The Flourishing Market of Distributed Generation in Brazil

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Energy Analyst

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MINISTÉRIO DE MINAS E ENERGIA

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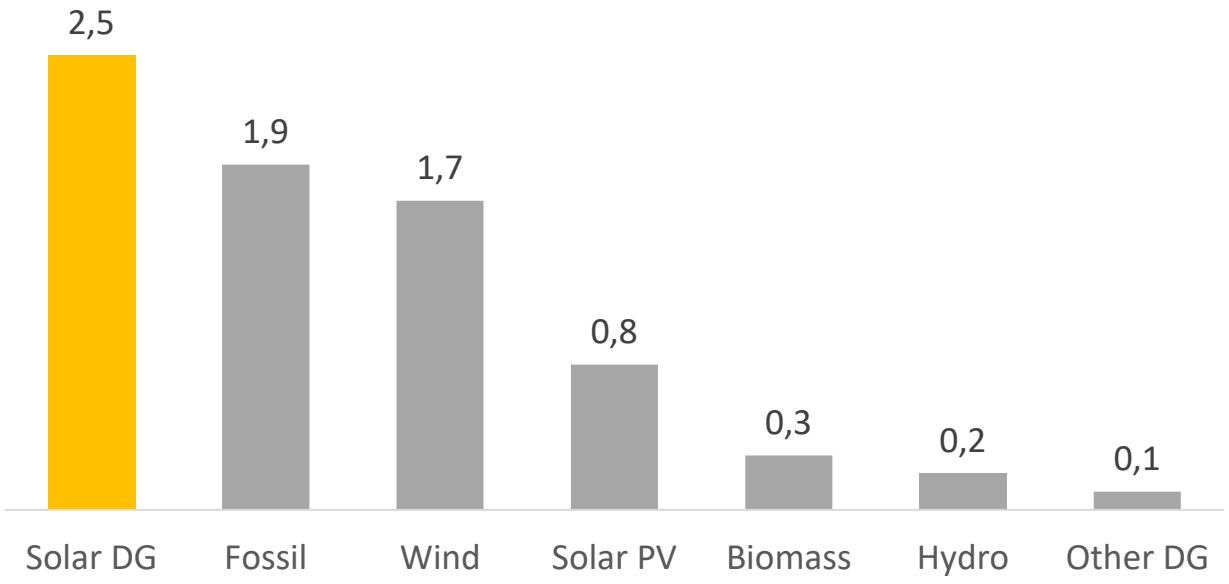
Distributed Generation is already a big market in Brazil

DG is becoming a protagonist in the expansion of the electricity supply in Brazil. In 2020, Solar DG led the addition of power capacity among all technologies.

Additions of power capacity by fuel and technology in 2020 (GW)



Source: ANEEL. Data from January 2021

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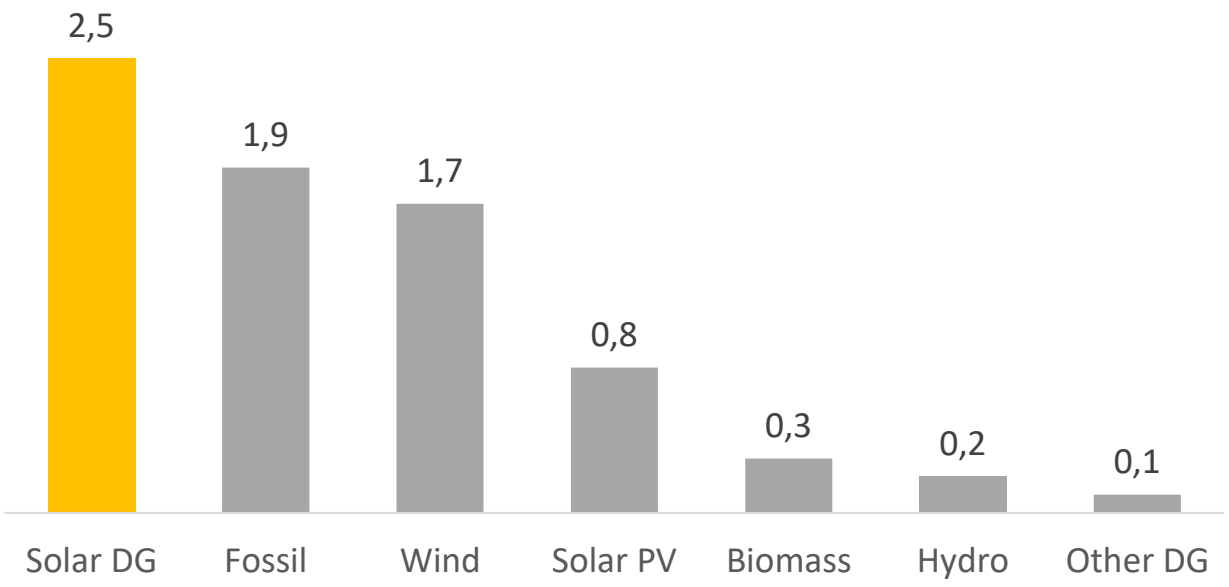

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What explains the DG numbers in Brazil?

- **A comprehensive net-metering scheme in place since 2012;**
  - Virtual net-metering also valid inside the same utility area;
  - Power plants up to 5 MW;
  - Renewable sources or Combined Heat and Power (CHP);
- Great irradiation levels across the country;
- Good return on investment (average payback within 5 years).

