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INFRASTRUCTURE AND ENERGY PROGRAM

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INFRASTRUCTURE GROUP

Logistics infrastructure in the Southeast region: an analysis of possible pathways for a partnership between Brazil and China

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INFRASTRUCTURE GROUP

The Group encourages the analysis of infrastructure in Brazil, based on a strategic vision of the necessary business environment to promote the sector's attractiveness, increasing investments from the private sector and foreign capital.

In addition, the Group reflects on the potential of public policy formulation in creating a competitive and attractive investment environment - considering the global macro trends of sustainability, urbanization, technological innovations, institutional and regulatory challenges, and resilience, among others. The Group is also dedicated to promoting guidelines for modernizing the national infrastructure, in order to increase the country's international competitiveness and improve the population's quality of life.



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EXECUTIVE SUMMARY

1. Brazil faces significant infrastructure gaps that affect its productivity and economic environment. The country ranks poorly on different relevant market indices¹, from competitiveness at large to infrastructure and logistics, impacting directly its capacity to integrate global productive chains and trade systems.

2. The logistics gap can be attributed to a couple of factors, ranging from low levels of investments (2.2% of GDP²) to inadequate investments allocation (70% of public investments directed to road transportation between 2011 and 2016), while also suffering from a fragmented governance and regulatory system. These structural barriers lead to a sector marked by dependency of road modal transportation, limited intermodal integration and high logistics costs (64% associated with transportation costs).

3. Brazil's economic activity is unevenly distributed among its territory and the Southeast region concentrates most of the population (42%) and GDP (52%). Therefore, understanding how the logistics system impacts the flow of goods and services in this region is particularly relevant to have a broader perspective of the country's ability to be competitive.

4. Given the scale of the infrastructure gap in Brazil and in its most dynamic region, but also the current fiscal constraints that limit the country's savings capacity, there is a huge opportunity to attract foreign capital.

5. In this context, China stands up as one of Brazil's main potential partners for infrastructure and logistics investments. The Asian country has been shifting its international position from a large trade partner into also a relevant source of foreign direct investment (FDI). The main motivations behind the so-called "going out" movement are the intention to diversify its investment portfolio, coupled with a search for greater geopolitical influence. Since the last decade, Chinese companies and financial institutions are increasingly performing as traditional investors, seeking financial returns and competitive investment opportunities.

6. At the same time, Brazil is the most relevant country to China's international agenda in South America, both in terms of trade and FDI (40% of the investments in South America between 2010 and 2017). Brazil is an attractive destination due to the potential improvement in its economic environment boosted by liberal reforms, its domestic market size and the abundance of natural resources.

1. Such as: (i) 72nd position (out of 140 countries) in the World Economic Forum Competitiveness ranking; (ii) 81st position (out of 140 countries) in the World Economic Forum Infrastructure Index and (iii) 56th position (out of 167 countries) in the World Bank Logistics ranking.

2. Considering the 2018 GDP.

7 Although well positioned to capture foreign investments in infrastructure, Brazil still needs to further improve the business and regulatory environment. The first step would be to develop a long-term vision and strategic planning, in order to identify its priority projects. Secondly, the country must simplify its regulatory and governance framework, as well as develop mechanisms to strengthen transparency and predictability.

8 These strategic drivers have the potential to foster foreign and Chinese investments, as well as contribute to a better allocation and effectiveness of these investments. By doing so, Brazil will be able to overcome its public investment constraint, address its most prominent logistics challenges, while boosting the country's competitiveness and fostering economic growth.

I. METHODOLOGY

The methodology used to write this white paper was based on: (i) desk research analysis; (ii) interviews with experts and (iii) discussion roundtables.

The desk research focused on the two aspects that are the centerpiece of this work, namely Brazilian logistics infrastructure's challenges and opportunities, and Brazil-China relationship. Different aspects were considered regarding infrastructure, such as its impact on the country's competitiveness; investment needs; logistics bottlenecks in Southeast region. The second round of analysis focused on issues related to Chinese investments in Brazil, including relevant sectors and stakeholders; key motivations and ambitions of Chinese institutions in the country and potential barriers to leverage a collaborative agenda.

The second phase of the project relied on interviews with different specialists from the private sector, academia and government. The experts were selected considering their expertise: five experts on infrastructure³ and logistics and five Brazil-China relationship specialists⁴. The interviews were based on semi-structured questionnaires aimed at identifying opportunities, challenges and overall perceptions regarding infrastructure in Brazil, with a focus on the Southeast region, as well as potential pathways to further increase Chinese interest.

Finally, the elaboration of this white paper benefitted from the inputs of two roundtables with high-level executives and senior specialists. The first one⁵ had the objective of mapping the most relevant bottlenecks in the logistics of the Southeast region, as well as identifying possible investment opportunities. The second event⁶ aimed at analyzing the main challenges

3. Claudio Frischtak - President at Inter. B consultoria internacional de negócios -, Luciene Machado - Deputy Managing Director, Infrastructure Division at BNDES -, José Magela - CEO at Prumo Logística -, Paulo Resende - Professor and coordinator of the Research Center for Logistics, Supply Chain and Infrastructure at Fundação Dom Cabral (FDC) - and Mauro Viegas Neto - President at Concremat Engenharia.

4. Anna Jaguaribe - China Working Group coordinator and Member of the Board of Trustees at CEBRI -, Ambassador Marcos Caramuru - Partner at KEMU Consultoria, - Ambassador Luiz Augusto de Castro Neves - Chairman at China-Brazil Business Council (CEBC) -, TaoTao Chen - Professor of International Business at Tsinghua University -, Renato Baumann - Under Secretary of Investments of the Foreign Trade Chamber (CAMEX).

5. The first event - "Infraestrutura logística na região Sudeste: desafios e oportunidades para atração de investimentos" - was held in March 26th at CEBRI's headquarters. Clarissa Lins moderated the debate with the participation of Mauro Viegas Neto - President at Concremat Engenharia e Tecnologia -, Marcelo Allain - Managing Partner at BR Infra Group - and Eduardo Costa - Logistic Manager at BNDES.

6. The second event - "Brazil and China: fomenting a long-term partnership in the infrastructure sector-Opportunities in the Southeast region" - was held in May 6th at CEBRI's headquarters. André Clark - CEBRI's Infrastructure Working Group Coordinator and CEO at Siemens Brazil - moderated the debate with the participation of: Anna Jaguaribe - China Working Group coordinator and CEBRI Trustee -, Ambassador Marcos Caramuru - Partner at KEMU Consultoria, - Ambassador Luiz Augusto de Castro Neves - Chairman at China-Brazil Business Council (CEBC) -, TaoTao Chen - Professor of International Business at Tsinghua University -, Renato Baumann - Under Secretary of Investments of the Foreign Trade Chamber (CAMEX) - and Miguel Flaksman - Executive Managing Director at BOCOM BBM.

and opportunities to the Brazil-China long-term partnership, on top of identifying potential pathways to foster Chinese investments in the infrastructure sector.

Therefore, the inputs and analyses gathered throughout the previous phases represent the core of the paper, which is divided in two main chapters. The first one addresses the principal challenges and opportunities related to Brazilian infrastructure and logistics, with a focus on understanding what is at stake in the Southeast region. The second one presents an approach to understand what lies behind the Chinese interest for investing in Brazilian infrastructure, considering the broader context of Brazil-China relationship.

PART I

Logistics infrastructure in Brazil: challenges and opportunities for its modernization

2. LOGISTICS INFRASTRUCTURE

2.1. Infrastructure and Brazilian competitiveness

Infrastructure has a key role in promoting access to public services and connecting geographic areas, therefore influencing the quality of life of a society. Additionally, it is strongly related to the competitiveness of the economy, determining its capacity to integrate global chains and trade systems. A modern and efficient infrastructure network reduces trade costs and facilitates international economic integration.

Brazil is the ninth largest global economy and the most relevant Latin America country, both measured by GDP. Its continental size [Fig.01] and domestic market strengthen the role of infrastructure as a fundamental aspect to its social and economic panorama. Additionally, the large-scale availability of energy, food and mineral resources makes the country a natural resource powerhouse. In this sense, an efficient and sustainable infrastructure can leverage its potential as an emerging country, fostering economic growth and its international insertion.

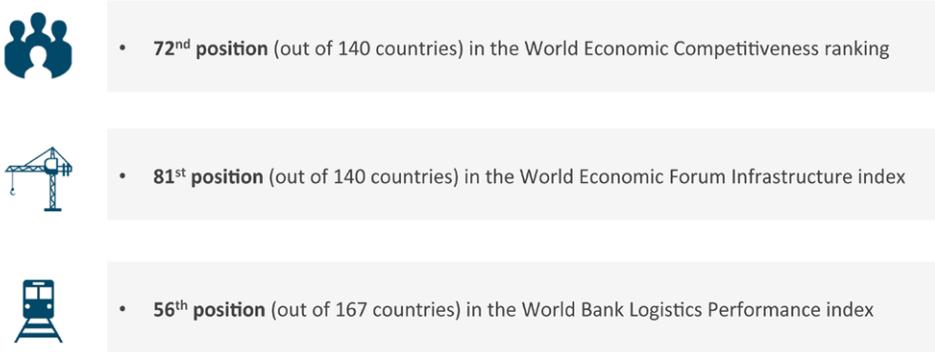
Fig. 01: Brazil's relevance in Latin America



Source: Catavento's analysis

However, Brazil faces significant infrastructure gaps that affect its productivity and business environment. The country’s current infrastructure situation can be illustrated by its poor performance on several rankings, among them: (i) the World Economic Forum Competitiveness ranking; (ii) the World Economic Forum Infrastructure index and (iii) the World Bank Logistics Performance index [Fig. 02].

Fig. 02: Brazil's ranking positions



Source: Catavento's analysis based on - World Economic Forum (WEF). Global competitiveness report. 2018; World Bank. Logistics Performance index. 2019

According to the World Economic Forum⁷, the country ranks 72nd in global competitiveness (out of 140 countries) and 81st in the infrastructure index, a pillar that captures the quality and density of transport infrastructure (road, rail, water and air). Brazil’s ranking position is significantly behind other emerging countries such as China (29th), México (49th), India (63rd) and South Africa (64th)⁸, significantly affecting the country’s capacity to be internationally integrated.

Infrastructure quality influences the business environment mainly due to its impacts on logistics. Economic activity is often constrained by the lack of efficient logistics networks, which leads to high transportations costs. Brazilian logistics cost increased from 11.7% of companies’ gross revenues in 2015 to 12.4% in 2017⁹. Commonly associated with the “*custo Brasil*”, this percentage is higher than the observed in countries such as China (10%) and the USA (8.5%). In these countries, logistics costs are mainly associated with storage, while in Brazil the main contribution is related to transportation – long distance (40%) and urban distribution (24%) - representing 64% of total logistics costs. [Fig. 03]. Some of the reasons behind these aspects range from high insurance costs to bureaucracy. As an example, there

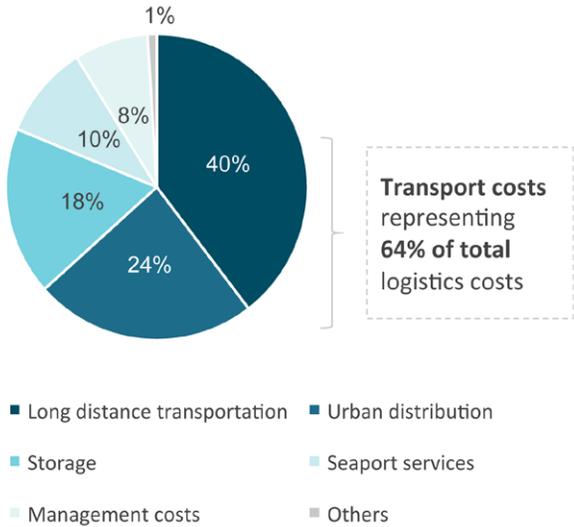
7. World Economic Forum (WEF). Global competitiveness report. 2018

8. World Economic Forum (WEF). Global competitiveness report. 2018

9. FDC. Custos logísticos no Brasil. 2018

are specific regions and states in Brazil with higher insurance costs due its security risks. This is the case of Rio de Janeiro, which has, in the recent past, experienced several freight transportation thefts.

Fig. 03: Logistics costs by type (2017) (%)

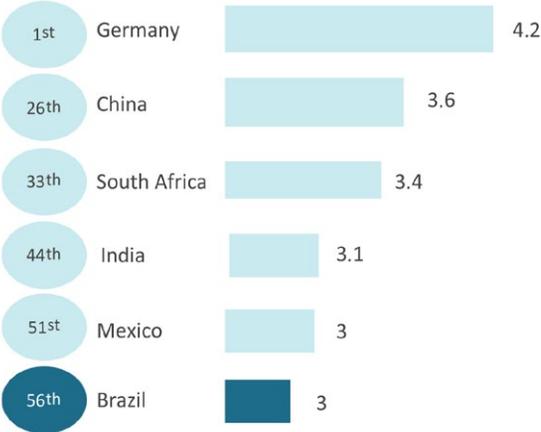


Source: FDC. Custos logísticos no Brasil. 2018

This challenging logistics costs scenario can be illustrated again by the World Economic Forum study, which evaluates the transportation services efficiency and the quality of different transportation modes. Once more, the country lacks efficiency in air transport services (73rd), rail services (97th), seaport services (105th) and quality of roads (112nd)¹⁰. These issues explain the bulk of the inefficiencies related to Brazilian logistics, as evidenced by the Logistics Performance index from the World Bank, where the country stands in the 56th position (out of 167 countries)¹¹ [Fig. 04].

