

# COVID-19 OUTLOOK BRAZIL

Impacts on energy markets in Brazil

January – June 2020

MINISTÉRIO DE  
MINAS E ENERGIA



PÁTRIA AMADA  
**BRASIL**  
GOVERNO FEDERAL



Empresa de Pesquisa Energética



**Here, you will  
find:**

**1**

**Main energy  
figures for  
2019 in Brazil**

**2**

**Covid-19  
impacts in the  
first half of  
2020**



# 2019: energy in numbers

Progress of total primary energy  
supply

Brazilian Energy Balance

Energy consumption by sector

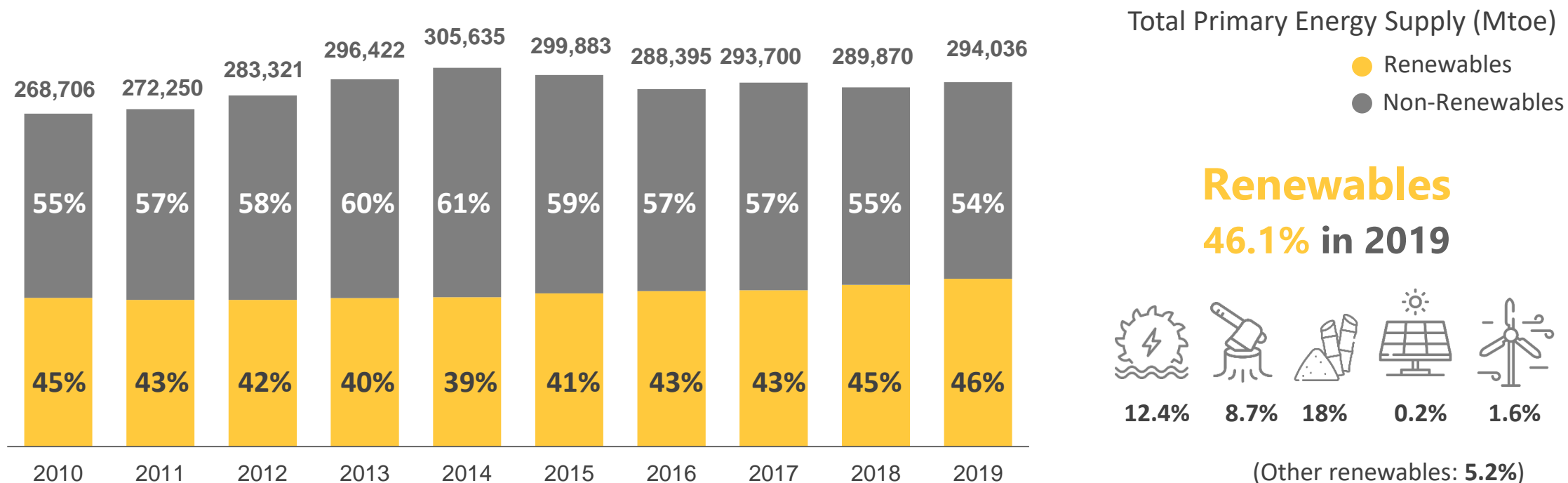
Domestic electricity supply



# Progress of total primary energy supply



The 2015 and 2016 economic crisis kept the total primary energy supply below the pre-crisis period until 2019, but the share of renewables has been recovering...



There was a reduction in the share of renewables in the energy mix between 2011 and 2014 due to the drop of the hydraulic energy supply. From 2015, with economic stagnation and the consequent small variation in the total primary energy supply, associated with the expansion of sugarcane products, wind and biodiesel, renewables sources resume their growth, reaching 46.1% in 2019.

# Brazilian Energy Balance in 2019



● RENEWABLES ► 46.1%

● NON-RENEWABLES ► 53.9%



Sugarcane  
Biomass  
18.0%



Hydraulic<sup>1</sup>  
12.4%



Firewood and  
Charcoal  
8.7%



Other renewables  
7.0%



Oil and  
its Products  
34.4%



Natural  
Gas  
12.2%



Coal  
5.3%



Uranium  
1.4%



Other non-  
renewables  
0.6%

# Energy consumption by sector in 2019

**2019**

**259.4 M<sub>toe</sub>**

Transport

**32.7%**



Industries

**30.4%**



Energy Sector

**11.2%**



Non-Energy Use

**5.5%**



Energy Use

**94.5%**

Households

**10.3%**



Services

**5.1%**



Agriculture  
and Livestock

**4.9%**



Industrial production and cargo / passenger transport account for approximately 63% of the country's energy consumption

