# Building BIG

## BRAZIL's
challenges and opportunities
in infrastructure
A public-private perspective

IDB | Invest

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About IDB Invest:
IDB Invest, the private sector institution of the Inter-American Development Bank (IDB) Group, is a multilateral development bank committed to supporting Latin America and the Caribbean businesses. It finances sustainable enterprises and projects to achieve financial results that maximize economic, social and environmental development for the region. With a current portfolio of US$11.2 billion under management and 330 clients in 23 countries, IDB Invest works across sectors to provide innovative financial solutions and advisory services that meet the evolving demands of its clients. As of November 2017, IDB Invest is the trade name of the Inter-American Investment Corporation.



IDB Invest, June 2019.

# INTRODUCTION

Investments in transport, water and sanitation, energy, and telecommunications are key drivers of sustainable development, providing essential services for people and businesses. Similarly, as urbanization continues to increase in Latin American and Caribbean (LAC) countries such as Brazil, improving urban transport systems is critical for accessing jobs, health, and education services (IDB Invest, 2018). Research shows that each dollar invested in infrastructure can increase gross domestic product (GDP) by two to eight dollars (Leduc & Wilson, 2013). Furthermore, quality infrastructure is directly linked with the Sustainable Development Goals (SDGs).

Despite its importance in the global economy, Brazil faces significant infrastructure challenges that hinder its sustainable growth. To close the infrastructure investment gap, the Global Infrastructure Hub Outlook estimates that Brazil needs to invest an average of US$110 billion per year until 2040 (GIH, 2018). At the same time, the large scale of investment needs represents an enormous business opportunity for local and international investors. Also, given the country's business environment and changing financial landscape, the role of international Development Finance Institutions (DFIs), including IDB Invest, in providing and mobilizing equity and debt financing for infrastructure projects is key. This document presents an overview of the main infrastructure challenges facing Brazil as well as the opportunities for improving the underlying institutional and regulatory framework and harnessing financial and capital markets to unleash the country's investment potential.

# BRAZIL'S INFRASTRUCTURE CHALLENGES

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As one of the largest economies in the world, Brazil's infrastructure is critical for its competitiveness and trade. Brazil ranks among the top ten world economies and is the largest in Latin America, with a GDP of US$2 trillion in 2017 (APEX-Brazil, 2018). The country is a major player in international trade and the world's second largest agricultural exporter (FAO, 2015). It is the largest exporter of raw sugar, poultry, and beef and the second largest exporter of soybeans and iron ore (OEC, 2018). As the world's fifth largest country by population and landmass - 8.5 million km$^2$ and 208.8 million inhabitants (APEX-Brazil, 2018), Brazil is highly reliant on infrastructure for its productive activity, regional integration, and global trade. However, lags in infrastructure have affected the country's competitiveness. According to the World Economic Forum (WEF, 2018), Brazil ranks 81st out of 137 economies in overall infrastructure quality. Although access to infrastructure services has increased, relevant challenges persist, with notable differences between regions within the country (World Bank, 2017).

Transport and water and sanitation are the most lagging sectors (World Bank, 2017). Brazil has 13% of its road network paved, while the countries of the Organization for Economic Co-operation and Development (OECD) have an average of 70.3% (IRF, 2013). Also, the country's road density is 0.2km/km2 compared to 1km/km$^2$ in the OECD (IRF, 2013). While the South and Southeast have the highest road densities, the north and central west are markedly lagging (CNT and MTPA in EMIS, 2018). Although Brazil ranks among the top ten countries with the largest cargo railroad networks in the world, its productivity (TKU/km) and network density (km/km$^2$) are much lower than its BRICS[2] counterparts. Brazil possesses 3.4km of rail per 1,000 square km of railways, compared with 14.7km in the United States and its narrow-gauge challenges interoperability (Amman et. Al., 2016). Quality, capacity, and connectivity challenges, coupled with a transport matrix that is highly dependent on road transport, result in high logistics costs, estimated at around 15% of GDP compared to 8-10% of GDP in OECD countries. While Brazil's logistics performance scores above the LAC average, it worsened from 2016 to 2018 according to the World Bank's Logistics Performance Index and lags behind OECD countries. Poor transport and logistics infrastructure do not only reduce the competitiveness of Brazilian producers in global markets, but also the level of economic integration across regions in Brazil, allowing for wide differences in productivity and income levels to persist across states (World Bank, 2016). Regarding urban transportation, Brazil's vehicle fleet almost doubled between 2005 and 2016, increasing from 23.3 million to 42.8 million vehicles in use (Sindipecas, 2018), while public transport usage is in decline due to its low quality and high cost. Rio de Janeiro is ranked as one of the most congested cities worldwide - 8th out of 390 cities (Tom Tom Traffic Index, 2017). Congestion in Brazilian urban areas reduces productivity and exacerbates pollution and road safety issues.

