



# Brazil's Infrastructure Landscape 2022



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# Foreword

## The Infrastructure Sector in Brazil

### A Protagonist in the Future of Brazil

The years 2020 and 2021 are marked globally as the years of the COVID-19 pandemic. In Brazil, in addition to health challenges, we continue to experience internal challenges directly related to political, economic and social issues.

However, it's been two years during which we have also seen the infrastructure sector, which has always been on the sidelines of the economy, become critical to Brazil's development, gaining importance, notoriety and prominence. Serious work and planning combined with a state view allowed the infrastructure sector to position itself, once again, as a pillar to attract investment and support economic growth (and recovery)—of resources and of the level of employment and improvement of the quality of life in the country.

Since 2019 the federal government, through the Ministry of Infrastructure, has carried out privatizations and concessions of ports, airports, railways and highways, which grant the government, according to official data, more than R\$18 billion. Additionally, investors committed more than R\$73 billion and generated more than one million jobs. In 2021, during the Brazilian Infra Week, with the concession of 28 assets in several transport modals, the government collected R\$3.6 billion in grants and had investors taking on investment commitments of an additional R\$10 billion. In October 2021, the renewal of the concession of the highway Presidente Dutra, where more than 50% of the Brazilian GDP is transported, generated grant resources to the state of R\$1.8 billion and investment commitments around R\$15 billion over the next 30 years.

There is a structural deficit in the country and this fact by itself explains the interest of investors, both domestic and international, in the sector. Respect for regulators, agencies and contracts, as well as the direct interaction of the government and its agents with the investors, increased the level of trust. This scenario has attracted the strategic investor but also, and strongly, the financial investor.

The combination of these structural needs, which include other important sectors such as energy and telecommunications, allied to regulatory frameworks (oil and gas or water/sanitation are some examples) and transparency, established over the last few months, contributed to the increasing interest of the investor in the sector. Public-Private Partnership (PPPs) have also contributed and transformed the way the public sector operates—and here the headline wording includes productivity and governance.

By December 2021, auctioning another 19 assets, the government intends to attract an additional R\$50 billion in private investments (mainly in road and railway areas) and grant the collection of more than R\$3 billion, with the expected generation of more than 400,000 jobs. The initiatives and discussions for the 5G technology auction, in 2021, estimate investments of more than R\$6 trillion in the country in the coming years.

Prospects for 2022 and 2023 for the sector are positive and, allied to a portfolio of projects being well presented and coordinated in their placement on the market, will continue to attract national and international investors. Free from any ideological and political bias, the sector is a pillar of support for the creation of a virtuous circle of social and economic benefits and the country's recovery.

**Alexandre Pierantoni**

Managing Director

Head of Brazil Corporate Finance



This paper provides an overview of the infrastructure sector in Brazil and assesses the current landscape of opportunities that may be available to private capital investors. We examine Brazil's level of infrastructure investment relative to other emerging economies and review potential needs by subsector. We also highlight certain actions, developments and programs that have aimed to support private investment within the sector and review key characteristics of infrastructure investments that attract interest in the asset class globally.

Additionally, we present recent updates regarding the projects in development through the Brazilian Government Investments Partnerships Program.

## Executive Summary

Brazil has the world's sixth largest population, and its gross domestic product (GDP) places it among the 15 largest economies. Brazil benefits from an abundance of natural resources, and this abundance positions the country as a global leader in the production and exportation of several key commodities. The country also has the 16th largest industrial production in the world.

Yet, despite the country's position in the global economy and its expanding, urban-concentrated population, Brazil's investment in infrastructure has lagged behind that of other large countries and emerging economies. Brazil's infrastructure ranks 78th in the world<sup>1</sup>, according to the World Economic Forum's Global Competitiveness Index. This disparity between Brazil's infrastructure and the country's broader demographics and economic standing may indicate a significant incremental opportunity for private capital investors across virtually all relevant subsectors, including energy, logistics, telecom, sewage and water.

Private capital investment in infrastructure continues to be supported by economic policies and programs sponsored by the Brazilian government, and recent policy changes at Brazil's development bank, Banco Nacional do Desenvolvimento Econômico e Social (BNDES), are expected to result in expanded private market activity going forward. The current Ministry of Infrastructure has focused on privatizing assets through Investments Partnerships Program (PPI) and in reducing barriers for private investments, such as in the sewage and gas distribution sectors, with the discussion of a new regulatory/legal framework. Between 2019 and 2021, the PPI auctioned a total of 77 transport projects, 27 oil, gas and mining projects, and 23 other projects, totaling R\$ 829 billion of scheduled investments.

Private investment in the Brazilian infrastructure sector has emerged over the past couple of decades, with several domestic and global alternative investment managers entering the market.

Given the disparity that persists in Brazil's level of infrastructure investment today, the opportunity for private investors within the sector may continue to accelerate going forward.

An examination of the infrastructure sector in Brazil reveals a significant disparity between the level of infrastructure investment and the size of the country's economy—such disparity may present an attractive opportunity for investors.<sup>2</sup>

<sup>1</sup> According to latest WEF GCI score report (2019) available [here](#).

<sup>2</sup> Conversion rate used: USD 1 = BRL 5







## Section 1

# The Infrastructure Landscape in Brazil

**Brazil has the sixth largest population in the world, and its 2020 GDP of approximately \$1.4 trillion<sup>3</sup> places the country among the 15 largest economies. With more than 140 million hectares of productive land, Brazil's abundance of natural resources positions the country as a global leader in the production and/or export of several commodities, including coffee, iron ore, meat, orange juice, pulp and paper, soybeans and sugar.**

With the adverse effects from the COVID-19 pandemic, Brazilian GDP fell 4.1%, compared to 2019, representing the lowest historic rate since 1996. Agriculture and cattle were the only sectors to grow (2.0%), following a commodities boost with soy and coffee outstanding. Industry declined 3.5%, influenced by the construction and transformation industry. Services fell 4.5%, impacted by social isolation.

In the first four months of 2021, Brazil was affected by an aggravation of the pandemic, reaching a level of 4,000 deaths per day due to COVID-19. Despite the health crisis, the hardening of sanitary measures and social distancing, economic growth in Q1 returned GDP to pre-pandemic levels. Agriculture and construction sectors experienced significant expansion. Yet, unemployment and inflation reached record rates, showing that full economic recovery may be slower than predicted.<sup>4</sup>

As Brazil emerges from a recent recession, GDP is forecasted to expand by approximately 5.05% in 2021 and 2.12% per year, on average, between 2022 and 2025.<sup>5</sup> The country's population of more than 200 million, over 80% of which resides in urban areas, is expected to peak at 233 million in 2047 and stabilize at 228 million by 2060<sup>6</sup>. However, despite the country's expanding population and position in the global economy, Brazil's investment in infrastructure has lagged behind that of other large countries and emerging economies.

The Global Competitiveness Index (GCI), developed by the World Economic Forum, measures the performance of 137 countries in 12 areas of competitiveness. In the World Economic Forum's 2019–2020 *Global Competitiveness Report*, Brazil's infrastructure competitiveness, as measured by the GCI, ranked 78th.

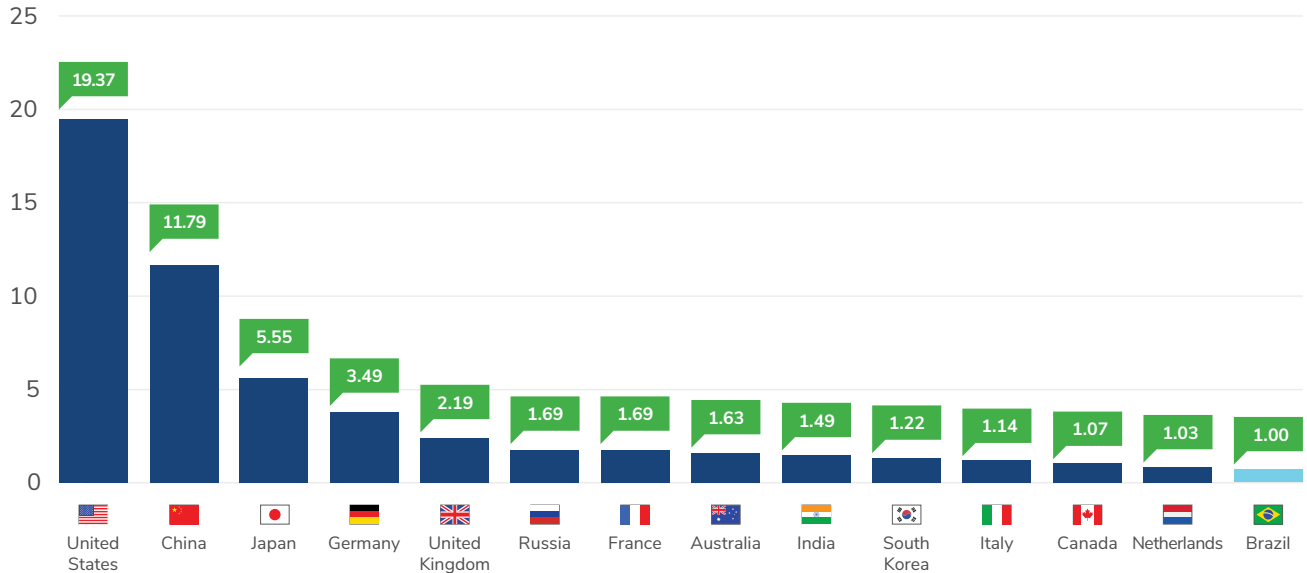
<sup>3</sup> According to <https://data.worldbank.org/country/brazil>

<sup>4</sup> Source: <https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa>

<sup>5</sup> Source: BCB Market Expectations System

<sup>6</sup> Source: Instituto Brasileiro de Geografia e Estatística (IBGE)

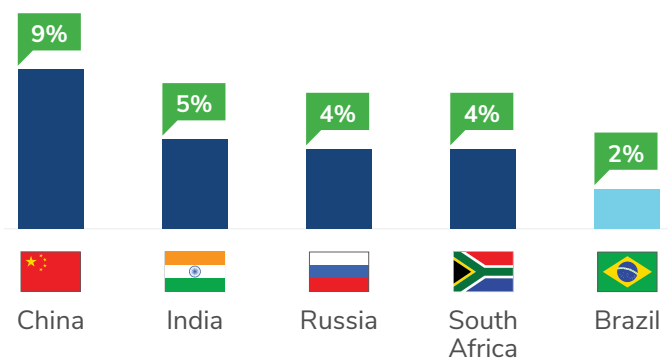
### Top 10 Countries by GDP (Trillions of \$) and Global Competitiveness Index Infrastructure Rank



Source: World Bank and Global Competitiveness Index

A closer assessment of Brazil's investment in infrastructure relative to other emerging economies indicates a similar disparity. Between 2000 and 2013, Brazil's average annual investment in infrastructure as a percentage of GDP, approximately 2%, ranked behind other countries in the group of nations known as "BRICS" (Brazil, Russia, India, China and South Africa).

### Average Investment as % of GDP From 2000 to 2013



Source: World Bank

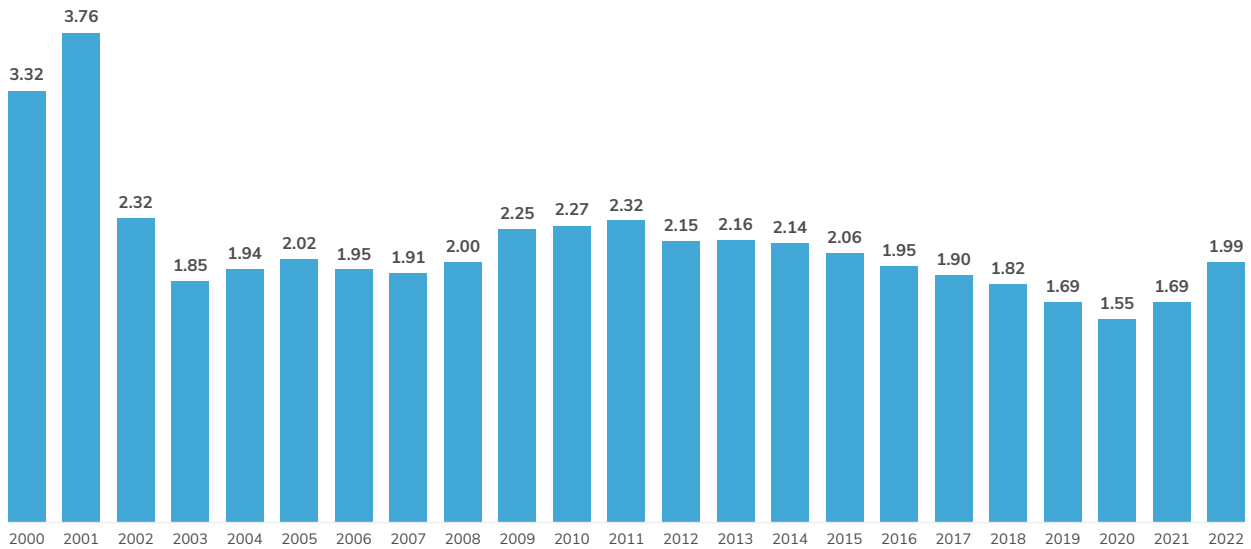
Between 2011 and 2016, Brazil invested an average of 2.2% of GDP in the infrastructure sector.<sup>7</sup> In 2017, as Brazil's economy began to recover from a deep recession, infrastructure investment declined further, to 1.4% of GDP, or R\$87 billion. In 2018, infrastructure investment remained at a similar level, 1.5% of GDP. During the COVID-19 pandemic, infrastructure investment remained at a level of 1.55% of GDP, or R\$115.8 billion, being 5.4% lower than previous year.

<sup>7</sup> According to *Infraestrutura e Regulação* report by Oliver Wyman – 2018



To merely return to levels achieved between 2011 and 2016, it is estimated that an investment of R\$323 billion would be required between 2018 and 2019<sup>8</sup>, two-thirds of which would compensate for depreciation alone. The graph below illustrates the tendency of Brazilian investments on infrastructure as a % of GDP which historically has been below the investment need to compensate for depreciation.

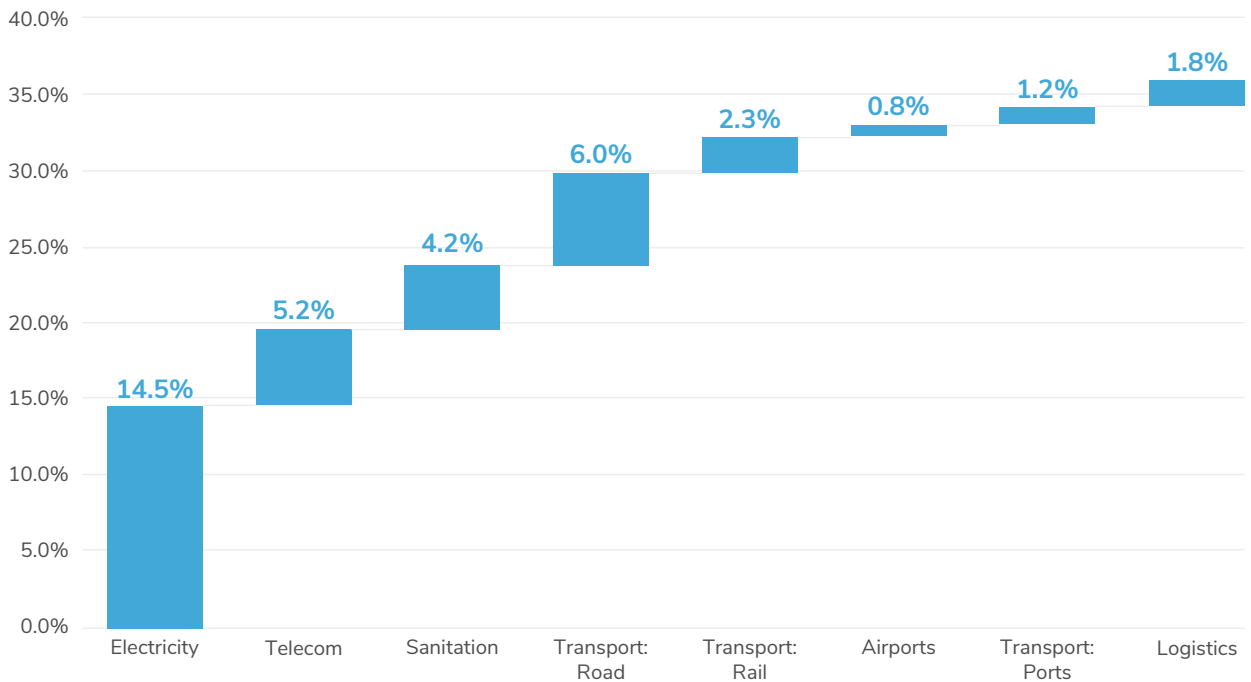
### Brazil's Infrastructure Investment as a % of GDP



Source: Projeto Infra2038. Consulta Pública 01 – January 2020

Brazil's infrastructure stock, a measurement of a country's infrastructure assets as a percentage of GDP, was approximately 36% in 2019.<sup>9</sup> The image below illustrates the distribution of infrastructure stock throughout various categories.

### Brazil's Infrastructure Stock as a % of GDP (2019 figures)



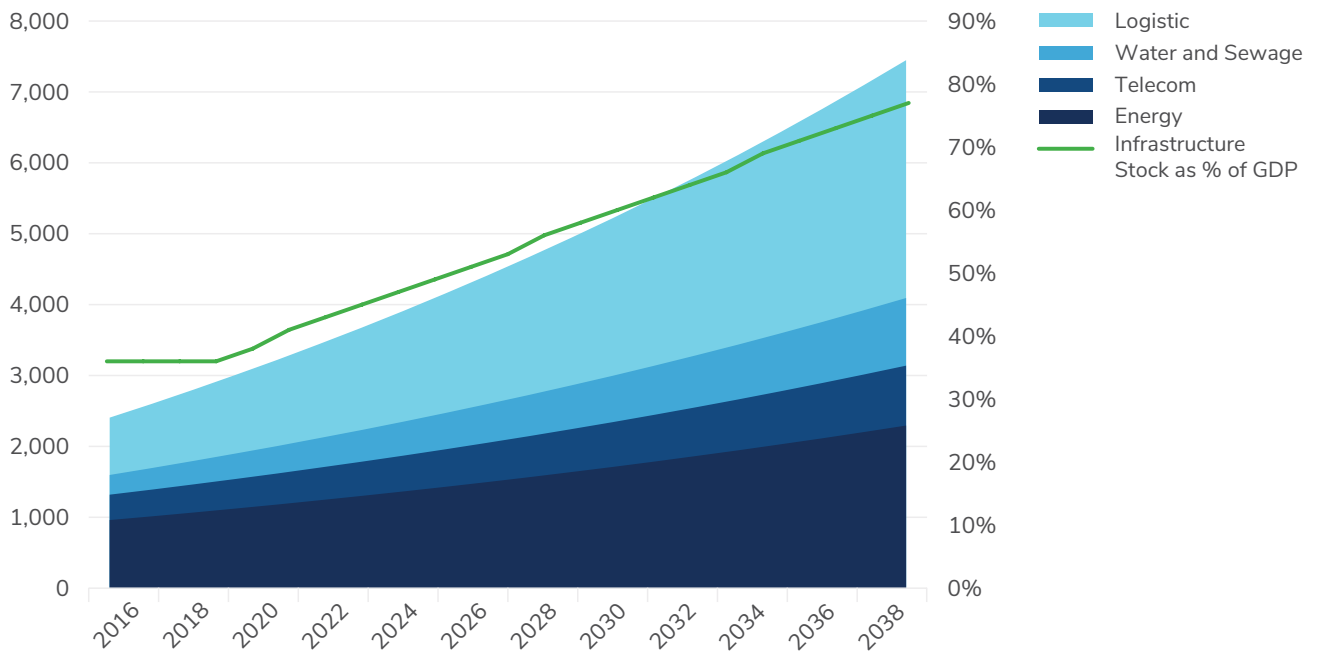
Source: Infra2038(2019) and SDI/ME (Secretaria de Desenvolvimento da Infraestrutura).