# Domestic electricity supply in 2019



**2019**

**651.3 TWh**

Hydropower

**64.9%**



Wind Power

**8.6%**



Biomass

**8.4%**



Solar PV

**1.0%**



Nuclear

**2.5%**



Natural Gas

**9.3%**



Coal

**3.3%**



Oil

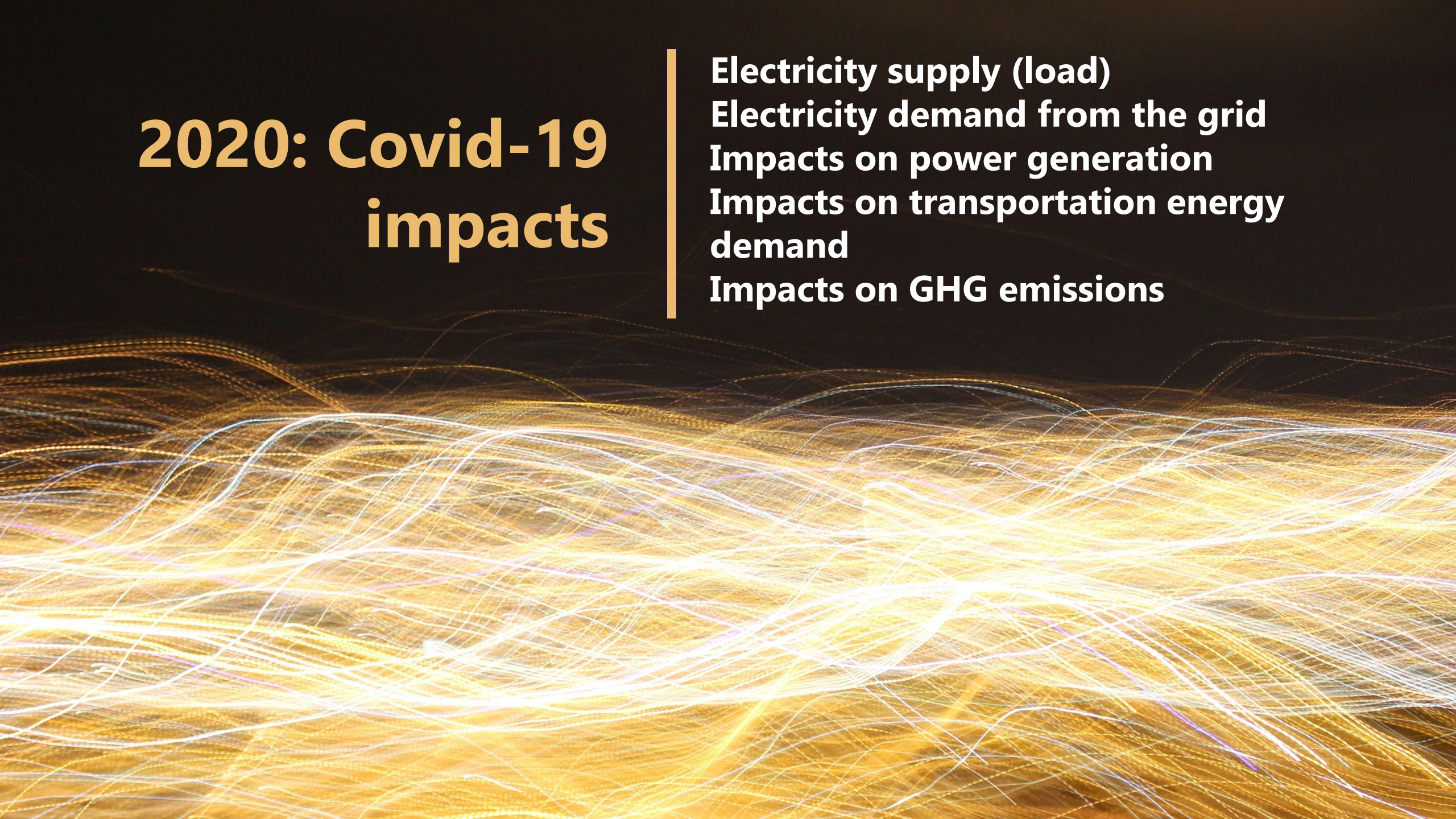
**2.0%**



In 2019, more than 85% of the electricity supply was provided from clean energy sources (non-emitting greenhouse gases), including renewable and nuclear.