Although access to improved water and sanitation has increased, relevant challenges persist. Water and especially sanitation services pose a challenge in Brazil given the country's large population and vast landmass. Remarkably, in 2016, 83.3% of the Brazilian population had access to water. The high national water supply index, however, does not reflect the inequality of access to water in the country. Water supply is uneven and varies widely between regions, municipalities, or even in different districts within the same municipality. The largest deficits are concentrated in the North and Northeast, in the smaller and/or less developed municipalities and rural areas (FGV, 2018). Moreover, water losses are significant and 38% of treated water produced does not reach the consumer. Sizeable gaps exist in sanitation as the percentage of population with access to safely managed sanitation services in Brazil is 38% while in the OECD it is 84% (WHO/UNICEF, 2018).

Brazil also has challenges in its energy and social infrastructure sectors. Brazil is Latin America's largest energy consumer, accounting for over 40% of the region's primary consumption. According to Empresa de Pesquisa Energética (EPE)'s forecasts, electricity demand in Brazil will grow at 3.7% annually between 2016 and 2026, increasing from 516 TWh to 741 TWh, which implies an estimated investment need of US$110 billion. The country faces the challenge of providing electricity to over 1.4 million people, mainly in the North and the Northeast, which will represent additional investments of US$100 million per year until 2030.[2] 10 million people still rely on biomass for cooking. Moreover, electricity transmission and distribution losses are more than twice the OECD average (19% vs. 6% res-

[2] BRICS is an informal group of states comprising the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People's Republic of China and the Republic of South Africa (BRICS, 2019).

[3] Assuming 4 people per household and a household connection cost of US$3,500 until 2030.

pectively) (EPE, 2017); and the country has a rating of 4.5 (7 being most reliable) in terms of electricity quality compared to an OECD average of 6.2 (WEF, 2018). Finally, Brazil faces challenges with respect to health infrastructure, with an estimated 2.5 hospital beds per 1,000 (compared with 4.8 in the OECD) and service quality is an issue (EIU, 2014). Similarly, the challenges with respect to the quality of education include severe shortcomings in education infrastructure, including the lack of basic services (Censo Escolar, 2017).

# INVESTMENT LANDSCAPE, PUBLIC-PRIVATE PARTNERSHIPS (PPPs) AND CONCESSIONS

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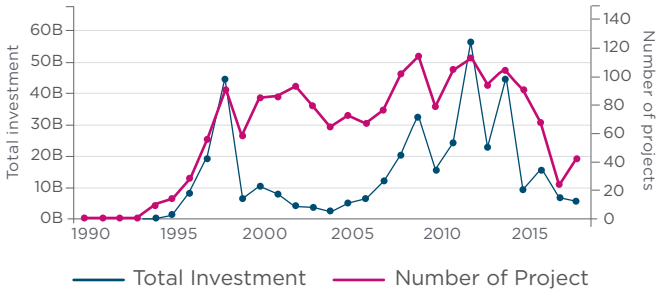
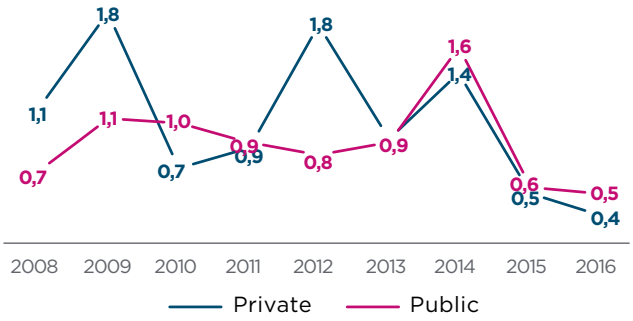
Poor infrastructure is largely explained by low investment. Bearing in mind the reduction in public investment due to fiscal constraints, one of the main challenges in the infrastructure sector is how to encourage private sector investment to overcome the existing gaps in the country and bring efficiency and innovation in the development and management of these assets. While in the early 1980's infrastructure investment was around 5.2% of GDP (IMF, 2015)[4], between 2008 and 2016 it averaged 2% of GDP (INFRALATAM, 2019). This investment level is lower than the 5%-7% recommended to address the infrastructure gap in the region (Serebrisky, 2015) and below the minimum of 3.2% advised by internal assessments to be invested between 2019-2024 (Allain, 2017).[5] Despite the relevant contribution of the private sector to infrastructure development, which accounted for around 50% of total investments between 2008 and 2016, investments have markedly decreased since 2012. According to the World Bank (2017), annual investment requirements between 2015 and 2025 amount to 4.35% of GDP, with higher needs in transportation (1.91% of GDP) than in any other sector in infrastructure.[6] In turn, clean energy investments have increased since 2005, with an annual average of US$7 billion between 2011 and 2017, for a cumulative investment of US$49.3 billion in that period (data from Bloomberg, 2017).