10. World Economic Forum (WEF). Global competitiveness report. 2018
 11. The World Bank. Aggregated LPI. 2019 - Available at: <https://lpi.worldbank.org/international/aggregated-ranking>

Fig. 04: Logistics performance index (ranking, grade (0 - 5))



Source: World Bank. Logistics Performance Index. 2018

As seen above, the current Brazilian infrastructure landscape contributes to inefficiency, reducing not only the country’s competitiveness, but also the flow of products and people. That said, in order to address these issues and develop an efficient logistics network, one must start by understanding the barriers faced by the sector.

2.2. Potential reasons behind Brazil’s logistics infrastructure challenges

Brazilian logistics inefficiency can be attributed to low levels of investments, inadequate allocation of capital, in addition to a fragmented governance and regulatory system [Fig. 05].

Fig. 05: Framework - Logistics landscape

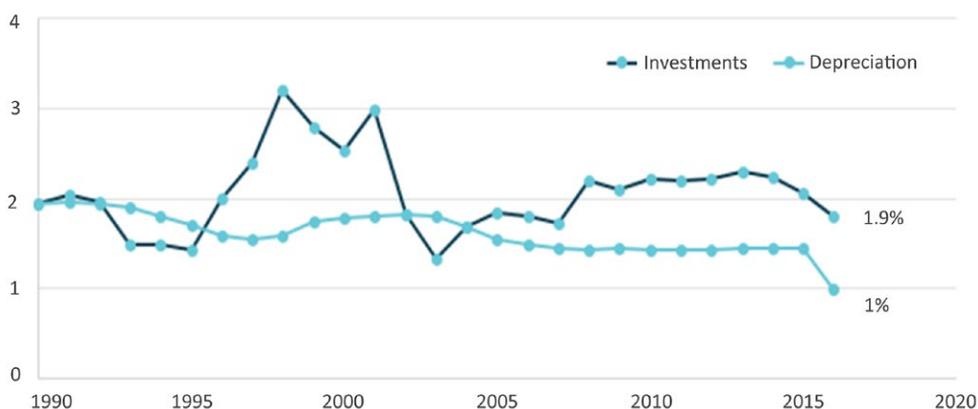


Source: Catavento's analysis

During the 1970s, Brazilian investments to GDP ratio reached a peak of almost 7%, following a government orientation to promote the country's modernization. The public sector has, since then, not been able to retain this investment level, and the average rate decreased consistently, mainly due to periods of economic recession and fiscal crisis. Some experts link this investment stagnation to a lack of prioritization, coupled with Brazil's high level of social and welfare expenditures¹².

That said, the decline in infrastructure investment could have had a lower impact in the country's overall infrastructure had the private sector compensated it. However, private investments in infrastructure have also remained insufficient to fill this gap. Since the 1990s, investment levels represented an average of 2% of GDP [Fig. 06], while Brazil struggled with low productivity levels and economic growth.

Fig. 06: Investments and depreciation in Brazilian infrastructure sector (% GDP)



Source: Oliver Wyman. *Infraestrutura: regras e incentivos*. 2017

More specifically, Brazil invested 2.2% of its GDP from 2011 to 2016, on average, which is remarkably low compared to other emerging countries. China invests more than three times this percentage, reaching almost 7% of GDP, while India levels stand at 5.5% of GDP¹³. Additionally, Brazilian investments are lower than other countries that have already achieved a modernized infrastructure system, such as the USA (investments of approximately 2.5% of GDP). This is even more worrisome as advanced economies invest to renew aging infrastructure, while emerging countries, such as Brazil, still have to build the necessary structure required to support its economic development¹⁴.

12. The World Bank. *Back to planning - how to close Brazil's infrastructure gaps in times of austerity*. 2017

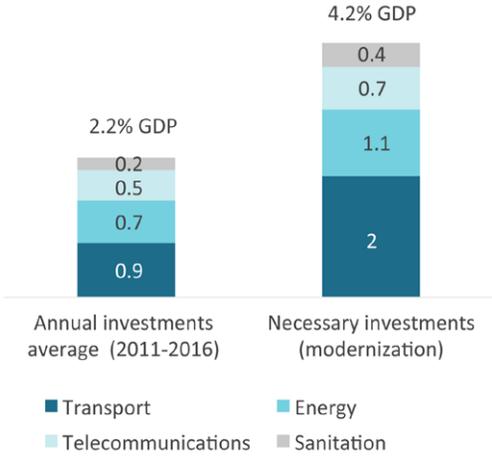
13. Oliver Wyman. *Infraestrutura - regras e incentivos*. 2018

14. McKinsey. *The infrastructure conundrum: Improving productivity*. 2015

The past investment track record led to an infrastructure deficit, which needs to be addressed to support growth recovery at sustainable levels. According to Frischtak (2017)¹⁵, Brazil's current infrastructure stock amounts to approximately 36% of GDP. However, the stock needed to modernize the country's infrastructure stands at around 60% of GDP. This would require an investment of 4.2% of GDP annually over the next 25 years, which means approximately R\$ 285.6 billion¹⁶ per year [Fig. 07].

Given this modernization scenario, transportation would be the sector with the most significant gap to address. Its average stock, currently estimated at 12.1% of GDP, would need to double. This means an increase of 1.1 percentage points in the annual transportation investment to GDP ratio when compared to levels observed in the past, leading to R\$ 74.8 billion per year of additional investments¹⁷.

Fig. 07: Infrastructure investments by sector (% GDP)



Source: CNI. *Oportunidades para a privatização da infraestrutura: O que fazer, como fazer*. 2017; Frischtak. *Uma estimativa do estoque de capital de infraestrutura no Brasil*. 2017

In addition to low levels of investments, Brazilian logistics have been directly impacted by an inadequate investment allocation. There is a significant concentration of public investments in road transportation¹⁸ as it is responsible for almost 70% of the total amount [Fig. 08]. Consequently, Brazil's freight transportation system has traditionally been road-centered, relying on limited modal integration. Looking specifically to the overall transportation of general cargo, road system responded for 65% of the total volume in 2015.

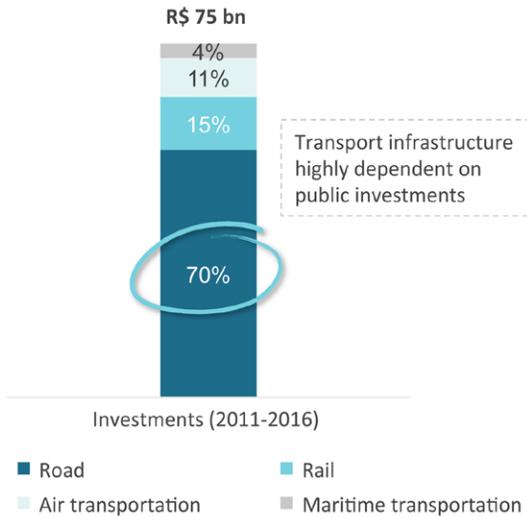
15. Frischtak. *Uma estimativa do estoque de capital de infraestrutura no Brasil*. 2017

16. Considering 2018 GDP/Banco Central do Brasil. *Indicadores Econômicos consolidados*. 2019

17. Frischtak. *Uma estimativa do estoque de capital de infraestrutura no Brasil*. 2017

18. Ministério dos Transportes. *Série histórica orçamentária*. 2018

Fig. 08: Public investments by modal (2011-2016) (%)



Source: Ministério dos Transportes. Série histórica orçamentária. 2018; CNT. Plano CNT de Transporte e Logística. 2018

Nevertheless, Brazilian roads are in precarious conditions, imposing security risks and environmental costs. In addition, highways are usually not the most efficient transportation modal. While the distance traveled by maritime transportation and rail is, respectively, 243 and 213 km per ton of cargo, road transport reaches only 35 km¹⁹. Therefore, continental countries tend to prioritize and heavily invest in other modes, such as railroads. As an example, the infrastructure densities of rail in EUA and China are, respectively, 7 and 6 times larger than in Brazil²⁰.

A recent episode illustrates the extent to which depending on road modal can be risky for the country. Back in May 2018, Brazil experienced a 10-day strike led by truck drivers, protesting against diesel price increases and volatility. Transportation services were interrupted, and important highways were blocked, leading to a shortage of fuel, food and other products across different regions. Government estimates an impact of R\$ 15 billion²¹, or 0.2% of GDP, in the country's economy.

The third factor related to poor standards in logistics has to do with the regulatory framework, which is extremely complex and contributes to a lack of predictability and efficiency. There are at least three regulatory agencies²² dealing with different modes of

19. EPL. Plano Nacional de Logística 2025.2018

20. Oliver Wyman. Infraestrutura - regras e incentivos. 2018

21. Ministério da Fazenda. Greve dos caminhoneiros impacta a economia em cerca de R\$ 15,9 bilhões. 2018 - Available at: <http://www.fazenda.gov.br/noticias/2018/junho/greve-dos-caminhoneiros-impacta-a-economia-em-cerca-de-r-15-9-bilhoes>

22. Agência Nacional de Transportes Terrestres (ANTT), Agência Nacional de Transportes Aquaviários (ANTAQ) and Agência Nacional de Aviação (ANAC)

transportation²³. ANTT performs the regulatory and inspection role for the land modes (rail and road) and implements the policies formulated by the Ministry of Infrastructure. On the other hand, ANTAQ oversees regulating and inspecting navigation and ports, while ANAC is responsible for regulating air transport. Each agency has its own legal framework, with specific technical and economic criteria.

Therefore, there is a lack of coordination among the different regulatory bodies, which leads to delays, suspensions and outputs with reduced quality²⁴. This represents an additional obstacle to allow for a significant intermodal integration and the establishment of a collaborative environment among different transportation modes.

Additionally, the sector is characterized by a decentralized governance structure, without a clear attribution of each entity's accountability. As an example, the Infrastructure Ministry frequently overlaps the orientations of the Planning and Logistics Company (EPL), which is theoretically responsible for logistics and transportation planning researches. This situation leads to coexisting multiple sectoral strategies not integrated into an overall economic development strategy.

The inadequate coordination among the responsible bodies, as well as the limited planning and monitoring capacity, has led to successive changes in directions and priorities. As a result, several government programs to stimulate infrastructure and logistics investments have had insufficient results²⁵. Additionally, there have been increased difficulties to scale up infrastructure projects, due to the lack of confidence in the different phases of the regulatory process²⁶.

23. Ilos. Logistics Overview in Brazil. 2008

24. The World Bank. Back to planning - how to close Brazil's infrastructure gaps in times of austerity. 2017

25. As an example, during the first Growth Acceleration Program (PAC), from the 16,000 projects initially announced, only 10% have been completed. Source: Oliver Wyman. Infraestruturas - regras e incentivos. 2018

26. The World Bank. Back to planning - how to close Brazil's infrastructure gaps in times of austerity. 2017

Long-term planning practiced in Colombia

Colombia is one of Latin America's highlights in terms of progress in the infrastructure sector. Despite decades of political and economic instability, the current administration has been working to promote regulatory improvements in order to attract private and foreign investors. Through the National Development Program (PND) 2018-2022, the government has set important targets focused on the country's infrastructure modernization, such as the intention to extend port concession terms to 80 years²⁷.

Another initiative intended to attract foreign investors was the creation of a centralized state agency, the National Infrastructure Agency (ANI), which is financially and technically independent. ANI replaced another government agency, highly inefficient and commonly influenced by government officials. The entity is responsible for long-term planning, being a potential benchmark to Brazil.

Additionally, the agency is contributing to the coordination of new PPP projects. The country is today the third most competitive globally in terms of regulation for funding infrastructure projects through PPPs, only behind United Kingdom and Australia²⁸. Several PPP projects are being conducted with significant potential impacts on Colombia's infrastructure landscape. As an example, the Colombia's Fourth Generation (4G) Infrastructure Program involves substantial investments on roads, ports and rail. The Program is considered a success, as 21 roads have started construction, 16 were modernized and more than US\$ 2.4 bn were invested in ports²⁹.

Colombian government is promoting infrastructure reform through an efficient coordination among different bodies and authorities, as well as by simplifying bureaucratic procedures to private and foreign investments. Therefore, the country is creating the necessary conditions towards a new infrastructure sector: more competitive, transparent and based on a more diverse set of players.

Although the Brazilian infrastructure context leads to relevant challenges for development – namely high logistics costs, dependency of road modal transportation and low level of intermodal integration -, the country has seen some relevant improvement in its business environment in the last years.

