Docks Companies' and the Union's. In 2007, it was sanctioned the law instituting the National Port and Waterway Dredging Program, allowing the hiring of dredging services to foreign companies. The law permits to treat the dredging as an engineering service, open to any market's participant, enabling longer terms for the contracts. In 2009, SEP/PR concluded the process of hiring dredging services to deepen the Port of Santos' navigation canal to 15 meters.

It is important to mention that dredging has been one of the main problems faced by Brazilian ports, aggravated by delays in obtaining the environmental permits, objections of inspection organizations and judicial resources of companies in biddings. The dredging contracts are usually short-termed, burdening the sector in face of the constant repetition of bureaucratic bidding processes and extending the services deadlines. On the other hand, the dredging (or lack of it) has direct impact on the draft permissible to the vessels in the port, essential item for the analysis of meeting demand for freights movement in the port and its competitiveness. In general, for each foot over draft the vessel can get additional 2,000 tons. The Docks Companies also fight with great difficulties to generate their own resources for investments. In Santos, for example, despite large investments are planned for decades14, and the CODESP revenues have reached US$ 337 million, in 2009, the annual investments with own resources hardly ever exceed a few millions. From 2007 to 2009, for example, the cash flow reported by the port's administration indicates accumulated entries of more than US$ 1,1 billion, having the National Treasury contributed with about 10% of this amount (US$ 112 million). The total of investments, in turn, not even reached the volume of resources provided by the Treasury, being limited to US$ 76 million.

Table 5.1 - Total investments

CASH FLOW – PORT OF SANTOS	In US$ thousands			
	2007	2008	2009	Accumulated
A – OPENING BALANCE	**11,259**	**10,912**	**9,463**	**31,634**
B – ENTRIES	**303,713**	**341,879**	**495,887**	**1,141,480**
Treasury Revenues	266,772	265,628	370,219	902,619
Other Entries	24,128	45,641	57,316	127,085
Other Resources (Treasury)	12,813	30,611	68,352	111,776
C – OUTFLOWS	**304,061**	**343,328**	**408,284**	**1,055,673**
Investments	11,719	30,021	34,437	76,177
Interests/ Own Capital	-	-	3,288	3,288
Personnel and Social Charges	81,599	89,664	102,845	274,109
Outsourced Services	52,237	53,111	66,795	172,143
Utilities/Duties (Water, Electricity,Taxes , etc.)	58,725	61,061	51,139	170,924
Debts Installment	64,578	61,287	86,347	212,211
Other Outflows	35,202	48,185	63,433	146,820
D – ENDING BALANCE (A + B - C)	**10,912**	**9,463**	**97,066**	**117,441**

Source: CODESP Annual Report - 2009

[14] Deepening of the navigation canal and evolution basins; implementation of traffic telematic system; implementation of the Port Perimetral Avenue; relocation of the rail network on the right bank; implementation of the sewerage system Outernhos-Saboó; demolishing Stones; tunnel Santos (right bank)) – Guarujá (left bank); project Barnabé-Bagres; implementation of the Ferradura, enabling the free rail access to the port of Santos; removal of debris from the sunken ship "Ais Giorgis"

Regarding the evolution of productivity and costs, the reform process of the port activity and the restructuring, the operation of the organized port has substantially modified, in terms of amount and profile, the board of the port services' price formers. Thus, it was replaced in almost all the ports the public entrepreneur (Port's Administration) by the private one (private partnership), which has substantially modified the performance in the sector, especially the price formation.

Regarding the containers, the investments in terminals in practically all the port regions of the Country generated the competition aimed by the Port Modernization Law, of 1993. As a result, ANTAQ official studies report a significant and systematic reduction of the prices charged for the movement services, of an average of US$ 371, in 1997, to US$ 179 per TEU in 200415, but with relative stability from this year until 200716. In 2007, the container terminals of the ports of Rio de Janeiro and Santos had their total average prices, estimated by ANTAQ, in the range of US$ 126-187.

The trend of prices reduction is confirmed by the evolution of the costs reported by the main container terminals of the country, the TECON of Santos-Brasil (48% of containers market share in the Port of Santos and 23% in Brazil, in 2008). This company reports a unit cost of movement of US$ 577, in 1998, which is reduced to US$ 225, in 200517. According to the company, this result is due, mainly, to the significant productivity gains in containers movement, which evolved from 26 to 53 per hour, between 1998 and 200818.

It is worth highlighting that there is a trend of growth of the vessels size, especially the container vessels. A direct impact of this trend in the port services is the reduction of the number of stopovers in some ports due to the economic imperative to restrict the number of stopovers of the larger vessels, moving large lots in each of these, for further distribution by feeder services. On the other hand, the larger vessels have economies of scale and, hence, lower unit costs if fully used. Promoting the transfer of port productivity gains to the users is one of the greatest current challenges. The reduction of costs between terminals and operators is necessary, but it is not enough to increase competitiveness of Brazilian goods, especially of the Brazilian international trade.

Clearly, a significant improvement in relation to productivity of port services in the last years is experienced. Notwithstanding, the best performance verified among the national container terminals indicates an average sheet of 33 movements/hour, according to data collected by ANTAQ in 2008. It is appropriate to mention that there are some terminals in the world which have operations with high degree of automation and economies of scale obtaining productivity rates above 60 movements per hour.

In this context, it is important to highlight that, in Brazil, a more efficient port is not necessarily the cheapest. In many cases, the ship owner as well as the shipper could incur into higher costs if this means more reliable and faster services or, yet, if it provides higher gains in another part of the logistics chain. The installation of portainers, for example, may result in increased port tariffs, independently of the global economy that can represent for the ship owner when reducing the permanence time of the vessel in the port or when allowing the use of a vessel without crane. It is believed, however, that this must generate a reduction in the maritime transport costs, either by reducing the total port cost, or by increasing the efficiency of the process, or both.

---

[15] Amounts in Reais of January 2007; deflator IPCA.
[16] Last Port Performance Report 2008 (ANTAQ), available (with data until 2007).
[17] Amounts in Reais of December 2005; deflator IGP-M. Prospect Data IPO, Oct. 2006, p. 141.
[18] Annual Report 2008

There are, still, issues related to the terrestrial access to the ports, which impact the costs and productivity of the services rendered in the port/port terminals. When the terrestrial access to ports is not efficient, all the operation of freight transport and other services can be jeopardized, once the obstacles on arrival at the port generate delays and, consequently, need for larger safety stocks, so increasing the total logistics cost. This situation can generate negative impacts in the profitability of the terminals and export companies and, in a wider scale, reduce competitiveness of Brazilian products abroad.

Thus, the obstacles and deficiencies in port infrastructure raise legitimate concerns as to the possibility of exhaustion of the operating capacity, for lack of basic investments of terrestrial access to the ports (road, rail) and in the operational infrastructure – dredging to deepen the access canal, internal ways, etc. –, as well as the increase of the mooring quay draft of the terminals leased in the public ports – port authority's obligations.

For the private sector, it is appropriate to increase investments in the port equipment, including equipment necessary for the terminals operation and the recovery and maintenance of the freights loading and unloading facilities. With the investments suggested, the operational costs reduction, greater accessibility – of vessels and of terrestrial transport – to the ports and, as a consequence, the reduction of the waiting time of the vessels, in benefit of the national competitiveness growth are expected.

But infrastructure is not the only obstacle to be resolved in the port system. Another problem that has harmed competitiveness of the port services in Brazil refers to the high labor costs charged in the national terminals. The system of shifts, currently adopted in the Brazilian ports, is inappropriate to the recent technological progress, tying the hiring of workers in groups that generate an idle contingent and a sharp rise of costs for the port customer.

Besides, according to the study presented by V. Ships Brasil, the costs with crew in national flag vessels reach more than 230% of the value charged by other flags' vessels. In terms of total operating costs, Brazil operates annual price lists until 80% above those in international flags vessels, which harms the chances of competition of the products transported for the raise in the final freight prices, jeopardizing even more the national capacity of international trade through ports.

5.1.6. The role of organizations in port management

The Brazilian Association of Container Terminals for Public Use – ABRATEC represents nationwide the tenant companies of Port Terminals for Public Use. Besides its institutional role, ABRATEC represents the container terminals operators in the Port Authority Council – CAP.

It is appropriate to highlight, inside the institutional aspects of the sector, which the port reform of 1993 had as main objective the reformulation of the centralized control model in force until the extinction of PORTOBRÁS, in 1990. The basic mechanisms of the proposed transformation are: creation of Port Authority Councils – CAP, instituted in all the organized ports or in the extent of each concession, with responsibilities of governance; foster competition among terminals (intra-port) and among ports, through the lease of facilities and terminals, in public ports, to private companies, as well as the permission for operation of third party freight by the private terminals; transfer of the freight movement operation for private port operators; transformation of the Docks

Companies into port infrastructure managers (although not explicit in the legislation); decentralization of the sector's public management, through state and city management of ports by means of a delegation through covenant (Law n. 9.277/96).

The Organized Port is directed by two institutions: CAP and Port Administration – AP. This latter is exercised by Docks Companies, state-owned companies directly controlled by the federal government, or by the states and cities, in the delegated ports, directly or also through companies. The roles of these institutions are:

- Port Authority Council: consists of representatives of all the sectors participating of the activity grouped in four blocks. Actually, CAP is an intermediate body of government, with collegial structure, and broad competences.
- Port Administration – AP: must set the prices and collect the port tariffs (port facilities of common use), these duly approved by CAP. Besides these competences, AP has the responsibility to establishing the workdays in the quay for public use and the working time at the port, after CAP's approval; and planning the use of the organized port's area.

It may be inquired, for example, if the Docks Companies model of restructuring in port authority, with these Companies remaining under public stock control, would be the recommended, in view of an occasional commercial operation expected from these companies, as well as the promotion of an inter-ports competition policy. Similarly, it is questioned whether the inter-ports competition policy is compatible to the predominantly federal control of these companies, as well as federal contributions of resources for investment.