**Private investment infrastructure in Brazil**




Source: PPI - World Bank (2019)

**Public and private investment infrastructure** (% of GDP) 2008-2016




Source: Infralatam Database (2019)

*To close the infrastructure investment gap, the Global Infrastructure Hub Outlook estimates that Brazil needs an average of around US$110 billion per year until 2040 (GIH, 2018). Infrastructure investment requirements do not only imply relevant needs for long-term financing resources, but also the need to attract technically solid and financially solvent equity sponsors.*

Regulatory uncertainty hinders investment (Amann & Baer, 2006; Cunha & Rodrigo, 2012; De Paula & Avellar, 2008 in Amann et al., 2016). Shortcomings in Brazilian regulatory governance has resulted in high regulatory risk (Amann et. Al, 2016). There is evidence that regulatory agencies in Brazil have become more politicized over time (Correa, Melo, Mueller, and Pereira, 2017 in World Bank 2017). In transport, disagreements between the Tribunal de Contas da União (TCU) (Union's Audit Office) and State Court Auditors with the Transport Regulatory Agency (ANTT), have impeded projects going forward on many occasions. At the same time, the ANTT lacks the desired autonomy. Moreover, subsector-specific regulations have changed numer-

4 Brazil has invested less than a third of what is required in transport in recent years, with investment dropping to just 0.54% of GDP in 2015. Between 2006 and 2015, investment in transport was close to US$118 billion at 2015 prices.

5 Depreciation costs are estimated to be around 3% of GDP per annum (World Bank, 2016).

6 According to estimates by the World Bank (2017), projected annual investment requirements in telecommunications are around 0.29% of GDP; Electricity, 1.9% of GDP; Water and Sanitation, 0.11% of GDP.

ous times, including in transport and water and sanitation (World Bank, 2017 & Amann et. Al, 2016). These limitations and lack of coordinated regulation across municipalities has led to underinvestment, particularly in water and sanitation (World Bank Group 2018).

*Major scandals such as the Car Wash affair, have impacted large construction companies and as a result investor confidence. According to WEF's Executive Survey, corruption is the third most problematic factor for doing business in Brazil, followed by inefficient government bureaucracy and inadequate supply of infrastructure (WEF, 2017). Tax rates and restrictive labor regulatinos are the first two most problematic factors for doing business.*

PPPs and concessions face complex multilevel governance and are not conceived under a systematic planning exercise, even though Brazil has been the largest market for PPPs in Latin America over the past two decades (PPI, 2017 in World Bank, 2017)[7]. However, relevant progress has been made with the *Programa de Aceleração do Crescimento* (PACs) and *Programa de Parcerias de Investimentos* (PPI). According to the Infrascope 2019,[8] which measures the enabling environment for PPP development, Brazil ranks seventh out of 21 counties (EIU, 2019). Brazil ranks high in the institutions' category along with the financing category (3rd and 5th respectively). Nevertheless, the country ranks 9th in investment and business climate, 13th in maturity and 16th in regulations. Weaknesses in investment planning are considered a root cause of subsequent governance and management failures in later stages of infrastructure projects (World Bank, 2017).

