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Brazil infrastructure market study

November 2022



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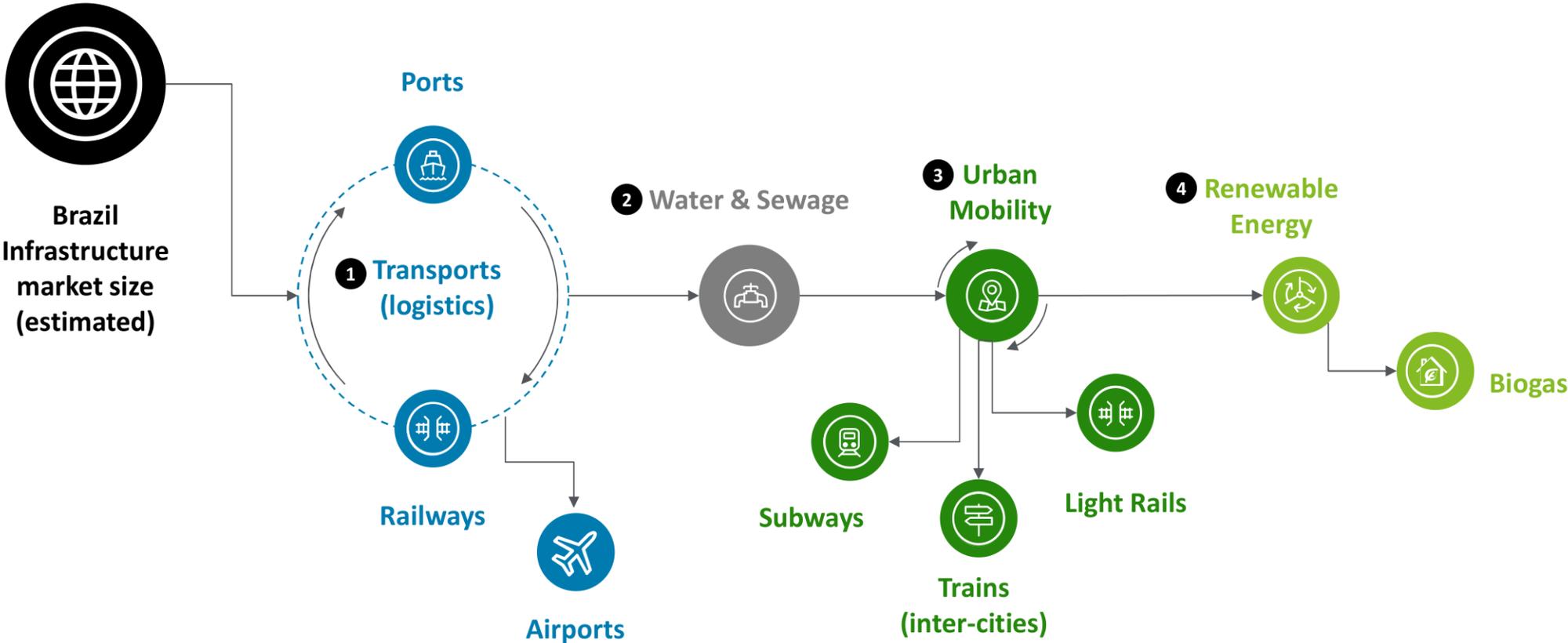
鉄道（貨物）セクター 市場調査 エグゼクティブサマリ

ハイライト情報

取扱物量	鉄道（貨物）セクター合計： 506.8 millions トン（2021年、前年比3.6%増）であり、1kmあたりの使用可能トン数（TKU:輸送トン数に有効走行距離を乗じたもの、効率性を表す指標）は372 billion TKU（2021年、前年比1.9%増）
計画投資金額	認可モデル: 約R\$295 billion（全てのプロジェクトが承認された場合。23,000kmの新たな鉄道の敷設。） 鉄道のPPIフレームワークの投資: 約R\$70 billion
進行中のプロジェクト数	鉄道のPPIフレームワークの投資: 5つの進行中のプロジェクトと2つの延長予定プロジェクト 認可モデル: 95件の承認申請と32件の契約済のプロジェクト
市場競争力	新たな法規制と投資優遇措置により、市場の競争力が増し、新しいプレーヤーが参入する余地が生まれると期待されている。
法律規制の背景	鉄道関連の法律は、鉄道の建設や鉄道輸送サービスの提供において、民間資本を誘致することを目的としている。これにより、ブラジルの交通網において鉄道が占める割合が大幅に増加することが期待されている。
成長のポテンシャル	高い。投資優遇措置がとられることで、広大な国土を横断する人や物の移動がより効率的になることが期待されている。

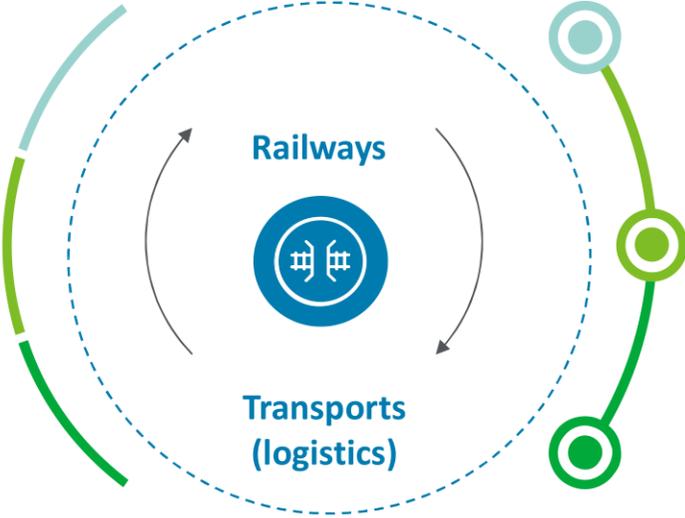
Brazil infrastructure market study

General Overview



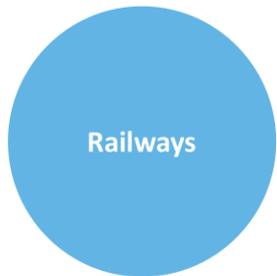
Brazil infrastructure market study

Transports - Railways



Brazil infrastructure market study

Transports – Railways - Agenda



Public Value Chain and Regulations



General Sector Overview



Main Players



Main Projects Portfolio



Final Considerations

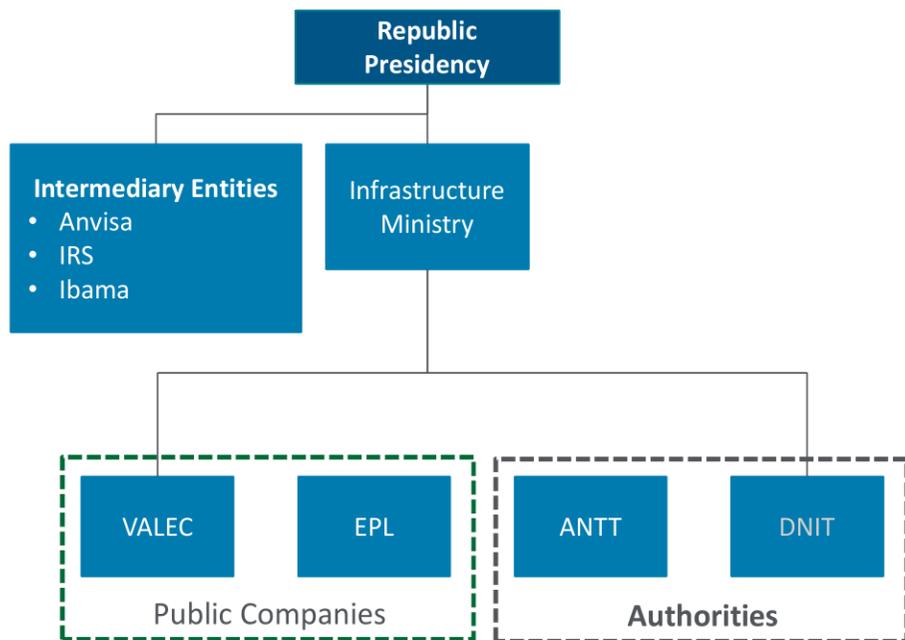
Public Value Chain and Regulations



Public Value Chain and Regulations

Regulatory Environment – Sector Regulatory entities.

The creation of ANTT allowed the regulation of penalties, as well as the rights and duties provided for in the railroad concession contracts.



Source: ANTT

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Roles and Responsibilities

ANTT: National Land Transportation Agency

- Agency responsible for regulating the exploration activities of the federal rail and road infrastructure and the provision of land transport services.

DNIT: National Department of Transport Infrastructure

- Department responsible for the maintenance, expansion, construction, inspection and preparation of technical studies to solve problems related to the Federal Traffic System, as well as the multimodal traffic of people and goods.

EPL: Planning and Logistics Company

- State-owned company whose purpose is to structure and qualify, through studies and research, the process of integrated logistics planning in the country, interconnecting highways, railways, ports, airports and waterways.

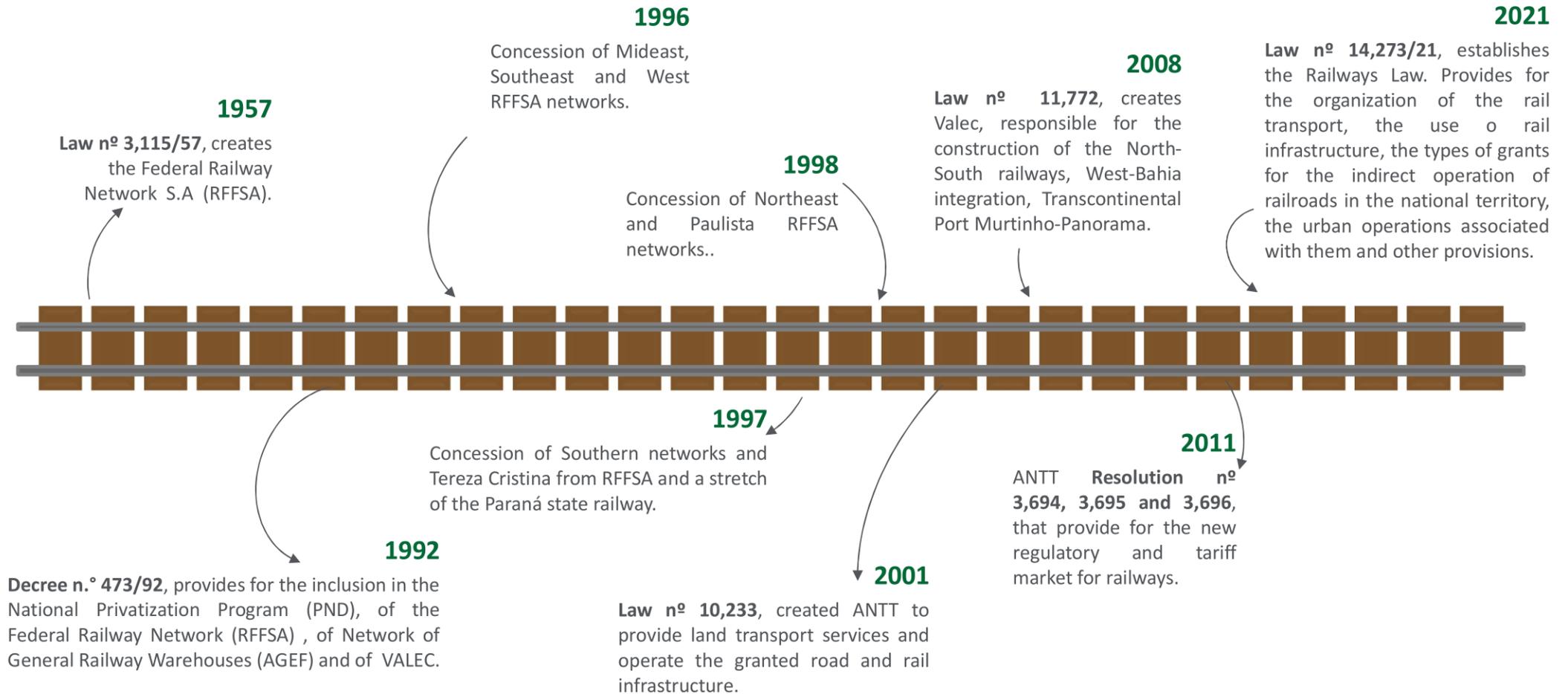
VALEC Engineering, Construction and Railways