<sup>8</sup> According to Projeto Infra2038. Consulta Pública 01 – January 2018.

<sup>9</sup> According to Projeto Infra2038. Consulta Pública 01 – January 2018.

The *Infra2038* Report estimates that Brazil would need to increase its infrastructure stock to approximately 77% over the next 20 years to rank among the top 20 countries, according to the GCI on infrastructure. Such improvement would require as much as R\$8.8 trillion in incremental infrastructure investment over the next 20 years.<sup>10</sup>

### Infrastructure Stock Projection by Type in Brazil (R\$ billion)



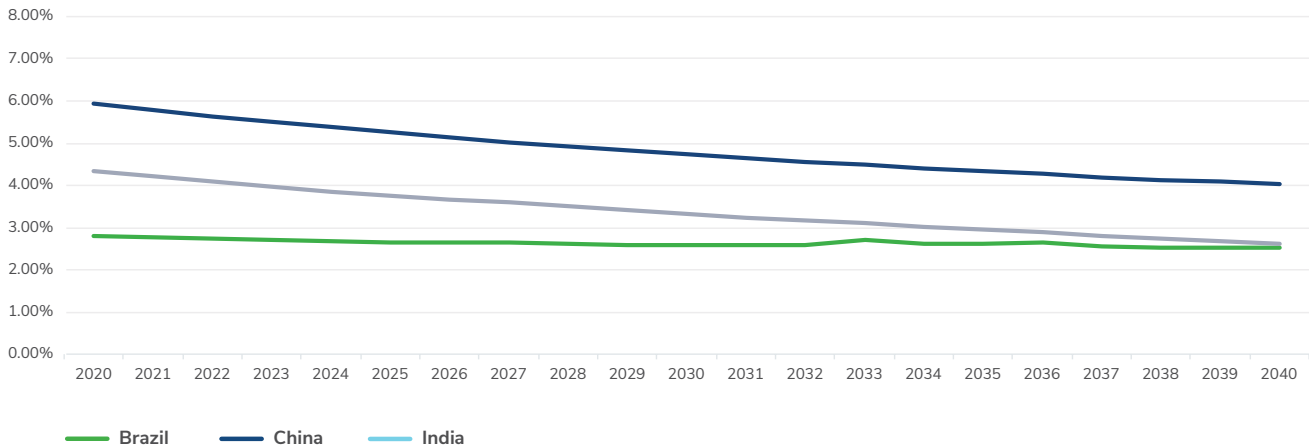
Source: *Infra2018* Report



<sup>10</sup> According to Projeto *Infra2038*. Consulta Pública 01 – January 2018.

During the same time period, infrastructure spending as a percentage of GDP is expected to decline in both China and India, further underscoring the potential for a growing investment opportunity within the sector in Brazil.

### Infrastructure Investment at Current Trends as a % of GDP

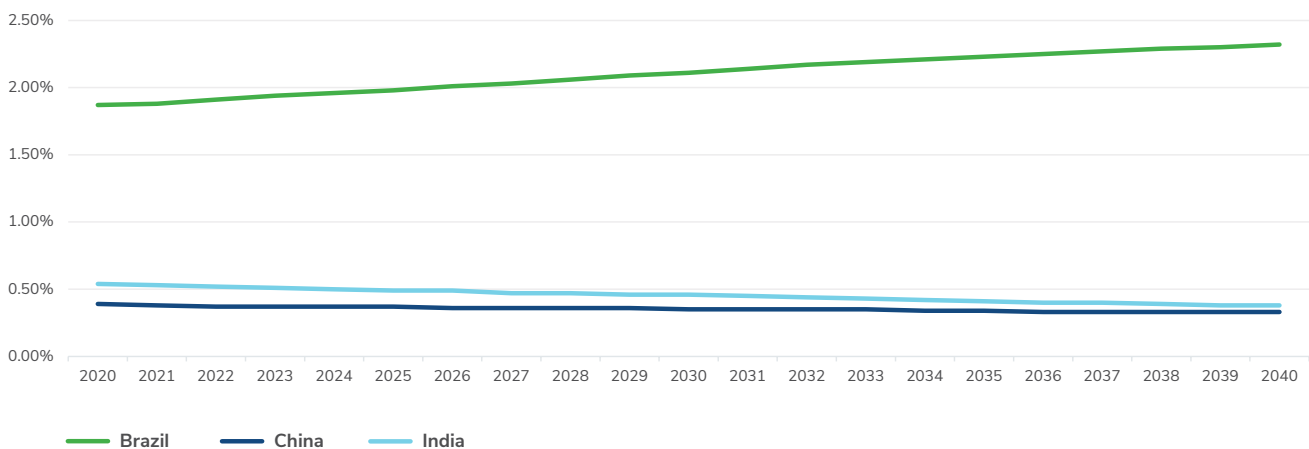


Source: [Global infrastructure outlook accessed in 10/06/2021](#)

According to *Global Infrastructure Outlook*'s latest data, Brazil's infrastructure is expected to sustain its current level but has, by far, the largest investment gap among these three economies, as illustrated below. The "gap" is the result of the comparison between the "current trend" forecast and the "investment need" forecast, which aims to demonstrate the investment that would occur if countries were to match the performance of their best performing peers.

Based on Brazilian Central Bank (BCB) estimates for 2021 Brazilian GDP, this gap could reach approximately USD 28 billion in 2021 alone. The total 20-year forecast estimates a gap of USD 1 trillion, distributed per sector as shown below.

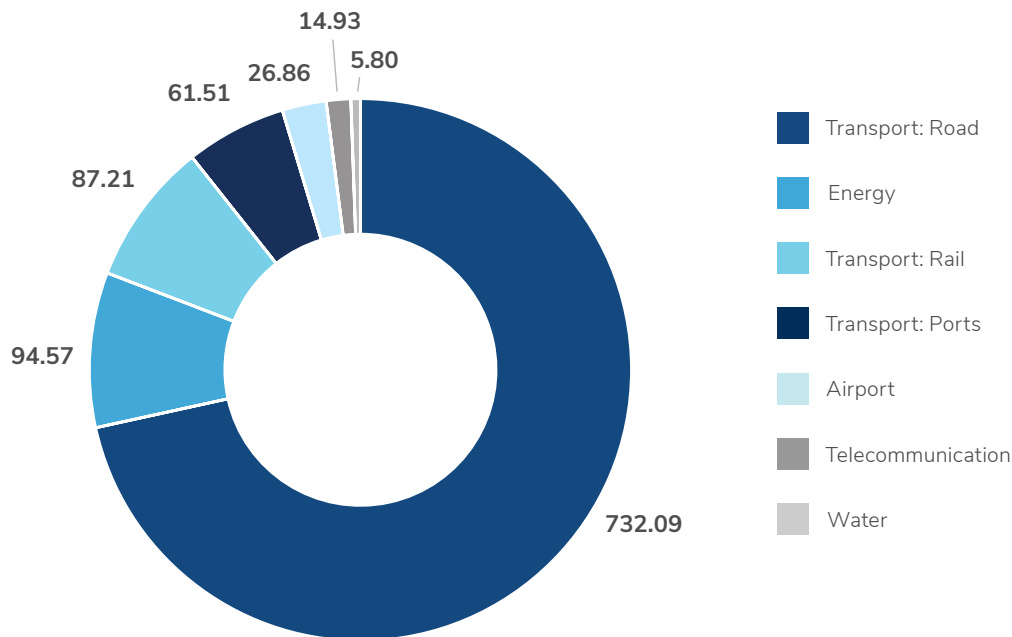
### Infrastructure Investment Gap as a % of GDP



Source: [Global infrastructure outlook accessed in 10/06/2021](#)



## Infrastructure Investment Gap in USD Billion per Sector



Source: [Global infrastructure outlook accessed in 10/06/2021](#)

### Tozzini Freire Legal Overview

On April 1, 2021, federal law no. 14,133 entered into force, setting forth a brand-new legal framework for public procurement proceedings and contracts with the government across all levels (federal, state and municipal).

It is a major milestone for the public procurement legal framework; once in a two-year period, it will entirely replace the major existing rules concerning government contracts and public tenders. The New Public Procurement Act will substantially impact the routine of governmental entities in Brazil, which have spent an estimated R\$54 billion in the acquisition of goods and contracting of services in 2020.

The New Public Procurement Act comes in the scene with high expectations: turning the public procurement system into a more agile, less burdensome, and efficient set of rules designed for public tenders and governmental contracts.

The new rule provides for a two-year transition period. Meanwhile, the public bodies will have the opportunity to choose which statute will rule their procurements proceedings: the one that is currently valid (mostly based on law no. 8,666/1993) or the new one. It is not difficult to foresee possible misunderstandings resulting from the existence of two valid legal frameworks for public procurements, so this is one of the most polemic points of the new act. It is expected that the regulation of the new statute will bring additional clarification in this regard.

Law No. 14,133/2021 puts Brazil's three main bidding statutes together into one.

Among its changes, the New Public Procurement Act excludes the modalities named "invitation" (convite) and "price request" (tomada de preços).

It also establishes a new type of bid called "competitive dialogue," already known in European countries and in the U.S. Through competitive dialogue, the public administration will be able to collect inputs from the private sector to identify solutions that are already implemented in the market, and based on that, define the specifications of the object that is intended to be acquired.

Other points of the new legal framework worth highlighting:

- Aiming to clarify currently doubtful topics, the statute defines terms that bring uncertainty to bidders, such as "reference sheet," "preliminary project" (anteprojeto), "basic project," "risk matrix," "startup" and "overpricing."
- It also turns well-established court precedents into law (for instance, the matter related to the suspension of bidding rights).
- It provides incentives for better planning of procurement proceedings by creating a "preparation phase," which entails a long list of requirements, to be addressed by the public officials in charge of procurement.
- It also establishes the Annual Procurement Plan, whereby federal entities should forecast all items to be contracted in the upcoming year.

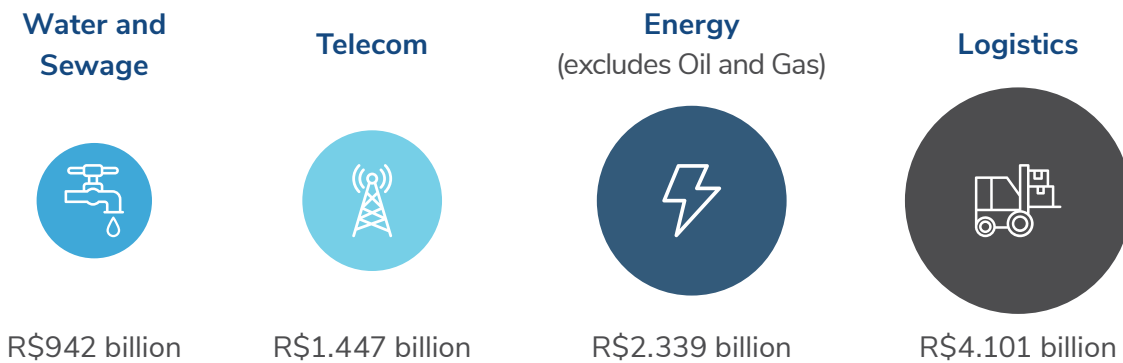
Despite the changes it brings, the New Public Procurement Act does not set an actual turnaround regarding the way Brazilian government procures goods and services.



# Infrastructure by Sector

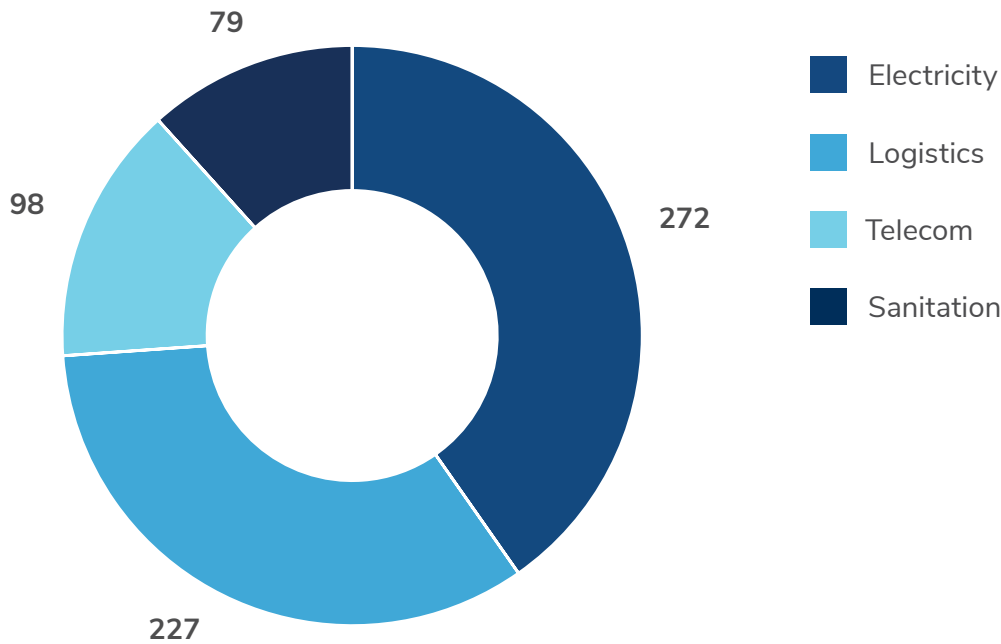
According to the *Infra2038 Report*, nearly three-quarters of Brazil's infrastructure stock as of 2019 comprised assets in the energy and logistics sectors.

Total Required Investment by Sector to Achieve Top 20 Infrastructure Ranking by 2038, According to the Global Competitiveness Index (R\$ billion)



Source: *Infra2038 (2018 report)*

Infrastructure Stock by Sector (USD billion—2019 data)



Source: *Infra2038 (2019 report)*



# Energy

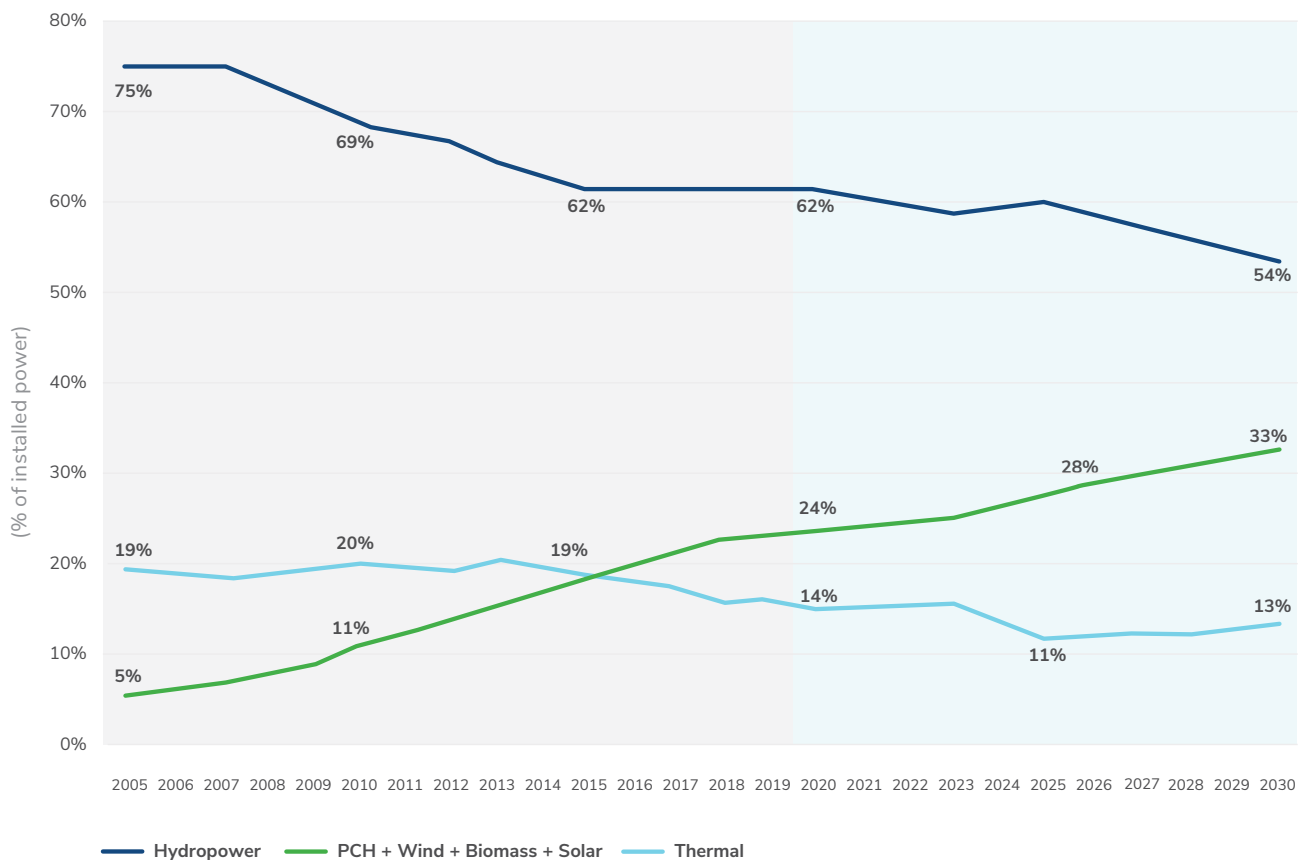
Brazil has a continental territory with great natural wealth and very favorable climate and soil fertility conditions that exceed many times the total energy demand estimated for the next 30 years.<sup>11</sup> The country is expected to transition from a net energy importer to a net energy supplier, taking on the new role of managing the abundance of energy resources.

This abundance comes from a wide range of energy sources. A significant portion is composed of renewable resources. Therefore, the expansions of supply and consumption of energy will be made in a sustainable way, with the maintenance of renewable indicators: between 45% and 50% in the energy matrix, and between 80% and 85% in the electric generation matrix.

The latest 10-year plan (PDE2030), provided by the Energy Research Office (EPE in its Portuguese acronym), illustrates the evolution of the participation of different generation sources over the forecasted period.