On the other hand, the CAPs authority on the organized ports and its constitution from the representatives of clearly conflicting interests, without any set of rules for their deliberations, as well as no responsibilities of these representatives for their choices, puts at serious regulatory risk the port administrations, even these being public companies. Similarly, it severely limits the private interest in an occasional privatization of these concessions. It is momentous to observe that Decree n. 1990, of 29 Aug 1996, included in the National Destatization Program – PND the Union's Docks Companies, as well as all the ports and assets managed by them, including those whose administrations currently fall to them and that previously were managed by the extinct Portobrás.

Another important aspect concerns the correspondence between the Port Administration responsibilities and the CAP's mechanisms of action. So, although formally the exploitation model of the Brazilian ports approaches the landlord port type, these do not have autonomy and business view of regional development which characterizes this model. Among the Port Authorities competences appearing in Law n. 8.630, there is no reference to the adoption, by AP, of a regional entrepreneurial attitude. This one, in turn, is among the CAP's competences: fostering the industrial and commercial operation of the port; developing mechanisms to attract freight; and stimulating competitiveness.

As to the relationship between AP and CAP, it must be recognized that the latter is constituted so as to limit the entrepreneurial attitude of the first. In this case, CAP is closer the "Assembly of Condominium" figure with the role of the building manager played by AP. This CAP constitution guarantees the presence of members with conflicting interests among themselves and, sometimes, with the port's own interests. In Europe, in many cases, the Council's organization, even including the representation of people interested in the port activity, has as a counterpart the presence of a certain number of neutral people, specialists in several fields linked to port activity or to trade,

being the participation individual, aiming at the benefit of the port, without necessarily belonging to a block of interests.

Indeed, the CAP members deal and decide on matters that relate directly to their private interests, except (maybe) the group of representatives of the public sector. The assumption is that from this conflict of interests arises an efficient and coherent strategy and regulation for the port activity. If we look this institution more closely, however, we can observe that certain appropriate incentive mechanisms are not present. Actually, some of the CAP's members do not get any advantage in fostering intra-port competition or among ports and terminals of a same region; others can benefit if AP, at least in a short term, charges tariffs below its economic-financial balance point. The majority does not suffer directly any impact if the decisions taken at CAP do not align with the public interests. Moreover, the Port Administration, which is part of the CAP's port operators group is, in fact, in a position regulate itself from an external institution.

There are several issues related to these considerations, such as:

1. Ports traditionally offer goods or public services, local or regional, in a strictly economic sense. Therefore, some way of regulation is necessary.
2. The regulation is necessary regardless of the proprietary structure of the port's exploitation; that is, if the port is private or public. In this last case, regulation is also necessary due to the diversity of interests (local, regional, national, commercial, labor) which are part of the port activity.
3. It s necessary to reach an agreement about the functions and strategic decisions which can be treated in an appropriate way through a representative structure such as CAP's. Up to a point, the decisions of investment and price related to the public facilities included in the port area could be accordingly treated by CAP. On the other hand, the promulgation and implementation of competitive strategies inside the port could be affected by local or specific interests (supposing that each CAP is responsible for only one port zone, what not always happens). Moreover, AP is, usually, a state-owned company, thus subject to the respective regulation that would significantly restrict its administrative flexibility.

It should also be emphasized Decree n. 6.6.20/2008, which settles policies and guidelines for the sector. The decree introduces important regulations both for grants in organized ports, and for terminals for private use. It establishes concession or lease term of 25 years, renewable for similar period, through justification, observed the guidelines of the General Grants Plan - PGO[19], culminating with the issue of Decree n. 108 SEP/PR, in April 2010, detailing guidelines for the concessions. In the case of permits for port facilities for mixed use, the main change was the determination that the predominant movement of own freight and, on an alternative and eventual, of third party. This "interpretation" of the Law n. 8630 has caused significant impact for the future of private investments in the sector.

According to CNT (2006), many times the Port Administration does not recognize the importance of CAP, created to be the major authority of port system, and thus, it ends up operating independently, when it should act as executive body. So, and due to its composition, CAP's role is strangled among Special Secretariat of Ports – SEP, Agency for Waterway Transportation– ANTAQ and Docks Companies.

[19] Decree nº 257/2009, of SEP/PR, approves the General Grants Plan proposed by ANTAQ, but temporarily, and determines the PGO review within 15 months.

Regulation in the Port Subsector

- *Because of gaps in the legislative and regulating system, today the Brazilian ports have difficulties to solve the port liabilities, administrative and policy issue derived from the privatization process*

ANUT says that in Brazil, no other link of the freight transport chain presents such complex, problematic and diverse regulation as the port system, with the aggravating factor that the initiatives that were in development in the last seven years are under the effects of a dangerous gap, for the difficulty in the definition of the new government's posture.

For ANUT, there is, for a long time, a distortion in the position assumed by the maritime transport regulating entities as to interpretation of the purpose of the regulating rules for vessels chartering for freight transportation prescribed to the national flag in the long haul navigation and for the freight transport in cabotage.

The fact is that these rules have been imposed, primarily, as regulatory of the right of chartering foreign vessels, by Brazilian navigation companies, forgetting that, secularly, the good commercial practice of navigation includes the total or partial chartering of vessels also by the freight's owner. In other words, for centuries the practice of maritime trade recognizes that the charterer of a vessel can either be an owner or a shipper; fact that has not been, in due measure, informed to the users.

Regarding cabotage, the protection of flag given to the national ship owner is more than convenient, but it cannot result, for the shipper, as it has resulted, in the unavailability of transport by this modal, obliging him to resort to another modal, for example, the road, jeopardizing the final price of the goods. This, besides not being fair for the shipper, it is not fair to the Brazilian society either, which ends up being burdened by the most expensive freight. Both issues deserve the due consideration in order to adjust the application of existing rules to the best interests of the nation.

5.1.7. The impact of costs

Comparing in terms of import and export operations procedures Brazil with other direct competing countries, Brazil appears to be slow and more costly, in this area. Brazil is slower and demands more signatures than Argentina, China, Mexico, South Korea, Chile, Colombia, Philippines, Portugal, Venezuela and others.

The most critical points in physical infrastructure – ports and terrestrial transfer – are responsible for only 25% of the time spent, while in the case of imports the documents pre-arrival explain 59% of this period. Although some bureaucracy has to exist for justifiable reasons (safety, taxes payment, etc.), the fact is that there is often the presence of deadweights, procedures that remain in force even after completion – when some can be pointed out – for inertia or for private interests. And such deadweights are expensive.

In the case of manufactured goods export, for example, the costs of commercial transactions in many of the developing economies are higher than those corresponding to the rates applied on them in the European Union and in the USA. It is estimated that the costs of bureaucracy outweigh 10% of the export amount of these countries. Some studies indicate that, on average, one additional day in the transport of goods through

land or air costs 0.5% of the freight's value. That is, cutting 10 days in the export terms would allow savings of 5% of the exporter's costs.

Besides, the inefficiency in the transport of products and in the customs implicates the necessity for the companies to immobilize capital in the form of larger stocks of inputs or final products, adding there between 4% and 6% to the production costs. Not to mention the costs with corruption, situation that is getting worse due the number and the complexity of procedures.

So, Brazil could immediately increase its exports to US$ 530 million per year only with the reduction of bureaucracy and improvement of the international trade services. In the medium term, Latin America could increase by 20% the sales if a wide reform in the customs and in infrastructure was made, according to World Bank study. This without the withdrawal of any tax or barrier in the rich countries. While the governments confront in the World Trade Organization – OMC to determine the future rates that each product will get, the World Bank points out that another negotiation, which occurs with the objective of facilitating the commercial exchanges, could generate gains for the world economy of US$ 377 with improvements in the customs, ports, laws and infrastructure in the sector of international trade related services.

The main aspects registered: (i) in most of the emerging countries, the costs of commercial transactions are higher than the rates applied for the export of manufactured goods. It means that, even succeeding in the international rounds of negotiations, the customs cost would still work as a barrier to the entry of Brazilian products; (ii) in Brazil, the exporters expenses with administrative and customs processes – mainly with logistics – raise in approximately 20% the exporters' cost; (iii) these costs are higher in emerging countries than in developed ones. The important is the comparison among similar ones and Brazil is among the most expensive half of the countries analyzed by the World Bank together with the African countries and behind Argentina and China, for example; (iv) the annual report "Doing Business" compares indexes of performance of 155 countries. The figures show that on average the release of imports in Brazil takes 43 days and export, 39 days. For the clearance eight documents and nine signatures are necessary for the imports and 14 documents and 16 signatures for the exports; and (v) highlights the need for technological improvement and for inspection systems as the main obstacles existing in the Country. The computerization which has been announced by IRS is one of these aspects. It is required, still, a maximum time limit for releasing the goods.

5.1.8. Cabotage

The Brazilian maritime model, due to the gaps of legislation and excess of bureaucracy, currently propitiates the stagnation of the cabotage transport offer and the demand flight to alternative channels of the service supply (the highways). It does not exist, in the juridical framework which rules the subject, the obligation of transporting, and this is a major cause of stagnation in the transport offer that is observed. For many years neither the government, nor regulating organizations demonstrate interest in explaining to the user the facilities that law grants them, and defending the right of usufruct of these facilities.

An exacerbated mentality of "agent of promotion" of the shipbuilding industry has been established in the public sector, which took to a fervent position of defense of the ship owners to the detriment of the users. The regulating rules are more restrictive than the law's text jeopardizing simultaneously both the navigation companies and the shippers,

with no major contribution for strengthening the shipbuilding industry. It is necessary to change this posture, and give the due importance to the obligation of transporting in exchange for the conceded monopoly. The impasse existing in the market of cabotage will only be undone through a "shock of offer".

Besides, the low attractiveness of the offer isolated from maritime transport is derived from the cost, transit time, connectivity with other modes and frequency; main factors that discourage both the ship owner and the shipper to use this transport mode as complementary in the intermodal transport chain of the country. Another factor is the indifference of the user, mainly because traditionally the cabotage transport has been offered as a segment isolated from a process which is indeed door to door. Thus, it falls exclusively to it all the complications and risks involved in the several stages of this process, which makes the road transport almost unique choice.