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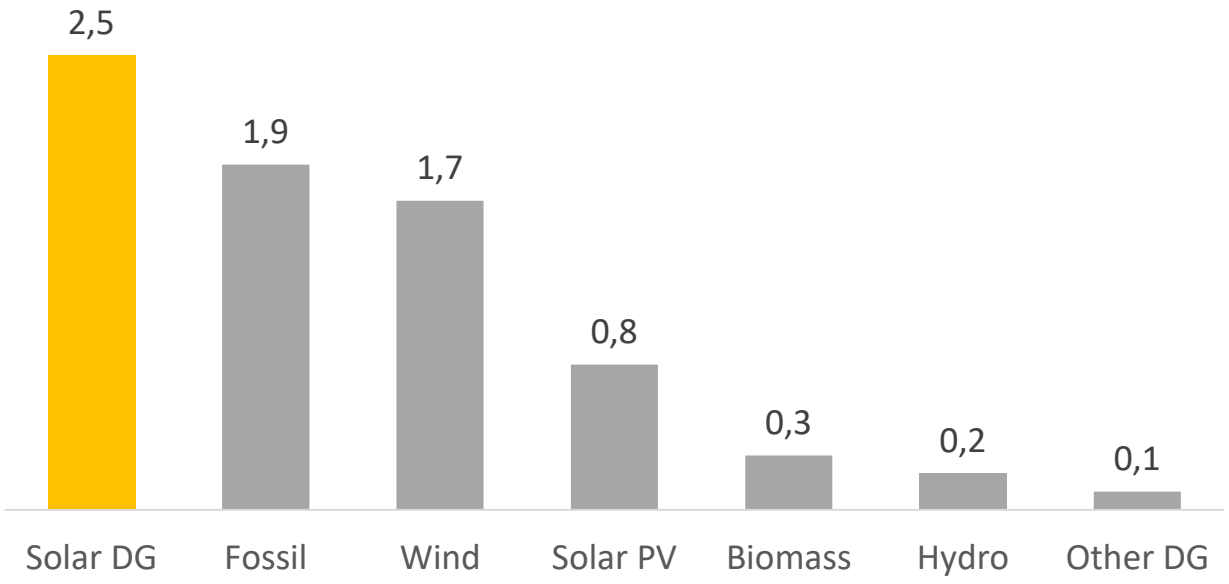

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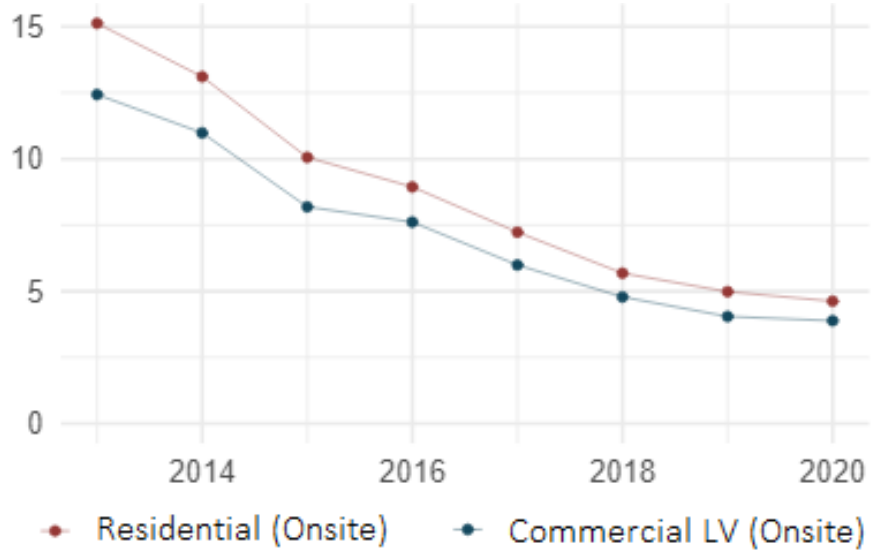
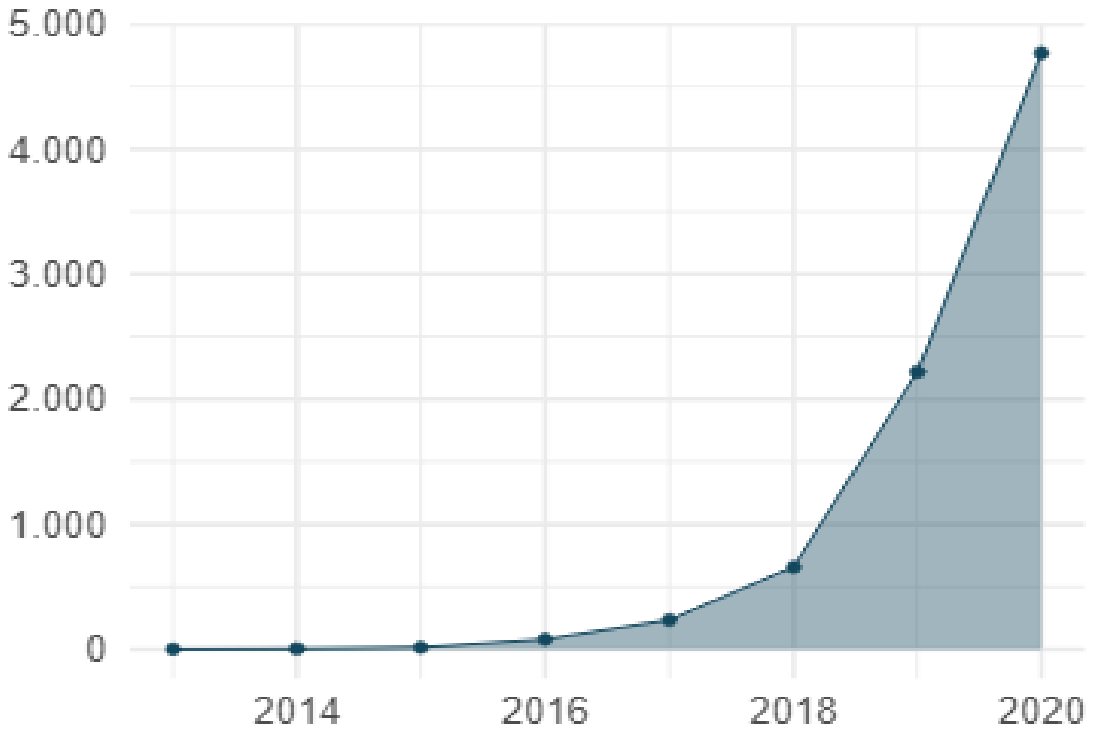
Historical average payback period for rooftop PV investments (years)