## Installed Capacity of Centralized Energy Generation per Source (% of total installed capacity)

2005–2019 actual, 2020–2030 forecast



Source: PDE 2030 - Energy Research Office (EPE)

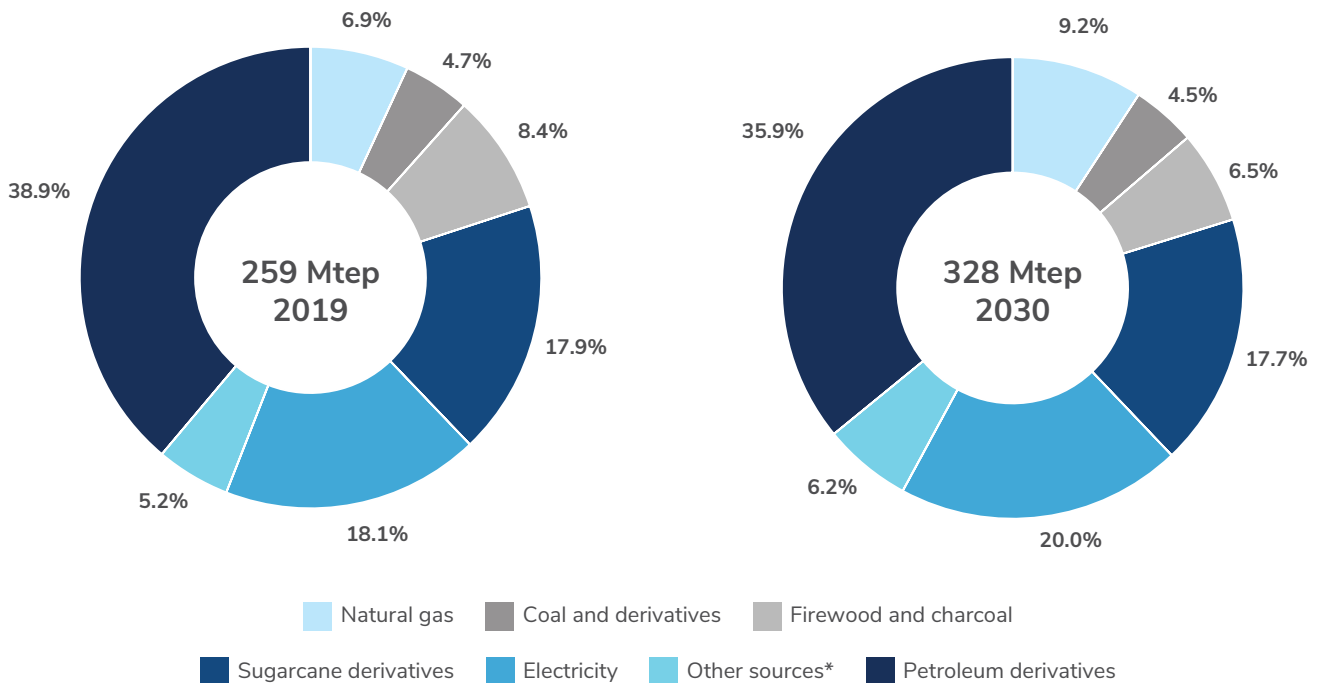
<sup>11</sup> Source: PNE report 2050

According to the *Infra2038* Report published in 2018, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$2.339 billion in investment within the energy sector would be required until 2038.

The expectations for the evolution of the matrix of energy consumption by source between 2019 and 2030 show the continuation of the trend of growing electrification of the country, a source that reaches an average annual increase of 3.1%. The sugarcane derivatives also gain importance over the period.

Petroleum derivatives continue to be the main source of the final energy, with an average annual growth of 1.4% in the period studied. Part of its potential market is being absorbed by ethanol and biodiesel, especially in the transport sector. Firewood and charcoal are also losing participation, in favor of other nobler sources with better yields.<sup>12</sup>

### Final Energy Consumption by Source



\* includes biodiesel, bleach, other renewable and non-renewable sources

### Tozzini Freire Legal Overview

The power sector in Brazil is currently undergoing major changes on structural points of its legal and regulatory framework. There are several public consultations and law-making processes attempting to modernize and enhance applicable regulation.

First, it should be noted that the Ministry of Mines and Energy (MME) has recently changed large consumers' eligibility requirements for power trading within the free market,<sup>13</sup> gradually reducing the minimum load from 3MW to 2.5MW (effective July 2019), 2MW (effective January 2020), 1.5MW (effective January 2021), 1MW (effective January 2022), 0.5MW (effective January 2023) and less than 0.5 MW (effective January 2024), with grid connection at any voltage. Therefore, the free market is expected to have an increasing number of participants in upcoming years.

<sup>12</sup> Source: *Infra2038* (2018 report)

<sup>13</sup> Ref. Ministerial Ordinances Nos. 514/2018 and 465/2019.

In this scenario, between the years 2020 and 2021, it was possible to observe an increase in free market renewable projects as a direct result of the modification to the segment's eligibility requirements as well as the implementation of (still sluggish) Environmental, Social and Governance (ESG) or energy transition measures by certain sector players. The strengthening of the Brazilian free market is reflected in the increasing number of long-term power purchase agreements executed in the market and self-production structures using renewable sources, which are being implemented by and between energy market players and large consumers, to secure their power demand and ESG needs.

Needless to say, the expansion of the generation will inevitably put pressure on transmission and the typical bottlenecks faced in respect to transmission infrastructure. The development of new transmission facilities and the expansion of existing ones are auctioned by the federal government through the National Electric Energy Agency (ANEEL), which has already set forth a schedule for auctions in the upcoming years.

The increase of free market players is also encouraging the review of the applicable regulation concerning the participation of energy traders in the sector, specifically in relation to market reliability. Among the points currently being discussed by ANEEL and the Energy Trading Chamber (CCEE) are the following: (i) requirement of financial stability, (ii) technical capacity and knowledge of market rules and risks, and (iii) analysis of the criminal record or administrative penalties of the agent. Such tools are seen by the regulator as a first step toward improving the reliability of the transactions conducted within the free market.

In addition, as of December 2022, exporters and power producers will be entitled to execute power purchase agreements in foreign currency, as permitted by Law No. 14,286/2021.

It is also worth mentioning that, in July 2021, the federal government published Law No. 14,182/2021, which provides for the capitalization/privatization of Centrais Elétricas Brasileiras S.A. (Eletrobras). This measure aims to expand the company's investment capacity in both energy generation and transmission segments. As next steps in the capitalization process, it is necessary to conclude the company's valuation studies, as well as the definition of the value and quantity of shares to be offered to the market.

Furthermore, on January 7th, 2022, Law No. 14,300 was approved with the purpose of establishing the legal framework for distributed generation (DG) projects in the country. DG corresponds to renewable on-site generation plants limited, as applicable, to 5 MW.

Also on January 25, 2022, the Brazilian Federal Government published Decree No. 10,946/2022, which defined the first guidelines for offshore wind projects in Brazil. The decree deals mainly with the assignment of the use of physical space and the use of natural resources for this type of electricity generation through offshore projects. The Ministry of Mines and Energy shall issue additional rules to the decree within 180 days of it coming to effect on June 15, 2022. By publishing this decree, the main goal of the Federal Government is to explore Brazil's huge potential for offshore wind power plants, especially in the Northeast of the country, which has some projects that are already being implemented.

Based on the foregoing information, it is possible to conclude that the Brazilian legal and regulatory framework applicable to the energy sector is currently facing a revision process, with the purpose of guaranteeing adequate response to energy transition and ESG needs, a competitive market and different regulatory instruments intended to empower the energy consumer to freely manage energy demand and supply.

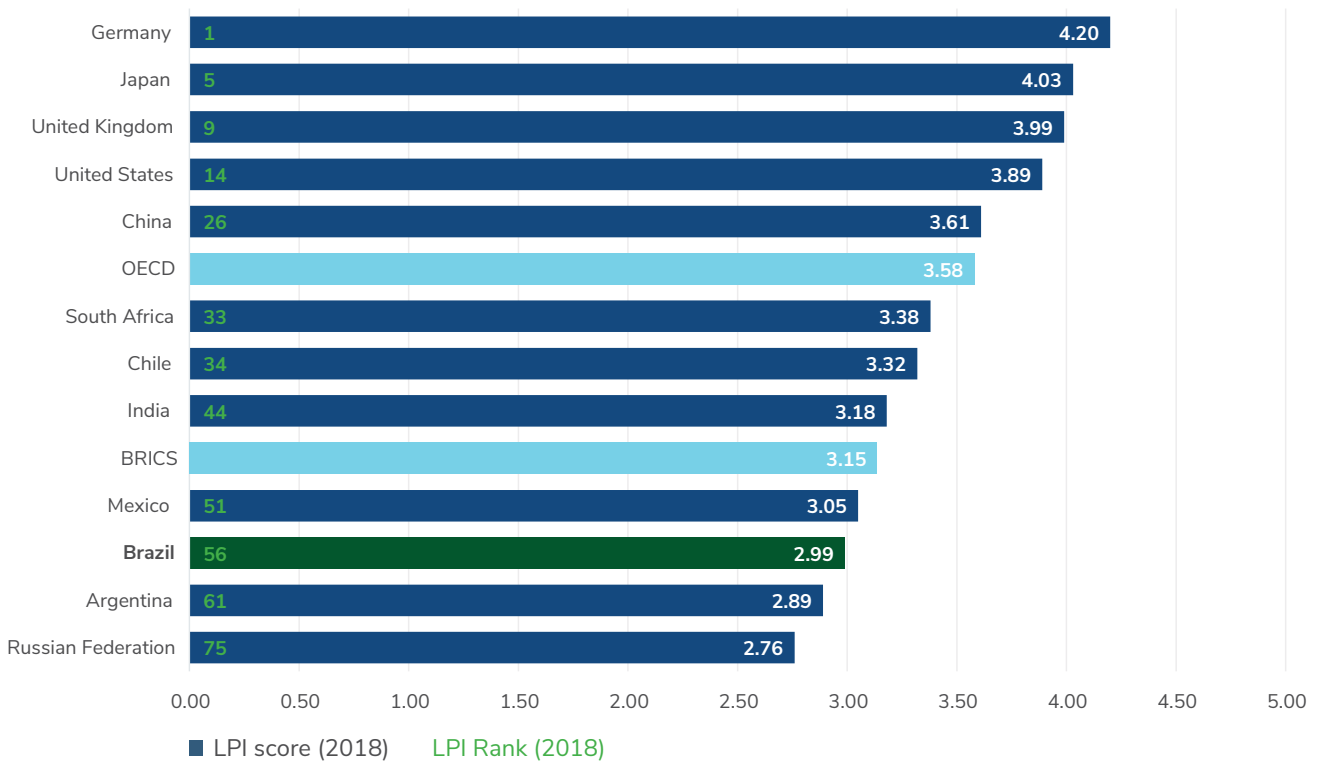






# Logistics

Logistics infrastructure plays an important role in all countries, but it is of particular importance in Brazil, given the country’s growing population, geographic span and position as a leading global exporter of key commodities. According to the World Bank’s Logistics Performance Index, Brazil’s logistics infrastructure ranked 56th out of 160 countries as of 2018.



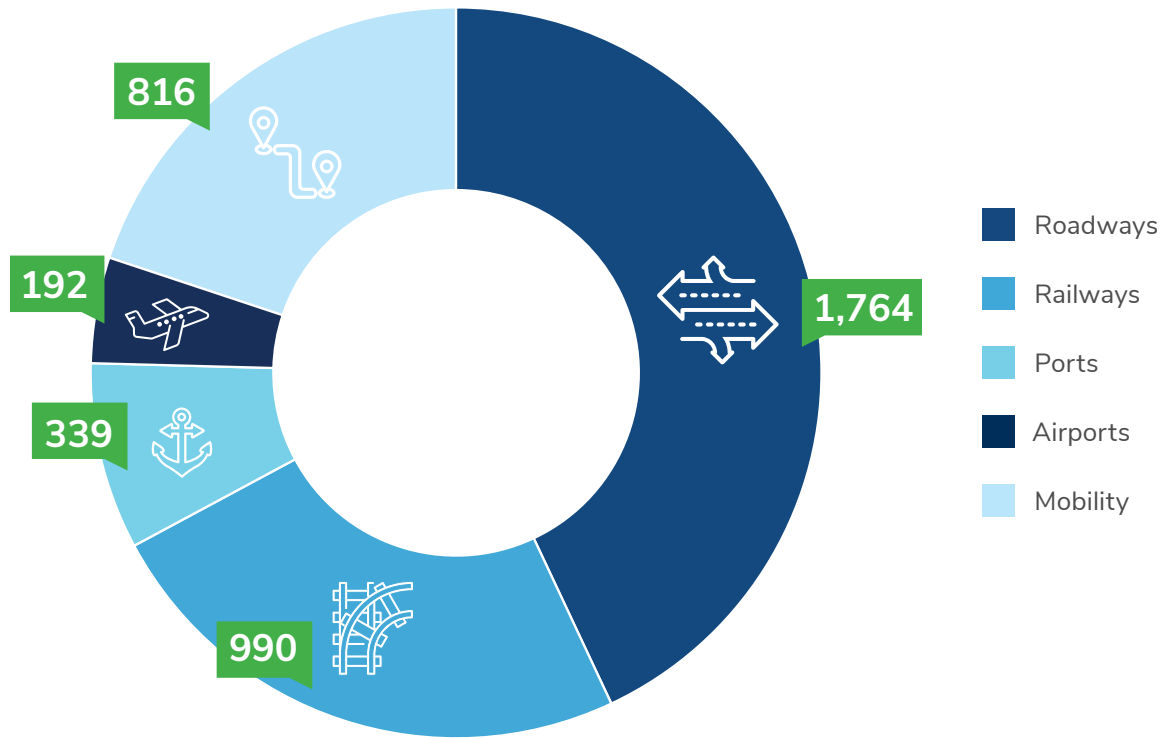
Source: World Bank’s Logistics Performance Index



The *Infra2038* Report estimates that approximately R\$4.1 trillion in investment would be required over the next several years for Brazil's infrastructure to achieve a top-20 ranking in the GCI.<sup>14</sup>

The Brazilian government intends to auction a total of 87 logistics assets in 2022 and onward. This figure stands for 37 ports, 22 Roadways, 26 Airports, 2 urban mobility projects.<sup>15</sup>

**Total Investment Needed per Logistics Segment To Be One of the Top 20 Best Countries in Infrastructure by 2038 (R\$ billion)**



Source: *Infra2038* (2018 Report)

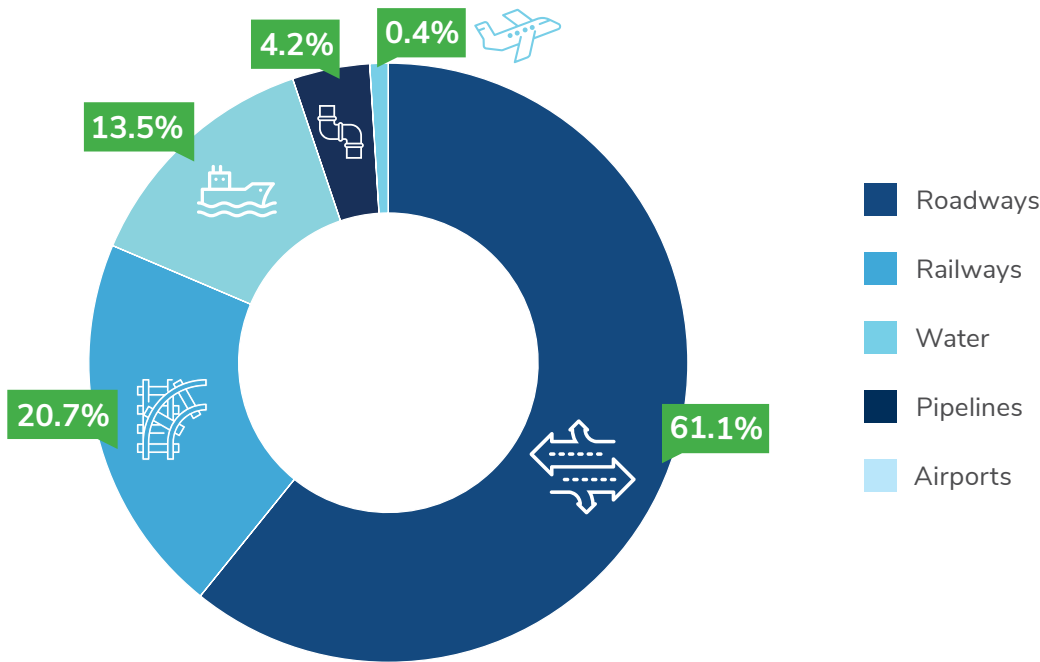
<sup>14</sup> Source: *Infra2038* (2018 Report)

<sup>15</sup> According to "Apresentação PPI - XP Investimentos - 27 de janeiro de 2022": <https://portal.ppi.gov.br/index.php>

## Roadways

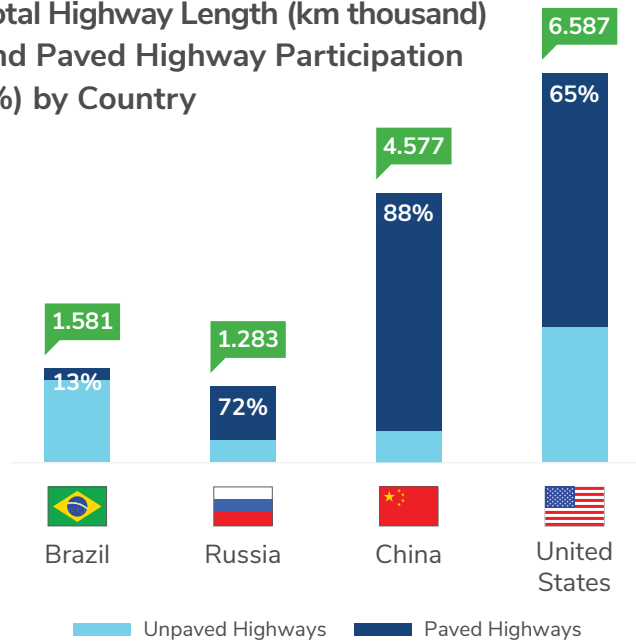
More than 60% of freight transportation in Brazil occurs over roadways.<sup>16</sup> However, only 12.3% of Brazil’s 2.0 million kilometers (km) of road network is paved—a much smaller percentage compared to that of Russia, China or the United States.<sup>17</sup>

### Freight Transportation Matrix in Brazil Freight Transportation



Source: Confederação Nacional do Transporte

### Total Highway Length (km thousand) and Paved Highway Participation (%) by Country



Although the opportunity to expand and enhance Brazil’s roadway network appears to be significant, only approximately 23,230 km of the existing network are currently under concession to the private sector<sup>18</sup> (totaling approximately R\$35 billion in investment since 1995).<sup>19</sup>

However shy in volume, the kilometers under concession to the private sector may double in the upcoming years. To list a few, there are currently 14 projects for concession and eight environmental permits in the Brazilian government IPP portfolio. Forty-five new concession projects will enable the number of kilometers to double. There will be five new procurement auctions with new configurations in the state of São Paulo. Construction of 17,648 km of new federal highways and 8,328 km of state highways will occur in the coming years.<sup>20</sup>

Source: CIA’s World Factbook

<sup>16</sup> Source: Pesquisa CNT de Rodovias – 2018.

<sup>17</sup> Source: CIA’s World Factbook – July 19.

<sup>18</sup> According to Associação Brasileira de Concessionárias de Rodovias.

<sup>19</sup> According to Brazilian Trade and Investment Promotion Agency.

<sup>20</sup> According to Associação Brasileira de Concessionárias de Rodovias.







