



INVEST
IN BRASIL



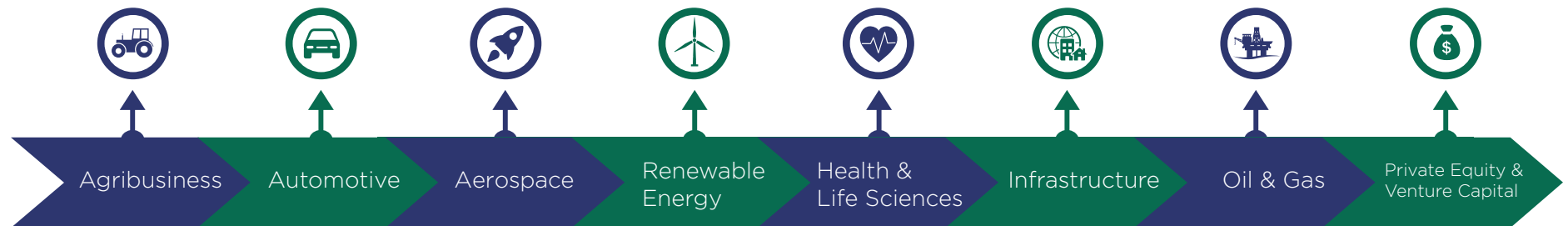
RENEWABLE..... ENERGY

Introduction



The Brazilian Trade and Investment Promotion Agency (Apex-Brasil) supports international investors as they analyze the opportunities to establish a plant in Brazil, start a partnership with a Brazilian company, or commit capital in Brazil through funds and companies. Our goal is to satisfy investors needs and generate results as we attract technology, innovation, new companies and generate jobs in Brazil.

The Agency's service portfolio ranges from **preparing market data intelligence** to **connecting investors to** high-level authorities offering **solutions** mainly (although not exclusively) for the following industries:



We are part of the Brazilian Ministry of Foreign Affairs, through which we count with 120+ offices in the world, and we work in close collaboration with other Ministries, regulatory Agencies, class entities, and so on.

Apex-Brasil is **ready to assist in all steps** of the investor's decision-making process by:



Why Brazil

Leading Regional Economy:
Brazil ranks among the **top 10 economies** in the world
and it's the largest one in Latin America,
with a GDP of USD 1.8 trillion in 2019.

USD 1 trillion
INWARD FDI FLOWS TOTALLED



Global Destination for Investment
6th global recipient of FDI inflows in 2019.
Inward FDI flows totalled over USD 1 trillion
from 2010 to 2019.



USD 8,959.02 PER CAPITA GDP

A **population of over 210 million** and a strong and
steady **domestic demand** for services, goods and agricultural
products (Household consumption of 64% of GDP - 2018).
Per capita GDP of USD 8,959.02 in 2018, **above major emerging
players** such as India and South Africa.

Diversified Economy: We Have It All

Brazil's economy relies on a **wide range of economic sectors** – that includes Latin America's largest **aerospace, automotive, oil and gas, mining, capital goods, medical equipment, chemical** and **technology industries**.

Large Pool of Workers

With an active working age population (15- 64 years old) of around 69% in 2018, above world average, Brazil's domestic market offers good opportunities for companies seeking to hire locally.



▪
▪

Extensive Raw Materials

Brazil's is one of the biggest producers and exporters of agricultural and mining products (especially iron ore) in the world. The country is also estimated to hold the world's largest freshwater reserves.

▪
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Energy Powerhouse

10th largest oil producer in the world and the largest in Latin America. One of the top producers and exporters of ethanol biofuel in the world. Renewable sources are responsible for over 80% of the Brazil's electricity generation.



▪



Global Player

Brazil has been an active and engaged global player, **coordinating trade, policies and human rights advocacy**, earning the respect of its peers in the process. With a large economy, **sound political and judicial systems and active engagement in foreign affairs**, Brazil plays an important role in the international community.

Gateway to Latin America

Brazil has free trade agreements with the largest markets in Latin America and signed Investment Facilitation Agreements with several other countries. Brazil is a founding member of the Southern Common Market (Mercosur), which has recently signed a big FTA agreement with the European Union.