# **2020: Covid-19 impacts**



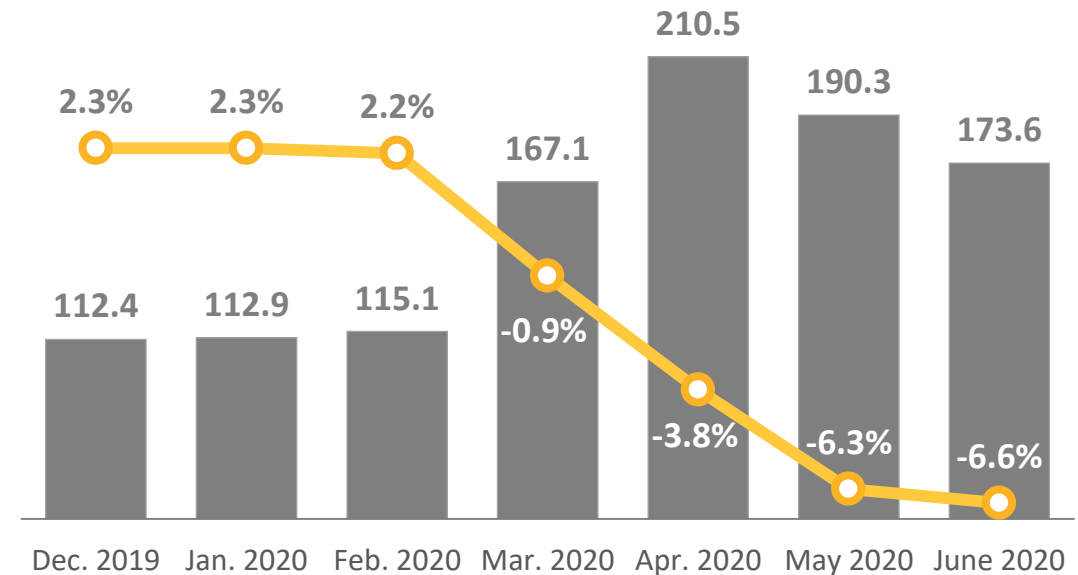
**Electricity supply (load)  
Electricity demand from the grid  
Impacts on power generation  
Impacts on transportation energy  
demand  
Impacts on GHG emissions**



- The Covid-19 pandemic caused a profound reversal in the economic scenario;
- Social isolation measures to combat the pandemic have caused severe impacts on economic activity in several countries;
- Mitigation efforts around the world, with stimulus packages of US billions, have not prevented intense declines in China's, the US's and the EU's GDP in the 1st quarter of 2020;
- The risk of a new wave of the disease with yet another phase of isolation measures ("two-wave crisis") makes it difficult to resume economic activity, with the return to "normality" linked to the availability of a vaccine.

## GDP 2020 (Focus) x Uncertainty (FGV) projections

Sources: BCB and FGV



● GDP 2020 median projections (Focus)

● The Brazilian Economy Uncertainty Index (IIE-Br)

Note: Focus Readout projections on the last day of each month

**The first half of 2020 was marked by the rise of uncertainty and continuous revisions in economic projections, with no clear perspective about the depth and length of the installed health, social and economic crises.**