We have reached almost 5 GW of DG by the end of 2020

Even in a pandemic year, the addition of DG installed capacity grew by 60% compared to the previous year (2,6 GW in 2020 versus 1,6 in 2019).

Total DG installed capacity (MW)



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Solar PV is the predominant source and it is gaining market share in the last years.

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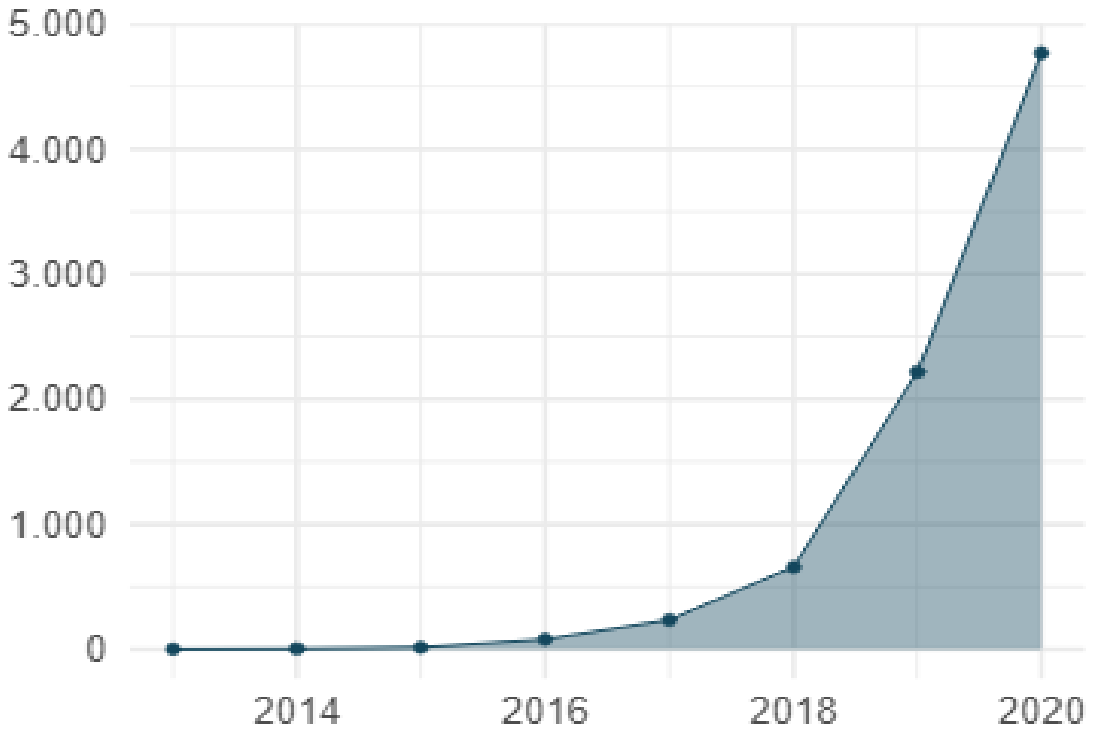
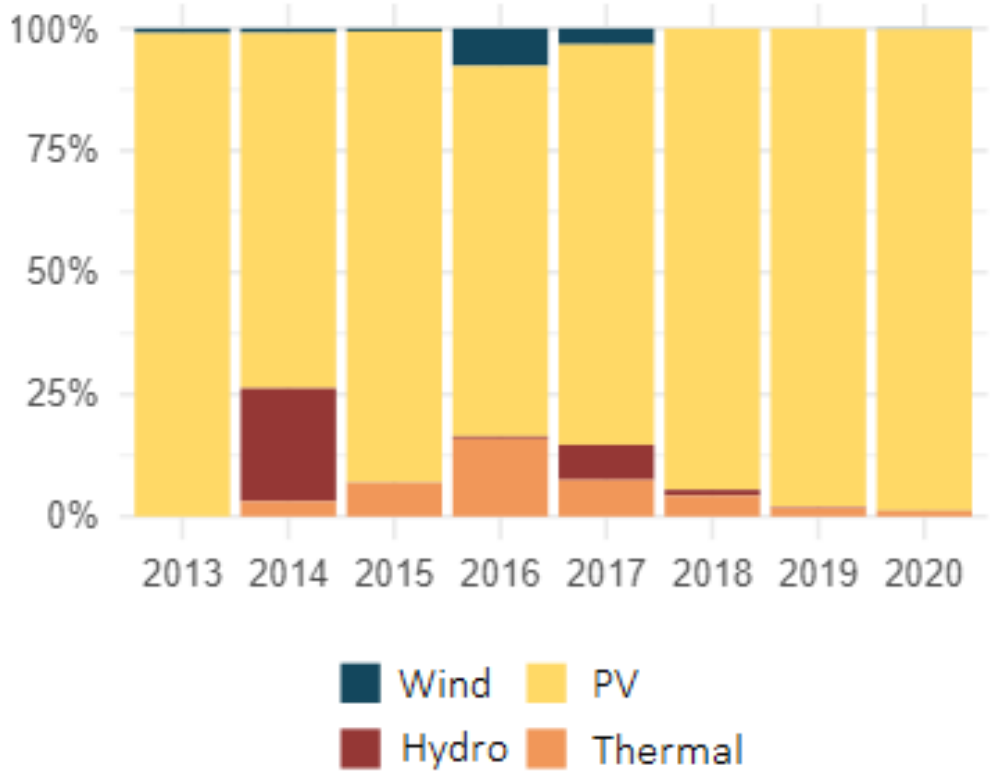