Renewable Energy and Environmental Solutions

Brazil has one of the **cleanest electricity matrixes** in the world



Brazil is the **9th** largest power consumer and producer in the world



By 2029, the government plans to increase the solar energy output to 20,08 MW (8% of the Brazilian electric



Electricity generation from wind and solar PV sources is estimated to increase to 150 GW until 2040, representing **44%** of the Brazilian matrix

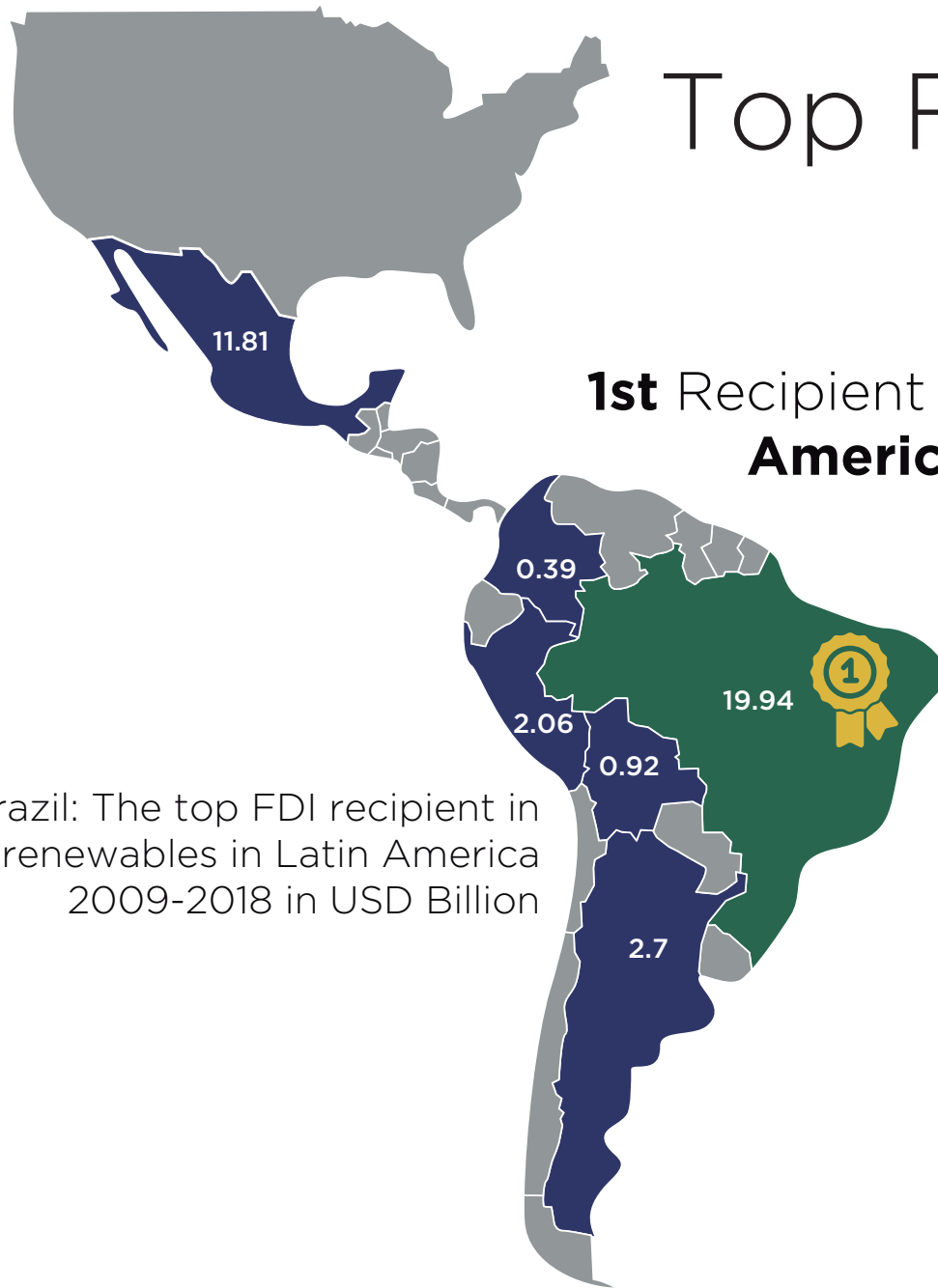


Renewable Energy represents over **80%** of the country's electricity generation capacity

Top FDI recipient in renewables

1st Recipient of FDI in renewables **in Latin America** from 2009 to 2018 - **35.2%**

Brazil: The top FDI recipient in renewables in Latin America 2009-2018 in USD Billion



3rd recipient of FDI in renewables **in the world** from
2009 to 2018 - **11,6%**