27. GRIHUB. Infrastructure in Latin America. 2019; World Bank. Infrastructure investment guide: Colombia. 2018

28. GRIHUB. Infrastructure in Latin America. 2019

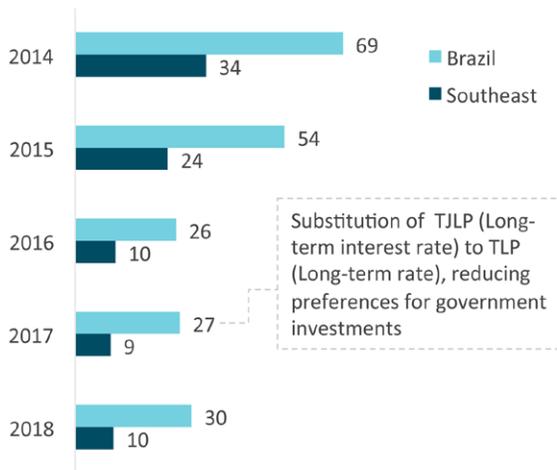
29. Procolombia. Colombia bets heavily on infrastructure.2019 - Available at: <https://www.globalbankingandfinance.com/procolombia-colombia-bets-heavily-on-infrastructure/gb290518-52/>

3. RECENT IMPROVEMENTS

The recent economic and fiscal crises have significantly reduced public sector's investment capacity. There is no doubt that the government cannot cope with the sole responsibility of bridging the infrastructure gap. That explains why it is promoting several reforms and creating new mechanisms to develop a more attractive environment for private and foreign investments. Among the most relevant undergoing reforms, one can highlight the changing role of BNDES and the establishment of a new contractual framework, especially through the Investment Partnership Program (PPI).

Brazilian National Development Bank - BNDES has gradually shifted its role from the largest infrastructure financing agents to seeking alternative sources of commercial funding³⁰. In fact, it has more than halved the volume of disbursements to the sector, from R\$ 69 billion (33% of the sector's financial support) to R\$ 30 billion between 2014 and 2018. In the Southeast region, for example, the reduction was even more sound, falling 70% since 2014 [Fig. 09].

Fig. 09: Evolution of BNDES disbursements in infrastructure (R\$ bn)



Source: BNDES. Estatísticas operacionais. 2019 - Available at: <https://www.bndes.gov.br/wps/portal/site/home/transparencia/estatisticas-desempenho>

However, BNDES promoted specific reforms to encourage increased private sector's participation. It modified the interest rate used back in 2017, replacing TJLP by TLP, in a move to better align its financing policy to the financial market and reduce implicit

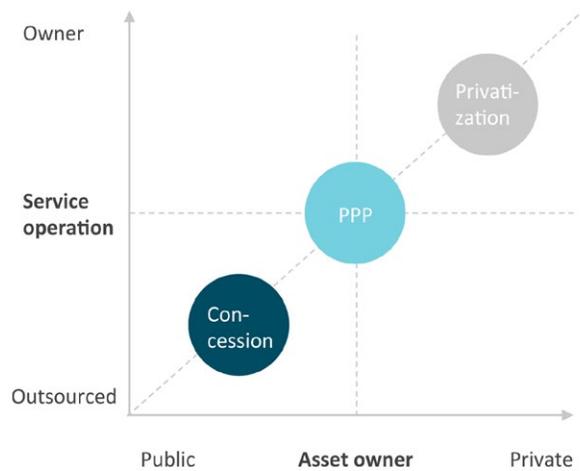
30. The World Bank. Back to planning - how to close Brazil's infrastructure gap in times of austerity. 2017

subsidies to specific sectors. By doing so, it also removed a barrier to develop a robust private infrastructure financing system, incentivizing the diversification of sources³¹.

As an example of the private financing potential, the market for incentivized debentures is consolidating itself as an important source of funding for the infrastructure sector. Bond emissions hit a record of R\$ 23.8 bn in 2018, encompassing 65 operations which correspond to an increase of 164% compared to the previous year³².

Additionally, the government is promoting new mechanisms to stimulate the participation of private investments in infrastructure. Different contractual frameworks are being proposed to allow for diverse levels of private sector participation, such as concessions, public-private partnerships and privatizations [Fig. 10].

Fig. 10: Private sector participation



Source: Oliver Wyman. *Infraestrutura: regras e incentivos*. 2017

Concession³³ – contract for the provision of a public service to a private company (concessionaire), for a limited period and under specific conditions agreed between the parties. The concessionaire makes the necessary investments and assumes the activity’s operational risks.

Public-private partnership (PPP)³⁴ – a specific concession contract where the concessionaire’s remuneration comes in part or in totality of payments done by the government.

31. Oliver Wyman. *Infraestrutura - regras e incentivos*. 2018

32. Anbima. *Debêntures de infraestrutura atingem volume recorde em 2018*. 2018

33. PPI. Programa de Parcerias de Investimentos. *Perguntas frequentes*. 2019 - Available at: <https://www.ppi.gov.br/perguntas-frequentes>

34. PPI. Programa de Parcerias de Investimentos. *Perguntas frequentes*. 2019 - Available at: <https://www.ppi.gov.br/perguntas-frequentes>

Privatization³⁵ - process by which a property or business is transferred through a sales agreement from the public sector to the private sector.

Given the different possibilities of partnerships, the Brazilian government created, in 2016, a program named the Investment Partnerships Program (PPI) aimed at improving the coordination among government agencies and properly structuring the governance around private sector partnerships.

PPI's contracts are established through the concession and PPPs modalities and represent an important mechanism for the development of necessary public services and other infrastructure projects in Brazil. On one hand, the private sector contributes with necessary resources for each infrastructure project, alleviating the fiscal burden. On the other hand, management and execution of public services can be carried out with increased efficiency by private operators.

Since its creation, the program has benefitted from adjustments and improvements in terms of planning, selecting and monitoring investments. As an example, a new workflow has been put in place regarding project validation, signaling a more detailed timeframe. At the same time, PPI is fostering new investments by means of a transparent communication with investors and financial institutions, longer terms for the bidding procedures, so that investors can accurately assess project's characteristics and complexities, and elimination of bureaucratic and unnecessary requirements for the auctions³⁶.

Considering the projects proposed by the PPI, 124 have been successfully auctioned by the end of 2018 guaranteeing a government levy of more than R\$ 46 bn and an expected investment exceeding R\$ 254 billion in the coming years³⁷. The auctions gathered the interest of private and foreign players from more than 16 different countries³⁸ indicating the attractiveness of the projects.

So far, PPI is considered an important step towards the establishment of a new infrastructure platform. By improving the level of transparency and providing predictability, the Program is catching private investors' attention and interest. There is no doubt that the quality of the dedicated personnel also adds value. These attributes must be constantly strengthened and consolidated in order to transform Brazil's infrastructure reality.

35. PPI. Programa de Parcerias de Investimentos. Perguntas frequentes. 2019 - Available at: <https://www.ppi.gov.br/perguntas-frequentes> / World Bank Group. Full Divestiture/Privatization. 2019 - Available at: <https://ppp.worldbank.org/public-private-partnership/agreements/full-divestiture-privatization>

36. PPI. Programa de parcerias de investimentos. 2019 - Available at: <https://www.ppi.gov.br/investors>

37. PPI. PPI: mais de dois anos impulsionando a economia do País. Conheça nossos números. 2018 - Available at: <https://www.ppi.gov.br/ppi-mais-de-dois-anos-impulsionando-a-economia-do-pais-conheca-nossos-numeros>

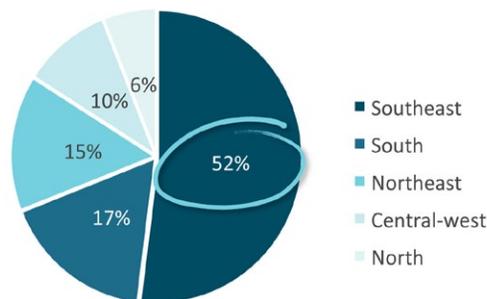
38. PPI. Relatório de Gestão. 2018

4. LOGISTICS IN THE SOUTHEAST REGION

4.1. Economic relevance and logistics network

Brazil's continental territory makes the investments in logistics infrastructure uneven across different regions. The Southeast region concentrates the largest portion of the Brazilian population (42%)³⁹, as well as the biggest cities⁴⁰ and urban areas. At the same time, it is also responsible for 52% of national GDP [Fig. 11], while the State of São Paulo accounts for more than 32% of Brazilian GDP, followed by Rio de Janeiro (10%), Minas Gerais (9%) and Espírito Santo (2%).

Fig. 11: GDP by region (%)



Source: CNI. Portal da Indústria - Comparativo dos Estados. 2019

Therefore, the Southeast region must develop better quality logistics systems to support its complex economic activities, mainly in areas such as industry, services and trade.

The region is marked by a diverse set of industries, such as civil construction, oil and gas (O&G), food and beverages. São Paulo state has the largest industrial sector of Latin America, accounting for 32% of the national industrial GDP. At the same time, Rio de Janeiro is characterized by its robust and diverse energy sector, mainly associated with the O&G industry. The region has also several commerce and service activities (responsible for 65% of the country services sector total net profit⁴¹) due to its highly populated states.

39. CNI. Portal da Indústria - Comparativo dos Estados. 2019

40. Brazil's two most populated cities are located in the Southeast region: São Paulo (12.1 million habitants) and Rio de Janeiro (6.6 million habitants) - IBGE. IBGE divulga as Estimativas de População dos municípios para 2018. 2018 - Available at: <https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/22374-ibge-divulga-as-estimativas-de-populacao-dos-municipios-para-2018>

41. IBGE. Estatísticas. 2017

In addition to that, an effective market opening process could potentially increase the volume of trade with neighbors and partners. The Southeast region would, therefore, be one of the main impacted regions, both negatively in terms of higher logistics capacity constraints and positively due to investments attraction. This higher exposure to trade reform is based on its relevance for Brazilian trade, since it accounts for 49% of Brazil’s exports and 55% of imports. São Paulo is responsible for approximately 22% of total national exports and 34% of imports, occupying the number one position on both national rankings [Fig. 12].

In this context, the efficiency of the region’s infrastructure network will directly influence the country’s ability to integrate global chains and trade systems.

Fig. 12: Southeast region participation in Brazil’s trade flow (% , ranking)

States	Exports	Imports	Ranking
São Paulo	22%	34%	1 st
Rio de Janeiro	12%	13%	2 nd
Minas Gerais	11%	5%	4 th , 6 th
Espírito Santo	5%	3%	8 th , 10 th

Source: Ministério da Economia. Comex Vis: Estado. 2019

Infrastructure opportunities for the O&G sector ⁴²

The relevance of oil products to the Southeast region is clearly illustrated by a simple analysis of the main products traded. In fact, Rio de Janeiro and São Paulo states are, respectively, responsible for 62% and 26% of the country's crude oil exports⁴³. Rio de Janeiro is the largest O&G producer, accounting for 69% of country's total output⁴⁴. The state has the most productive oil and gas pre-salt⁴⁵ field, Lula, accounting for 61% of its total production, as well as the most promising one, Mero⁴⁶.

Pre-salt development perspectives and recent regulatory improvements raised the Brazilian O&G market to a different level. It has the potential to increase the demand for better-integrated logistics systems, in order to support the production growth, as well as the increasing participation of global players⁴⁷. By 2027, the Brazilian Energy Planning Agency (EPE) expects an increase of 96% in oil production, with 84% of the country's production coming from the pre-salt⁴⁸. In absolute terms, this means an expected total volume production of 5.1 million barrels per day, creating a significant positive impact in terms of supply chain and service providers⁴⁹.

Besides the resource availability, the sector has also benefitted from significant regulatory and governance improvements⁵⁰, such as a multiyear auctions calendar, review of the local content policy and the extension of the REPETRO regime, contributing to a more transparent and predictable business environment⁵¹. In this context, the government expects to attract new investments and global players. The regulatory agency ANP estimates a potential investment of approximately US\$ 450 bn by 2054, representing an equivalent of US\$ 42 bn per year⁵².