- It manages the operation programs of the railway infrastructure, in the railways granted to it;
- Coordinates, executes, controls, reviews, supervises and manages railway infrastructure construction works, which are granted to them;
- Develops studies and projects for railway infrastructure construction works.



Public Value Chain and Regulations

Regulatory Environment - Main sector laws.

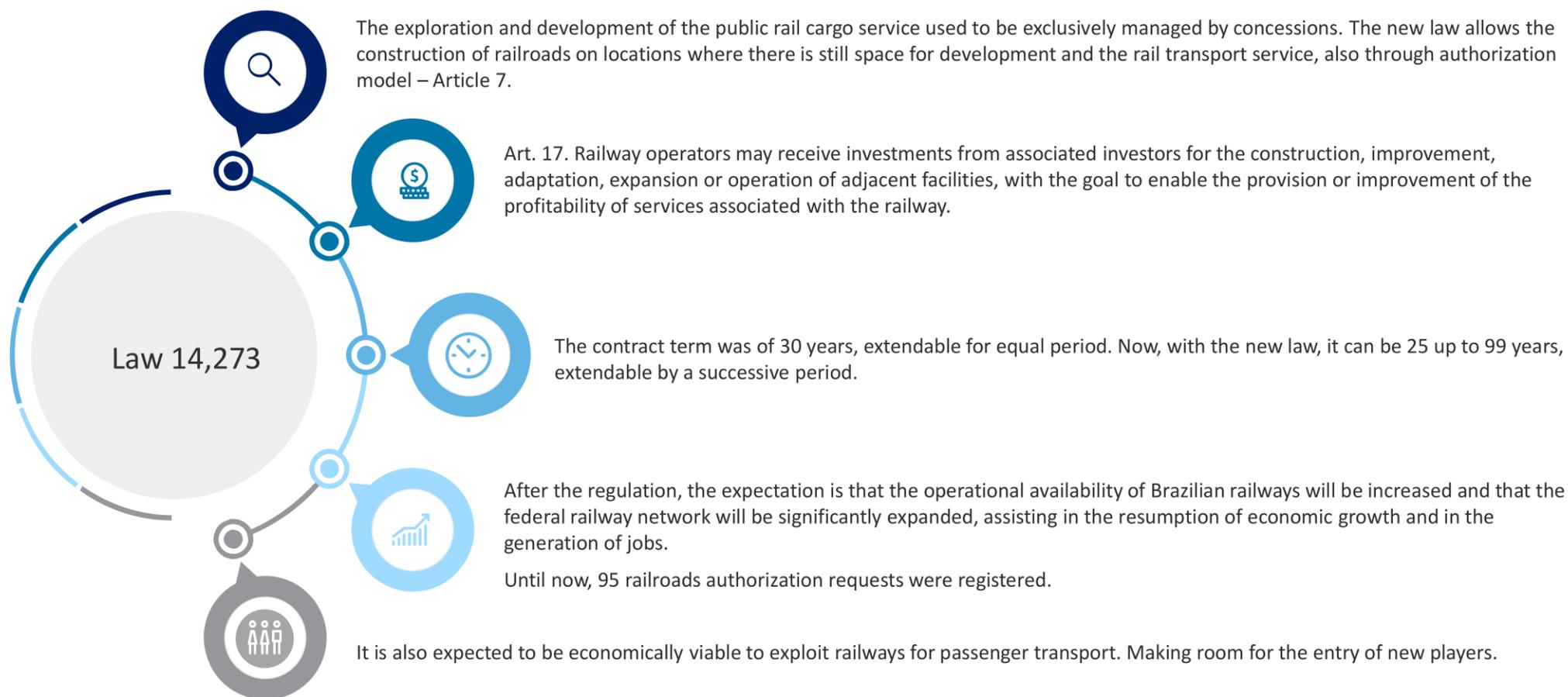


Source: Planalto

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Public Value Chain and Regulations

Regulatory Environment - Law nº 14,273/21 – Changes made.



General Sector Overview



General Sector Overview

World Rail Ranking – Brazil is currently in the 9th place.

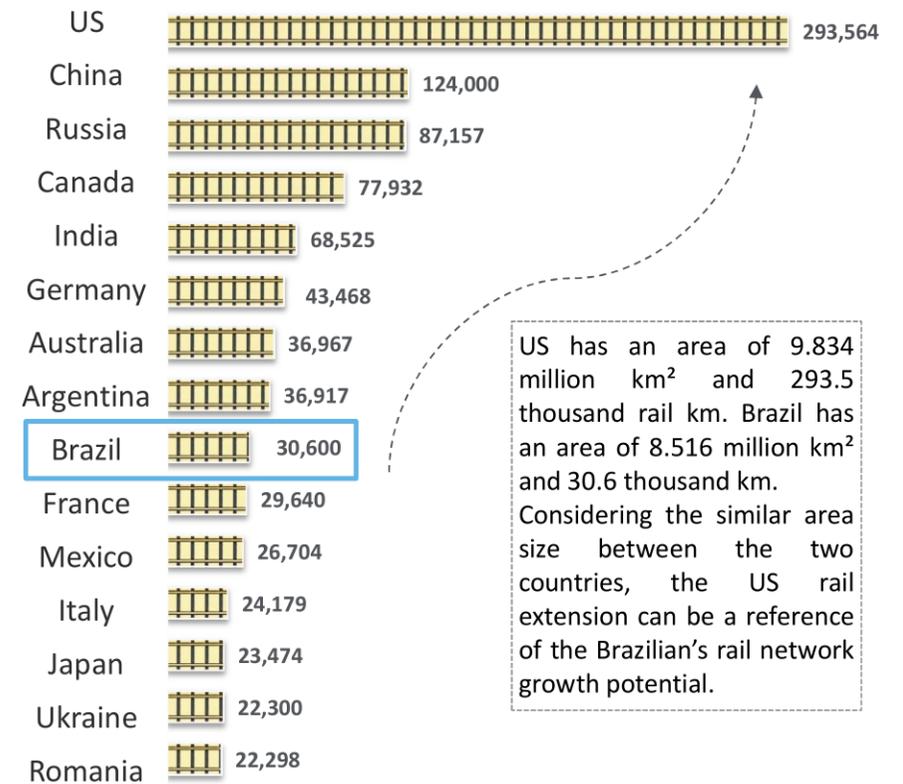
The Brazilian railway modal appears in 9th place in the world ranking (in kilometers), with 506.8 millions of useful tons (TU) of cargo moved in 2021, showing a 3.6% growth compared to 2020.

However, even with positive results, the performance and efficiency of national railways are affected by several factors. Currently, Brazil is still a poor country railways wise, which are irregularly distributed and poorly located throughout the territory.

Currently, the passengers flow by rail transportation is irrelevant in Brazil, therefore, the following data is focused on cargo transportation.

Extension of the rail network

(km)



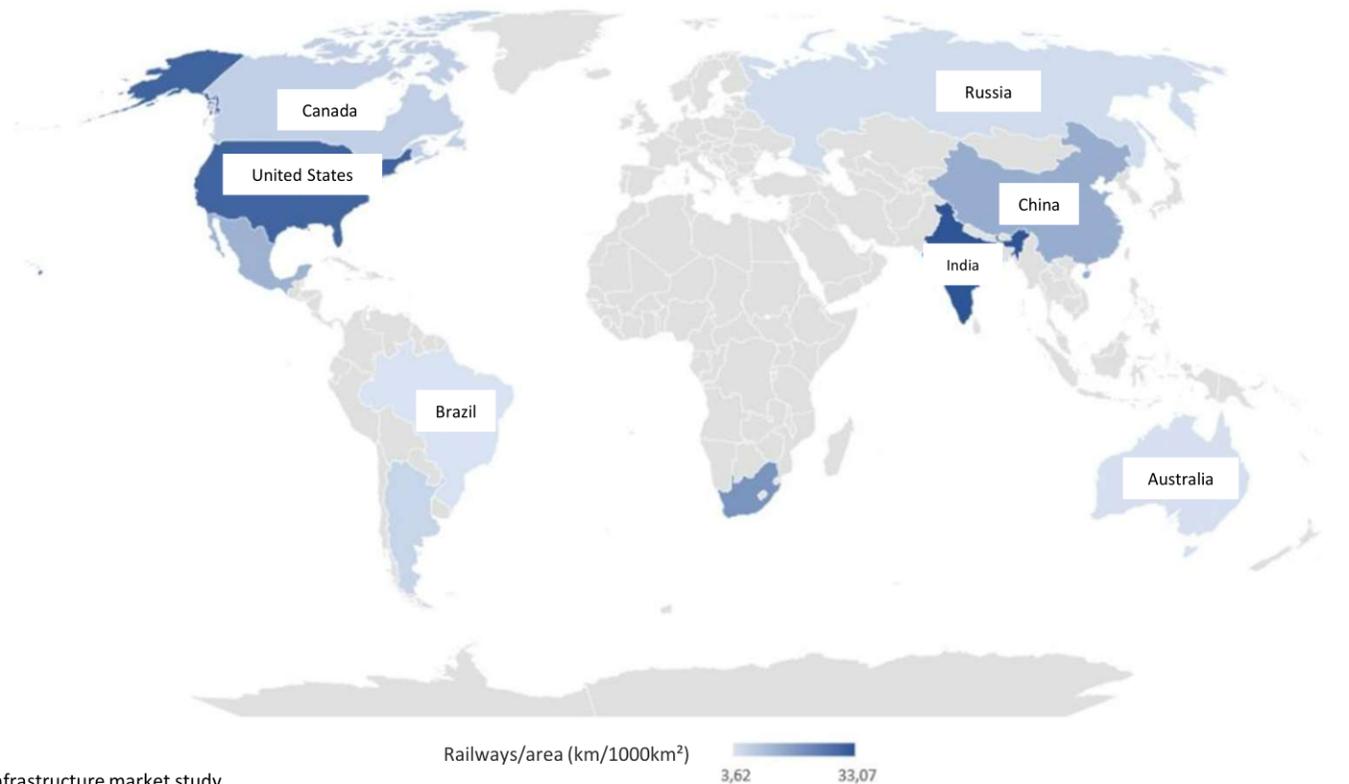
Source: ANTT



General Sector Overview

Worldwide rail network extension in countries with continental area – Compared with similar area countries, Brazil has a smaller extension, indicating possibility for further investments.