## Detail of Main Highways Projects

### Highways

**1** BR-158/155MT/PA  
1,135.1 km

Ribeirão Cascalheira/  
MT and Marabá/PA

**2** BR-135/316/MA  
437.7 km

BR-135 junction (to Pedrinhas)  
– Itaqui/Bacanga junction;  
Access to Aeroporto do Tirirical  
– BR-136(B) junction (Peritoró);  
BR-135(B)/MA-020 junction  
(Peritoró) – BR-226(B)/343(A)  
junction (Div. MA/PI) (Teresina/Timon)

**3** BR-381/MG and BR-262/MG/ES  
686.6 km

Section of BR-381/MG between  
Belo Horizonte/MG and Gov.  
Valadares/MG  
Section BR-262/MG/ES between  
João Monlevade/MG and Viana/ES

**4** BR-116/493/RJ/MG  
(Rio-Valadares)  
726.9 km

Section of BR-116/RJ  
Section between Além  
Paráiba/RJ and BR-040/MG

**5** BR-040/495/MG/RJ + BR-  
040/MG (Rio de Janeiro –  
Ribeirão das Neves)  
473 km

Section between Rio de Janeiro/  
RJ and Belo Horizonte/MG

**6** Rebidding BR-101/RJ  
(autopista fluminense)  
320 km

Section between Rio de Janeiro  
and the RJ/ES border

**7** Rebidding BR-040/DF/  
GO/MG 679.7 km

Section between Brasília/DF  
and Belo Horizonte/MG

**8** Federal and state highways in  
Santa Catarina  
3,153.4 km

**9** Integrated Road Paraná  
3,361.9 km

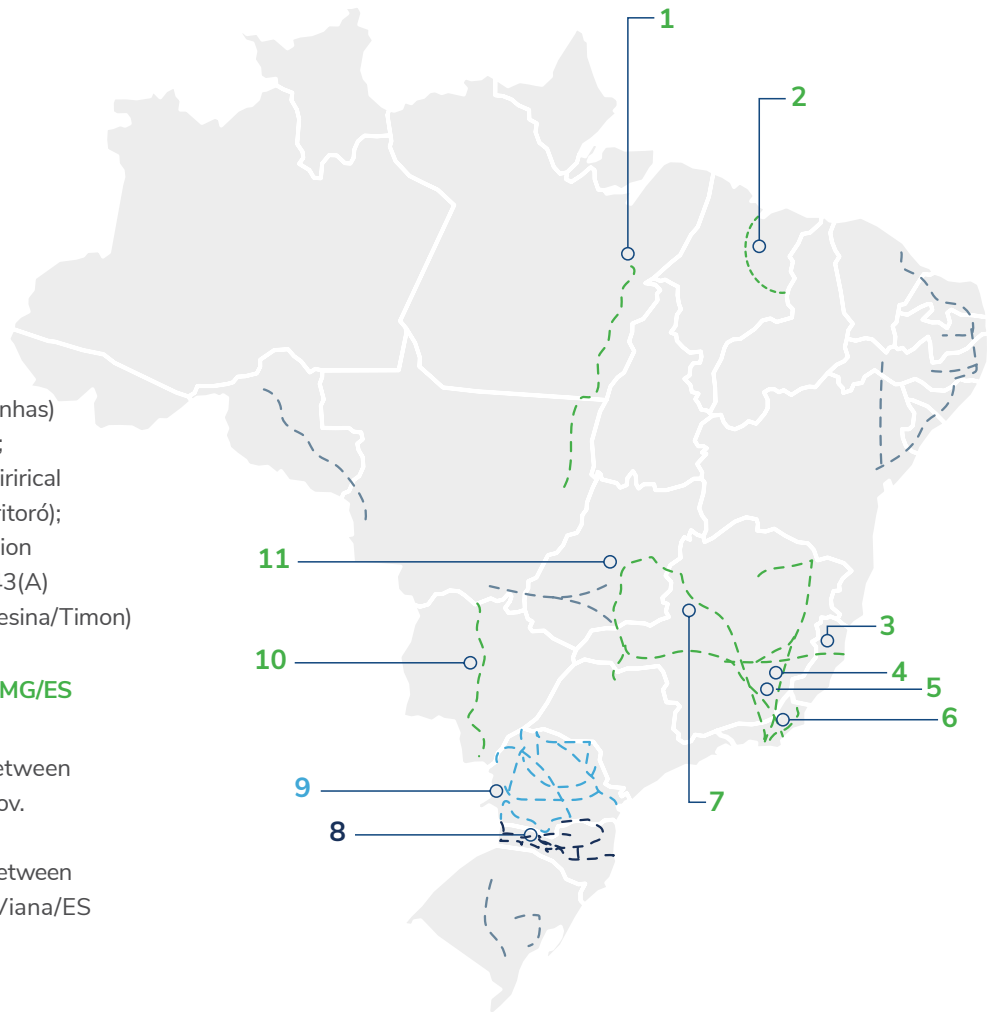
**10** Rebidding BR-163/MS  
1,094 km

Section between borders MT/  
MS and MS/PR

**11** Rebidding BR-60/153/262/  
DF/GO/MG  
1,202.1 km

Brasília/DF – São José do Rio  
Preto/SP – Betim/MG

- Concession of 6,938 km  
of highways in 4 lots



### Highways portfolio

Investments	R\$ 154.6 billion
Total Length	20,208 km

## Highways

### Next Auctions (2022)

Highway	Length	Capex (USD)	Date
<b>BR 381/MG and BR 262/MG/ES</b> <ul style="list-style-type: none"> <li>BR 381/MG between Belo Horizonte/MG and Gov. Valadares/MG</li> <li>BR 262/MG/ S between João Monlevade/MG and Viana/ES</li> </ul>	686.1 km	7.36 billion	Auction suspended, date to be defined
<b>BR 116/493/RJ/MG (Rio Valadares)</b>	726.9 km	9.22 billion	2º tri/22
<b>Integrated Road Paraná</b> <ul style="list-style-type: none"> <li>BR 153/158/163/272/277/369/373/376/476/PR and relevant state</li> </ul>	3,361.9 km	42.11 billion	2º tri/22
<b>Studies for the concession of 6,600 km stretches of federal highways Centro Norte lots (2,572.1 km)</b>	2,572.1 km	13.72 billion	4º tri/22
<b>BR 040/495/MG RJ (previous Concer) + BR 040/MG/RJ</b> <ul style="list-style-type: none"> <li>Belo Horizonte to Rio de Janeiro</li> </ul>	473 km	7.2 billion	4º tri/22
<b>BR 060/153/262/DF/GO/MG</b>	1,202.1 km	10 billion	4º tri/22
<b>BR 040/DF/GO/MG (rebidding 679.7 km)</b>	679.7 km	-	4º tri/22
<b>BR 158/155/MT/PA</b>	1,135.1 km	-	4º tri/22
<b>BR 163/267/MS</b>	1,094 km	-	4º tri/22
	<b>11.931 km</b>	<b>R\$ 89.61 billion</b>	

Source: Brazilian Investment Partnerships Program- PPI – January 2022

In January 2020, a consortium formed by the management company Pátria and the Singapore sovereign wealth fund GIC won the bid for the 30-year concession of the Piracicaba-Panorama road corridor, known as PiPa, the country's largest concession to date, with an estimated CAPEX of BRL 14 billion (over the concession). The group offered a fixed grant of R\$1.1 billion, which will be paid to the São Paulo state government. The auction for the Dutra concession will take place on October 29, 2021; the highway connects the cities of São Paulo and Rio de Janeiro and has an estimated CAPEX of BRL 14.8 billion (over the concession).<sup>21</sup>

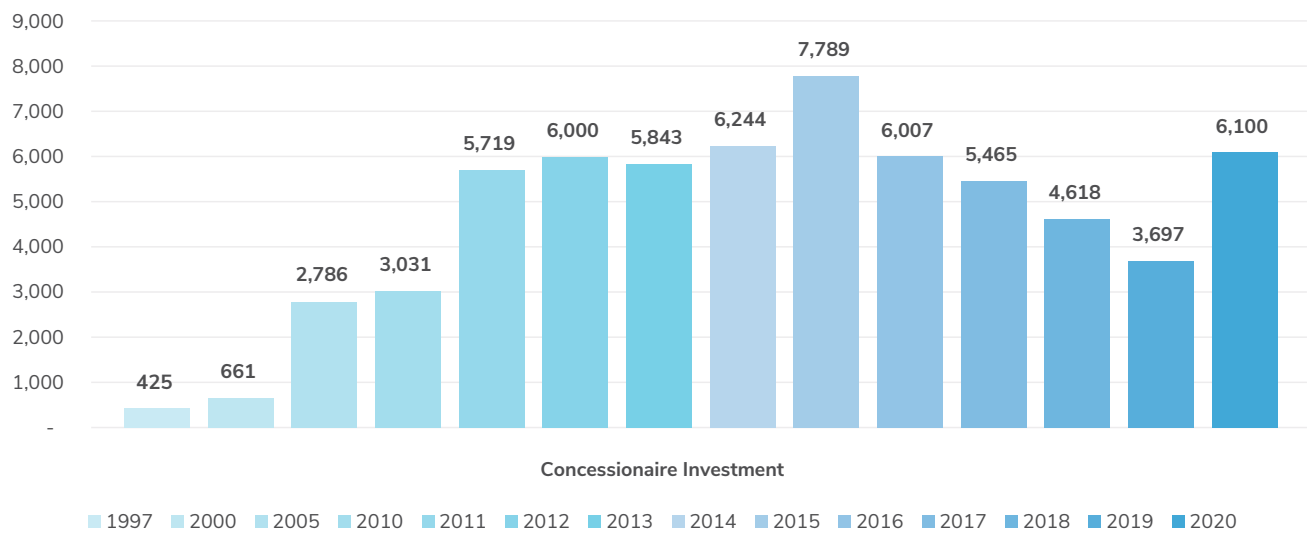
According to the *Infra2038* Report, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$1.764 billion in investment in the roadways sector would be required until 2038.

<sup>21</sup> Source: <https://g1.globo.com/economia/noticia/2021/10/29/leilao-da-dutra.ghtml>

## Railways

Brazil's freight railway network of more than 29,925 km is the ninth longest in the world.<sup>22</sup> Only 21% of freight transportation in Brazil occurs over railways. The government plans to invest approximately BRL 30 billion to expand the railway network, aiming to achieve 30% of freight transportation in Brazil. Since 1992, the Brazilian government has supported a concessions program for the development of the railway system. There are currently 13 railways in Brazil that are under concession.

### Concessionaire Investment

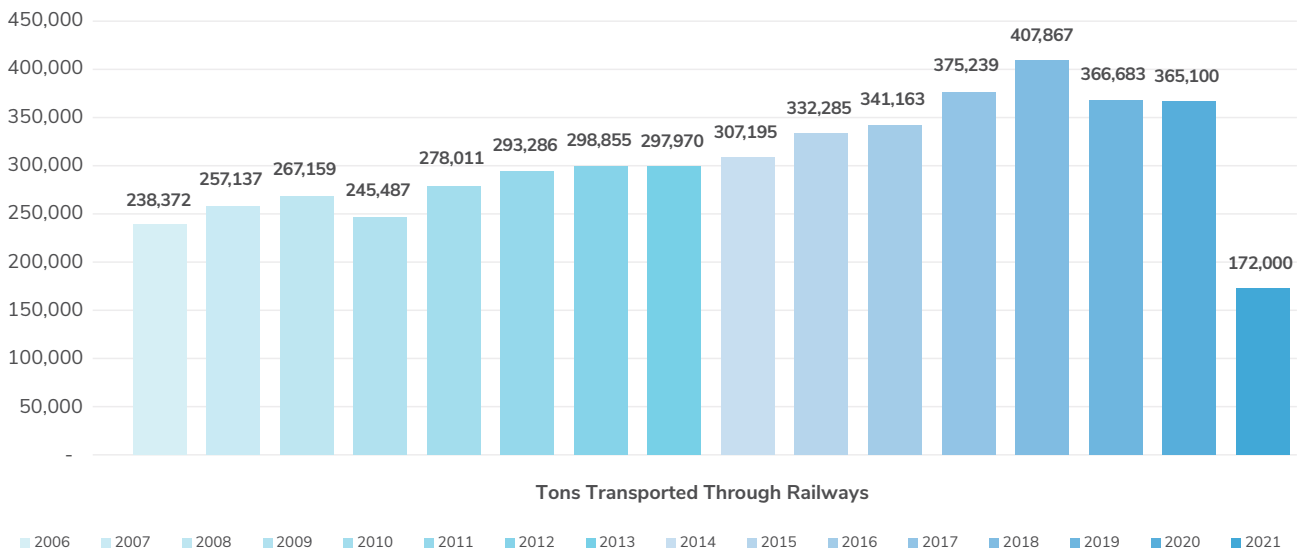


Source: Associação Nacional dos Transportadores Ferroviários



The railroad connectivity indicator is defined as the extent in kilometers of railways available per thousand square kilometers of territory.<sup>23</sup> Brazil has a railway density of only 3.5 km/thousand km<sup>2</sup>. In comparison, other countries of similar continental size have better numbers, such as the United States (29.9 km/thousand km<sup>2</sup>), China (13.2 km/thousand km<sup>2</sup>) and Canada (7.8 km/thousand km<sup>2</sup>).<sup>24</sup> To reach 20th place on the GCI 4.0, the current density should grow by more than 1,000%. These likely unattainable requirements to climb positions on this aspect of the GCI 4.0 rank are consequence of the vast areas of sparse occupation which characterizes Brazil. Even if Brazil doubles the 2019 rail network extension the country would still rank 62nd in the 2019 GCI 4.0 rank.<sup>25</sup>

### Railway Production per Year (tons transported)



Source: Agência Nacional de Transportes Terrestres

<sup>22</sup> Source: Agência Nacional de Transportes Terrestres.

<sup>23</sup> Source: Infra2038 Report

<sup>24</sup> Source: Valor Econômico (information available [here](#))

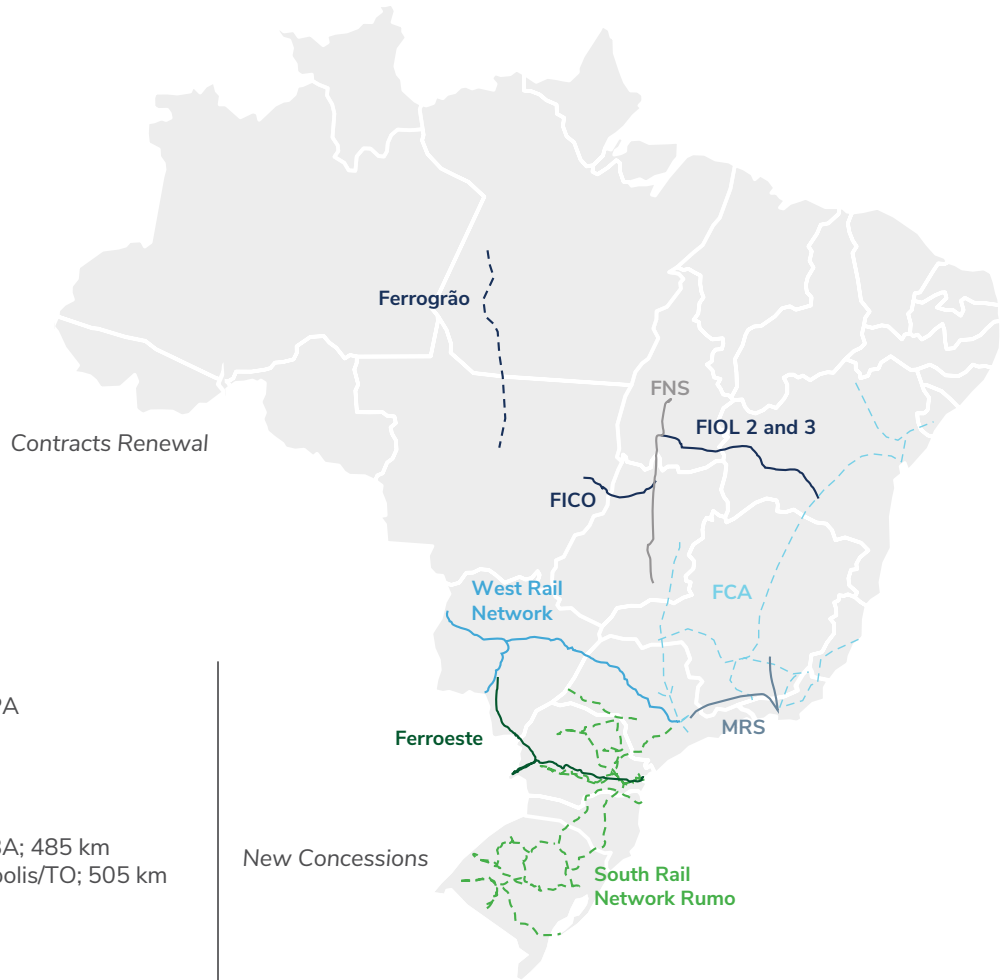
<sup>25</sup> Source: Infra2038 Report

According to the *Infra2038* Report, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$990 billion of railway investment would be required until 2038.

**Railroads**

**Map Legends**

- **West Rail Network**  
1,973 km  
Inv.: to be defined
- - - **FCA**  
7,215 km  
Inv.: R\$ 13.8 bn
- **MRS**  
1,686 km  
Inv.: R\$ 16.8 bn
- - - **South Rail Network Rumo**  
7,223 km  
Inv.: R\$ 10.3 bn
- - - **Ferrogrão**  
Sinop/MT to Miritituba/PA  
933 km  
Inv.: R\$ 25.2 bn
- **FIOL 2 e FIOL 3**  
Caetité/BA – Barreiras/BA; 485 km  
Barreiras/BA – Figueirópolis/TO; 505 km  
Inv.: to be defined
- **FICO**  
Mara Rosa/GO to Água Boa/MT  
383 km  
Inv.: to be defined
- **Ferroeste**  
1,304 km  
Inv.: R\$ 29.4 bn



**Railroad portfolio**

<b>Investments</b>	<p><b>R\$ 95.5 billion</b></p> <p>New – R\$ 25.2 billion</p> <p>Renewal – R\$ 40.9 billion</p> <p>Privatization – R\$ 29.4 billion</p> <p>Rebidding – to be defined</p>
<b>Total Length</b>	<p><b>21,707 km:</b></p> <p>New – 2,306 km</p> <p>Renewal – 16,124 km</p> <p>Privatization – 1,304 km</p> <p>Rebidding – 1,973 km</p>

Source: Brazilian Investment Partnerships Program- PPI – January 2022



The Ferrogrão concession project was sent for analysis by the Federal Court of Accounts (TCU) and is awaiting completion to be auctioned. Ferrogrão will boost the flow of grain from the Center-West through the ports of the Arco North.<sup>26</sup>

The operation of Fiol 2 is being carried out by the state-owned company Valec. The Ministry of Infrastructure is waiting for the installation license for Fiol 3.<sup>27</sup> The construction of FICO will be carried out by state-owned Vale.<sup>28</sup>

In September 2021 the Brazilian government introduced a new program named “Pro-trilhos”, that plans to implement 20,721 km of railways and accumulate a total of R\$ 240,8 billion. As of January 2022, the program had already signed 21 authorizations for new railways and had reached the mark of 6,840 km of planned new railways totalling R\$ 102,3 billion in investments.

## Tozzini Freire Legal Overview

On 12.23.2021, the Brazilian president approved the bill introducing the long-awaited new legal framework of railway transport (Federal Law No. 14,273, of 12.23.2021).

According to the Federal Government, the new legislation seeks to facilitate private investments in the construction of railways, in the use of idle stretches of railways and in the provision of railway service, through the reduction of bureaucracy currently applicable to the sector.