In order to fully develop its reserves, Brazil must reinforce an appropriate logistics network

42. Analysis based on public information, such as: MME, ANP, EPE, MIDIC and IBP

43. MDIC. Comex stats. 2019 - Available at: <http://comexstat.mdic.gov.br/pt/home>

44. ANP. Boletim da produção de petróleo e gás natural. 2019

45. The pre-salt is one of the world's most relevant O&G provinces, with high commercial value oil and gas reserves. In addition to that, the pre-salt is the home of the largest offshore oil discoveries in the last decade - responsible for 63% of the world's deepwater oil discoveries between 2010 and 2014. Source: ANP. O&G industry in Brazil. 2018

46. Petrobras. Pre-Salt. 2019 - Available at: <http://www.petrobras.com.br/en/our-activities/performance-areas/oil-and-gas-exploration-and-production/pre-salt/>

47. CEBRI. The energy sector in 2022. 2018

48. EPE. Plano Decenal de Expansão de Energia. 2018

49. EPE. Plano Decenal de Expansão de Energia. 2018

50. CEBRI. The energy sector in 2022. 2018

51. IBP. Sucesso das rodadas de licitação 2017-2018. 2019

52. ANP. ANP participa de seminário sobre o futuro do setor de óleo e gás. 2019 - Available at: <http://www.anp.gov.br/noticias/anp-e-p/4710-anp-participa-de-seminario-sobre-o-futuro-do-setor-de-oleo-e-gas>

to support the increase of production and the transportation to demand centers⁵³. Due to its proximity to both pre-salt basins, Santos and Campos, as well as to demand centers, the Southeast region is key for the development of the O&G infrastructure. Considering the trade flows of oil products, both Rio de Janeiro and São Paulo have an important role due the existence of ports (eg. Port of Santos, São Sebastião, Rio de Janeiro, Açu, Vitória) [Fig. 13] and other distribution channels capable to support the production flow both directed to the domestic and the international markets.⁵⁴

Fig. 13: Southeast region and its proximity to pre-salt basins



Source: Catavento's analysis

Due to their geological characteristics, the pre-salt fields also represent an opportunity to develop a robust market of natural gas. According to EPE, Brazilian net gas production is expected to grow 97% by 2027⁵⁵, reaching 217 million of cubic meters per day. To guarantee the full deployment of this potential, there are still relevant challenges to be addressed, such as the infrastructure modernization⁵⁶ and the domestic market development⁵⁷.

According to the Ministry of Mines and Energy, a regulatory reform of the natural gas sector

53. FGV. A dialética do mercado de gás natural brasileiro. 2018

54. ANP. A retomada da indústria do petróleo e gás no Brasil. 2018

55. EPE. Plano Decenal de Expansão de Energia. 2018

56. Adriano Pires. Gás natural precisa de novas perspectivas regulatórias, diz Adriano Pires. 2019

57. MME. Ministro anuncia o programa "Novo Mercado de Gás" durante encontro com jornalistas. 2019 - Available at: http://www.mme.gov.br/web/guest/pagina-inicial/outras-noticias/-/asset_publisher/32hLrOzMKwWb/content/ministro-anuncia-o-programa-novo-mercado-de-gas-durante-encontro-com-jornalistas

will be able to promote a competitive market, fostering the participation of a different set of players⁵⁸. Among the most relevant regulatory adjustments⁵⁹ are: (i) the harmonization between federal and state regulatory framework; (ii) the creation of new access formats to critical infrastructure and (iii) the introduction of a tariff model on transport systems⁶⁰. These regulatory improvements are considered key for the development of the Brazilian gas market, potentially leading to new investments in infrastructure network, competitive prices and increased gas sales to the domestic market.

There are already new projects under development in the Southeast region focusing on the natural gas market opportunities, such as Route 03 and Port of Açu's gas hub. Route 03 project aims to increase the natural gas flow from the pre-salt area, transporting gas from the Santos Basin, 307 km from the coast, to the Petrochemical Complex of the State of Rio de Janeiro (COMPERJ), located in Itaboraí⁶¹. Route 03 will be the third major gas pipeline connecting the pre-salt area to the Brazilian coast [Fig. 14]⁶². Given the expected increase in volumes of O&G production, one should look for additional investments related to the development of the required infrastructure.

It is also worth mentioning that Prumo Logística is developing a natural gas hub in Port of Açu, through its subsidiary Gás Natural Açu (GNA) which is a partnership with Siemens and BP⁶³. The project, currently under construction, includes the installation of Brazil's first private LNG regasification terminal, integrated with the largest thermoelectric plant in Latin America (3 GW of installed capacity and with potential to be expanded to 6.4 GW⁶⁴) [Fig. 14].

58. IBP. O que você precisa saber sobre a modernização do mercado de gás natural no Brasil. 2018

59. IBP. O novo mercado de gás natural: integração na matriz energética. 2019

60. ANP. O mercado de gás natural no Brasil. 2018

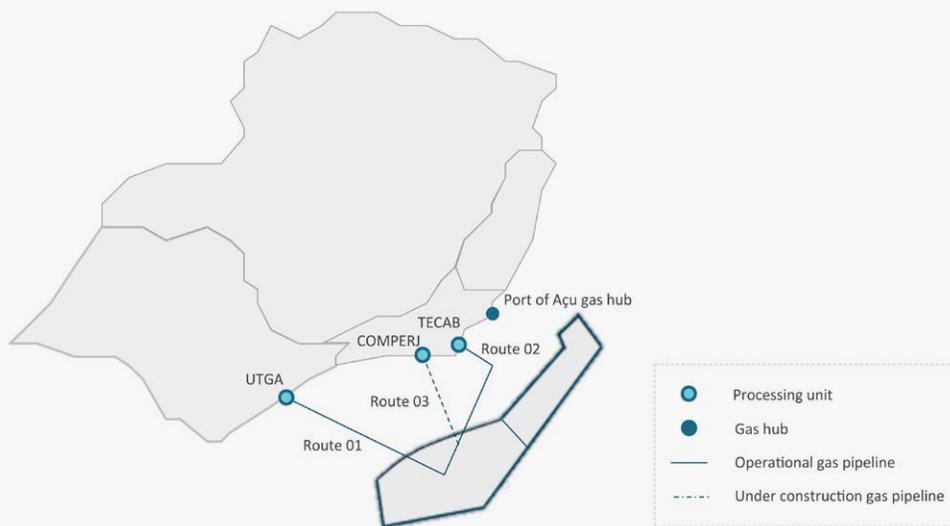
61. EPBR. Ministros recebem Porto do Açu para assinatura de contrato do terminal de GNL. 2019 - Available at: <https://epbr.com.br/ministros-recebem-porto-do-acu-para-assinatura-de-contrato-do-terminal-de-gnl/>

62. Petrobras. Rota 03. 2019 - Available at: <https://www.comunicabaciadesantos.com.br/empreendimento/rota-3.html>

63. Porto do Açu. Porto do Açu atrai mega investimento da GNA. 2019 - Available at: <https://portodoacu.com.br/porto-do-acu-atrai-mega-investimento-da-gna/>

64. GNA has an environmental license to more than double the current installed capacity reaching 6.4 GW. Source: Siemens. Siemens secures major order for integrated LNG-to-Power project in Brazil. 2019 - Available at: <https://www.siemens.com/press/en/pressrelease/?press=en/pressrelease/2019/gas-power/pr2019040217gpen.htm>

Fig. 14: Relevant natural gas projects in the Southeast region



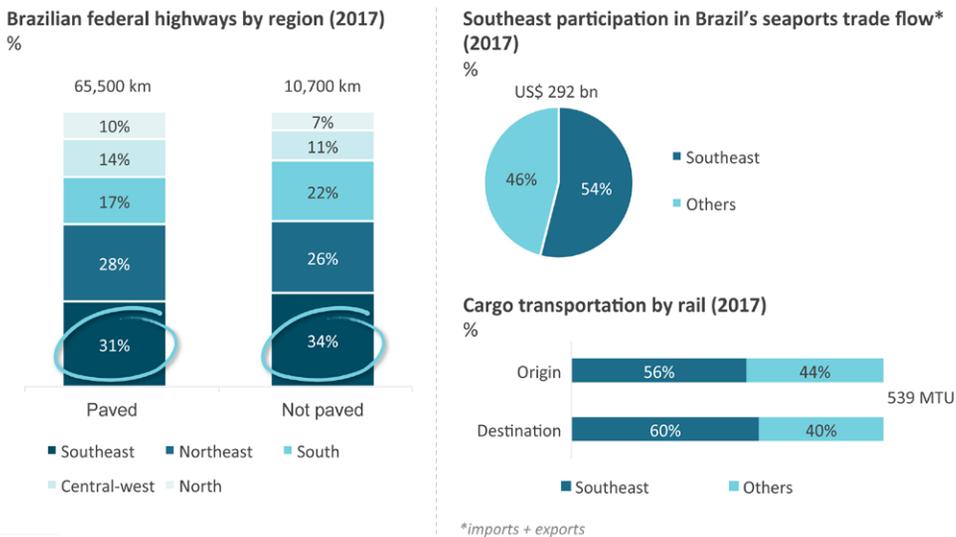
Source: EPBR. *Ministros recebem Porto do Açú para assinatura de contrato do terminal de GNL. 2019; Petrobras. Rota 03. 2019*

The Southeast region also concentrates the country’s transportation and logistics systems aiming to support the flow of goods and services, both internally and dedicated to international trade. Regarding the road sector, the region accounts for, respectively, 31% and 34%⁶⁵ of the country’s paved and unpaved roads [Fig. 15]. However, service provision still lacks quality and does not fully address the regional demand, according to households and enterprises. As an example, over 40% of companies in Rio de Janeiro identified transport services as a major or severe constraint to its economic activities⁶⁶. Therefore, the region faces the same logistics challenges of Brazil and its economic and social concentration makes the promotion of an efficient logistics network even more needed [Fig. 15].

65. Ministério da Infraestrutura. Anuário Estatístico. 2018

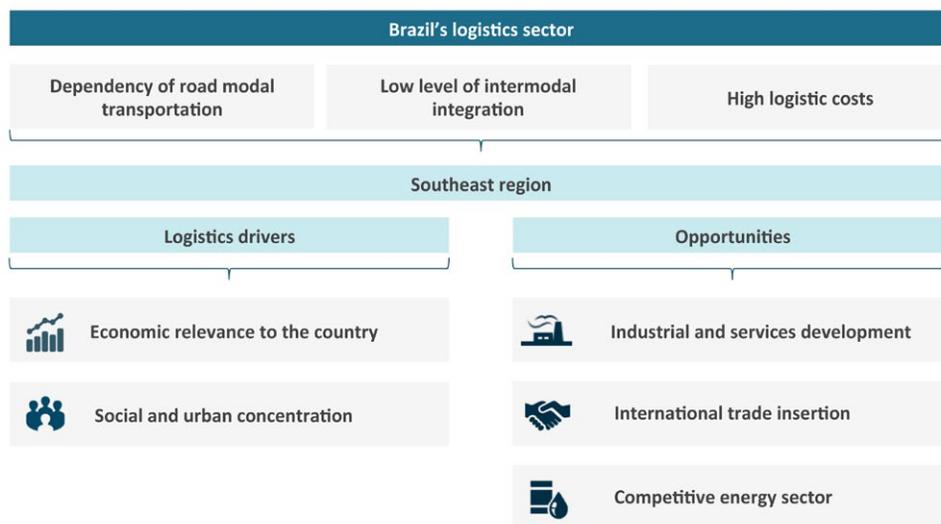
66. The World Bank. Back to planning - how to close Brazil’s infrastructure gap in times of austerity. 2017

Fig. 15: Transportation modes by region



Source: Ministério da Infraestrutura. Anuário Estatístico. 2018

Fig. 16: Framework - Logistics panorama



Source: Catavento's analysis

4.2. Perspectives for PPI in the Southeast region

The PPI represents an opportunity for the Southeast region to promote the development of logistics networks through new private investments. Up to May 2019⁶⁷, ten logistics projects located in the Southeast region were included under the PPI's pipeline, with estimated investments of R\$ 30 bn to be initiated in 2019 and 2020. The road sector was prioritized with 04 projects and a CAPEX of R\$ 23.4 bn, followed by rail (R\$ 6.1 bn), air transportation (R\$ 0.59 bn) and ports (R\$ 0.239 bn) [Fig. 17].⁶⁸

Fig. 17: Southeast region PPI's projects



Source: Analysis Catavento based on: PPI. Cronograma dos Projetos. 2019 - Available at: <https://www.ppi.gov.br/cronograma-dos-projetos>

Although these projects represent the possibility of attracting new private capital, they do not address the historical barriers to an improved logistics infrastructure system as they keep the dependency on road modal transportation, do not call for a better intermodal integration and do not tackle the issue of high logistics costs. In fact, 78% of the total expected capex will be destined to the road sector, while only 20% for rail⁶⁹ [Fig. 18]. Additionally, most of the projects are brownfield one (88%), not contributing to the development of a new infrastructure capable of increasing capacity and improving transportation efficiency⁷⁰ [Fig. 18].

