National Connectivity Report

Paraguay 2020

International Trade and Integration

Proyect Documents

National connectivity report

Paraguay 2020

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This document was prepared by Mical Rodríguez Laconich, consultant of the Infrastructure Services Unit of ECLAC's International Trade and Integration Division and Jorge A. Lupano, Associate Economic Affairs Officer of the Infrastructure Services Unit of ECLAC's International Trade and Integration Division. This research was conducted within the framework of the activities of the United Nations Development Project entitled "Sustainable transport connectivity and implementation of transport-related Sustainable Development Goals (SDGs) in selected landlocked and transit/bridging countries".

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Astract

The National Connectivity Report (NCR) is managed by the United Nations Economic Commission for Europe (UNECE) in collaboration with the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Economic and Social Commission for West Asia (ESCWA) and is developed under UNDA funded "Sustainable transport connectivity and implementation of transport-related Sustainable Development Goals (SDGs) in selected landlocked and transit/bridging countries" project. The NCR report covers and measures the performance of inland transport modes: railway, road and inland waterway (ILW) transport modes. In Paraguay's NCR, railway transport indicators are not covered because railways are not used for cargo transport. All modes of transport are studied through three key pillars: economic, social and environmental sustainability.

Five (5) pilot countries, were selected from different regions of the world in order to measure inland transport connectivity, compare each country performance and evaluate connectivity progress in the next years. Paraguay is one of the pilot countries where the SITCIN will be tested and based on the results, the indicators will be further finetuned. The NCR preparation process is generally divided into following key phases: data-collection and meta-analysis, relevant fact-finding missions and interviews with the stakeholders, structure findings and recommendations, discussion of NCR results on national policy dialogue meeting with the stakeholders. After approval of the NCR, capacity-building workshops will be held targeting the most pressing topics in inland transport policy based on the NCR recommendations and findings.

Fact-finding missions were held by the project team to review the beneficiary country's transport system information and statistics and gather views and approaches from competent national authorities and relevant stakeholders. In the frame of the fact-finding missions SITCIN team met with representatives of various public institution and visited the Border Crossing Point at Jose Falcón and the Border Crossing Point in Ciudad del Este.

The following private and public stakeholders were consulted during the SITCIN data collection process that took place from February to December 2020: Ministry of Public Works and Communications (MOPC), Ministry of Foreign Affairs (MRE), National Transport Authority (DINATRAN), National Authority for Navigation and Ports (ANNP), TERPORT, Merchant Navy Administration (DGMM), Ministry of Industry and

Trade (MIC), Ministry of Sustainable Development and Environment (MADES), National Customs Authority (DNA), National Agency for Road Safety (ANTSV), National Institute for Food and Nutrition (INAN), National Service for Plant and Seed Quality and Health (SENAVE).

In total, SITCIN includes 215 different indicators, but in the Paraguayan case data was collected to evaluate 161 indicators for road and Inland Waterway transport (54 railway indicators were excluded from Paraguay's NCR because railway transport mode is not used to transport goods).

SITCIN scoring results are divided into 6 chapters:

(i) Border Crossing Facilitation

(ii) Transport Infrastructure

(iii) Safety and Security

(iv) Transport of perishable foodstuffs and dangerous goods

(v) Intermodality

(vi) Environment

Conclusions and recommendations are developed and summarized based on detailed analysis of data collected through surveys, interviews, consultations, desktop research, etc, as well as findings and statements defined in the SWOT analysis.

Recommendations are also divided into the six chapters mentioned above. In each chapter recommendations are addressed to the following segments: Government and its agencies, International organizations, Transport business – private companies and relevant associations.

Acknowledgements

This document has been prepared by Mical Rodríguez Laconich, consultant with the Economic Commission for Latin America and the Caribbean (ECLAC), under the supervision of Fabio Weikert Bicalho, Associate Economic Affairs Officer with the Infrastructure Services Unit of the International Trade and Integration Division of ECLAC. The author gratefully acknowledges Camila Tórtora Morales for her important contribution during the development of the Spanish version of this report. This research was conducted within the activities of the United Nations Development Account project, "*Sustainable transport connectivity and implementation of transport-related Sustainable Development Goals (SDGs) in selected landlocked and transit/bridging countries*". The views expressed in this document, which have been reproduced without formal editing, are those of the author and do not necessarily reflect the views of the Organization.

The representatives from the stakeholder agencies: Ministry of Public Works and Communications (MOPC), Ministry of Foreign Affairs (MRE), National Transport Authority (DINATRAN), National Authority for Navigation and Ports (ANNP), TERPORT, Merchant Navy Administration (DGMM), Ministry of Industry and Trade (MIC), Ministry of Sustainable Development and Environment (MADES), National Customs Authority (DNA), National Agency for Road Safety (ANTSV), National Institute for Food and Nutrition (INAN), National Service for Plant and Seed Quality and Health (SENAVE), provided information and suggestions during the preparation of this report.

About ECLAC (Economic Commission for Latin America and the Caribbean)[1]

The Economic Commission for Latin America (ECLA) -the Spanish acronym is CEPAL- was established by Economic and Social Council resolution 106(VI) of 25 February 1948 and began to function that same year. The scope of the Commission's work was later broadened to include the countries of the Caribbean, and by resolution 1984/67 of 27 July 1984, the Economic Council decided to change its name to the Economic Commission for Latin America and the Caribbean (ECLAC); the Spanish acronym, CEPAL, remains unchanged.

ECLAC, which is headquartered in Santiago, Chile, is one of the five regional commissions of the United Nations. It was founded with the purpose of contributing to the economic development of Latin America, coordinating actions directed towards this end, and reinforcing economic ties among countries and with other nations of the world. The promotion of the region's social development was later included among its primary objectives.

In June 1951, the Commission established the ECLAC subregional headquarters in Mexico City, which serves the needs of the Central American subregion, and in December 1966, the ECLAC subregional headquarters for the Caribbean was founded in Port-of-Spain, Trinidad and Tobago. In addition, ECLAC maintains country offices in Buenos Aires, Brasilia, Montevideo and Bogotá, as well as a liaison office in Washington, D.C.

[1] https://www.cepal.org/en/about-eclac-o

List of Abbreviations

ANNP	National Authority for Navigation and Ports
ANTSV	National Agency for Road Safety
ASAMAR	Paraguayan Shipping Agents Association
BCP	Border Crossing Point
CAFYM	Paraguayan Shipowner's Association
CAPATIT	Paraguayan Chamber of International Road Transport
CATERPA	Paraguayan Chamber of Terminals and Private Ports
CIH	Intergovernmental Committee on the Paraguay-Paraná the Waterway
DGMM	Merchant Navy Administration
DINATRAN	National Transport Authority
DNA	National Customs Authority
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EODB	Ease of Doing Business
FEPASA	Paraguayan Railways S.A.
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
INAN	National Institute for Food and Nutrition
IWW	Inland waterway transport
LPI	Logistics Performance Index
LLDC	Landlocked Developing Countries
MADES	Ministry of Sustainable Development and Environment
MERCOSUR	Mercado Común del Sur (Southern Common Market)
MIC	Ministry of Industry and Trade
MOPC	Ministry of Public Works and Communications
NCR	National Connectivity Report
SENACSA	National Service for Animal Health and Quality
SENAVE	National Service for Plant and Seed Quality and Health
SDGs	Sustainable Development Goals
SITCIN	Sustainable Inland Transport Connectivity Indicators
SITCIN Team	UNECE representatives and national consultants
UNECE	United Nations Economic Commission for Europe

Introduction

Sustainable Inland Transport Connectivity Indicators (SITCIN) is a tool developed under the UNDA funded project "Sustainable transport connectivity and implementation of transport- related Sustainable Development Goals (SDGs) in selected landlocked and transit/bridging countries". This project is managed by the United Nations Economic Commission for Europe (UNECE) in collaboration with the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Economic and Social Commission for West Asia (ESCWA).

SITCIN aims to allow the countries to report on the progress they are making towards achieving the UN SDGs, the 2030 Agenda for Sustainable Development and ultimately the Vienna Programme of Action. Countries and their external partner organizations to the project, will be able to base their assessment of effectiveness and efficiency of the transport systems and the level of compliance of national administrative and legal frameworks with UN legal instruments in the field of transport and border crossing facilitation providing a domestic and a cross-border perspective and improving competitiveness, safety, energy efficiency and security in the transport sector. Furthermore, the countries will be able to measure the effectiveness of their efforts in implementing UN legal instruments in the field of transport and work towards the harmonization and standardization of rules and documentation, including through more effective implementation of international conventions on transport and transit and regional/bilateral agreements.

This National Connectivity Report (NCR) is the next step after the development of SITCIN. Paraguay is one of the five case-study countries where the SITCIN will be tested and based on the results, will be further fine- tuned.

A. NCR concept and phases

The NCR report covers and measures the performance of inland transport modes: namely railway, road and inland waterway (IWW) transport modes. In the Paraguayan case, railway transport is not developed as of the NCR preparation period. All modes of transport are studied through three key pillars: economic, social and environmental sustainability.

The NCR preparation process is generally divided into 4 key phases: (1) data-collection, (2) fact-finding missions and interviews with the stakeholders, (3) analysis of findings, drafting of recommendations, (4) discussion of NCR results on a national policy dialogue meeting with the stakeholders.

Capacity-building workshops will be held targeting the most pressing topics of inland transport policy based on the NCR recommendations and findings.

B. Fact-finding mission in Paraguay

The fact-finding missions were held by the project team to review the beneficiary country's transport system information and gather views from competent national authorities and relevant stakeholders.

During the fact-finding missions, the SITCIN team visited:

BCP Jose Falcón on February 12, 2020

- BCP Ciudad del Este on February 13, 2020

The purpose of the initial fact-finding mission was to conduct extensive consultations with national stakeholders, collect relevant data and information (on hardware/software, policies, and regulations), identify connectivity gaps and challenges.

C. National Stakeholders

Various institutions from the private and public sector were consulted during the SITCIN data collection process that took place from February to December 2020:

- Ministry of Public Works and Communications (MOPC)
- Ministry of Foreign Affairs (MRE)
- National Transport Authority (DINATRAN)
- Ministry of Industry and Trade (MIC)
- National Agency for Road Safety. (ANTSV)
- National Authority for Navigation and Ports (ANNP)
- TERPORT
- Merchant Navy Administration (DGMM)
- Ministry of Sustainable Development and Environment (MADES)
- National Customs Authority (DNA)
- National Institute for Food and Nutrition (INAN)
- National Service for Plant and Seed Quality and Health (SENAVE)

D. Project aim

The overall aim was to evaluate both the institutional and legal set-up as well as the regulatory and administrative environment related to border crossings, customs and transit procedures, appraise the quality of the administrative framework (including consignment and transport documentation regimes) surrounding road and rail transport respectively, analyse the quality and effectiveness of transport and logistics

infrastructure, determine the robustness of the road traffic management and road traffic infrastructure system, assess the quality of the regulatory framework surrounding transport of dangerous goods and perishable foodstuffs and evaluate efforts aimed at reduction of greenhouse gases, age and maintenance of vehicle fleet and air and noise emissions.

The aim of the project is that the SITCIN will be used by LLDCs and non-LLDCs in and outside the UNECE region, to voluntarily assess and report their international transport connectivity. By assessing on an annual basis, benchmarking and time-series data will be developed.

I. Sustainable Inland Transport Connectivity Indicators (SITCIN) Methodology

SITCIN indicators and sub-indicators are classified according to the following three modes of transport: Road Transport, Railway Transport and Inland Waterways Transport. Furthermore, aiming to comply with United Nations Sustainable Development Goals, indicators structured by transport modes are further divided into the three pillars of Sustainable development: Economic, Social and Environmental sustainability. Indicators are structured in the way to respond and enhance Key targets of each pillar: enhancing efficient movement, enhancing safety and security and creating environmentally sustainable transport systems.

Figure 1
Pillars of sustainable development, marking and numbering of SITCIN indicators

Source: SITCIN methodology document.

Pillar 1: Economic Sustainability - refers to practices that support long-term economic growth without negatively impacting other aspects of development. The key target for this dimension is "Enhancing efficient movement". Pillar 2: Social Sustainability - refers to sustainable traffic and transport systems with lower social costs, such as fewer accidents and fewer traffic delays. The key target for this dimension is "Enhancing safety and security". Pillar 3: Environmental Sustainability - refers to the reduction of greenhouse gas emissions, air pollutants, and noise emissions. The key target for this dimension is "Creating an environmentally sustainable transport system".

Table 1
Number of SITCIN indicators per pillar and transport mode

Transport Mode	Pillars			Total
	Economic	Social	Environmental	
Road	52	56	13	121
Rail	37	12	5	54
IWW	20	15	5	40
Total	109	83	23	215

Source: SITCIN methodology document.

There are 39 indicators in total, each of these 39 indicators contain several sub-indicators. The total number of sub-indicators is 215, out of these 121 are dedicated to road transport and logistics, 54 are related to railway transport and 40 to IWW Transport. An overview of the structure and number of all indicators and sub-indicators is shown in table 2.

Table2
Structure and number of SITCIN sub-indicators

Mode	Pillar	Indicator	Number of sub-indicators
Road	Economic	Efficiency	11
		Time	5
		Cost	6
		Infrastructure	9
		Operations	6
		Intermodality/combined transport	4
		ICT and ITS Solutions	11
	Social	Road traffic rules/behavior	18
		Road traffic infrastructure	5
		Vehicle regulations	5
		Perishable foodstuffs transport	5
		Dangerous goods transport (administrative)	19
		Dangerous goods transport (infrastructure)	4
	Environmental	Fleet	6
		Emission	6
		Infrastructure	1

Mode	Pillar	Indicator	Number of sub-indicators
		Total sub-indicators for road transport	121
Rail	Economic	Efficiency	9
		Time	3
		Cost	3
		Infrastructure	4
		Operations	10
		Intermodality/combined transport	4
		ICT and ITS Solutions	4
	Social	Rail traffic infrastructure	7
		Dangerous goods transport (administrative)	5
	Environmental	Fleet	3
		Emission	2
Total sub-indicators for rail transport			54
IWW	Economic	Efficiency	3
		Cost	5
		Infrastructure	4
		Operations	2
		Intermodality/combined transport	2
		ICT and ITS Solutions	4
	Social	IWW traffic rules	2
		Vessels regulations	5
		Dangerous goods transport (administrative)	6
		Dangerous goods transport (infrastructure)	2
	Environmental	Fleet	2
		Emission	3
Total sub-indicators for IWW transport			40
Total indicators of SITCIN			215

Source: SITCIN methodology document.

The indicators are scored in descending order on a scale of 0 to 10. On this scale, level 0 is assigned for the worst scenario, for instance when a specific regulation does not exist. Level 10 represents an ideal scenario. In some cases, a score less than 10 is given for the best scenario. In this case, additional points are available when for instance an additional measure is implemented to achieve the promoted objective.

II. Data collection process

The SITCIN team briefed the national stakeholders on the benefits of the project "Sustainable transport connectivity and implementation of transport-related Sustainable Development Goals (SDGs)" and discussed the Sustainable Inland Transport Connectivity Indicators draft.

Based on the SITCIN indicators, detailed questionnaires for each stakeholder were prepared considering specifications and profile of their organization. Some questionnaires were translated into Spanish for simplification of the data collection process. The SITCIN national consultant identified, evaluated and analysed data gathered from each stakeholder public agencies and private companies.

Several interviews were held with representatives from public and private stakeholder agencies and organizations to gather relevant information and data:

- Joint introductory meeting with public agencies.
- Joint introductory meeting with private companies.
- Site visits to 2 different road BCPs.
- Case-based B2B meetings with specialists and experts.

Difficulties during data collection were related to lack of data or lack of consolidated data. In some cases, data is available but scattered among different organizations. Misunderstanding of indicator definition and the scoring system was another reason for additional questions and detailed discussion with stakeholder agencies.

The data that are used to compile SITCIN can be categorized as follows:

(i) Quantitative data, which is subdivided bya. Discrete data, such as a number of accidents and a number of vehicles that are usually expressed in absolute terms or as ratios.b. Continuous data, which is used to measure the length of infrastructure (in kilometres), goods transported (in tonnes) or waiting time at borders (in minutes).

(ii) Qualitative dataIn most cases qualitative data is used, which categorizes performance by very good to very poor – such as infrastructure condition - to produce an ordinal scale where the higher the value the better the performance.

III. Country information

A. Key economic indicators of Paraguay

- GDP (current USD billion 2019) – 38
- GDP per capita PPP (current international USD) – 13,210.3
- Annual GDP growth average (2003-2015) – 4.7
- Population (million inhabitants) – 7.0
- Surface Area (sq.km) – 406,752
- Human Development Index – 0.710 female / 0.734 male
- Trade (exports and imports as a percentage of GDP) – 69.8

Source: HDR ranking, World Bank.

B. Paraguay's Road Transport Infrastructure

The Ministry of Public Works and Communications (MOPC) is in charge of proposing and executing the policies and provisions regarding infrastructure and basic services for the integration and economic development of the country. The Directorate of Roads is responsible for national and departmental routes. The Directorate of Neighborhood Roads is in charge of neighborhood roads. Both divisions are part of the Vice Ministry of Public Works and Communications.

The road system in Paraguay is classified into the following three groups of roads: National Routes, Departmental Routes and Neighborhood Routes. According to the Workd Bank, Paraguay's road network length is estimated at 100,000 km, of which only 32,208 km are classified and managed by the Ministry of Public Works and Communications (MOPC). Around 68,000 km of the network is under the administration of

local authorities. Surveys carried out in 2011 and 2014 over approximately 4,860 km of paved roads indicate that roads are deteriorating rapidly possibly as a result of insufficient maintenance. As such, while in 2011 some 68 percent of the paved network was in good condition (measured through its roughness, International Roughness Index [IRI] < 3), in 2015 surveys this figure has gone down to 59 percent, with an increased share of roads in fair condition up to 33 percent (3 < IRI < 5) and 9 percent that are in poor condition (IRI > 5).'' The following table shows the road network classification in 2020 according to the MOPC.

Table 3
Classification and surface type the national road network in 2020

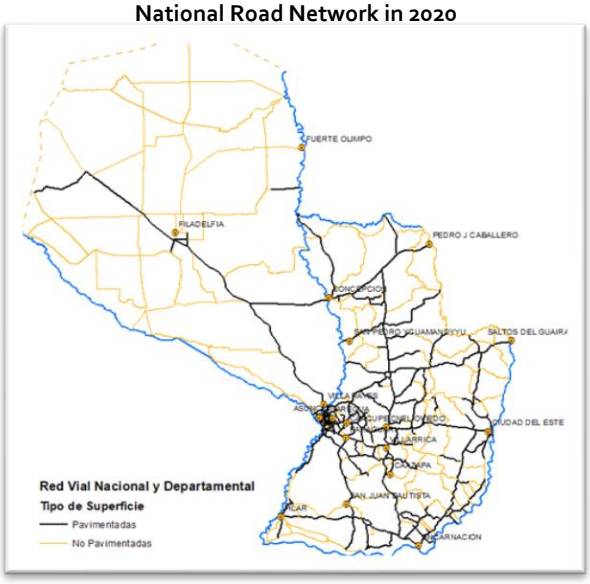
Paraguay road network									
	Data from 7/1/2020				Total Inventoried Departamental Network (km): 78.811				
Type of network	TYPE OF SURFACE								Total by network type (km)
	PAVED (KM)						NON-PAVED (km)		
	PCA*	SURFACE TREATMENT**	HCP***	Cobblestone (portland cement concrete)	Stone	Stone-Gravel	Gravel	Earth	
National (km)	4.702,27	321,16	15,00	34,65	83,34	66,17	0,00	3.553,32	**8.775,91**
Departamental (km)	2.056,24	84,90	0,00	0,00	474,44	384,53	0,00	4.825,81	**7.825,93**
Neighbourhood roads (km)	1.320,66	33,08	0,00	5,34	688,54	646,26	0,00	59.515,27	**62.209,14**
Total by surface type (km)	**8.079,17**	**439,13**	**15,00**	**39,98**	**1.246,32**	**1.096,96**	**0,00**	**67.894,41**	
Percentage %	**13,85%**						**86,15%**		

*PCA: asphalt layer
**Surface treatment: Layers with surface treatment
***HCP: concrete pavement with portland cement

Source: Directorate for Road Planning. Ministry of Publics Works and Communications (2020).

The road network grew from 2016 to 2020. The Ministry of Public Works and Communications (MOPC) carried out a new classification and recategorization of the Paraguayan road network, after the last update carried out in 1962. According to this update, the Eastern Region of the country had 3,494 km of national roads and now has 5,502 km of paved routes. The Paraguayan Chaco added 4 more roads, totaling 3,554 km[2]. Figure 2 shows the layout of the national road network in 2020.

Figure 2
National Road Network in 2020



Source: Directorate for Road Planning. Ministry of Publics Works and Communications (2020).

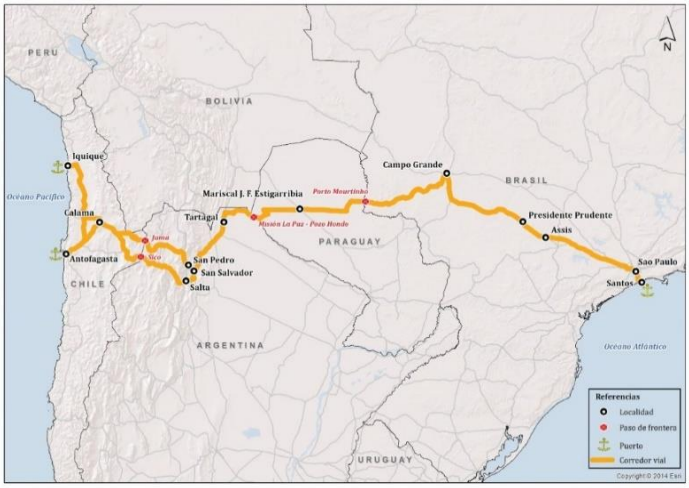
[2] https://www.mopc.gov.py/index.php/actualizacion-de-la-red-vial-de-rutas-nacionales-del-paraguay

In 2012, the Ministry of Public Works and Communications (MOPC) developed the National Transport Master Plan (2012–2032) in order to reduce logistic challenges. The current administration has established a long-term road sector strategy on the basis of this plan. The main goals are: 1) completing the key national corridors (bi-oceanic corridor and international corridors); 2) improving the condition of the existing road assets; 3) ensuring adequate maintenance to minimize total road user costs and improve road safety; and 4) ensuring the sustainability of the road programs by prioritizing investments to assure an alignment with available resources while expanding the tolling network to increase the revenues available[3].