## Main Innovations of the New Legal Framework of Railways

We list below the main innovations of the new legal framework of railways:

- **Authorization Regime:** The most disruptive innovation refers to the possibility of using the authorization regime for (i) construction of new railways; exploitation of unimplemented or idle portions of railways; or (ii) exploitation of railways which are in the process of restitution or deactivation. This regime differs greatly from current concessions, which are public structures conceded to private exploitation, and depend on prior bidding and modeling by the government. It is a regime that allows private companies to propose private projects to the Federal Government in a less bureaucratic way;
- **Transport services without infrastructure exploitation:** Simplification of the procedure for provision of transport service that does not involve infrastructure operation, through simple registration with the railway regulator;
- **Investor User and Associate Investor:** The new framework creates the ‘Investor User’, who may enter into an investment contract with the railway operator to increase capacity, improve or adapt the railway infrastructure granted; and the ‘Associate Investor’, who may invest to enable the provision or improve the profitability of services associated with the railway (not directly linked to the transport itself). Such investors may enter into contracts with concessionaires without the need for prior authorization or bureaucratic procedure with the regulatory body;

<sup>26</sup> Source: <https://g1.globo.com/natureza/amazonia/noticia/2021/07/11/ferrograo-entenda-sobre-o-projeto-de-ferrovia-que-promete-impulsionar-o-escoamento-de-graos-pelo-norte-mas-enfrenta-impasse-legal.ghtml>

<sup>27</sup> Source: <https://www.gov.br/pt-br/noticias/transito-e-transportes/2021/09/governo-federal-assina-contrato-para-concessao-da-fiol>

<sup>28</sup> Source: <https://www.gov.br/infraestrutura/pt-br/assuntos/noticias/construcao-da-ferrovia-de-integracao-centro-oeste-iniciara-em-breve-afirma-tarcisio>

- Self-regulation: Possibility of creation of a self-regulatory entity by railway operators, which will establish technical-operational standards without government interference, except for regulation of safety issues and specific situations;
- Conversion of concessions to authorizations: The current concessionaires affected by the operation of authorized railways may migrate to the new legal authorization regime. The conversion may occur if the authorization has been granted to a (i) competitor, generating a competitive logistics market; or (ii) legal entity that is part of the same economic group of the concessionaire. Among other requirements, there is an obligation to maintain financial commitments to the Union and investments on the railway. The law provides for a hybrid scheme for this hypothesis, with characteristics of the two models (authorization and concession). This coexistence of regimes will have an important challenge of implementation (e.g., existence of reversible and non-reversible assets).

## Mobility

Given the completion of new subway lines in São Paulo, Rio de Janeiro and Belo Horizonte, in addition to the development of rapid bus transport in Rio de Janeiro and Belo Horizonte Minas Gerais, investment in mobility infrastructure has been quite active over the past few years. It is expected that approximately R\$235 billion of incremental investment in mobility infrastructure would be required to address capacity constraints in the 15 largest metropolitan areas.<sup>29</sup>

According to the *Infra2038 Report*, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$816 billion of mobility infrastructure investment would be required until 2038.

## Ports and Airports

Investment in the continued development of Brazil's ports, a significant portion of which has historically come from the private sector, is expected to increase substantially over the next two decades. Capacity is expected to increase by 92% between 2015 and 2042, and such expansion could require as much as R\$51.3 billion in incremental investment over this time period.<sup>30</sup>

Over the past several years, the private sector has also increased its investment in Brazil's airports. In 2011, the federal government made the first concession of an airport project in Natal Rio Grande do Norte. Since then, many additional concessions were granted, including major projects in Brasília (Federal District), Galeão (Rio de Janeiro state) and Guarulhos (São Paulo state). In April 2021 the Brazilian government auctioned 22 airports and 5 port terminals. Of the investments, R\$6.1 billion will be allocated to the 22 airports, R\$600 million to four ports in Itaquí/MA and one port in Pelotas/RS, and R\$10 billion to Santos's port.<sup>31</sup>

According to the *Infra2038 Report*, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$531 billion of investment in ports and airports would be required until 2038.

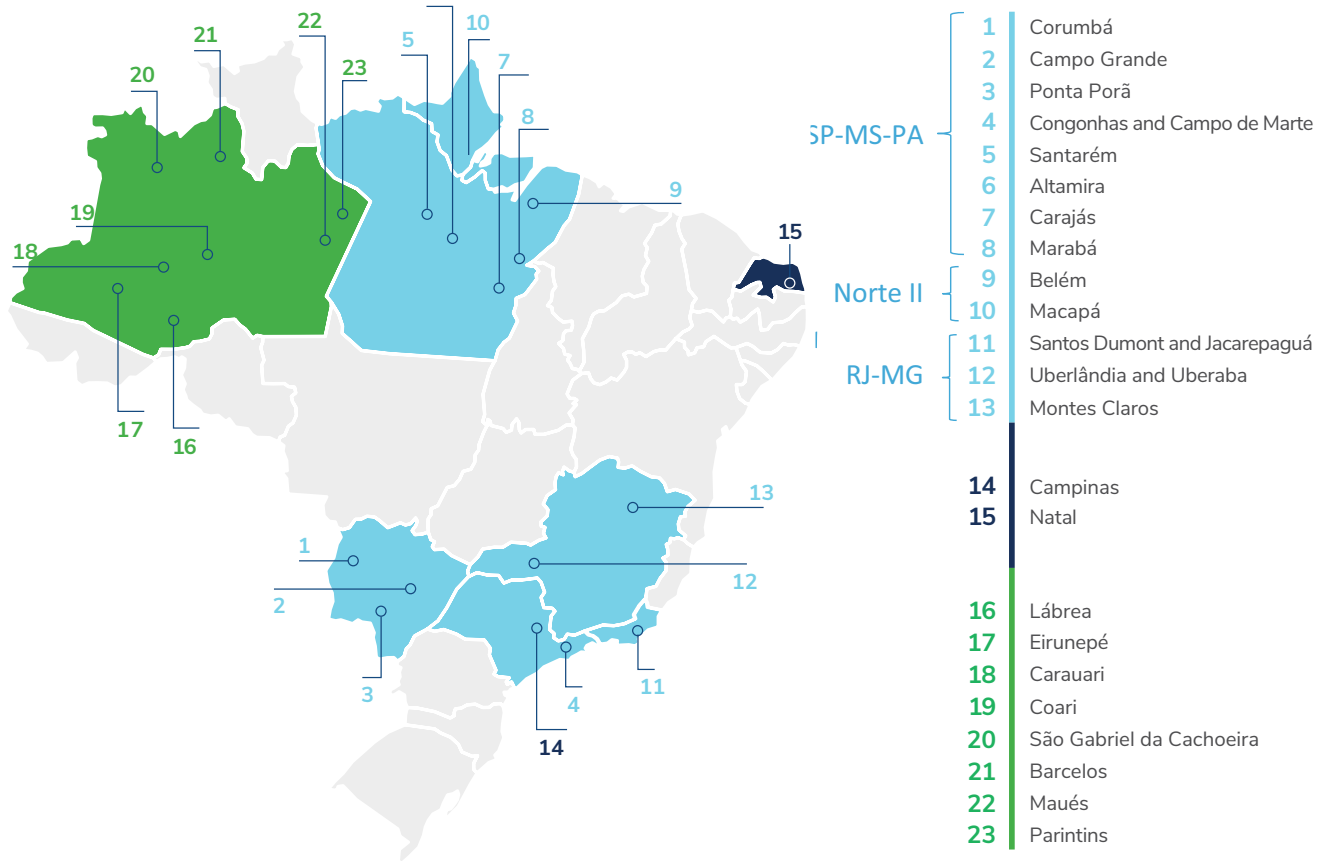
<sup>29</sup> Source: Valor Setorial magazine – June 2018.

<sup>30</sup> Source: UOL Economia "Após privatização, aeroportos pioraram ou melhoraram? Especialistas avaliam" Available [here](#).

<sup>31</sup> Source found [here](#).

The maps below show the planned auctions for ports and airports.

## Airports



### 16 Airports (3 blocks): 7<sup>th</sup> round

Investments	R\$ 8.4 billion
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#### Block SP-MS-PA: 7<sup>th</sup> round

Investments	R\$ 5.3 billion
-------------	-----------------

#### Block RJ-MG: 7<sup>th</sup> round

Investments	R\$ 2.4 billion
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#### Block Norte II: 7<sup>th</sup> round

Investments	R\$ 869 million
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### 2 Airports for rebidding

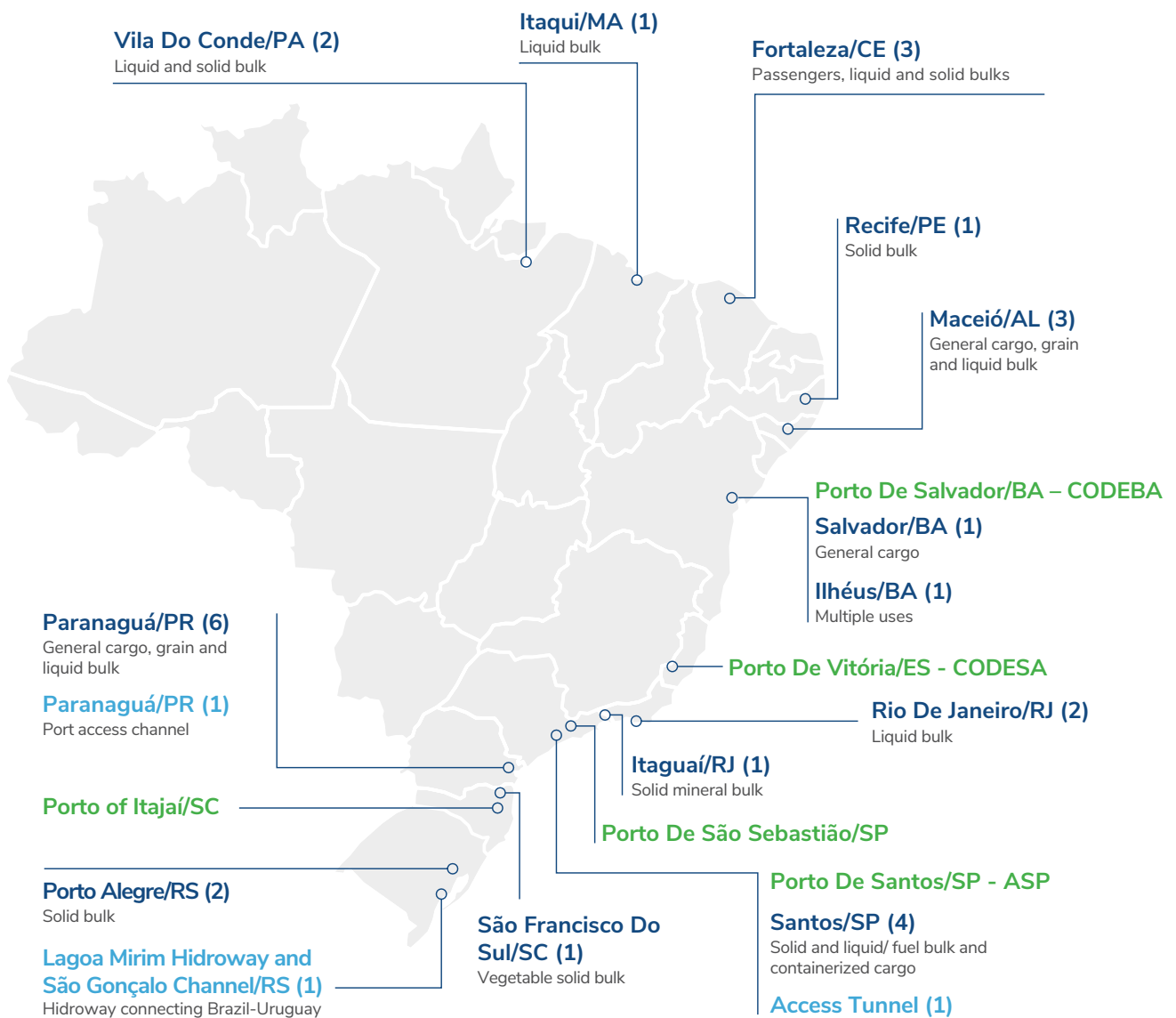
Natal/RN and Campinas/SP	R\$ 0.31 billion R\$ 4.25 billion
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### 8 Regional Airports (AM)

São Gabriel da Cachoeira, Barcelos, Parintins, Maués, Coari, Lábrea, Carauari and Eirunepé	R\$ 0.38 billion
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Source: Brazilian Investment Partnerships Program- PPI – January 2022

Ports



Port Portfolio in Progress

Investments	R\$ 30.5 billion
Port leasings	28
Privatizations and port concessions	5
Access channel/hidroway	3

Source: Brazilian Investment Partnerships Program- PPI – January 2022

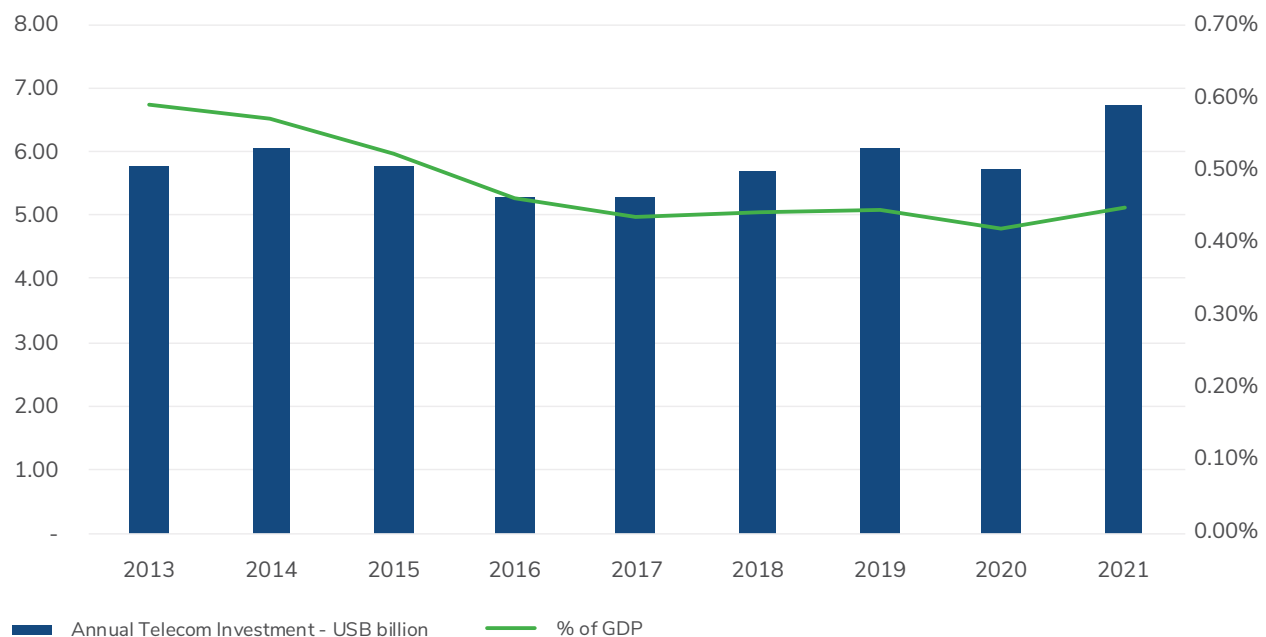


# Telecom

**Brazil's telecom sector constituted approximately 0.42% of 2020 GDP, or R\$31.1 billion. In 2021, it is estimated that the sector will represent 0.45% of GDP, or R\$36.5 billion, the same level as before the pandemic.<sup>32</sup>**

Due to social distancing caused by the COVID-19 pandemic, work, study and consumption habits have migrated to online platforms, which may continue even after the pandemic. This migration forced the telecom sector to increase coverage and broadcasting of mobile and fixed connectivity: In 2020, fixed broadband grew 10% and mobile broadband grew 5.3%. Now, 98.3% of the Brazilian population (5,544 cities) has access to 4G coverage; every city in Brazil has access to fixed broadband, but only 83% of residences are connected. The pandemic also changed connectivity in rural areas: In 2019, only 53% of the rural population had any type of internet access. Now, the proportion is equal to 70%, since Brazil has implemented strong policies and regulatory strategies to ensure and facilitate small operators in serving networks in rural and remote areas.<sup>33</sup>

## Annual Investment in Telecom in USD Billions



Source: Telebrasil and Infra2038

Mobile connectivity is the service most used by Brazilians, representing 81.2% of online access using 4G coverage; 77.9% of the population access fixed connectivity through computers, while 59.2% of the population has access to both connections.

Brazil's telecom sector constituted approximately 3.5% of 2018 GDP.<sup>34</sup> Investment in the sector reached R\$29.9 billion in 2018, which was 7% higher than 2017 but below investment levels in 2013–2015.<sup>35</sup> Investment levels for 2013–2015 were elevated due in part to Brazil's hosting of the FIFA World Cup in

<sup>32</sup> Source: Infra2038 (2020 Report)

<sup>33</sup> Source: [https://www.teleco.com.br/blarga\\_cobertura.asp](https://www.teleco.com.br/blarga_cobertura.asp)

<sup>34</sup> Source: Associação Brasileira de Telecomunicações

<sup>35</sup> According to International Telecommunication Union (UN) statistics in 2016. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>



2014 and the Summer Olympics in 2016, among other events. Such events played an important role in the modernization of Brazil's telecom infrastructure.

Despite Brazil's ranking as the fourth largest internet user in the world, the country's average broadband speed is below that of other emerging countries in Latin America, including Chile, Mexico and Uruguay.<sup>36</sup>

According to the Inter-American Development Bank, Brazil would have to invest approximately USD 20 billion to achieve the same level of connectivity of Organisation for Economic Co-operation and Development (OECD) countries.

According to the *Infra2038* Report, for Brazil's infrastructure to achieve a top-20 ranking by 2038 in the World Economic Forum's GCI, approximately R\$1.447 billion of investment in telecom would be required over the next 20 years.<sup>37</sup>

## 5G Technology

5G technology is considered the most important technological revolution of the century, allowing sectors such as health care, logistics, the transportation industry, urban planning, public safety and agriculture to develop digitally. The technology will allow deeper and more stable connections, reaching remote areas that cannot count on network coverage: 5G coverage will extend to every area with at least 600 residents.<sup>38</sup>

In November 2021 the most important auction on radio frequency was held in Brazil, establishing national and regional compromises on investment in 5G coverage and backhaul. The auction ended with R\$42 billion in investment commitments by the winning carriers.

Contract terms are expected to terminate in 20 years, allowing extension under the terms in effect at that time. By December 2029 all municipalities in Brazil must have 5G coverage.<sup>39</sup>

<sup>36</sup> According to International Telecommunication Union (UN) statistics in 2016. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

<sup>37</sup> Source: *Infra2038* (2018 Report)

<sup>38</sup> Source: <https://www.ppi.gov.br/leilaoanatel5g>

<sup>39</sup> Source: Brazilian Investment Partnerships Program - PPI – September 2021



# Sewage and Water

**As of 2019, 100 million Brazilians (more than 45% of households) live in locations without a sewage network and 35 million (approximately 16.3% of households) did not have access to the general water distribution network as a primary source of clean drinking water.<sup>40</sup> During the same calendar year, over 273,000 hospitalizations for waterborne diseases were reported.**

In Brazil the regulation of sanitation services is decentralized at the state and even the municipal level, in many cases. This causes legal uncertainty and ends up making large, private investments unfeasible. In recent years, few public investments have been made in this sector due to budget constraints, and the lack of a regulatory framework has discouraged private investment.

In 2020, a New Legal Framework for Wastewater Treatment and Sanitation (Novo Marco Legal do Saneamento) was announced, a landmark achievement transforming Brazil's reality in socioeconomic and environmental terms. The new framework brings together different stakeholders from the public, private and third sectors. It adopts strategies to make the locality more attractive to private investment, enhances the mechanisms of inspection and accountability, and improves adequacy of service contracts to guarantee the fulfillment of goals and quality.

<sup>40</sup> Source: National Sanitation Information System (SNIS).