Share of the annual installed capacity by technology



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Onsite generation represented 80% of the add capacity in 2020

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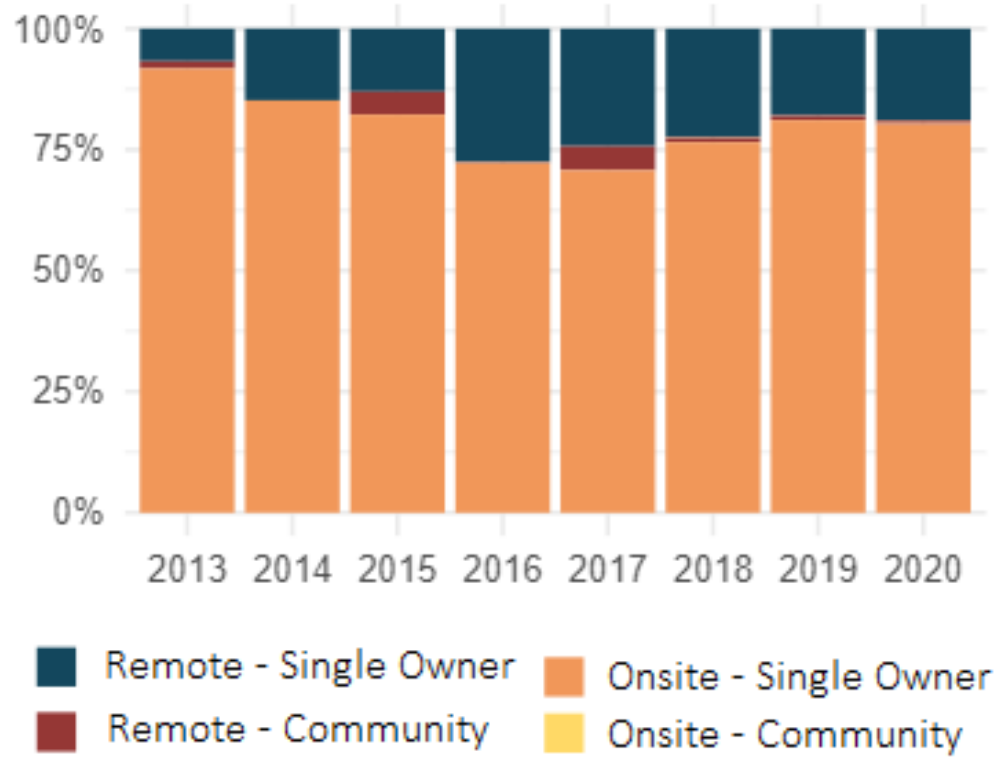
- Community projects have not yet taken off;

Share of the annual installed capacity by configuration



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The residential and rural sectors are gaining market share since the inception of the net metering scheme in Brazil.