1. Bi-oceanic Road corridor

The Bioceanic Corridor is the most important project carried out by the Ministry of Public Works and Communications (MOPC) in the Chaco region. The project uses the 'turnkey' modality put in place by Law 5074 and entails an investment of USD 445 million. The corridor will connect the most important seaports of the Pacific and Atlantic Ocean. According to the Ministry of Public Works" the construction of this Corridor has a high strategic value for Paraguay because it will turn the Western Region into an international logistics center by becoming the shortest route between Chilean and the Brazilian ports. The Bi-oceanic corridor already has 106 kilometers of paved and signposted roads of the total of 277 km planned[4].

Figure3
Bi-oceanic Road corridor



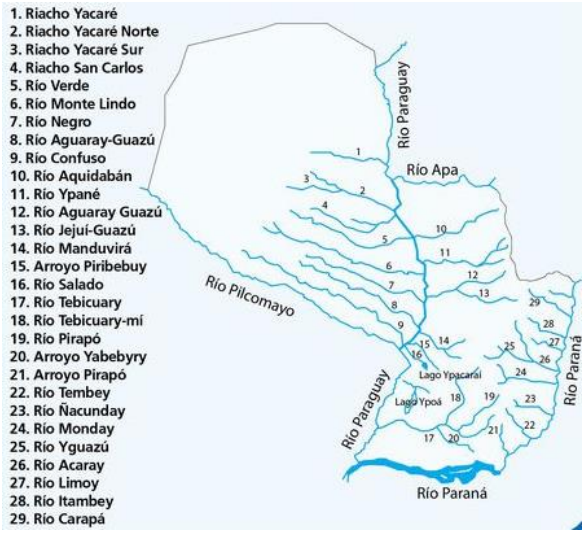
Source: Inter-American Development Bank. Available at https://conexionintal.iadb.org/2017/07/11/corredor-vial-entre-el-atlantico-y-el-pacifico/. Accessed on 10 November 2020.

C. Paraguay's Inland Waterway Transport Infrastructure

As the hydrographic map shows, Paraguay's Inland Waterway system is very rich. The most important rivers are the Paraguay River (length 1260 km) and the Parana River (length 850 km) because of their flow, extension and navigability. Nevertheless, all the rivers that run through the Paraguayan territory are part of a large hydrographic basin called the River Plate Basin, a channel that ends in the River Plate and then flows into the Atlantic Ocean[5].

[3] http://documents1.worldbank.org/curated/en/557201468241822800/pdf/PAD1248-PAD-P147278-R2016-0142-1-Box396273B-OUO-9.pdf
[4] https://www.ip.gov.py/ip/corredor-bioceanico-avanza-con-la-ejecucion-del-505-en-todos-sus-subtramos/
[5] https://cicplata.org/es/una-cuenca-cinco-paises/. http://perfil.cepal.org/l/es/pdf/Area1-Par.pdf

Figure 4
Paraguay's hydrographic map



Source: abc (2016). Available at https://www.abc.com.py/edicion-impresa/suplementos/escolar/hidrografia-del-paraguay-los-rios-1500520.html. Accessed on 10 November 2020.

Paraguay is part of the Paraguay-Paraná Waterway which consists of 3,442 km of inland waterway that unite 5 countries and runs from Puerto Cáceres (Brazil) to Nueva Palmira (Uruguay). It passes through Puerto Busch (Bolivia), Asunción (Paraguay) and the ports of the Paraná river (Rosario, Zarate), Buenos Aires, Dock Sud and La Plata (Argentina), up to the Recalada sea access. The Paraguay-Paraná Waterway Agreement was signed by Argentina, Bolivia, Brazil, Paraguay and Uruguay in 1991 and is one of the most important and extensive axes of political, economic and social integration in South America. Its area of influence is approximately 5 million square kilometers, and includes a population of about 70 million inhabitants.

Paraguay is also part of the Intergovernmental Committee on the Paraguay-Parana Waterway. This body formulates proposals and coordinates policies related to the facilitation of navigation in the Waterway.

Figure 5
Paraná Paraguay Waterway System

Source: Diálogo Chino (2020). Available at https://dialogochino.net/en/infrastructure/37072-chinese-company-could-run-crucial-argentine-shipping-route/.Accessed on 10 November 2020

Paraguay has the third-biggest fleet of tug-steered barges in the world, behind the US and China. This fleet transports more than 90% of the intra-zone cargo in the Paraguay-Parana Waterway. That is, the intra-zone imports and exports of all the countries that signed the Paraguay-Parana Waterway Agreement, which are Brazil, Bolivia, Paraguay, Argentina and Uruguay. The traffic exceeds 30 million tons per year[6]. Although the importance of Parana-Paraguay Waterways is unquestionable the country has 4 to 5 navigable rivers whose potential is not being used. The volume of traffic in the Paraguay-Parana Waterway, among other factors, has led the country to develop its IWW transport sector. Nevertheless, more investment, particularly in dredging and signalling is needed to guarantee navigation throughout the year. The table below provides more information on the Paraguayan fleet.

Table 4
Characteristics of the Paraguayan Fleet in the Paraguay-Paraná Waterway

Type of vessels & barges	Quantity	Static transport capacity (tones)	Static transport capacity (TEUs)
Dry-bulk Barges	2 700	3 694 034	-
Tank Barges	247	473 900	-
Container Barges	33	128 399	4 085
Tugboats and pusher boats	380		-
Self-propelled Barges	85	211 404	6 726
Total	3 445	4 507 737	10 812

Source: 5th World Forum (2020). Cities and Logistics Platforms. The future of IWW transport. Available at https://www.youtube.com/watch?v=uTUAeXwm48w Accessed on 25 December 2020.

In 1989, there were fewer than 100 vessels flying the Paraguayan flag and today there are over 2722. Paraguay implemented a very flexible regime for incorporating vessels to its flag, such as a leasing law that allowed the incorporation of capital goods with benefits and also tax benefits. As a result of these measures, a large number of vessels were incorporated in the 90's'[7].

With regard to port infrastructure, the country has public and private ports. There are 9 private ports in the Parana River and 38 private ports in the Paraguay River. The National Authority for Navigation and Ports (ANNP) manages 17 ports. Cross-border ports that belong to ANNP are located at the head of bridges with Brazil and Argentina, the parking lots in these ports have a direct connection with the main road and the land terminals of those countries and Bolivia. ANNP is resposible for maintaining the infrastructure that houses government agencies involved in import and export activities.

Furthermore, in 2020, the Ministry of Public Works issued decree 4143/20 that simplifies procedures and decreases the operational costs to register private ports. In the past, it was necessary to obtain a presidential decree. However, after the enactment of the new decree only a ministerial decree is required. This measure will reduce the amount of time previously required by at least 3 months. Lastly, concerning prices, public ports have fixed costs set by decrees while private ports set costs depending on a series of

6 https://www.clubdeejecutivos.org.py/revista/hidrovia-paraguay-parana-arteria-de-la-economia-paraguaya

7 https://www.clubdeejecutivos.org.py/revista/hidrovia-paraguay-parana-arteria-de-la-economia-paraguaya
https://www.ft.com/content/4c086044-56cf-11e9-8b71-f5b0066105fe.
Merchant Navy Administration

factors, for instance the location of the port, the volume of cargo that each client manages, the dynamics of supply and demand in certain scenarios such as drought, pandemic, etc.[8].

D. Paraguay's Rail Transport Infrastructure

Rail infrastructure is not used for cargo transport. Therefore, rail transport indicators are not included in this report. Nevertheless, it is relevant to mention that there is a two-stop rail line for transport of passengers between Posadas in Argentina and Encarnación in Paraguay. The Posadas–Encarnación International Train is an 8 km commuter rail international service that started operating in January 2014. It leaves every 30 minutes from each station and can carry 240 people on every trip. The train transports approximately 1 million people every 2 years[9].

Moreover, it is important to indicate that Paraguay is planning to develop rail infrastructure for cargo transport. These plans include the construction of a freight train in the southern city of Encarnación. Another freight train that connects the northeast cities of Concepción and Pedro Juan Caballero. This freight train would provide multimodal links between the Paraguay-Paraná Waterways and Ponta Porá - Campo Grande Brazilian Railways and increase the amount of private investment in the north of the country. Lastly the bi-oceanic railway corridor will connect the Atlantic and Pacific Ocean and will enhance integration between the MERCOSUR member countries in aspects related to the interoceanic transport of goods and merchandise. According to the South American Council of Planning and Infrastructure (COSIPLAN), the railway integration projects that include Paraguay are the following: 1) a project to connect the port of Santos in Brazil and the port of Illo in Peru, passing through Bolivia and connecting Asuncion-Paraguay, 2) a project to connect the port of Paranaguá in Brasil and the port of Antofagasta in Chile, passing through Paraguay and Argentina, 3) a project to develop a north-south rail in order to connect all the rail projects in South America[10].

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8 https://www.presidencia.gov.py/archivos/documentos/decretos_1_20201028121740303_fq4k6aou.PDF https://www.abc.com.py/nacionales/2020/06/30/annp-habla-de-aumento-de-los-ingresos-aunque-eso-se-dio-en-6-de-17-uertos/https://www.ip.gov.py/ip/annp-deroga-resolucion-que-modificaba-tarifas-por-servicios-portuarios/ https://abogadoparaguayo.blogspot.com/2015/01/decreto-n-1229708-tasas-portuarias.html https://www.mundomaritimo.cl/noticias/terport-y-tecplata-logran-acuerdo-para-abaratar-costos-de-fletes-en-la-hidrovia-paraguay-parana

9 https://www.argentina.gob.ar/transporte/trenes-argentinos/horarios-tarifas-y-recorridos/servicios-regionales-larga distancia/posadas-encarnacion.

10 https://www.parlamentomercosur.org/innovaportal/v/16971/1/parlasur/comision-de-infraestructura-aprueba-realizacion-de-seminario-sobre-transporte-ferroviario-en-america-del-sur.html

IV. Key Findings by group of indicators

A. Border Crossing Facilitation

This indicator is an aggregate of Efficiency, Time required at borders, Cost, Operations and ICT, and Intelligent Transport System Solutions indicators under the Economic Pillar of SITCIN, to measure the performance of border crossing facilitation.

Table 5
Border Crossing Facilitation Indicators and Findings

Indicator 1-EC-1: Efficiency	Definition	Scoring	Score Points	Answer	Source
1-EC-1.1: Staff resources at road BCPs and inland clearance stations	Adequacy of the number of personnel at road BCPs and inland clearance stations to cope with the freight volumes involved. Staff categories include Customs, border guards/police, Health and	Some staff categories available 24/7 at more than 50% of considered BCPs and inland	8 points	All staff categories are available during office hours at all BCPs. Safeguard staff are available 24/7 at all BCPs. In addition, staff at all BCPs can work after office hours if there is a request in advance.	National Customs Authority (DNA)

Indicator	Definition	Scoring	Score	Answer	Source
	Safety Executive, State Veterinary Office, State Plant Health Protection Agency, Public Health Agency, Food and Drug Administration, Service for Foreigners' Affairs, National Revenue Services, Vehicle and Operators Services Agency, and Department of Transport.	clearance stations: 8 points			
1-EC-1.2a: BCP infrastructure (Joint controls facilities)	Availability and opening hours of joint controls facilities at road BCPs open for international goods traffic. It concerns facilities for domestic controls as well as joint controls with the adjoining country. In terms of opening hours, Article 6 of the Annex 8 to the Harmonization Convention sets out 24 hours a day as a minimum requirement.	Facilities for either joint bilateral controls or domestic controls are available with limited opening hours (e.g., no night, weekend and holidays operation): 6 points	6 points	According to MERCOSUR's provision "GMC 77/99" integrated control areas (joint border controls) operate from 7 am to 7 pm. Other BCPs operate from 8 am to 6 pm. In some cases, companies get a permit from the National Customs Authority (DNA) to continue activities until 9 pm.	GMC 77/99 http://www.cartillaciudadania.mercosur.int/oldAssets/uploads/RES_077-1999_ES_Horario%20Atenc_Ptos-Frontera_Acta%204_99.doc.pdf
1-EC-1.2b: BCP infrastructure (off-lane control areas)	Availability and opening hours of off-lane control areas, for random cargo and vehicle checks, at road BCPs open for international goods traffic.	No off-lane control areas available, inspections take place in the waiting line: 0 points	0 points	There are no off-lane control areas and they will not be easy to implement because of lack of physical infrastructure. Nevertheless, the customs office is implementing a programme called Authorized Economic Operator which decreases the amount of traffic at BCPs. Note: It is important to highlight that the National Customs Authority does not own the infrastructure that hosts BCPs and is not responsible for its construction or maintenance. Regarding off-lane control, customs dependencies have a designated place for physical inspection of cargo. Regarding inland clearance stations, these stations mainly serve to carry out documentary checks. Whenever there is a substantiated doubt concerning a particular cargo, inspection is carried out in the nearest customs office, or a place designated by customs or judicial authorities.	National Customs Authority (DNA) https://www.aduana.gov.py/6923-28-Operador%20Económico%20Autorizado.html

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-1.2c: BCP infrastructure (parking and terminal facilities)	Availability of appropriate parking and terminal facilities at road BCPs open for international goods traffic.	Paid basic parking facilities are available: 4 points	4 points	Paid parking facilities are available. The customs office is not always in charge of providing or charging for parking facilities. In some cases, this service is provided by private or public ports. A study on import processes in Paraguay was published in 2019. According to this study, provision parking is one of the factors that increases the cost of goods transport in the country. Note: In Paraguay, the National Customs Authority is not in charge of providing or charging for parking because the institution is not legally authorized to collect that type of fee. The private company or public institution in charge of managing BCP infrastructure is the one entitled to provide or charge for parking.	Assessment of road and inland waterways import processes in Paraguay (2019) https://www.uip.org.py/wp-content/uploads/2020/06/DIAGNOSTICO-IMPORTPY-UIP.pdf
1-EC-1.3: Inland clearance and control procedures for import	The extent to which control procedures for import are undertaken at inland clearance stations away from the border so as to alleviate congestion and efficient movements at the BCPs. The control procedures are involving medico-sanitary inspection, veterinary inspection, phytosanitary inspection, controls of compliance with technical standards, quality controls, vehicle inspections, and weighing of vehicles. The adoption of customs risk management system will get additional points as risk management procedures expedite the clearance of goods.	<4 control procedures take place at inland clearance stations: 4 points Application of customs risk management system: + 2 points	6 points	Weighting of vehicles takes place in inland stations. In addition, the Authorized Economic Operator (AEO) Programme uses a risk management tool which allows for the expeditious movement of goods imported or exported by companies that get the AEO certificate. Inland clearance stations mainly serve to carry out documentary control. (Note: 2 extra points were given because the country uses a risk management system)	National Customs Authority (DNA)
1-EC-1.4: Availability of fast lanes for trucks carrying live animals and perishable foodstuffs	Availability of fast lanes/fast track treatment for trucks carrying live animals and perishable foodstuffs. As set out by the Harmonization Convention, priority should be given to live animals and perishable goods in order to minimize waiting times at BCPs.	No fast lane available at BCPs: 0 points	0 points	No fast lane available. The customs office plans to implement an expeditious process for companies that get an Authorized Economic Operator (AEO) certificate. Note: The National Customs Authority (DNA) is not in charge of BCP infrastructure. Nevertheless, DNA can request the construction of certain facilities to private companies or public institutions in charge of BCP infrastructure.	National Customs Authority (DNA)

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-1.5a: Coordination and delegation of controls among national border agencies	The extent to which national border agencies (such as Health and Safety Authorities, Treasury, and Food and Drug Administration) delegate their control activities to other border agencies such as Customs authorities, in accordance with a cooperation agreement or MoU. By implementing a delegation mechanism, duplication and overlapping activities, and conflicting instructions and requirements can be reduced.	No coordination and delegation mechanism in place, as such all-government agencies act independently: 0 point	0 points	Government agencies act independently, they do not delegate their control activities to other border agencies. Note: National laws do not allow agencies to delegate their control activities.	National Customs Authority (DNA)
1-EC-1.5b: Coordination and delegation of controls between agencies of neighboring countries	The extent to which border agencies from both sides of the BCP coordinate with each other or delegate the control procedures to each other at a designated single common border post/station, in accordance with a bilateral agreement or MoU). Implementing such a coordination and delegation mechanism will increase the border crossing efficiency.	A coordination and delegation mechanism are in place, where border agencies from both sides of the BCP in specific cases (e.g., during off-peak hours and at night) act/perform controls jointly or on each other's behalf: 6 points	6 points	Integrated Control Areas were set up to perform controls jointly. Nevertheless, this is not the case in all BCPS. More coordination is needed in BCPs that do not have Integrated Control Areas.	Provision 20/09. Administrative regulation of Joint Control Areas (abrogation of provision GMC Nº 03/95) http://www.sice.oas.org/trade/mrcsrs/resolutions/Res2009_s.pdf
1-EC-1.5c: Exchange of data and information among national border agencies	Degree of implementation of data and information exchange (including for risk management purposes) among national border agencies, so as to increase time efficiency and provide accurate information for statistical purposes.	Data and information (including for risk management purposes) are shared among different national border agencies at all times, through the use of shared electronic databases and platforms and if applicable through face-to-face consultations: 10 points	10 points	Data and information are shared at all times when the information pertains to activities related to customs. There is a shared electronic database for exports and another one for imports. One-stop business service for export or inter-agency e-single window (VUE) and one-stop business service or inter-agency e-single window for import (VUI)	VUE's website: http://www.vue.org.py VUI's website: https://www.aduana.gov.py/125-6-ventanilla-unica-del-importador--vui-.html

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-1.5d: Exchange of data and information with foreign border agencies	Degree of implementation of data and information exchange (including for risk management purposes) with foreign border agencies, so as to increase time efficiency and provide accurate information for statistical purposes.	Data and information (including for risk management purposes) are mutually accepted among different border agencies at the international level, through the use of shared electronic databases and platforms and if applicable through face-to-face consultations: 10 points	10 points	A system called INDIRA (Custom Records Information Sharing System) is in place. MERCOSUR's provision from 2008 (MERCOSUR/CMC/DEC. No 01/08) establishes technical characteristics for INDIRA. Since then, the interface has been improved. In 2019, the Paraguayan customs office approved the use of the latest interface (provision 252/19).	https://www.unece.org/fileadmin/DAM/trans/doc/themes/UNDAC2C/Geneva2016/Oquendo210616s.pdf. MERCOSUR/CMC/DEC. No 01/08 http://www.sice.oas.org/Trade/MRCSRS/Decisions/dec0108s.pdf Provision 252/19 https://www.aduana.gov.py/uploads/archivos/Resoluci__n%20DNA%20N__%20252.19.pdf
1-EC-1.6: Traffic separation for vehicles under cover of valid international customs transit documents	Degree of implementation of traffic separation in order to give priority to vehicles under cover of valid international/regional/sub-regional customs transit documents, such as TIR and temporary importation carnets, so as to decrease truck waiting times at BCPs.	No separation of traffic: 0 point	0 points	There is no separation of traffic.	National Customs Authority (DNA)
1-EC-2: Time required at borders			**Points**		
1-EC-2.1a: Average border clearance time for transit TIR trucks (with physical inspection)	The average border clearance time (in minutes) needed by a transit TIR-truck, when physical inspections are involved. It is calculated by summing the clearance time of all inspected transit TIR-trucks divided by the number of inspected transit TIR-trucks. Time taken into consideration is the time from entering the border post in one territory to leaving it in the other country. The survey should capture the clearance time by time of day (peak and off-peak) and day of week.	Not applicable. This is a verification indicator.	N/A	Paraguay does not use the Transports Internationaux Routiers (TIR) to regulate road cargo. Paraguay adopted the Agreement on International Land Transport (ATIT), which links it with almost all the countries of South America. Furthermore, Paraguay is part of the Southern Common Market, MERCOSUR, which is an Integrated Treaty, between Argentina, Brazil, Paraguay, Uruguay. MERCOSUR'S Sub Working Group No. 5, MERCOSUR's Transport, works on the negotiation and adoption of common technical standards to be applied between the states. If Paraguay wishes to incorporate TIR to its current framework it could follow the steps of Argentina since Argentina adopted TIR in 2018 and in addition is also a part of ATIT and MERCOSUR.	Agreement on International Land Transport (ATIT): http://www.dinatran.gov.py/tp_presentacargaInter.html Transports Internationaux Routiers (TIR) agreement in Argentina: http://servicios.infoleg.gob.ar/infolegInternet/anexos/310000-314999/312723/norma.htm

1-EC-2: Time required at borders			Points		
1-EC-2.1b: Average border clearance time for transit TIR trucks (without physical inspection)	The average border clearance time (in minutes) needed by a transit TIR-truck, when no physical inspections are involved. It is calculated by summing the clearance time of all surveyed transit TIR-trucks divided by the number of surveyed transit TIR-trucks. Time taken into consideration is the time from entering the border post in one territory to leaving it in the other country. The survey should capture the clearance time by time of day (peak and off-peak) and day of week.	Not applicable. This is a verification indicator.	N/A	Paraguay does not use the Transports Internationaux Routiers (TIR) to regulate road cargo. Paraguay adopted the Agreement on International Land Transport (ATIT), which links it with almost all the countries of South America. Furthermore, Paraguay is part of the Southern Common Market, MERCOSUR, which is an Integrated Treaty, between Argentina, Brazil, Paraguay, Uruguay, MERCOSUR'S Sub Working Group No. 5, MERCOSUR's Transport, works on the negotiation and adoption of common technical standards to be applied between the states. If Paraguay wishes to incorporate TIR to its current framework it could follow the steps of Argentina since Argentina adopted TIR in 2018 and in addition is also a part of ATIT and MERCOSUR.	Agreement on International Land Transport (ATIT): http://www.dinatran.gov.py/tp_presentacargaInter.html Transports Internationaux Routiers (TIR) agreement in Argentina: http://servicios.infoleg.gob.ar/infolegInternet/anexos/310000-314999/312723/norma.htm
1-EC-2.2a: Average border clearance time for non-TIR transit trucks (with physical inspection)	The average border clearance time (in minutes) needed by a transit non-TIR truck, when physical inspections are involved. It is calculated by summing the clearance time of all inspected non-TIR transit trucks divided by the number of inspected non-TIR transit trucks. Time taken into consideration is the time from entering the border post in one territory to leaving it in the other country. The survey should capture the clearance time by time of day (peak and off-peak) and day of week.	Not applicable. This is a verification indicator.	No data available.	No data available.	
1-EC-2.2b: Average border clearance time for non-TIR transit trucks (without physical inspection)	The average border clearance time (in minutes) needed by a non-TIR transit truck, when no physical inspections are involved. It is calculated by summing the clearance time of all surveyed non-TIR transit trucks divided by the number of inspected non-TIR transit trucks. Time taken into consideration is the time from entering the border post in one territory to leaving it in the other country. The survey should capture the clearance time by time of day (peak and off-peak) and day of week.	Not applicable. This is a verification indicator.	No data available.	No data available.	