It is expected that, due to the changes in the rules that regulate the sector, the organizations involved will further intensify their work with people and municipalities, contributing to the advancement of basic sanitation. Thus, it is certain that this sum of expertise among public authorities, sanitation companies, and class and civil society entities will be fundamental to speeding up the universalization of water supply and sanitary sewage services in the country, foreseen by 2033, as stipulated in the new legislation.



### Water and Wastewater Attendance (2010 vs 2019)



#### Water service network\*

	2010	2019
Pop. Total 	147.7 <b>81.1%</b>	170.8 <b>83.7%</b>
Pop. Urban Area 	143.9 <b>92.5%</b>	162.2 <b>92.9%</b>

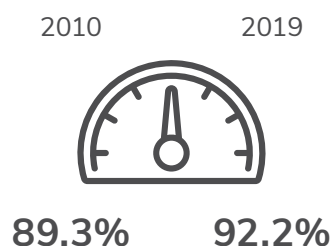
#### Sewer service network\*

	2010	2019
Pop. Total 	82.7 <b>46.2%</b>	110.3 <b>54.1%</b>
Pop. Urban Area 	82.3 <b>53.5%</b>	108.1 <b>61.9%</b>

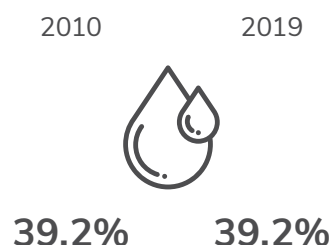
\*Millions of citizens

\*Percentage excludes service networks with alternative systems

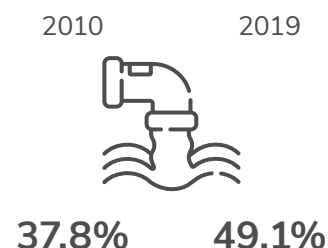
#### Hydrometer Active water connections with hydrometer



#### Available drinking water not accounted for or lost in distribution

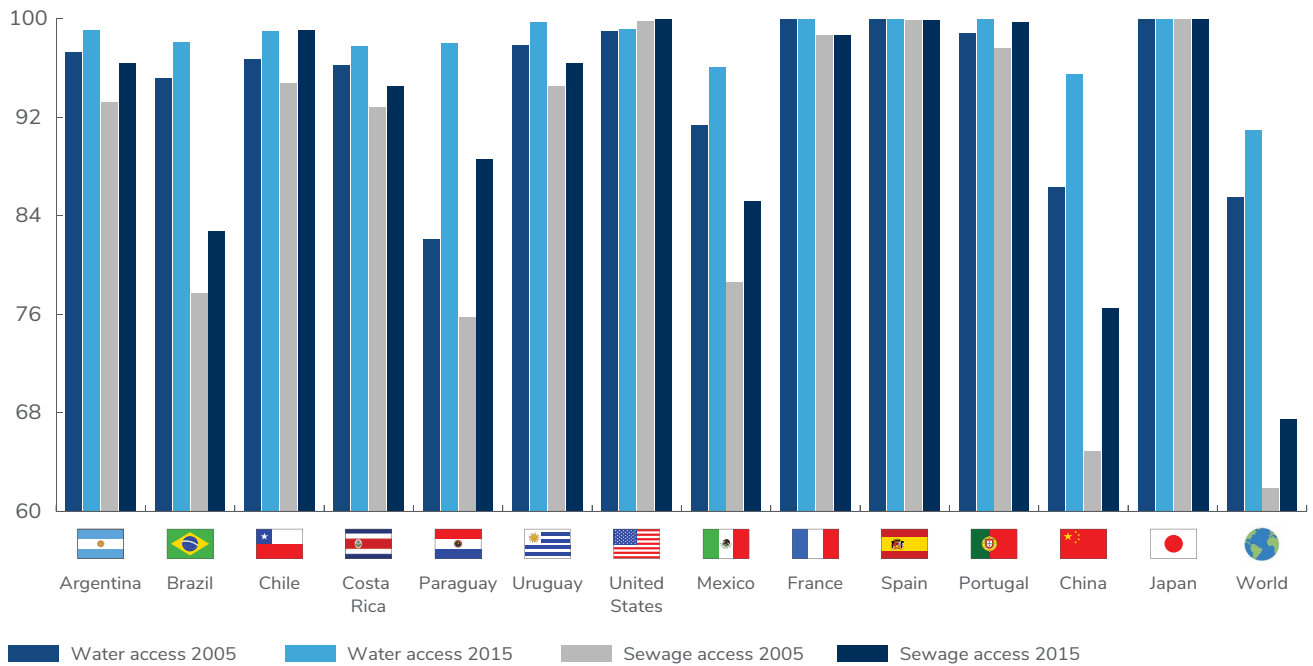


#### Generated sewage that was treated





### Water and Sewage Access (% of population)



Source: Pesquisa Nacional por Amostra de Domicílios Contínua 2017

Despite improvements in access to water and sewage over the past 10–15 years, opportunities for continued enhancements and incremental efficiency still exist. Brazil's water network of approximately 602 km is more than double the length of its sewage network (284 km)<sup>41</sup>, and only one-third of water consumed in households was treated prior to returning to the environment, as of 2015. Furthermore, Brazil experienced approximately 38% treated-water loss in 2017 (which represented an annual loss of more than R\$10 billion<sup>42</sup>)—more than double the average treated-water-loss rate for developed countries (15%).<sup>43</sup>

### Tozzini Freire Legal Overview

In July 2020, Federal Law No. 14,026/2020 amended Federal Law No. 11.445/2007, bringing several changes to the Brazilian regulatory framework on sanitation.

The main goal of Federal Law No. 14,026/2020 is to make sanitation universally available by December 31, 2033, providing clear water for up to 99% of the population and sewage collection and treatment to 90% of the population. In order to achieve this goal, the new Brazilian regulatory framework on sanitation focuses on boosting private investments and competition among market players.

<sup>41</sup> Source: Benefícios Econômicos e Sociais da Expansão do Saneamento No Brasil, from Instituto Trata Brasil.

<sup>42</sup> Source: Instituto Trata Brasil.

<sup>43</sup> Source: World Bank

It is worth mentioning the following five major changes:

1. Clearer rules, especially concerning the Brazilian National Water Agency's (ANA's) power to develop national regulatory reference standards for public basic sanitation services
2. "Program Contracts" ("Contratos de Programa") —public-style contracts executed between state-owned sanitation companies and municipalities without a bidding procedure—are no longer possible
3. Incentives for private investments and the privatization of state-owned sanitation companies
4. Establishment of "regional units" and/or "metropolitan regions" for purposes of performing the sanitation service
5. Implementation of governance rules, with the creation of the Interministerial Committee on Basic Sanitation (CISB), chaired by the Ministry of Regional Development, to ensure the implementation of the federal basic sanitation policy and to coordinate the allocation of financial resources

In addition, it is important to note that ANA now plays a central role in the sector and is responsible for issuing general guidelines on public sanitation services.



The following table details the water and wastewater auctions and projects.

### Sanitation Projects BNDES



Total population covered

**+34 million**



Invested capital (grants + CAPEX + additional investments, only held auctions)

**~R\$ 72 billion**

	Alagoas RM Maceió	Cariacica (ES)	Rio de Janeiro blocks 1, 2 and 4	Amapá	Alagoas - blocks B and C
<b>Business model</b>	Concession for water distribution and sewage treatment	PPP sewage	Concession for water distribution and sewage treatment	Full concession of water and sewage treatment	Concession for water distribution and sewage treatment
<b>Population covered</b>	1.008 mn	423 mn	11.500 mn	734 mn	1.300 mn
<b>Estimated CAPEX</b>	R\$ 2.568 mn	R\$ 600 mn	R\$ 27.300 mn	R\$ 3.100 mn	R\$ 2.885 mn
<b>Auction forecast</b>	✓	✓	✓	✓	✓
<b>Grant</b>	R\$ 2 bn	-	R\$ 22.700 mn	R\$ 930 mn	R\$ 1.600 mn
<b>Current stage</b>	Concession signature (BRK)	Concession signature (AEGEA)	Auction held (30/04/2021)	Auction held (02/09/2021)	Auction held (13/12/2021)

	Rio de Janeiro blocks 3	Porto Alegre (RS)	Ceará	Paraíba	Sergipe	Rondônia
<b>Business model</b>	Concession for water distribution and sewage treatment	Full concession of water and sewage treatment	PPP sewage	Model to be defined	Model to be defined	Model to be defined
<b>Population covered</b>	2.700 mn	1.501 mn	4.173 mn	2.200 mn	2.300 mn	1.015 mn
<b>Estimated CAPEX</b>	R\$ 4.700 mn	R\$ 2.174 mn	R\$ 6.411 mn	R\$ 4.000 mn	R\$ 3.600 mn	R\$ 2.000 mn
<b>Auction forecast</b>	✓	2T2022	2T2022	1T2023	To be determined	To be determined
<b>Grant</b>	R\$ 2.200 mn	-	-	-	-	-
<b>Current stage</b>	Auction held (29/12/2021)	Model review (inclusion of drainage interventions)	Public consultation	Studies in progress	Consultants selection	Consultants selection

Mais informações em: <https://www.ppi.gov.br/projetos-concessoes-e-parcerias>

## Sanitation Projects FEP



Total population covered  
**2.8 million**



Total estimated investment  
**~R\$ 1.4 billion**

	Bauru (SP)	Teresina (PI)	Consórcio Convale (MG)	Consórcio Comares (CE)
Business model	Concession RSU	Concession RSU	Concession RSU	Concession RSU
Population covered	377 mn	865 mn	433 mn	633 mn
Estimated CAPEX	R\$ 140 mn	R\$ 220 mn	R\$ 163 mn	R\$ 151 mn
Auction forecast	August 22	May 22	March 22	August 22

	São Simão (GO)	Crato (CE)	Volta Redonda (RJ)	São Gonçalo do Amarante (RN)
Business model	Concession RSU, water and sewage	Sewage concession	Sewage concession	Sewage concession
Population covered	21 mn	132 mn	273 mn	102 mn
Estimated CAPEX	R\$ 49 mn	R\$ 248 mn	R\$ 320 mn	R\$ 120 mn
Auction forecast	February 11/22	February 11/22	September 22	December 22

Source: Brazilian Investment Partnerships Program- PPI – January 2022







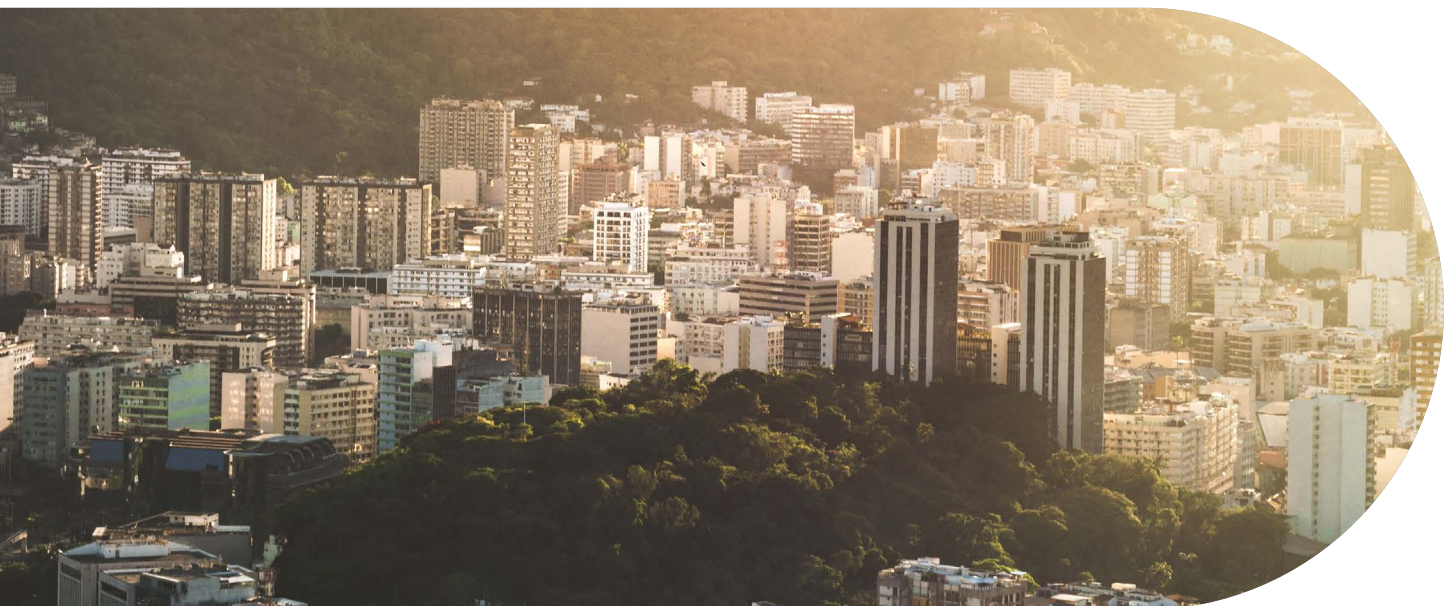
# Environmental, Social and Governance

According to the Global Sustainable Investment Alliance's 2021 report, by early 2020, a third of all global assets under management adhered to some form of ESG-related framework. ESG refers to environmental, social and corporate governance practices. ESG initiatives have advanced greatly in Brazil in recent years. During the COVID-19 pandemic, a period of crisis and retraction for many public investments, the market signaled positively with the growth in ESG-related investments. The pandemic made more evident to investors the importance of the issues covered by ESG: social, governance and environmental factors, highlighting human rights and climate issues. This scenario contributes to the Brazilian market's tendency to regulate ESG-related investments.

Regarding the infrastructure sector, in August 2021, the Ministry of Regional Development launched the Green Investment Strategy, an initiative of voluntary implementation that aims to encourage the inclusion of ESG criteria in infrastructure bidding processes and contracts at the federal, state and municipal levels. The ministry developed a set of metrics and indicators adapted to Brazil that were inspired by European rules. This initiative also seeks to provide greater security to investors through the production of a specific taxonomy to monitor the implementation of ESG criteria in companies and governments.

There is a trend to provide for a regulated carbon market and new regulations on climate change and environmental issues, reflected in the increase of bills of law that aim to address such matters. For instance, the National Policy of Payment for Environmental Services was enacted in 2021.

The social pillar refers to human rights issues and encompasses topics such as diversity and inclusion, forced labor, discrimination, child labor, and social responsibility. An example of a topic included under this umbrella is human rights mandatory due diligence. The last few years have been marked by the spur of laws and regulations, mostly in European countries, that include the duty of European corporations (or corporations operating in Europe) to implement due diligence processes in their whole transnational chain of operation and in their supply chain. On February 23, 2022, the EU Commission published the draft of directive on corporate sustainability due diligence, in line with the German Law on Supply Chain Due Diligence and the



French Duty of Vigilance Act. Consequently, European corporations are expected to gradually demand due diligences and prevent human rights violations in Brazil and in other countries in Latin America.

In Brazil, a bill was presented on March 14, 2022, for a National Framework on Human Rights and Business, but was not yet enacted. Thus, there are still no mandatory human rights due diligence laws in effect, only voluntary norms and directives. The courts, however, find that human rights treaties adopted by Brazil are effective and applicable to the activities of enterprises; this is called horizontal effectiveness of human rights. In other words, companies must respect all human rights recognized by the national legal system. The main change refers to the shift from a view focused exclusively on corporate responsibility to repair damages to a view that recognizes the commitment of companies to identify their impacts and adopt preventive measures.

With respect to the ESG-related investment scenario, in early 2021, the Brazilian Securities and Exchange Commission opened for public consultation its proposals for amending its Instruction 480, addressing the inclusion of ESG criteria in the issuance of market securities, in line with the latest European guidelines, in effect since March 2021 (the Sustainable Finance Disclosure Regulation). In September, the Central Bank of Brazil published a set of regulations (CMN Resolutions 4.943, 4.944 and 4.945, BCB Resolutions 139 and 140, and BCB Normative Instruction 153) with the objective of making the National Financial System more sustainable by creating rules concerning governance and strategies for social, environmental and climate risk management, as well as the disclosure of this information, to be applied to financial institutions.

## Potential Catalysts for Private Investment

### Underfunded Public Programs

In 2015, during the depths of Brazil's recession, only 37% of mandated public infrastructure programs were ultimately funded.<sup>44</sup> In 2017, the funding level of such programs reached 60% of their mandate, indicating that a significant funding gap remains.

### Tozzini Freire Legal Overview

In 2019, the House of Representatives' special committee voted in favor of Bill No. 7,063/17 that provides for a new legal framework for public concession and public-private partnerships.

The bill was drafted to unify the legal provisions related to concession of public services, public-private partnerships and infrastructure investment funds, mainly aiming at increasing the private investments in the infrastructure sector.

The bill addresses new instruments such as (i) the "simplified concession," to be applied for smaller projects, and (ii) the "concession of related services," which allows the concessionaire to also provide services associated with the main concession.

The bill also aims at expanding the applicability of alternative dispute resolutions, such as arbitration, making it possible to reach out to concessionaires to settle economic and financial conflicts.

<sup>44</sup> According to *Infraestrutura e Regulação* report by Oliver Wyman – 2018

### **BNDES Interest Rate Policy Changes**

BNDES has historically been a major player in the financing of large-scale infrastructure projects within the country. In 2017, the federal government began to shift its strategy regarding BNDES' financing policies in an effort to narrow the disparity between bank-offered interest rates (which were subsidized) and rates available through the private markets. Given the government's efforts, in the second half of 2018 and first half of 2019, the volume of money raised by Brazilian companies in the capital markets was three times greater than the disbursements made by BNDES.<sup>45</sup>

As an option, Brazil will raise funds with the New Development Bank (NDB), the BRICS Bank, to finance infrastructure projects, which should reduce the participation of more traditional institutions, such as the World Bank and the Inter-American Development Bank (IDB) in this area.<sup>46</sup>

Over the medium to long-term, the change in policy is expected to increase private-sector financing activity for Brazilian infrastructure projects.<sup>47</sup> One example of such a project is the recent case of French power generator Engie, which announced the issuance of R\$1.6 billion in debentures to finance wind and hydro projects.<sup>48</sup>

The issuance of infrastructure debentures reached a record volume of R\$33.8 billion in 2019, an increase of 56% over 2018. Besides that, the average ticket was higher, according to the general coordinator of Microeconomic Reforms, highlighting the maturation of this market. Despite the growth, the volume is still insufficient for the investment needed in infrastructure in Brazil.<sup>49</sup>

### **Government Programs**

Since 2016, Brazilian federal government has been working with PPI, an initiative aimed at increasing private investment in infrastructure. To date, 428 projects have qualified for the program, 233 of which have already been accomplished, summing USD 153.2 billion in investments. By August 2021, 48 projects have been auctioned, and 57 new projects shall be accomplished by the end of the year, totaling R\$307 billion in private investment.

By Q3 of 2021, 48 auctions were carried out. Through PPI and PND (Programa Nacional de Desestatização), 22 airports from south, north and central blocks were auctioned. Vinci Airports, a French private company, won the auction for North Block I, composed of seven terminal airports located in Manaus, Tabatinga, Tefé, Porto Velho, Rio Branco, Cruzeiro do Sul and Boa Vista. This block is extremely important due to its economic vocation for ecological tourism, business tourism, air taxi and cargo transportation. Consórcio Eco153 won the 850.7 km highway, which connects Anapolis (Goiás State) to Aliança do Tocantins (Tocantins State). Consorcio Via Brasil 163 won the concession to operate, through the next 10 years, the 1009.52 km of highway 163, the most important route to the agriculture sector. During the 10 years of concession, R\$2 billion is expected to be invested along with eight port terminals and two companies of sewage water, with total investments estimated at USD 11.72 billion.