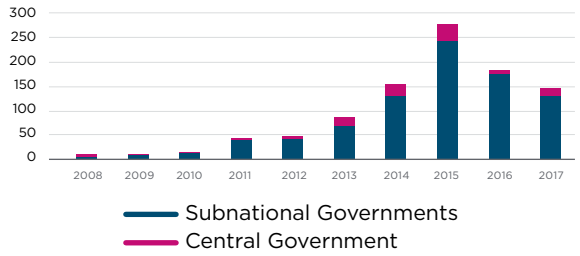
The complex bureaucratic mechanism in place for PPPs/concessions causes delays in the project cycle and increases project costs. Overlapping responsibilities between environmental agencies at the federal (IBAMA), state, and municipal levels as well as cumbersome licensing procedures significantly affect project timelines (World Bank, 2017). In sanitation for example, out of 4,128 projects scheduled to go ahead as part of PAC 2 by late 2013, only 54% had been granted formal approval; of these, in 2016 many had not even begun the construction phase (Amann et. Al. 2016). Also, between 2014 and 2017, 60% of transmission projects were not concluded on time; and in 2018, 63% of generation projects were delayed. The main causes of these delays include environmental and social constraints and permits. In general, concessionaires are responsible for environmental licensing in Brazilian PPPs and concession contracts. This, along with low project maturity, generates relevant delays that result in renegotiations, which in turn causes conflicts among regulatory and control agencies (TCU and/or state Court Auditors). The latter increases the perception of risks for investors. Worse yet, delays and renegotiations generate a negative perception among users of PPP/concession contracting models, which is furthered by the lack of communication and accountability mechanisms from authorities.

There are capacity constraints within the public sector to structure projects with private participation. While there is a Federal PPP Law, each federative unit is entitled to enact its own PPP framework, which may include specific institutions, policies, and processes (World Bank 2017). In recent years, subnational governments have significantly increased their participation in the PPP project pipeline. Nevertheless, these face institutional and capacity constraints to identify, appraise, structure, execute, and monitor PPP projects, particularly in non-traditional sectors, for which most local governments are not yet prepared (EIU, 2017). According to Estruturadora Brasileira de Projetos (EBP), only 6 out of 26 states have the capacity to undertake PPPs (World Bank, 2017). Transaction advisors have been used sparingly (due in part to time and budget constraints) and project preparation facilities face capacity limitations (as working capital needs to be provided up front given the reimbursement through a success fee). In general, lack of clear identification, understanding, and allocation of risk has led to renegotiations which increase uncertainty. In roads, the federal government awarded significant works under single contracts (500km-600km) with very low project maturity, which led to extensive negotiations with regulators, delays, and supervisory issues. Out of the 130 PPPs that entered the pipeline in 2014, only 7% reached financial close as of June 2017 (World Bank 2017a). This has hindered the creation of a solid and bankable pipeline of projects.

7 Around US$517 billion invested between 1990 and 2015.

8 The index evaluates the readiness and capacity of countries to develop PPP projects by analyzing 5 categories: 1. Enabling laws and regulations, 2. The institutional framework, 3. Operational maturity, 4. Investment and business climate, 5. Financing facilities for infrastructure projects.

## Number of projects entering the pipeline between 2008-2017




Source: Radar PPP
Note: Only projects with public viability gaps are shown.

Financial sustainability challenges have affected private investment. In energy and telecommunications, cost recovery through user fees has been easier than in transport and water and sanitation (World Bank 2017). Obstacles to the full recovery of costs from users and uncertainty regarding tariffs (either through user charges or availability payments) have decreased interest from private investors (World Bank, 2017). In transport, the modernization and capacity increase of various roads under concession has been halted due to the financial constraints of the concessionaires because of reduced demand since 2014 (FGV, 2018). These contracts awarded in 2013 had revenues based 100% on demand risk, and demand forecasts did not materialize.