1-EC-2: Time required at borders			Points		
1-EC-2.3: Average queuing time	The average queuing time (in minutes) for trucks at customs point of entry. Time taken into consideration starts when a truck joins the queue and ends when the truck reaches the customs booth. Average time is calculated by summing the queuing time of all surveyed trucks divided by the number of surveyed trucks. The survey should capture queuing time by time of day (peak and off-peak) and day of week.	Not applicable. This is a verification indicator.	No data available.	No data available.	
1-EC-3: Cost			**Points**		
1-EC-3.1a: Average customs clearance cost (exports)	The average customs clearance cost for exports. It concerns costs associated with compliance with customs regulations and border crossing procedures in the country relative to the average cost in the region. The involved costs are cost of carnets, loading/unloading of shipment at BCPs, and inspection charges. Region can be defined as a group of countries that are engaged in economic cooperation that might cover sub-region and the adjoining countries of the sub-region.	Cost is less than 50% higher than the regional average: 2 points	2	No statistics to calculate clearance cost per TEU but drawing from World Bank's Doing Business Report 2019, it can be stated that the cost of exports in Paraguay is slightly higher than the regional average.	https://www.doingbusiness.org
1-EC-3.1b: Average customs clearance cost (imports)	The average customs clearance cost for imports. It concerns costs associated with compliance with customs regulations and border crossing procedures in the country relative to the average cost in the region. The involved costs are cost of carnets, loading/unloading of shipment at BCPs, and inspection charges.	Cost is less than 50% lower than the regional average: 7 points	7	No statistics to calculate clearance cost per TEU but drawing from World Bank's Doing Business Report 2019, it can be stated that the cost of imports in Paraguay is lower than the regional average.	https://www.doingbusiness.org
1-EC-3.1c: Average customs clearance cost (transit)	The average customs clearance costs for transit cargo. It concerns cost associated with compliance with customs regulations and border crossing procedures in the country relative to the average cost in the region. The involved costs are cost of carnets, loading/unloading of shipment at BCPs, and inspection charges.	Cost is less than 50% lower than the regional average: 7 points	7	No statistics to calculate clearance cost per TEU but it can be stated that the cost of imports in Paraguay is lower than the regional average because the country has developed temporary import regimes that allow transit cargo to enter free of charge.	https://www.aduana.gov.py/60-6-Requisitos%20Admisión%20Temporaria%20.html

1-EC-3: Cost			Points		
1-EC-3.2: Average Road freight rate	Average road freight rate is defined as the average trucking fee per ton km applied in the country, relative to the average rate in the region.	Rate is less than 50% lower than the regional average: 7 points	7	Average road freight varies depending on distance and type of product. In Paraguay, cost can be as low as 1 USD cent or 5,7 USD cents per ton/km. Because of the pandemic prices went down to 2,8 USD cents. In Argentina costs range from 3,9 USD cents to 6,9 per ton/km (In 2017, 11 cents per ton/km. Price change could be the result of strong currency depreciation over the last few years). In 2017, road freight per ton/km was 6,1 USD cents[11].	1.https://www.lanacion.com.py/negocios/2020/10/10/pese-a-reactivacion-sector-camionero-lamenta-bajo-precio-de-flete/ 2.https://www.ultimahora.com/camioneros-y-sector-empresario-acuerdan-precios-del-flete-n2790994.html 3.https://bcr.com.ar/es/mercados/investigacion-y-desarrollo/informativo-semanal/noticias-informativo-semanal/fletes-para 4.https://www.infobae.com/economia/2017/07/22/costo-argentino-el-transporte-de-granos-es-70-mas-caro-que-en-brasil-y-eeuu/
1-EC-3.3: Visa requirements for professional drivers	The extent to which the country requires a visa for foreign professional drivers who wish to enter the country.	No visa required for nationals from the region: 10 points	10	Paraguay has signed many bilateral agreements to remove visa requirements. Therefore, no visa is required for nationals from the region.	https://www.mre.gov.py/index.php/tramites/visas/acuerdos-de-supresion-de-visas
1-EC-3.4: Cost for foreign drivers	Average cost for foreign drivers wishing to enter the country, if allowed. The cost involved is the cost per entry, defined as the cost associated with visa, fees, insurance, and a temporary driving license and temporary taxes for vehicle registration, if applicable.	<$50: 10 points	10	Visas are not required. The immigration office only requires a valid ID and the international cargo manifest (MIC).	Immigration Office

[11] Currency conversion was calculated according to average exchange rates in November 2020. Access source links to see a breakdown of prices in national currency.

1-EC-5: Operations			Points		
1-EC-5.1: Access rights for transport operators from adjoining countries	The extent to which access is given to foreign transport operators to enter the country in terms of issuance of permit and quota restriction.	Access without quota and without designated routes	10 points	Foreign transport companies do not have restrictions other than documentary compliance. In total there are 327 registered foreign transport operators (The largest number of operations come from Brazil, followed by Argentina, Bolivia, Chile, Uruguay and Peru)	National Transport Authority (DINATRAN)
1-EC-5.2: Admission requirements for means of transport	Admission requirements for means of transport, incl. vehicles and containers, based on the UN Temporary Importation Conventions, Container Convention, TIR Convention and the WCO Istanbul Convention.	Application of regional regime equivalent to the applicable international conventions: 8 points	8 points	There are several temporary importation mechanisms available in the country. Some established by MERCOSUR (MERCOSUL/CMC/DEC. No 27/10) and some others established to benefit the industries that re-export products or that import inputs for production that will be exported.	MERCOSUL/CMC/DEC. No 27/10 https://www.aduana.gov.py/uploads/archivos/DEC_027-2010_ES_CAN.pdf https://www.aduana.gov.py/3123-4-circuitos-de-regimenes.html
1-EC-5.3: Driving permit recognition	Degree of recognition of driving permit based on the UN Conventions on Road Traffic and Harmonization Convention.	Bilateral arrangement with additional documents: 6 points	6 points	At the moment, the country works under a regime of bilateral recognition of licenses. The National Agency for Road Safety is currently working to recognize and harmonize UN conventions of traffic such as the UN Convention on Road Traffic and Harmonization Convention and the UN Convention on Road Signs and Signals (1968).	National Agency for Road Safety (ANTSV) https://www.ip.gov.py/ip/en-seminario-abordaran-convenciones-de-transito/ http://www.opaci.org.py/index.php?option=com_content&task=view&id=139&Itemid=62
1-EC-5.4: Vehicle insurance recognition	Degree of recognition of vehicle insurance for foreign vehicles.	Global or regional (Green Card or equivalent): 10 points	10 points	Regional recognition of vehicle insurance for foreign vehicles (green card). These provisions were established in Mercosur's resolution: MERCOSUR/GMC/RES Nº 120/94.	MERCOSUR/GMC/RES Nº 120/94 http://www.cartillaciudadania.mercosur.int/oldAssets/uploads/RES_120-1994_ES_SeguroRespCivilProp.pdf

1-EC-5: Operations			Points		
1-EC-5.5: Contract of carriage requirements	Level of harmonization of the contract of carriage requirements as per internationally and/or regionally agreed arrangements.	Regionally or subregionally harmonized: 8 points	8 points	Paraguay is not a contracting party of the Convention on the Contract for the International Carriage of Goods by Road (CMR). Paraguay signed the International Terrestrial Commercial Law in Montevideo in 1940 and ratified it in 1955 through law 266. In addition, the country signed the Inter-American Convention on Contracts for the International Carriage of Goods by Road. Furthermore, Paraguay adopted the Agreement on International Land Transport (ATIT), a regional agreement signed by Argentina, Bolivia, Brazil, Chile, Paraguay, Perú and Uruguay. At a regional level countries use an instrument called (MIC/DTA) which is equivalent to the International Consignment Note used in the countries under CMR.	International Terrestrial Commercial Law (Tratado de Derecho Terrestre Internacional) 1.https://paraguay.justia.com/nacionales/leyes/ley-266-jul-19-1955/gdoc/ 2.http://www.oas.org/juridico/spanish/firmas/f-16.html Inter-American Convention on Contracts for the International Carriage of Goods by Road (Convención Inter-Americana sobre Contrato de Transporte Internacional por Carretera) Paraguay's legal framework concerning Contract Law 1.https://www.pj.gov.py/ebook/monografias/nacional/civil/Fernando-Peroni-Marco-Normativo-Derecho-Contractual-en-Py.pdf 2.http://www.oas.org/juridico/english/treaties/b-55.html 3.http://www.oas.org/juridico/spanish/firmas/b-55.html
1-EC-5.6: Weight and vehicle dimension requirements	Degree of harmonization of the weight and vehicle dimension requirements with the internationally and/or regionally agreed standards, so as to avoid repetitive vehicle weighing procedures at BCPs.	Adhere to the regional standards: 8 points	8 points	Rules regarding weight and vehicle dimensions adhere to regional standards and in addition there are bilateral agreements in place. Provision 1762/98 issued by DINATRAN harmonizes national rules with MERCOSUR rules. Vehicles certify their weight using a technical inspection certificate which is harmonized and recognized among MERCOSUR countries. Furthermore, considering that the last provision on technical inspection was drafted in 1997 the MERCOSUR sub-working group no. 5 in charge of transport is currently working towards revising and updating the document.	Provision 75/97 Mercosur on Technical inspection https://www.mercosur.int/documento/inspeccion-tecnica-vehicular-res-75-97/ Provision 1762/98 DINATRAN on vehicle dimensions. http://www.dinatran.gov.py/docum/dimensiones.pdf

1-EC-7: ICT and Intelligent Transport System Solutions			Points		
1-EC-7.1: Implementation of interconnected e-solutions	Degree of implementation of interconnected e-solutions for customs and border procedures i.e., eTIR, eCMR, and e-Single Window system.	eTIR and or eCMR or equivalents and inter-agency e-Single Window are implemented: 10 points	10 points	An inter-agency e-single window is used for customs procedures. The single window for exports is called VUE and the one for imports is called VUI. 100% of air cargo uses electronic cargo information for pre-clearance. Through Provision 139/2019, electronic cargo information for Inland Waterways (TEMAFLU) was implemented. The customs office is currently implementing electronic cargo information for road cargo. In addition, the customs office manages other systems. For instance, Sofia Query Facilities (SQF) is used to check the cargo manifest (goods details and consignor/consignee/carrier information for clearance in cross-border trade), manage payments, and to get additional information in different situations.	https://www.aduana.gov.py/110-4-Sistemas.html https://www.aduana.gov.py/7573-4-Nuevo%20Sistema%20de%20Gestión%20de%20Garant%C3%ADas.html https://www.unece.org/trans/bcf/etir/welcome.html https://www.unece.org/fileadmin/DAM/cefact/GuidanceMaterials/ExecutiveGuides/eCMR-ExecGuide_Eng.pdf
1-EC-7.2: Application of advance electronic cargo information	Degree of application of advance electronic cargo information for pre-clearance purposes.	Full-fledged advance electronic cargo information system allowing for pre-clearance is applicable for the majority of cargo: 7 points	7 points	Electronic cargo information for Inland Waterways (TEMAFLU) was implemented in 2019 (Provision 139/2019). The customs office is currently implementing electronic cargo information for road cargo[12].	Provision Nº 139/2019 https://www.aduana.gov.py/uploads/archivos/rdna1392019.pdf https://www.aduana.gov.py/7197-8-Exitosa%20Primera%20Transmisión%20Electrónica%20del%20Manifiesto%20Anticipado%20Fluvial%20–%20TEMAFLU.html

[12] It is worth mentioning that 100% of air cargo uses electronic cargo information for pre-clearance.

1-EC-7: ICT and Intelligent Transport System Solutions			Points		
1-EC-7.3: Availability of detection equipment and inspection technologies	Availability of detection equipment, scanning and non-intrusive inspection technologies including scanners for cargo, technology for detection of chemical, biological, radiological and nuclear materials, and e-Seal.	Available at less than 50% of BCPs and inland clearance stations: 4 points	4 points	The customs office has several mobile scanners that move around different BCPs according to priorities and needs. In early October 2020, the customs office published an article indicating that private ports urgently need more scanners to control cargo. The Customs Office is planning to buy ten (10) scanners to cover the busiest control points in the country. The procurement process to acquire two (2) out of ten (10) scanners is already underway. Furthermore, e-seals are mainly used to monitor road cargo according to provisions made by custom's risk management office.	National Customs Authority (DNA) Information concerning e-seals and scanners: https://www.aduana.gov.py/uploads/archivos/anexo1_924_19.pdf https://nanduti.com.py/aduanas-anuncia-ara-compra-de-escaneres/ https://www.aduana.gov.py/7775-8-Urge%20necesidad%20de%20escáneres%20en%20todos%20los%20puertos%20privados.html
1-EC-7.4: Application of intelligent transport systems at BCPs	Degree of application of intelligent transport systems at and around BCPs, such as traffic light management, automatic vehicle registration number recognition, and automatic container recognition.	Not available at any BCPs nor inland clearance stations: 0 point	0 points	Not available at any BCPs. For the application of intelligent transport systems, it would be necessary that the National Agency for Road Safety issues a regulatory decree for the use of technological means in automated road traffic enforcement taking into account art. 146-152 of Law 5016/14. Note: It is important to highlight that these systems will have to be acquired and installed by the public or private institution in charge of BCP infrastructure.	National Customs Authority (DNA) National Agency for Road Safety (ANTSV)
1-EC-7.5: Application of intelligent traffic management systems	Degree of application of intelligent traffic management systems along international roads leading to BCPs. It concerns providing information to approaching trucks on the traffic situation at BCPs, i.e., traffic occupancy, processing and queuing time, and providing early recommendations such as postponing entry to BCPs or deviating to other BCPs.	Systems are not in place: 0 point	0 points	Systems are not in place. For the application of intelligent traffic management systems, it would be necessary that the National Agency for Road Safety issues a regulatory decree for the use of technological means in automated road traffic enforcement taking into account art. 146-152 of Law 5016/14. Note: It is important to highlight that these systems will have to be acquired and installed by the public or private institution in charge of BCP infrastructure (these institutions will have to coordinate their activities with the Ministry of Public Works and Communications and the National Customs Office (DNA)	National Customs Authority (DNA) National Agency for Road Safety (ANTSV)

1-EC-7: ICT and Intelligent Transport System Solutions			Points		
1-EC-7.6: Application of ICT systems	Degree of application of information and communication support systems to the transport system in the country. The systems include: (1) Telecommunication Networks (TLC); (2) Automatic identification systems (Automatic Equipment Identification (AEI)/ Automatic Vehicle Identification (AVI)); (3) Systems for automatically locating vehicles (AVLS); (4) Protocols for the electronic exchange of data (Electronic Data Interchange/EDI); (5) Cartographic databases and information systems providing geographical data (Geographic Information System/GIS); (6) Systems for the collection of traffic data, including Weigh-In-Motion (WIM) and systems for the automatic classification of vehicles; (7) Systems for counting the number of users of a public transport system (Automatic Passenger Counters/APC).	2 systems are in place: 4 points	4 points	1) Not in place 2) A couple of tollbooths use the Automatic Vehicle Identification (AVI) mechanism. 3) Not in place 4) Not in place 5) Available for passenger transport systems. 6) Not in place 7) Transportation cards and e-ticketing will be fully implemented in 2021. Authorities expect the full implementation to start operating the Automatic Passenger Counter platform.	Ministry of Public Works and Communications (MOPC) Vice ministry of Transport
1-EC-7.7: Number of national trucks with track and trace device	Ratio of the number of national trucks equipped with track and trace devices to the total number of national trucks involved in international transport.	10% ≤ ratio < 30%: 2 points	2 points	It is not mandatory to equip national trucks with track and trace devices. Nevertheless, some companies choose to do it. Furthermore, in 2020, DINATRAN started equipping national trucks with Radio-frequency identification (RFID) tags. Over time all national trucks will be equipped with RFID tags.	https://www.ip.gov.py/ip/dinatran-inicia-proceso-para-eliminar-la-presencia-de-fiscalizadores-en-ruta/
1-EC-7.8: Application of fleet management	Degree of application of fleet management systems whereby vehicles can be tracked from a Traffic Control Center using GPS navigation devices together with communication facilities and digital cartography.	Systems are in place: 10 points	10 points	Fleet management systems are in place but at the discretion of companies. The companies that choose to implement these systems manage their traffic control centers.	National companies that provide fleet management services: http://www.tracker.com.py/ https://www.hpti.com.py/j1/index.php/menu/cctv-vehicular/software-gestion-de-flotas https://www.rastrearparaguay.com/ https://www.skycop.com.py/

1-EC-7: ICT and Intelligent Transport System Solutions			Points		
1-EC-7.9: Application of roadside ITS	Degree of application of roadside ITS to increase efficiency and capability to act in terms of time and resource management. The roadside technology includes: (1) Traffic Control Centers (TCC); (2) Traffic information centers; (3) Video monitoring system for traffic; (4) Variable Message Signs (VMS) to distribute information concerning particular events in a timely fashion; (5) Automatic Incident Detection (AID); (6) Radio channels that both provide information to road users and are used for service communication purposes; (7) Roadside equipment for speed enforcement	3-4 systems are in place: 6 points	6 points	1. No 2. No 3. The country's capital has video monitoring systems. 4. The country's capital has variable message signs (VMS). 5. The country's capital has Automatic Incident Detection (AID) 6. No 7. Yes. For the application of intelligent traffic management systems, it would be necessary that the National Agency for Road Safety issues a regulatory decree for the use of technological means in automated road traffic enforcement taking into account articles 146 to 152 of Law 5016/14.	Vice ministry of Transport
1-EC-7.10: Application of pre-trip traffic information systems	Degree of application of pre-trip traffic information systems to make international drivers aware of the traffic situation and travel conditions (so they can assess their travel options) through different types of media.	Through traditional channels such as radio: 6 points	6 points	Drivers use traditional channels such as radio and others.	National Transport Authority (DINATRAN)
1-EC-7.11: Application of Electronic Toll Collection (ETC) systems	Application of Electronic Toll Collection (ETC) technology. The score is given based on the highest ETC technology implemented in the country.	Automatic Number Plate Recognition (ANPR)/ Dedicated Short Range Communications (DSRC)/Radio-Frequency Identification (RFID): 4 points	4 points	In 2020, Automatic number plate Recognition (ANPR) and Radio-frequency identification (RFID) systems were implemented. However, it is likely that the system needs scaling-up since it was recently implemented.	https://www.tapepora.com.py/bin/principal#sec-avances https://www.dromeus.com.py/prg/productos/peaje https://www.lanacion.com.py/pais/2020/07/31/paraguay-tendra-su-primer-sistema-de-telepeaje-desde-agosto/
Road Transport Total	Max score 340 points		191 points		

3-EC-1 Efficiency			Points		
3-EC-1.1: Waiting times at ports	The average waiting times at port, defined by the period from the latest time of acceptance of goods to the departure of vessels and from the arrival of vessels to the beginning of unloading of containers.	2 hours > time > 1 hour: 5 points	5 points	The average waiting time is 1 to 2 hours without booking. Time depends on the type of product. Bulk carriers wait longer because they send a lot of trucks to the port and it is harder to organize the movement of cargo (the time cost of this operation can be 1 or 2 days). On the other hand, oil tankers take 1 to 2 hours.	TERPORT
3-EC-1.2: Waiting times at locks	The average waiting times at locks, defined by the period from the arrival of vessels at the locks area to the time when the vessels are allowed to enter the system.	60 minutes ≤ time < 20 minutes: 5 points	5 points	There are not many locks in the country. Paraguay shares Yacyreta locks with Argentina which uses a booking system to manage the entry of vessels.	https://comip.org.ar/wp-content/uploads/2020/11/Sin-titulo-2.pdf
3-EC-1.3: Nighttime operation	Whether the majority of inland waterways in the country allow for nighttime navigation.	allow for nighttime navigation: 10 points	10 points	Inland waterways allow for night-time navigation but the country needs to invest more in signalling.	https://www.clubdeejecutivos.org.py/revista/hidrovia-paraguay-parana-arteria-de-la-economia-paraguaya
3-EC-2 Cost			**Points**		
3-EC-2.1: Port dues	The average inland port dues applied in the country relative to the average port dues in the region. It concerns a charge levied by the port to all ships entering the port till the time it leaves the port, and generally calculated on the gross registered tonnage of the ship as per the tonnage certificate issued for that ship.	Cost is less than 50% lower than the regional average: 7 points	7 points	On average port costs are less than 50% lower than the regional average.	TERPORT National Authority for Navigation and Ports (ANNP)
3-EC-2.2: Tugboat service cost	The average tugboat service cost applied in inland navigation ports in the country relative to the average tugboat service cost in the region. The costs are normally calculated based on the size of the tugboat in addition to an hourly usage charge.	Cost is less than 50% lower than the regional average: 7 points	7 points	On average port costs are less than 50% lower than the regional average.	National Authority for Navigation and Ports (ANNP)
3-EC-2.3: Tonnage dues	The average tonnage dues applied in inland navigation ports in the country relative to the average tonnage dues in the region. This is a charge paid by the vessel operator to a port for the usage of the port.	Cost is less than 50% lower than the regional average: 7 points	7 points	On average port costs are less than 50% lower than the regional average.	National Authority for Navigation and Ports (ANNP)

1-EC-7: ICT and Intelligent Transport System Solutions			Points		
3-EC-2.4: Cargo dues	The average cargo dues applied in inland navigation ports in the country relative to the average cargo dues in the region. This concerns a fee levied by the port for using the port facilities for movement of the cargo.	Cost is less than 50% lower than the regional average: 7 points	7 points	On average port costs are less than 50% lower than the regional average.	National Authority for Navigation and Ports (ANNP)
3-EC-2.5: Lock service charges	The average lock service charges applied along the inland waterways in the country relative to the average similar charges in the region.	Cost is less than 50% lower than the regional average: 7 points	7 points	On average port costs are less than 50% lower than the regional average.	National Authority for Navigation and Ports (ANNP)
3-EC-4 Operations			**Points**		
3-EC-4.1: Harmonization of boat master's certificates	Level of harmonization of national boat master's certificates as per sub-regionally agreed arrangements.	Only nationally recognized: 2 points	2 points	CINAE (Naval Training Institutes) is in charge of type approval and according to the Naval Prefecture certificates are recognized at a regional level. However, according to the company AcGroup Worldwide, harmonization and recognition of certificates is limited, and further work is needed for type approval and standardization. Therefore, this indicator receives a lower score.	http://www.acgroup.com.py/es/noticia.php?noticia_id=1022 Naval Prefecture
3-EC-4.2: Contract of carriage requirements	Level of harmonization of the contract of carriage requirements as per internationally and/or regionally agreed arrangements.	Regionally harmonized: 8 points	8 points	Regionally harmonized following the rules in the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways. In addition, in 2005 Paraguay approved Law Nº 2614 that ratified the United Nations Convention on the Carriage of Goods by Sea (also known as 1978 Hamburg Rules).	Law 2614/2005 https://www.bacn.gov.py/leyes-paraguayas/4177/ley-n-2614-aprueba-el-convenio-de-las-naciones-unidas-sobre-el-transporte-maritimo-de-mercancias
3-EC-6: ICT and Intelligent Transport System Solutions			**Points**		
3-EC-6.1: Percentage of IWW equipped with RIS	Ratio of the length of inland waterways equipped with River Information Services (RIS) to the total length of the IWW network.	60% ≤ ratio < 80%: 8 points	8 points	The entire Paraguay-Parana IWW network is covered by at least one River Information System technological solution, i.e.: RIS O RIVER INFORMATION SERVICES, RIVER- PRO, SEATTLE, among others. The use of VHF radio is mandatory according to the technical inspection forms issued by the naval prefecture (provision 198/15).	Provision 198/15 http://www.prefecturanaval.mil.py/documentos/Reso198_15.pdf

3-EC-6: ICT and Intelligent Transport System Solutions			Points		
3-EC-6.2: Application of RIS technological solutions	Degree of application of RIS technological solutions in the country, which include (1) VHF radio; (2) Mobile data communication; (3) Global Navigation Satellite Systems (GNSS); (4) Internet; (5) Vessel tracking and tracing system; (6) Ship reporting system.	All 6 systems are in place: 10 points	10 points	All 6 systems are in place but not in the same degree. Vessels in the Paraguay-Paraná Waterways (international cabotage) use River Information Services, VHF radio, Mobile Data Communications (MACRO), Global Navigation Satellite Systems, Internet is used in places where there is coverage (mail, telephone), Vessel tracking and tracing system (SSRS) (JAMAT ENGINEERING).	TERPORT Naval Prefecture
3-EC-6.3: Percentage of IWW covered by Inland ECDIS standard	Ratio of the length of IWW of international importance that are covered by Inland ECDIS (Electronic Chart Display Information System) standard, to the total length of the international IWW in the country.	ratio ≥ 80%: 10 points	10 points	All the vessels in the Paraguay-Paraná Waterways (international cabotage) have Electronic Chart Display Information Systems.	Electro Service TERPORT Naval Prefecture
3-EC-6.4: Percentage of IWW equipped with AIS	Ratio of the length of inland waterways equipped with Automatic Identification System (AIS) to the total length of IWW network.	ratio ≥ 80%: 10 points	10 points	Naval Prefecture Provision 63/17 establishes it is mandatory to use Automatic Identification Systems (AIS). All the vessels in the Paraguay-Paraná Waterways (international cabotage) use AIS.	Naval Prefecture Provision 63/17: http://www.prefecturanaval.mil.py/documentos/Reso63_17.pdf
IWW Transport Total	Max score 136 points		103 points		
Chapter Score	Max score 100 points		59 points		

Source: Self-made

B. Transport infrastructure

This indicator refers to the infrastructure indicator under the Economic pillar that assess the availability and quality of routes leading to a cargo BCP and logistic facilities in the proximity of a BCP. Infrastructure indicators under the social pillar of SITCIN measure the availability, quality, and safety of transport infrastructure in the country.