In face of the size of the country, the density of the Brazilian rail network is not enough to meet the growing needs of the economy and population. Brazil has a rail density of 3.62km/1000km², a number very small compared to the USA (29.86km/1000km²) and Argentina (6.47km/1000km²), for example.



The shades matches the magnitude of the country's train lines. The darker, the greater the density magnitude. The country with the highest value is the United states (294 thousand km).

Source: ANTF



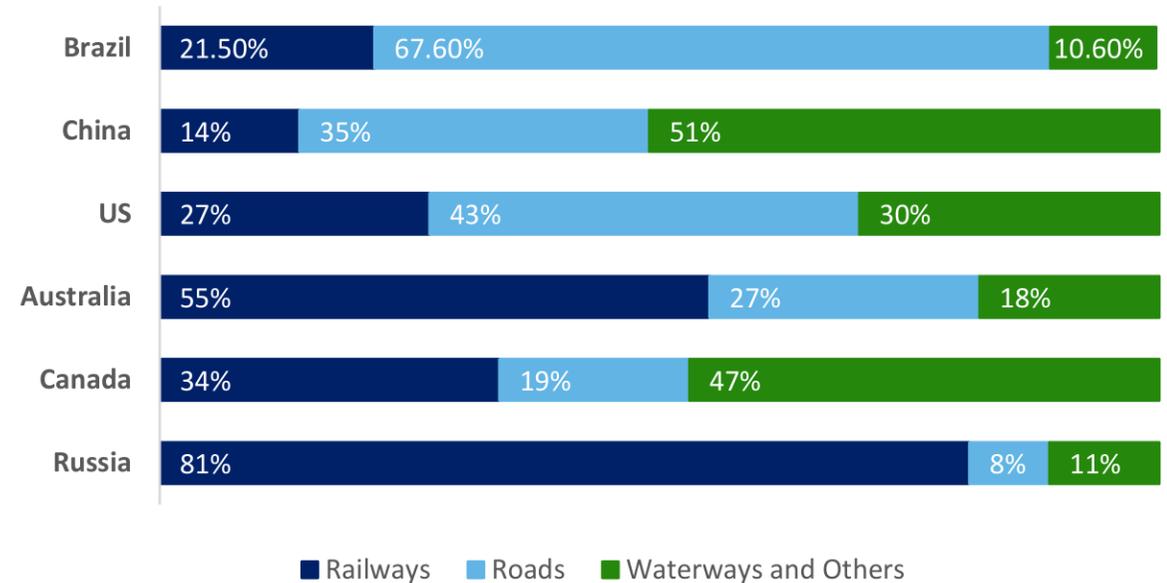
General Sector Overview

Railways worldwide participation in the transport matrix – There is still a lot of room to grow.

In more than 25 years of concessions for the private sector, the railways have increased their participation in the Brazilian cargo transport matrix - which currently corresponds, to a 21.5% share.

Through the graphic, its possible to analyze that most of the countries with big areas uses the railway modal more than Brazil does. In Russia, for example, 81% of the transportation are through railways.

% Participation in the transport matrix



Source: ANTF

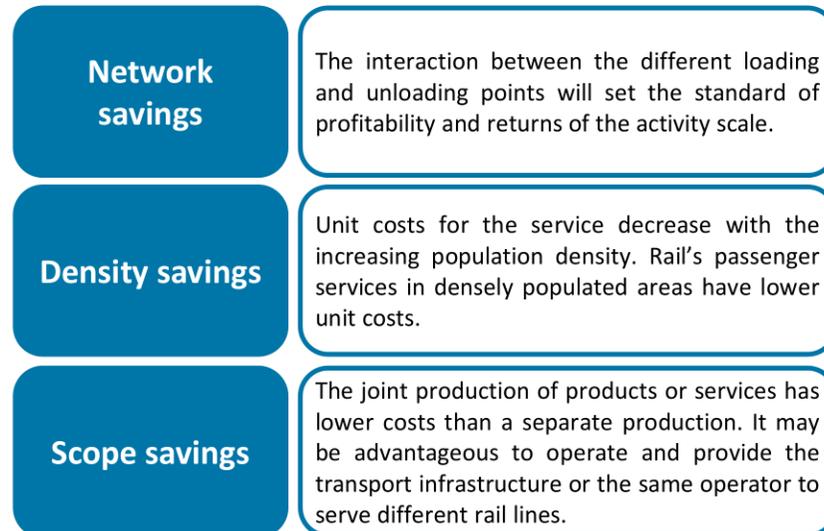


General Sector Overview

Advantages of rail transport – The railways have a positive impact in the logistics sector work, as they bring different advantages than those on other modals.

Rail technology acts on the reduction in transportation costs, by reducing travel time and increasing safety and reliability in the transport of people and goods.

The following gains result from the extension and frequency of services:



Source: CNT

Other advantages:





General Sector Overview

Gaps in the rail transport sector.

The physical and financial gaps that exist in the railway modal are one of the reasons that, among the BRICS, the group of emerging developing countries, Brazil appears in last place in railway quality wise.

In Brazil, more than half of goods travel by truck, despite long distances. However, in Russia, about 81% of the cargo travels by train, due to safety and economic advantages offered by the modal.

These are several factors that compromise the efficiency of the Brazilian rail modal:

Physical

1. The domain tracks invasion which force the speed of trains to decrease from 40 k/h to 5 km/h, compromising the efficiency of rail transport and increasing the operational costs of the modal and making it less efficient.
2. Level crossings reduce speed and make maneuvering in densely populated areas difficult, increasing the risk of accidents.
3. Non-uniform gauges, which makes system integration more difficult.

Financial

1. The contracts signed with the concessionaires in the past years did not provide for the obligation to expand the network, generating an investment only for the maintenance of the existing infrastructure and the acquisition of rolling stock.

Source: CNT



General Sector Overview

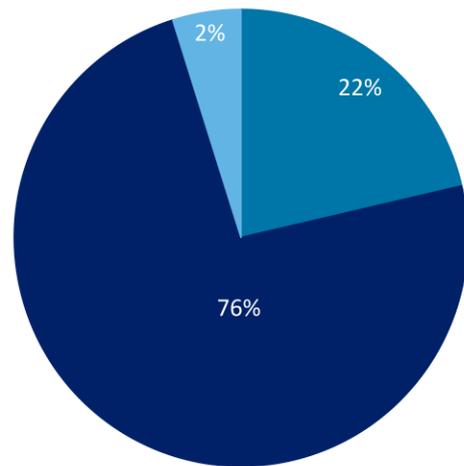
Modal types of gauges in terms of train tracks length – Metric gauge corresponds to 76% of Brazilian railways length. Besides the room to invest in terms of length, the data below also indicates that there's still space to invest in terms of modernization.

Brazil currently has 30,600 km of traffic railways, with a 3.6 km/1000km² density, where 52% of the railways are in the Southeast region.

The rail transport in Brazil is responsible for 21.5% of cargo transportation. There are three types of gauges in the Brazilian modal: wide (1.60 m), metric (1.0 m) and mixed.