Sub-sovereign risk and lack of scale of some subnational projects limit their attractiveness. Some subnational governments have credit ratings that limit the interest from potential investors. Moral hazard concerns have led central governments to move away from guaranteeing subnational governments. However, an OECD study noted that hardly any subnational infrastructure investment was carried out without the support from national or supranational authorities (PPP Knowledge Lab). Another impediment to the modernization of infrastructure, particularly in water and sanitation, has been the scale of municipal projects. In this sector, new regulations have fostered the creation of public consortiums[9] to improve waste-handling services, notwithstanding limitations in human capital, among other.

Financing infrastructure with traditional sources is increasingly challenging. The Brazilian Development Bank (BNDES) has traditionally been the main long-term financier for infrastructure. Between 1997 and 2017 BNDES loans represented 70-80% of total infrastructure financing in Brazil (S&P Global Ratings, 2017). This protagonist role stemmed from the highly subsidized interest rate - Taxa de Juros de Longo Prazo (TJLP), the long-term maturity of its loans vis-a-vis the higher market interest rate (SELIC), and shorter maturities in the local market (S&P Global Ratings, 2017). The Law 13,483 passed in 2017 will gradually replace BNDES' TJLP with a market-based long-term interest rate.

In this environment where interest rates for infrastructure projects will gradually converge with market rates, greater participation by capital markets and pension funds, as well as commercial banks both nationally and internationally, in the financing of infrastructure in Brazil is essential. However, the adoption of international banking regulation (Basel III) that establishes high capital consumption ratios on long-term financing might impact the capacity of the banking sector to increase its portfolio in the infrastructure sector. Moreover, given the magnitude of the necessary investments, Brazil will need to attract more international infrastructure developers and investors with technical and financial capabilities that complement the local market supply. This is particularly relevant considering that some of the major local sponsors working in infrastructure affected by corruption scandals will reduce their participation because of reputational, legal, and financing constraints (FGV, 2018).

Most of the debenture market has centered on individuals rather than institutional investors; also, project completion and currency risks remain a challenge. Regulatory changes aimed at attracting private investment to infrastructure have been introduced in Brazil, including tax incentives for the issuance of bonds for infrastructure financing ("infrastructure debentures") in the local market. According to the Brazilian Association of Financial and Capital Market Entities (ANBIMA), between 2016 and 2017, the volume of bonds issued for infrastructure financing increased from US$1.3 billion to US$2.8 billion (Apex-Brazil, 2018a). Nevertheless, these bonds have been designated to attract individuals and foreign investors rather than local institutional investors.

Construction and project completion risks also remain a high deterrent of investment for institutional investors. The Brazilian pension fund market currently invests 80% of its approximately US$400 billion in funds in government bonds and only 2% in private sector corporate securities (S&P Global Ratings, 2017). Moreover, currency fluctuation has affected foreign lenders and developers leading to project cancellations. Specifically, in early 2016, solar energy PPA contracts dropped in value from US$86/MWh to US$55/MWh (GreenTech Media 2017).

[9] To date around 200 solid waste consortiums have been created (Maiello, A. Nogueira, A and Freitas, T. 2108); In Rio de Janeiro, the state created 8 public consortiums including 41 of the 92 cities of the federative unit.

# OPPORTUNITIES AHEAD

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Despite these challenges and limitations, there will be significant investment opportunities in the coming years as the government takes relevant steps to enable private investment. In the coming years, the Brazilian infrastructure market will generate huge opportunities for equity and debt investors, construction companies, and the financial markets in renewable energy generation, transmission lines, port infrastructure, urban mobility, roads, railways, and sanitation, among others.[10] Infrastructure development will be essential to support economic recovery, competitiveness, and integration as well as to improve mobility, productivity, and quality of life in urban centers.

*Infrastructure needs to develop to keep pace with the country's positioning as a global food supplier. Total exports of soybeans and corn increased from 58 million tons in 2011 to an estimated 97 million tons in 2017, with a significant increase in exports through the north of the country (137% in Arco Norte). As national grain production prospects are positive for the coming years (30% from 2017/2018 to 2027/2028 passing from 232,600 million tons to 307,833 million tons according to the Ministry of Agriculture, Livestock and Supply), developing a more robust multimodal network to access the ports in the north is expected to reduce logistics costs in up to 40% (CNA, 2017, 2018).*