Table 6
Transport infrastructure Indicators and Findings

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-4: Infrastructure			**Points**		
1-EC-4.1: Percentage of international road network	Ratio of the total length of international roads to the total road network in the country. International roads concern international motorways, international express roads and international ordinary roads as defined by the AGR (UNECE), and international routes of regional, international and intraregional importance as defined by the Asian highway (UNESCAP), ECLAC, and M network (ESCWA).	Ratio ≥ 4%: 10 points	10 points	Paraguay's international road network is composed of 4.082 km of paved roads and 2.849 km of unpaved roads (6.930 km in total) while the length of the country's road network is 78.811 km. Therefore, the percentage of international roads to the total road network is 8,8%.	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)
1-EC-4.2: Length of international road network per class	Ratio of the total length of class 3 international roads to the total international road network in the country. Class 3 is the lowest class of international roads as defined by the AGR. For the Arab states, this concerns the second-class roads of the M network. In other regions, the road classification might be different. This indicator is about the lowest class as per the classification of the international road network followed by the country.	20% ≤ ratio < 40%: 7 points	7 points	Paraguay does not use the road classification mentioned in the ESCWA Agreement on International Roads in the Arab Mashreq. Nevertheless, to answer this question it is assumed that class 3 roads entail unpaved roads or roads with designs speed below 100km/H. Taking this definition into consideration, the percentage of the total length of class 3 international roads to the total international road network in the country is approximately 33,4% or 2.314 km (at the moment the Ministry of Public work is paving 512 km of the international road network. Once the construction contract comes to an end, these roads will have design speeds above 100km/hr)	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-4.3: Harmonization of road classes at BCP	The number of country's BCPs with harmonized road classes within 50 km of a BCP. When the roads on one side of a BCP are for instance class 1 roads, while the roads on the other side of the BCP are class 3 roads, this situation is unharmonized and creates a bottleneck.	Entirely harmonized (100%): 10 points	10 points	All BCPs have harmonized road classes (note that road classes are also considered harmonized if there are class 3 roads on both sides of the BCP)	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)
1-EC-4.4: Harmonization of BCP infrastructure	Level of harmonization of BCP infrastructure between the assessed country and the adjoining country. It concerns the harmonization of the following: (1) number of channels; (2) number of parking lots; (3) number of bays for inspections; (4) height of monitoring gantries. If there is more than one BCP, the average score of all BCPs should be calculated. If there is more than one adjoining country, the average score should also be calculated.	All 4 infrastructure items are harmonized: 10 points	10 points	All 4 infrastructure items are harmonized in Integrated Control Areas. However, this is not the case in all BCPs only in the ones where joint control is performed. **Note**: It is important to note that public or private institutions that own BCP infrastructure are in charge of activities related to construction, maintenance and harmonization of these items.	National Customs Authority (DNA)
1-EC-4.5: Length of international road network with design speeds of at least 100 km/h	Ratio of the total length of international roads with design speeds of at least 100 km/h to the total international road network in the country.	60% ≤ ratio < 80%: 8 points	8 points	At the moment, 4.105 km of roads have design speeds of at least 100 km/h and the Ministry of Public works is currently paving an extra 512 km. In total, 4.617 km or 66% of international roads have design speeds of at least 100 km/h.	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)
1-EC-4.6: Design standard and technical specifications of new international roads	The extent to which the construction of new international roads complies with the internationally and/or regionally agreed standards, in terms of parameters of design and dimensions, number and width of traffic lanes, geometric characteristics and other technical specifications, conditioned by its functions, its location (topography, land use, etc.) and the general technical and economic context.	In accordance with regionally agreed standards: 5 points	5 points	The Ministry of Public Works and Communications (MOPC) defines technical specifications following the rules set in the Highway Manual, which is written by the MOPC. The manual is the main guide for all those involved in road projects in the country, such as authorities in charge of road infrastructures, consultants, builders, academics and professionals in the area of road engineering. The Paraguayan Highway Manual 2019 is available in the following link: https://www.mopc.gov.py/index.php/rutas-py/manuales-viales	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-4.7: Sufficiency of service facilities along international roads	The extent to which the provision of rest and service areas, the number of toll and border crossing control lanes are determined in terms of the volume of traffic anticipated.	Not taking the volume of traffic into account: 0 point	0 points	The provision of rest and service areas does not take the volume of traffic into account. Note: It is important to note that public or private institutions that own BCP infrastructure are in charge of the provision of rest and service areas.	National Customs Authority (DNA)
1-EC-4.8: Provision of tunnel management systems	The extent to which traffic management systems and control center are provided for long tunnels (tunnels with lengths of over 500 meters) and tunnels with heavy traffic (higher than an annual daily average of 2000 vehicles per lane), as set out in AGR or similar agreements applied in the country.	No tunnel management systems in place: 0 point	N/A	The country does not have tunnels with lengths over 500 meters.	N/A
1-EC-4.9: Provision of safety equipment for tunnels	Ratio of the length of long tunnels and tunnels with heavy traffic, equipped with emergency exits and access for emergency services, and tunnel equipment (such as lighting devices and ventilation systems) as per AGR or similar agreements applied in the country, to the total length of long tunnels and tunnels with heavy traffic on the international road network.	Not applicable	N/A	The country does not have long tunnels.	N/A
1-SO-2: Road Traffic Infrastructure			**Points**		
1-SO-2.1: Length of dual carriageway international roads	Ratio of the total length of dual carriageway international roads to the total length of the international roads in the country.	ratio ≥ 10%: 10 points	10 points	The length of the international road network is 6930 km. The length of dual carriageway international roads is 823 km which equals 11,9% of the total international road network. It is worthwhile noting that at the moment 260 km of dual carriageway international roads are already built and 563 km are under construction.	Directorate for Road Planning Ministry of Public Works and Communications (MOPC)
1-SO-2.2: Harmonization of international standards for road signs, signals, and marking	Harmonization of international standards for road signs, signals, and marking into the national legislations (e.g., Traffic Signs Regulations and Manual).	Not harmonized: 4 points	4 points	The National Agency for Road Safety is currently working to ratify and harmonize UN conventions of traffic such as the UN Convention on Road Traffic and Harmonization Convention and the UN Convention on Road Signs and Signals (1968). National rules on road signs, signals and making can be found in the National Highway Code Unit 3 (according to the latest version published in November 2019).	National Agency for Road Safety (ANTSV) Record of meetings: 1.https://www.mopc.gov.py/userfiles/files/Senalizacion%20Vertical.pdf 2.https://www.ip.gov.py/ip/en-seminario-abordaran-convenciones-de-transito/ 3.http://www.opaci.org.py/index.php?option=com_content&task=view&id=139&Itemid=62

Indicator	Definition	Scoring	Score	Answer	Source
1-SO-2.3: IRI rating	The IRI (International Roughness Index) rating for the total length of the international roads.	Fair: 6 points	6 points	There are no International Roughness Index (IRI) studies concerning international roads. Nevertheless, a World Bank document published in 2016 indicates that "in 2011, around 68 percent of the paved network was in good condition (measured through its roughness, International Roughness Index [IRI] < 3). In 2015, this figure had gone down to 59 percent, with an increased share of roads in fair condition up to 33 percent (3 < IRI < 5) and 9 percent that are in poor condition (IRI > 5)". More accurate data can be obtained if the country carries out more IRI studies.	http://documents1.worldbank.org/curated/en/557201468241822800/pdf/PAD1248-PAD-P147278-R2016-0142-1-Box396273B-OUO-9.pdf
1-SO-2.4: Number of secured parking lots for trucks at BCPs	The number of parking lots at secured parking areas (in absolute number) as a percentage of the throughput of trucks in 24 hours.	Not applicable. This is a verification indicator.	No data available. Refer to the answer column.	A study on import processes in Paraguay was published in 2019. According to this study, provision parking is inadequate, and it is one of the factors that increases the cost of goods transport in the country.	Assessment of road and inland waterways import processes in Paraguay (2019) https://www.uip.org.py/wp-content/uploads/2020/06/DIAGNOSTICO-IMPORTPY-UIP.pdf
1-SO-2.5: Number of incidents of cargo theft	The number of cases of reported cargo theft per 100,000 trucks involved in trade (import and export) per year.	Not applicable. This is a verification indicator.	No data available.	N/A	N/A
Road Transport Total	**Max score 120 points**		**20 points**		

3-EC-3 Infrastructure			Points		
3-EC-3.1: Percentage of IWW with international technical parameters	Ratio of the length of IWW of international importance (in Europe these are E waterways) that complies with the internationally/regionally agreed technical and operational parameters, to the total length of the IWW in the country. The target infrastructure parameters are set out in the "Inventory of Main Standards and Parameters of the E Waterway Network".	40% ≤ ratio < 60%: 6 points	6 points	Regionally harmonized following the rules in the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways. More investment is needed (dredging, signalling for night-time navigation, maintenance) to guarantee navigation throughout the year.	National Authority for Navigation and Ports (ANNP) https://www.clubdeejecutivos.org.py/revista/hidrovia-paraguay-parana-arteria-de-la-economia-paraguaya
3-EC-3.2: Cargo handling capacity of inland navigation ports	Ratio of cargo handling capacity of inland navigation ports of international importance (in Europe these are E ports) in the country to the minimum capacity set out in the international agreements. In AGN (the European Agreement on Main Inland Waterways of International Importance), this has been set at 0.5 million tonnes/year. The target parameters of ports are set out in the "Inventory of Main Standards and Parameters of the E Waterway Network".	ratio ≥ 80%: 10 points	10 points	Ports of international importance such as Caacupemi can handle 120.000 or more containers per year.	https://portalportuario.cl/puertos-privados-paraguay-esperan-incrementar-10-volumen-transferencia-carga/
3-EC-3.3: Number of destination countries that can be reached by international IWW corridors and coastal routes	The total number of destination countries that can be reached by the international IWW corridors and coastal routes that pass through the country.	Not applicable. This is a verification indicator.	Four countries	Four countries: Argentina, Brazil, Uruguay, Bolivia.	TERPORT
3-EC-3.4: Harmonization of national laws on IWW	Degree of harmonization of the AGN and other relevant international conventions and legal instruments in the national laws on IWW (e.g., Inland Waterway Navigation and Ports Legislation and Maritime Code).	Partially harmonized: 7 points	7 points	National laws on IWW follows Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways which in turn uses the Maritime Code and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)	Merchant Navy Administration (DGMM)
IWW Transport total	**Max score 30 points**		**23 points**		
Chapter Score	**Max score 100 points**		**39 points**		

Source: Self-made.

C. Safety & Security

The Road Traffic Rules/Behaviour indicators aim to measure the effectiveness of the provision of road signs and signals, road traffic rules, driver's driving times enforcement, etc., in reducing the number of road traffic accidents. The Vehicle Regulations indicators measure the effectiveness of harmonized vehicle and packing regulations in increasing traffic safety both mode-specific and intermodal transport operations.

Table7
Safety & Security Indicators and Findings

Indicator	Definition	Scoring	Score	Answer	Source
1-SO-1: Road Traffic Rules/Behavior			**Points**		
1-SO-1.1a: Harmonization of national laws on traffic rules	Degree of harmonization of the UN Convention on Road Signs and Signals (1968) in the national laws covering traffic rules for drivers and specific rules for professional drivers, such as National Highway Code and Road Traffic Regulations.	Not harmonized: 4 points	4 points	National law 5016/14 and its regulatory decree set out traffic rules for drivers and specific rules for professional drivers. The National Agency for Road Safety is currently working to ratify and harmonize UN conventions of traffic such as the UN Convention on Road Traffic and Harmonization Convention and the UN Convention on Road Signs and Signals (1968).	https://www.ip.gov.py/ip/en-seminario-abordaran-convenciones-de-transito/ http://www.opaci.org.py/index.php?option=com_content&task=view&id=139&Itemid=62
1-SO-1.1b: Development of rules on traffic behavior	The existence of rules on traffic behavior concerning position on carriageway, maneuvering, overtaking, passing of traffic, change of directions, behavior at intersections and level-crossings, giving way and use of lamps.	Rules on traffic behavior are in place: 10 points	10 points	Rules on traffic behavior are set in law 5016/14 (article 57 to 67).	https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial
1-SO-1.1c: Effective rules on speed	The existence and effectiveness of rules on speed. The effectiveness of the rules can be assessed by analyzing the number of violations on speed limit (indicator 1-SO-1.1d) in the last five years, where a decreasing trend can represent effective rules.	Rules on speed are in place, but ineffective: 6 points	6 points	Rules on speed are set on Law 5016/14 (article 68 and 69). The highway police are gradually acquiring equipment to enforce these rules. The country lacks equipment to fully monitor violations of speed limits. A study on road behaviour published in 2018 shows that there is a high level of non-compliance related to road safety regulations and speed limits.	https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial https://www.abc.com.py/nacionales/nuevos-radares-para-controlar-excesos-de-velocidad-1782413.html
1-SO-1.1d: Number of violations on speed limit	Ratio of the number of violations of exceeding the speed limit to the total number of recorded traffic violations on the (inter)national roads per year.	Not applicable. This is a verification indicator.	No data available. Refer to the answer column for more information	There are no statistics on the number of violations for exceeding the speed limit or statistics regarding traffic violations on international roads. Nevertheless, a study on road behaviour published in 2018 shows that there is a high level of non-compliance related to road safety regulations and speed limits.	https://www.conacyt.gov.py/sites/default/files/upload_editores/u294/comportamiento-vial-final.pdf

1-SO-1: Road Traffic Rules/Behavior			Points		
1-SO-1.1e: Effective rules on safety equipment	The existence and effectiveness of rules on the compulsory use of safety equipment: (1) safety belts; (2) child restraint systems; and (3) helmets. The effectiveness of the rules can be assessed by analyzing the number of violations on the use of safety equipment (indicator 1-SO-1.1f) in the last five years, where a decreasing trend can represent effective rules.	Rules on all three-safety equipment are in place, but ineffective: 8 points	8 points	The compulsory use of safety equipment is set in law 5016/14 and its regulatory decrees. Use of safety belts (article 112), use of child restraint systems (article 38), use of helmets (article 76). A study on road behaviour published in 2018 shows that there is a high level of non-compliance related to road safety regulations and speed limits.	https://antsv.gov.py/application/files/2515/2215/1014/LEY_DE_TRANSITO_-_DE_BOLSILLO.pdf https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial https://www.abc.com.py/nacionales/nuevos-radares-para-controlar-excesos-de-velocidad-1782413.html
1-SO-1.1f: Number of violations on the use of safety equipment	Ratio of the number of violations on the compulsory use of safety equipment (safety belts, child restraint systems, and helmets), total number of recorded traffic violations on the (inter)national roads per year.	Not applicable. This is a verification indicator.	No data available. Refer to the answer column for more information	There are no statistics on the number of violations on the compulsory use of safety equipment or statistics regarding traffic violations on the international roads. Nevertheless, a study on road behaviour published in 2018 shows that there is a high level of non-compliance related to the use of safety equipment.	https://www.conacyt.gov.py/sites/default/files/upload_editores/u294/comportamiento-vial-final.pdf
1-SO-1.1g: Effective rules on cargo loading and carriage of passengers	The existence and effectiveness of rules to strictly regulate loading of vehicles and carriage of passengers and put in place specific regulations for cargo securing for road transport and for carriage of passengers by buses and coaches. The effectiveness of the rules can be assessed by analyzing the number of violations on cargo loading and carriage of passengers on the (inter)national roads in the last five years, where a decreasing trend can represent effective rules.	Rules are in place, but ineffective: 6 points	6 points	Rules are in place. Law 5016/14 article 84 refers to transport of cargo and security provisions. Provision 830/2018 regulates Local and International Carriage of Passengers. The effectiveness of these rules cannot be assessed because there is no consolidated data concerning the number of violations.	Law 5016/14 Transit Safety: https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial National Transport Authority (DINATRAN) Provision N° 830/2018 which Regulates Local and International Carriage of Passengers: http://www.dinatran.gov.py/docum/resol830del2018.pdf
1-SO-1.1h: Number of vehicles stopped per year	Ratio of the number of cars and trucks that are stopped by the police per year to the total number of vehicles on the (inter)national roads per year.	Not applicable. This is a verification indicator.	No data available. Refer to the answer column for more information	There are no statistics of the number of cars and trucks that are stopped by the police per year or statistics regarding traffic violations on the international roads. Nevertheless, a study on road behaviour published in 2018 shows that there is a high level of non-compliance related to road safety regulations.	https://www.conacyt.gov.py/sites/default/files/upload_editores/u294/comportamiento-vial-final.pdf
1-SO-1.1i: Application of special regulations for motorways and tunnels	The existence of special traffic regulations for motorways and/or tunnels, such as prohibition of standing and parking, prohibition of reversing or making a U-turn, and the obligation to have the lights of the vehicle on in tunnels.	Special regulations are in place: 10 points	10 points	There are no special traffic regulations for tunnels because the country only has two short tunnels (350 metres each). However, special traffic regulations for motorways are set in law 5016/14. prohibition of standing and parking (article 66-h), prohibition of reversing (article 66-g), provisions concerning turns are set in article 61.	Ministry of Public Works and Communications (MOPC) Law 5016/14 Transit Safety: https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial

1-SO-1: Road Traffic Rules/Behavior			Points		
1-SO-1.1j: Effective rules on road users distractions	The existence and effectiveness of rules regarding distraction during driving due to use of infotainment systems, portable electronic devices or mobile phones. The effectiveness of the rules can be assessed by analyzing the number of violations of distracted driving (indicator 1-SO-1.1k) in the last five years, where a decreasing trend can represent effective rules.	Rules are in place, but ineffective: 6 points	6 points	Rules on distracted driving are set in law 5016/14 (article 66) and its regulatory decree. The capital's municipality established special provisions regarding the use of mobile devices and prosecutors have stated that the use of mobile devices is only an administrative offence.	https://www.lanacion.com.py/pais_edicion_impresa/2018/01/07/usar-el-celular-al-manejar-no-esta-penado-por-la-ley/ https://antsv.gov.py/application/files/2515/2215/1014/LEY_DE_TRANSITO_-_DE_BOLSILLO.pdf https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial https://www.abc.com.py/nacionales/nuevos-radares-para-controlar-excesos-de-velocidad-1782413.html
1-SO-1.1k: Number of violations of distracted-driving	Ratio of the number of violations of distracted driving to the total number of recorded traffic violations on the (inter)national roads per year.	Not applicable. This is a verification indicator.	No data available. Refer to the answer column for more information	There are no statistics on the number of violations of distracted driving or statistics regarding traffic violations on international roads. Nevertheless, a study on road behaviour published in 2018 shows that there is a high level of non-compliance related to road safety regulations.	https://www.conacyt.gov.py/sites/default/files/upload_editores/u294/comportamiento-vial-final.pdf
1-SO-1.1l: Adequate regulations on training and examination for drivers	The existence of an adequate system that sets out minimum requirements of curriculum and qualifications of professional driving establishments (Certificate of Professional Competence), requirements for obtaining a driving permit, including contents and procedure of both theoretical and practical exams, and requirements for training and certification for driving instructors and retraining for professional drivers.	Regulations are in place and fully cover the required elements: 10 points	10 points	Rules regarding driving permits are set in law 5016/14 (article 66) and cover the required elements. Nevertheless, the level of enforcement and compliance is not the same in every municipality.	https://antsv.gov.py/application/files/2515/2215/1014/LEY_DE_TRANSITO_-_DE_BOLSILLO.pdf
1-SO-1.2a: Number of vehicles with tachograph	Ratio of the number of commercial vehicles involved in international transport that are equipped with tachograph, to the total number of commercial vehicles involved in international transport in the country per year.	Ratio < 10%: 0 point	0 points	There are no commercial vehicles involved in international transport equipped with tachographs.	National Transport Authority (DINATRAN)