India



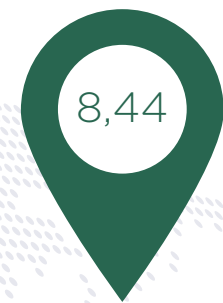
China



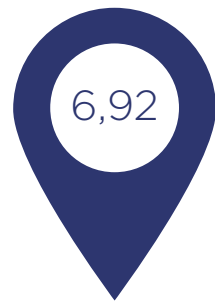
Brazil



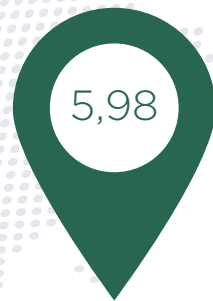
Mexico



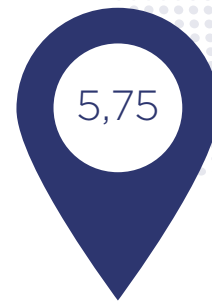
Chile



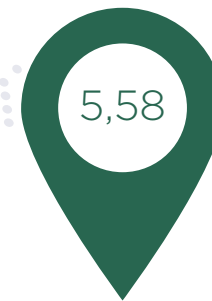
Turkey



South Africa



London



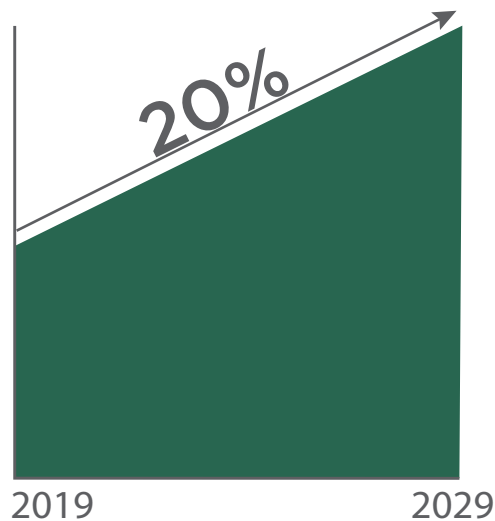
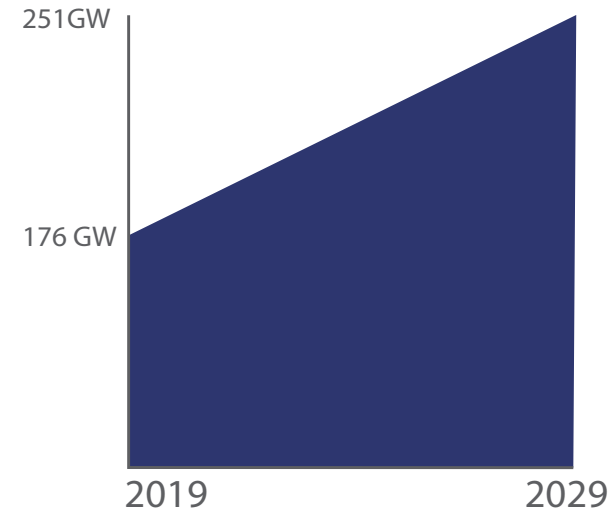
Morocco