Length of train tracks by type of gauge in 2020

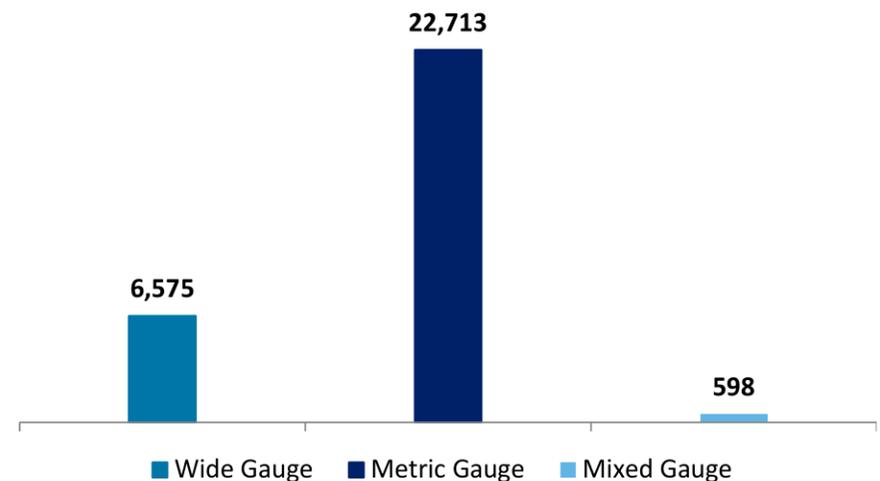
Distribution of km extension in %



■ Wide Gauge ■ Metric Gauge ■ Mixed Gauge

Length of train tracks by type of gauge in 2020

In km



Source: EPL/ONTL



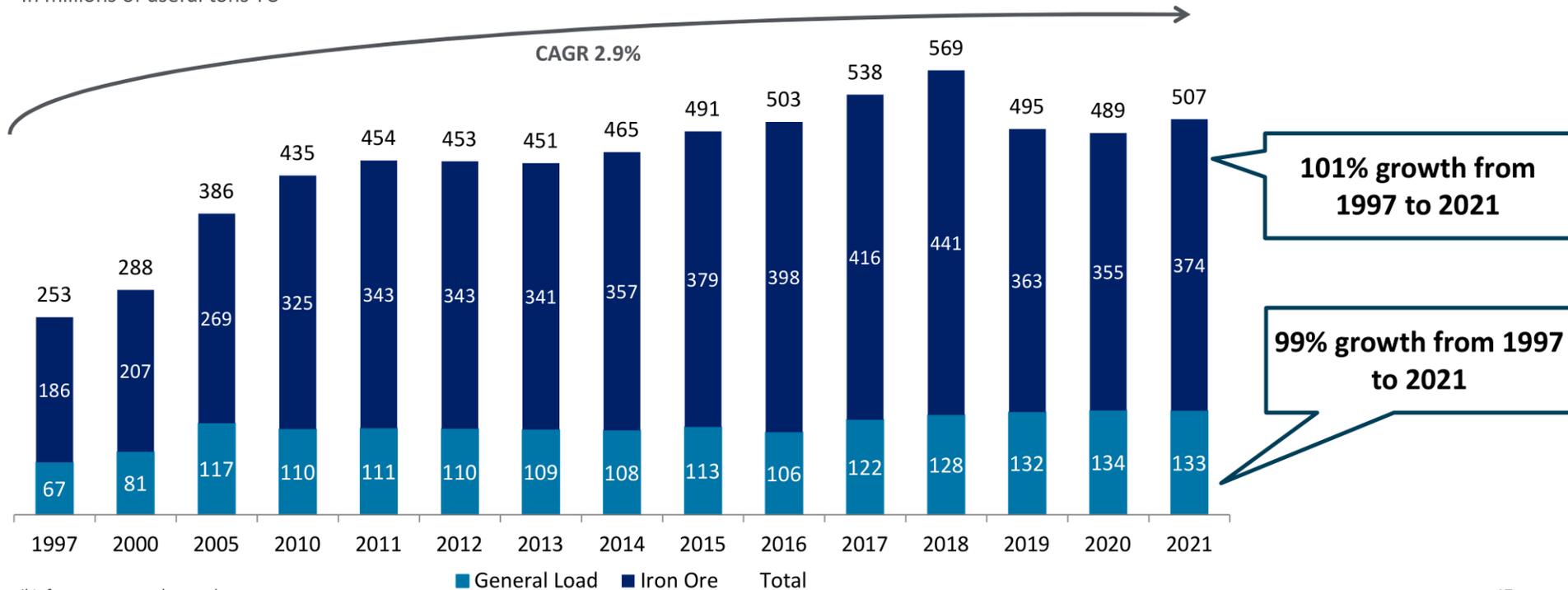
General Sector Overview

Market size in terms of volume - The rail transport represents 21.5% of the total cargo transported in the country, being the second most used modal.

Cargo movement by railways went up to 506.8 million useful tons (TU), 3.6% higher when compared to 2020, 489 million TU, and 2% compared with 2019, 494.5 million TU, pre-pandemic period.

Cargo movement by railways

In millions of useful tons TU



Source: ANTF



General Sector Overview

Market size in terms of volume – Productivity rates.

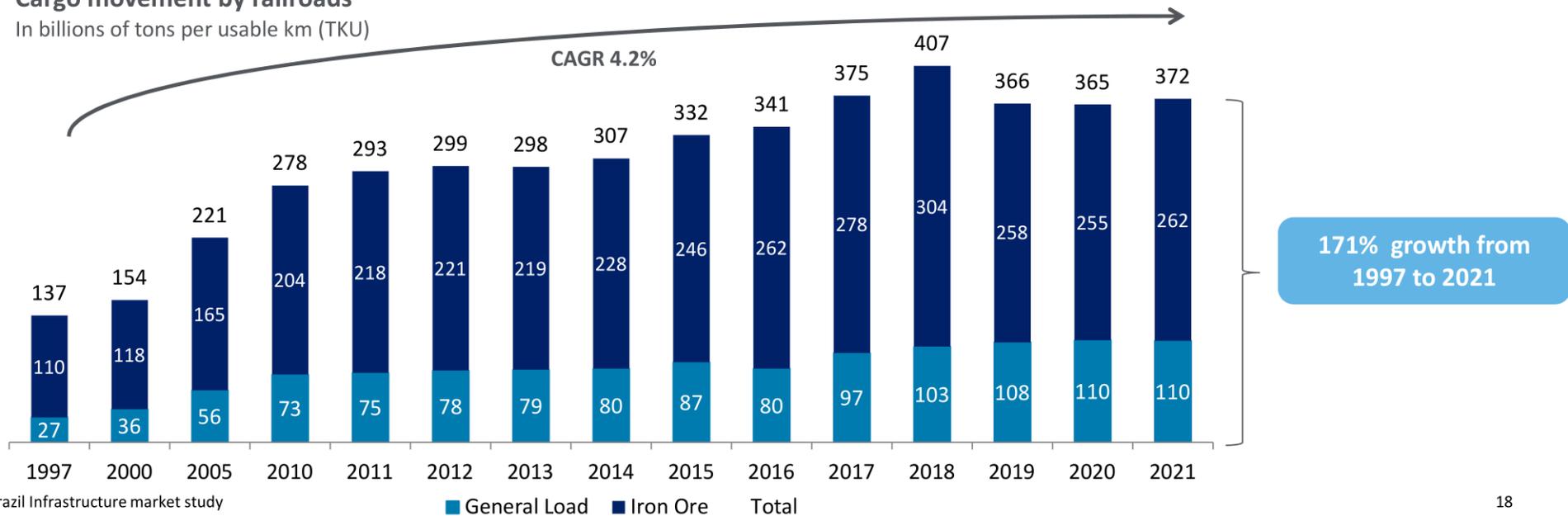
Regarding railway production, the sector also showed signs of growth resumption, which is scaled by the number of tons of cargo handled per kilometer. In 2021, there were 372 billion tons per usable kilometer (TKU), representing a 1.9% growth compared to 2020, 365 billion TKU, and 1.6% over the 2019 result, 366 billion TKU, pre-pandemic period.

The TKU is defined as the quantity of transported tons multiplied by the useful mileage covered by them. Its applicability is in the verification of the efficiency of the transport plans regarding the transported cargo.

In its historical results, the sector has experienced successive growth rates, year after year, always above GDP. Since the beginning of the concessions, the growth in TKU was 171%, returning an annual growth of 4.2%, as shown in the chart below.

Cargo movement by railroads

In billions of tons per usable km (TKU)



Source: ANTF

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Main Players

Main Players

Sector's players.

Among the main players , the highlights are:

- D** Concessionaires (pg 20-31)
- L** Main Railways users (pg 32)
- D** Rolling stock manufacturer – locomotives (pg 33)
- D** Rolling stock manufacturer – wagons (pg 33)
- L** Rolling stock manufacturer - passangers¹ (pg 34)

Some other Players of the sector:

- L** Construction, maintenance, equipment And components is permanent Way manufacture. (pg 35)
- L** Shock And traction systems (pg 35)
- L** Systems and Products - Electric Power, Air Network and Auxiliaries (pg 35)
- L** Systems And products Manufacture- Signaling, Control And Telecommunication (pg 36)
- L** IT (pg 36)
- L** Engine parts, Electronic Components (pg 36)

¹Passangers transportation are currently irrelevant, but some players already participate in intercity railways transportation. It is expected an increase of oportunities to those companies considering the new law 14,273.

Legend

- D** More details in this section
- L** List of competitors in this section

Main Players

Concessionaires

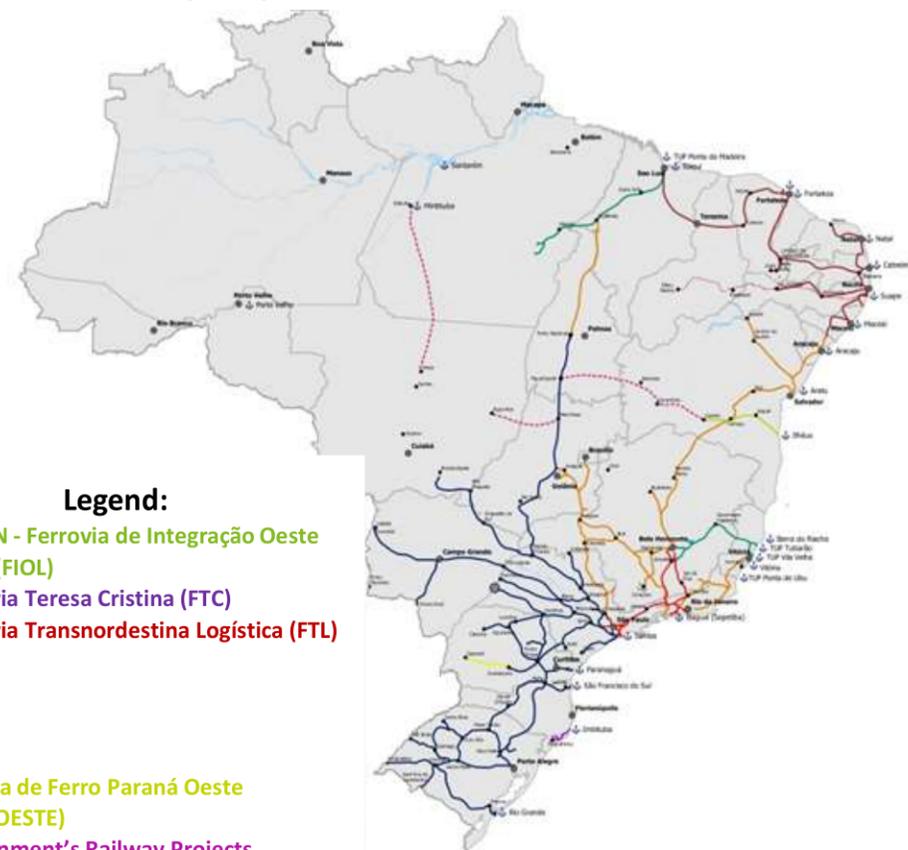
Since the beginning of the concessions, two and half decades ago, the railways returned to play an important role in Brazilian logistics and have increased significantly their productivity rates.

In 2021, there were 30,600 kilometers of railways associated to ANTF, they connect south of Minas Gerais and other mining and steel centers, they also connect agriculture centers (especially in the Midwest region) to the main Brazilian ports.

Source: ANTT



Brazil's Railway Map



Legend:

- BAMIN - Ferrovia de Integração Oeste Leste (FIOL)
- Ferrovia Teresa Cristina (FTC)
- Ferrovia Transnordestina Logística (FTL)
- MRS
- Rumo
- Vale
- VLI
- Estrada de Ferro Paraná Oeste (FERROESTE)
- Government's Railway Projects
- Transnordestina Logística S.A (TLSA)

Main Players

Concessionaires – **BAMIN - Ferrovia de Integração Oeste Leste (FIOL I)**.

Abstract

Fiol I's route goes from Ilhéus to Caetite/BA. It is expected to begin operation in 2025, moving more than 18 million tons of cargo, the main transported item might be the iron mining produced in Caetité, but it also expected to move soy and other grains, cement, fuels, processed food, and others.

At the beginning of operation, it will be 16 locomotives and 1.4 thousand mil wagons. In 2035, the expectation is to move over 50 million tons with 34 locomotives and 2.6 thousand wagons.