1-SO-1: Road Traffic Rules/Behavior			Points		
1-SO-1.2b: Number of vehicles with operational tachograph	Ratio of the number of vehicles involved in international transport that are equipped with operational tachographs (being used), to the total number of vehicles with tachographs involved in international transport in the country per year. The data might be collected from a survey by logging the number of trucks with operational tachographs at BCPs (in fact, the BCP police may enforce technical standards upon entry) or country's statistics on roadside inspection on driving and resting time rules	Ratio < 10%: 0 point	0 points	There are no commercial vehicles involved in international transport with operational tachographs.	National Transport Authority (DINATRAN)
1-SO-1.3: Development of regulations on cargo securing	The existence and effectiveness of regulations on cargo securing that include the standards of safety of loads on vehicles, truck loading code, etc.	Regulations are in place: 10 points	10 points	Law 5016/14 article 84 sets rules on cargo securing. For instance, it mentions placing standardized containers in adapted vehicles with fastening devices that meet regulatory safety conditions. It also mentions the use of proper signalling with retro-reflective elements.	https://www.bacn.gov.py/leyes-paraguayas/4418/ley-n-5016-nacional-de-transito-y-seguridad-vial
1-SO-1.4: Number of crashes due to violating the traffic rules	Number of crashes involving international traffic, due to violating the traffic rules per year.	Not applicable. This is a verification indicator.	No data available.	N/A	N/A
1-SO-1.5: Application of National Road Safety System	The extent to which a National Road Safety System (NRSS) is developed based on the UNRSTF Global Framework Plan of Action for Road Safety (GFPARS), which comprises 5 pillars: (1) Road safety management; (2) Safe user; (3) Safe vehicle; (4) Safe Road; (5) Effective post-crash response.	No NRSS in place: 0 point	0 points	There is no National Road Safety System in place. The country developed a Road Safety National Plan which was in place until 2018 and took into account all 5 pillars from the UNRSTF Global Framework plan of Action for Road Safety (https://www.who.int/roadsafety/decade_of_action/plan/es/). The Ministry of Public Works and Communications and the National Agency for Road Safety are currently working on a new plan.	National Agency for Road Safety (ANTSV) Link to the old Road Safety National Plan: https://www.antsv.gov.py/application/files/3215/3746/6750/Plan_Nacional_Seguridad_Vial_2013_-_2018_compress.pdf

1-SO-1: Road Traffic Rules/Behavior			Points		
1-SO-1.6: Application of Post-Crash Response	The extent to which Post-Crash Response standards and procedures are developed based on the UNRSTF Global Framework Plan of Action for Road Safety (GFPARS), which comprises eight actions. 1) Introduce legal requirement for anyone to perform first-aid activities within his/her capacity, 2) Introduce standards for post-crash professional emergency response, 3) Introduce framework for rehabilitation programmes, 4) Establish a link between liability insurance and financing of care for crash victims, and rehabilitation programmes 5) Enable multi-disciplinary crash rescue operation and investigation, 6) Introduce a clear framework for crash investigation and data collection, 7) Designate authorities responsible for implementation including enforcement of the existing standards as well as for their further development, as necessary, 8) Assess effectiveness and completeness of standards (completeness of standards benchmarked against international regulatory framework)	No NRSS in place: 0 point	0 points	There is no National Road Safety System in place. The country developed a Road Safety National Plan which was in place until 2018 and partially addressed the GFPARS' post-crash response but did not cover all its 8 actions. The Ministry of Public Works and Communications and the National Agency for Road Safety are currently working on a new plan.	Link to the Road Safety National Plan: https://www.antsv.gov.py/application/files/3215/3746/6750/Plan_Nacional_Seguridad_Vial_2013_-_2018_compress.pdf
1-SO-3: Vehicle Regulations			**Points**		
1-SO-3.1: Harmonization of vehicle regulations	Number of national vehicle regulations applied for new vehicles, which are developed in harmony with international agreements such as the UN agreements on vehicle regulations.	number < 40: 2 points	2 points	National rules regarding this type of provisions are developed based on regional agreement, namely MERCOSUR provision 75/97 on technical inspection. The MERCOSUR sub-working group no. 5 (in charge of transport) drafts these rules taking into account international agreements. As a result, a number of rules match those of UN agreements. It is worthwhile noting that the last provision on technical inspection was drafted in 1997. Therefore, the MERCOSUR sub-working group no. 5 is currently revising and updating the document (For instance, the original documents does not indicate if new vehicles have to go under technical inspection)	National Transport Authority (DINATRAN)

1-SO-3: Vehicle Regulations			Points		
1-SO-3.2: Application of periodic technical inspections	Degree of application of periodic technical inspections (PTIs) of vehicles.	PTIs are enforced and applied with an increasing frequency to ageing vehicles: 8 points Recognition of international inspection certificate additional 1 point	9 points	Law 3850/2009 creates the National System for Periodic Technical Inspection of vehicles. The law also establishes its enforceability by enacting some measures, for instance PTI is a prerequisite to renew vehicle licenses. The Decree 6139/2011 published by the Ministry of Public Works regulates the implementation of PTIs. Article 9 of decree 6139/2011 determines that PTIs are enforced and applied with an increasing frequency to ageing vehicles. In addition, Article 7(3) decree 6139/2011 provides that vehicles which have foreign plates are exempted if they present a PTI from their country of origin.	Law 3850/2009: https://www.bacn.gov.py/leyes-paraguayas/2585/crea-el-sistema-nacional-de-inspeccion-tecnica-vehicular-y-establece-la-obligatoriedad-de-la-realizacion-de-la-inspeccion-tecnica-como-requisito-previo-para-la-obtencion-o-renovacion-de-la-patente-municipal-de-rodados-en-todo-el-territorio-nacional Link to decree 6139/2011: https://www.conacyt.gov.py/sites/default/files/decreto_6139.pdf https://www.asuncion.gov.py/transito/vehiculos-mas-5-anos-antiguedad-deben-realizar-la-inspeccion-tecnica-vehicular-anualmente
1-SO-3.3: Vehicle registration documentation	Degree of recognition of vehicle registration documentation applied in the country.	Use of internationally recognized registration certificate: 10 points	10 points	International vehicle registration documents are recognized in the country.	MERCOSUR/GMC/RES Nº 120/94 http://www.cartillaciudadania.mercosur.int/oldAssets/uploads/RES_120-1994_ES_SeguroRespCivilProp.pdf
1-SO-3.4: Number of accidents due to technical failure	The number of accidents, where the primary cause is technical failure, per km driven.	Not applicable. This is a verification indicator.	55 out of 1316 accidents were caused by technical failure in 2019	The highway police annual reports indicate that in 2016 2.6% (55 out of 2085) of accidents were caused by technical failure. In 2017, 2.8% (56 out of 1933) of accidents were caused by technical failure. In 2018, 2.8% (44 out of 1528) and in 2019, 3.7% in (55 out of 1316). The number of accidents is not calculated per km driven but rather as a percentage of total accidents.	http://www.caminera.gov.py/application/files/7415/5112/2954/Accidentes_por_posibles_causas.pdf http://www.caminera.gov.py/application/files/4415/5172/3464/ACCID._POR__POSIBLES_CAUSAS__2017.pdf http://www.caminera.gov.py/application/files/3215/5148/6916/ACCID._POR__POSIBLES_CAUSAS__2018.pdf
1-SO-3.5: Number of accredited technical inspection centers	The number of accredited technical inspection centers per million vehicles.	Not applicable. This is a verification indicator.	There are 8.3 technical inspection centers per million vehicles.	There are 21 accredited technical inspection centers for 2.502.700 vehicles which means there are 8.3 technical inspection centers per million vehicles.	http://www.dinatran.gov.py/citv.html https://www.ultimahora.com/cuantos-vehiculos-matriculados-hay-paraguay-n2908096.html#:~:text=Desde%20la%20Direcci%C3%B3n%20del%20Registro,tractomaquinarias%20(2%2C30%25)
Road Transport Total	**Max score 160 points**		**91 points**		

3-SO-1 Traffic Rules			Points		
3-SO-1.1: Application of internationally harmonized navigation rules	Degree of application of internationally harmonized navigation rules (in Europe, these concern the European Code for Inland Waterways/CEVNI) on the country's international waterways.	Partially harmonized: 7 points	7 points	Navigation rules are governed by the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways which in turn uses the Maritime Code and other international agreements as reference.	Merchant Navy Administration (DGMM)
3-SO-1.2: Navigation-related accidents	Number of navigation-related accidents per year. These concern the accidents that occur due to insufficient navigational infrastructure, such as navigational aids (cardinal marks, lateral marks and buoy etc.) and other signs & markings along waterway routes for both night and day navigation.	Not applicable. This is a verification indicator.	1 or 2 per year	1 or 2 navigation-related accidents per year caused by poor weather conditions.	Naval Prefecture
3-SO-2 Vessels Regulations			**Points**		
3-SO-2.1: Harmonization of registration of inland navigation vessels	Degree of harmonization of internationally/regionally agreed provisions on the registration of inland navigation vessels, in the national laws and legislations.	Globally harmonized: 10 points	10 points	The rules of state registration of ships are set in provision 3154/2019 published by the Merchant Navy Administration which is a division within the Ministry of Public Works and Communications. The preamble of the decree states that the following international agreements were considered: Convention on the International Maritime Organization, International Convention for the Safety of Life at Sea (SOLAS), the International Ship and Port Facility Security (ISPS Code) and the International Safety Management (ISM) Code. In addition, the regional Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways and its security protocols were also taken into account.	Provision 3154/2019 https://www.todoleyes.com/15079d8a06a1a81be41c4eee3b1c5118
3-SO-2.2: Acceptance of harmonized mandatory vessel certificates	Degree of acceptance of harmonized mandatory vessel related certificates (such as vessel certificate vessel and measurement certificate).	Regionally harmonized: 8 points	8 points	Regionally harmonized following the rules in the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways.	Merchant Navy Administration (DGMM)

3-SO-2 Vessels Regulations			Points		
3-SO-2.3: Number of vessels equipped with AIS	Ratio of the number of vessels involved in international transport that are equipped with Automatic Identification System (AIS), to the total number of vessels involved in international transport in the country per year.	ratio ≥ 90%: 10 points	10 points	All vessels are equipped with Automatic Identification Systems (AIS). Naval prefecture Provision 63/17 established it is mandatory to use AIS.	Naval Prefecture Provision 63/17: http://www.prefecturanaval.mil.py/documentos/Reso63_17.pdf
3-SO-2.4: Application of provisions for safety clearance, freeboard and draught marks	Degree of harmonization of internationally/regionally agreed provisions for safety clearance, freeboard and draught marks for inland navigation vessels, in the national laws and legislations.	Regionally harmonized: 8 points	8 points	Regionally harmonized following the rules in the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways.	http://www.prefecturanaval.mil.py/documentos/Regla-8.pdf
3-SO-2.5: Application of provisions for passenger vessels	Degree of harmonization of internationally/regionally agreed provisions for passenger vessels in the national laws and legislations.	Not recognizing international/regional provisions or no national law applied: 0 point	0 points	The provisions available are not harmonized with internationally, regionally or bilaterally agreed provisions.	Merchant Navy Administration (DGMM) National Authority for Navigation and Ports (ANNP)
IWW Transport Total	**Max score 60 points**		**43 points**		
Chapter Score	**Max score 100 points**		**61 points**		

Source: Self-made.

D. Transport of perishable foodstuffs and dangerous goods

This indicator refers to the Perishable Foodstuffs Transport and Dangerous Goods Transport under the Social pillar of SITCIN, to measure the extent to which safety of transporting perishable foodstuffs and dangerous goods is maintained. These indicators aim to promote harmonizing national legislation with the relevant international regulations and rules, and the administrative procedures and documentation requirements and to reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil contamination resulting from transport operations.

Table8
Transport of Perishable Foodstuffs and Dangerous Goods Indicators and Findings

Indicator	Definition	Scoring	Score	Answer	Source
1-SO-4: Perishable Foodstuffs Transport			**Points**		
1-SO-4.1: List of perishable foodstuffs and corresponding transport conditions	Degree of harmonization of internationally/regionally agreed provisions on the list of perishable foodstuffs and corresponding transport conditions, in the national laws and legislations.	In accordance with regionally agreed provisions: 5 points	5 points	There are three different institutions in charge of perishable foodstuff. The National Institute for Food and Nutrition (INAN) which is in charge of the safety and quality of processed foodstuffs. The National Service for Animal Health and Quality (SENACSA) which is in charge of meat products. The National Service for Plant and Seed Quality and Health (SENAVE) which is in charge of the safety of fresh fruits and vegetables (however, fruits and vegetables unless processed are not covered by the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage ATP). SENAVE and INAN have not developed regulations on transport of perishable foodstuffs. Provisions regarding equipment to transport perishable foodstuffs were developed by SENACSA, in part because beef is one of Paraguay's most important export products. The regional bloc MERCOSUR has issued many provisions regarding production and trading of meat products. SENACSA has implemented several of MERCOSUR's guidelines. In addition, the Municipality of Asunción issued municipal ordinances that regulate the transport of perishable foodstuffs, carries out inspections and issues compliance certificates.	http://www.arp.org.py/images/files/COMPILACION%20DE%20LEYES%20RELACIONADOS%20(8).pdf https://www.asuncion.gov.py/wp-content/uploads/2016/04/ORD-2002-27.pdf

Indicator	Definition	Scoring	Score	Answer	Source
1-SO-4.2: Requirements for testing and approval	Degree of harmonization of internationally/regionally agreed provisions on the requirements for testing and approval of the special equipment used for the transport of perishable foodstuffs, in the national laws and legislations. It concerns insulated, refrigerated, mechanically refrigerated or heated equipment as set out in the ATP.	In accordance with regionally agreed provisions: 5 points	5 points	Same as indicator 1-SO-4.1	http://www.arp.org.py/images/files/COMPILACION%20DE%20LEYES%20RELACIONADOS%20(8).pdf https://www.asuncion.gov.py/wp-content/uploads/2016/04/ORD-2002-27.pdf
1-SO-4.3: Requirements for classification of special equipment	Degree of harmonization of internationally/regionally agreed provisions on the requirements for classification of the special equipment used for the transport of perishable foodstuffs, in the national laws and legislations. It concerns distinguishing marks that are affixed to the special equipment as set out in the ATP.	In accordance with regionally agreed provisions: 5 points	5 points	Same as indicator 1-SO-4.1	http://www.arp.org.py/images/files/COMPILACION%20DE%20LEYES%20RELACIONADOS%20(8).pdf https://www.asuncion.gov.py/wp-content/uploads/2016/04/ORD-2002-27.pdf
1-SO-4.4: Harmonization of certificate of compliance	Degree of harmonization of internationally/regionally agreed provisions on the issuance of certificates and certification plates of compliance for the special equipment used for the transport of perishable foodstuffs, in the national laws and legislations.	Issued in accordance with regionally agreed provisions: 5 points	5 points	Same as indicator 1-SO-4.1	http://www.arp.org.py/images/files/COMPILACION%20DE%20LEYES%20RELACIONADOS%20(8).pdf https://www.asuncion.gov.py/wp-content/uploads/2016/04/ORD-2002-27.pdf
1-SO-4.5: Number of checks on trucks transporting perishable foodstuffs	Ratio of the number of roadside checks conducted on trucks transporting perishable foodstuffs to the total number of trucks transporting perishable foodstuffs involved in international transport in the country per year. It concerns checks to verify whether the requirements concerning transport of perishable foodstuffs have been met.	Not applicable. This is a verification indicator.	No data available.	N/A	N/A

1-SO-5.1: General provisions for the transport of dangerous goods by road			Points		
1-SO-5.1a: Classification of dangerous goods for transport	Degree of harmonization of internationally/regionally agreed provisions on the classification of dangerous goods for transport, in the national laws and legislations.	In accordance with internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. The National Transport Authority (DINATRAN) harmonized its regulation with MERCOSUR'S provisions. In turn, MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	Current legal framework regarding dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Resolución CD N° 12/2005 ´´Por la cual se aprueba la vigencia en la republica del Paraguay de las instrucciones para la fiscalización del transporte por carretera de mercancías peligrosas en el MERCOSUR http://www.dinatran.gov.py/docum/resoluciones/res12_05.PDF
1-SO-5.1b: Marking and labeling of packaging	Degree of harmonization of internationally/regionally agreed provisions on marking and labeling of packages of dangerous goods, in the national laws and legislations.	In accordance with internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Chapter VIII of the sectoral agreement deals with marking and labelling of packages of dangerous goods. In turn, MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	Current legal framework regarding dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Provision N° 12/2005 regarding instructions for the inspection of transport of dangerous goods by road: http://www.dinatran.gov.py/docum/resoluciones/res12_05.PDF Training on dangerous goods: http://www.dinatran.gov.py/c_peligrosas/PRESENTACI%C3%93N%20%20B%C3%81SICA%20DEL%20REGLAMENTO%20MERPEL%20-%20INDUCCI%C3%93N.pdf
1-SO-5.1c: Placarding and marking of containers and vehicles	Degree of harmonization of internationally/regionally agreed provisions on placarding and marking in the national laws and legislations. It concerns placarding and marking of all types of containers and vehicles for the transport of dangerous goods.	In accordance with internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Chapter VII of the sectoral agreement deals with placarding and marking of containers and vehicles used for the transport of dangerous goods. In turn, MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	Current legal framework regarding dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Provision N° 12/2005 regarding instructions for the inspection of transport of dangerous goods by road: http://www.dinatran.gov.py/docum/resoluciones/res12_05.PDF Training on dangerous goods: http://www.dinatran.gov.py/c_peligrosas/PRESENTACI%C3%93N%20%20B%C3%81SICA%20DEL%20REGLAMENTO%20MERPEL%20-%20INDUCCI%C3%93N.pdf

1-SO-5.1: General provisions for the transport of dangerous goods by road			Points		
1-SO-5.1d: Dangerous goods transport documentation	Degree of harmonization of internationally/regionally agreed provisions on the required documentation and information, in the national laws and legislations. It concerns documents that accompany the transport of dangerous goods.	In accordance with internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Chapter III of the sectoral agreement deals with documents that should accompany the transport of dangerous goods. In turn, MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	Current legal framework regarding dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Provision N° 12/2005 regarding instructions for the inspection of transport of dangerous goods by road: http://www.dinatran.gov.py/docum/resoluciones/res12_05.PDF
1-SO-5.1e: percentage of transport of dangerous goods	Percentage of traffic classified as transport of dangerous goods on the international road network.	Not applicable. This is a verification indicator.	No data available.	The National Transport Authority (DINATRAN) is currently working on a project to publish data concerning traffic classified as transport of dangerous goods.	National Transport Authority (DINATRAN)

1-SO-5.2: Training of personnel involved in the transport of dangerous goods			Points		
1-SO-5.2a: Training provisions for persons involved in the transport of dangerous goods	Degree of harmonization of international/regional legal instruments and/or recommendations in the training provisions for personnel involved in the transport of dangerous goods in the country. It concerns personnel other than the driver, e.g., vehicle crew, consignor, carrier, consignee, loader, packer, filler, tank-container/portable tank operator, and unloader.	The provision is developed based on international recommendations or related legal modal instruments: 9 points	9 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex I of the sectoral agreement establishes provisions regarding training for persons involved in the transport of dangerous goods. It determines that it is indispensable for drivers to receive a training certificate. National instructions regarding inspection of Transport of Dangerous Goods by Road indicate that it is mandatory for drivers to carry and present an original training certificate (article 3.1.15). Lastly, rules on training for drivers and people involved in the transport of dangerous goods are set in provision 220/04 drafted by the National Transport Authority (DINATRAN). MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	MERCOSUR Agreement and norms on transport of dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Provision 220/04 on training and certification of drivers engaged in transport of dangerous goods: http://www.dinatran.gov.py/docum/resoluciones/resol2200001.pdf http://www.dinatran.gov.py/c peligrosas/curso2020/CURSO%20DINATRAN%202019-LEGISLACION.pdf

1-SO-5.1: General provisions for the transport of dangerous goods by road			Points		
1-SO-5.2b: Harmonization of requirements to appoint safety adviser	Degree of harmonization of international/regional provisions in the national legislations on the requirements for undertakings involved in the transport of dangerous goods related activities (which include the carriage, or the related packing, loading, filling or unloading) to appoint one or more safety adviser responsible for helping to prevent the risks for people, property or the environment inherent to such activities.	The requirements are developed in accordance with internationally agreed recommendations: 10 points	10 points	The South American Trade Bloc Mercosur drafted regional norms on requirements to appoint a safety advisor. The National Transport Agency harmonizes its regulation with MERCOSUR'S provisions. In turn, MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	DINATRAN Common market Council Provision CMC Provision No16/19
1-SO-5.2c: Number of safety adviser training certificates issued	Ratio of the number of safety adviser training certificates issued/renewed per year by a national competent authority or its accredited authorized body to the total number of undertakings involved in the transport of dangerous goods related activities.	Not applicable. This is a verification indicator.	No data available.	N/A	N/A
1-SO-5.2d: Provision of security awareness training	Degree of harmonization of internationally/regionally agreed rules in the provision of security awareness training for persons involved in the transport of dangerous goods. The internationally agreed elements of security awareness training are set out in ADR.	The provision is developed based on internationally agreed rules: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex I of the sectoral agreement establishes provisions regarding training for persons involved in the transport of dangerous goods. It determines that it is indispensable for drivers to receive a training certificate. National instructions regarding inspection of Transport of Dangerous Goods by Road indicate that it is mandatory for drivers to carry and present an original training certificate (article 3.1.15). Lastly, rules on training for drivers and people involved in the transport of dangerous goods are set in provision 220/04 drafted by the National Directorate for Transport (DINATRAN). MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	MERCOSUR Agreement and norms on transport of dangerous goods: http://www.dinatran.gov.py/cp_normativa.html Provision 220/04 on training and certification of drivers engaged in transport of dangerous goods: http://www.dinatran.gov.py/docum/resoluciones/resol2200001.pdf http://www.dinatran.gov.py/c_peligrosas/curso2020/CURSO%20DINATRAN%202019-LEGISLACION.pdf