According to ANUT, the current scenario of the cabotage market shows continuous growth, but discreet, of the transported volume. There is difficulty to attract the user's interest, while there is strong evidence of repressed demand. Besides, there is a false balance between supply and demand of cabotage transport.

The ship owners have tried to prove with figures that the tonnage of own vessels available is perfectly able to meet the current cabotage transport demand. It happens that the characteristics of these vessels and the nature and cost of the service offered inhibit the growth of the demand that comes to market. That is, the shipper prefers to remain on road transport even knowing that, theoretically, it is not the most feasible solution. Here is an impasse that needs to be well understood and solved.

In the last ten years, except for some barges, only 10 new vessels were incorporated to the fleet of own cabotage vessels: 2 cargo vessels, 3 LNG carriers, 2 oil tankers, 2 container vessels and 1 chemical tanker. Out of the 110 vessels that form the cabotage fleet, 67 have more than 20 years, that is, 60%. For ANUT, there is the necessity of developing a special effort with the government so that the shipping of cabotage freight is neither more expensive nor more complicated than the road freight. According to Lachmann Group, nowadays the cabotage transport, for using port terminals, passes through the same procedures as the export/import freights, which generates much higher costs and time than necessary.

Concerning the freight inviolability, the maritime transport is much safer than the road one, so there is no justification for a cabotage freight bound for the domestic market is also inspected at its origin, and if bound for exportation, at the port of its departure of the national territory. Regarding the import freight, the inspection at the port of its placement is enough and, in the future, due to the experience acquired and to the improvement of the freight shipping process, only at the destination port.

For ANUT, the terminals for private use, of general freight, and mainly the container ones can have an important role in capturing import and export freight for the cabotage transport if they are efficient and reasonable in the transshipment operations. Thus, they may turn into true strengthening levers of the country's cabotage.

The door to door offer with the coverage of the Bill of Lading – that is, of the door to door operation, under the responsibility of an only multimodal operator and under the coverage of only one bill of lading, started to be formed in 2008, when the interest of some important operators – ship owners emerged. ANUT has placed great confidence in this phenomenon associated to the growing containerization of the freights. Hence it is trying to develop, as coordinator, a Pilot Project, in collaboration with the Ministry of Agriculture and all the public organizations and private entities which have a seat on the

Logistics and Transport Thematic Chamber of that Ministry, involving door to door operation of agricultural bulks or not together with the industrialized products, nucleated on certain maritime flows at the multimodal transport operator's choice.

According to some stakeholders, the bureaucratic procedures and the gaps in legislation seem to be part of a real "plot" to impede the intermodal transportation. The problems are not observed only in the cabotage transport, but in the lack of incentive to the waterway transport and also in the unresolved issues of the rail transport.

5.1.9. Functioning of trade & transport corridors - Bioceanic Corridor

Since 1996, a project grips Mercosur countries: a road-rail and bioceanic corridor which intends to link the ports of the bloc, boosting the region's trade. Twelve years later, about 20% of the route has to be concluded, which has one of the largest commercial interchanges of South America.

In Brazil, there is a project to study the issue of the bioceanic rail corridor and some passages to connect with Chile and Andes. In this project the passages via Belgrano, in the north of Argentina, and through Mendoza, in Paso Del Cristo Redentor, also in Argentina have emerged as possible routes.

The project is included in the initiative for the Integration of the Regional Infrastructure in South America – IIRSA, a joint program of the governments of 12 countries, which aims at promoting the physical integration among them, through the modernization of the transport, energy and telecommunications infrastructure, with joint actions. It also has the support of the Andean Fomentation Corporation– CAF and of the Inter-American Development Bank – BID.

The corridor links Valparaíso, in Chile, to Belo Horizonte (MG), passing through Uruguaiana and Porto Alegre. The South America Integration Routes Committee – Crias, asserts that the section of BR-101 between Palhoça (SC) and Torres is still missing, which is expected to be concluded in 2010.

The infrastructure in the rest countries involved is consolidated, but it needs improvements related to the capacity and maintenance of the roads. In Argentina, the works on Route 14, which will integrate the corridor – called Mercosur Axis -, have advanced. In Chile it is still necessary to improve the transposition of the Andes region. Another problem is also the gauges used in the railways, different from each other. Thus, the western countries will have better access to the European markets, while the eastern ones, like Brazil, will have the trade with Asia facilitated.

While this project is not operational yet, another corridor could help Rio Grande do Sul. It is the Capricorn Axis, which will link Antofagasta, in Chile, to the port of Paranaguá, in Paraná – thus, also connecting the Pacific and Atlantic oceans. Ferroeste, a state-owned company from Paraná, which has taken the works in Brazil, will expand the railway to Chapecó, in Santa Catarina.

The company's Idea is to expand the railways to cities such as Passo Fundo and Erechim, to facilitate the region's production. The director of the State Secretariat of Infrastructure and Logistics from RS, who has participated in the meetings, stated that there are no plans for this to occur, because the concession is from the federal government. In total, nearly one thousand kilometers of railways is missing to complete the corridor, until the work is concluded – those, around 500 kilometers in Brazilian territory.

Solutions are being studied by BNDES to make the Freight Rail Logistics System among ports in the South/Southeast of Brazil and ports in Chile feasible.

Freight rail axis linking ports in the South/Southeast of Brazil and ports in Chile may make the rational Logistics System feasible, reducing the freight movement costs. Certainly they will propitiate the increase of the movement of goods and the inter-regional trade, a better multinational integration in South America and the integration of the corridor countries with other continents.

Several discussion forums on the integration of Latin America countries and the interconnection between the Pacific and the Atlantic oceans, facilitating the international trade mainly with the market from the Far East countries, have originated a series of studies about bioceanic corridors.

A detailed economic study about bioceanic corridors was developed by GEIPOT (not existing anymore) in 1996. In that study, several alternatives of connections of Brazil with the South American countries from the Pacific coast were analyzed resulting to a total of ten alternatives for corridors. Since then, much has been discussed about the idea of a bioceanic corridor, but the socioeconomic and political challenges of the countries involved in the projects showed little expressive results for the effective implementation of a corridor of such reach.

Similarly to the GEIPOT Study, IIRSA developed in 2007 an update of a business view for the Capricorn Axis, seeking to establish the main interchanges and necessities of transport, which could be developed in the next 10 to 20 years, in the area of influence of the called Capricorn Axis.

The area of influence of the Capricorn Axis comprises in the case of Brazil, the states of Paraná, Santa Catarina and Rio Grande do Sul, the Department of Tarija in Bolivia, all the territory of Paraguay, the provinces of Salta, Jujuy, Catamarca, La Rioja, Formosa, Chaco, Misiones, Corrientes, Tucumán and Santiago del Estero of Argentina and the Second and Third regions (Antofagasta and Atacama) of Chile.

According to Universidad de Buenos Aires – UBA, the possibility of rail integration and the shift of road traffic to rail in the integration with Chile, through Belgrano, in the north, there are certain types of freight using this border, but they are very scarce because there is little possibility of scale trade, but it is not thought about this passage as something commercial, only for particular cases. The transport Chile – Brazil – Argentina is insignificant, although there is virtually only one operator from São Paulo to Mendoza, ALL, which operates all these lines using three different gauges.

5.1.10. Intermodal transport processes

- *Legal gap about logistics centers*

There are several initiatives in the National Congress to create an industrial customs logistics center, which would be a way of relieving the ports, distributing customs terminals inland, which are currently very few, around 20 in the entire country. This initiative is also jeopardized by the tax issue, because the importer likes to use the dry port, because it takes longer to make the clearance. In turn, the exporter does not, because if it makes the clearance (pass through customs) in the dry port, he will still take several days, considering that he has already paid the taxes. Just for simple administrative issues it should be charged from him only at the time he leaves the

country, that is, in the maritime port. Therefore, it generates incentive for the industries and users to export through the dry port.

With the growth of international trade and the necessity for investments in the Brazilian port infrastructure, the approval of Bill 327/06 – which changes the nomenclature of customs facilities to CLIA, Logistics and Industrial Custom Centers – could allow the further development of this sector, motivating the opening of new establishments and workstations, corporate stability for the dry ports operators, increase in the collection of taxes, opportunity to lessen the customs transit in primary zone and stimulate competition, essential for the functioning of the market.

Brazil, with its high number of urgent hindrances in infrastructure, has to solve the lack of regulation of the dry ports. This logistics solution cannot work because of a legal hindrance, sustained largely by pressures from business sectors that want to sustain market reserves. The current active businesses do not want the entry of competitors, thus restricting the segment's development, which is crucial for the Brazilian international trade.

Therefore, nowadays there are in Brazil only 63 dry ports, number below the necessary to accommodate all the needs for customs services that the Country currently has, which is manifested in trucks queues in the overloaded and inefficient ports and warehouses. The great majority of the dry ports, 48, operate under temporary restraining orders, because they have missed deadline for renewal of contracts with the IRS; nine still wait for bidding and only six are legally bid to work.

Known as customs facilities for public use, the dry ports are warehouses run by private companies, which have checkpoints of the IRS, thus allowing the movement and clearance of import and export cargo.

The attempt to expand the customs services beyond the primary zones of international trade – that is, out of the ports and airports – started in 1970, when the Inland Customs Offices created by the government. In the 1990s, these establishments were renamed to Inland Customs Stations – EADIs, and from May 1996 they started to be known as dry ports.

Since July 1995, with the approval of Law n. 9074, the dry ports can only operate as customs facilities after public bidding, for they are under the control and supervision of the IRS, and the customs service operated in these establishments is public. Before the current legislation was approved, a group of companies already worked with permit contracts (on private property) and concession (on public property) settled with the IRS. In the end of May 2003, the new Law n. 10.864 was approved to regulate the sector, which established a period of 25 years, with renewal for more ten, so that these companies continued to operate the customs service.

This resulted in the problems faced today. The period of 180 days for renewal and presentation of the documentation required by IRS was not enough for most of the businesses which operated the dry ports. Today 48 of the 63 Brazilian dry ports work under temporary restraining orders, which can be suspended at any time.