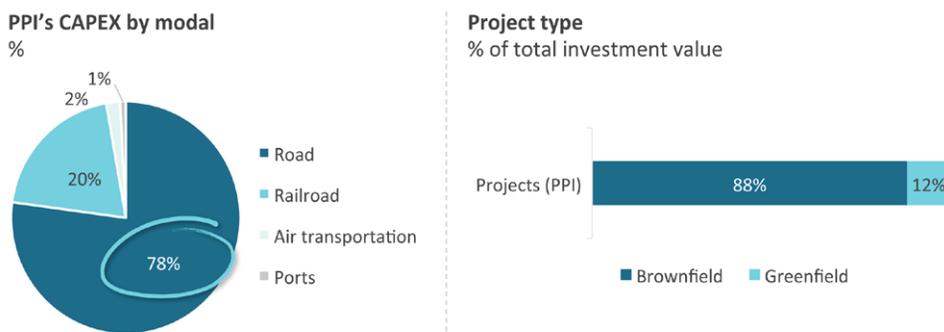
67. Period of analysis: From January to May 2019

68. PPI. PPI: mais de dois anos impulsionando a economia do País. Conheça nossos números. 2018 - Available at: <https://www.ppi.gov.br/ppi-mais-de-dois-anos-impulsionando-a-economia-do-pais-conheca-nossos-numeros>

69. Analysis Catavento based on: PPI. Cronograma dos Projetos. 2019 - Available at: <https://www.ppi.gov.br/cronograma-dos-projetos>

70. Analysis Catavento based on: PPI. Cronograma dos Projetos. 2019 - Available at: <https://www.ppi.gov.br/cronograma-dos-projetos>

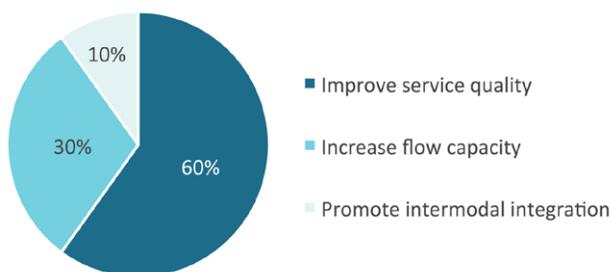
Fig. 18: PPI's projects analysis



Source: Analysis Catavento based on: PPI. Cronograma dos Projetos. 2019 - Available at: <https://www.ppi.gov.br/cronograma-dos-projetos>

In addition, these projects apparently do not aim to foster greater system integration. Considering the main expected contributions of the projects established in the PPI schedule, only one of them promotes strategic modal integration – railroad EF 151 (Ferrovia Norte Sul), while the others aim to contribute to increased flow capacity and improved service quality [Fig 19].

Fig. 19: Project's key contributions to Southeast logistics (%)



Source: Analysis Catavento based on: PPI. Cronograma dos Projetos. 2019 - Available at: <https://www.ppi.gov.br/cronograma-dos-projetos>

5. STRATEGIC DRIVERS: CHANGING THE CURRENT LOGISTICS INFRASTRUCTURE PANORAMA

The development of an efficient logistics network represents an opportunity to both regional and national economic growth. In this sense, there are specific strategic drivers focused on addressing the most prominent logistics barriers and promoting the sector's development [Fig. 20], which are: (i) approaching logistics infrastructure as a competitive enabler; (ii) fostering an integrated and collaborative vision in the logistics sector and (iii) developing investment partnerships.

Logistics infrastructure must be considered an economic competitiveness enabler. Through the development of efficient logistics networks, the Southeast region and, consequently, Brazil would be able to experience faster economic growth and international integration. This would potentially reduce transportation costs and increase overall economic productivity, strengthening the business environment and contributing to its investment attractiveness.

At the same time, the transportation sector must envision the potential benefits of intermodal systems, shifting from an independent to a collaborative approach among the modal sectors. In this sense, some adjustments in the sector's governance and regulatory framework could create the necessary conditions to foster an integrated vision of the logistics sector. Greater coordination among the different bodies, with possible unification among main regulatory agencies, can contribute to a greater balance in the transportation matrix and diminished road dependency through a collaborative dialogue.

In addition to that, other adjustments could improve the sector's governance. First, defining each entity's sphere of operation and responsibilities, as well as eliminating overlapping tasks, will directly contribute to the logistics governance effectiveness. At the same time, it is necessary to enhance transparency mechanisms, contributing to greater legitimacy of the sector's decisions, as well as to reduce interferences in different regulatory and control bodies.

It is also important to highlight that **the development of investment partnerships, among foreign, private and public players, can be the most effective way to address the current logistics infrastructure challenges.** It is now commonsense that the public sector participation alone in infrastructure is not able to address the most important structural challenges. Therefore, besides the governance and regulatory adjustments, other mechanisms are able to enhance the transparency and predictability of the logistics sector, such as: (i) the creation of a transparent infrastructure projects pipeline; (ii) the enhancement of a collaborative dialogue with investors and financial institutions; (iii) the reduction of bureaucratic requirements for auctions.

Finally, such improvements directly contribute to the elaboration of a necessary long-term planning capable of identifying, through a qualified dialogue among foreign, public and private actors, priorities for the development of country’s logistics infrastructure.

Fig. 20: Changing the current infrastructure panorama

Strategic Drivers	Opportunities for Brazil
<ul style="list-style-type: none"> • Logistics infrastructure as a competitive enabler – enhance the comprehension and understanding associated with its benefits to the economic growth and competitiveness 	<ul style="list-style-type: none"> • Develop an efficient logistic network • Reduce transportation and logistic costs • Increase country’s overall competitiveness and business attractiveness
<ul style="list-style-type: none"> • Integrated and collaborative vision in the logistic sector – foster a qualified dialogue among key sector’s players, reducing regulatory and governance complexities 	<ul style="list-style-type: none"> • Promote the unification of main regulatory agencies • Define each entity’s sphere of operation and responsibility • Reduce interferences of regulatory and control bodies
<ul style="list-style-type: none"> • Development of investments partnerships – create the necessary conditions to foster foreign and private investments 	<ul style="list-style-type: none"> • Create a transparent infrastructure projects pipeline • Enhance a collaborative dialogue with investors and financial institutions • Reduce the bureaucratic requirements for auctions

Source: *Catavento’s analysis*

PART II

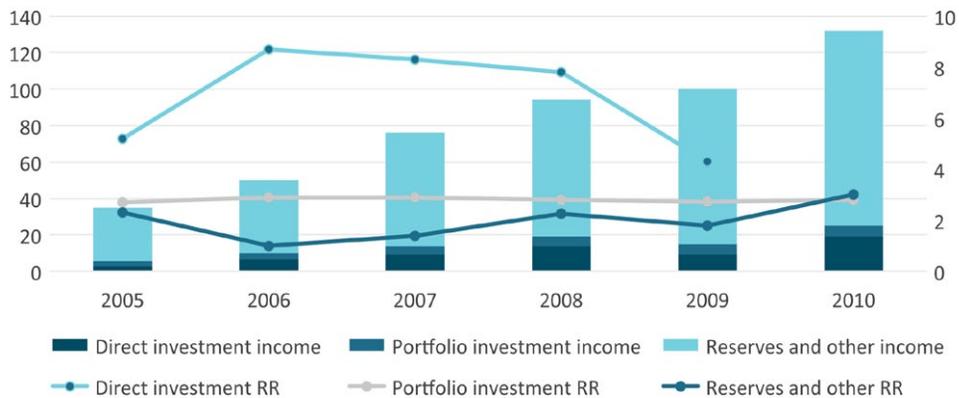
Brazil and China: aiming for a long-term partnership

6. CHINA'S INTERNATIONAL APPROACH

China, the world's second largest economy when measured by GDP, has strengthened its global relevance over the last decade. The country has shifted its position from a large trade partner into a relevant source of foreign direct investment (FDI). Such a change is being known as “going out”, motivated by the intention to diversify its investment portfolio, coupled with a search for greater geopolitical influence. As a result, China became the world's second most relevant source of foreign direct investments (FDI) only behind the USA⁷¹. By the end of 2017, the China's FDI stock reached US\$ 1,482 bn, representing 12.6% of its GDP⁷².

This investment portfolio diversification can be evidenced by China's net foreign assets profile, measured by foreign assets (foreign exchange reserves, overseas investments, positions held overseas) minus foreign liabilities (foreign direct investments inside China, international investments in China)⁷³. Up to 2013, China's surplus in both current account and capital and financial account⁷⁴ led to a significant increase in its foreign reserves. Those were usually held in the form of U.S. bonds and presented lower return rates when compared to foreign direct investments [Fig. 21].

Fig. 21: Income and return rate of China's foreign assets (US\$ mn - %)



Source: CEBC. Direções globais de investimentos. 2019

71. UNCTAD. World Investment report. China. 2018

72. UNCTAD. World Investment report. China. 2018

73. Yuning Gao; Qinzhen Wang. China's global investment: structure, route and performance. 2018

74. The change of reserve assets equals to the sum of current account balance and capital and financial account balance, where usually one is positive and the other one is negative. Source: CEBC. Direções globais de investimentos. 2019

In this context, China was no longer fully satisfied with investing in foreign reserves⁷⁵, and set out to diversify its foreign capital allocation in order to guarantee better return rates. Between 2005 and 2015, foreign reserves participation in foreign assets declined from 68% to 55%, while foreign direct investments (FDI) clearly gained relevance, increasing from 5% to 18%⁷⁶.

On the other hand, Chinese FDI is also seen as an important soft power mechanism in the global geopolitical context. Foreign investments seek to foster China's bilateral relations with other countries, strengthening its position in the main international forums and, in the long term, increasing trade between the partners⁷⁷.

Belt and Road Initiative (BRI)

Belt and Road Initiative (BRI) is China's current most prominent infrastructure project, clearly aligned with the strategy of increasing its geopolitical influence. BRI is measured in decades, with its conclusion planned for 2049, when the founding of the People's Republic of China celebrates its 100th anniversary⁷⁸.

The project was announced by Chinese President Xi Jinping back in 2013 and, through infrastructure investments, China intends to strengthen its central position in the global economy, connecting different markets and regions. In the long term, the project can promote economic growth and trade opportunities, as well as expand global use of the national currency (renminbi)⁷⁹. BRI is already in progress, with more than US\$ 350 bn of investments committed by 2023⁸⁰. Nonetheless, different data suggest that global infrastructure requirements under BRI could reach US\$ 1 tn to US\$ 1.6 tn per year over the coming decades⁸¹.

The Chinese initiative has attracted interest from over 150 countries, while 68 of them are already considered BRI partners. These countries represent approximately 65% of world's population, 30% of the global economic output and more than 55% of total carbon dioxide emissions⁸², located mostly in Asia, Africa, and Europe [Fig. 22]. Most of these countries are still facing widespread poverty, in the sense that BRI has the potential to transform their economic and social environment, impacting the future of global trade.

75. Yuning Gao; Qinzen Wang. China's global investment: structure, route and performance. 2018

76. Daniel Poon. China's overseas development finance: policy tools & mechanisms. 2018

77. McKinsey. China and the world: Inside a changing economic relationship. 2018

78. World Economic Forum (WEF). What you need to know to understand Belt and Road. 2018

79. Brookings. China's Belt and Road: The new geopolitics of global infrastructure development. 2019; Standar Chartered. Belt and Road by numbers. 2019 - Available at: <https://www.sc.com/en/feature/belt-and-road-by-the-numbers/>

80. Standard Chartered. Belt and Road by numbers. 2019

81. Brookings. China's Belt and Road: The new geopolitics of global infrastructure development. 2019

82. Columbia. Toward a Real Green Belt and Road. 2019

Fig. 22: Relevant regions under China's Belt and Road Initiative



Source: World Economic Forum (WEF). *What you need to know to understand Belt and Road*. 2018

A critical aspect of BRI is its rapid mobilization of capital. The investment process is significantly faster than projects supported by conventional development finance organizations, increasing the relevance and the expected impact of the initiative in host countries. However, this rapid process leads to experts' concerns associated with the lack of transparency in the investment decision process, the potential impact of unsustainable actions regarding the debt level of recipient countries, as well as the potential harms to the environment, both locally and globally⁸³.

Chinese government is aware of the potential reputational risks arising from BRI's environmental and social impacts⁸⁴. In this sense, China has issued different official documents promoting green and compliance standards. There are initiatives providing orientations about environmental risks and supporting better transparency, as well as promoting partnerships with local NGOs and private companies⁸⁵.

Although there are clear potential benefits in the development of new infrastructure systems in the recipient countries, it is expected that China continuously strengthens a robust and sustainable set of standards to address the potential impacts on its partners and on the global economy. On the other hand, the host countries must fully understand the implications and consequences of adhering to BRI, as well as the policies and institutional reforms needed to guarantee long-term and sustainable benefits⁸⁶.

83. Banyan. The Economist. Chinese investment in infrastructure is often a diplomatic trap. 2019 - Available at: <https://www.economist.com/asia/2019/02/02/chinese-investment-in-infrastructure-is-often-a-diplomatic-trap>

84. Columbia. *Toward a Real Green Belt and Road*. 2019

85. Columbia. *Toward a Real Green Belt and Road*. 2019

86. The World Bank. *Belt and Road Initiative*. 2019

That said, although there is no consensus regarding the initiative's effective impacts, it is clearly at the center of the debate among major global policy makers and experts. In 2019, China's 2nd Belt and Road Forum brought together leaders from 37 countries and delegates from over 150 countries⁸⁷. In the coming years, it is expected to become one of the world's most relevant meetings, directly influencing the global geopolitics and economy⁸⁸.