1-SO-5.3: Checks and other support measures to ensure compliance with safety requirements			Points		
1-SO-5.3a: Harmonization of procedures for approvals of inspection bodies	Degree of harmonization of international/regional provisions in the national legislations on the procedures for approvals of inspection bodies by the competent authority. The inspection bodies carry out conformity assessments, periodic inspections, intermediate inspections, exceptional checks and surveillance of the in-house inspection service (in case of delegation of inspection tasks) for pressure receptacles.	The approval procedures are developed based on regionally agreed provisions: 5 points	5 points	The approval procedures are developed based on regional provisions, namely MERCOSUR provision 75/97 on technical inspections. It is worthwhile noting that the last provision on technical inspection was drafted in 1997. Therefore, the MERCOSUR sub-working group no. 5 (in charge of transport) is currently working towards revising and updating the document. For instance, the original documents do not indicate if new vehicles have to go under technical inspection.	Provision 75/97 Mercosur on Technical inspection: https://www.mercosur.int/documento/inspeccion-tecnica-vehicular-res-75-97/ Law 4856/12 http://www.dinatran.gov.py/docum/leyes/4856_12.pdf
1-SO-5.3b: Revocation of approval of inspection bodies	Revocation or restriction of the approval, given by the competent authority, to inspection bodies that are no longer in compliance with the requirements or do not follow the procedures specified in the provisions of ADR.	Revocation/restriction is based on non-respect of regionally agreed rules: 5 points	5 points	The approval procedures are developed based on regional provisions, namely MERCOSUR provision 75/97 on technical inspections.	National Transport Authority (DINATRAN)
1-SO-5.3c: Availability of information on transport restrictions	Availability of information on transport restrictions applicable to the transport of dangerous goods.	Information is publicly available and accessible for free: 10 points	10 points	Information is publicly available and accessible for free.	http://www.dinatran.gov.py/cp_normativa.html
1-SO-5.3d: Requirements of security plans for transporting high consequence dangerous goods	Degree of harmonization of internationally/regionally agreed rules in the national legislations on the requirements for adopting, implementing, complying with a security plan when transporting high consequence dangerous goods.	The requirements are developed based on internationally agreed rules: 10 points	10 points	The requirements are developed based on regionally agreed rules within MERCOSUR. MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road. The National Transport Authority (DINATRAN) requires the use of emergency and safety data sheets. Mandatory courses for drivers in charge of transport of dangerous goods include techniques to manage emergencies. MERCOSUR sub-working group no. 5 (in charge of transport) is currently working on a new emergency sheet template.	National Transport Authority (DINATRAN) http://www.dinatran.gov.py/c_peligrosas/CARGAS%20PELIGROSAS/11%20MANEJOyTRANSPORTE%20SEGURO--MERPEL.pdf

1-SO-5.1: General provisions for the transport of dangerous goods by road			Points		
1-SO-5.3e: Reporting of occurrences involving dangerous goods	Degree of harmonization of internationally/regionally agreed rules in the national legislations on the procedures for reporting a serious accident or incident takes place during loading, filling, carriage or unloading of dangerous goods. The report shall be made by the loader, filler, carrier or consignee, and developed based on the model prescribed by international/regional agreements.	The procedures are developed based on internationally agreed rules: 10 points	10 points	The requirements are developed based on regionally agreed rules within MERCOSUR. MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road. It includes a calling plan in case of emergencies. Mandatory courses for drivers in charge of transport of dangerous goods cover this topic. MERCOSUR sub-working group no. 5 (in charge of transport) is currently working on a new emergency sheet template.	National Transport Authority (DINATRAN)
1-SO-5.3f: Provisions for vehicles transporting dangerous goods	The extent to which the carriage of dangerous goods is subject to the mandatory use of vehicles required by the international standards for the carriage of dangerous goods as regards their construction, type approval, ADR approval and annual technical inspection.	Mandatory: 10 points	10 points	The situation regarding regulation of the transport of dangerous goods by road is as follows: There is a regulation on International Land Transport within MERCOSUR called 'Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR'. It came into force in 1994. The framework adopted to draft the agreement was defined by the United Nations Committee of Experts on the Transport of Dangerous Goods (publication ST / SG / AC.10 / 1 / Rev.7 - year 1991). In addition, the newest versions of the European Agreement on the Transport of Dangerous Goods by Road (ADR) and the International Regulations on the Transport of Dangerous Goods by Rail (RID) were taken into account. The agreement was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Finally, the Ministry of Public Works and the National Directorate of Transport issued provisions regarding the inspection of Transport of Dangerous Goods by Road. Many requirements are similar to those mentioned in)ADR although not as detailed. Requirements entail provisions for braking system, electric system, security panels, lightning, prevention of fire, among others. Technical inspection is mandatory for all cargo trucks regardless of the type of goods they transport.	National Transport Authority (DINATRAN) MERCOSUR AGREEMENT, DECREE 17.723/91 and provisions regarding the inspection of Transport of Dangerous Goods by Road. Source: http://www.dinatran.gov.py/cp_normativa.html Provision 53/02 regarding technical inspection: http://www.dinatran.gov.py/tp_presentacarganac.html

1-SO-5.1: General provisions for the transport of dangerous goods by road			Points		
1-SO-5.3g: Instructions in writing in the event of emergency	Degree of harmonization of internationally/regionally agreed rules in the national legislations on the provision of instructions in writing, in a language understood by the crew, to be carried on board for actions to be taken in the event of an accident or emergency.	The provision of instructions is developed based on internationally agreed rules: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex I of the sectoral agreement establishes provisions regarding actions to be taken in the event of an accident or emergency. MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	http://www.dinatran.gov.py/c_peligrosas/CARGAS%20PELIGROSAS/2%20ACUERDO%20MERPEL%20-%20Presentaci%C3%B3n%20y%20Contenido%20TEXTO%20DEL%20ACUERDO.pdf
1-SO-5.3h: Requirements for construction, testing and approval of packaging, tank and bulk containers	Degree of harmonization of internationally/regionally agreed provisions in the national legislations on requirements for the construction, testing and approval of packaging (all types), tank and bulk containers for the transport of dangerous goods.	The requirements are developed based on internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex II of the sectoral agreement establishes requirements for the construction, testing and approval of packaging (all types), tank and bulk containers for the transport of dangerous goods. MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road.	http://www.dinatran.gov.py/c_peligrosas/CARGAS%20PELIGROSAS/2%20ACUERDO%20MERPEL%20-%20Presentaci%C3%B3n%20y%20Contenido%20TEXTO%20DEL%20ACUERDO.pdf
1-SO-5.4: Provisions concerning transport equipment and transport operations involving dangerous goods			**Points**		
1-SO-5.4a: Provisions concerning loading, unloading and handling of dangerous goods	Degree of harmonization of internationally/regionally agreed provisions in the national regulatory provisions concerning loading, unloading and handling of dangerous goods.	The national regulatory provisions are developed based on internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex I of the sectoral agreement establishes provisions regarding loading, unloading and handling of dangerous goods. MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road. The National Transport Authority (DINATRAN) issued a Provision (no. 220/04) on training and certification of drivers engaged in transport of dangerous goods which establishes that drivers should receive updated training on these matters every 5 years.	http://www.dinatran.gov.py/documresoluciones/resol2200001.pdf

1-SO-5.4: Provisions concerning transport equipment and transport operations involving dangerous goods			Points		
1-SO-5.4b: Mandatory requirements concerning transport units and equipment on board	Degree of harmonization of internationally/regionally agreed provisions in the national legislations on requirements concerning transport units and equipment on board, e.g., fire-fighting equipment and equipment for personal protection.	The requirements are developed based on internationally agreed provisions: 10 points	10 points	There is a Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR which was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Annex II of the sectoral agreement establishes requirements concerning transport units and equipment on board (e.g., fire-fighting equipment and equipment for personal protection). MERCOSUR develops its rules in accordance with internationally agreed provisions such as the UN Orange Book and the European Agreement concerning the International Carriage of Dangerous Goods by Road. Furthermore, national instructions regarding inspection of Transport of Dangerous Goods by Road includes a list of mandatory safety equipment (article 3.4). Namely, personal protection equipment, fire extinguishers, toolkit for emergency repairs.	http://www.dinatran.gov.py/c_peligrosas/Resol_12_Homologaci%C3%B3n_Mercanc%C3%ADas_%20Peligrosas.pdf
1-SO-6: Dangerous Goods Transport – Infrastructure/Hardware Requirements			**Points**		
1-SO-6.1: Application of tunnel categorization	Degree of harmonization of internationally/regionally agreed rules in the national law on tunnel categorization when applying restrictions to the passage of vehicles carrying dangerous goods through tunnels. According to ADR, there are five tunnel categories that define the degree of restrictions for the carriage of dangerous goods.	Not applicable	N/A	N/A. The country does not have tunnels that are long enough to require safety measures. There are 2 road tunnels in the country; each tunnel has a length of 350 m.	Ministry of Public Works and Communications (MOPC) Vice ministry of Transport
1-SO-6.2: Availability of information on tunnel categorization	Availability of information on tunnel categorization (including road signs and signals), notifications of tunnel prohibitions/restrictions and alternative routes for transport of dangerous goods.	Not applicable	N/A	N/A. The country does not have tunnels that are long enough to require safety measures. There are 2 road tunnels in the country; each tunnel has a length of 350 m.	Ministry of Public Works and Communications (MOPC) Vice ministry of Transport

1-SO-6: Dangerous Goods Transport – Infrastructure/Hardware Requirements			Points		
1-SO-6.3: Requirements concerning the construction and approval of vehicles	Degree of harmonization of internationally/regionally agreed provisions in the national law on the requirements of vehicles for the transport of dangerous goods, as regards their construction, type approval, ADR approval and annual technical inspection.	The vehicles requirements are developed based on regionally agreed provisions: 5 points	5 points	The situation regarding regulation of the transport of dangerous goods by road is as follows: There is a regulation on International Land Transport within MERCOSUR called 'Sectoral Agreement for the facilitation of the Transport of Dangerous Goods in MERCOSUR'. It came into force in 1994. The framework adopted to draft the agreement was defined by the United Nations Committee of Experts on the Transport of Dangerous Goods (publication ST / SG / AC.10 / 1 / Rev.7 - year 1991). In addition, the newest versions of the European Agreement on the Transport of Dangerous Goods by Road (ADR) and the International Regulations on the Transport of Dangerous Goods by Rail (RID) were taken into account. The agreement was harmonized into national legislation through Decree No. 17,723 of July 04, 1997. Finally, the Ministry of Public Works and the National Directorate of Transport issued provisions regarding the inspection of Transport of Dangerous Goods by Road. Many requirements are similar to those mentioned in ADR although not as detailed. Requirements entail provisions for braking systems, electric systems, security panels, lightning, prevention of fire, among others. Technical inspection is mandatory for all cargo trucks regardless of the type of goods they transport.	National Transport Authority (DINATRAN) MERCOSUR agreement, Decree 17.723/91 and provisions regarding the inspection of Transport of Dangerous Goods by Road. Source: http://www.dinatran.gov.py/cp_normativa.html Provision 53/02 regarding technical inspection: http://www.dinatran.gov.py/tp_presentacarganac.html
1-SO-6.4: Harmonization of requirements to be complied with by vehicle crew	Degree of harmonization of internationally/regionally agreed provisions in the national law on the requirements to be complied with by the vehicle crew, such as use of fire-fighting appliances, prohibition of smoking, portable lighting apparatus, running the engine during loading or unloading, and use of the parking brakes and wheel chocks.	The requirements are developed based on regionally agreed provisions: 5 points	5 points	The requirements are developed based on regionally agreed provisions.	National Transport Authority (DINATRAN)
Road Transport Total	**Max score 250 points**		**189 points**		

3-SO-3: Dangerous Goods Transport – Administrative Requirements			Points		
3-SO-3.1a: Provision of function-specific training	Degree of harmonization of internationally/regionally agreed rules in the provision of function-specific training for personnel and crew involved in the transport of dangerous goods. The internationally agreed elements of function-specific training are set out in ADN.	The provision is developed based on internationally agreed rules: 10 points	10 points	The Naval Prefecture follows the MARPOL SOLAS agreement. In addition, Law 6438/19 approves the indefinite period of validity of the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways. The Agreement has a protocol regarding the transport of dangerous goods which is based on International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	https://www.bacn.gov.py/leyes-paraguayas/9224/ley-n-6438-aprueba-el-acuerdo-de-transporte-fluvial-por-la-hidrovia-paraguay-parana-puerto-de-caceres-puerto-de-nueva-palmira-octavo-protocolo-adicional
3-SO-3.1b: Percentage of transport of dangerous goods	Percentage of traffic classified as transport of dangerous goods on the IWW network.	Not applicable. This is a verification indicator.	No data available.	The Intergovernmental Committee for the Parana-Paraguay Waterway is currently setting up a division to consolidate statistics on the volume of goods transported along the Waterway.	Merchant Navy Administration (DGMM) http://hidrovia.org/
3-SO-3.2a: Harmonization of procedures for appointment of inspection bodies	Degree of harmonization of international/regional provisions in the national legislations on the procedures for appointment of inspection bodies. The inspection bodies are expert bodies on the construction and inspection of inland navigation vessels and as expert bodies on the transport of dangerous goods by inland waterway.	The appointment procedures are developed based on internationally agreed provisions: 10 points	10 points	The Naval Prefecture issued Provision PGN Nº 02/15 which is based on the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes. The provision states that issues concerning inspections and issuance of technical certificates are based on Chapter I part B of the SOLAS Convention (Regulation 6 Inspection and survey: The inspection and survey of ships [..] shall be carried out by officers of the State whose flag the ship is entitled to fly, provided that the Government of each State may entrust the inspection and survey either to surveyors nominated for the purpose or to organizations recognized by it. In every case the Government concerned fully guarantees the completeness and efficiency of the inspection and survey.)	Law 2367/04 https://www.bacn.gov.py/leyes-paraguayas/3943/ley-n-2367-aprueba-el-convenio-internacional-para-la-seguridad-de-la-vida-humana-en-el-mar / Provision 02/15 http://www.prefecturanaval.mil.py/documentos/Circular02_15.pdf SOLAS Convention https://www.ifrc.org/docs/idrl/I456EN.pdf
3-SO-3.2b: Provisions for vessels transporting dangerous goods	The extent to which the carriage of dangerous goods is subject to the mandatory use of vessels required by the international standards for the carriage of dangerous goods as regards their construction, type approval, ADN approval and technical inspections.	Mandatory: 10 points	10 points	Law 2367/04 ratifies the International Convention for the Safety of Life at Sea (SOLAS). Drawing from the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes, the Naval Prefecture issued Provision PGN Nº 02/15 in which it establishes the obligation to present a Document of Compliance with special requirements for ships carrying dangerous goods. Dangerous Goods.	Law 2367/04 https://www.bacn.gov.py/leyes-paraguayas/3943/ley-n-2367-aprueba-el-convenio-internacional-para-la-seguridad-de-la-vida-humana-en-el-mar / Provision 02/15 http://www.prefecturanaval.mil.py/documentos/Circular02_15.pdf

3-SO-3: Dangerous Goods Transport – Administrative Requirements			Points		
3-SO-3.3a: Provisions concerning loading, carriage, unloading and handling of dangerous goods	Degree of harmonization of internationally/regionally agreed provisions in the national regulatory provisions concerning loading, carriage, unloading and handling of dangerous goods.	The national regulatory provisions are developed based on internationally agreed provisions: 10 points	10 points	The Naval Prefecture issued Provision PGN Nº 02/15 which covers the requirements concerning loading, carriage, unloading and handling of dangerous goods. This provision is based on the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes. In addition, Law 6438/19 approves the indefinite period of validity of the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways. The Agreement has a protocol regarding the transport of dangerous goods which is based on International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	Law 2367/04 https://www.bacn.gov.py/leyes-paraguayas/3943/ley-n-2367-aprueba-el-convenio-internacional-para-la-seguridad-de-la-vida-humana-en-el-mar / Provision 02/15 http://www.prefecturanaval.mil.py/documentos/Circular02_15.pdf Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways http://www.prefecturanaval.mil.py/documentos/Regla-14.pdf
3-SO-3.3b: Mandatory requirements concerning vessels and equipment	Degree of harmonization of internationally/regionally agreed provisions in the national legislations on requirements concerning vessels and equipment, e.g., fire-extinguishing arrangements and special equipment.	The requirements are developed based on internationally agreed provisions: 10 points	10 points	The Naval Prefecture issued Provision PGN Nº 02/15 in which it establishes the requirements concerning vessels and equipment including fire-extinguishing arrangements and special equipment. This provision is based on the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes.	Provision 02/15 http://www.prefecturanaval.mil.py/documentos/Circular02_15.pdf
3-SO-4.1: Requirements concerning the construction of vessels	Degree of harmonization of internationally/regionally agreed provisions in the national law on the requirements of vessels for the transport of dangerous goods, as regards the rules for construction of dry cargo and tank vessels, and construction applicable to seagoing vessels.	The construction rules are developed based on internationally agreed provisions (ADN): 10 points	10 points	The Naval Prefecture issued Provision PGN Nº 02/15 in which it establishes the requirements concerning requirements of vessels for the transport of dangerous goods. This provision is based on the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes. In addition, Law 6438/19 approves the indefinite period of validity of the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways. The Agreement has a protocol regarding the transport of dangerous goods. which is based on International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	Law 2367/04 https://www.bacn.gov.py/leyes-paraguayas/3943/ley-n-2367-aprueba-el-convenio-internacional-para-la-seguridad-de-la-vida-humana-en-el-mar / Provision 02/15 http://www.prefecturanaval.mil.py/documentos/Circular02_15.pdf Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways http://www.prefecturanaval.mil.py/documentos/Regla-14.pdf

3-SO-3: Dangerous Goods Transport – Administrative Requirements			Points		
3-SO-4.2: Harmonization of requirements to be complied with by vessel crew	Degree of harmonization of internationally/regionally agreed provisions in the national law on the requirements to be complied with by the vessel crew, such as type of portable lamps and prohibition on smoking, fire and naked light.	The requirements are developed based on internationally agreed provisions (ADR): 10 points	10 points	Law 2367/04 ratifies the International Convention for the Safety of Life at Sea (SOLAS) and the Naval Prefecture follows the rules set in this Convention.	Law 2367/04 https://www.bacn.gov.py/leyes-paraguayas/3943/ley-n-2367-aprueba-el-convenio-internacional-para-la-seguridad-de-la-vida-humana-en-el-mar /
IWW Transport Total	**Max score 70 points**		**70 points**		
Chapter Score	**Max score 100 points**		**86 points**		

Source: Self-made.

E. Intermodality

This indicator refers to the intermodality indicator under the Economic Pillar of SITCIN. It measures the modal share of freight transport and share of multimodal/intermodal/combined cargo.

Table 9
Intermodality Indicators and Findings

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-6: Intermodality/Combined Transport			**Points**		
1-EC-6.1: Modal share of freight road transport	Ratio of the freight ton kilometers performed with road transport modes to the total ton kilometers involved in international (transit) journeys per year.	10% ≤ ratio < 25%: 8 points	8 points	IWW transport is the most widely used transport mode in the country, around 80% of the movement of cargo is performed through IWW and around 20% is performed with road transport modes.	Merchant Navy Administration (DGMM)
1-EC-6.2: System approach to intermodal transport	Degree of harmonization of the national law on intermodal transport with the international and/or regional intermodal transport agreements, such as the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC).	National law adheres to regional intermodal transport agreement: 8 points	8 points	There are a couple of provisions that pertain to this point. On one hand, Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay entered a regional agreement on international road transport in 1991 (ATIT). The Paraguayan Congress approved this agreement and adopted it as national legislation through Law 1128/97 (nevertheless, the Executive Power has enacted administrative decisions to implement the agreement since 1991). The Transport Authority further regulated its implementation through Decree CD N° 53/02 regarding national and international road transport of cargo". On the other hand, there is an intermodal agreement within MERCOSUR incorporated into national laws through the presidential decree 16.927/97.	Presidential decree 16.927/97: http://www.morinigoyasociados.com/todas_disposiciones/1997/decretos/decreto_16927_97.htm Law nº 1128/97: http://www.dinatran.gov.py/docum/leyes/ley1128.pdf National Transport Authority (DINATRAN) Decree CD N° 53/02 which regulates the national and international road transport of cargo: http://www.dinatran.gov.py/docum/rcarga5302.pdf
1-EC-6.3: Share of multimodal, intermodal and combined cargo	Ratio of the gross weight of international (transit) cargo (tones) that is transported by either multi-modal, inter-modal or combined transport, to the total gross weight of cargo per year. Multimodal refers to a single transport contract covering more than one mode of transport. Intermodal means one means of transport being moved by different modes such as trucks on ferries or trucks on railways. Combined Transport refers to the transport of goods in one and the same transport unit using more than one mode of transport (as defined by AGTC).	75% ≤ share < 50%: 7 points	7 points	Around 80% of the movement of cargo is performed through IWW that involves multimodal transport.	Merchant Navy Administration (DGMM)

Indicator	Definition	Scoring	Score	Answer	Source
1-EC-6.4: Share of containerized cargo	The share of containerization is defined as the gross weight of containerized cargo divided by the gross weight of international (transit) non-bulk cargo. Oil, coal, grain, bulk, cement, etc., are excluded.	10% ≤ share < 25%: 4 points	4 points	No data available. Nevertheless, Paraguay has seen an increase in terms of containerized cargo transport volumes, both in imports and exports. In 2011, Paraguay transported 145,000 TEUs and by the end of 2018, the country transported around 220,000 TEUs. This change in transport volumes represents a growth of 50%. Therefore, it can be said that the share of containerized cargo can be around 10%.	https://mundomaritimo.cl/noticias/paraguay-movilizo-220-mil-teus-en-2018-50-mas-que-en-2011
Road Transport Total	Max score 40 points		16 points		
3-EC-5: Intermodality/Combined Transport			**Points**		
3-EC-5.1: Modal share of freight by IWW	Ratio of ton-kms of freight by IWW to the total ton-kms by road, rail and IWW per year.	ratio ≥ 10%: 10 points	10 points	80% of the movement of cargo for exports is performed through IWW. 63% of the movement of cargo for imports is performed through IWW.	Merchant Navy Administration (DGMM)
3-EC-5.2: Connection of port terminals with road and railway	Whether the terminals in inland waterway ports are connected with main roads and railway lines.	Connected with either main roads or railway lines not belonging to the international network: 3 points	3 points	Connected with either main roads or railway lines not belonging to the international network	Merchant Navy Administration (DGMM)
IWW Transport Total	Max score 20 points		13 points		
Chapter Score	Max score 100 points		73 points		

Source: Self-made

F. Environment & Energy

This indicator refers to the Environmental pillar of SITCIN, to assess the extent to which a sustainable fleet is being deployed and the extent to which emission-reduction measures are applied.