In 2021 BAMIN won FIOL I concession and will be responsible to conclude its construction and operate it for 35 Years.

Fiol will have two more routes (FIOL II and III) connecting, when concluded, the future port of Ilhéus/BA to Figueiropolis/TO – connection point to Norte Sul Railway.

Fiol II that connects Caetité/BA to Barreiras/BA, that will have 485.4 km, is been constructed by Valec.

And FIOL III, that connects Barreiras to Figueirópolis/TO, is waiting for licenses to be constructed.

Bough FIOL II and III will be granted in the Investment Partnership Program (PPI) and will be addressed in the next section “Main Projects Portfolio”.

Important Numbers

Rail extension

537 km – it will reach 1,527 after routes II and III

Auction date and duration of the concession

Aug/2021 - Aug/2036 – 30 Years (renewable)

Carried cargo

n/a

MAP



Main Players

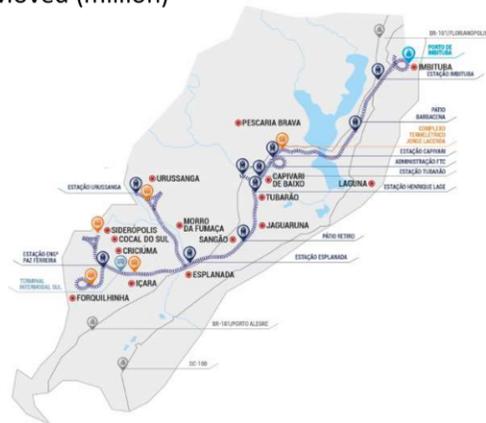
Concessionaires – [Ferrovia Teresa Cristina \(FTC\)](#).

Abstract

FTC is the concessionaire that manages the Southern Santa Catarina Railway and its main product transported is mineral coal, shipping from Criciúma to Jorge Lacerda thermoelectric complex, situated in Capivari de Baixo. The 164 km of rails also includes the Imbituba Port (SC), where industrialized cargos are destined to serve both the internal and external market.

Volume Moved (million)

5,64 tons (2021)
64,36 tons (1997-2020)
70,00 tons (1997-2021)



Source: FTC
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Important Numbers

Rail extension

164 km

Auction date and duration of the concession

Jan/1997 - Jan/2027 - 30 Years (renewable)

Carried cargo

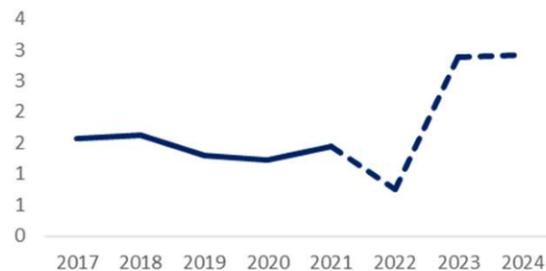
70 million tons (TU) – 1997 - 2021

Notes: For more information on TKU and TU, go to page 16 and 17.

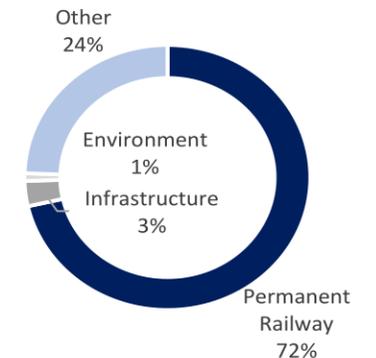
Total Investments

Triennial investment plan - % Distribution

Investments (R\$ million)



Source: Mininfra



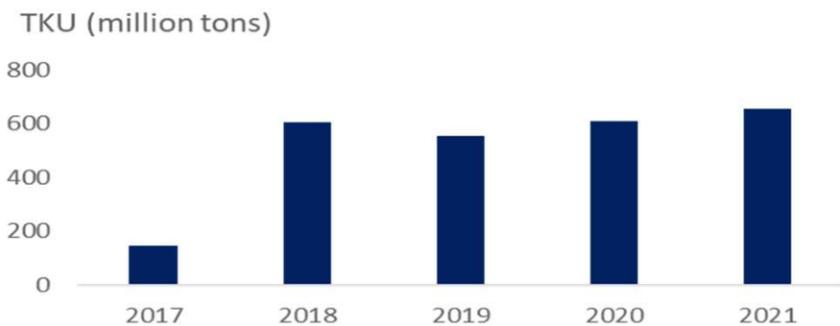
Main Players

Concessionaires – **Ferrovias Transnordestina Logística (FTL)**.

Abstract

Ferrovias Transnordestina Logística (“FTL”) is a concessionaire that manages the connection between the Itaqui Port (São Luís/MA), Pecém (São Gonçalo do Amarante/CE) and Mucuripe (Fortaleza/CE), promoting integration and dynamizing the regional economy. The FTL transports mostly cellulose, fuel and cement.

Volume Moved



Source: Mininfra
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Important Numbers

Rail extension

4,295.10 km

Auction date and duration of the concession

Dec/1997 - Dec/2027 - 30 Years (renewable)

Carried cargo

654 million TKU

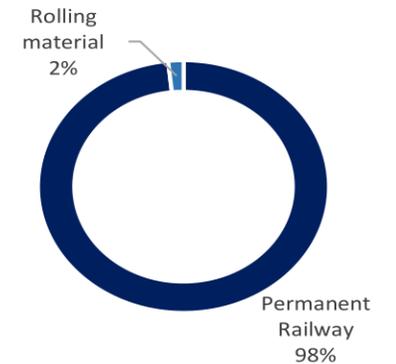
Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments



Source: Mininfra

Triennial investment plan - % Distribution



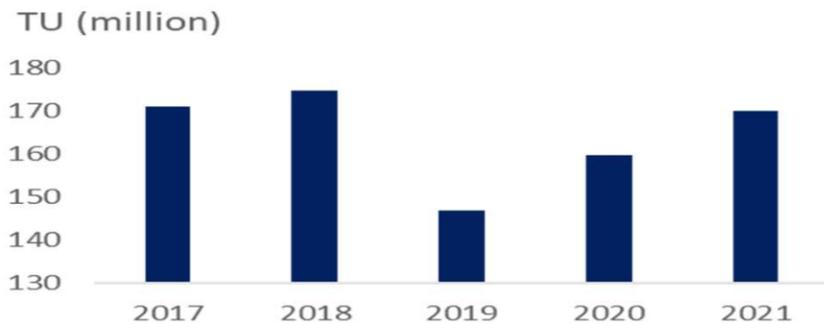
Main Players

Concessionaires – **MRS.**

Abstract

MRS connects the states of Rio de Janeiro, Minas Gerais e São Paulo, attending a region that concentrates around 43% of the Brazilian GDP. It has 1,821 km of railroads and reaches the Rio de Janeiro, Itaguaí and Santos Ports, this last one being considered the most important port of Latin America. MRS focus is on integrated logistics and the rail transport of general cargoes, such as minerals, finished steel products, cement, bauxite, petroleum coke, agricultural products and containers. MRS rout had an anticipated term extension in Jul/22, an ongoing investment of R\$ 9.7 billion that includes security improvement and capacity increase, that will be agreed with ANTT. That extension is expected to be finished in Nov/26.

Volume Moved



Source: Mininfra
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Important Numbers

Rail extension

1,821.30 km

Auction date and duration of the concession

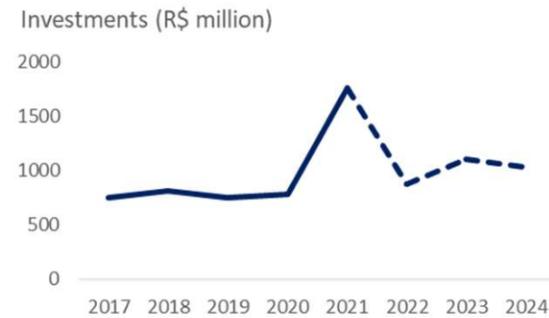
Nov/1996 - Nov/2026 - 30 Years (renewed in Jul./2022)

Carried cargo

170 million TU

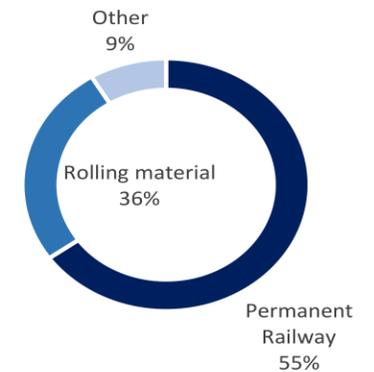
Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments



Source: Mininfra

Triennial investment plan - % Distribution



Main Players

Concessionaires – **RUMO** - North Mesh (RMN) – South Mesh (RMS) – São Paulo Mesh (RMP) – West Mesh (RMO) – Central Mesh (RMC).

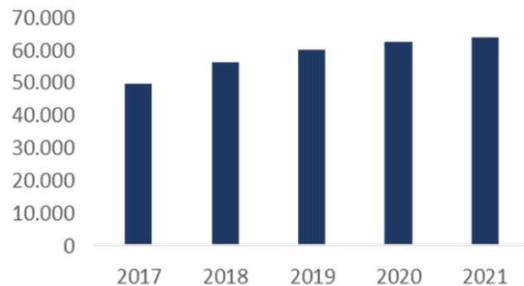
Abstract

The Rumo concessionaire manages thousands of kilometers of railroads across the country. It transports different inputs, such as industrialized products, fuels and agricultural commodities. Also has direct connection with Santos, Paranaguá, São Francisco do Sul e Rio Grande Ports. Rumo is responsible for 26% of the grain volume exported and it has operations in 8 states (MT, MS, SP, PR, SC, RS, TO, GO), being present on the 3 main Brazilian exportation routes.

RMP route had an anticipated term extension in May/20 an ongoing investment of R\$5.7 billion that includes security improvement and capacity increase, that will be agreed with ANTT. That extension is expected to be finished in Dec/29.

Volume Moved

TKU (million tons)



Source: Mininfra

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Important Numbers

Rail extension

13,593.80 km

Auction date and duration of the concession

RMN – may/1989 - may/2079 – 90 years (renewable)
 RMS – mar/1997 - mar/2027 – 30 years (renewable)
 RMP – Jan/1999 - Jan/2029 – 30 years
 RMO – Jul./1996 - Jul./2026 (renewable) – 30 years
 RMC – Jul./2019 - Jul/2049 – 30 years (nonrenewable)

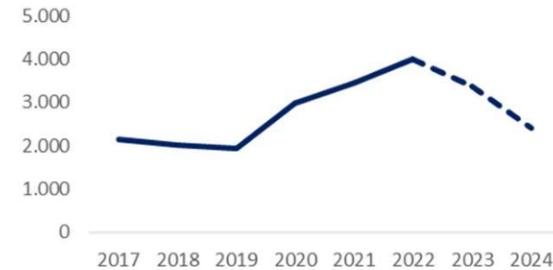
Carried cargo

64,028 million TKU

Notes: For more information on TKU and TU, go to page 16 and 17.