Egypt

Forecast – a continuous growth

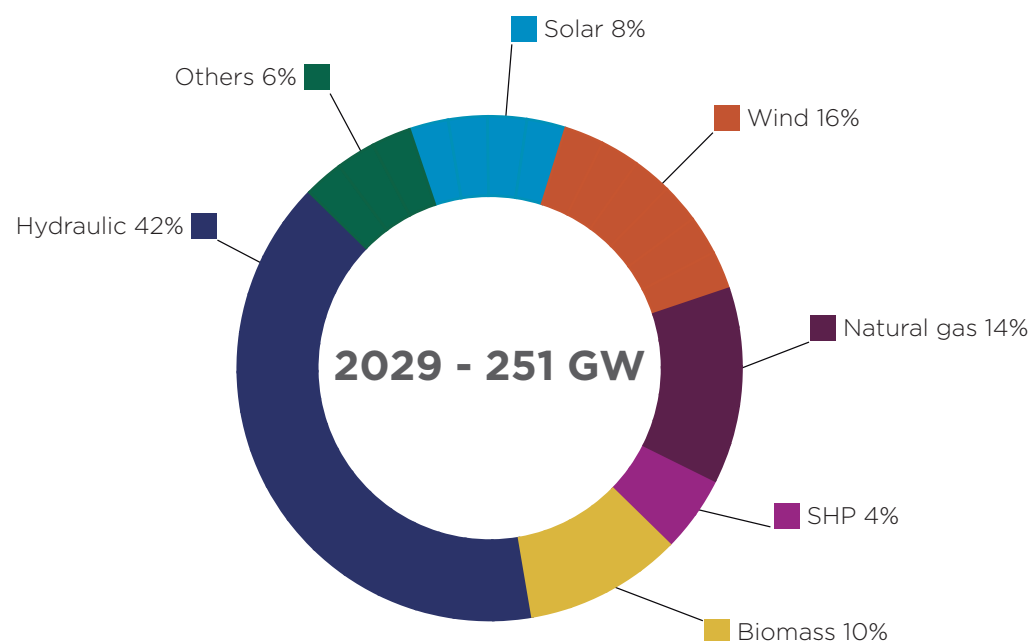
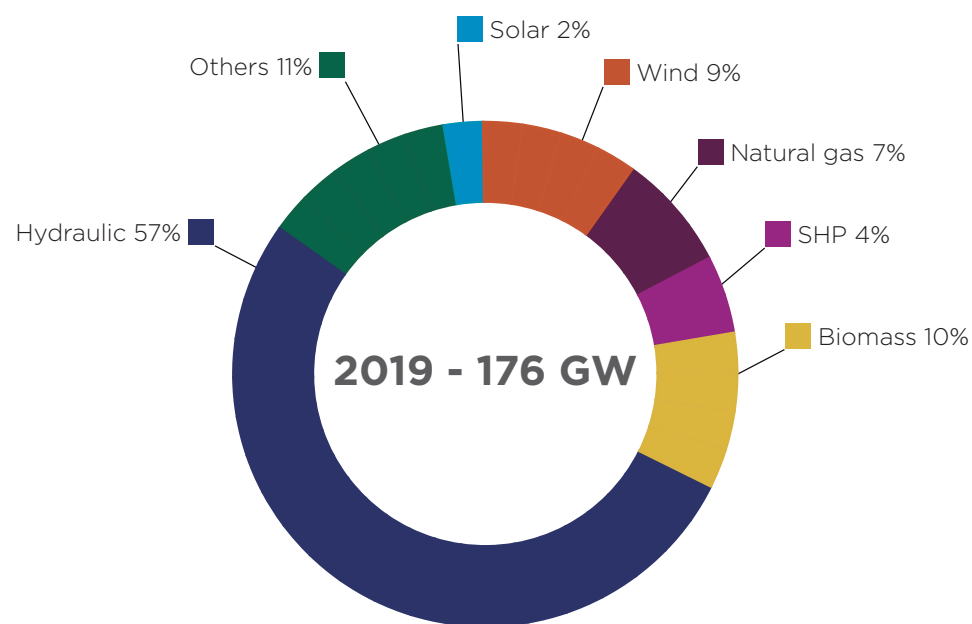
The National Energy's Plan 2029 (PDE 2029) forecasts that **Brazil's installed capacity will grow** from 176 GW, in 2019, to 251 GW, in 2029.



The country's **power demand will grow over 20% until 2029**. By 2050, it is estimated that Brazil will need USD billion in investments for renewables.

Evolution of the composition of total installed capacity by source 2019 - 2029

Especially solar and wind sources will have a **considerable increase in the next 10 years**, from 2% to 8%, and from 9% to 16%, of the country's electricity matrix, respectively.



Source: PDE 2029

Note: Does not include the portion of the Itaipu Hydroelectric Plant that belongs to Paraguay