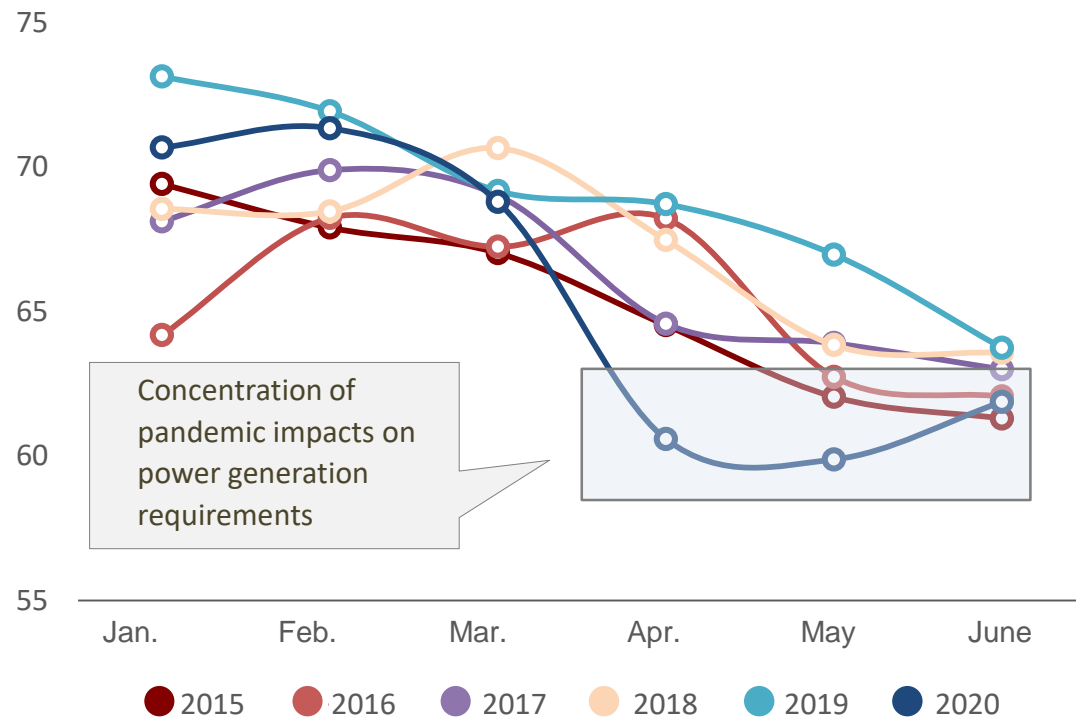


# Jan-Jun 2020 | Impacts on electricity supply (load)

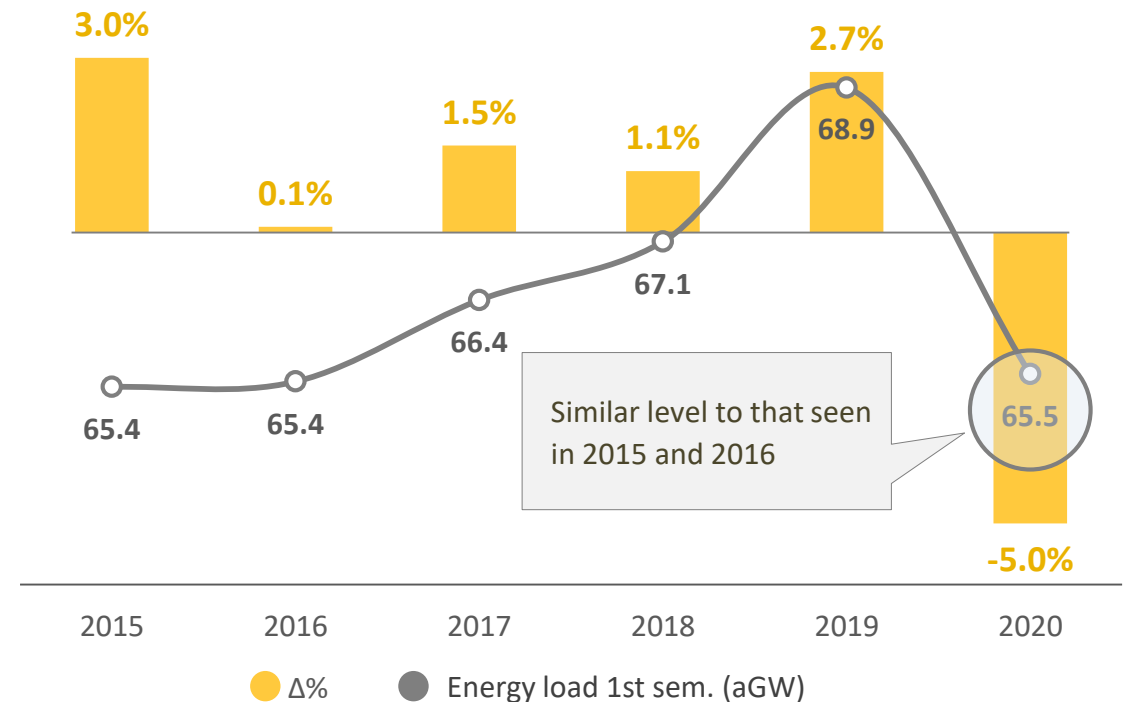


## SIN. Monthly energy load in the 1<sup>st</sup> semester (aGW)

Source: ONS. Prepared by EPE.