Given FDI's increased strategic relevance to China's economic and geopolitical ambitions, it is submitted to the approval of the central government and of different regulatory agencies under the State Council's administration, among them NDRC, MOFCOM and SAFE⁸⁹. The Council is composed of different departments at a ministerial level, reporting directly to the Premier, who is the head of the State Council⁹⁰. A view of how a firm gets its overseas investment approval can be simplified as follows: (i) NDRC approves the economic feasibility of the company's investment project, as well as its alignment to the country's international ambition; (ii) MOFCOM keeps it on record for statistical reasons and for trade monitoring; (iii) company applies for approval of foreign exchange loans from SAFE⁹¹ [Fig. 23]. Although still subject to a high level of political influence, the central government has been promoting reforms and loosening these regulations⁹².

87. CSIS. Center for strategic and international studies. 2019

88. CSIS. Center for strategic and international studies. 2019

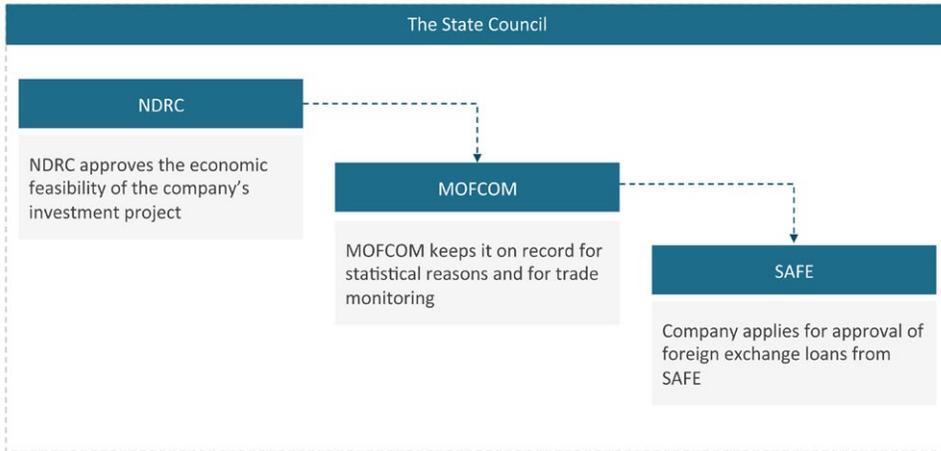
89. National Development and Reform Commission (NDR), Ministry of Commerce of the People's Republic of China (MOFCOM), State Administration of Foreign Exchange (SAFE)

90. Yan Li. Science and technology policy tools that promote China's global investments. An investigation into China's One Belt One Road STI Cooperation Plan. 2019

91. Yan Li. Science and technology policy tools that promote China's global investments. An investigation into China's One Belt One Road STI Cooperation Plan. 2019

Yan Li. Science and technology policy tools that promote China's global investments. An investigation into China's One Belt One Road STI Cooperation Plan. 2019; Bloomberg. China Opens Up More of Its Economy to Foreign Investors. 2018 - Available at: <https://www.bloomberg.com/news/articles/2018-06-29/china-opens-up-more-of-economy-to-foreign-investors>

Fig. 23: Simplified FDI's approval route



Source: Catavento's analysis based on CEBC. *Direções globais de investimentos. 2019*; Zhong Lin. *China: Legal environment overview on the outbound investment of Chinese enterprises. 2018*

At the same time, to support China's outward investment flows and to bolster its projects management capabilities, the Chinese government is strengthening the role of China Development Bank, on top of creating several regional and multilateral development finance institutions. Among those, the most relevant are the Asian Infrastructure Investment Bank (AIIB), the New Development Bank (NDB)⁹³ and the Silk Road Fund (SRF).

The CDB is the world's largest national development bank by assets (US\$ 2.0 tn) and loans and it is mainly focused on infrastructure projects⁹⁴. Over the recent years, CDB's international performance has grown rapidly by providing project finance to support the Chinese going out strategy⁹⁵. The CDB is considered the Chinese financial institution with the largest track record in the international scenario⁹⁶.

In addition to that, the new banks - AIIB and NDB - have an important role in providing greater legitimacy to China's international ambitions⁹⁷. The country is seeking to increase its level of participation and engagement in the international arena through multilateral platforms⁹⁸. It also follows a logic of leveraging Chinese influence in multilateral institutions.

93. Developed in partnership with other BRIC countries, has its shareholding structure equally divided among its members: Brazil, China, India and Russia. Source: Daniel Poon. *China's overseas development finance: policy tools & mechanisms. 2018*

94. Daniel Poon. *China's overseas development finance: policy tools & mechanisms. 2018*

95. Kevin Gallagher. *The Guardian. China's development banks need to clean up their act. 2017* - Available at: <https://www.theguardian.com/global-development/poverty-matters/2013/jul/10/china-development-banks-environment>

96. Daniel Poon. *China's overseas development finance: policy tools & mechanisms. 2018*

97. Jonathan Dove. *The Diplomat. The AIIB and the NDB: The End of Multilateralism or a New Beginning? 2016* - Available at: <https://thediplomat.com/2016/04/the-aiib-and-the-ndb-the-end-of-multilateralism-or-a-new-beginning/>

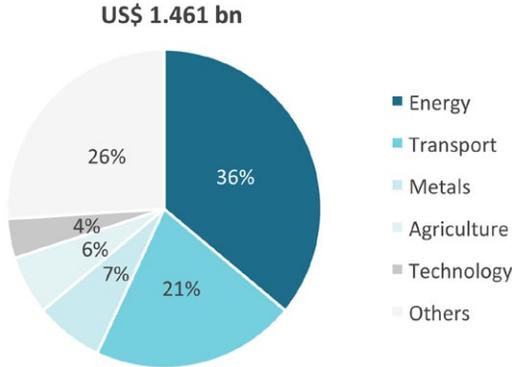
98. John Ikenberry; Darren Lim. *Brookings. China's emerging institutional statecraft. 2017* - Available at: <https://www.brookings.edu/research/chinas-emerging-institutional-statecraft/>

The traditional forums – World Bank and IMF, for example – have voting structures that do not favor emerging markets⁹⁹. As an example, countries such as Japan, Germany and France hold greater voting shares than China. The Asian country aims to use these new institutions to increase its influence and authority within the current international system.

Therefore, by loosening regulation and enhancing the financial institutions capabilities, the Chinese government has been changing its perception regarding the State’s role and FDI investments, acknowledging that planning mechanisms and oriented public finance are effective instruments to influence market behavior and shape new economic opportunities¹⁰⁰. In this sense, Chinese companies and financial institutions are more willing to perform as global players: investing based on economic opportunities in specific sectors and seeking competitive returns¹⁰¹.

The new Chinese FDI landscape reflects the integration between governmental and market-oriented objectives. On one hand, the drivers behind the market dynamics and investment decisions are: (i) the companies’ existing expertise and capabilities and (ii) the availability of attractive international project pipelines¹⁰². On the other hand, there is still a historical governmental orientation to (i) natural resources and energy security; (ii) projects that allow access to research and technology and (iii) those that involve the export of Chinese domestic products and services. According to China Global Investment Tracker’s (CGIT), energy, transport, metals and agriculture sectors were among the main destinations of China’s FDI between 2010 and 2017¹⁰³, as can be seen in the graph below [Fig. 24].

Fig. 24: Chinese direct investments by sector (2010-2017)



Source: CGIT. China Global Investment Tracker. 2019 - Available at: <http://www.aei.org/china-global-investment-tracker/>

99. Jonathan Dove. The Diplomat. The AIIB and the NDB: The End of Multilateralism or a New Beginning? 2016 - Available at: <https://thediplomat.com/2016/04/the-aiib-and-the-ndb-the-end-of-multilateralism-or-a-new-beginning/>

100. Anna Jaguaribe. Brazil and China Partnerships. 2019

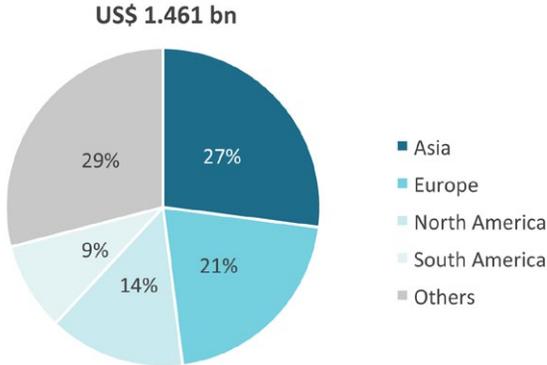
101. McKinsey. China and the world: Inside a changing economic relationship. 2018

102. McKinsey. China and the world: Inside a changing economic relationship. 2018

103. CGIT. China Global Investment Tracker. 2019 - Available at: <http://www.aei.org/china-global-investment-tracker/>

When analyzing the regional distribution of China’s FDI, Europe (21%) and North America (14%) were the most relevant destinations behind Asia [Fig. 25]¹⁰⁴. This can be partially explained by the increasing relevance of economic drivers for Chinese investments, focusing on projects with competitive returns in European and North American countries. M&A activity and attractiveness can also be a driver, since 90% of total investments in those regions were conducted through mergers and acquisitions of local companies, higher than the global average¹⁰⁵.

Fig. 25: Chinese direct investments by region (2010-2017) (%)



Source: CGIT. China Global Investment Tracker. 2019 - Available at: <http://www.aei.org/china-global-investment-tracker/>

On the other hand, South America attracted 9% of Chinese FDI between 2010 and 2017, amounting to US\$ 131.5 bn. The Chinese investments in the region apparently aim to guarantee access to relevant and growing domestic markets, as well as provide economic returns in specific competitive sectors, such as energy and infrastructure, where China holds consistent knowhow and technology track record.

104. CGIT. China Global Investment Tracker. 2019 - Available at: <http://www.aei.org/china-global-investment-tracker/>

105. McKinsey. China and the world: Inside a changing economic relationship. 2018

7. CHINA'S INVESTMENTS IN BRAZIL

7.1. Potential reasons

Brazil is the most relevant country to China's international agenda within the context of South America. There are currently over 200 Chinese companies operating in Brazil¹⁰⁶ and economic exchanges have intensified. Trade between the two countries has been growing exponentially in the last 4 years, reaching a record of US\$ 99 bn in 2018¹⁰⁷, making China Brazil's top trading partner. In 2018, the Brazilian trade surplus with China mounted to US\$ 29 bn and exports reached US\$ 65 bn, representing almost 1/3 of total Brazilian exports. In the coming years¹⁰⁸, Chinese demand for Brazilian commodities is expected to further leverage the trade flow between the two nations, at the same time as Chinese investments continuously gain relevance in the Brazilian agenda.

Between 2010 and 2017, Brazil was the 4th destination of China's FDI, accounting for more than 40% of total investments in South America¹⁰⁹. China has relevant reasons to invest in the country, since several Brazilian sectors are experiencing liberal reforms, with greater openness to foreign investments (eg. energy and infrastructure). As an example, one could highlight the multi-year auctions calendar in both energy (oil, gas and power) and infrastructure sectors (PPI's auctions). These recent changes are attracting global companies by promoting more predictability, coupled with Brazil's relative regulatory and business environment stability. In addition to that, compared with other South American countries, Brazil has competitive advantages in terms of natural resources availability and market size. [Fig. 26].

106. Anna Jaguaribe. Brazil and China Partnerships. 2019

107. Ministério da Indústria, Comércio Exterior e Serviços. 2019. Available at: <http://www.mdic.gov.br/comercio-externior/estatisticas-de-comercio-externior/comex-vis/frame-pais>

108. Ministério da Indústria, Comércio Exterior e Serviços. 2019. Available at: <http://www.mdic.gov.br/comercio-externior/estatisticas-de-comercio-externior/comex-vis/frame-pais>

109. CGIT. China Global Investment Tracker. 2019 - Available at: <http://www.aei.org/china-global-investment-tracker/>

Fig. 26: Competitive environment



Economic environment - different Brazilian sectors are experiencing liberal reforms, with greater openness to foreign investments (eg. energy and infrastructure sectors)



Natural resources – diversity and availability, especially in the energy sector. Country's enormous potential for generating different energy sources (eg. wind, solar, oil and gas)



Market size - largest domestic market in South America, concentrating 55% of the region's population

Source: Catavento's analysis

Brazil is characterized by the diversity of its natural resources, in particular in the energy sector. It has a significant potential for generating wind, solar, biomass, oil and gas in a competitive manner. Brazilian average wind power capacity factor, for example, is much higher than the global average (42% in Brazil compared to 24% globally)¹¹⁰. In addition, the size (56% of Brazilian O&G proven reserves)¹¹¹ and productivity (1.8 Mboe/d of O&G from 88 production wells)¹¹² of the pre-salt reservoirs can also be highlighted as an advantage, already attracting global players¹¹³.

In this sense, Chinese companies investing in Brazil envision an opportunity to apply their expertise and technology in a profitable industry, as well as to increase the participation in key sectors for China's growth ambitions¹¹⁴.