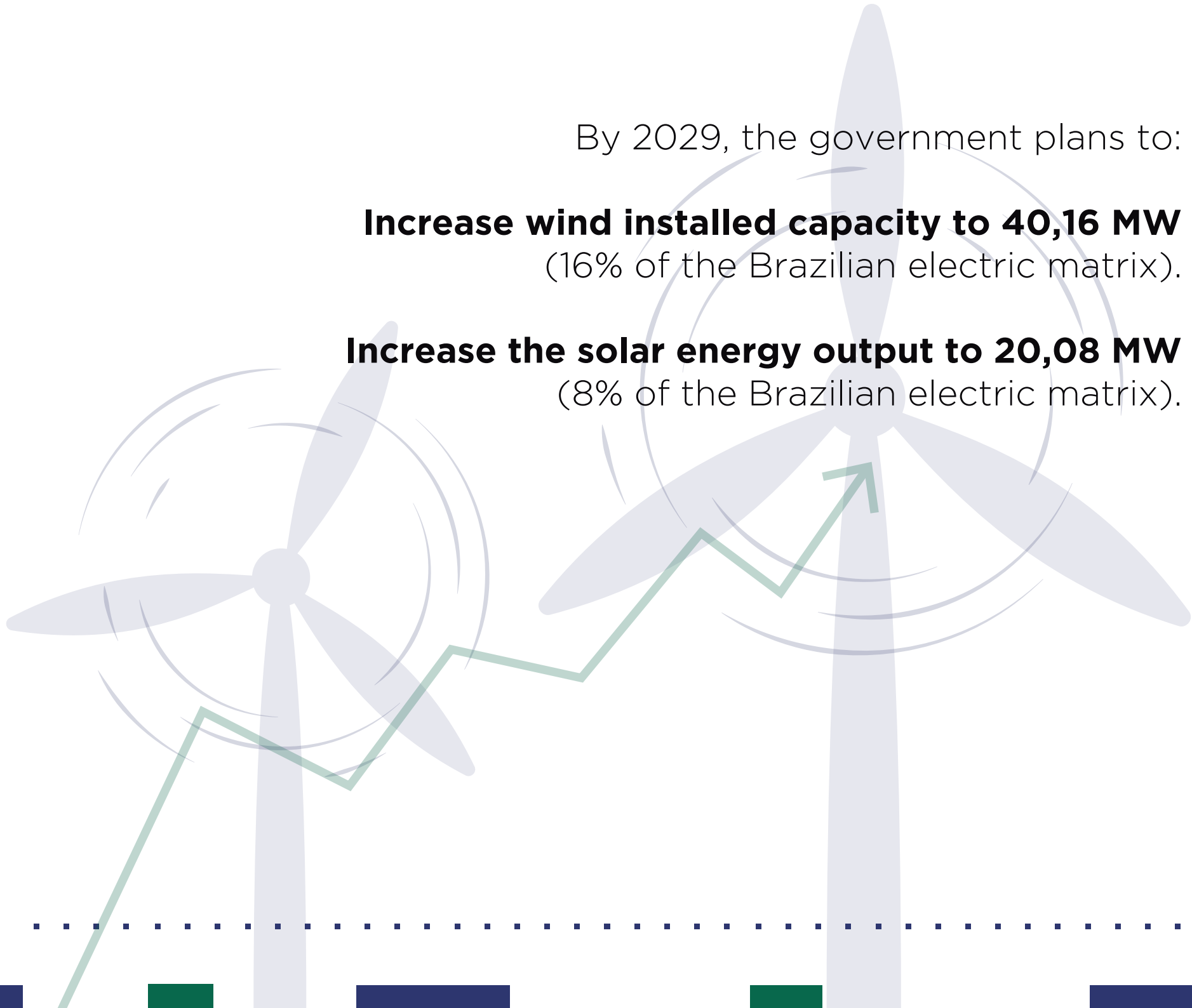
By 2029, the government plans to:

Increase wind installed capacity to 40,16 MW

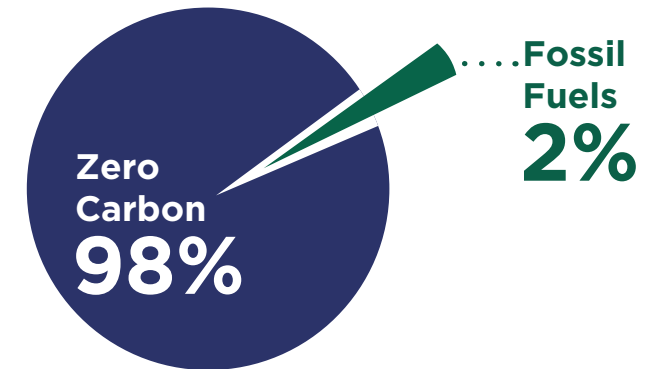
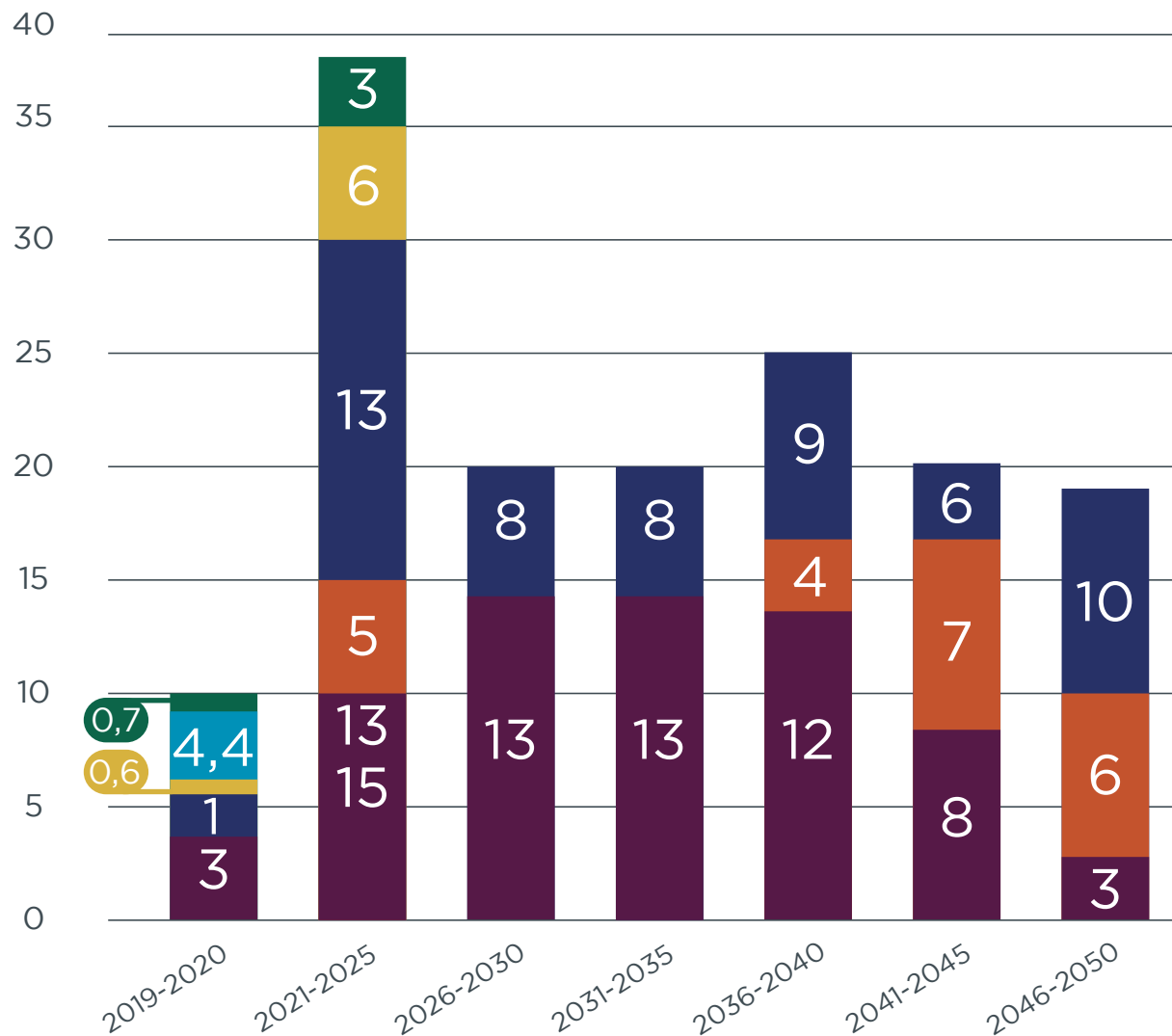
(16% of the Brazilian electric matrix).

Increase the solar energy output to 20,08 MW

(8% of the Brazilian electric matrix).



BNEF forecasts that **98%** of the investment to be made in New Power Capacity in Brazil until 2050 will be directed to **Zero Carbon sources**.

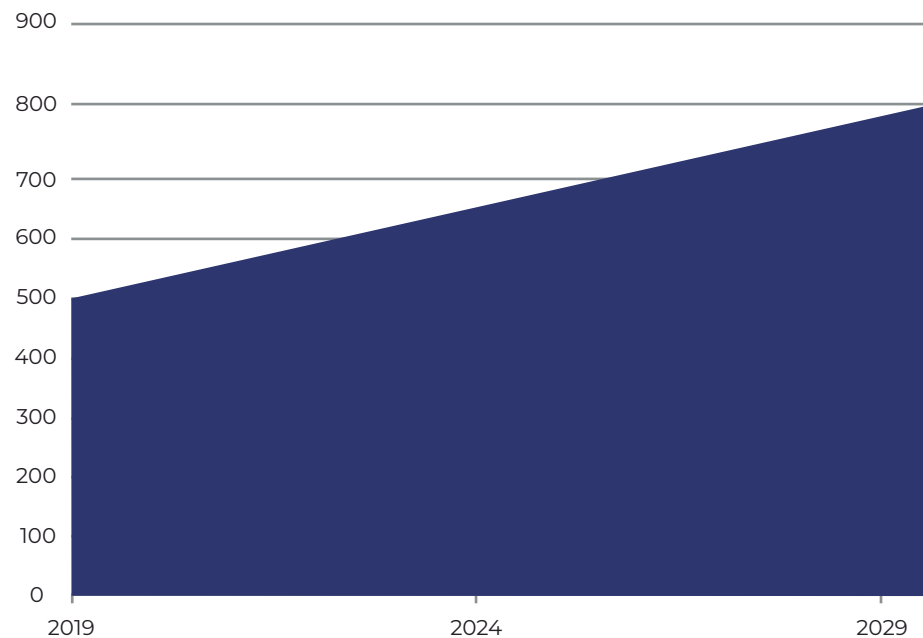


- Gas R\$ 3.7 bn
- Hydro R\$ 4.4 bn
- Biomass R\$ 6.6
- Onshore Wind R\$ 54 bn
- Utility-scale PV R\$ 22 bn
- Small-scale PV R\$ 63 bn

