

THE INVESTOR'S HANDBOOK FOR RENEWABLE ENERGY IN BRAZIL

AN INSIDER'S GUIDE



REA CONSULT

Preface

Favorable geographic conditions, growing electricity demand, progressive regulatory reform, and maturing supply chains, have made Brazil one of the most exciting countries in the world for renewable energy investment.

According to Bloomberg's **2019 Climatescope report**, Brazil ranks third most attractive in the world for clean energy investments. Brazil also ranks third globally in terms of installed capacity from renewable energy sources, after only China and the United States, according to **IRENA** analysis. Despite this, Brazil only ranks 7th in the world for installed wind power capacity and 22nd for solar.

The real renewable power in Brazil comes from hydroelectric, where it is only second to China. Large hydropower plants account for around 80% of domestic electricity generation, providing flexible and low-emission base power supply. However, further expansion is constrained by the remoteness and environmental sensitivity of remaining hydropower resources.

As a result, reforms in the Brazilian energy market over the last decade have focused on diversifying the country's energy mix. While natural gas plays a role in this new power landscape, the key focus has been to promote the development of wind and solar power generation by creating the technical, socio-economic, and political conditions required to encourage investment.

Transmission capacity and technology have improved to account for intermittent supply, new financing mechanisms have been put in place to suit a wide range of projects, and more supportive regulation has been established. From 2017 to 2020 (ytd) the average annual installed capacity growth of centralized solar power was approximately 35%. In the same period, distributed solar power grew by more than 120% on average, benefiting from the world's most progressive net metering regulation. The more mature wind sector saw an average increase in

the generation capacity of 8% per year, while total wind capacity is expected to double between 2017 and 2024.

There is a famous saying here, we say that "Brazil is not for beginners". Despite reform, Brazil is still an emerging market with many of the inefficiencies and cultural hurdles

you would expect of a populous Latin American country. However, those who can navigate Brazil's dense legal and regulatory jungle will discover a renewable energy market that is brimming with potential. Since I began working in the renewable energy sector, I have seen markets peak and stall. The conditions are right, now is the time for Brazil.

The Investor's Handbook for Renewable Energy in Brazil has been developed by REA Consult to support that journey. It serves as an insider's guide for those developing projects renewable energy in Brazil and anyone curious about the inner-workings of this lucrative market. A new chapter will be released every week, all free to read and share. See all the chapters published so far and **follow the evolving story here**



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REA Consult is a management and consulting firm committed to building bridges for international sustainable investments. Born in Brazil with offices in Europe, Asia, and South America, REA Consult has a global track record of supporting successful projects.

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RENEWABLE ENERGY FINANCING IN BRAZIL

BNDES ONCE REPRESENTED THE ONLY FUNDING
IN TOWN, NOW THE CAPITAL MARKETS & A WIDE
RANGE OF PARTICIPANTS ARE EAGER TO INVEST
IN RENEWABLE ENERGY PROJECTS

- △ Public Funding
- △ Private Funding

- △ Bonds
- △ Energy Programs

Renewable Energy Financing in Brazil

Overview

Infrastructure funding has always been a challenge in Brazil. Regulatory flaws, constant change in rules and governments lacking enough resources are among the factors that have always brought additional risks to the most attractive of projects.

The market is not facing a new reality. Firstly, there is a wave of privatizations in country, improving the governance in infrastructure companies. Secondly, with record low interest rates, long term financing has become affordable and manageable.

If Brazil's development bank (BNDES) once represented the only funding in town, now a much bigger share of participants is willing to invest in innovative energy projects.

Public Funding

The energy sector always played an important role in BNDES' infrastructure financing lines. In 2017, for example, the sector accounted for a share of 75.12%.

BNDES partially subsidized conditions were traditionally better than market standard:

- △ Maturities can reach 24 years (limited to the last 2 years of existing PPAs)
- △ 80% of the project is financeable, for 100% of eligible components
- △ Imports are allowed if local parts are not available
- △ Grace periods can add up to 6 months, once the project is operational

Interest rates are structured by the sum of three components:

- △ Long-term interest rate (known as TLP), which is basically the country's official inflation rate (IPCA) added by a fixed interest rate (1.53% p.a. in September 2020)
- △ Bank's spread (0.9% p.a. for solar projects/ 1.3% p.a. for other sources)
- △ Client risk



When a financial intermediary is present, such as a third party financial institution, BNDES' spreads are higher (1.05% p.a. for solar projects / 1.45% p.a. for other sources), along with a rate agreed with the financial institution.

Additionally, projects have to comply with local environmental, social, and governance directives.

In fact, the dominating role of the BNDES has been often a target of critics: the subsidized and state regulated control over credit was handicapping the development of an independent and privately owned financial sector. With a turn toward liberalizing politics, in recent years, BNDES has become more of a financial structuring agent as it focuses on fostering innovation and sustainability. The trick worked: the credit market saw many new private players offering credit options for energy assets.

By taking a more structuring work, BNDES expects to continue providing the longest term financing available albeit promoting participation by financial into future investment opportunities.