<sup>45</sup> Source: IstoÉ Dinheiro. Available at <https://www.istoedinheiro.com.br/empresas-trocam-bndes-por-mercado-2/>

<sup>46</sup> Source: Valor Econômico. Available [here](#)

<sup>47</sup> According to Infraestrutura e Regulação report by Oliver Wyman – 2018

<sup>48</sup> IstoÉ Dinheiro. Available at <https://www.istoedinheiro.com.br/empresas-trocam-bndes-por-mercado-2/>

<sup>49</sup> Source: Valor Econômico. Available [here](#)



## PPI portfolio still counts with 180 under development, divided into the following sectors:



### Ports (37)

- 5 Concession (3 privatizations)
- 28 Port terminals/ports
- 1 Waterway concession
- 1 Channel concession port access
- 1 Waterway licensing
- 1 Port access tunnel



### Highways (22)

- 14 Projects for concession
- 8 Environmental permits



### Airports (26)

- 16 Airports to be granted
- 8 Regional airports
- 2 Airports rebidding



### Railways (8)

- 3 Contract renewals
- 4 Concessions
- 1 Privatization with concession



### Oil and Gas (1)

- 3rd Cycle Permanent Offer



### Energy (11)

- 2 Transmission auctions
- 7 HPPs (environmental licensing)
- 2 Privatizations (Eletrobrás and Nuclep)



### Mining (11)

- 6 CPRM's mineral rights
- 4 Availability rounds of ANM areas



### Regional Development (9)

- 8 Irrigation projects
- 1 Water infrastructure project (PISF)



### National Forests and Parks (28)

- 19 Concessions of parks and forests for visitation
- 9 Forest concessions for sustainable management



### Tourism (6)

- 6 Concessions of historic and tourist buildings (MG, PB, PE, SP and RJ)



### Fishery Terminals (7)

- 7 TPP concessions



### Supply (3)

- 1 Privatization of Ceasamines
- 2 CONAB Projects (148 warehouses/properties + 2 hortomercados/RJ)



### Urban Mobility (2)

- CBTU + BH subway line 2
- Trensurb



### Defense and Public Safety (PPP's) (2)

- 1 Radio Communication Public Safety and Defense
- 1 PRF vehicle guard



### Communications and Technology (3)

- 3 Privatizations (Telebras, Post and EBC)



### Economy (5)

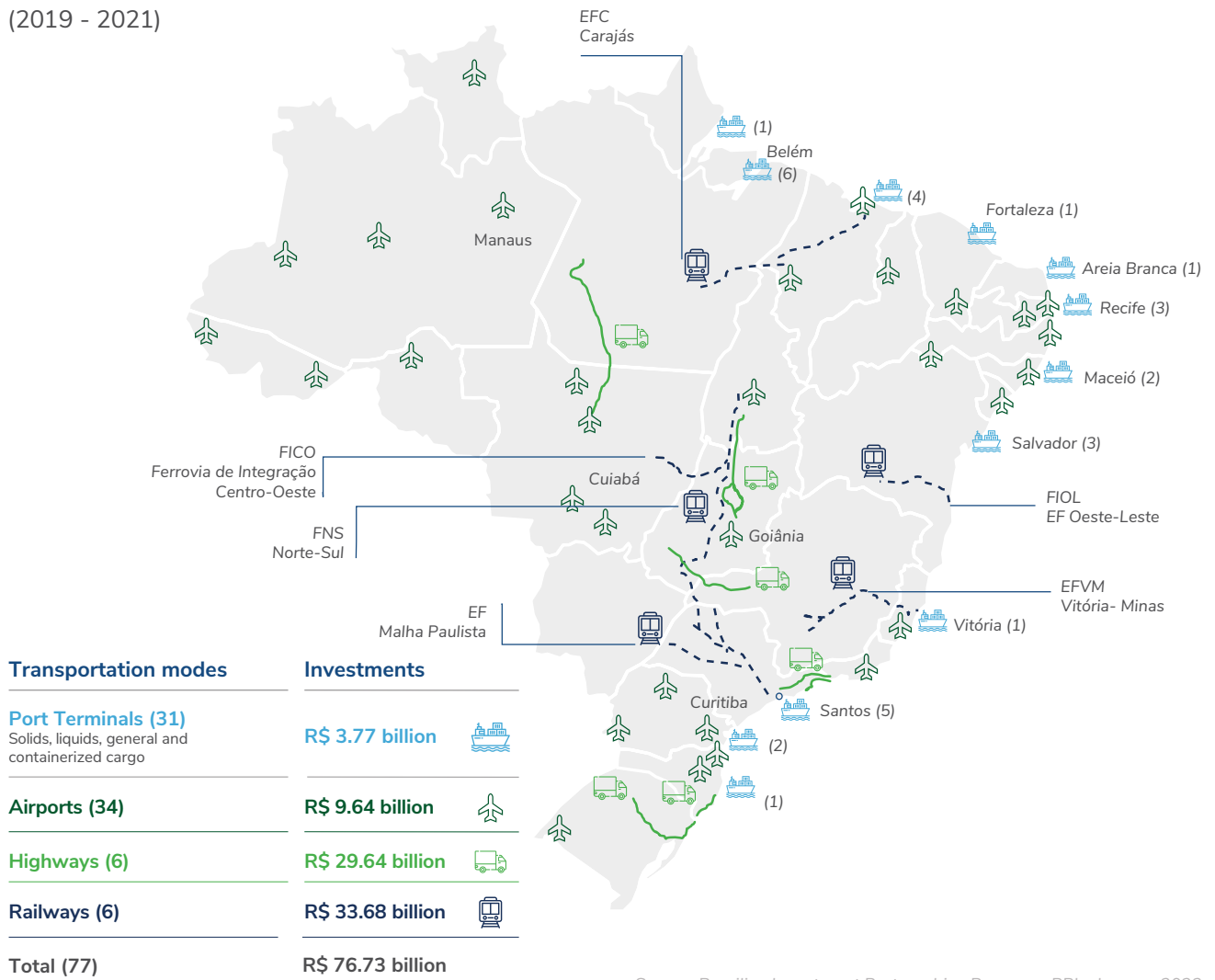
- 4 Privatizations (ABGF, EMGEA, Serpro and Dataprev)
- 1 Lotteries (Lotex)

In Q4 of 2021, important auctions shall be offered by the federal government, such as Nova Dutra Highway, which connects Sao Paulo to Rio de Janeiro, with almost R\$15 billion estimated in investment ; BR 381/262 MG/ES, which connects Belo Horizonte (MG) to Governador Valadares (MG) and João Monlevade (MG) to Viana (ES) and works as an important connection to areas designated for agriculture, cattle raising, mining, and industrial and commercial centers ; the 5G technology auction, aiming to foster investments in connectivity, shall happen in November, with USD 9.15 billion estimated in investment.

From 2019 to date, 113 projects, including assets auctioned and signed contracts, have been delivered through PPI. These include transportation projects with port terminals designated for solids, liquids, general and containerized cargo transportation, located in north, northeast, southeast and south regions; airports among all regions of the country; highways in Cuiaba, Para, Tocantins, Goiás, Santa Catarina and Rio Grande do Sul states; and railways connecting important productive areas to ports terminal. The investments in logistics sum USD 12.76 billion as of Q3 2021.

### Transportation Projects

Assets auctioned /signed contracts  
(2019 - 2021)



Source: Brazilian Investment Partnerships Program- PPI – January 2022

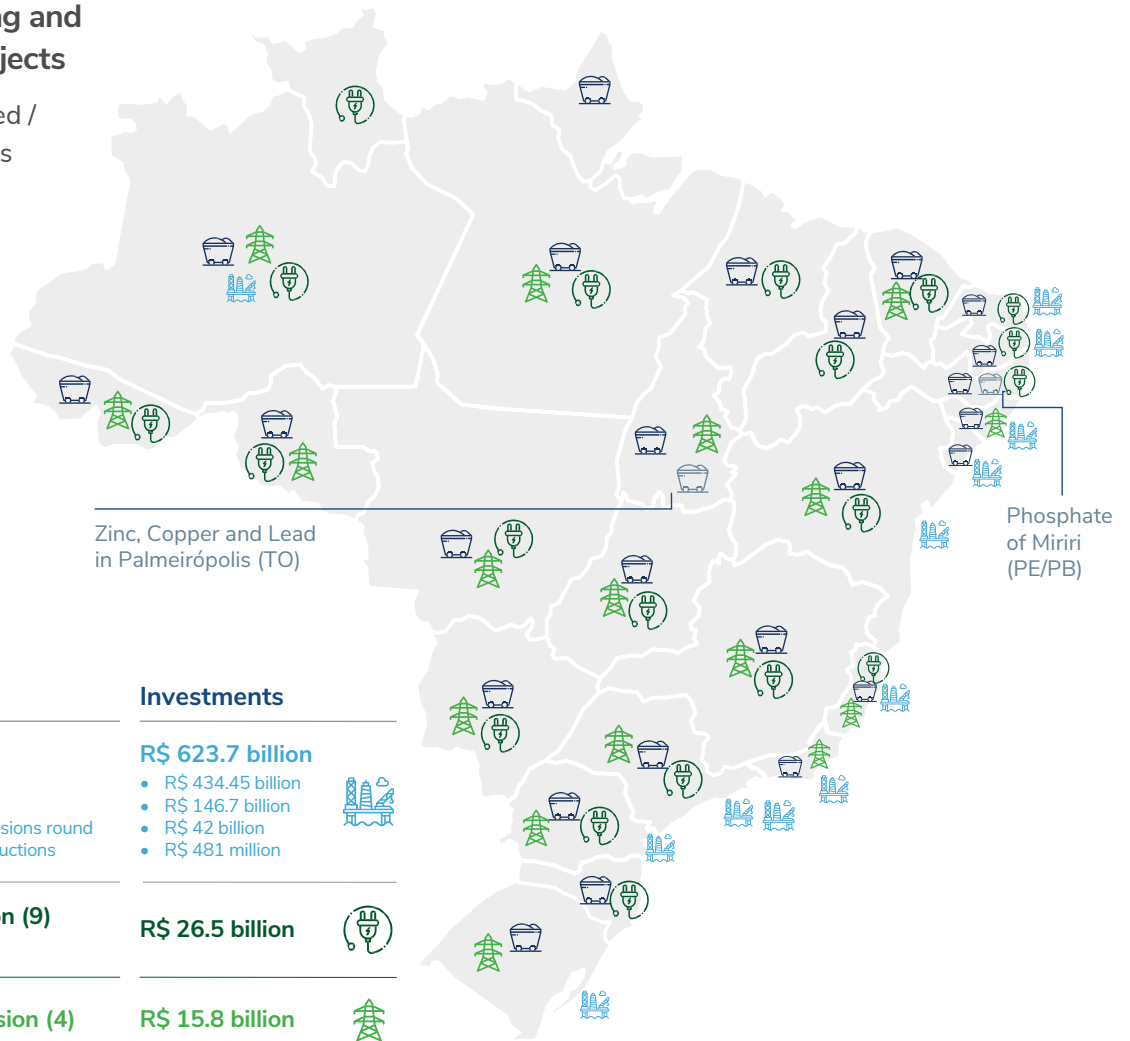
<sup>50</sup> Source: <https://www.gov.br/economia/pt-br/assuntos/noticias/2021/agosto/conselho-do-ppi-qualifica-18-novos-projetos-com-mais-de-r-31-bilhoes-em-investimentos-estimados>

<sup>51</sup>Source: <https://www.ppi.gov.br/concessao-das-rodovias-br-381-262-mg-es-trecho-da-br-381-mg-entre-belo-horizonte-e-gov-valadares-e-br-262-mg-es-entre-o-joao-monlevade-mg-e-viana-es>

<sup>52</sup>According to PPI.

## Energy, Mining and Oil & Gas Projects

Assets auctioned / signed contracts (2019 - 2021)



### Sectors

#### Oil and Gas (8)

- Cessão Onerosa
- 6<sup>th</sup> sharing round
- 16<sup>th</sup> and 17<sup>th</sup> concessions round
- 2 Permanent offer auctions

#### Energy Generation (9)

- 1.733 MW médios

#### Energy Transmission (4)

#### Mining

- CPRM (2)
- ANM (5)

### Investments

#### R\$ 623.7 billion

- R\$ 434.45 billion
- R\$ 146.7 billion
- R\$ 42 billion
- R\$ 481 million

#### R\$ 26.5 billion

#### R\$ 15.8 billion

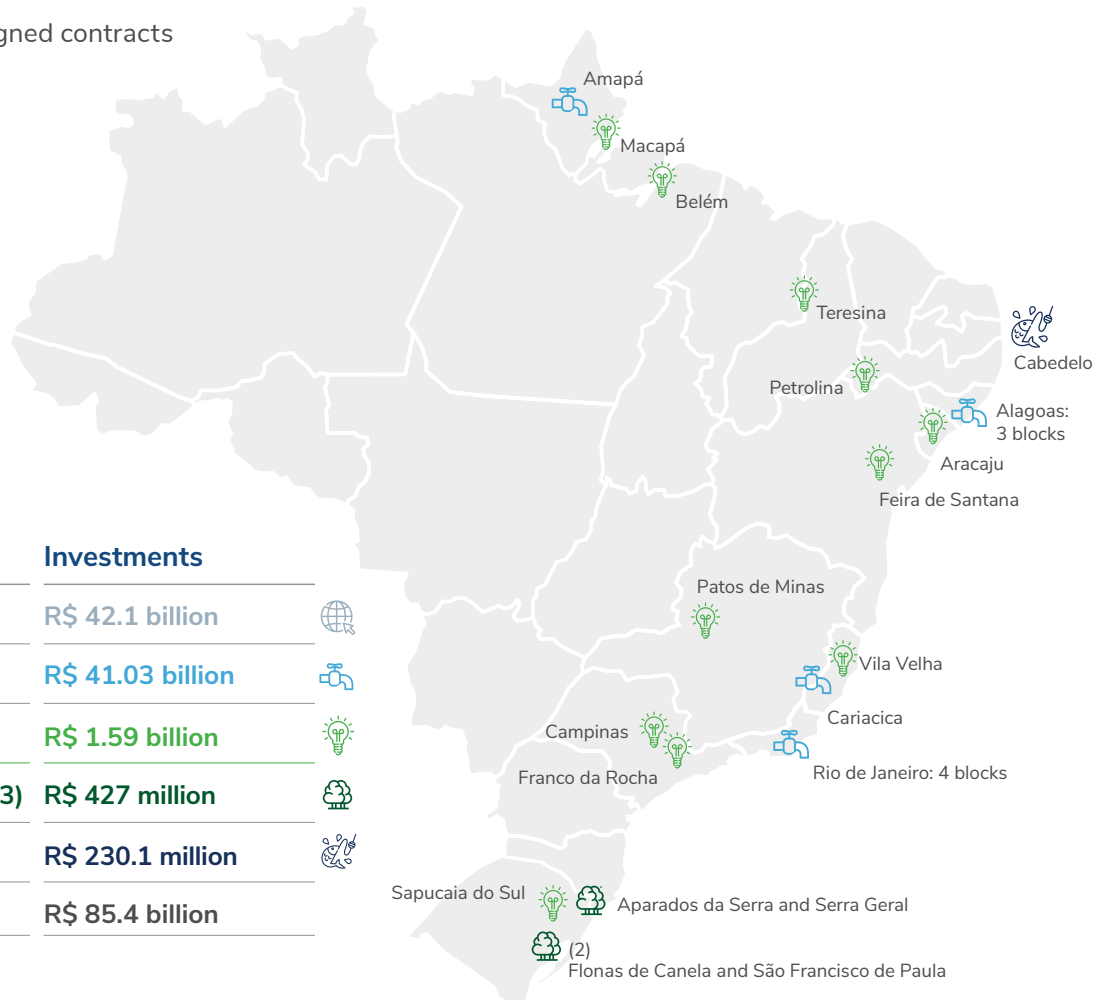
- R\$ 33.68 billion

Source: Brazilian Investment Partnerships Program- PPI – January 2022



### Other Projects

Assets auctioned /signed contracts  
(2019 - 2021)



Sector	Investments	
5G (1)	R\$ 42.1 billion	
Basic sanitation (7)	R\$ 41.03 billion	
Public lighting (11)	R\$ 1.59 billion	
Parks for visitation (3)	R\$ 427 million	
Fishery Terminal (1)	R\$ 230.1 million	
<b>Total (23)</b>	<b>R\$ 85.4 billion</b>	

Source: Brazilian Investment Partnerships Program- PPI – January 2022

The following chart illustrates the auctions carried out in 2021 and the expected investments.

## 48 Auctions Carried Out in 2021

Advisory and consulting	Investments	Concession fee
 <b>Port Terminals (8)</b> <ul style="list-style-type: none"> <li>• 4 in Itaquí/MA (IQI 03, 11, 12 and 13) <i>apr/09</i></li> <li>• 1 in Pelotas/RS (PEL01) <i>apr/09</i></li> <li>• 1 in Santana/AP (MCP02) <i>aug/13</i></li> <li>• 1 in Mucuripe/CE (MUC01) <i>aug/13</i></li> <li>• 1 in Salvador/BA (SSD09) <i>aug/13</i></li> </ul>	USD 122.4 million	USD 43.26 million
 <b>Highways (2)</b> <ul style="list-style-type: none"> <li>• BR-153/080/414/GO/TO <i>apr/08</i></li> <li>• BR-163/230/MT/PA <i>jul/08</i></li> </ul>	USD 1.94 billion	USD 64 million
 <b>Airports (22)</b> <ul style="list-style-type: none"> <li>• 6 Round of Airports Concession (south, north and central blocks) <i>apr/07</i></li> </ul>	USD 1.22 billion	USD 660 million
 <b>Railroad (1)</b> <ul style="list-style-type: none"> <li>• East-West Integration Railroad (FIOL) <i>apr/08</i></li> </ul>	USD 1 billion	USD 6.5 million
 <b>Fishery Terminals (7)</b> <ul style="list-style-type: none"> <li>• Cabedelo/PB <i>jan/28</i></li> </ul>	USD 46 million	USD 37,209
 <b>Parks and Forests (2)</b> <ul style="list-style-type: none"> <li>• ICanela/RS <i>jul/12</i></li> <li>• São Francisco de Paula/RS <i>jul/29</i></li> </ul>	USD 33 million	USD 148.2
 <b>Energy (6)</b> <ul style="list-style-type: none"> <li>• Generation(5): <ul style="list-style-type: none"> <li>– Isolated Systems <i>apr/30</i></li> <li>– Existing Energy(LEE A-4 and A-5) <i>jun/25</i></li> <li>– New Energy (LEN A-3 and A-4) <i>jul/08</i></li> </ul> </li> <li>• 1° auction of electricity transmission 2021 <i>jun/30</i></li> </ul>	USD 1.14 billion	
 <b>Mining (4)</b> <ul style="list-style-type: none"> <li>• 2nd, 3rd and 4th Round of Available Areas – ANM <i>mar/29 and jun/30</i></li> <li>• Phosphate-Miriri(PE/PB) <i>jun/10</i></li> </ul>	USD 38 million	USD 47.6 million
 <b>Water and Wastewater Services (2)</b> <ul style="list-style-type: none"> <li>• CEDAE-Rio de Janeiro <i>apr/30</i></li> <li>• Amapá State <i>sep/02</i></li> </ul>	USD 6.12 billion	USD 4.72 billion
	<b>Expected Investments</b>	<b>USD 11.72 billion</b>
	<b>Concession fee/bonus</b>	<b>USD 5.56 billion</b>

Source: Source: Brazilian Investment Partnerships Program- PPI – September 2021

The following table includes a detailed list of active auctions planned to 2022.