## SIN. Energy load during the 1<sup>st</sup> semester



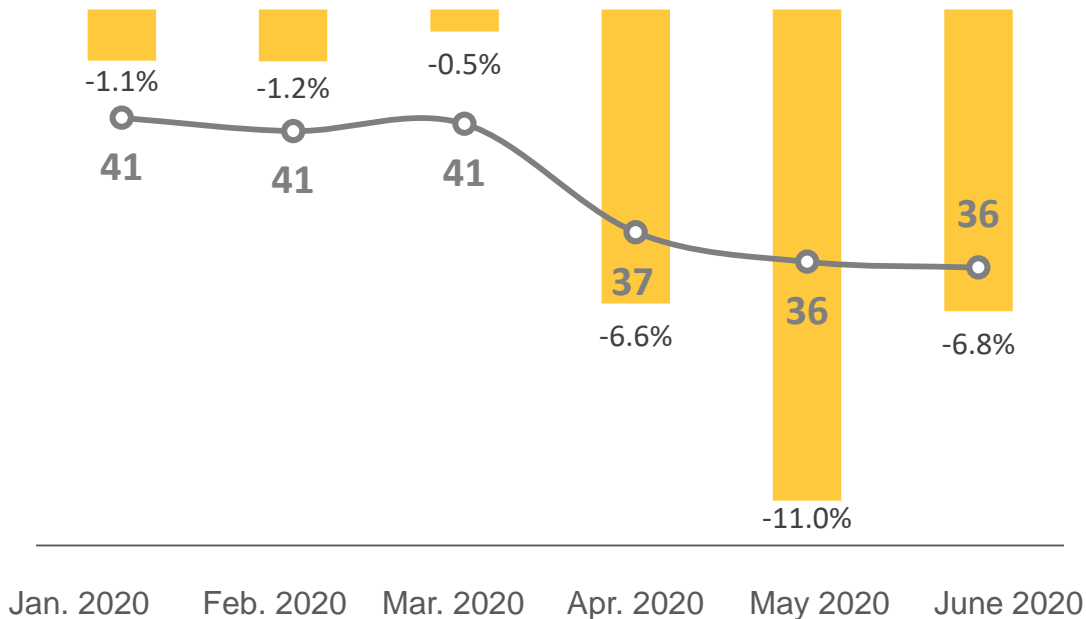
The Covid-19 pandemic and its resulting measures of social isolation have generated negative impacts on the energy load, especially since April.



## Brazil. Monthly grid consumption (TWh and %)

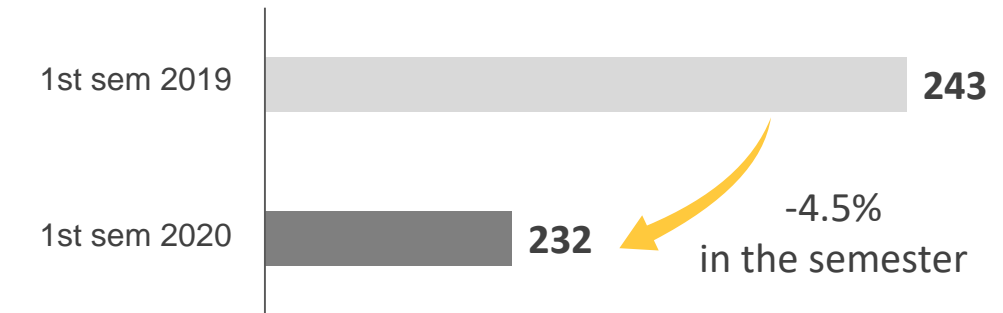
<sup>1</sup> Percentage changes compared to 2019

<sup>2</sup> Estimated values for June

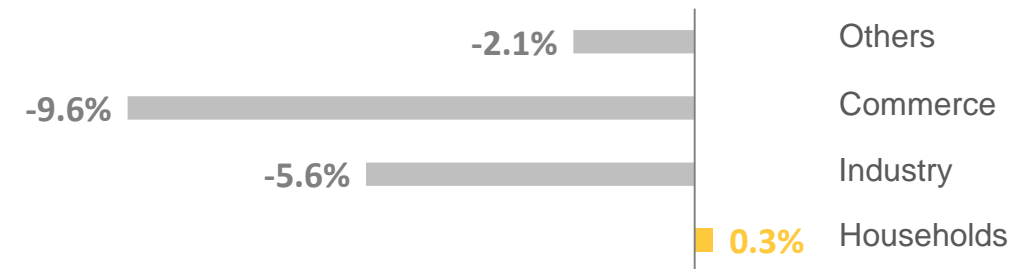


## Brazil. Grid consumption in the 1<sup>st</sup> semester (TWh)

(preliminary results)