Strengthening infrastructure governance, including the institutional capacity for identifying, structuring, implementing, and monitoring projects under PPPs or concessions. Efforts towards strengthening the role of the private sector in infrastructure need to be coupled with improvements in sector and project planning, pipeline development, and contract management (World Bank, 2017). The identification of projects with private participation must stem from a long-term strategic and integrated infrastructure planning exercise. In this regard, a further centralization for screening PPP projects and providing basic contract oversight,[11] together with the implementation of project prioritization mechanisms, (FGV, 2018) could increase investment coherence. Project appraisal entities for PPPs in Colombia and the United Kingdom have proven useful. A systematic use of cost-benefit analysis is recommended to prioritize projects (FGV, 2018). Furthermore, training in project finance and the preparation of adequate studies in early project stages by the governments are essential elements to improve the business environment for infrastructure development in Brazil.

Improving risk identification and allocation in projects. Improved risk identification and allocation attracts solid investors (FGV, 2017), as demonstrated with the recent airport tenders. Capacity building in this regard can improve the success rate of PPPs in Brazilian subnational governments, especially in non-traditional sectors such as water, sanitation, and social infrastructure. While the capacity within the government consolidates, transaction advisors could support projects in the short term. In this regard, multilateral institutions such as the IFC have supported the structuring of federal and state projects, including four brownfield road PPPs in the state of Sao Paulo, using the Brazilian Private Sector Participation (PSP) Facility, a joint initiative with the Inter-American Development Bank (IDB) and BNDES. At the IDB Group, the PPP Single Window serves as a one-stop shop for supporting both institutional and regulatory strengthening and providing advisory services for structuring PPPs and concessions.

Advancing process streamlining, transparency, and integrity to make the participation of the private sector competitive. Key actions include a revision of the procurement and environmental licensing regime to streamline procedures without compromising public interest. Less prescriptive laws such as those in the United Kingdom oriented toward principles of value-for-money and fit-for-purpose have proven to be more effective and less subject to ongoing change. There is also a pressing need to advance in transparency and accountability mechanisms against the kind of corruption cases that impacted large construction companies in 2016. Institutional capacity and autonomy in the sector's regulatory agencies must be developed, creating conditions for attracting investments and private participation in infrastructure. The appointment of competent independent directors and mandating regulatory impact assessments can contribute to this goal (World Bank, 2017).

[10] Healthcare PPPs being planned in Brazil include the construction and maintenance of hospitals in Minas Gerais and the capital, Brasilia (BN Americas, 2017).

[11] While the PPI constitutes progress, is has no independent capacity for project appraisal; and its relationship with EBP is yet to be clarified.

Developing sustainable models for financing infrastructure. It is necessary to develop new financing models that are sustainable and efficient in the long term, considering the economic-financial difficulties observed in road and other concessions. Regarding road concessions awarded in 2013, the federal government could consider rescuing them and launching new tenders with reallocated risks as a way to move forward the pending investments. A combination of improvement of cost recovery from charges, subsidies, and other revenue sources, where feasible (World Bank, 2018), should be diligently analyzed. In the state of São Paulo, new modalities allow the execution of a tripartite agreement to be signed between the granting authority, the concessionaire, and the financier (FGV, 2018). Also, new staged modalities and flexible toll tariffs[12] in road concessions may be considered (FGV, 2018) as well as the bundling of projects whenever feasible. The latter can be particularly relevant for subnational projects where the scale tends to be lower and the regulatory framework is weaker.

*As the country reaches over 160 million people living in urban areas, there is a market opportunity in helping cities develop and consolidate integrated and smart transport systems that contribute to increased productivity and quality of life while mitigating climate change. This includes the development of low-emission mass transit networks and, where feasible, railways for passenger transportation as part of a multi-modal solution.*

Offering indexed revenues to US dollars in some sectors to reduce currency risk. This can enable concessionaires to access longer-term and less-expensive financing in the international markets (Allain, 2017). Similarly, the currency hedging mechanisms used in recent airport concessions and previously in roads, could be extended to other sectors (Allain, 2017). Development Finance Institutions (DFIs) can partner with local banks to provide technical expertise and financing instruments such as loans or loan guarantees to eliminate currency risk (Heggarty, T. as reported in GreenTech Media 2017). Furthermore, there is an opportunity to increase the appetite of potential investors for subnational PPPs through mechanisms that guarantee government obligations.[13] To attain the expected results, adequate project preparation and accountability on all project stages is crucial.