Table 10.
Environment & Energy Indicators and Findings

Indicator	Definition	Scoring	Score	Answer	Source
1-EV-1: Fleet			**Points**		
1-EV-1.1a: Number of alternative fuel passenger cars	Ratio of the number of alternative fuel passenger cars involved in international transport, to the total number of passenger cars involved in international transport in the country per year. Alternative fuels are defined as electric, hybrid, liquid biofuel includes bio gasoline, biodiesels and other liquid biofuels, natural gas (CNG/LNG) and hydrogen/fuel cells	5% ≤ ratio < 10%: 3 points	3 points	There is no data available for this indicator. However, it is considered that the percentage of alternative fuel passenger cars is low. At the moment, Paraguay is working on its greenhouse gas inventory and it plans to include statistics related to this indicator.	Ministry of Environment and Sustainable Development (MADES).
1-EV-1.1b: Number of alternative fuel buses	Ratio of the number of alternative fuel buses involved in international transport, to the total number of buses involved in international transport in the country per year. It concerns buses carrying more than 9 passengers. Alternative fuels are defined as electric, hybrid, liquid biofuel includes bio gasoline, biodiesels and other liquid biofuels, natural gas (CNG/LNG) and hydrogen/ fuel cells	ratio < 5%: 0 point	0 points	There is no data available for this indicator. However, it is considered that the percentage of alternative fuel buses is low. At the moment, Paraguay is working on its greenhouse gas inventory and it plans to include statistics related to this indicator.	Ministry of Environment and Sustainable Development (MADES).

1-EV-1: Fleet			Points		
1-EV-1.1c: Number of alternative fuel trucks	Ratio of the number of alternative fuel trucks involved in international transport, to the total number of trucks involved in international transport in the country per year. It concerns trucks weighing more than 3.5 tons. Alternative fuels are defined as electric, hybrid, liquid biofuel includes bio gasoline, biodiesels and other liquid biofuels, natural gas (CNG/LNG) and hydrogen/fuel cells	ratio < 5%: 0 point	0 points	There is no data available for this indicator. However, it is considered that the percentage of alternative fuel trucks is low. At the moment, Paraguay is working on its greenhouse gas inventory and it plans to include statistics related to this indicator.	Ministry of Environment and Sustainable Development (MADES).
1-EV-1.2a: Average age of passenger cars	The average age of passenger cars in the country	age > 15 years: 0 point	0 points	The Paraguayan Automobile and Machines Dealers Chamber (CADAM) indicates passenger cars are 18 years old on average. According to the Chamber this is the case because a large number of old cars have been imported over the last years. It should be noted that Paraguay is the only country in South America that allows importing companies to purchase cars that are over 10 years old.	http://www.cadam.com.py/noticia/antiguedad-del-parque-automotor-amenaza-la-salud-publica https://www.lanacion.com.py/negocios/2017/06/05/paraguay-unico-en-sudamerica-que-importa-vehiculos-con-mas-de-10-anos/
1-EV-1.2b: Average age of buses	The average age of buses involved in international transport. It concerns buses carrying more than 9 passengers	age ≤ 5 years: 10 points	10 points	The average age of buses involved in international transport is 5 years. The average age of buses used for public transport in the country is 9 years. The fleet of buses involved in international transport is the best performing fleet measured by average age.	National Transport Authority (DINATRAN) http://www.dinatran.gov.py/docum/Anuario_2017.pdf The National Transport Authority Director also summarized numbers regarding average age of the vehicle fleet in a public statement published in social media: https://www.facebook.com/amigocamioneropy/videos/2278990783534 10/?__so__=permalink&__rv__=related_videos
1-EV-1.2c: Average age of trucks	The average age of trucks involved in international transport. It concerns trucks weighing more than 3.5 tons	age > 15 years: 0 point	0 points	There are no official statistics for this indicator. However, fabrication years of an important number of trucks are 1998 and 2005.	National Transport Authority (DINATRAN)

1-EV-2: Emission			Points		
1-EV-2.1: Level of stringency of national vehicle emission legislation	The level of stringency of the national vehicle emission legislation concerning the minimum emission standard for new vehicles.	Euro 1-3 (or equivalent): 2 points.	2 points	National law is not harmonized with European emission standards. Nevertheless, in 2015 the Ministry of Public Works issued a provision whereby it establishes that new buses should comply with euro 3 regulations. In addition, the country has strongly regulated the quality of diesel and petrol. Diesel sulphur content is as low as 10ppm and not higher than 50 ppm which could allow euro 4 or euro 6 vehicles to circulate. Petrol sulphur content is not higher than 150ppm which would allow euro 3 vehicles to circulate in the country. Furthermore, in 2018 the Secretary for the Environment (now Ministry of Environment and Sustainable Development) issued Provision 78/18 which establishes maximum levels of air pollutants from automobiles. Municipalities are in charge of measuring CO emissions. However, not all municipalities have implemented the regulations established in provision 78/2018. In light of this, the Ministry of Environment and Sustainable Development issued provision 152/20 which contains a template that municipalities can use to start implementing regulations.	Ministry of Environment and Sustainable Development (MADES) Provision 78/18 Page 5 of the following link: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj25OSPkpXwAhWiqZUCHRsMCtsQFjAHegQIBxAD&url=https%3A%2F%2Fwww.contrataciones.gov.py%2Fdocumentos%2Fdownload%2Fconvocatoria%2Fgg134ptNdmc%25253D&usg=AOvVaw2AVcK7kkut0jj93MiSmlVE Ministry of Environment and Sustainable Development (MADES) Provision 152/20 http://www.mades.gov.py/wp-content/uploads/2020/05/Resolucion-152-de-fecha-08-de-mayo-de-2020.pdf
1-EV-2.2: CO2 emissions	The method used to measure CO2 emissions from road vehicles and the application of vehicle taxation based on the measured CO2 emission levels.	No CO2 emissions measurement and vehicle taxation: 0 point	0 points	Paraguay does not have regulations regarding emission of greenhouse gases. Vehicle taxation is not based on CO2 emissions. However, concerning import activities, there are tax incentives for electric and dual fuel or flexible fuel vehicles.	https://www.bacn.gov.py/leyes-paraguayas/2957/ley-n-5183-modifica-la-ley-n-460112-de-incentivos-a-la-importacion-de-vehiculos-electricos http://www.impuestospy.com/Decretos/Decreto%205822_16.php

1-EV-2: Emission			Points		
1-EV-2.3: Noise emissions	The application of noise regulations, restricting the amount/duration/source of noise, to reduce excessive noise levels of motor vehicles.	Requirements applied to powertrain noise: 3 points	10 points	Noise pollution used to be regulated by law 1100 which was enacted in 1997. A new law 6390 pertaining to noise pollution was passed in early 2020 overturning the previous one. According to law 6390 municipalities are in charge of implementing policies in order to gradually reduce pollution, establish permitted pollution levels, and harmonize provisions with international and regional agreements. As a result, rules regarding this matter are very decentralized. In order to fully assess this topic, it is necessary to analyse provisions of 254 municipalities. Nevertheless, for this study a couple of decrees were analysed and there is a tendency to apply requirements to the following: powertrain noise, audible warning signals, wet grip, tire noise, replacement silencers. (Note on scoring: requirements applied to powertrain noise:3 points, requirements applied to tire noise alone: 2 points, combined with wet grip: 3 points, requirements applied to audible warning signals (horn): 2 points, requirements applied to replacement silencers: 1 point, requirements applied to acoustic vehicle alerting system (AVAS): 1 point)	Law 6390 concerning noise pollution: http://silpy.congreso.gov.py/expediente/115358 Municipal decrees concerning noise pollution: https://ordenanzasmunicipales.sanlorenzopy.com/ordenanza-no-19-2001-polucion-sonora/ https://www.mra.gov.py/application/files/5815/5300/2867/Ord014-2014JM1-1.pdf
1-EV-2.4: Modal share of passenger road transport	Ratio of the passenger kilometers performed with road transport modes to the total passenger kilometers involved in international journeys per year.	ratio ≥ 90%: 0 point	0 points	Most passenger journeys are performed with road transport modes. Currently, there are no certified vessels to transport passengers. Moreover, rail infrastructure is very underdeveloped in the country. Nevertheless, the Posadas–Encarnación International Train is an 8 km commuter rail international service operated between Posadas in Argentina and Encarnación in Paraguay. The service started operating in January 2014. It leaves the station every 15 minutes and can carry 240 people in every trip. The train transports approximately 1 million people every 2 years.	https://www.argentina.gob.ar/transporte/trenes-argentinos/horarios-tarifas-y-recorridos/servicios-regionales-larga-distancia/posadas-encarnacion https://revistalogisticaparaguay.com/tren-turistico-entre-posadas-y-encarnacion-ya-transporto-un-millon-de-pasajeros/

1-EV-2: Emission			Points		
1-EV-2.5: Application of models to predict weather-related risks	Degree of application of operational models/software tools to predict weather-related risks to transport infrastructure. It concerns the application of the following tiers according to the Intergovernmental Panel on Climate Change (IPCC): tier 1: simplest method with default values; tier 2: similar to tier 1 but with country-specific emission factor and other data; tier 3: more complex approaches (models).	No tool in place: 0 point	0 points	There are no software tools in place. Nevertheless, the Climate Change National Directorate is currently drafting climate change adaptation plans and could include this point in the plan.	Ministry of Environment and Sustainable Development (MADES)
1-EV-2.6: Implementation of technical adaptation measures in road transport	Degree of implementation of technical adaptation measures for road to project climate change impacts on road transport system and to propose adaptation options. Some examples of documents where such measures are addressed are Highways Agency Climate Change Adaptation Strategy and Framework Model (UK), Advanced Road Weather Information Systems (Canada), and Costs of Climate Change Impacts and Adaptation (France).	Measures are currently being developed: 7 points	7 points	A National Climate Change Law was approved in 2017 (Law 5875). This law created the Climate Change National Directorate which is currently developing plans concerning the impact of climate change on road transport systems.	https://www.bacn.gov.py/leyes-paraguayas/8712/ley-n-5875-nacional-de-cambio-climatico http://www.mades.gov.py/2019/05/19/mades-coordina-acciones-de-mitigacion-ante-el-cambio-climatico-en-el-sector-transporte/
1-EV-3: Infrastructure			**Points**		
1-EV-3.1: Share of alternative fuel filling stations	Ratio of the number of alternative fuel filling stations along international roads and inland stations, to the total number of fuel filling stations along international roads and inland stations. Alternative fuels are defined as electric, hybrid, liquid biofuel includes bio gasoline, biodiesel and other liquid biofuels, natural gas (CNG/LNG) and hydrogen/fuel cells. Alternative fuel filling stations can be defined as alternative fuel filling points as a part of fuel filling stations.	20% ≤ ratio < 30%: 8 points	8 points	Most fuel filling stations in the country provide natural gas (CNG/LNG). Moreover, the Itaipu Dam, a hydroelectric dam on the Paraná River located on the border between Brazil and Paraguay, has been implementing a project called "green road" which seeks to build electric charging stations throughout the country.	http://gis.mic.gov.py https://www.itaipu.gov.py/es/sala-de-prensa/noticia/intn-inspeccionocargadores-de-la-ruta-verde-del-pti-py-para-vehiculos-electr
Road Transport Total	Max score 130 points		37 points		

3-EV-1: Fleet			Points		
3-EV-1.1: Number of alternative fuel inland vessels	Ratio of the number of alternative fuel inland vessels to the total number of inland vessels in the country per year. Alternative fuels for inland vessels are liquefied natural gas, liquefied petroleum gas, methanol, biofuel, hydrogen, as well as electro motion, hybrid (diesel-electric), fuel cell and battery systems.	ratio < 5%: 0 point	0 points	Inland vessels use diesel. The Intergovernmental Committee on the Paraguay-Parana Waterway is discussing a project to start using gas.	Merchant Navy Administration (DGMM)
3-EV-1.2: Average age of vessels	The average age of inland vessels involved in international transport.	30 years < age ≤ 50 years: 4 points	4 points	The average age of vessels is 33 years according to UNCTAD statistics maritime database 2019.	https://unctadstat.unctad.org/CountryProfile/MaritimeProfile/en-GB/600/index.html
3-EV-2: Emission			**Points**		
3-EV-2.1: Harmonization of water pollution prevention	Degree of harmonization of internationally/regionally agreed provisions on the prevention of water pollution produced by vessels in the national laws and legislations.	Globally harmonized: 10 points	10 points	Provisions regarding prevention of water pollution are harmonized with The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). The naval prefecture issued a decree in which it establishes the obligation to all shipping companies that transport hydrocarbons, oils and chemical substances or dangerous substances, in waters of Argentine Jurisdiction and Shared Jurisdiction (Paraguay River) and exclusive Paraguayan Jurisdiction to hire a company with the capacity to provide responses to eventual spills of hydrocarbons and / or dangerous liquid substances. It is unclear how much of the Convention's content is actually integrated within national legislation. The intergovernmental Committee for the Parana-Paraguay Waterway has been working for several years to gradually adapt MARPOL's provisions to the waterways of Rio de la Plata Basin (at the moment the Committee is working to adapt Annex II).	http://www.asamar.org.py/es/desde-el-1-de-noviembre-la-prefectura-general-naval-podria-suspender-operaciones-de-buques-y-barcazas-que-operan-hidrocarburo-de-no-contar-con-empresa-osro-n413 http://www.prefecturanaval.mil.py/documentos/reso33_18.pdf http://www.hidrovia.org/es/xlvi-reunion-del-comite-intergubernamental-de-la-hidrovia-paraguay-parana-cih
3-EV-2.2: Modal share of passengers IWW transport	Ratio of the passenger kilometers performed with IWW transport to the total passenger kilometers involved in international journeys per year.	Ratio < 2%: 0 point	0 points	There is not much data available regarding the exact passenger kilometers performed with IWW transport per year. There are some cargo ships which offer carriage of trips to the north of the country because access by land to that area is limited. In addition, there are many speedboat services in several border crossings.	National Authority for Navigation and Ports (ANNP)

3-EV-2: Emission			Points		
3-EV-2.3: Implementation of technical adaptation measures in inland waterways	Degree of implementation of technical adaptation measures for inland waterways to project climate change impacts on inland waterways system and to propose adaptation options. Some examples of documents where such measures are addressed are Climate Change Adaptation Plan for International IW Network (USA), and the impact of climate change to inland waterway transport and the competitive position of the port of Rotterdam (the Netherlands).	Measures are currently being developed: 7 points	7 points	A National Climate Change Law was approved in 2017 (Law 5875). This law created the Climate Change National Directorate which is currently developing plans concerning the impact of climate change on inland waterways systems.	Ministry of Environment and Sustainable Development (MADES)
IWW Transport Total	**Max score 50 points**		**21 points**		
Chapter Score	**Max score 100 points**		**32 points**		

Source: Self-made

V. Paraguay's Overall Score

A. Formula 1. Overall score calculation

$$\text{country overall score} = \frac{\sum \text{country score by each subchapter} * \text{maximum overall score}}{\sum \text{maximum score by each chapter}}$$

Country final/overall score is a weighted number. Each transport mode score is weighted and the final Overall Country score is calculated based on the weighted scores.

Table 11
Score summary – Paraguay (2020)

NCR Chapters	Max score	Score	Progress
Road	**340**	**175**	**51%**
IWW	**136**	**103**	**76%**
1. Border Crossing Facilitation	**100 points**	**39 points**	**39%**
Road	100 points	77 points	77%
IWW	30 points	23 points	77%
2. Infrastructure	**100 points**	**48 points**	**48%**
Road	160 points	91 points	57%
IWW	60 points	43 points	72%

NCR Chapters	Max score	Score	Progress
3. Safety and Security	**100 points**	**61 points**	**61%**
Road	230 points	189 points	82%
IWW	70 points	70 points	100%
4. Transport of perishable foodstuffs & dangerous goods	**100 points**	**78 points**	**78%**
Road	40 points	27 points	68%
IWW	20 points	11 points	55%
4.Interoperability	**100 points**	**38 points**	**38%**
Road	130 points	40 points	31%
IWW	50 points	21 points	42%
6. Environment and energy	100 points	27 points	27%

Source: Self-made.

Table 12
Weighted final country score

Transport mode	Max score	Weighted max score	Weighted score	Weighted progress
Road	1000 points	380 points	228 points	60%
IWW	366 points	227 points	168 points	74%
Total	1366 points	607 points	396 points	65.2%

Source: Self-made.

VI. SWOT Analysis

The SWOT (strength, weakness, opportunity, threat) analysis is developed based on the indicators grouping used in the previous chapter, as presented in the following table:

A. Border Crossing Facilitation SWOT analysis

Border crossing facilitation	
Strength	**Weakness**
Road transport • Not all procedures take place at BCPs. Weighting of vehicles takes place in inland stations. In addition, the Authorized Economic Operator (AEO) Programme will adopt a set of measures to relieve traffic at BCPs. • The country has set joint control areas with neighbouring countries. • There are inter-agency e-solutions for customs and border procedures. The one-stop business service (VUE) is the electronic database for exports and one-stop business service (VUI) is the electronic database for imports. • INDIRA (Custom Records Information Sharing System) is in place to share information among border agencies • Cost of imports lower than the regional average. • Easy access for foreign drivers and foreign transport operators. • Several temporary importation mechanisms available in the country • The country recognizes vehicle insurance for foreign vehicles through the green card system. • Radio-frequency identification (RFID) and Automatic number plate Recognition (ANPR) systems are being implemented for Electronic Toll Collection (ETC). • Electronic cargo information for Inland Waterways (TEMAFLU) was implemented in 2019. The customs office is currently implementing electronic cargo information for road cargo.	**Road transport** • BCPs do not operate 24/7 and there are no off-lane control areas. • Lack of appropriate and affordable parking and terminal facilities at road BCP. • There are no fast lanes/fast track treatment for trucks carrying live animals and perishable foodstuffs. • There is no delegation mechanism in place among national border agencies, all government agencies act independently. • Although shared databases such as INDIRA exist, border agencies' systems are not fully integrated yet. In many BCPs there is double weighting and double scanning that could be avoided if countries shared information with each other. • There is no traffic separation in order to give priority to vehicles under cover of valid international/regional/sub-regional customs transit documents, so as to decrease truck waiting times at BCPs. • No data for border clearance time. • Cost of exports is higher than the regional average. • No recognition of driving permits based on the UN Conventions on Road Traffic and Harmonization Convention. There are bilateral recognition agreements in place.

- The country uses e-seals to monitor cargo that does not go under clearance controls at the first point of entry.
- The country uses mobile scanners to compensate for the shortage of detection equipment.

IWW transport

- Port costs are lower than the regional average.
- The entire IWW network currently in use is covered by at least one River Information System technological solution. The most widely used is VHF radio since its use is mandatory according to the technical inspection forms issued by the naval prefecture.
- Most if not all vessels have an Electronic Chart Display Information System because it is the tool that captains are trained to use.
- Inland waterways are equipped with Automatic Identification System (AIS)

- There is no application of pre-trip traffic information systems to make international drivers aware of the traffic situation and travel conditions. Drivers use traditional channels such as radio and others.
- There is not enough detection equipment, scanning and non-intrusive inspection technologies including scanners for cargo at BCPs.
- The country does not use intelligent transport systems at and around BCPs, such as traffic light management, automatic vehicle registration number recognition, and automatic container recognition. In addition, there is a low degree of implementation of Roadside Intelligent Transport systems. There are video monitoring systems, variable message signs (VMS) and equipment for speed enforcement but their availability is heavily concentrated in the country's capital.
- The country does not use intelligent traffic management systems along roads leading to BCPs to notify approaching trucks on the traffic situation at BCP (i.e., traffic occupancy, processing and queuing time, and providing early recommendations such as postponing entry to BCPs or deviate to other BCPS).

IWW transport

- Harmonization and recognition of certificates (such as boat master's certificates) is limited, and further work is needed for type approval and standardization.

Opportunity	Threat
Road transport • The National Customs Authority is implementing a programme called Authorized economic operator which simplifies procedures for certified companies and relieves traffic at BCPs. • The customs office plans to implement fast lanes and traffic separation in order to give priority to vehicles under cover of Authorized Economic Operator (AEO) certificates. • Data on time spent at the border can be obtained using SOFIA (System for the Fiscal Organization of Customs Levies). • Electronic cargo manifest systems (e-CMR) such as TEMAFLU are being implemented. • In 2020, the National Transport Authority (DINATRAN) started equipping national trucks with Radio-frequency identification (RFID) tags. The company Tape Pora also started to implement RFID tags for Electronic Toll Collection (ETC). The systems could be integrated. • The Customs Office is planning to buy ten (10) scanners to cover the busiest control points in the country. The procurement process to acquire two (2) scanners is already underway[13]. **IWW transport** • The Intergovernmental Committee on the Paraguay-Paraná Waterway provides a solid platform to develop advances in the harmonization and mutual recognition of botmaster`s certificates.	**Road transport** • Poor physical infrastructure is one of the most significant bottlenecks. There is not enough space for parking. In addition, infrastructure does not always belong to the customs office. As a result, the customs office is not always in charge of providing or charging for parking facilities. In some cases, this service is provided by private or public ports. Therefore, it is harder to implement a unified overarching policy. • High cost of detection equipment, scanning and non-intrusive inspection technologies including scanners for cargo. • High cost to roll out application of intelligent transport systems and intelligent traffic management systems. **IWW transport** • There is no other platform as relevant as the Intergovernmental Committee on the Paraguay-Paraná Waterway. Inland Waterways that are not part of the Paraguay-Paraná Waterway agreement do not have the same requirements and standards as the waterways that are part of the agreement.

Source: Self-made.

13 https://nanduti.com.py/aduanas-anuncia-ara-compra-de-escaneres/

B Transport Infrastructure SWOT analysis

Transport Infrastructure	
Strength	**Weakness**
Road transport • There are provisions covering road signs, signals, and marking. **IWW transport** • There is a solid national framework pertaining to navigational rules. National laws on IWW follow the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways which in turn uses the Maritime Code and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). • Inland navigation ports of international importance have a high cargo handling capacity. • The international IWW corridors and coastal routes that pass through the country connect Paraguay to all its immediate neighbors plus Uruguay (Argentina, Brazil, Uruguay, Bolivia) .	**Road transport** • National legislation covering road signs, signals, and marking is not harmonized with international standards. • The provision of rest and service areas, the number of toll and border crossing control lanes do not take into account the volume of traffic anticipated. This type of consideration is not possible sometimes because of poor BCP physical infrastructure. • The country does not have many International Roughness Index (IRI) studies. • No public data available concerning the number of cases of reported cargo theft. **IWW transport** • Navigation throughout the year is not guaranteed. • Navigation is heavily concentrated on the Paraná-Paraguay Inland Waterways (from Puerto Caceres in Brazil to Puerto Nueva Palmira in Uruguay). There are 4 or 5 navigable rivers in Paraguay whose potential is overlooked.
Opportunity	**Threat**
Road transport • The National Agency for Road Safety is currently working to ratify and harmonize UN conventions of traffic such as the UN Convention on Road Traffic and the UN Convention on Road Signs and Signals (1968). **IWW transport** • The National Transport Master Plan developed by the Ministry of Public Works and Communications (MOPC) could provide a meeting point and common ground place for the public and private sector involved in IWW transport.	**Road transport** • International Roughness Index (IRI) studies can be costly. **IWW transport** • There is no record of common and harmonized action between public institutions and the private sector involved in IWW transport and cooperation as well as fluent communication is needed for a successful dredging plan and maintenance of IWW.