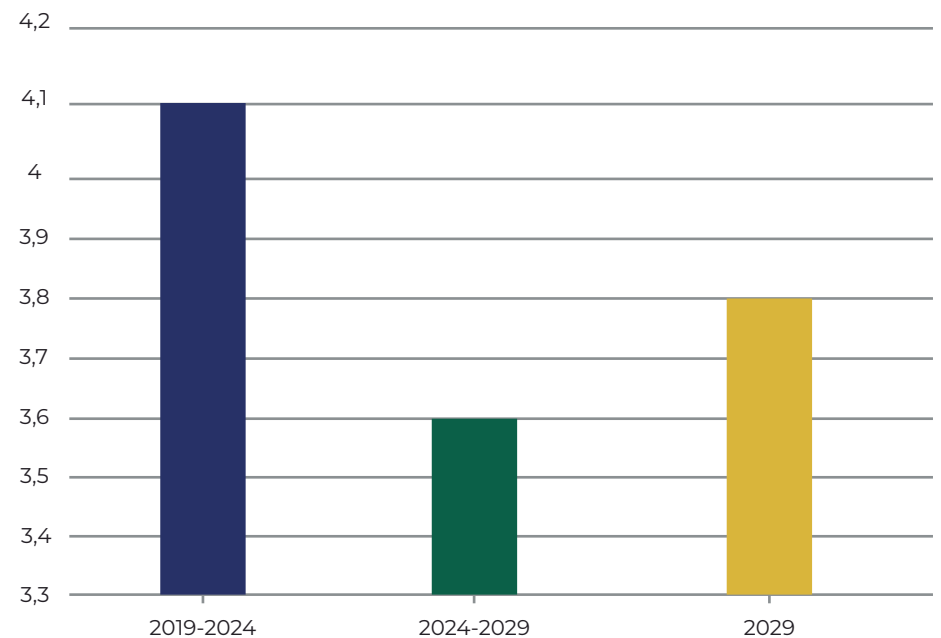
The increase in installed capacity is essential to meet the **continuous growth of the Brazilian energy demand**

Projected increase in energy demand by 2029

Total Consumption (TWh)
2019-2029



Average Growth
(% per year)



The **opportunities** go from the **Regulated Market**, with a successful auctions model, to the **Free Market**, an increasing and flexible corporate sourcing model, which currently corresponds to 30% of Brazil's power demand. An **increase of 1,000 TWh in electricity consumption is expected**, which will generate the need for USD 150 billion in investments in renewable energies until 2050.

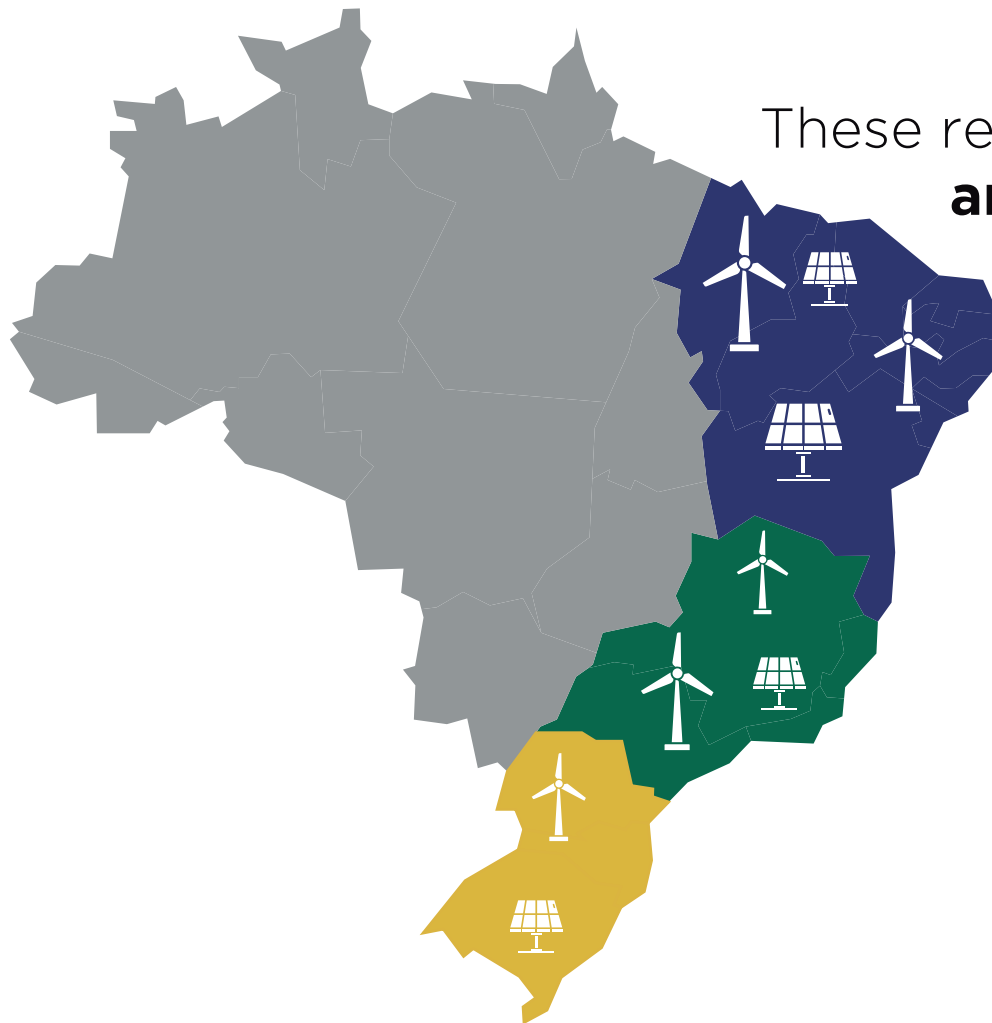
From 2009 to 2018, Brazil attracted over USD 20 billion in FDI for renewable energies