When this happens, the effects to the country's economy are quite negative. Administrators, grantees and concessionaires of dry ports cannot operate while the temporary restraining order is suspended; a situation that provokes drop in tax revenues falling upon importation, uncertainty for the operators, customers and staff, besides inhibiting new investments in the sector.

Brazil is one of the world champions in logistics inefficiency of international trade. The excess of bureaucracy and the accumulation of operations in few customs make the country one of the world's most expensive and deficient commercial destinations. According to a World Bank, Bird, survey, while in Chile an importer spends on average US$ 274 and takes 4.2 days to clear a container at the port, in Brazil the average expense with storage, transportation and customs services reaches US$1,145 and almost 13 days are necessary to release the container from the port. The dry ports can contribute to improve these indexes that affect the national economic growth.

- *The Regulation of Multimodal Transport*

For the effective implementation of multimodal transport in Brazil, one of the main obstacles is the insufficient regulation on crucial issues, such as the tax charges, the registration of the multimodal operators and the insurance of the transport operations.

Issued in February 1998, the Law n. 9.611 for the Multimodal Transport Operator – OTM, although regulated by the Decree n. 3.411, from April 2000, still has its implementation suspended by the impasse created as a consequence of the obligation of the multimodal insurance for the companies to obtain their respective registrations.

The difficulty is in the lack of parameters of the insurance market for the establishment of the clauses and the rates of the contract required for the registration of the multimodal operator. In short: these parameters do not exist so far, which can only be established based on the multimodal transport practice; however, the latter can only exist if there are multimodal operators registered; and how to register the multimodal operator if one of the requirements for this registration is the presentation of a multimodal insurance contract?

The Ministry of Transportation assigned to the National Agency of Terrestrial Transport – ANTT the responsibility for establishing the rules for the OTM's registration, and so ANTT has sought criteria which solve this impasse through joint efforts between the private initiative and SUSEP.

Law n. 9.611/98, which until today has not been implemented correctly, predicts that the multimodal freight transport can only be ruled by one contract, using two or more transport modes. In Brazil there are approximately 200 Multimodal Transport Operators – OTM, who are registered in ANTT, but there are only two companies (Log-In and Dreyfuss) accomplishing multimodal transport with one contract.

About the competition between road and waterborne, it is more beneficial to send the cargo in a truck from Salvador to São Paulo (distance of 1,800 km) than using intermodality, even if it is not multimodality, as predicted in the law, but the transport operator does not pay to transport freight by vessel to clear it later. This happens due to the Tax on Circulation of Goods and Services – ICMS, because sometimes the company cannot generate credits, but it does not generate debt for the ICMS either. Due to the tax issue, multimodality is jeopardized.

This ICMS issue about transport has not been solved yet, it would be necessary to go to the states' Council of Treasury Policies – CONFAZ, to find a way to offset the taxes to avoid this situation. Currently, the companies which issue the multimodal transport bill of lading have the necessity of a new bill for each section, by different transport modes. This unique bill of lading serves not only the tax issue, but also the insurance issue, which gets cheaper, for it is paid 0.5% of the cargo amount. Now it does not depend on the distance, but charged according to the cargo value, independently if there will be

displacement of 100 km or 2,000 km. Thus, the companies get discount at least in the insurance, which has already made the transport more competitive.

In multimodal transport, the OTM does not operate: he contracts a truck, which transports the cargo in determined section and a relevant bill of lading is used for the vessel, which issues the bill of lading to ANVISA. The cargo owner does not know, but for an OTM this does not work, precisely for the tax issue, because each state does not want to give up the section where the cargo is transported through it, and they never reach an agreement.

The company Global Transporte Marítimo, which belongs to Lachmann Group, believes that to get valuable results for the improvement of freight transport, it is necessary to move towards the integration of transport modes. It believes that good results can only be achieved if all the players were involved, with the government playing an important role, as facilitator. A big project that will provide an integrated freight transport and an intelligent transport system should be examined.

- *Evaluation of the main hindrances in Multimodal Transport*

Despite the advances, Brazil still faces serious problems in the transport sector. In highways and railways or in the ports and airports, the administrative difficulties have prevented the efficient use of resources and infrastructure. The result is the low quality of all the Brazilian transport modes. For CNI, this inadequate system affects the competitiveness of industries and inhibits the national economy's growth.

The Vice-President in charge of Rail Transport of the Brazilian Chamber of Containers – CBC pointed out the several obstacles that presently hinder the development of multimodality in the country, activity that could also contribute to the reduction of the polluting emissions. He mentions problems such as congested highways with excess of trucks, deteriorated railways, rich watershed, but without the appropriate infrastructure for use. He also says that Law n. 9.611/1998, which addresses the application of the concept of multimodality in logistics operation, has not been put in practice yet due to the lack of incentives to the sector's companies.

There is not any kind of tax incentive and the container companies that today use the called sustainable logistics do it through operational tests. He assured that without a unified Tax on Circulation of Goods and Services – ICMS, multimodality is impracticable, because each state has its own tax system.

It is necessary to recover the road network to increase the transports efficiency. According to the National Transportation Confederation – CNT, about 75% of the road network under the control of the state present some kind of deficiency, being that 36.6% are in bad or terrible condition. For the industry, these figures that result to the increase of costs, burdening production and, consequently, the consumer.

Besides that, for Lachmann Group, the road system is extremely competitive. Today, more than 60% of the domestic movement occurs by this mode, making the transport matrix unsustainable and impracticable. To improve this modal split, it is necessary to have a strong political will, because the road transport is the favorite, for being extremely competitive. To dispatch a vessel in cabotage, for example, it is necessary to provide a list with about 20 documents that cannot be dispatched electronically, they have to be issued in paper. In the road transport, this port bureaucracy does not exist and with only one document the transport can be accomplished.

The road transport concentrates more than 60% of the cargo flows, because it is the most economic, in competitive terms. As the customers have to make the cargo movement feasible, the waterway transport is not required anymore, for it is just feasible in long distances, with more than 1,000 km.

For the freight owner, it is better to contract a truck, which carries and leaves for the destination without the need for filling out any document. Nevertheless, to transport the container via cabotage it has to suffer all the bureaucracy as in the case of export. The company can be audited by IRS, because it is already seen as an exporter, when in fact it is not. If the freight owner is inland and has to take a license in the IRS, and has to pass through a more demanding examination, with electronic fiscal note, so it opts for the road transport. The shipping agent suffers a lot with bureaucracy. The ports are complicated: the same law, which should be interpreted likewise for all the ports, passes through different interpretations.

In the case of road transport, according to Professor Newton de Castro, Brazil still has the rumor of "road country", but it has problems of lack of capacity and inappropriate highways. In this context, the model of financing of the road sector stayed in limbo, and also suffered with the grants problem. As in the port sector, it ends up heavily burdening the user, who is dependent on the road model with usually very high toll rates.

Today, Brazil does not have a clear financing mechanism, where the necessary resources for maintaining the highways flow in a reasonably quiet way, as happened with the National Road Fund in the 1940s, which enabled the construction of the entire Brazilian road network and terminated in the beginning of 1980s.

In the rail transport case, what exists in the legislation, which was the decree before the privatization process is mutual traffic, it is not right-of-way, which says: "it is mutual traffic and in its impossibility the right-of-way" is used. It is a prerogative of the concessionaire to define if it is going to operate in mutual traffic, something that does not work in the whole world, which is to arrive at the transition yard of a railway to another, take out the traction equipment, equipage, and bring another one. This is a totally inefficient transport system, notoriously a rail integration process that does not work anywhere. The right of way is an alternative, but it was thought to be used in short sections. There is an obstacle of a very short distance in kilometers and that the grantor has to regulate and establish a rule where the mutual traffic does not make sense. Rules have to be established for small quantities, so that some concessionaires can access customers or strategic areas, like in the case of the port of Santos.

But today there is an impasse, which is being solved, because we practically have two rail operators in Brazil – ALL in the South and Southeast, Vale in the North and in the center of the country, so it occurs a very large concentration, which increases the responsibility and the importance of the regulating action of the grantor.

Another important point to be highlighted in the specific case with intermodality is the critical issue of the port accesses. Great part of the ports in Brazil, as in the rest of the world, starts inside cities. These start to constrain the port, the accesses are getting difficult and there is a situation that requires a very large coordination at several levels of the government. In the case of Rio de Janeiro, the municipal government regulates the access to the port, the federal government owns the port, the state government, occasionally, has some investments and hardly ever all these actors get together to coordinate the investments in this area.

Lachmann Group points out that the ports in Brazil do not have conditions to receive modern vessels due to the lack of dredging. This infrastructure does not exist and there

is not an intelligent system that is able to manage five thousand containers in 22 minutes either. It would be a chaos if they could receive these modern vessels, with five thousand containers, as well as it would be in road transport.

- *Indicative proposed actions for the development of Multimodality*

- Mobilize the public and private sector for a joint effort to promote cabotage transport within a multimodal door to door service, under coverage of the Maritime Bill of Lading, in competitive conditions with road transport.
- Temporary suspension and temporary basis of the import tax for new vessels built in foreign shipyards for cabotage. Review the regulating rules of the vessels chartering for cabotage, correcting the points where the limits of the law are extrapolated, redirecting the circularization process of demand, primarily, for meeting the user necessities at a competitive price, guaranteeing them the right of direct consultation to foreign navigation companies, in case the offer from national companies is economically not feasible, and inclusion of the OTM in these regulating rules as shipper and transport requester.
- Temporary suspension and temporary basis of the rate of 10% of the Freight Additional for Renewal of the Merchant Marine – AFRMM on the import and export cargo transported by cabotage and restrain the AFRMM on the port expenses, mainly the Terminal Handling Charge – THC.
- Reevaluate the benefits concretely received by REB in the cabotage, concerning the alleviation of tax burden and operational costs in general (mainly the costs with fuel and crew), with reexamination of the possibility of the creation of the integral subsidiary of national navigation companies, tried, without success in the past.
- Promote an effort to raise awareness of the public power on the importance of cabotage in "unlocking" the correction process of the Brazilian transport matrix, and in this context, the importance of competitiveness of the cabotage dispatch in relation to road transport, in the reactivation of PROHAGE, the facilitation (by Docks Companies) of the import and export freight transshipment.