## PPI Auctions/Projects Scheduled for 2022



### Airports (25)

- 15 airports in 3 blocks – 7th round
  - Block General Aviation (2): Campo de Marte/SP and Jacarepaguá/RJ.
  - Block SP-MS-PA-MG (11): Congonhas/SP, Campo Grande/ MS, Corumbá/MS, Ponta Porã/MS, Santarém/PA, Marabá/PA, Carajás/PA, Altamira/PA, Uberlândi/MG, Uberaba/MG and Montes Claros/MG
  - North Block 2 (2): Belém/PA and Macapá/AP
- 8 regional airports in Amazonas: Parintins, Carauari, Coari, Eirunepé, São Gabriel da Cachoeira, Barcelos, Lábrea and Maués
- 2 airports (rebidding)
  - Viracopos/Campinas (SP)
  - São Gonçalo do Amarante (Natal/RN)



### Highways (9)

- BR-381/262 (MG/ES) February 25
- BR-116/493/RJ/MG – Rio Valadares
- BR-040/495/MG/RJ
- 2,153.6 km of federal highways
  - north central lot
- BR-040/DF/GO/MG – rebidding
- BR-060/153/262/DF/GO/MG
- Integrated Highways of the Paraná
- BR-158/155/MT/PA
- BR-163/267/MS



### Electricity (2)

- 2 power transmission auctions



### Ports (30)

- 4 port terminals in Santos/SP
- 6 port terminals in Paranaguá/PR
- Organized Port of Itajaí/SC
- Port of São Sebastião/SP
- 1 terminal in Suape/PE
- 2 terminals in Vila do Conde/PA
- Access channel Port of Paranaguá and Antonina/PR
- 2 terminals in the port of Rio de Janeiro/RJ
- 1 terminal at the Port of Salvador/BA
- 1 terminal in the Port of Ilhéus/BA
- 2 terminals at the Port of Mucuri/CE
- 1 terminal in the Port of Itaquí/MA
- 2 terminals in the Port of Maceió/AL
- 1 terminal in the Port of São Francisco do South/SC
- 1 terminal in the port of Rio Grande/RS
- 1 tunnel in the Port of Santos/SP
- 1 terminal in Itaguaí/RJ
- 1 terminal in Porto Alegre/RS



### Railways (4)

- Ferrograin
- Renovation of the FCA railroad
- Estrada de Ferro Paraná Oeste S.A.
  - Ferroeste
- Renovation of the MRS railway



### Gas Oil (1)

- 3rd cycle of the Permanent Offer





### Mining Rights (10)

- 6th to 9th availability rounds
- Copper – Bom Jardim de Goiás/GO
- Limestone – Aveiro/PA
- Coal – Candiota/RS
- Diamond – Santo
- Gypsum – Rio Cupari/PA
- Ignatius/BA
- Kaolin – Rio Capim/PA



### Regional Development (1)

- Irecê/BA perimeter irrigation March 15



### Tourism (3)

- Pau D'Alho Farm/SP
- Fortress of Santa Catarina/PB
- Forte Orange/PE



### Parks and Forests (9)

- Humaitá Forest/AM
- Iquiri/AM Forest
- Forest of Castanho/AM
- Iguazú National Park/PR
- Chapada dos Guimarães National Park/MT
- Lençóis Maranhenses/MA
- Jericoacoara National Park/CE
- São Joaquim National Park/SC
- Brasília National Park/DF



### Privatization (13)

- Electrobras
- CODESA March 25
- ABGF
- Trensurb
- Correios
- Serpro
- Dataprev
- EMGEA
- Cesasamines
- Nuclep
- Organized Port of Santos (SP)
- CBTU/MG + line 2 subway BH



### Fishing Terminals (7)

- Aracaju (SE)\*
- Santos (SP)\*
- Cananéia (SP)\*
- Vitória (ES)\*
- Belém (PA)\*
- Manaus (AM)\*
- Natal (RN)\*

\* March 07



### Security (1)

- PRF patios



### Supply (2)

- CONAB's warehouses and properties

**PPI Auctions/Projects Scheduled for 2022**



**Subnational (30)**

- Daycare PPP: 20 new daycare centers in Teresina/PI
- 2 prison PPPs: Blumenau/SC and Erechim/RS
- 2 socio-educational units PPS: state of Minas Gerais and Santa Catarina
- 4 sanitary sewer projects: Volta Redonda, Ceará state, São Gonçalo do Amarante/RN and Crato/CE February 11
- do Amarante/RN, e Crato/CE 11/Fevereiro
- 2 projects for water distribution and sewage treatment: Porto Alegre (RS), Corsan (RS)
- 1 health PPP: new Hospital Municipal da Criança e do Adolescente in Guarulhos(SP)
- 1 joint concession for urban solid waste, water and sanitation services: São Simão (GO) February 11
- 4 projects for solid waste: Convale consortium / MG, Teresina/PI, Bauru/SP and Comares consortium/CE
- 13 street lighting PPPs:
  - Corumbá/MS
  - Crato/CE
  - Valparaíso de Goiás/GO
  - Camaçari/BA
  - Caruaru (PE) February 17
  - Nova Iguaçu/RJ
  - Jaboatão dos Guararapes/PE
  - Cachoeiro do Itapemirim/ES
  - Barreiras/BA
  - Colatina/ES
  - Ariquemes/RO
  - Toledo/PR
  - Curitiba/PR



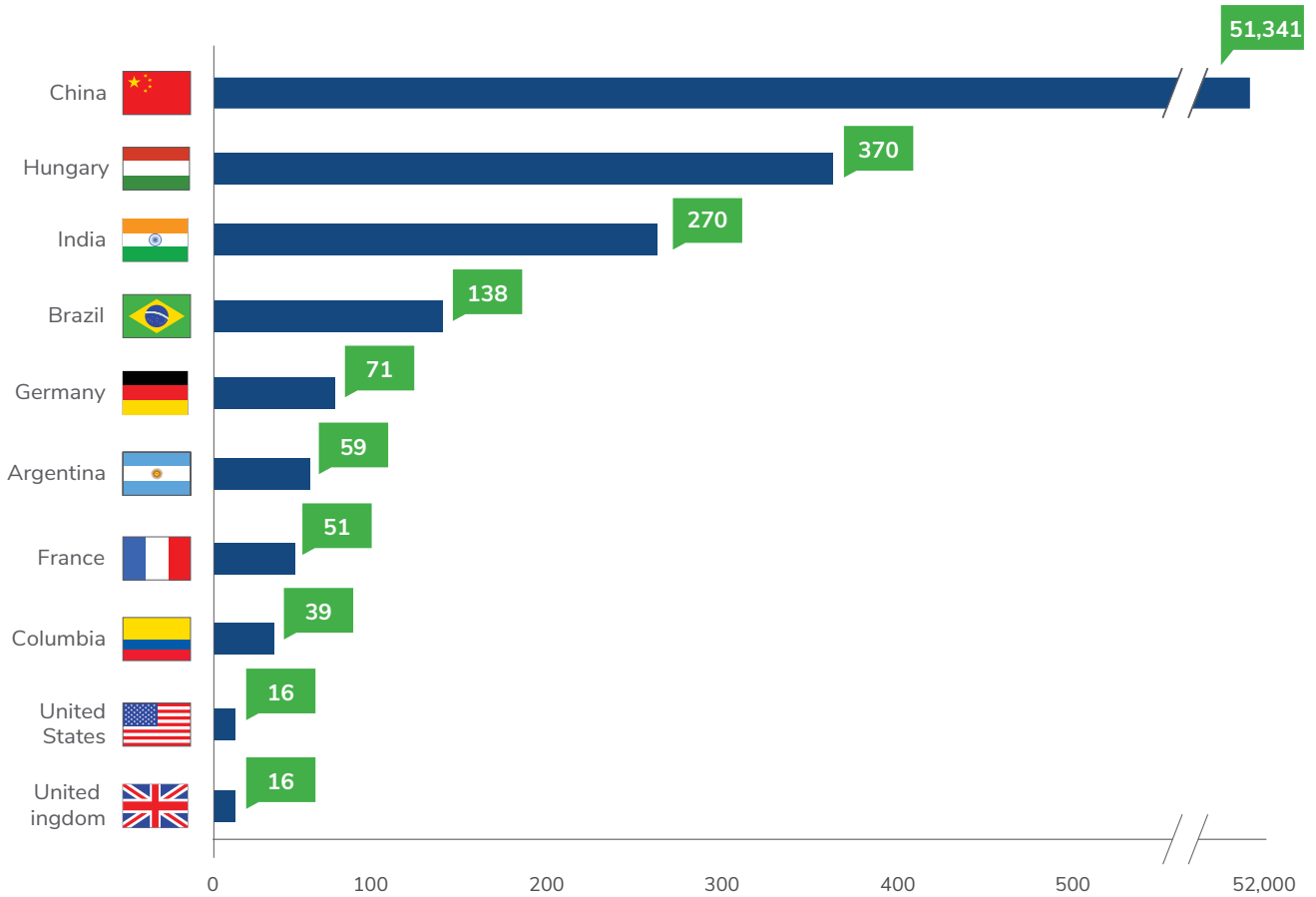
**Environmental Licensing (7)**

- Preliminary demolition license of Pedral do Lourenço/PA
- License for the installation of BR-080/MT
- License for the installation of the BR-158/MT outline
- Preliminary license for BR-139/AM/RO
- Decision for unblocking BR-135/BA/MG
- Preliminary license for BR-242/MT (section between Querência and Santiago do Norte)
- LI for BR 135/MG (Manga/MG - Itacarambi/MG)

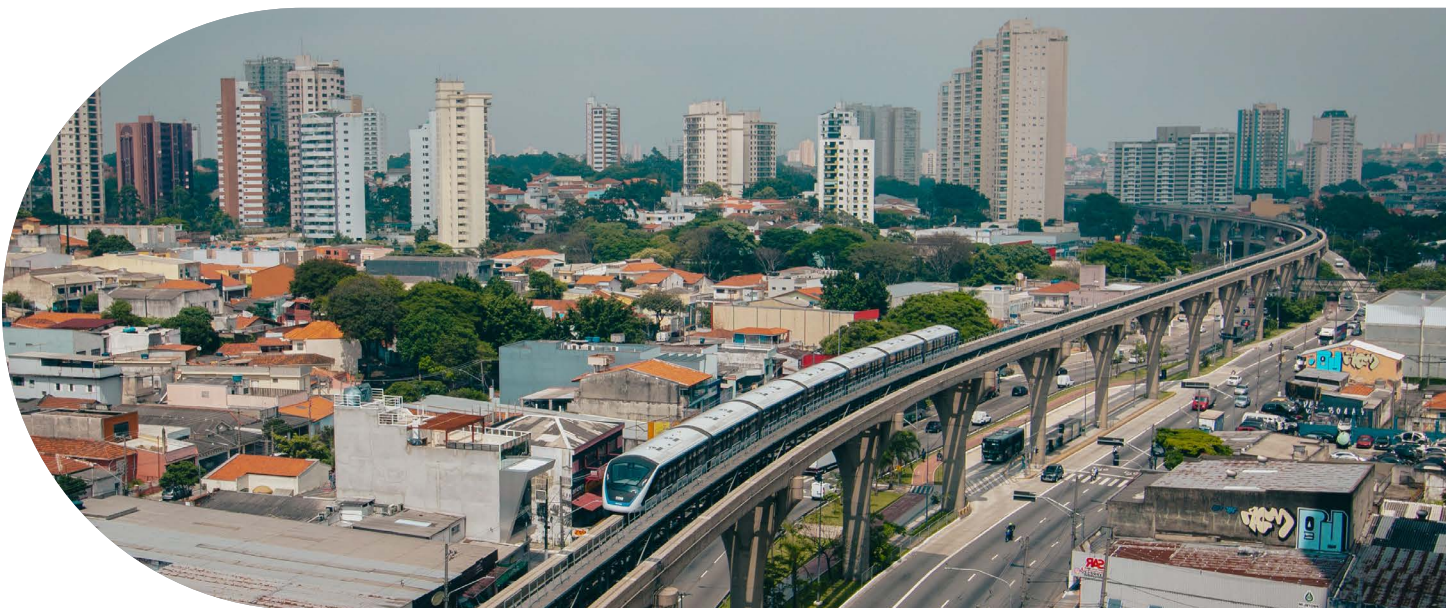
**154 assets**  
**R\$ 340.7**  
**billion investments**

According to OECD, in 2015 there were more than 400 companies in Brazil owned by the public power (including states and municipalities). OECD ranked 39 countries by considering the number of public companies belonging only to the federal governments: Brazil was in 4th place, holding 138 companies.

### Number of Public Companies in 2015



Source: OECD





## Section 2

# Distinct Characteristics of Private Equity Infrastructure

Infrastructure investments are often viewed as an attractive asset class due to their ability to generate strong, risk-adjusted returns, stable cash flows, diversification and downside protection through inflation-hedging characteristics.<sup>53</sup>

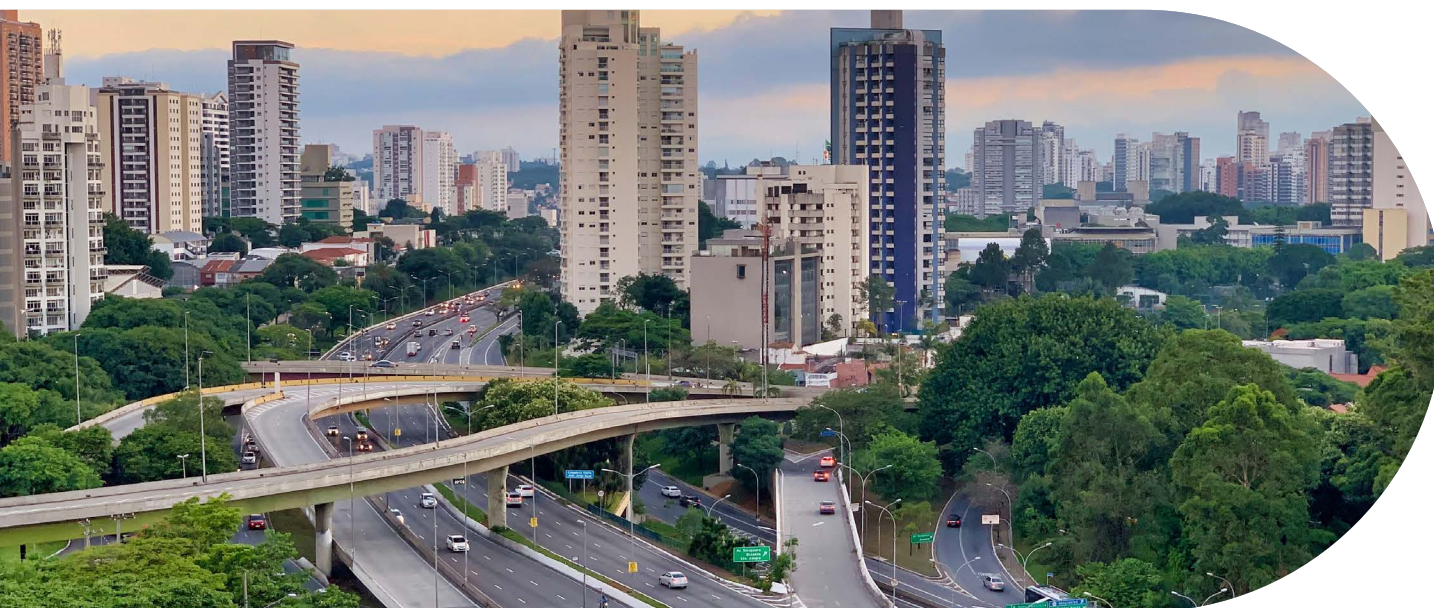
During the COVID-19 pandemic, due to stay-at-home policies set by both companies and government, the mobility sector, especially subways and buses, was the hardest hit category among the infrastructure sectors. Restrictions also struck the airports sector, which saw its demand suffer from severe volatility. Given that Brazil is a leading exporter country, a rise in commodities demand, mainly due to the Chinese appetite for agricultural products, had ports and railways operating at a higher-than-normal level, with Brazil's agribusiness as a whole registering a record USD 100.8 billion in exports and an 18.2% year-over-year growth on gross revenues. The regional cargo transport didn't register any major mishaps and sustained its demand level.<sup>54</sup>

## Risk-Adjusted Returns and Stable Cash Flows

Infrastructure investments typically offer investors strong, risk-adjusted returns and stable cash flows over the long term. Assets are commonly long-lived, with highly visible and predictable cash flows that may be driven by regulation, contractual agreements or relatively unchanging usage patterns under a wide range of economic scenarios.

<sup>53</sup> Source: Preqin's 2018 Global Infrastructure Report

<sup>54</sup> Source: <https://www.agenciainfra.com/blog/infradebate-os-desafios-do-setor-de-infraestrutura-no-pos-pandemia/>



## Diversification

Infrastructure investments are generally viewed as having lower correlation to traditional asset classes, including equities, fixed income and real estate. Furthermore, returns on infrastructure assets may not be as correlated with developments in the broader economy. Therefore, infrastructure investments are typically considered relevant alternatives for portfolio diversification.<sup>55</sup>

## Inflation-Hedging

Many infrastructure investments offer inflation-hedging characteristics, as underlying contracts may link revenues to certain inflation-related benchmarks, thereby offering protection from potential inflation volatility.<sup>56</sup> Such inflation-hedging characteristics may also be driven by concessions or regulatory provisions, among other factors.

## Illustrative Global Infrastructure Returns Data

- The median net Internal Rate of Return (IRR) was 9.8% across all vintages between 2005 and 2015.
- Unlisted infrastructure had an average net IRR of 10.1% for vintage 2004–2015 funds, behind buyouts (13.5% net IRR) and venture capital (10.3% net IRR).<sup>57</sup>
- In 2014 vintage, the second-highest net IRR was 13.6% after buyouts.<sup>58</sup>
- Estimated dry powder as of June 2018 was R\$36 billion.<sup>59</sup>

<sup>55</sup> Source: Preqin's 2019 Global Infrastructure Report.

<sup>56</sup> Source: Preqin's 2018 Global Infrastructure Report

<sup>57</sup> Source: Preqin's 2019 Global Infrastructure Report.

<sup>58</sup> Preqin's quarterly update: Infrastructure Q2.

<sup>59</sup> Estadão newspaper published on – September 17, 2018.

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# Across 30 countries and territories



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- Buenos Aires
- Chicago
- Dallas
- Diamond Bar
- Ellensburg
- Houston
- Los Angeles
- Mexico City
- Miami
- Minneapolis
- Morristown
- Nashville
- New York
- Philadelphia
- Richardson
- San Francisco
- Sao Paulo
- Seattle
- Secaucus
- Silicon Valley
- Toronto
- Washington DC
- Waterbury

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- Cayman Islands

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- Barcelona
- Berlin
- Bilbao
- Birmingham
- Channel Islands
- Dubai
- Dublin
- Frankfurt
- Gibraltar
- Lisbon
- London
- Longford
- Luxembourg
- Madrid
- Manchester
- Milan
- Munich
- Padua
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- Pesaro
- Preston
- Riyadh
- Rome
- Turin
- Zurich

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