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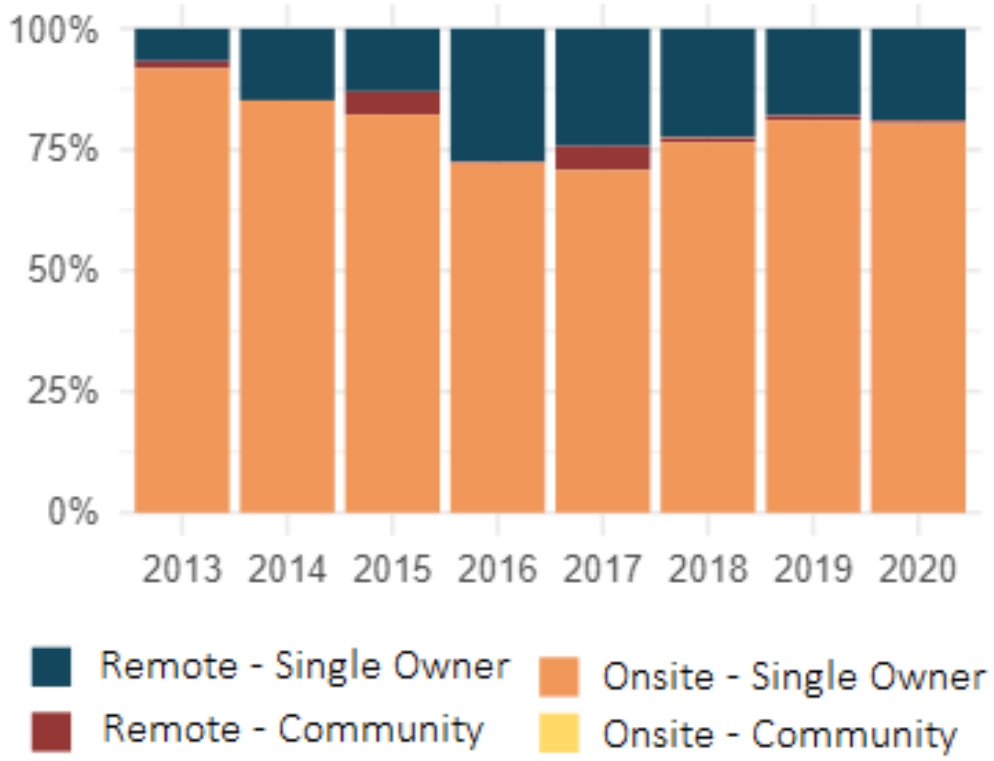
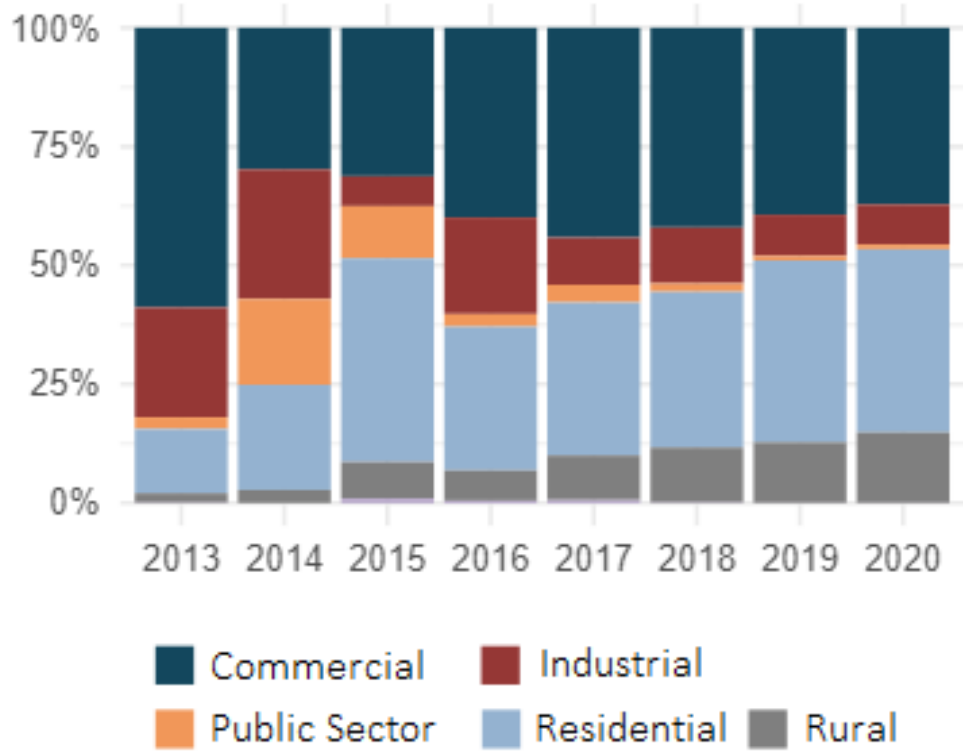


Share of the annual installed capacity by sector



However, there are some uncertainties for the coming years

WHAT REGULATORY CHANGES ARE BEING DISCUSSED?

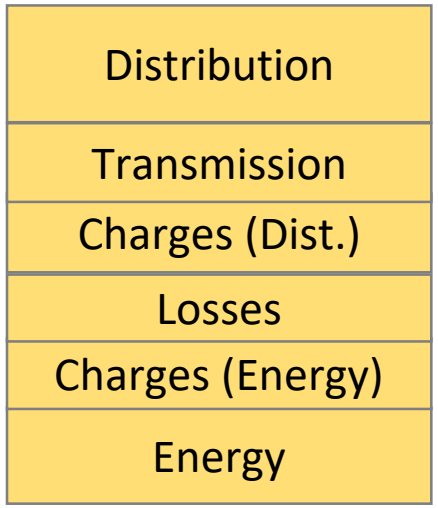
Changes in the net-metering scheme

- Currently, the generator uses the energy credits to offset all tariff components. It is an incentive that was given to jump-start this market;
- With the cost reductions and the huge expansion of DG, the review of the net-metering is being discussed in order to better align incentives and systemic sustainability. In this way, the energy injected into the grid would be used to compensate only some components of the tariff;

Implementation of two-part tariffs

- Today, utilities charge a single R$/kWh tariff for low-voltage customers.
- There is a discussion underway to recover fixed costs through a fixed or R$/kW tariff.
- That change also would impact the DG attractiveness

Tariff Components



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Tariff Components

Distribution
Transmission
Charges (Dist.)
Losses
Charges (Energy)
Energy

Both topics are being discussed by ANEEL (Regulatory Agency) and the Congress.

Questions:

- Will we have any changes?
- What the new model of net metering will look like?
- Which of the tariff components could be offset?
- When the changes will take effect?
- When will we have a two-part tariff in place?

Guidelines to DG policy design approved in Dec, 2020.