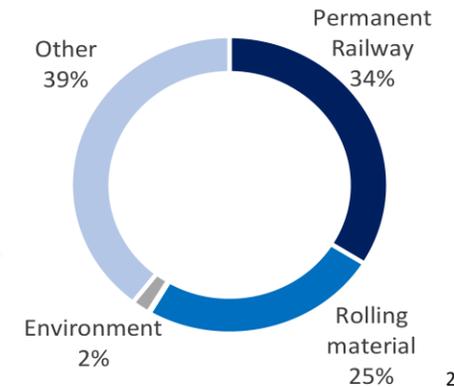
Total Investments

Investments (R\$ million)



Source: Mininfra

Triennial investment plan - % Distribution



Main Players

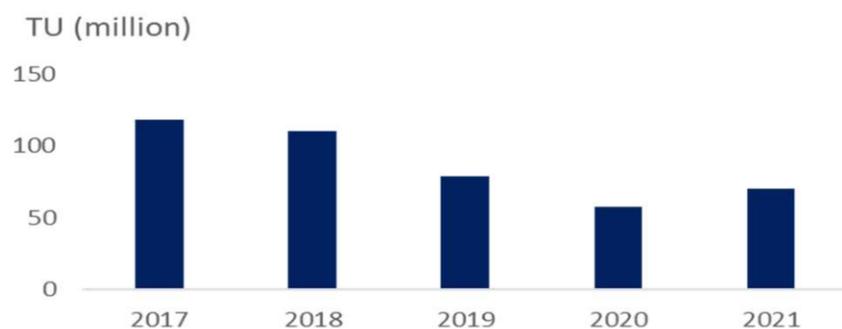
Concessionaires – **Vale** - Estrada de Ferro Vitória a Minas.

Abstract

Estrada de Ferro Vitória a Minas is operated by Vale and starts at metropolitan region of Belo Horizonte, where it connects to FCA, it runs through Vale do Rio Doce and reaches Tubarão TUP in Vitoria. The main transported item is the iron mining intended for export that comes from Minas Gerais, but it also moves general cargo and transports passengers. Estrada de Ferro Vitória a Minas rout had an early term extension in Dec/20, an ongoing investment of R\$ 8.8billion that includes security improvement and capacity increase, that will be agreed with ANTT. That extension is expected to be finished in Jul/27.

That extension also includes a grant of R\$4.2 billion that will be manly used to public interest, such as investments in this and other railways construction as Centro-Oeste Integration Railway (FICO) that will have 383 km extension.

Volume Moved



Source: Mininfra

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Important Numbers

Rail extension

894.2 km

Auction date and duration of the concession

Jul/1997 to Jul/2057 (early renewed)

Carried cargo

70.2 million tons (TU)

Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments

Investments R\$ million



Source: Mininfra – triennial investment plan

Main Players

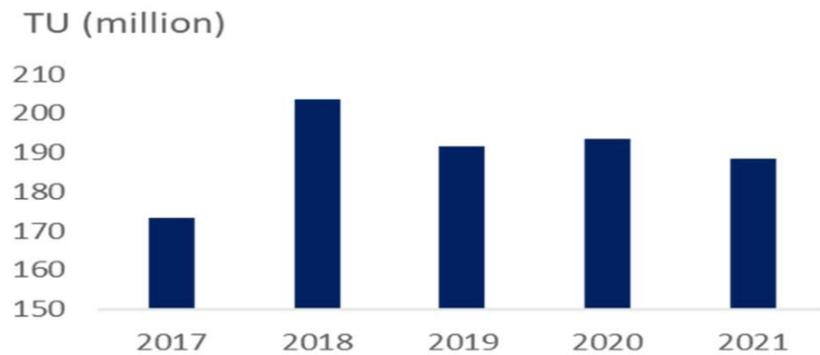
Concessionaires – **Vale** - Estrada de Ferro Carajas.

Abstract

Estrada de Ferro Carajás, is operated by Vale, it connects the biggest open pit iron ore mine in the world, in Carajás (PA), to Ponta da Madeira TUP, in São Luís (MA). It moves 188 million tons and transport 350 thousand passengers per year. It has one of the longest cargo trains in the world (with 330 wagons and 3.3 km extension).

Estrada de Ferro Carajas rout had an anticipated term extension in Dec/20, with an ongoing investment of R\$ 8.3 billion that includes security improvement and capacity increase, that will be agreed with ANTT. That extension is expected to be finished in Jul/27.

Volume Moved



Source: Mininfra

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Important Numbers

Rail extension

996.7 km

Auction date and duration of the concession

Jul/1997 to Jul/2027 (early renewed)

Carried cargo

188.3 million tons (TU)

Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments

Investments R\$ million



Source: Mininfra – triennial investment plan

Main Players

Concessionaires – **VLI** – Centro Atlântica Railway (FCA) -.

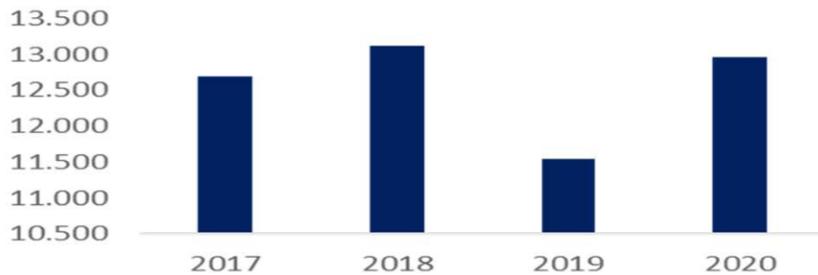
Abstract

Main axis of railroads between the northeast, southeast and Midwest, the Centro-Atlântica Railway (“FCA”) is operated by VLI and offers efficient and integrated solutions for its costumers. It transports grains, sugar, limestone, cement and fertilizers, in addition to steel and petrochemical products. The railway has more than 7,800 km of rails integrated with high performance terminals and to the Tubarão Port Complex through the “Concessionária Estrada de Ferro Vitória a Minas S.A” (EFVM concessionaire), seeking to add competitiveness to its client's business.

FCA's anticipated term extension is expected to happen in 2023 as presented in the next section “*main projects portfolio*”.

Volume Moved

TKU (million tons)



Source: Mininfra

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Important Numbers

Rail extension

7,856.80 km

Auction date and duration of the concession

Aug/1996 - Aug/2026 - 30 Years (renewable)

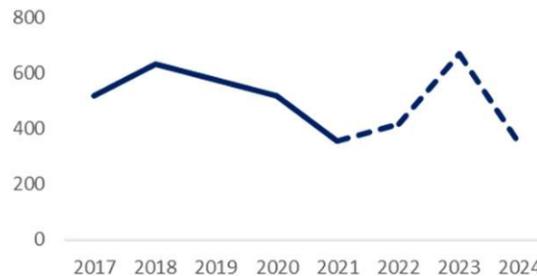
Carried cargo

12,955 million TKU

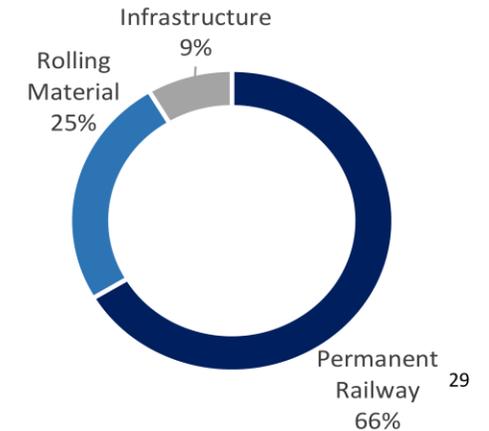
Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments

Investimentos (R\$ million)



Triennial investment plan - % Distribution



Main Players

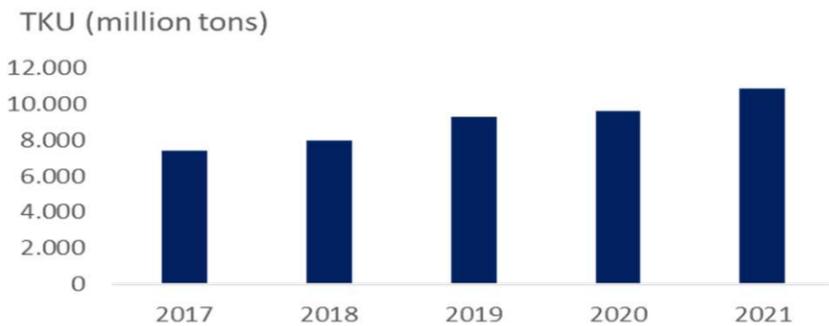
Concessionaires – **VLI** – Norte Sul Tramo Norte Railway (FNSTN)

Abstract

The Norte Sul Tramo Norte Railway (“FNSTN”) is responsible for the management of the railroad between Açailândia/MA and Porto Nacional/TO, which has 744.50 km of extension. The railroad was sub-concessed by VALEC and is operated by VLI. It transports mostly grains (corn/soy), bran, fuel, biodiesel, diesel, alcohol and gasoline.

It is an important part of the rout to move grains and fuel to Itaqui Port in São Luis.

Volume Moved



Source: Mininfra
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Important Numbers

Rail extension

744.5 km

Auction date and duration of the concession

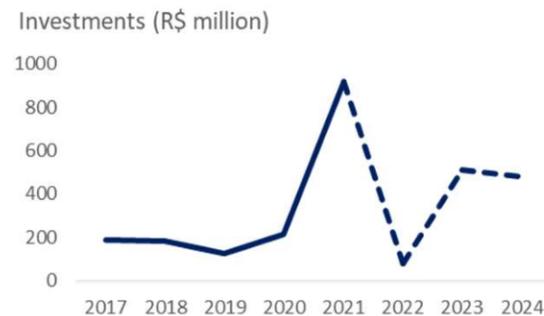
Dec/2007 - Dec/2037 - 30 Years (renewable)

Carried cargo

10,853 million TKU

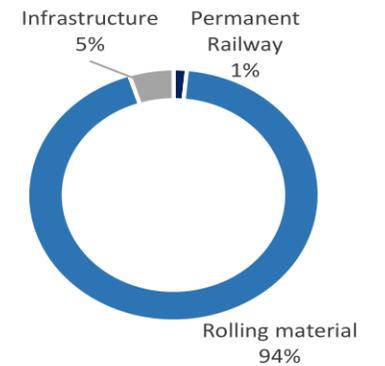
Notes: For more information on TKU and TU, go to page 16 and 17.