Brazil is expected to sum USD 150 billion in investments in renewables until 2050

80% of the industrial power consumption comes from the Free Market.



Brazil's renewables sector opportunities are mainly concentrated on the **Northeast, part of the Southeast and South** of the country.

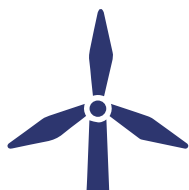


These regions together, in terms of **wind and solar, represent over 90% of installed capacity and new projects** of power generation are developed there.

Also, the **sector has two complementary models, the Regulated Market and the Free Market**, and there are business opportunities in both.



Brazil's Regulated Market is an auction model for **power generation supply**, including renewable sources, which is planned, **implemented and hired by the government**.



The success of this model is explained by **strong incentives**, 20-year or longer Power Purchase Agreements, and **clear and reliable regulation**. Only in the A-6 auction, held in 2019, 1GW for wind and 530 MW for solar were traded.



The energy to be traded in auctions from 2018 to 2022 will represent approximately 5-10% of Brazil's installed capacity.



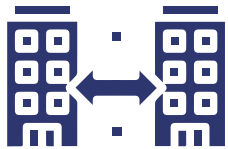
4 big auctions are scheduled for 2020 and 2021, bringing excellent opportunities for the sector.



The Free Market is a B2B model, a type of corporate sourcing in which the main advantage for the parties is the **possibility to negotiate the power price**.



It is estimated that, from 2003 to 2017, 29% of savings were made due to this model. Currently, the Free Market **represents 30% of Brazil's entire power demand and approximately 80% of the industrial consumption**.



Today, a demand of 2000 MW is necessary to play in this model, but in order to open the Free Market for more players, the Government will gradually reduce this demand to 500 kW until 2023. **The government is already studying ways to open the Free Market even more after 2023.**

The Brazilian Development Bank (BNDES) has created a reference price (Preço de Referência) for the Free Market, diminishing the risks and incentivizing investments in this model.



BNDES (Brazilian Development Bank)

Brazil attracted almost USD 57 billion in new asset finance for clean energy plants in 2010-17, by far **the largest amount in Latin America** over the period. **Wind alone accounts for 56% of the total, while solar attracted only 6%.** However, solar participation is due to increase as solar developers have secured almost 2GW in contracts in the 2017-18 auctions.

BNDES has played a major role in the development of the country's renewable energy market. **The bank is the top global lender to clean energy**, having disbursed USD 27 billion for renewable energy (excluding large hydro) projects between 2008 and 2017.

In addition, BNDES applies a strict local content requirement in granting wind and solar PV project loans, spurring equipment manufacturers to build factories in the country.

Renovabio RenovaBio is an initiative of the Ministry of Mines and Energy, launched in December 2016, which aims to **expand biofuel production**, based on predictability and environmental, economic and social sustainability by improving policies and regulatory aspects of biofuels, including ethanol.



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Contacts

Apex-Brasil has been successfully assisting foreign investors in the renewables sector for over 10 years. We work in close cooperation with relevant public and private stakeholders in order to help you achieve the best results for your investment plan. Talk to us and find out how we can assist you.