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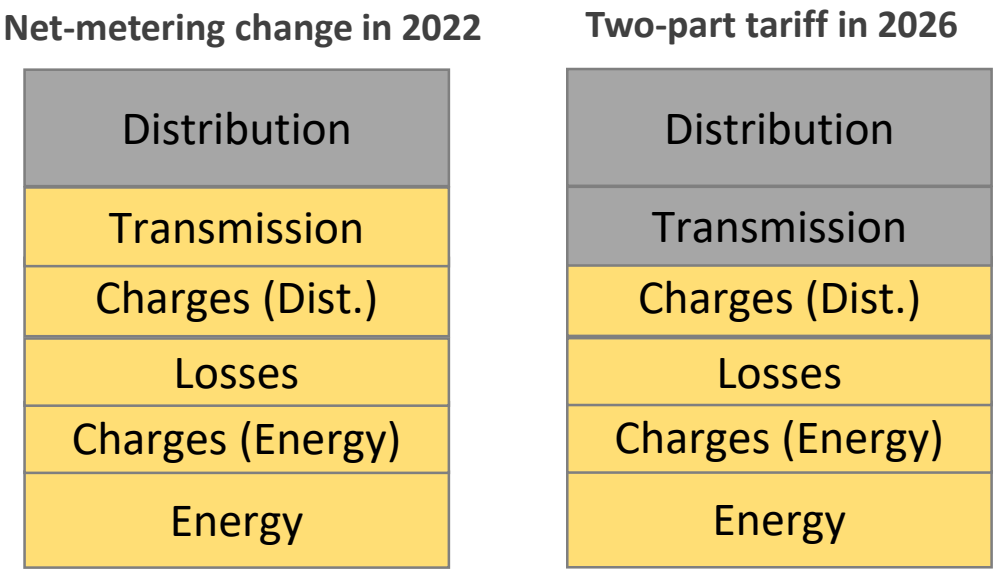
3. Allocation of the grid costs and sectorial charges, considering the benefits of DG.
4. Transparency and predictability in the processes of elaboration, implementation and monitoring of the policy.
5. Gradual transition of the rules.

Two scenarios for the DG development for the next 10 years

Given the uncertainties on the regulatory side, EPE drew two scenarios in order to visualize the possible outcomes and to plan the energy mix

SUMMER SCENARIO

Brazil chooses to maintain a policy of great incentive for DG, making subtle changes in regulation.



Components that can be offset

Components that cannot be offset or must be paid through a demand tariff (in the case of the application of a two-part tariff)

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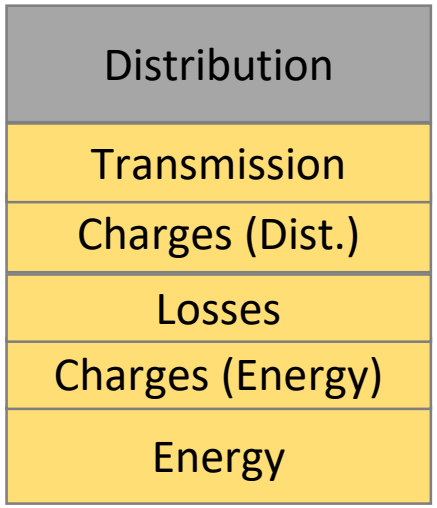
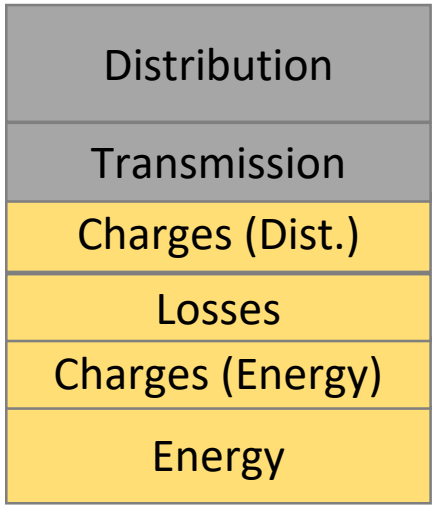
Net-metering change in 2022



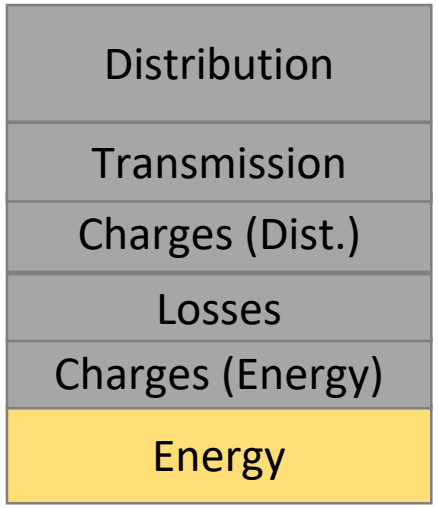
Two-part tariff in 2026



SPRING SCENARIO

Brazil chooses to remove tariff incentives to DG, but investment in MMGD remains attractive, which guarantees moderate growth over the decade.

Net-metering change in 2022



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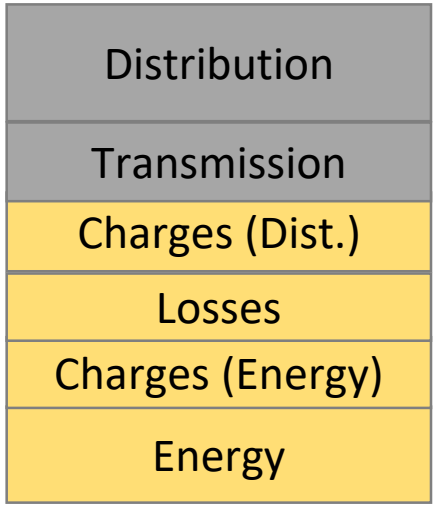