5.1.11. Ports ICT – Information and communication technologies as relevant for LA-EU intermodal transport

- *The revolution in the logistics processes, in telecommunications and in the information systems is incompatible with the slow customs processes*

The "just in time" concept incorporated to the management of companies needs to be adopted in the beginning of the customs process, as a way to speed up and improve the quality in the bureaucratic procedures of the international trade. The Customs efficiency is an important factor of competitiveness.

The subject currently involves the whole world, with many experiences in several countries reforming their customs systems. Nearby to Brazil countries have adopted systems that modified substantially their customs procedures. Peru, Jamaica, Egypt and Colombia, instituted a maximum term for the freights inspection by Customs, case that should be adopted in Brazil, as a way to touch the strikes that burst every year in federal organizations. Pakistan does not inspect cargo anymore; it just does the accreditation of the export and import companies at Customs, with basic rules to be followed.

Other countries, as China, adopted the electronic Customs, where all the process is done on the Internet, with reduction in the number of procedures and inspection points.

- *Necessity for technological improvement and inspection systems*

Computerization, definition of inspection rules based on the evaluation of risk and establishment of a maximum time limit for releasing the goods are measures adopted in other countries that could be replicated in Brazil. The computerization which has been announced by IRS is one of these aspects.

- *Automation of the port customs processes*

The development of international trade is strictly linked to the port issue, since almost the totality of the goods that circulate around the world is transported in vessels and moved through the ports. The new technologies introduced in the maritime navigation and in port infrastructure provoked deep changes in the world trade panorama. In the port system, in a certain way, the cycle of exportation and importation of inputs and consumer goods is concentrated. The quality of the services rendered by the port system influences directly the final cost of the products and determines the competitiveness in the global market.

The potential gains with modernization of the customs process in Brazil could be equivalent to those obtained with the reduction of tariffs in the international trade. Even considering difficult to measure the costs of the customs bureaucracy, mainly in the ports, the automation of the customs processes is a key element for the port organization. We have problems that some ports, with queue of 1 to 2 days to position the container for opening and do the inspection. It is necessary to improve the port management, which is still under the responsibility of public bodies.

- *Technological hub port*

The current scenario of application of information systems in the Brazilian port environment involves several solutions, distributed in an isolated and autonomous way among the several Brazilian ports. Each port authority develops its specific solutions; these new solutions are very restricted and intend to compose or complement the systemic structure in force. There is no optimization of efforts and resources among the ports, and there is no dissemination of the knowledge and the intellectual capital generated and accumulated through the logical structure of each new information system as well.

There is the necessity for aligning efforts generating comprehensive solutions and propitiate significant results and economy of scale. The solution must not have narrow scope in terms of entities involved, it must not stick to one port, but to the Brazilian port community, as it should not be limited in terms of functionality either, instead of considering the international maritime transport it must stick to the mechanisms necessary to promote and facilitate Brazil's international trade.

The development of comprehensive and complex projects, as the suggested one, requires active participation of several entities involved in the context of the international trade, from the public or private initiative. The recognition of the problem or opportunity is essential for the effective involvement of these entities, for this it is

necessary to work the culture and the understanding of these entities as to the potential of the new IT resources. It is critical that each entity understands the benefits for itself, for the port environment, for the international trade and for the country as a whole.

5.1.12. Interests of Brazilian stakeholders in the European experience

i. National Confederation of Industry – CNI suggests to be checked with the European community how the documents were standardized, related legislations, mainly about taxes, and if there is the figure of multimodal transport as in Brazil.

ii. Syndarma – National Union of Maritime Navigation Companies would like to know the European Union position about the shortage and training of Merchant Marine officers. It considers interesting to know what they have done and how they have discussed this workforce shortage, and mainly how Brazil's businesses can benefit from these Europeans' experience.

iii. Likewise, Lachmann Group points out the need for knowing the European solutions for the problem of officers' shortage.

iv. Lachmann Group would also like to obtain information, from the European partners, about the statistics of the freight distribution among all modes, since Kyoto, the carbon capture credits from the shift of cargo from road to more economic and sustainable modes of freight transport. Regarding Brazil, according to ANTF, the locomotives already work with biodiesel, and the whole operation considers the environment.

v. It would be interesting to obtain information about the newly developed concepts, like the motorways of the seas, relevant investments and their results. Has this efforts brought any results in the shift of cargo from road to maritime and if not why.

vi. Brazil is passing through an integration process of the players that can lead to a more monopolistic pricing; one would like to know how these integration processes occur.

5.2. Specific issues in Argentina

As mentioned above, development of logistics operations in Argentina has been heterogeneous in the country´s geography and economic sectors. In the greater Buenos Aires área, large private firms have developed intermodal practices as a result of long going histories of their own distributios systems in a spatially concentrated market. These have been based on truck transport, in related to short distances, below the 200 km range, around Buenos Aires.

5.2.1. Scale economies promoting intermodality: the case of rail

The analysis of the possibilities of rail is extemely important because it it related to potential cost saving for demand segments treading long distances. At a first glance, this presents itself as one of the most powerful chances to promote agglomeration and convergence of different operators, for the sake of harnessing lower transport costs.

For the rest of the country, low volumes of manufactured products being demanded or produced have been no stimulous to sophistication in the supply chain. In addition, inflexibility on the side of the behemoth public rail company to adapt, at the time when roads were being imporved and expanded, were features of a context that helped truck transport to definitely consolidate as the most adaptative option. The savings rail could have provided for the longer distances were never able to arise.

Currently, the condition of railroads responds entirely to the needs of bulk cargo only. Speeds are low, generally around or below 30 km/h, track may be bumpy na maintained to a standard were reliability is not a critical short term requirement. This new condition of railroads in Argentina, that may come as negligent, is actually a successfull strategy to turn old infrastructure useful. Recent growth in traffic hás been due to the fact that maintenace costs may be kept low while at the same time carrying freight.

Other elements also point out the limited possibilites of rail transport as a provider of savings in transport costs via scale economies via multimodal transport. Over the last decade, intercity roads have become increasingly congested for the first time in the existance of the road system. Paradoxically, manufactured products going relatively long distances shipped by large firms, such as automibiles (around greater Córdoba ,700 km from Buenos Aires) or wine (aournd the city of Mendoza, 1000 km from Buenos Aires) have remained reluctant to use rail.

The origin of current rail operators also show the circumstances under which multimodality may or may not become the following chapter after intermodal operations. Two concessions are owned by large firms related to the production of bulk goods. Three were originally won by engineering firms who expected to obtain contracts to repair their networks. But the most outstanding element hás been the abscence of truck operators all along. Considering some truck operators have been large and professionalized for a long time, their reluctance to explore rail, at least in partnership, to gain new markets remains a signal of multiple meaning. On the one hand, it may be interpreted as a confirmation of the fact that cargo demand, crops set aside, is extermely widespread. On the other, it may be reflecting the presence of conservative element. More recently a logistics company aquired two of the concessions. This generated remarkable expectation from analysts, since it would be a chance to test wether rail was still up to the challenge of integrating to intermodal or multimodal operations. However, this logistics company is foreign and hás no local assets, and it hás not developed ties to local truck operators. Rather, it has entirely concetrated on bulk cargo.

User`s opinion:

In this context, actors of the supply chain and the logistics sector will not refer to rail as a component in any aspect whatsoever relevant. The rail ring project in Rosario only concerns bulk shipping terminals, and other than that no capital upgrading projects regarding rail are at hand. Until about a decade ago it would be usual, although not among the primary issues, to hear suggestions that Buenos Aires` container terminals should improve their rail access infrastructure. This topic has been completely forgotten, and a new container terminal to enter service in the area was conceived ignoring the availability of a rail link. Most, if not all, of remarks from operators on rail are general, unprecise and are a result of a wider issue of railways and their symbolic meaning as a toll for progress. This nostalgic view is not the consequence of an appraisal of the potential of rail as a tool for the current market.

However, from the public policy side the relevance of rail for transport of manufactured goods should be given consideration. Flows of semi-trailer trucks (shown in the map in section 2) in Argentina show there are two well structured corridors between Buenos Aires and Tucumán and Buenos Aires and Mendoza, both just over the 1000 km. mark.

5.2.2. Scale economies promoting multimodality: the case of ports

Starting about twenty years ago, port operations and ownership have gone an irreversible process of reform. The shipping of bulk has seen costs drop dramatically as a result of the introduction of private terminals around Rosario and as a consequence of draft increases along Paraná river`s lower section. To a limited extent, container terminals have also benefited from a deeper and more reliable navigable channel, but much more from the introduction of portic cranes, ITS on the land side and huge increases in productivity. Competition amongst terminals around Buenos Aires has in turn helped maintain port use fees low. This seems likely to continue with the new terminal at La Plata, scheduled to enter service in 2011.

The increasing role of Rosario´s bulk terminals may lead to IT requirements in the future. Recently, some terminals have traded crop shipments directly from origin, bypassing Rosario`s stock exchange. This kind of transactions will increase the relation between purchase and delivery. Despite terminals are reluctant to comment on the issue, it is reasonable to assume one of the reasons for direct trading is a better coordination of the supply chain. Indeed, truck congestion between April and July in the greater Rosario area is a serious problem, and a cost for terminals in terms of the provision of buffer yards nearby. On top of being costly, these can mitigate but not solve the problem. Considering that volumes being shipped at Rosario are likely to continue growing, coordination between transactions and delivery has an incentive to gain sophistication. This process is likely to be lead either by international traders, operating most terminals, and or by Rosario´s stock exchange.

User´s opinion:

In a context were operators and actors are prone to skeptical remarks, port services outstand as the only link in the chain praised for the improvements seen over the last decade. Difficulties surrounding use of ports are related to bureaucracy and road congestion, both under the sphere of government.

5.2.3. Current paths to reducing costs

Bureaucracy has repeatedly been targeted has a source of cost and unreliability. Container terminal operators have led the public debate on the need to digitalize customs information, as a next step after establishing strict entry and exit schedules for trucks and information platforms for their cargo. Remarkably, port agencies have not been a key player in this regard.