On the other hand, when analyzing the region's population and market, Brazil is by far the most relevant South American country, accounting for 52% of the region's GDP¹¹⁵, more than 55% of total population¹¹⁶ and having the largest domestic market of South America. According to the World Economic Forum Competitiveness report, Brazil ranks 10th in terms of global market size, which considers the size of the domestic market and the access to foreign markets by the country's firms, better positioned than other South American countries¹¹⁷.

110. ABEEólica. Wind generation annual bulletin. 2017

111. ANP. Oil and gas industry in Brazil. Improvements, goals and opportunities. 2018

112. ANP. Boletim da Produção de Petróleo e Gás Natural. 2019

113. CEBRI. The energy sector in 2022. 2018

114. ECLAC. Chinese foreign direct investment in Latin America and the Caribbean. 2013

115. World Bank. GDP data. 2019 - Available at: <https://data.worldbank.org/indicator/ny.gdp.mktp.cd>

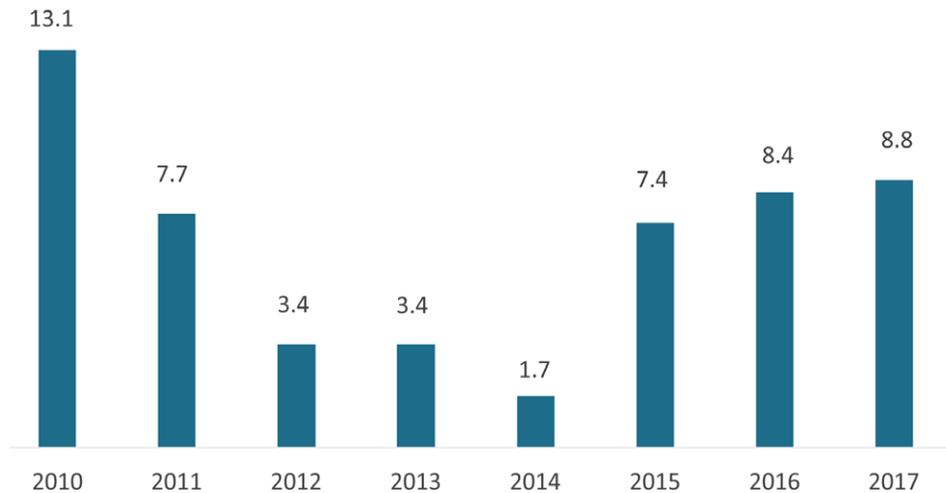
116. World Bank. Population. 2019 - Available at: <https://data.worldbank.org/indicator/sp.pop.totl>

117. World Economic Forum (WEF). Global competitiveness report. 2018

7.2. Investment analysis (2010-2017)

Chinese investments in Brazil averaged US\$ 0.16 bn up to 2010. They have, since then, mounted to almost US\$ 54 bn¹¹⁸, cumulatively [Fig. 27]. More recently, since 2014, there has been a notable and continuous growth in the amount invested by Chinese companies, with a compound annual growth rate (CAGR) of 50%.

Fig. 27: Chinese investments in Brazil (2010-2017) (US\$ bn)



Source: Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

When analyzing these investments in terms of the entry mode, there are similarities with Chinese international investments profile. Between 2010 and 2017, almost 81% of Chinese investments in Brazil were made through M&As [Fig. 28]. This pattern reflects Chinese preference to acquire brownfield assets¹¹⁹, as well as the development of partnerships with local companies that already operate and know the Brazilian market¹²⁰. Additionally, another relevant aspect of Chinese investments in Brazil is the predominant participation of state-owned enterprises (SOEs). In fact, three SOEs (China Three Gorges, State Grid, and Sinopec) responded for 66% of total investments¹²¹.

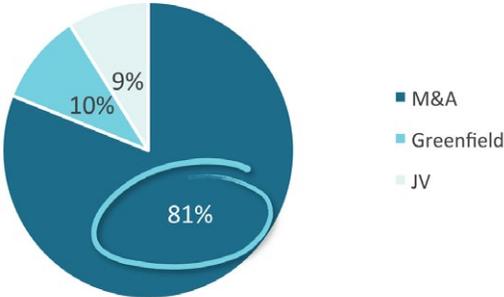
¹¹⁸ Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

¹¹⁹ CEBC. Chinese investments in Brazil. 2016

¹²⁰ Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

¹²¹ Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

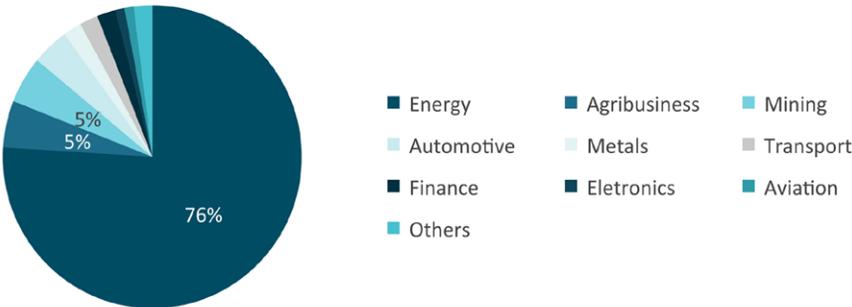
Fig. 28: Chinese investments by entrance mode (2010-2017) (%)



Source: Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

When analyzing Chinese investments by economic sector, there was a clear predominance of energy projects between 2010 and 2017, mainly oil, gas and power. Energy was the destination of 76% of Chinese investments in Brazil [Fig. 29], reaching a maximum of 94% of total Chinese investments in 2014. The sector's attractiveness is partially explained by the Chinese expertise, as well as new project opportunities arising from O&G auctions and transmission infrastructure concessions. Additionally, China's trade relations with Brazil still influence the nature of FDI, since many of the companies investing in the energy, mining and agribusiness sectors are large importers of these resources in China¹²².

Fig. 29: Chinese consolidated investments by sector (2010-2017) (%)



Source: Catavento's analysis based on - CEBC investments reports (2011, 2012, 2013, 2014, 2015, 2016, 2017)

The historical evolution of these investments can be summarized in four main investments phases¹²³: 1st up to 2010; 2nd from 2011 to 2013; 3rd from 2014 to 2015; and 4th from 2015 up to now. Initially, China prioritized the commodities market, more specifically the

122. ECLAC. Chinese foreign direct investment in Latin America and the Caribbean. 2013
 123. Catavento's analysis based on: David Kupfer; Felipe Rocha de Freitas. Direções do investimento chinês no Brasil 2010-2016: Estratégia nacional ou busca de oportunidades. 2019; CEBC. Investimentos Chineses no Brasil 2017. 2018

O&G sector. As an example of this investment phase, Sinopec invested US\$ 7.1 bn in the acquisition of 40% of Repsol Brazil (2010)¹²⁴, which is still considered one of the most relevant Chinese investments in the country. One can attribute this M&A operation to an interest in consolidating Brazil's exports to China, reflecting the initial FDI's approach that aimed to address China's deficit in natural resources and energy security challenges.

The second investment phase, from 2011 to 2013, led to a diversification of Chinese investments oriented by new opportunities in the industrial area, such as the automotive sector. In this context, companies were mainly attracted by Brazil's domestic market, which amounted to 2.2 mn of light vehicles sold and 41.2 mn of total fleet in 2017¹²⁵.

The third investment phase (2014-2015) evidenced the expansion of Chinese investments in Brazil into the services sector, through new investments and acquisitions in the financial area, such as Haitong (2014) and BoCom (2015). Such operations aimed at supporting the internationalization of the Chinese currency renminbi (RMB)¹²⁶, bilateral trade and Chinese investments in the country¹²⁷.

The fourth and last investment phase began in 2015, when the volume of Chinese investments reached a new level. This phase is marked by factors such as (i) a new context of Chinese investments worldwide, that started to promote regulatory reforms loosening the necessary requirements for outward FDI, (ii) a transformation of companies investment's orientation, performing more as conventional investors, looking for economic returns and competitive factors; (iii) better economic perspectives in Brazil¹²⁸. This last phase is characterized by a diversity in terms of sectors and players. Examples can be found in agribusiness, mainly through the acquisition of trading companies¹²⁹, and in the energy sector, supported by recent bids and new project opportunities in oil, gas and power^{130 131}.

124. David Kupfer; Felipe Rocha de Freitas. Direções do investimento chinês no Brasil 2010-2016: Estratégia nacional ou busca de oportunidades. 2019

125. ANFAVEA. Estatística. 2019

126. The Diplomat. RMB Internationalization Outlook: Milestones and the BRI. 2018 - Available at: <https://thediplomat.com/2018/04/rmb-internationalization-outlook-milestones-and-the-bri/>

127. CEBC. Chinese investments in Brazil. 2016

128. Joe Leahy; Andres Schipani; Lucy Hornby; Financial Times (FT). Brazil's vulnerability is a big opportunity for Chinese investors. 2017 - Available at: <https://www.ft.com/content/1d803686-c48e-11e7-b2bb-322b2cb39656>

129. China National Cereals, Oils and Foodstuffs Corporation (COFCO) acquired 51% of Nidera (US\$ 1.2 bn) and 100% of Noble Agri (US\$ 2.25 bn) in 2015. Source: David Kupfer; Felipe Rocha de Freitas. Direções do investimento chinês no Brasil 2010-2016: Estratégia nacional ou busca de oportunidades. 2019

130. Examples: the bids won by State Grid and China Three Gorges for the construction of hydroelectric plants and transmission lines

131. CEBC. Chinese investments in Brazil. 2016; David Kupfer; Felipe Rocha de Freitas. Direções do investimento chinês no Brasil 2010-2016: Estratégia nacional ou busca de oportunidades. 2019

State Grid in Brazil

Between 2010 and 2017, Chinese company State Grid invested more than US\$ 15.6 bn in Brazil, representing 30% of total Chinese investments over the period. Its main investment project related to the acquisition of a 54.6% stake in CPFL Energia (2016-2017)¹³², a relevant power company located in São Paulo. CPFL Energia is an integrated company working in all segments of the power sector, with more than 9.6 million clients. It is the third-largest private power generator in Brazil and the leader in renewable generation¹³³.

Established in 2002, State Grid is the largest utility in the world by annual revenue (US\$ 348.9 bn in 2017)¹³⁴. The company focuses on the construction and operation of power grids around the globe, while it currently owns and operates assets in China, Brazil, Portugal, Australia, Italy and other countries¹³⁵.

In 2018, State Grid announced investments totaling US\$ 38 bn in Brazil over the next five years (2019-2023). Investments in the transmission segment alone will account for more than US\$ 25 bn¹³⁶. The State Grid is also considering implementing ultra-high transmission technology, with lower power losses, in solar and wind projects. In this sense, the company is expected to strengthen its presence and relevance in the energy sector in the coming years, even though it is already considered one of the largest foreign companies operating in Brazil.

The fourth and last phase is also characterized by an increasing interest of Chinese companies in the logistics infrastructure sector. Different companies, such as China Communications Construction Company (CCCC) and China Railway Engineering Corporation (CREC), are now frequently participating in Brazilian infrastructure tenders. In 2017, almost 11% of total Chinese investments focused on the logistics infrastructure sector. The most important projects were conducted by (i) CCCC, which is constructing a private use terminal in the state of Maranhão, in partnership with the Brazilian company WTorre

132. David Kupfer; Felipe Rocha de Freitas. Direções do investimento chinês no Brasil 2010-2016: Estratégia nacional ou busca de oportunidades. 2019; CEBC. Investimentos Chineses no Brasil 2017. 2018

133. CPFL. Annual report. 2018

134. State Grid Corporation of China. Corporate Profile. 2019 - Available at: http://www.sgcc.com.cn/html/sgcc_main_en/col2017112307/column_2017112307_1.shtml

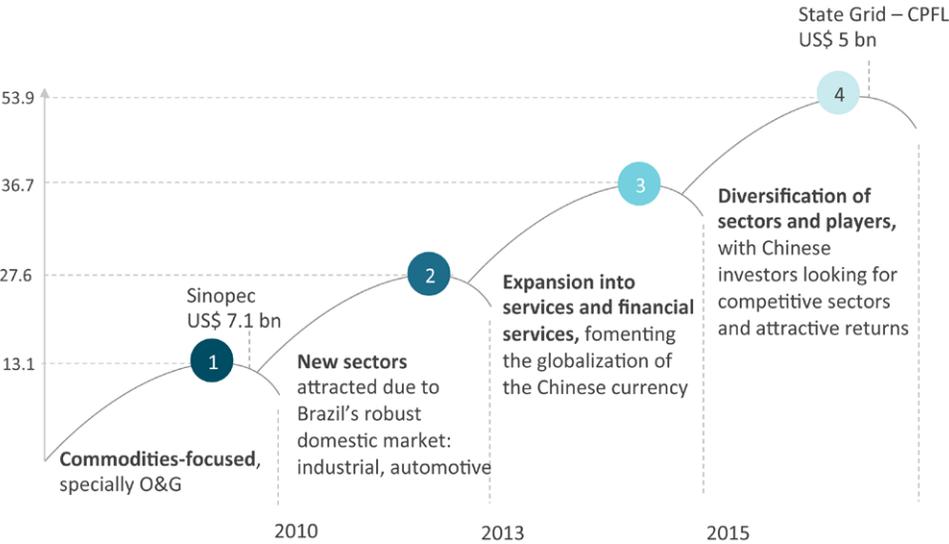
135. State Grid Corporation of China - Available at: <https://www.stategrid.com.br/pagina-inicial/>

136. Reuters. China's State Grid to invest \$38 bln in Brazil over 5 years. 2018 - Available at: China's State Grid to invest \$38 bln in Brazil over 5 years. 2018

(US\$ 0.48 bn); and (ii) China Merchants Port (CMPorts), through the acquisition of TCP Log company and 90% of stake of the container terminal in the port of Paranaguá, in the Paraná State (US\$ 0.9 bn)¹³⁷.