In terms of foreign development agencies, the Inter-American Development Bank (IDB) is Brazil's biggest multilateral partner (37%). Initiatives are carried out mostly through state development agencies (states of Goiás and Espírito Santo are some commonly known examples) and BRDE, a development bank that caters to the three Southern states.

Among IDB's budget targets is the reduction of the country's infrastructure gap, by fostering a bigger share of renewables and energy efficiency programs. Next table presents an overview of IDB's 2020 strategy for the Brazilian infrastructure sector.

Investment per Year in the Energy Sector (in R\$ billions)



Source: BNDES

Priority area	Strategic objective	Expected results	Indicator	Baseline, source, and year
Improve the business climate and narrow gaps in sustainable infrastructure for enhanced competitiveness	Promote greater economic competitiveness	Enhanced competitiveness	Global Competitiveness Index score	59.5 (72nd of 140 nations) - WEF 2018
	Increase the role of the private sector by improving the quality of the business environment	Improved business climate	Ease of Doing Business Index score	60.01 (109th of 190 countries) - Doing Business, World Bank 2019
		Simplified processes for opening and closing businesses	Average time to open a business	20.5 days - Doing Business, World Bank 2019
		Simplified tax payments	Average time used by companies to pay taxes (hours per year)	1,959 hours - Doing Business, World Bank 2019
		More private sector investment in R&D	Private sector share of R&D investment	45% - UNESCO 2016
		Increased private sector access to credit	Total credit to the private sector (% of GDP)	43.7% - Central Bank 2019
		Stronger framework for PPPs	Infrascope Index	70/100 - EIU 2018
		Narrow infrastructure gaps	Better quality infrastructure	Global Competitiveness Index 2018 - Infrastructure
	Better quality logistics		Logistic Performance Index	2.99 (56th of 160 countries) - World Bank 2016
	Increased share of renewables (eg. wind and solar) in the energy matrix		Share of renewable energy (eg. wind and solar) in the energy matrix	8.8% - ANEEL 2018
	Enhanced energy efficiency		Energy intensiveness of the economy (tons of oil equivalent/10 ³ R\$)	0.040 - EPE 2017

A total amount of US\$ 1.75 billion³ per year is expected in multilateral financing, but there is no predominance of energy projects.

This is due to the fact that most wind and solar projects are located in the Northeastern states (a total of 9 states), the north of the state of Minas Gerais and the state of Espírito Santo. This area is typically dominated by Banco do Nordeste do Brasil (BNB), which counts with a

constitutional fund created specifically for the development of the region.

No less than a 70%⁴ share of the bank's approved operations is directed towards generation and transmission projects, including the program called FNE Sol.

³ IBD Group Strategy with Brazil 2019-2022. P. 34. Available [here](#)

⁴ [CanalEnergia.com.br](#)

It targets the financing of components and installation of centralized generation and micro/mini solar energy generation systems, applicable to other renewable sources as well (wind, biomass, and small hydro plants).

The terms for the micro and mini installations, which benefit from the world's most liberalized net metering law, are quite attractive. Financing ratios can reach 100% and installments are determined according to the energy saved. Maximum financing lines contemplate 8 years, where payments start after a grace period of 6 months.

Debt Markets

Throughout the years, infrastructure bonds became relevant financial instruments for leveraging projects, which became notably after Law 12,431/11 (implemented in 2011): In 2019 alone, companies issued 56% more of such instruments than in the previous year (Valor 2020), showing how much they have evolved in the last 8 years, with increasingly bigger operations and longer maturities (up to 25 years).

Infrastructure debenture	Fixed income instrument representing medium - and long-term debt that guarantees debenture holders a right of credit against the issuing company. This type of debenture offers fiscal incentives to investors in infrastructure projects.	
Type: Bond	Latest regulation: Law 12,431/2011 Decree 8,874/2016	Investments 2014 - 2018* BRL 47 billion (~USD 11.8 billion) issued *Jan - Oct/ 2018
Sectors: energy, water and sanitation, transport, telecommunications, agribusiness, and forestry		
Sustainable investment: BRL 1.19 billion (~ USD 308 billion) in green bonds issuances	Sustainability criteria: Issuers can voluntarily label issuances as green, social or sustainable	Sustainable investment example: ISA CTEEP - Energy transmission

Status:

Since 2012, infrastructure debentures have increased their role in financing infrastructure projects in the capital markets, reaching a total of 174 issuances of infrastructure debentures from 2012 to September 2018 for projects focused on energy (127), transportation (38), telecom (5), and sanitation (4). The main investors in infrastructure debentures from January to September 2018 were individuals (17%), institutional investors (46.7%), and others (36.3%).

Source: *Financing sustainable infrastructure in Latin America and the Caribbean – Inter-American Development Bank – March 2020. P. 29.*

Yet, the country has enormous deficiencies. According to a McKinsey study, Brazil needs to invest over US\$ 67 billion per year for the next 20 years if it wants to reach its peers.

Depending on the bond's characteristics (project size, guarantees, and company rating), financing costs are similar to BNDES' credit lines. In that matter, the BNDES itself created a specific fund to purchase bonds (up to a limit of 100% of each bond issuance).