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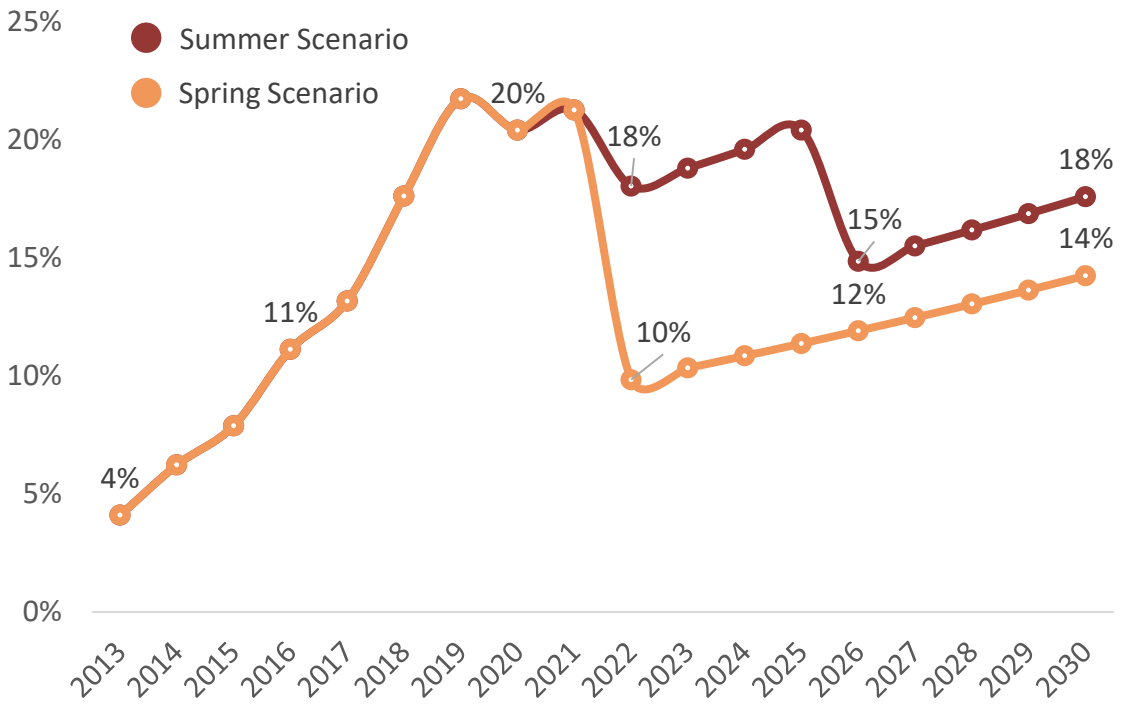
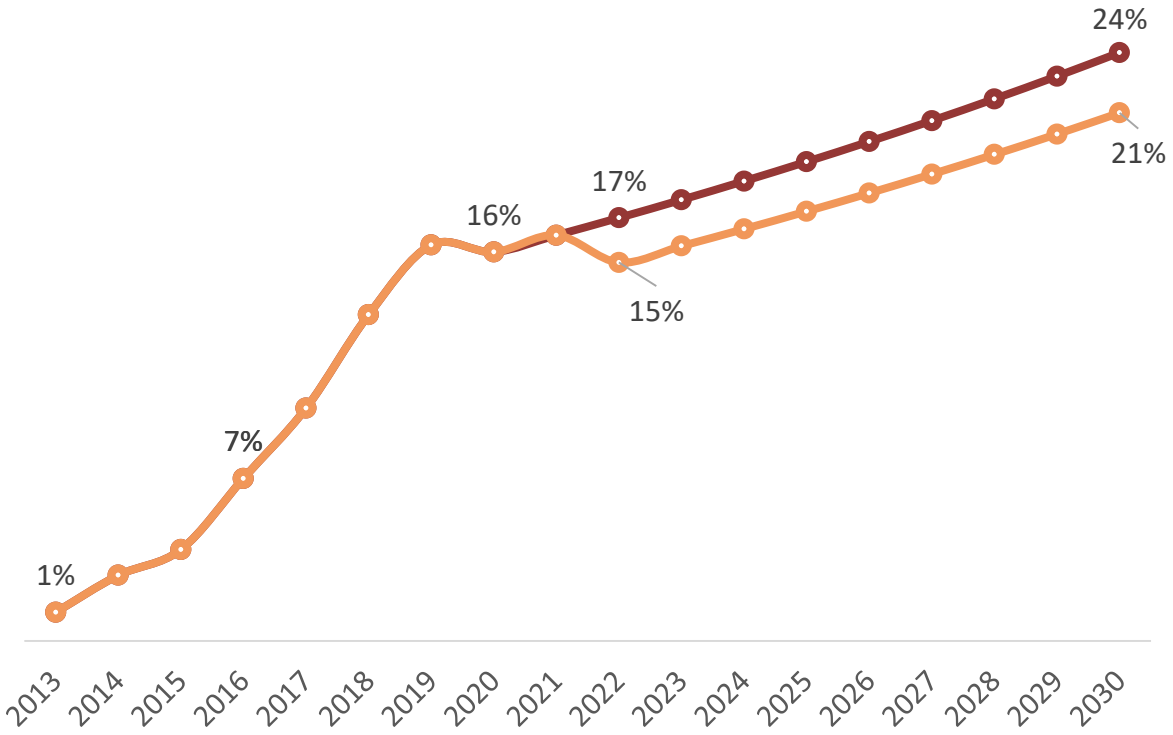
Even with the change in the rules, the investments will remain attractive

Average IRR for a residential rooftop solar project



Average IRR for a commercial (high voltage) rooftop solar project



Note: all cases assume 100% equity in the investments.