Source: Self-made.

C. Safety & Security SWOT analysis

Safety & Security	
Strength	**Weakness**
Road transport • Law Nº 5016 on transit safety and its regulatory decree set rules for drivers and professional drivers, minimum requirements of curriculum and qualifications for driving, obtaining driving permits, etc. • Law Nº 5016 on transit safety is comprehensive and solid (i.e.: there are rules on cargo securing, distracted driving, use of safety equipment, speed limits). • The country developed a Road Safety National Plan which was in place until 2018 and took into account all 5 pillars from the UNRSTF Global Framework plan of Action for Road Safety. • Periodic technical inspections (PTI) are enforced and applied with increasing frequency to ageing vehicles. **IWW transport** • Navigation rules are harmonized with global or regional standards such as Marpol/Solas. • Naval Prefecture established that all vessels must use Automatic Identification Systems (AIS) (provision 63/17).	**Road transport** • The rules for drivers and professional drivers are not harmonized with the UN Convention on Road Sign and Signals (1968) and the level of enforcement is not the same in every municipality. • The enforcement of transit rules is low. • Currently, there is no National Road Safety System in place. • MERCOSUR's provision 75/95 on periodic technical inspection (PTI) did not set rules for new vehicles and did not establish the mutual recognition of national rules pertaining to PTI among member countries. • Law 3850/2009 implemented Periodic Technical Inspections. While this law is regarded as positive, the lack of application of PTI in private vehicles and the lack of mandatory automobile liability insurance means a higher risk for road cargo transport and citizens. • Commercial vehicles are not equipped with tachographs. • The National Agency for Road Safety has not issued a regulatory decree for the use of technological means in automated road traffic enforcement taking into account art. 146-152 of Law 5016/14. This decree is necessary for the application of intelligent traffic management systems mentioned in indicator1-EC-7.5 & 1-EC-7.9. **IWW transport** • The Naval Prefecture has data on navigation related accidents or violation of navigation rules available. However, they do not publish it.
Opportunity	**Threat**
Road transport • The National Transit Safety Agency is currently working to harmonize national laws with the UN Convention on Road Sign and Signals (1968). • The Ministry of Public Works and Communications and the National Agency for Road Safety are currently working on a new Road Safety National Plan. • MERCOSUR's sub working group no. 5 is revising and updating provision 75/95 on periodic technical inspection (PTI). The National Transport Agency (DINATRAN) will participate in this revision. • There are discussions among agents in the transport business concerning the use of tachographs. **IWW transport** • The highway police publish statistics reports. The Naval Prefecture could use the highway police knowhow as a starting point and adapt their reports to publish navigation related data.	**Road transport** • Equipping trucks with tachographs can be challenging. High loan interest rates can negatively affect the willingness to invest in these devices. In addition, it should be noted that transport companies do not always own all the trucks in their fleet, sometimes they lease trucks from different individuals or directly hire drivers who own trucks. The dispersion of ownership can hamper the coordination of common actions because purchasing power and priorities among actors may be significantly different. • **IWW transport** • While the naval prefecture publishes all its resolutions, there is no strong public record of the institutions' operational data.

Source: Self-made.

D. Transport of Perishable Foodstuffs and Dangerous Goods SWOT analysis

Transport of perishable foodstuffs and dangerous goods	
Strength	**Weakness**
Road transport • There are provisions for the transport of meat products, particularly beef (refer to indicator 1-SO-4.1). • There is a solid national framework pertaining to general provisions for the transport of dangerous goods and the training of personnel involved in the transport of dangerous goods. This framework comes out of the 'Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR. **IWW transport** • There is a solid national framework pertaining to general provisions for the transport of dangerous goods through Inland Waterways. The Naval Prefecture issues provisions based on the SOLAS Convention, the International Maritime Dangerous Goods Code and the Code of safe practice for solid bulk cargoes. In addition, law 6438/19 approves the indefinite period of validity of the Agreement on Transport of Goods through Paraná-Paraguay Inland Waterways which has a protocol regarding the transport of dangerous goods based on International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).	**Road transport** • While the transport of beef is adequately regulated, this is not the case with other perishable foodstuffs. • There is no data concerning traffic classified as transport of dangerous goods. Therefore, it is challenging to design data-based policies. **IWW transport** • There is no data concerning traffic classified as transport of dangerous goods transported on the Inland Waterways network. Therefore, it is challenging to design data-based policies.
Opportunity	**Threat**
Road transport • In 2019, MERCOSUR published provision CMC N° 15/19 which takes into account the newest versions of United Nations rules, the European Agreement on the Transport of Dangerous Goods by Road (ADR) and the International Regulations on the Transport of Dangerous Goods by Rail (RID). This is an opportunity to improve existing rules. • The National Transport Authority (DINATRAN) is currently working on a project to publish data concerning traffic classified as transport of dangerous goods. **IWW transport** • The Intergovernmental Committee for the Parana-Paraguay Waterway is planning to set up a division to consolidate statistics on the volume of goods transported along the Waterway.	**Road transport** • It is not clear how long it will take to incorporate new provisions for the transport of dangerous goods published by MERCOSUR. **IWW transport** • The economic constraints caused by the current pandemic can hamper the Intergovernmental Committee for the Parana-Paraguay Waterway plans to create a new division in charge of statistics.

Source: Self-made.

E. Intermodality SWOT analysis

Intermodality	
Strength	**Weakness**
Road transport & IWW transport • The country has signed transport agreements such as ATIT (Agreement on International Ground Transport) in 1991 and MERCOSUR's intermodal agreement in 1997. • IWW transport is the most widely used transport mode in the country, 80% of the movement of cargo for exports is performed through IWW. 63% of the movement of cargo for imports is performed through IWW.	**Road transport & IWW transport** • No public data concerning the share of cargo transported by intermodal, multimodal, combined transport, the share of containerization of cargo or the share of non-bulk cargo in international transport of goods. • Terminals in inland waterway ports are not sufficiently connected with roads of international importance.
Opportunity	**Threat**
Road transport & IWW transport • There is a shared electronic database for exports and another one for imports. One-stop business service for export or inter-agency e-single window (VUE) and one-stop business service or inter-agency e-single window for import (VUI) which contains plenty of raw data on intermodality. • The plans to develop railway infrastructure are ongoing and there is time to incorporate considerations regarding intermodal transport in those plans.	**Road transport & IWW transport** • No record of common and harmonized action between public institutions and the private sector involved in IWW transport.

Source: Self-made.

F. Environment & Energy SWOT analysis

Environment	
Strength	**Weakness**
Road transport • There is a significant number of alternative fuel filling stations in the country that can accommodate flexible-fuel vehicles (also known as dual-fuel vehicles) or vehicles that use natural gas (CNG/LNG). In addition, the Itaipu dam is building electric charging stations. • The country has successfully regulated the quality of diesel and petrol. Diesel sulphur content is as low as 10 ppm and not higher than 50 ppm which could allow euro 4 or euro 6 vehicles to circulate. Petrol sulphur content is not higher than 150 ppm which would allow euro 3 vehicles to circulate. • There is a law in place to gradually reduce noise pollution. • There are provisions regarding maximum levels of air pollutants from automobiles. **IWW transport** • The naval prefecture provisions regarding prevention of water pollution are harmonized with the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).	**Road transport** • Fleets are old (average age of passenger cars is 18 years) • There are no statistics concerning the number of alternative fuel passenger cars, buses or trucks. • Paraguay does not have regulations regarding emission of greenhouse gases. Vehicle taxation is not based on CO_2 emissions. • There is no application of operational models/software tools to predict weather-related risks to transport infrastructure • Municipalities are in charge of implementing the law on noise pollution but not all have done so. • Municipalities are in charge of implementing the provisions regarding the reduction of air pollutants but not all have done so. **IWW transport** • There are top of the line vessels in the country. However, according to UNCTAD, the average age of vessels in 2019 was 33 years old. • The country has not implemented measures to address climate change impacts on inland waterways systems. • There are no statistics concerning the number of alternative fuel vessels.

Opportunity	Threat
Road transport • Public institutions have statistics departments that could produce data. The Ministry of Environment (MADES) is planning to include data concerning the number of alternative fuel passenger cars, buses and trucks in its greenhouse gas inventory report. • There are tax benefits for alternative fuel vehicles. • The Climate Change National Directorate is currently developing plans concerning the impact of climate change on road transport systems. **IWW transport** • The Intergovernmental Committee on the Paraguay-Paraná the Waterway is discussing alternative fuel options for inland vessels. • The Climate Change National Directorate is currently developing plans concerning the impact of climate change on inland waterways systems.	**Road transport** • Companies may not be willing to spend their resources on alternative fuel vehicles or trucks because they may think that costs outstrip benefits. • It should be noted that transport companies do not always own all the trucks in their fleet, sometimes they lease trucks from different individuals or directly hire drivers who own trucks. The dispersion of ownership can hamper the ability to coordinate actions because purchasing power and priorities among actors may be significantly different. • High loan interest rates can negatively affect the willingness to invest in alternative fuel vehicles. **IWW transport** • Companies may not be willing to spend their resources on alternative fuel vessels because they may think that costs outstrip benefits.

Source: Self-made.

VII. Conclusion

Paraguay's national connectivity report was drafted on the basis of analysis of indicators that were developed exclusively for landlocked countries. These indicators were designed to provide an evidence-based transport policy framework that can promote sustainable transport connectivity at the national, regional and international levels and at the same time foster the implementation of transport-related SDGs.

In the case of Paraguay, the indicators cover 2 transport modes, road and Inland Waterways (IWW), and 6 groups of sub-indicators also called NCR chapters. These chapters are: border crossing facilitation, transport infrastructure, safety and security, transport of perishable foodstuffs and dangerous goods, intermodality, environment and energy. Data were collected to evaluate 161 indicators in total, 121 indicators for road transport and 40 indicators for IWW transport, some indicators were not evaluated as a result of lack of data.

Concerning road transport, Paraguay scored higher on indicators related to safety and security and transport of dangerous goods. This was the case because the country has a comprehensive and solid road safety legislation since law 5016 was passed in 2014. Nevertheless, it is important to note that the level of enforcement of this law is low. The country also has a comprehensive and solid legislation regarding the transport of dangerous goods. The lowest scores are related to border crossing indicators, in part because there are no fast lanes at Border Crossing Points and no fast-track treatment for perishable foodstuffs. Nonetheless, it is important to indicate that Paraguay is putting in place the Authorized Economic Operator (AEO) programme which could counterweight the lack of fast lanes. A detailed description of strengths and weaknesses in each category of indicators can be found in the SWOT analysis section.

Concerning Inland Waterways (IWW) transport Paraguay also scored higher on indicators related to safety and security and transport of dangerous goods. This was the case because the country adopted and harmonized its rules with many international agreements such as the International Convention for the Safety of Life at Sea (SOLAS) agreement. The lowest scores pertain to intermodality indicators and to

environmental indicators, in part because ports and main roads are poorly connected and because the country has not implemented measures to address climate change impacts on inland waterways systems.

In terms of infrastructure, ports infrastructure scored high because ports have a high rate of cargo handling capacity but on the other hand more work is needed on IWW infrastructure. More investment is needed (dredging, signalling for night-time navigation, maintenance) to guarantee navigation throughout the year. A detailed description of strengths and weaknesses in each category of indicators can be found in the SWOT analysis section.

The following section contains recommendations developed and summarized based on the country's performance in each set of indicators and the SWOT analysis presented in the previous chapter.

VIII. Recommendations

A. Border Crossing Facilitation Recommendations

Border crossing facilitation	
Public sector	Target insitutions(s)
1.Take steps to implement fast lanes/fast track treatment for trucks carrying live animals and perishable foodstuffs	For measures that require changes infrastructure at BCPs: ANNP Ministry of Public Works and Communications (MOPC) For measures that entail implementing programs to facilitate movement of perishable foodstuff: National Customs Authority (DNA)
2. Publish data on border clearance time which can be obtained using SOFIA (System for the Fiscal Organization of Customs Levies)	National Customs Authority (DNA)
3.Work closely with border agencies to integrate information systems in order to avoid repetitive work (double weighting, double scanning) at BCPs	National Customs Authority (DNA)
4. Consider implementing pre-trip traffic information systems to make international drivers aware of the traffic situation and travel conditions. This system could also notify approaching trucks on the traffic situation at BCP such as traffic occupancy, processing and queuing time, and provide early recommendations such as postponing entry to BCPs or deviating to other BCPS[14].	National Customs Authority (DNA)
5. Consider extending BCPs working hours to facilitate an expeditious movement of goods.	All the public institutions involved in activities at BCPs
6. Consider setting up a cooperation mechanism to harmonize the use of Radio-frequency identification (RFID) tags with the Company Tape Pora.	National Transport Authority (DINATRAN)

14 Georgia uses a pre-trip traffic information systems app called megzuri, https://apkpure.com/megzuri/mobility.ge.megzuri

Border crossing facilitation	
Public sector	Target insitutions(s)
7. Set up a cooperation mechanism to further develop the use and integration of Radio-frequency identification (RFID) tags. For instance, the Ministry of Industry and Commerce has drafted a project called 'Cargo systems in international commerce' that aims to create a cargo module within the single window for exports (VUE) in order to register cargo, transit and transport information in a single place and improve control, traceability and obtain real time information on available transport capacity. RFID technology would help this project to attain its objectives.	National Customs Authority (DNA) National Transport Authority (DINATRAN)
8. Take steps to implement the recognition of driving permits based on the UN Conventions on Road Traffic and Harmonization Convention.	National Agency for Road Safety (ANTSV)
9. Take steps to harmonize and recognize international certificates (such as boat master's certificates), work on type approval and standardization.	Naval Prefecture
Private sector	Target institution(s)
1. Set up a cooperation mechanism to harmonize and integrate the use of Radio-frequency identification (RFID) tags with the National Transport Authority (DINATRAN).	Company Tape Pora

Source: Self-made.

B. Transport Infrastructure Recommendations

Transport Infrastructure	
Public sector	Target institution(s)
1. Consider setting up a mechanism to devise common actions with the private sector in order to address required steps to guarantee navigation throughout the year (ie: dredging, signalling for night-time navigation and maintenance)	Ministry of Public Works and Communications (MOPC) Naval Prefecture
2. Publish data on the number of cases of reported cargo theft.	National Customs Authority (DNA)
3. Consider taking account of the volume of traffic anticipated for the provision of rest and service areas, the number of toll and border crossing control lanes whenever the BCPs physical infrastructure allows for this type of consideration.	National Customs Authority (DNA)
4.More investment is needed on dredging, signalling for night-time navigation and maintenance to guarantee navigation throughout the year.	Ministry of Public Works and Communications (MOPC) Naval Prefecture
Transport Businesses	
1. Consider setting up a mechanism to devise common actions with the public sector in order to address required steps to guarantee navigation throughout the year (ie: dredging, signalling for night-time navigation and maintenance)	Paraguayan Shipowner's Association (CAFYM) Paraguayan Shipping Agents Association (ASAMAR) Paraguayan Chamber of Terminals and Private Ports (CATERPA)

Source: Self-made.

C. Safety & Security Recommendations

Safety & Security	
Public sector	Target insitution(s)
1. Consider recording and publishing data on the number of road traffic violations. For instance: violations of speed limit, use of safety equipment, cargo securing, carriage of passengers, distracted driving, use of mobile devices, and crashes caused because of these traffic violations.	National Agency for Road Safety (ANTSV) Highway Police Municipalities
2. Within the sphere of competence of the institution take actions to increase the level of enforcement and compliance related to awarding driving permits and if necessary, the requirements and certification for driving schools.	National Agency for Road Safety (ANTSV)
3. Consider including the 5 pillars of the UNRSTF Global Framework Plan of Action for Road Safety (GFPARS) in the new National Road Safety Plan. These pillars are: (1) Road safety management; (2) Safe user; (3) Safe vehicle; (4) Safe Road; (5) Effective post-crash response.	The Ministry of Public Works and Communications (MOPC) National Agency for Road Safety (ANTSV)
4. Consider including Post-Crash Response standards and procedures of the UNRSTF Global Framework Plan of Action for Road Safety (GFPARS) in the new National Road Safety Plan15.	The Ministry of Public Works and Communications (MOPC) National Agency for Road Safety (ANTSV)
5.Consider issuing a regulatory decree for the use of technological means in automated road traffic enforcement taking into account art. 146-152 of Law 5016/14.	National Agency for Road Safety (ANTSV)
6. Consider publishing statistical reports to record navigation related accidents and violation of navigation rules. The Naval Prefecture could adapt the highway police statistical reports to publish navigation related data.	Naval Prefecture
Intergovernmental organizations	Target institution(s)
1. Take into account the UN Agreement on Vehicle Regulations (https://unece.org/fr/node/3492) for new vehicles to update MERCOSUR's provision 75/97 on technical inspections.	MERCOSUR (DINATRAN is the focal point in Paraguay for this activity)
Private sector	**Target institution(s)**
1. Assess the ability to equip the current fleet with tachographs. Propose actions to fairly distribute costs and benefits taking into consideration the context and characteristics of the cargo transport business.	Paraguayan Chamber of International Road Transport (CAPATIT)

Source: Self-made.

[15] These standards consist of the following 8 actions:
1) Introduce legal requirement for anyone to perform first-aid activities within his/her capacity,
2) Introduce standards for post-crash professional emergency response,
3) Introduce framework for rehabilitation programmes,
4) Establish a link between liability insurance and financing of care for crash victims, and rehabilitation programmes
5) Enable multi-disciplinary crash rescue operation and investigation,
6) Introduce a clear framework for crash investigation and data collection,
7) Designate authorities responsible for implementation including enforcement of the existing standards as well as for their further development, as necessary,
8) Assess effectiveness and completeness of standards (completeness of standards benchmarked against international regulatory framework).

D. Transport of Perishable Foodstuffs and Dangerous Goods Recommendations

Transport of perishable foodstuffs and dangerous goods	
Public sector	Target institution(s)
1. Consider developing a comprehensive list of perishable foodstuffs and corresponding transport conditions. Consider developing rules concerning transport conditions of certain perishable foodstuffs when necessary.	National Institute for Food and Nutrition (INAN) National Service for Animal Health and Quality (SENACSA)
2. Publish data regarding the percentage of traffic classified as dangerous goods on the international road networks.	National Transport Authority (DINATRAN) National Customs Authority (DNA)
3. Take steps to update national regulations in light of MERCOSUR's provision CMC N° 15/19 which takes into account the newest versions of United Nations rules, the European Agreement on the Transport of Dangerous Goods by Road (ADR) and the International Regulations on the Transport of Dangerous Goods by Rail (RID).	National Transport Authority (DINATRAN)
4. Consider transport conditions for dangerous goods in the ongoing plans to develop rail infrastructure in Paraguay. MERCOSUR offers a solid platform to do so. The 'Sectoral Agreement for Transport of Dangerous Goods in MERCOSUR' was developed taking into account the International Regulations on the Transport of Dangerous Goods by Rail (RID).	Paraguayan Railways S.A FEPASA
5. Publish data regarding the percentage of traffic classified as dangerous goods on the Inland Waterway Network.	National Customs Authority (DNA)

Source: Self-made.

G. Intermodality Recommendations

Intermodality	
Public sector	Target institution(s)
1. Use the one-stop business service for export or e-single window (VUE) and one-stop business service for import or e-single window (VUI) to publish data that allows to diagnose the state of affairs of intermodality in the country or cooperate with research projects such as the ones carried out by PROCOMEX institute to offer a certain degree of access to these databases.	Ministry of Industry and Commerce National Customs Authority
2. Consider holding roundtable meetings with public and private ports to address the issue concerning the connection of ports and main roads and to agree on common actions.	Ministry of Public Works and Communications
3. Include considerations on intermodal transport in the current plans to develop rail infrastructure in the country. National Connectivity Reports from the countries that were part of SITCIN (Georgia, Serbia, Kazakhstan) could shed light on common problems and solutions related to intermodal rail transport.	Paraguayan Railways S.A FEPASA
Private sector	Target institution(s)
1. Consider holding roundtable meetings with the public sector to address the issue concerning the connection of ports and main roads and to agree on common actions.	Paraguayan Chamber of Terminals and Private Ports (CATERPA)

Source: Self-made.

H. Environment & Energy Recommendations

Environment & Energy	
Public sector	Target institution(s)
1. Consider including data concerning the number of alternative fuel vessels, passenger cars, buses and trucks in the greenhouse gas inventory report. Consider engaging and/or consulting the private sector and the Intergovernmental Committee on the Paraguay-Paraná the Waterway in the planning process concerning the impact of climate change on road transport and the inland waterways system.	Ministry of Environment and Sustainable Development
2. DINATRAN already produces high quality data on many topics in its statistical yearbook. Consider publishing indicators such as average age of trucks (weighting more than 3.5 tons), buses in international transport.	National Transport Authority (DINATRAN)
3. Consider developing provisions regarding emissions of greenhouse gases.	Ministry of Environment and Sustainable Development - National Congress
4. Include considerations related to alternative fuels in the current plan to develop railway infrastructure.	Paraguayan Railways S.A FEPASA
5. Increase efforts to draft municipal ordinances that bring into effect provisions regarding maximum levels of air pollutants from auto mobiles and the law to gradually reduce noise pollution.	Municipalities
6. Consider the application of operational models/software tools to predict weather-related risks to transport infrastructure (it concerns the application of the following tiers according to the Intergovernmental Panel on Climate Change (IPCC): tier 1- simplest method with default values; tier 2- similar to tier 1 but with country-specific emission factor and other data; tier 3: more complex approaches (models). https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter2.pdf	Ministry of Public Works and Communications Ministry of Environment and Sustainable Development Ministry of Defense (Meteorology Department)
Private Sector	Target institution(s)
1. Consider adopting measures to replace the current fleet for one that includes alternative fuel vehicles.	Paraguayan Chamber of International Road Transport (CAPATIT)
2. Collaborate with the Climate Change National Directorate to develop plans concerning the impact of climate change on transport infrastructure.	Paraguayan Chamber of International Road Transport (CAPATIT)
3. Assess the willingness and ability to replace the current fleet for one that includes alternative fuel vessels.	Paraguayan Shipowner's Association (CAFYM)
4. Collaborate with the Climate Change National Directorate to develop plans concerning the impact of climate change on inland waterways system.	Paraguayan Shipowner's Association (CAFYM) Paraguayan Shipping Agents Association (ASAMAR) Paraguayan Chamber of Terminals and Private Ports (CATERPA)

Source: Self-made.

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