Additionally, infrastructure bonds have an advantage over public funding which is the financing of imported components. Since public money is tied to industrial policy, it limits imports to situations where local production is not available.

Prospective buyers can be found everywhere: in pension funds, investment funds, and family offices.

Over the years, the bond investing community has gained heft, as closed funds (responsible for

managing wealthy families' resources) and newly regulated endowments aim to solve many of big cities' main infrastructure constraints. Pension funds and alternative investment funds, on their part, search for real assets.

Although for different reasons, they all have the same target: compensate for the lowest ever level of interest rates in the country. Environmental requirements apart, this process is also intensified by ESG funds historical returns, which show solid performance.

The pandemic (covid-19), however, has slowed the pace. In the first quarter, issuances were

already 40% lower when compared to a year ago. A modest pick up is expected for the remaining months of 2020, including energy companies, which have always had the preference among investors.

Infrastructure Equity Funds

The Brazilian Securities and Exchange Commission (CVM) is responsible for the local fund industry authorized a series of Infrastructure Private Equity Investment Funds, known as FIP - IEs, in 2019, mainly for the energy sector, which has a more consolidated regulatory framework:

<p>Infrastructure Private Equity Investment Fund</p>	<p>Fundo de Investimento em Participações - Infraestrutura (FPI - IE) is a closed-end investment fund in which at least 90% of the equity must be invested in infrastructure sectors.</p>	
<p>Type: Fund</p> <p>Sectors: energy, water and sanitation, transport, agribusiness, and forestry</p>	<p>Latest regulation: Law 11,478/07 CVM Instruction 578/2016 CVM Instruction 460/2007</p>	<p>Investments 2014 - 2018* BRL 6 billion (~USD 1.5 billion) in total assets as of Aug/2018</p>
<p>Sustainable investment: Not available</p>	<p>Sustainability criteria: This instrument has no embedded social, environmental, or climate criteria, nor incentives for socially and environmentally positive investments.</p>	<p>Sustainable investment example: FIP IE BB VOTORANTIM ENERG SUSTENT (I, II, AND III) - Renewable Energy</p>

Status:

Due to returns in the medium to long term and higher minimum investments requirements in FIP - IEs, this instrument attracts more institutional investors than individuals, although there is an income tax exemption for the latter. Only infrastructure Private Equity Investment Funds are currently listed by B3.

Source: Financing sustainable infrastructure in Latin America and the Caribbean – Inter-American Development Bank – March 2020. P. 30.

Energy project financing thrives despite decreased participation from development banks



Once in a FIP structure, flexibility is a plus, suiting both projects and operational plants alike.

The asset manager is free to conduct all the steps of the investment process:

- △ Selection of assets
- △ Due diligence
- △ Follow up
- △ Divestment

A fund administrator oversees regulatory requirements. Although most focus on

energy generation, transmission and distribution, other infrastructure sectors are soon to follow as retail investors look for investment diversification options. Looking forward, it is just a matter of time before this fund category becomes popular and expands further.

FIDC

Other regulated funds are being adapted to emerging needs:

Credit Receivables Investment Fund	FIDC are open or close-end investments funds composed of financial securities backed by loans, leases, or receivables.	
Type: Fund	Latest regulation: CVM Instruction 356 CVM Instruction 489 CVM Instruction 399 CVM Instruction 606	Investments 2014 - 2018* BRL 49.3 billion (~USD 12.7 billion) issued *Jan-Oct/ 2018
Sectors: All		
Sustainable investment: BRL 0.5 billion (~USD 129 million)	Sustainability criteria: Issuers can voluntary label issuances as green, social, or sustainable bonds	Sustainable investment example: BNDES - Renewable Energy Fund

Status:

The main FIDC investors are financial institutions related to the issuance of credit rights by the originators (39.3%), companies (40.6%), and investment funds (11.6%). Pension funds do not represent a significant share of FIDC investors (only 5.3%) as FIDC have complex structures and higher risk exposure than these institutions usually deal with.

Source: Financing sustainable infrastructure in Latin America and the Caribbean – Inter-American Development Bank – March 2020. P. 30.

Receivables Investment Funds (FIDCs) recently started implementing microfinancing and non-recourse financing in distributed generation retail operations.

Households are now offered the chance to purchase solar systems in 60 installments, as a distribution tariff subsidy allows for a 5-year payback in equipment that can endure a total of 25 years.

As seen in this chapter, energy project financing in Brazil includes new options despite decreased participation from development banks in the sector.

This is due to the existing low-interest-rate environment, which encourages the development of financial market solutions for

a broader base of investors —those wishing not only to put their wealth to good use but also to promote innovation and environmentally friendly practices.

Similar fund structures have the potential to explore this niche since financial institutions are channeling funds primarily to pandemic related issues (among the biggest private players, only Santander, is providing regular funding).

As seen in this chapter, energy project financing in Brazil includes new options albeit 'BNDES' decreased participation in the sector.

Liberalization of the credit market has been long wished for. Now it time for the energy market to seize the opportunities created by the increased liquidity of the capital markets.

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Please note that the energy field is dynamic, and the material and data presented herein could change.

Sources

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