Therefore, the evolution of the investment phases illustrates the changing dynamics behind Chinese FDI in Brazil, marked by a shift on the main investment drivers, from a resource-oriented strategy to a more economic driven approach [Fig. 30].

Fig. 30: Chinese investments phases and approach evolution (US\$ bn - by the end of indicated year)



Source: Catavento's analysis based on: CEBEC. Investimentos Chineses no Brasil 2017. 2018; CEBEC. Investimentos Chineses no Brasil 2017. 2018

¹³⁷. CEBEC. Investimentos Chineses no Brasil 2017. 2018

8. STRATEGIC DRIVERS: FOMENTING CHINESE INVESTMENTS IN THE BRAZILIAN INFRASTRUCTURE SECTOR

The development of Brazil and China relationship represents an opportunity for the infrastructure sector in Brazil. There are new strategic drivers orientating both countries, thereby creating the necessary conditions for a long-term partnership, which are: (i) the new global Chinese investment orientation; (ii) the Chinese infrastructure expertise and (iii) the privatization and public-private partnership agenda in Brazil.

First, the recent shift in Chinese orientation regarding FDI is an opportunity to foster foreign investments in the Brazilian infrastructure sector¹³⁸. Chinese companies are progressively performing as traditional investors, seeking financial returns and competitive advantages, as illustrated in the previous session. While in specific countries, such as the ones contemplated by the Belt and Road Initiative (BRI), the geopolitical strategy is still predominant, companies investing in Brazil are aiming at projects with high economic returns, where they can also contribute with their expertise.

Infrastructure development has been a top priority for Chinese government, while investments reached an average of 7% of its GDP (2011-2015)¹³⁹. There is a clear understanding that a sustainable, modern and competitive economy runs on reliable roads, rails and telecommunications. In this context, China fomented the consolidation of several engineering, construction and technology companies with strong infrastructure capabilities, as well as financial institutions oriented at supporting its infrastructure development. Today, these companies are investing on top-edge technologies in China, such as electric mobility and 5G technologies, at the same time as they envision an opportunity to apply their technology and expertise internationally through FDI. Historically, the Chinese access to the Brazilian construction sector was limited due to the existence of consolidated local companies. However, recent corruption investigations have led to compliance restrictions, as well as assets divestments opportunities.

In addition, Brazil lacks public sector investment capacity, leading to renewed motivations for attracting foreign capital to invest in infrastructure, promoting privatization and public-private partnerships. It is now commonsense that the Brazilian government is not able to address the most relevant infrastructure challenges by itself. In this context, there is an opportunity to develop partnerships with private and foreign companies to develop the Brazilian infrastructure sector in a sustainable way.

138. CEBRI. A China precisa mudar? 2019

139. Oliver Wyman. Infraestrutura - regras e incentivos. 2018; The Economist Intelligent Unit. Is China investing too much in infrastructure? 2018

Chinese companies are more willing to invest internationally, including in Brazil, through the development of partnerships with local companies, especially in brownfield projects, as this is a way to more easily have access to the local market and better understand the country's particularities and risks. In this context, cultural differences, as well as the complex regulatory environment in Brazil are among the key aspects taken into consideration by Chinese companies. As an example, the existence of different regulatory levels (eg. federal, state and municipal), with independent bodies and entities is usually pointed out as a barrier for Chinese investors.

Therefore, there are still challenges to improve the business environment and the coordination between Chinese investors and Brazilian opportunities. Taking into consideration the particularities of both countries, Chinese and Brazilian companies do not have the complete understanding of each other's cultures, capabilities and needs. In this sense, there are different mechanisms in place working to close some gaps, such as the Chinese-Brazilian High-Level Commission (COSBAN) and the China-Brazil Cooperation Fund for the Expansion of Production Capacity.

The COSBAN meeting is spearheaded by both countries' Vice-Presidents with the objective to enhance the dialogue around relevant topics, such as investments and trade. In May 2019, Brazil and China held in Beijing their first COSBAN's meeting since 2015, indicating the relevance of Brazil and China dialogue and partnership for both countries¹⁴⁰. Different topics were discussed, including potential paths to improve the bilateral trade and the promotion of infrastructure investments in Brazil through the Belt and Road Initiative (BRI)¹⁴¹.

The China-Brazil Cooperation Fund, on its turn, is a mechanism established by the Secretariat for International Affairs (SEAIN) and the China-LAC Industrial Cooperation Investment Fund (CLAIFUND) that aims to classify priority projects in the Brazilian infrastructure sector in order to facilitate investments and cooperation between both countries. The classified projects will receive a Certificate that can be used to request the financing from potential funders. After changes at the Brazilian Ministerial structure in 2019, the Fund is currently on hold. However, government officials indicated that the discussions are expected to be reestablished in the near future.

Both mechanisms highlighted above represent an opportunity to enhance the dialogue and understanding regarding China-Brazil partnership, but there is still room for further improvement. A qualified dialogue between Chinese and Brazilian institutions will contribute to the development of a common agenda, strengthening the relationship and

140. Ministério da Economia. China-Brazil Fund. 2019 - Available at: <http://www.planejamento.gov.br/assuntos/internacionais/brazil-china-cooperation-fund>

141. Itamaraty. Ata da quinta reunião plenária da Comissão Sino-Brasileira de Alto Nível de Concertação e Cooperação. 2019 - Available at: <http://www.itamaraty.gov.br/pt-BR/notas-a-imprensa/20434-v-reuniao-da-comissao-sino-brasileira-de-alto-nivel-de-concertacao-e-cooperacao-cosban-23-de-maio-de-2019>; Luiza Duarte. Folha de S. Paulo. Projetos da Nova Rota da Seda poderão ser realizados no Brasil via PPI, diz Mourão. 2019 - Available at: <https://www1.folha.uol.com.br/mercado/2019/05/projetos-da-nova-rota-da-seda-poderao-ser-realizados-no-brasil-via-ppi-diz-mourao.shtml>

further stimulating Chinese participation in the Brazilian infrastructure sector.

In this sense, the infrastructure sector must take a proactive approach towards the establishment of an attractive environment for foreign investments. Among the main market enablers, it can be highlighted: (i) the simplification of the regulatory environment; (ii) the creation of a transparent infrastructure projects pipeline; (iii) the improvement of project's design and structure, taking into consideration Chinese expertise and (iv) the development of competitive financing mechanisms. **These actions have the potential to foster the development of a competitive market, with projects targeting the most relevant Brazilian infrastructure gaps, as well as facilitating the access to financing instruments from both Chinese commercial and development banks in Brazil.**

The development of a long-term partnership in the infrastructure sector represents an opportunity for both countries. On one hand, China will access better-structured projects in a country with considerable infrastructure demand. On the other hand, Chinese infrastructure investments in Brazil is an important opportunity to address the governmental constraints, improving country's competitiveness.

Fig. 31: Fomenting Chinese investments in the Brazilian infrastructure sector

Strategic drivers	Opportunities for Brazil
<ul style="list-style-type: none"> • New global Chinese investment orientation – looking for competitive return rates amid an economic perspective 	<ul style="list-style-type: none"> • Creation of a transparent infrastructure projects pipeline • Improvement of project's design and structure, taking into consideration Chinese perceptions • Development of competitive financing mechanisms
<ul style="list-style-type: none"> • Chinese infrastructure expertise and investment capacity – consolidated companies with engineering know-how and technology, as well as access to funding resources and capital 	<ul style="list-style-type: none"> • Access to Chinese top-edge technologies, improving efficiency and reducing costs of infrastructure projects
<ul style="list-style-type: none"> • Privatization and public-private partnership agenda in Brazil – development of new mechanisms to foster private and foreign investments 	<ul style="list-style-type: none"> • Creation of an effective collaborative agenda in order to broaden the dialogue and partnership between Brazilian and Chinese companies • Understand both countries short and long-term goals

Source: Catavento's analysis

9. FINAL REMARKS

Brazil's logistics infrastructure system lacks efficiency and modernization. There is a dramatic gap to be overcome over the next decades that cannot rely on the public sector's financial capacity.

The Southeast region is particularly impacted by the poor situation faced by infrastructure assets, as it concentrates the bulk of the country's economic activity and trade. One of the ways to address the consequences of this situation is by reversing the curse of logistics investments.

This requires acknowledging that the Brazilian economy urgently needs to resume the level of investments dedicated to infrastructure, by setting appropriate and long-term rules, providing a predictable regulatory environment and attracting a new set of investors.

Among the different opportunities that are set through government's diverse initiatives (PPI, energy auctions, etc), there is a clear prospect within the O&G industry due to the scale, scope and productivity that makes the pre-salt development a world class asset, with positive impacts throughout the whole value chain.

The development of a long-term vision can contribute to the definition of priority projects, with enough guarantees for new investments. At the same time, the promotion of a more integrated and centralized governance, capable of setting a long-term strategic orientation, can significantly reduce bureaucratic procedures and regulatory complexities, leveraging the private sector participation. All these suggested drivers can foster private and foreign investments with the development of an attractive business environment.

In addition to that, there is an opportunity to benefit from the global shift in the Chinese investment orientation. Chinese infrastructure capabilities, as well as its capital availability, represent an opportunity to develop a modern and sustainable infrastructure in Brazil. Investments in the Brazilian infrastructure sector represent a competitive investment option for Chinese companies, due to the country's market size, as well as Chinese technological capabilities.

Time has come to combine both countries comparative advantages and to establish a longstanding partnership for a resilient, modern and efficient infrastructure.

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APPENDIX

Investment partnership program (PPI)

The PPI's projects were selected considering their location and auctions dates (2019 and 2020). Additionally, it was conducted an analysis considering the following aspects: the project's objectives, the main industries affected, the expected intermodal integration and the impacted states. The main industries affected and the expected intermodal integration were selected considering the project's location.

 Project – road	Objective	Main industry	Transport Integration	States
BR-040 Juiz de Fora to Rio de Janeiro	Improve service quality	Steel, cement, mineral	BR116, Port of Rio de Janeiro	RJ, MG, GO
BR-116 Além Paraíba to BR - 040	Improve service quality	Steel, cement	BR040, BR116	RJ
BR-364/365 Uberlândia to Jataí	Improve service quality	Agriculture, fertilizers	BR150, BR153	MG, GO
BR – 116 (Dutra) Rio de Janeiro to São Paulo	Improve service quality	Steel, cement	BR040, BR101, BR465	RJ, MG, SP
 Project – port	Objective	Main industry	Transport Integration	States
Port of Santos (SP) - liquid bulk	Increase flow capacity	Oil and Gas	-	SP
Port of Vitoria (ES) – liquid bulk	Increase flow capacity	Oil and Gas	-	ES
 Project – railway	Objective	Main industry	Transport Integration	States
EF-151 – SP/MG/GO/TO	Promote intermodal integration	Cellulose, oil and gas	<i>Malha paulista, malha norte, Port of Santos, EF 354</i>	GO, MT, MG, SP, TO
<i>Ferroanel</i> – North section concession (SP)	Increase flow capacity	Fertilizer, cellulose, cement, minerals	BR040, BR116	SP

 Project – air transportation	Objective	Main industry	Transport Integration	States
Macaé airport (RJ)	Improve service quality	-	-	RJ
Eurico de Aguiar Salles airport (ES)	Improve service quality	-	-	ES

Other Southeast's infrastructure projects

Other relevant projects are also indicated below. These projects were selected based on official announcements from public institutions. The CAPEX represents an initial estimative.

 Project – road	CAPEX (R\$ bn)	 Project – port	CAPEX (R\$ bn)
State concessions –São Paulo (2019-2020)	9	Port of Açu expansion	8
Road access Santos - Guarujá	2	Port of Santos dredging (tbc)	N/A
RJ 244	0.5	<i>PortoCel</i>	0.7
State concessions – São Paulo (2020-2025)	14	CODESA, CODESP, DOCAS RJ – privatization	N/A
 Project – air transportation	CAPEX (R\$ bn)	 Project – railway	CAPEX (R\$ bn)
Congonhas and Santos Dumont (tbc)	N/A	Rumo - <i>Malha Paulista</i>	4.7
		MRS Logística SA – <i>Malha Sudeste</i>	7.5
		EF 118 - Rio - Vitória	5



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