Total Investments



Source: Mininfra

Triennial investment plan - % Distribution



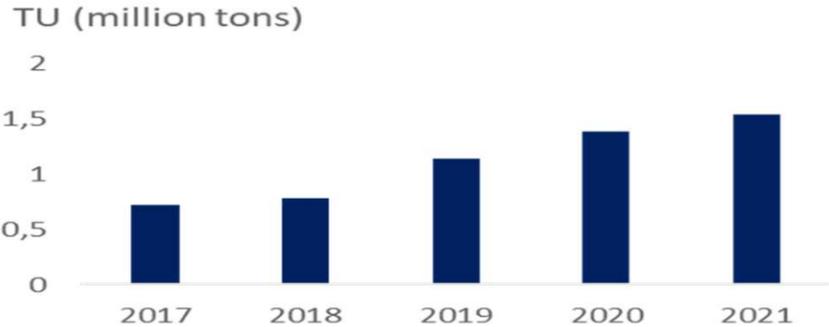
Main Players

Concessionaires – Estrada de Ferro Paraná Oeste (FERROESTE).

Abstract

The Ferroeste Paraná is a concessionaire that manages the railroad from Cascavel/PR to Guarapuava/MS. For the domestic market, transports mostly grains (soy, corn and wheat), bran and containers. In addition, for the external market, it transports mostly agricultural products, fertilizers, cement, fuel and compost. Currently, there is a project in study phase to increase the length of this railroad in 1,567km as presented in the next section “Main Projects Portfolio”. According to Ferroeste Paraná, the companies CREC 10 and Mitsui & Co has shown great interest in the project. The concessionaire did not publish their plan for expansion investments for the next years.

Volume Moved



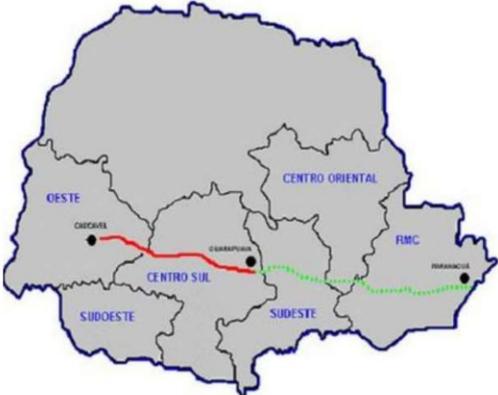
Source: Ferroeste.

Important Numbers

Rail extension	248.1 km
Auction date and duration of the concession	Oct/1988 to Oct/2078 - 90 Years (renewable)
Carried cargo	1.5 million TU

Notes: For more information on TKU and TU, go to page 16 and 17.

Area covered (Paraná state)





Main Players

Main Railways users – Railway Magazine 2019 award.

Sector	Company and country
Agriculture 	 ADM (Brazil)
	 AGREX (Brazil)
	 Agrovia
	 Ammagi
	 CANTAGALO GENERAL GRAIN – CGG
	 Cargil
	 Bunge
 Louis Dreyfus	
Steel and Mining 	 Anglo American
	 Arcelormittal
	 CBA
	 CSN
	 Usiminas
	 Gerdau
	 Votorantim

Sector	Company and country
Cement 	 Cimento Holcim  Cimento TPI
Sugar and Ethanol 	 Copersucar  Raízen
Petroleum Exploration Fuel 	 Petrobras  Ipiranga
Paper and Cellulose 	 Klabin  Suzano

Source: Railway Magazine 2019.

Main Players

Main rolling stock manufacturer (locomotives and wagons) – Railway Magazine 2019 award.

Manufacturer	
Locomotives	<p> GE Transportation - Is a division of Wabtec, a global digital industrial leader and supplier to the rail, mining, marine, stationary power and drilling industries. It is known as GE Rail. It has a locomotive manufacture in Contagem-MG;</p> <p> Locofer – Brazilian company with a consolidated position in the locomotives and wagons leasing and trade, service in terminals and railways, freight transport and railway operation for national and international markets. Located in Tubarão – SC;</p> <p> Progress Rail - One of the largest integrated diversified providers of rolling stock and infrastructure solutions and technologies for the global rail industry. Since the 1950s, Progress Rail has stood out in the freight and passenger rail markets in Brazil as a leading service provider and manufacturer of components for the industry. Through acquisitions over the years, Progress Rail has significantly expanded its supply of new and remanufactured EMD® locomotives to Brazil and South America.</p>
Wagons	<p> Greenbrier Maxion - Originating from the union between Greenbrier, Amsted Rail and lochpe-Maxio, Greenbrier Maxion, located in Hortolândia-SP, presents itself as the complete and integrated solution for the railway sector and it is considered the largest railway operation of South America. It has an accessible and efficient production capacity, with an expertise in projects of freight cars, bogies, reform services, adjustment and modernization of freight cars and their components, in addition to rental model;</p> <p> Randon - Produces solutions in equipment, automotive systems and transportation services. It is headquartered in Cacias do Sul – RS.</p>

Source: Railway Magazine 2019.

Main Players

Main rolling stock manufacturer (passengers) – Railway Magazine 2019 award.

Currently, the passengers transportation is irrelevant, but some players have already participated in intercity railways transportation. An increase of opportunities for those companies, considering the new law 14,273, is expected.

Manufacturer

-  **Alstom** – Dedicate to railway transportation sector, it offers mainly products and services to passenger's transport operators, but it also offers technological solution for cargo transportation;
-  **Ansaldo Hitachi** - Hitachi Rail is a fully integrated, global provider of transport solutions across rolling stock, signaling services and turnkey;
-  **Bombardier** - Bombardier Transportation is a global leader in rail technology offering the broadest portfolio of rail solutions in the industry providing integrated solutions to create substantial benefits for operators, passengers and the environment;
-  **Bom Sinal** - A Brazilian company, that manufactures Light Rail Train's it is headquartered in Barbalha, (Ceará);
-  **CAF** – Headquartered in Spain, CAF also has factories in France, UK, Brazil, Mexico and USA;
-  **CRRC** - CRRC Corporation Limited is a Chinese state-owned and publicly traded rolling stock manufacturer. It is the world's largest rolling stock manufacturer in terms of revenue;
-  **Hyundai- Rotem** – Provides a good amount of rail vehicles, including electric multiple units train and high-speed trains, it also provides maintenance of vehicles and rail systems;
-  **SCOMI** – Supplier of the line 17-Ouro São Paulo Subway train it's also part of VEM ABC concession;
-  **Temoinsa** – It is mainly focus on railway engineering solutions for passenger's transportation, it manages contracts and services, of maintenance review fleet modernization and vehicle manufacturing;
-  **T'Trans** - T'TRANS operates in the subway/railway sector, in rolling stock manufacturing and providing other services, such as energy, signaling, telecommunications, electronic ticketing. It has a factory in Rio de Janeiro.
-  **Vossloh** - Leading global rail technology company. Rail infrastructure is the core business of the Group.

Source: Railway Magazine 2019.



Main Players

Main Railways users – Railway Magazine 2019 award - other railway players.

Construction, maintenance, equipment and components in permanent railroad manufacture

- | | |
|---|---|
|  Arcelormittal |  Robel |
|  Brastan |  Schlatter |
|  Br Railparts |  Schwihag Ag |
|  Empretec |  Getzner |
|  Geismar do Brazil |  Intertech Rail |
|  Gerb do Brazil |  Pilon Fixações |
|  Harsco Rail |  Speno |
|  Hewitt Equipamentos |  Super Metal |
|  LB Foster Rail |  Tempo Operações Industriais |
|  Linsinger |  Thermit |
|  Loram |  Via Permanente |
|  Matisa |  Vibtech |
|  Pandrol South America |  Voestalpine - VAE |
|  Progress Rail Service |  Vossloh |
|  Plasser do Brasil | |

Shock And traction systems

-  Açoforja
-  Amsted Rail
-  Amsted Maxion
-  Cruzaço
-  Dellner
-  FAG - SCHAEFFLER
-  FOX Peças
-  FRAS-LE
-  IRSA Rolamentos
-  Siderea do Brasil
-  KNORR/BREMSE
-  MWL
-  NSK Brasil
-  SKF do BBrasil
-  Timken
-  Vallourec
-  Villares Metais
-  Wabtec

Systems and Products - Electric Power, Air Network and Auxiliaries

-  Cobresul
-  Cofibam
-  Corus
-  Faivelley
-  Huber+Sunhner
-  KNORR/BREMSE
-  Marfeq
-  NEXANS
-  Prymian Group
-  SECHERON
-  SIEMENS
-  SNEF Brasil
-  Termomecanica
-  Vinci Energies
-  Voith
-  WEG

Source: Railway Magazine 2019.



Main Players

Main Railways users – Railway Magazine 2019 award - other railway players.

Systems and products Manufacture- Signaling, Control and Telecommunication

-  Abb
-  Alstom
-  Barco
-  Bombardier
-  Boslooper Tecnologia Ferroviária
-  Efacec do Brasil
-  Frauscher
-  Frequentis
-  GURU Tecnologia
-  Huawei Brasil
-  KAPSCH
-  LAIRD
-  Motorola Solutions
-  MOXA
-  NIPPON SIGNAL
-  PROGRESS RAIL SERVICES
-  RAD do Brasil
-  SIEMENS
-  Thales Group
-  VOSSLOH
-  WABTEC

IT

-  Aliansa Brasil
-  ART - Alta Rail Tech
-  CFLEX
-  Daiken
-  DM Sistemas
-  Elipse Software
-  G3 TECK
-  Ge
-  Geoambiente
-  INFINITY AUTOMATION
-  Massa Pesagem
-  Motorola Solutions
-  MOXA
-  ONIX SAT
-  RRS SOFTWARE
-  Sisten Engenharia LTDA
-  SYSPAC

Engine parts, Electronic Components

-  A.C. Corrêa
-  Cummins
-  Manser
-  Mtu
-  Progress Rail
-  SAFT Baterias
-  Voith
-  WEG
-  WYMA Tecnologia

Source: Railway Magazine 2019.

Main Projects Portfolio



Main Projects Portfolio

Historical government investments – Investments in transport infrastructure have decreased in Brazil over the past years, however, the federal government is planning to change that.

In 2019, private investments in railways were R\$ 3.51 billion, a value that, after discounting inflation, is 26.4% lower than that recorded in 2018 (R\$ 4.76 billion). This modal has had the fourth consecutive year of decline in investments amounts.

Investments in railways managed by the Federal Government also fell, for the fifth year in a row, as shown in the table beside.