High voltage customers already pay a two-part tariff. Thus, they will not be affected by that change.

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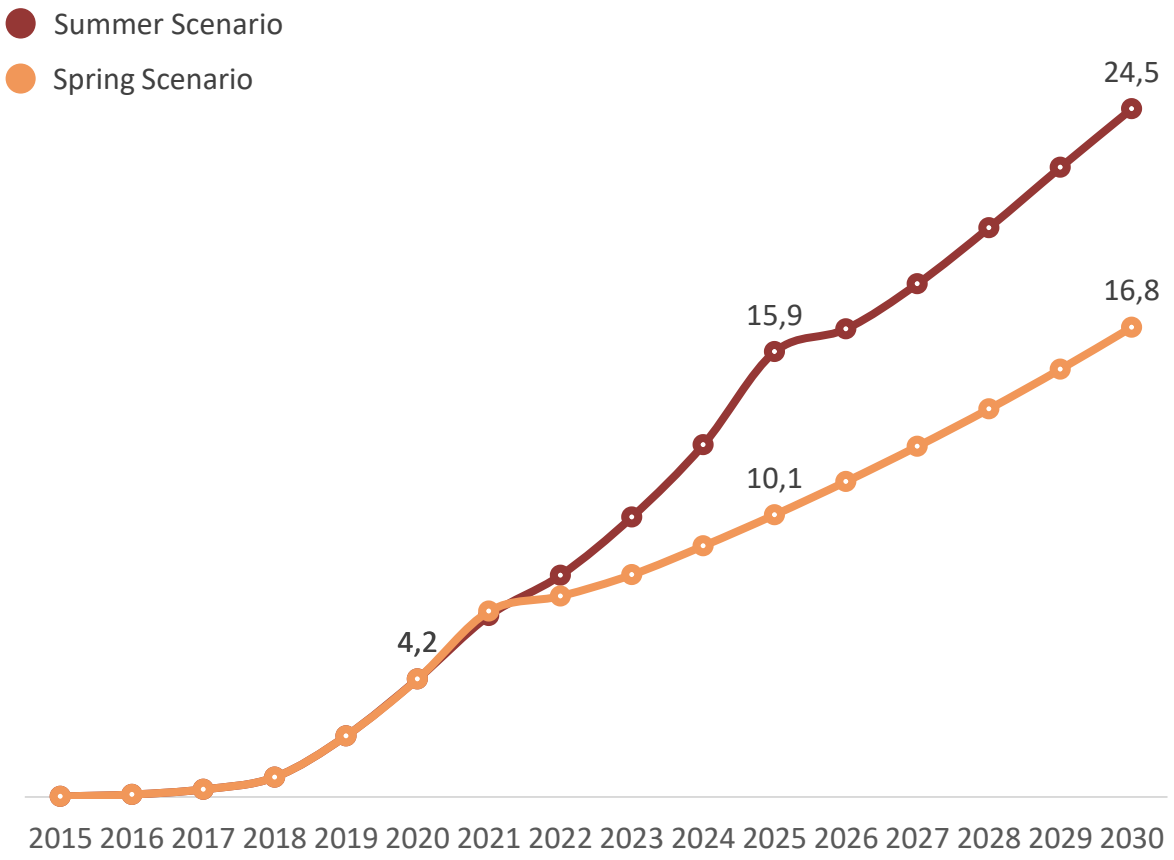
The distributed generation market will continue to flourish in Brazil

Projection of DG total installed capacity (GW)

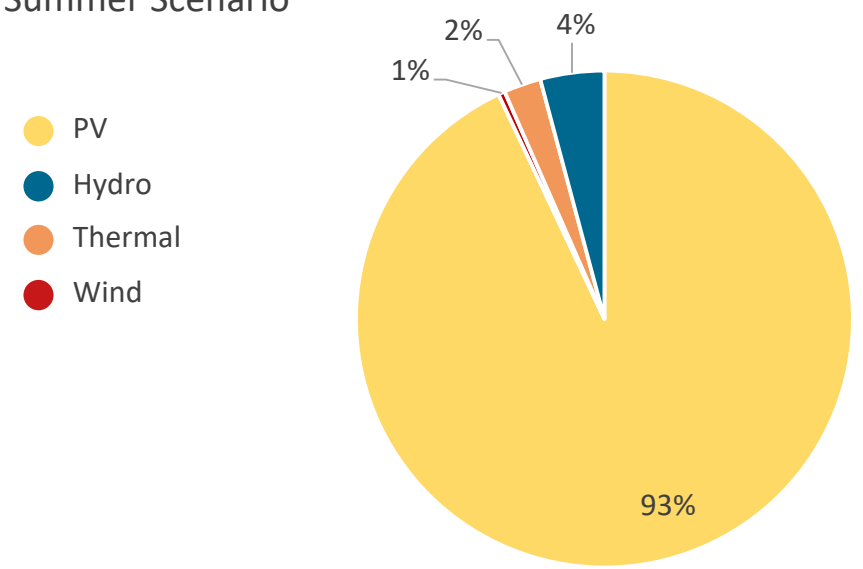


Summary of investments and adoption for each scenario

	Summer Scenario	Spring Scenario
Customers with DG in 2030	3 millions	2 millions
Investments until 2030	R$ 92 billions	R$ 58 billions

Projection of Total Installed Capacity by Source in 2030 (%)

Summer Scenario



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Summary

1. Distributed Generation is already a big market in Brazil.
2. However, there are some uncertainties for the coming years.
3. Even with the changes in the rules, the distributed generation market will continue to grow in Brazil.

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