12 Three concessions in the State of Sao Paulo have been granted under this modality (FGV, 2018).

13 Backstop mechanisms may involve: revenues such as oil royalties (RIOD), infrastructure lease payments (Sao Paulo, tariff receivables with good credit profile (Sao Paulo, Water) or assignment to the private partner of federal transfers (IFC, 2011).


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# THE ROLE OF DEVELOPMENT FINANCE INSTITUTIONS AND IDB INVEST

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Fostering greater participation by capital markets, DFIs, commercial banks, and institutional investors both nationally and internationally in long-term financing. Further risk mitigation instruments are needed to attract institutional investors. Examples of such instruments include guarantees that increase the credit rating of project bonds and mitigate construction risks. In this regard, the active participation of international DFIs with extensive experience in project finance structures and development impact can be instrumental for the development of such instruments. For example, IDB Invest has provided in Brazil an innovative full-wrap credit guarantee mechanism to infrastructure debentures in renewable energy projects. This sort of risk-mitigation structure has proven beneficial in attracting a broader range of investors to the transactions, supporting the development of the local capital markets and increasing private sector investments (IDB, 2018). Furthermore, there is opportunity to enhance financing via green bonds (EMIS Intelligence, 2018)[14] and mobilize additional resources to projects contributing to climate change mitigation and resiliency. A recent study shows positive and significant mobilization effects of multilateral (MDB) lending; the average size of syndicated loans by private creditors increased by 1.5 times following MDB participation in a syndication. Additionally, in the infrastructure sector, the mobilization effect spurred by MDB participation increased the average maturity of syndicated loans (Maffioli et. al, 2019).

*The Total Credit Guarantee (TCG) provided by IDB Invest was instrumental for completing the financing needs of the Santa Vitoria do Palmar wind farm, by wrapping the issuance of an infrastructure debenture amounting to R$105 million in the local capital markets, covering full debt payment to the bondholders until maturity. The Guarantee was key to ensuring the subscription of the bond with a competitive price and term, as well as for the AAA credit rating (local), which resulted in an oversubscription. The IDB Invest TCG was used for the second time to wrap the debentures issuance of the Pirapora solar farm up to an amount of R$315 million. Based on the lessons learned from the structuring of the previous TCG, Pirapora's issuance was able to obtain a A+ global rating as well as an oversubscription.*

The consolidation of credit funds will also be instrumental for mobilizing institutional investors and disseminating project finance structures that can further attract private investment. Credit funds can mobilize institutional investors looking to support projects that are financed under established criteria. That said, fixed-income investors will require a significant degree of predictability in investments and efforts should be directed toward increasing the latter (Mckinsey, 2016). Under IDB Invest's new Credit Fund for Infrastructure in Brazil, which aims to mobilize resources both locally and from international financial institutions, investments will comply with the social and environmental safeguards as well as the corporate governance and integrity standards of the IDB Group. With this added value, IDB Invest seeks to build trust and mobilize long-term financing for robust and sustainable infrastructure projects in Brazil.

[14] BNDES backs 1.3 GW of wind in Brazil with 2017 green bonds.


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# CONCLUSION

Infrastructure is key for development and Brazil's challenges in this sector are restraining the country's competitiveness. Lags are particularly relevant in transport and water and sanitation, with notable differences between regions within the country. Low investment levels are largely to blame for the deficient quality of infrastructure, with decreased private investments since 2012. Also, there are several interrelated institutional and regulatory factors hindering private investment in infrastructure. Financing from traditional sources is increasingly challenging, and currency and construction risks remain issues.

Notwithstanding, the Brazilian infrastructure market will generate immense opportunities for equity and debt investors, construction companies, and financial markets. To take full advantage of these opportunities, the country should continue building institutional capacity for identifying, prioritizing, structuring, implementing, and monitoring PPP projects and concessions. Also, streamlined processes and transparency will be key for developing successful infrastructure projects. Enhancing greater participation of the capital markets and institutional investors both nationally and internationally in long-term financing will be key. DFIs, including IDB Invest, have a relevant role in mobilizing private finance by providing risk-mitigation instruments and creating solid structures for investments such as credit funds.

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