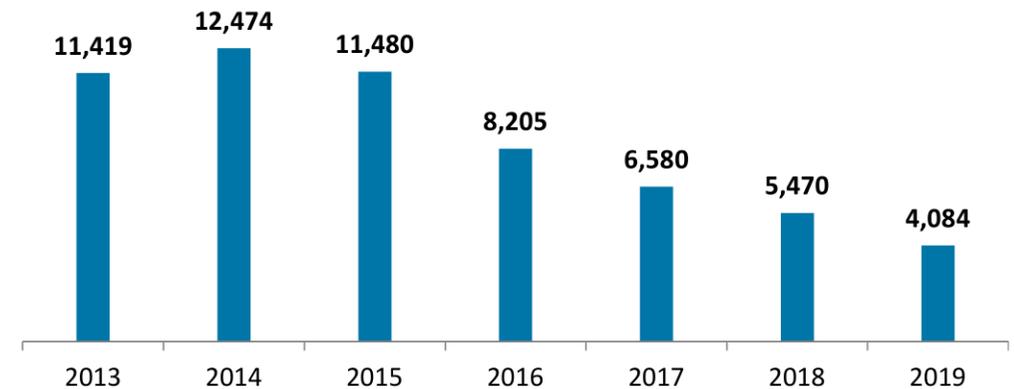
The federal government expenditures, via Valec, are mostly intended for construction of sections.

It is expected that the Federal Government and private companies will enhance their investments in railways, in the upcoming years, making them a logistical alternative with greater potential for the Brazilian production flow. The network expansion plan is based on the participation of the private sector, through the PPI (the Investment Partnerships Program). The 14,237/21 Law has established measures to encourage those investments.

Historical Investments in Railways (in R\$ millions)								
	2013	2014	2015	2016	2017	2018	2019	2020
Concessions	8,066.91	8,797.68	9,474.92	7,030.00	5,889.08	4,762.78	3,507.29	n.a
Federal Government	3,351.95	3,676.02	2,005.35	1,174.64	691.44	706.86	577.03	364.09
Total	11,418.86	12,473.69	11,480.27	8,204.64	6,580.52	5,469.65	4,084.32	n.a

Total historical investments in Railways

R\$ millions



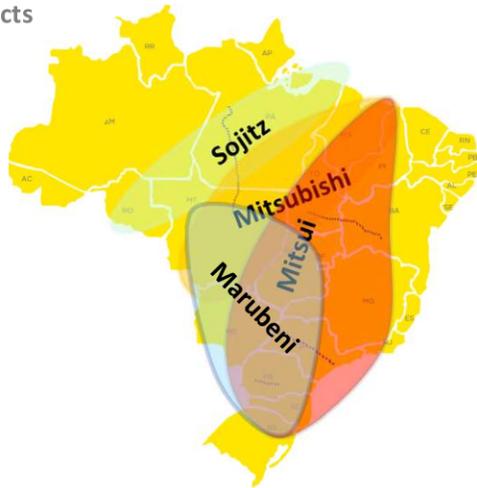


Main Projects Portfolio

Considering PPI projects – there are 5 ongoing projects concentrated in the same area that some Japanese companies operate, in that area, there are also several signed authorization contracts.

PPI – Investment Partnership Program

On Going Projects



5 projects on going projects and 2 projects extended

The projects include, term extensions, regular concessions, rebidding and state detachment.

The terms extensions are expected to anticipate investments and promote investments in security and capacity increase in existing railways. The regular concession are expected to increase railways extension and establish alternative economic routes for cargo flows .

Source:PPI/Infrastructure Ministry/ Pro Trilhos

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Authorization

Signed Projects



95 requests and 32 signed contracts

The signed contracts of railways authorization, are expected to generate investments of more than R\$ 130.0 bi, and to aggregate around 10,000 km of railways.

Those projects are going to be executed with private recourses only.

There are also 63 projects requests under improvement.

In case they are all approved. The total investment will be around R\$ 295 bi and will represent around 23,000 km of new railways.

Main Projects Portfolio

PPI - Investment Partnership Program – Railway Projects.

Brazil has a program of investment partnership, called PPI. Its purpose is to expand and strengthen the interaction between the State and the private sector through the structuring and development of projects that culminate in the execution of public-private partnership contracts, concessions and other privatization measures. PPI railway projects are presented bellow:

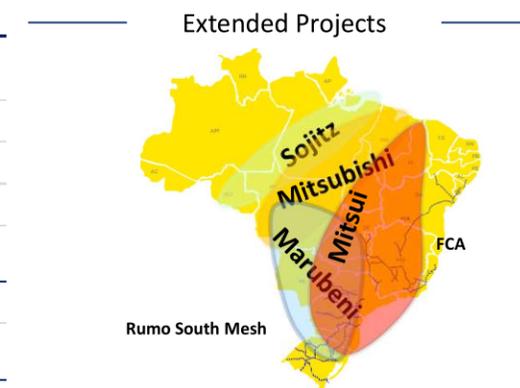
- 5 ongoing projects;
- 2 Extend projects expected to be completed in 2023.

Status	Project	Model	Signature	Demand (Mi tons)	Investment CAPEX (BRL Bi)	Term (years)	km
On going	Concession da EF-354 - Ferrovia de Integração Centro-oeste	Concession	n/i	13,0	2,73	n/i	383
On going	EF-277 - Estrada de Ferro Paraná Oeste - Ferroeste	PPP (under studies)	Contract expect. 2023	37,8	14,5	n/i	1567
On going	EF-334 – FIOl – routs II e III	Concession	n/i	n/i	n/i	n/i	990
On going	Ferrovia EF-170 – MT/PA - Ferrogrão	Concession	n/i	33,5	25,2	69	933
On going	Rebiding Malha Oeste - Concession	Concession (rebitding)	n/i	n/i	n/i	n/i	1973
Extended	FCA – Ferrovia Centro-Atlântica S.A.	Term Extension	Contract expect 2023	35	13,8	30	7200
Extended	Anticipated term extension - Rumo Malha Sul	Term Extension	Contract expect 2023	22,3	10,3	30	7223

n/i - not informed - project in study

Source:PPI

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Main Projects Portfolio

Projects Authorization – based on private investments only – currently there are 32 contracts signed, as listed below.

Project	Signing year	Km	Investment (BRL bi)	Company
Barcarena-PA and Santana do Araguaia-PA conection - Rondon do Pará-PA and Açailândia	2022	1370	n/i	3G Empreendimentos e Logística S.A
Barra de São Francisco/ES to Brasília/DF	2021	1108	14,2	Petrocity Ferrovias Ltda
Ipojuca/PE to Curral Novo/PI	2021	717	5,7	Planalto Piauí Participações e Emp. S.A.
Sete Lagoas/MG to Anápolis/GO	2021	716	15,3	Macro Desenvolvimento Ltda
Presidente Kennedy/ES to Conceição do Mato Dentro/MG and Sete Lagoas/MG	2021	610	14,0	Macro Desenvolvimento Ltda
Açailândia/MA to Barcarena/PA	2021	571	5,7	Minerva Participações e Investimentos S.A.
Unai-MG to Campos Verdes-GO	2022	530	5,3	Petrocity Ferrovias Ltda
Alcântara/MA to Açailândia/MA	2021	520	n/i	Grão Pará Multimodal Ltda
Água Boa/MT to Lucas do Rio Verde/MT ¹	2021	508	6	VLI Multimodal S.A.
Água Boa/MT to Lucas do Rio Verde/MT ¹	2021			Rumo S.A.
Primavera do Leste - MT to Ribeirão Cascalheira/MT	2022	498	7,5	Rumo S.A.
São Mateus/ES to Ipatinga/MG	2021	410	5,0	Petrocity Ferrovias Ltda
Guarapuava/PR to Paranaguá/PR	2021	405	15,2	Estrada de Ferro Paraná Oeste S/A - Ferroeste
Cascavel/PR to Chapecó/SC	2021	286	6,0	Estrada de Ferro Paraná Oeste S/A - Ferroeste
Uberlândia/MG to Chaveslândia (Santa Vitória/MG) ²	2021			VLI Multimodal S.A.
Uberlândia/MG to Chaveslândia (Santa Vitória/MG) ²	2021	277	2,7	Rumo S.A.
Santa Rita do Trivelato MT to SINOP	2022	251	3,8	Rumo S.A.
Bom Jesus do Araguaia-MT to Água Boa-MT	2022	249	n/i	Rumo S.A.
Porto Franco/MA to Balsas/MA	2021	230	2,8	VLI Multimodal S.A.

Project	Signing year	Km	Investment (BRL bi)	Company
Cascavel/PR to Foz do Iguaçu/PR	2021	166	6,3	Estrada de Ferro Paraná Oeste S/A - Ferroeste
São Desidério/BA to Riachão das Neves/ BA	2022	141	3,0	VLI Multimodal S.A.
Abaíra/BA to Brumado/BA	2021	120	1,2	Brazil Iron Mineração LTDA.
Colatina-ES to Linhares-ES	2022	100	1,0	Morro do Pilar Mineirais S.A.
Três Lagoas/MS to Aparecida do Taboado/MS	2021	89	n/i	Eldorado Brasil Celulose S.A.
Correntina/ BA to Arrojoandia/BA	2022	83	1,7	VLI Multimodal S.A.
Maracaju/MS to Dourados/MS	2021	76	2,9	Estrada de Ferro Paraná Oeste S/A - Ferroeste
Corumba de Goiás/GO to Anapolis/GO	2022	68	0,4	Petrocity Ferrovias Ltda
São João da Barra RJ	2022	41	n/i	Porto do Açú Operações S.A.
Lençóis Paulista/SP to Pederneiras/SP	2021	20	n/i	Bracell SP Celulose Ltda
Cubatão-SP to Santos-SP	2022	9	0,1	VLI Multimodal S.A.
Lençóis Paulista/SP	2021	4	n/i	Bracell SP Celulose Ltda
Santo André/SP	2021		0,3	Fazenda Campo Grande Emp. e Part. Ltda

Both companies required authorization to the same route, both were allowed.

Source: Infrastructure Ministry/ Pro Trilhos

Final Considerations

Final Considerations

Market Overview – Main data.



Movement (2021 in TU)	The Railway sector: 506.8 millions TU and 372 billion TKU. (The railway sector moved 506.8 millions of useful tons in 2021, with a 3.6% growth compared to 2020, the productive rates reached 372 billion TKU,, 1.9% growth compared to 2020).	Market Competition	The expectation is that the market will increase its competitiveness with the new legal context and by investment incentives, which will make room for new players.
Planned Investments	<ul style="list-style-type: none">• Authorization Model: about R\$295 billion (in case all projects are approved);• PPI framework selected railways: around R\$70 billion.	Legal Context	The Laws are aimed at attracting private capital to the sector, in the construction of railways and in the provision of rail transport services. The expectation is that the rail mode will increase significantly its share in the Brazilian transport matrix.
Number of projects in progress	<ul style="list-style-type: none">• PPI framework selected railways: 5 ongoing projects and 2 extended;• Authorization Model: 95 requests and 32 signed contracts.	Growth Potential	High. The scenario is marked by investment incentives, which will make the movement of people and goods across the vast territory of the country more efficient.



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