As mentioned, congestion on longitudinal sections of Argentina`s federal road network, as different to congestion around large cities, has entered the scene. Over the last two decades, traffic on the network has grown 160%. A number of stretches have been turned into limited access, four-lane highways, and some more are currently under construction. However, a preliminary analysis (Universidad de Buenos Aires, 2010) suggests further expansion is required, which isn´t even yet underway.

As for clogging of roads around Buenos Aires and Rosario, part of such congestion is already being set off by the use of ports in congestion-free locations. Terminals at Bahía Blanca owe part of their increasing activity to congestion around Rosario. In Buenos Aires an unpredictable number of containers will stop using terminals whose access are overlapped with metropolitan congestion, and will profit from the much better location of the new terminal at La Plata. These flexible strategies are effective at providing savings without the need of investments from logistics operators in a credit-scarce context.

5.3. Examples of European opportunities for investments in Latin America

- *The participation of foreign groups in the provision of container services*

The provision of services in port container movement has been subject of interest by several agents. The first biddings for container terminals leasing like that were won mainly by national groups. More recently, the entry of major navigation actors or of the world port movement is observed, like what has happened in Argentina and Uruguay. This entry is taking place both in the participation in already existing terminals and in new projects.

In the South region there are examples in the port of Paranaguá, like the incorporation of foreign operators as partners in the lease-holder company. Terminal Contenedores de Barcelona – TCB started to take part in the shareholders board. Additionally, in 2007, AP Moller-Maersk Group became, indirectly, through its Brazilian subsidiaries, the only shareholder of TECONVI, which is a lease-holder and operator of the container terminals of Itajaí. In Santa Catarina, the Battistella group and the Hamburg Süd/ Alliance Navigation group are investing in the construction of a new container terminal in Itapoá (private terminal for private use out of organized port) aiming at the exportations from the wood, metal-mechanic and meats sectors. It is also appropriate to mention the Dragados Group as one of the shareholders in the containers movement in the Port of São Francisco do Sul (SC).

Another relevant example corresponds to the leasing of the Suape Container Terminal, in Pernambuco, by the Philippine operator International Container Terminals Inc. – ICTSI. At that time, ICTSI got rid of its participation in a terminal of Buenos Aires and leased TECON in Suape.

In the port of Santos, the project of Brazil Terminal Portuário – BTP terminal, controlled by Europe Terminal, is a joint venture between MSC and an American investor, and it will be a container and liquid bulks terminal. In addition, there is the EMBRAPORT's project, which includes a partnership with a foreign operator, DPW.

- *Regulating process with gaps: integration is good, but can be dangerous*

Brazil is passing through an integration process of the players that can take to a more monopolistic pricing. Ecorodovias – highways concessionaire has bought Armazéns Gerais Columbia and EADI Sul (colligated of Columbia freights terminal) control equities. Columbia is one of the leaders of the integrated logistics sector. EADI Sul is a colligated

of Columbia present in the main terrestrial borders points of Brazil with other Mercosur countries.

With this acquisition, Ecorodovias consolidates, in integrated operations, important complementary aspects of its current assets Ecopátio Cubatão and Ecopátio Bracor Imigrantes to a solid basis of customers and operational experience of Columbia's for more than 68 years.

Thus, Ecorodovias logistics systems, formed by the Ecopátios and for highways' concessionaires that make the connection of the big commercial and industrial centers to the ports of Santos, Paranaguá, Rio Grande, São Sebastião and the borders with Mercosur – Argentina, Paraguay and Uruguay – will rely on the assets of Columbia and EADI Sul, which are located mostly along the company's highways.

5.4. Final considerations

The identification and analysis of the transport system and its use in the trade between Brazil and Argentina and the European Union were described in this document and placing particular emphasis on the obstacles, barriers and opportunities to the inter and multimodal transport sustainability.

The evaluation of the dynamics and the trends of use of the transport modes in the international trade between Brazil and Argentina and also with the European Union revealed that, even technologically prepared and with common interests in enhancing intermodality and the multimodality – mainly in Brazil, with the improvement of the natural resources available to the inland navigation – regulatory, tax, legal and customs barriers exist that discourage the provision of a more economic transport.

Such issues were presented by the configuration of the infrastructure system of logistics in both countries (Brazil and Argentina), and the relation of this infrastructure in serving the international trade. Therefore, the territorial identification of production and consumption was the basis to study this relation.

Thus, it can be concluded that one of the most relevant factors which characterize obstacles to the practice of multimodality concerns the deficiencies in the legislation of tariffs, which, independently of the logistics and commercial conditions to accomplish this practice of transport, cannot be promoted legally.

In this way, intermodal transport is quite limited and restricted to certain types of products, mainly due to the competitiveness between road transport and the other means of transportation. This privilege in the use of road burdens the value of the goods transport, and mainly the international trade. The validity of this argumentation is sustained by the territorial dimension of Brazil, Argentina and the transport infrastructure networks of these countries, besides the distribution of production and consumption which serves the trade between them and with the rest of the world, particularly the European Union.

The deficiency of investments in the transport infrastructure, and mainly in multimodal corridors, is presented as a barrier to certain freight operations, such as the intensive use of rail between Brazil and Argentina.

The need for enlargement of the port capacities, the expansion of the rail networks and the increase in the use of waterways, would provide better conditions to intermodal and

multimodal transport, and the reduction of the costs for the circulation of goods, both to the internal and the external markets.

In this way, with the identification of the groups of transport operators and customers of the transport services offered in Brazil and Argentina, mainly those involved with the international trade, the analysis of the practices used, the characteristics of the logistics operations and other issues were structured, resulting in the proposition of the research priorities described in Chapter 4 of this document.

Thus, this document is concluded with an overview of the main barriers that currently exist in the freight transport systems in Brazil and Argentina, with proposition of associated research and the companies and institutions must be engaged in the process of continuing the studies on transport sustainability.

BIBLIOGRAPHY

ABSA. **Novos modelos de negócios na América Latina**. Available http://www.aviationlatam.com/files/c8462ad16f5521178a66f706564bc769/c_apresentacao_norberto_jochmann.pdf Access in: 09mar2010.

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL – ANAC. **Anuário estatístico do transporte aéreo. 2008**. 1ª Edição, Volume 1 Dados Estatísticos. Available: http://www.anac.gov.br/. Access in: 20jan2010.

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL – ANAC. **Empresas Aéreas**. Available: http://www.anac.gov.br. Access in: 26nov2008.

AGÊNCIA NACIONAL DE TRANSPORTES AQUAVIÁRIOS – ANTAQ. **Anuário estatístico 2008.** Available: http://www.antaq.gov.br/Portal/Anuarios/ Portuario2008/Index.htm. Access in: 02feb2010.

AGÊNCIA NACIONAL DE TRANSPORTES AQUAVIÁRIOS – ANTAQ. **Subsídios técnicos para identificação de áreas destinadas à instalação de portos organizados ou autorização de terminais de uso privativo em apoio ao Plano Geral de Outorgas**. May, 2009. Available: http://www.antaq.gov.br/ PORTAL/pdf/palestras/PGO/RelatorioPGOTomoI.pdf. Access in: 20jan2010.

AGÊNCIA NACIONAL DE TRANSPORTES TERRESTRES – ANTT. **Relatório anual do transporte 2008**. Available: http://www.antt.gov.br/relatorioanual/ Relatorio2008.pdf. Access in: 25jan2010.

_____. **Lei nº 9.611, de 19 de fevereiro de 1998**. Dispõe sobre o Transporte Multimodal de Cargas e dá outras providências, D.O.U. de 20/02/1998.

_____. **Resolução nº 363, de 26 de Novembro de 2003**. Dispõe sobre os procedimentos relativos à expedição de Licença Originária e Autorização de Caráter Ocasional, para empresas nacionais de transporte rodoviário de cargas autorizadas a operar no transporte rodoviário internacional entre os países da América do Sul e de Licença Complementar e de Trânsito, em caso de empresas estrangeiras, e dá outras providências. D.O.U. de 27/11/2003.

AGOSTA, ROBERTO D. **Transporte: vías para un desarrollo equitativo y sustentable**. Departamento Transporte de La Facultad de Ingeniería de la Universidad de Buenos Aires; Universidad Católica Argentina; Universidad Torcuato Di Tella. Noviembre, 2005. Available: http://materias.fi.uba.ar/ 6807/contenidos/Agenda Transporte.pdf. Access in: 14jan2010.

ANGELO, L.B. **Custos logísticos de transferência de produtos**. Grupo de Estudos Logísticos – GELOG, Universidade Federal de Santa Catarina – UFSC, 2005.

ASSOCIAÇÃO BRASILEIRA DAS INDÚSTRIAS DE ÓLEOS VEGETAIS – ABIOVE. **Dados do complexo soja.** Available: http://www.abiove.com.br/mapa_br.html. Access in: 16nov2007.

ASSOCIAÇÃO BRASILEIRA DOS TERMINAIS DE CONTÊINERES DE USO PÚBLICO – ABRATEC. **Terminais de Contêineres Desempenho 2008**. Available in: http://www.abratec-terminais.org.br/novo/arquivos/3.pdf. Access in: 02feb2010.

ASSOCIAÇÃO LATINO AMERICANA DE INTEGRAÇÃO – ALADI. **O que é a ALADI?** Available:http://www.aladi.org/nsfaladi/arquitec.nsf/VSITIOWEBp/quienes_somosp. Access in: 14jan2010.

BROWN, L.; CALDWELL, H.; GALLEGOS, G.; HART, A.; HART, M.; MEYER, M.; MOVASSAGHI, K.; PENNE, R.L.; PLANT, B.; REAGAN, C.D.; RYBICKI, S.; ROMERO, J.S.M. **Freight Transportation: The Latin American Market**. Office of International Programs, U.S. Dept. of Transportation, Washington, DC Office of International Programs Office of Policy Federal Highway Administration U.S. Department of Transportation American Association of State Highway and Transportation Officials 81p. August 2003. Available in: http://international .fhwa.dot.gov/latinamer/freight_transp.pdf. Access in: 25jan2010.

CENTRO DE ESTUDOS AVANÇADOS EM ECONOMIA APLICADA – CEPEA. **PIB do Agronegócio.** Available: http://www.cepea.esalq.usp.br/pib/. Access in: 16nov2007.

CENTRO DE EXCELÊNCIA EM ENGENHARIA DE TRANSPORTES – CENTRAN. **Plano Nacional de Logística e Transportes – PNLT**. April 2007.

CENTRO DE INFORMACION INTEGRAL PARA EL COMERCIO EXTERIOR 2010, **Aduanas argentinas.** Available in: http://www.aduanaargentina.com, Access in: 30jan2010.

CENTRO TECNOLÓGICO DE TRANSPORTE, TRÁNSITO Y SEGURIDAD VIAL – C3T. **El transporte automotor de cargas en la Argentina**. Secretaría de Extensión Universitaria, Universidad Tecnológica Nacional (U.T.N.). Primera edición. edUTecNe. Buenos Aires, Argentina, 256p., May, 2007.

COMISSÃO ECONÔMICA PARA AMÉRICA LATINA E O CARIBE – CEPAL. **Acerca de la CEPAL**. Available: http://www.eclac.org/cgi-bin/getprod.asp?xml=/ noticias/paginas/4/21324/P21324.xml&xsl=/tpl/p18f-st.xsl&base=/tpl/top-bottom_ acerca.xsl. Access in: 15jan2010.

COMMISSION OF THE EUROPEAN COMMUNITIES – CEC. **EU-Latin America: global players in partnership.** Communication from the Commission to the European Parliament and the Council, COM 495/3, Brussels, September, 2009.

COMMISSION OF THE EUROPEAN COMMUNITIES – CEC. **Freight transport logistics action plan**. Communication from the Commission, COM 607, Brussels, October, 2007.

DATHEIN, R. **MERCOSUL: antecedentes, origem e desempenho recente**. Economia, Curitiba, v. 31, n. 1(29), p. 7-40, jan./jun. 2005. Editora UFPR.

DE NEGRI, F. **Padrões tecnológicos e de comércio exterior das firmas brasileiras**. São Paulo, Classificação JEL: F12, 2008. Available: http://www.inovacao.unicamp.br/report/comext-projetoABC.pdf. Access in: 20jan2010.

DEPARTAMENTO NACIONAL DE INFRAESTRUTURA DE TRANSPORTES – DNIT. **Plano Nacional de Viação – PNV**, 2009. Available: http://www.dnit.gov.br/ plano-nacional-de-viacao. Access in: 10jan2010.

DEPARTAMENTO DE TRANSPORTE DE LA FACULTAD DE INGENIERÍA DE LA UNIVERSIDAD DE BUENOS AIRES – FIUBA. **Integración y conectividad en el territorio argentino**. March 2010.

EMPRESA BRASILEIRA DE INFRAESTRUTURA AEROPORTUÁRIA – INFRAERO. **Terminais de carga no Brasil**. Available: http://www.infraero.gov.br/cargaaerea/ Access in: 09mar2010.

EUROPEAN COMMISSION – EC. **MERCOSUR – Common Market of the South**. External Relations, MERCOSUR. Available: http://ec.europa.eu/external_relations/mercosur/ index_pt.htm. Access in: 11nov2009.

EUROSTAT. **EU27 deficit in trade in goods with Brazil of 9 bn euro in 2008, surplus of 3 bn in trade in services**. EU – Brazil Summit. 2009. Available in: http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/6-02102009-BP/EN/6-02102009-BP-EN.PDF. Access in: 29jan2010.

FAY, M.; MORRISON, M. **Infrastructure in Latin America and the Caribbean recent developments and key challenges**. Report n. 37899, World Bank. The International Bank for Reconstruction and Development / The World Bank. Washington DC, 2007. Available in: http://siteresources.worldbank.org/ INTLAC/Resources/LAC_Infrastructure_complete.pdf. Access in: 20jan2010.

FELIPE JUNIOR, N. F.; SILVEIRA, M. R.. **A intermodalidade na Europa e no Brasil: O porto de Pederneiras – SP como ponto nodal**. Geografia em Atos, nº 7, v.2. Presidente Prudente – SP, 2007. Available: http://www4.fct.unesp.br/revistas/ geografiaematos/nelson.pdf. Access in: 29jan2010.

FRANCH, M.J.B., ZARZOSO, I.M. **Analisis de los flujos comerciales Union Europea – MERCOSUR**. SECTOR EXTERIOR ESPAÑOL – ICE. Revista de Economía, ISSN 0019-977X, Nº 788, 2000, pags. 119-132. Available in: http://www.revistasice.com/ cmsrevistasICE/pdfs/ICE_788_119132__9B1AC65EEB4FBFB88492DDCFBF98A074.pdf. Access in 26jan2010.

FUNDAÇÃO CENTRO DE ESTUDOS DE COMÉRCIO EXTERIOR – FUNCEX. **Obstáculos ao acesso das exportações do Brasil ao Mercado Comunitário.** Missão do Brasil junto às Comunidades Européias. Rio de Janeiro, Dez/2000, 15 p. Available: http://www.funcex.com.br/estudos.asp>. Access in: 27jan2010.

GIAMBIAGI, F., BARENBOIM, I. **MERCOSUL: por uma nova estratégia brasileira. Revista do BNDES**, Rio de Janeiro, v. 12, n. 24, p. 77-110, dez. 2005. Available: http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/ conhecimento/revista/rev2404.pdf. Access in: 14jan2010.

GUIA MARÍTIMO – FERRAMENTA DE COMÉRCIO EXTERIOR. **Exportações e importação entre portos.** Available: http://www.guiamaritimo.com.br. Access in: 26jan2010.

INICIATIVA PARA LA INTEGRACIÓN DE LA INFRAESTRUCTURA REGIONAL SURAMERICANA – IIRSA. **¿Qué es IIRSA?** Available: http://www.iirsa.org /Institucional.asp?CodIdioma=ESP. Access in: 15jan2010.

INSTITUTE FOR TRADE & TRANSPORTATION STUDIES – ITTS. **Trade policies In Latin America.** Appendix III, In: Latin American Trade & Transportation Study – LATTS. Louisiana Department of Transportation. March 2001. Available: http://www.dotd.louisiana.gov/programs_grants/latin/pdfs/Appendix_III_Trade_Policies_in_Latin_America.pdf. Access in: 01feb2010.

INSTITUTE FOR TRADE & TRANSPORTATION STUDIES – ITTS. **International trade agreements and barriers**. Section B5, In: Latin American Trade & Transportation Study – LATTS. Louisiana Department of Transportation. March 2001. Available: http://www.gomdot.com/Divisions/IntermodalPlanning/ resources/Programs/ITTSLATTS/pdf/LATTS/Alliance/Sec%20B5%20Int%27l%20Trade%20Agreements%20and%20Barriers.pdf. Access in: 03feb2010.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA – IBGE. **Países.** Available: http://www.ibge.gov.br/paisesat/. Access in: 13jan2010.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA – IBGE. **Banco de dados agregados.** Available: http://www.sidra.ibge.gov.br/. Access in: 20jan2010.

INSTITUTO NACIONAL DE ESTADÍSTICAS Y CENSOS – INDEC. **Índice de Preços ao Consumidor**. Available: http://www.indec.gov. ar/. Access in: 02fev2010 (a).

INSTITUTO NACIONAL DE ESTADÍSTICAS Y CENSOS – INDEC. **Sector externo**. Comércio Exterior. Exportação. Available: http://www.indec.gov.ar/. Access in: 02feb2010 (b).

JUNIOR, R.F.S. **O transporte ferroviário de cargas no Brasil e na Argentina: da implantação à recente privatização**. Revista de Economia Política e História Econômica, número 07, p.05-38, June , 2007.

MINISTÉRIO DA AGRICULTURA, GANADERÍA Y PESCA – MAGyP. **Sistema Integrado de Información Agropecuaria**. Available: http://190.220.136.179/ index.php/series-por-tema/comercio-exterior. Access in: 14jan2010.

MINISTÉRIO DA FAZENDA – SECRETARIA DA RECEITA FEDERAL. **Aduanas.** Available: www.receita.fazenda.gov.br/Grupo1/Aduana.asp. Access in: 30jan 2010.

MINISTÉRIO DAS RELAÇÕES EXTERIORES. **Página brasileira do MERCOSUL.** Available: http://www.mercosul.gov.br/perguntas-mais-frequentes-sobre-integracao-regional-e-mercosul-1/sobre-integracao-regional-e-mercosul/. Access in: 13jan2010.

MINISTÉRIO DO DESENVOLVIMENTO, INDÚSTRIA E COMÉRCIO EXTERIOR – MDIC. SECRETARIA DE COMÉRCIO EXTERIOR – SECEX. **Sistema de análise das informações de comércio exterior via internet – ALICEWeb**. Available: http://aliceweb.desenvolvimento.gov.br/. Access in: 11jan2010.

MINISTÉRIO DO DESENVOLVIMENTO, INDÚSTRIA E COMÉRCIO EXTERIOR – MDIC. SECRETARIA DE COMÉRCIO EXTERIOR – SECEX. **Sistema de análise das informações de comércio exterior – ALICEWeb MERCOSUL**. Available: http://aliceweb.desenvolvimento.gov.br/. Access in: 12jan2010.

MINISTÉRIO DO PLANEJAMENTO, ORÇAMENTO E GESTÃO – MP. **Iniciativa para a Integração da Infraestrutura Regional Sul-Americana (IIRSA).** Available: http://www.planejamento.gov.br/secretaria.asp?cat=156&sub=302&sec=10 Access in: 15jan2010.

MINISTÉRIO DOS TRANSPORTES. Empresa Brasileira de Planejamento de Transportes – GEIPOT. **Facilitação fronteiriça no transporte rodoviário internacional Brasil – MERCOSUL**. Brasília-DF, november de 2001.

MINISTÉRIO DOS TRANSPORTES. **Transportes terrestres.** Available: <http://www.transportes.gov.br/Modal/Terrestre.htm>. Access in: 15nov2007.

NUNES, A. O. (2007). **Análise da oferta dos operadores de transporte multimodal de cargas no Brasil: Uma aplicação da teoria dos custos de transação**. Dissertação de Mestrado, Publicação T.DM – 011 A/2007, Departamento de Engenharia Civil e Ambiental, Universidade de Brasília . Brasília. 96p.

PUERTO BUENOS AIRES. **Estadísticas**. Available: http://www.puertobuenosaires .gov.ar/licitacionesDOCS.asp?documen='imagenes/Dic 2009w.pdf'. Access in: 02feb2010.

RODRIGUES, P. R. A. **Introdução aos sistemas de transportes no Brasil e à Logística Internacional**. Aduaneiras, 2005.

SCHOOL OF ENGINEERING, UNIVERSITY OF BUENOS AIRES (2010). Intercity transportation in Argentina. Report to the Ministry of Federal Planning and Investment. Unpublished.

SECRETARIA ESPECIAL DE PORTOS. **Porto sem papel – concentrador de dados portuários**. Avaliações Setoriais, Programas e Projetos. Available in: http://www.portosdobrasil.gov.br/programas-e-projetos/porto-sem-papel/pag _inicial. Access in: 29jan2010.

TERMINAL DE CARGAS ARGENTINA – TCA. **Guia de carga – Líneas aéreas**. Available: http://www.tca.aero/esp/guia_cargas/linea_aerea.asp?letra=A. Access in: 13mar2010.

THORSTENSEN, V. (2007). **Relações comerciais entre a União Europeia e o MERCOSUL.** Instituto de Estudos Estratégicos e Internacionais. Available: http://www.ieei.pt/files/Relacoes_comerciais_UE_Mercosul.pdf. Access in: 12jan2010.

UNITED NATIONS STATISTICS DIVISION. **National accounts main aggregates database**. Available: http://unstats.un.org/unsd/snaama/selbasicFast.asp. Access in: 14jan2010.

VACCHINO, J. M. **Momentos claves en la história de Alalc-Aladi**. Integración Latinoamericana, Buenos Aires: Intal, n. 126, August. 1987.

WILBUR SMITH ASSOCIATES – Engineers Planners Economists. **Latin America trade & transportation study**. Short Sea Shipping Conference New York City, November 12th, 2002. Available in: http://www.gomdot.com/Divisions/ IntermodalPlanning/Resources/Programs/ITTS-LATTS/pdf/LATTSII/Presentati ons/LATTS2_SSSC. pdf. Access in: 02feb2010.

WORLD BANK. **Argentina: el desafio de reducir los costos logisticos ante el crecimiento del comercio exterior**. Informe No. 36606 – AR, Departamento de Finanzas, Sector Privado e Infraestructura, Región de América Latina y el Caribe, June, 2006.

ANNEXES

ANNEX 1 – Products Exported from Argentina to Brazil, in 2009

ITEM	PRODUCT
01	alive animals
02	alive plants and flower products
03	aluminium and its works
04	animal or vegetable fats and oils and their fractions, etc.
05	art objects, of collection and antiquity
06	automotive vehicles, tractors, etc. their parts/accessories
07	base starch products
08	books, magazines, gravures, other graphic products, etc.
09	carpets, other revetments to paviments of textile materials
10	ceramic products
11	cereal, flour, starch preparations, etc.
12	cereals
13	clocks and similar equipments, and their parts
14	clothes and theirs accessories of jersey
15	clothes and theirs accessories, except of jersey
16	cocoa and its preparations
17	coffee, tea and flavouring
18	copper and its works
19	cork and its works
20	cotton
21	different works
22	different works of regular metals
23	drinks, alcoholical liquid and vinegars
24	essential oils, perfumery products, etc.
25	fruit, peel of citrus fruit or melons
26	furniture, mattress, etc.
27	furs with hair and their works
28	furs, except with hair, and leather
29	fused iron, iron and steel
30	fused iron, iron and steel works
31	glass and glazing work

ITEM	PRODUCT
32	gums, resin and other juices and vegetable extracts
33	gunpowder and explosive, pyrotechnics articles, etc.
34	hats and similar artifacts and their parts
35	horticultural and fruit products preparations, etc.
36	horticultural products, plants, roots, etc. edible products
37	inorganic chemicals, etc.
38	jersey fabrics
39	lead and its works
40	leather works
41	machines, equipment, electric material and their parts
42	manure or fertilizer
43	meat and sundries, comestible
44	meat, fish or crustacean preparations, etc.
45	milk and dairy, eggs, natural honey, etc.
46	milling industry products, malt, starches, etc.
47	mineral fuels, oils and waxes, etc.
48	musical instruments, their parts and accessories
49	natural and cultivated pearls, gem, etc.
50	nuclear reactors, boilers, machines, etc. mechanical products
51	oil seeds and fruits, grains, seeds, etc.
52	optical instruments and equipments, photography, etc.
53	organic chemicals
54	other products of animal origin
55	other regular metals and theirs works
56	other textile articafts
57	other textile vegetable fibers, paper thread, etc.
58	other vegetable origin products
59	paper and carton, works of cellulose, paper, etc. paste
60	pastes, felts and fake fabrics, etc.
61	pharmaceutical products
62	plastic and its works
63	prepared feather and down, and their works
64	products from photography and cinematography
65	products of fish or crustaceans, molluscs or other aquatic invertebrates
66	residues and wastes of alimentary industries, etc.

ITEM	PRODUCT
67	rubber and its works
68	salt, sulphur, grounds and stones, gypsum, lime and cement
69	several nutritive preparations
70	several products from the chemical industries
71	ships and floating structures
72	shoes, gaiters and similar products and their parts
73	smoke and its manufactures
74	soap, organic agents of surface, etc.
75	spare parts, aircraft engines
76	special fabrics, tuft fabrics, laces, tapestry, etc.
77	steeped and overlaid fabrics, etc.
78	stone, gypsum, cement, mica, etc.
79	sugar and confectionery
80	synthetic or artificial fibers, discontinued
81	synthetic or artificial filaments
82	tanning extracts and its derivatives, etc.
83	tools, cutlery artifacts, etc.
84	toys, plays, diversion articles, sports, etc.
85	umbrella, sunshade, walking stick, etc.
86	vehicles and material to railroads, etc.
87	weapons and ammunition, their parts and accessories
88	wood pastes or stringy cellulose material, etc.
89	wood, wood charcoal and its works
90	wool works
91	wool, slim or gross hair, threads and fabrics of horsehair
92	zinc and its works

ANNEX 2 – Products Exported from Brazil to Argentina, in 2009

ITEM	PRODUCT
01	alive animals
02	meat and sundries, comestible
03	products of fish or crustaceans, molluscs or other aquatic invertebrates
04	milk and dairy, eggs, natural honey, etc.
05	other products of animal origin
06	alive plants and flower products
07	horticultural products, plants, roots, etc. edible products
08	fruit, peel of citrus fruit or melons
09	coffee, tea and flavouring
10	cereals
11	milling industry products, malt, starches, etc.
12	oil seeds and fruits, grains, seeds, etc.
13	gums, resin and other juices and vegetable extracts
14	other vegetable origin products
15	animal or vegetable fats and oils and their fractions, etc.
16	meat, fish or crustacean preparations, etc.
17	sugar and confectionery
18	cocoa and its preparations
19	cereal, flour, starch preparations, etc.
20	horticultural and fruit products preparations, etc.
21	several nutritive preparations
22	drinks, alcoholical liquid and vinegars
23	residues and wastes of alimentary industries, etc.
24	smoke and its manufactures
25	salt, sulphur, grounds and stones, gypsum, lime and cement
26	mineral, scorias ans ashes
27	mineral fuels, oils and waxes, etc.
28	inorganic chemicals, etc.
29	organic chemicals
30	pharmaceutical products
31	manure or fertilizer
32	tanning extracts and its derivatives, etc.
33	essential oils, perfumery products, etc.
34	soap, organic agents of surface, etc.
35	base starch products
36	gunpowder and explosive, pyrotechnics articles, etc.
37	products from photography and cinematography

ITEM	PRODUCT
38	several products from the chemical industries
39	plastic and its works
40	rubber and its works
41	furs, except with hair, and leather
42	leather works
43	furs with hair and their works
44	wood, wood charcoal and its works
45	cork and its works
46	wool works
47	wood pastes or stringy cellulose material, etc.
48	paper and carton, works of cellulose, paper, etc. paste
49	books, magazines, gravures, other graphic products, etc.
50	silk
51	wool, slim or gross hair, threads and fabrics of horsehair
52	cotton
53	other textile vegetable fibers, paper thread, etc.
54	synthetic or artificial filaments
55	synthetic or artificial fibers, discontinued
56	pastes, felts and fake fabrics, etc.
57	carpets, other revetments to paviments of textile materials
58	special fabrics, tuft fabrics, laces, tapestry, etc.
59	steeped and overlaid fabrics, etc.
60	jersey fabrics
61	clothes and theirs accessories of jersey
62	clothes and theirs accessories, except of jersey
63	other textile articafts
64	shoes, gaiters and similar products and their parts
65	hats and similar artifacts and their parts
66	umbrella, sunshade, walking stick, etc.
67	stone, gypsum, cement, mica, etc.
68	ceramic products
69	glass and glazing work
70	natural and cultivated pearls, gem, etc.
71	fused iron, iron and steel
72	fused iron, iron and steel works
73	copper and its works
74	nikel and it works
75	aluminium and its works
76	lead and its works
77	zinc and its works

ITEM	PRODUCT
78	tin and its works
79	other regular metals and theirs works
80	tools, cutlery artifacts, etc.
81	different works of regular metals
82	nuclear reactors, boilers, machines, etc. mechanical products
83	machines, equipment, electric material and their parts
84	vehicles and material to railroads, etc.
85	automotive vehicles, tractors, etc. their parts/accessories
86	spare parts, aircraft engines
87	ships and floating structures
88	optical instruments and equipments, photography, etc.
89	clocks and similar equipments, and their parts
90	musical instruments, their parts and accessories
91	weapons and ammunition, their parts and accessories
92	furniture, mattress, etc.
93	toys, plays, diversion articles, sports, etc.
94	different works
95	art objects, of collection and antiquity
96	special transactions