## Brazil. Grid consumption by class (January-May)



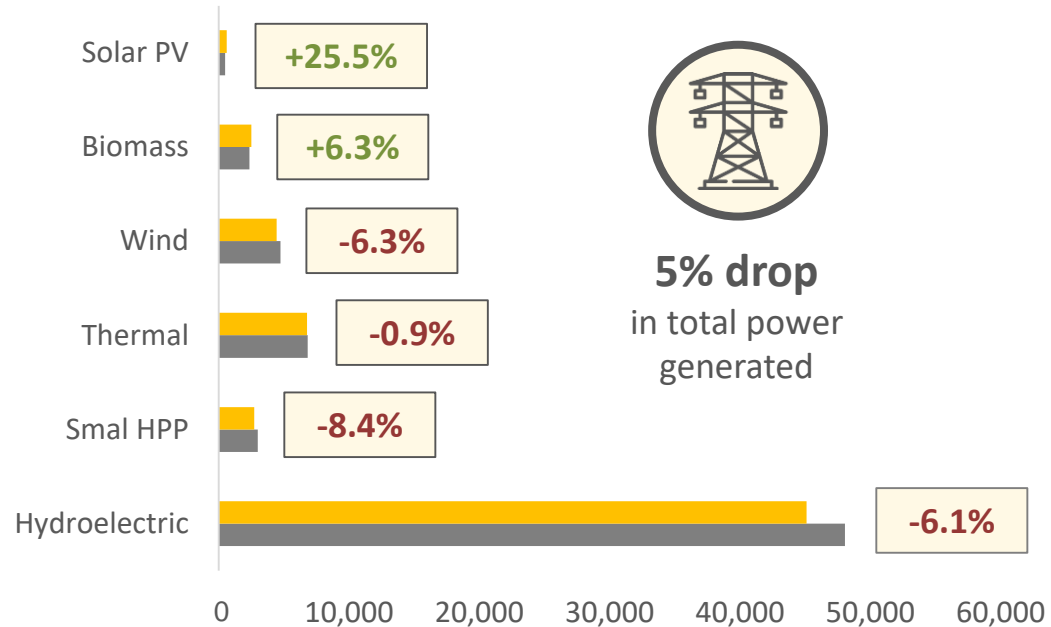
The commercial and industrial classes were the most impacted by the Covid-19 pandemic. On the other hand, the residential class experienced a positive impact due to confinement.



## Power generation in the 1<sup>st</sup> semesters of 2019 and 2020 (aMW)

Source: CCEE, 2020

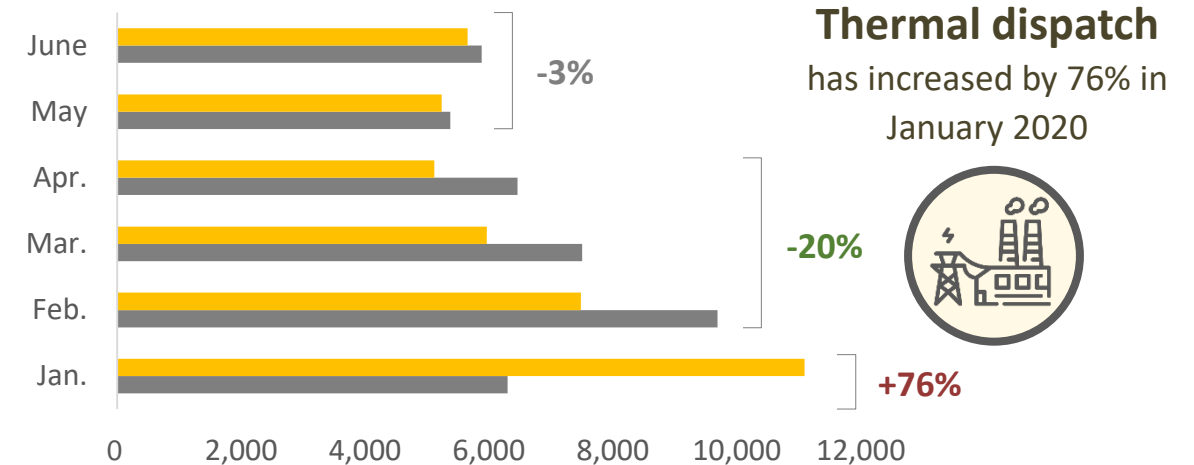
● 2020 ● 2019



## Thermal power generation in the 1<sup>st</sup> semesters of 2019 and 2020 (aMW)

Source: CCEE, 2020

● 2020 ● 2019



## RENEWABLE SOURCES ARE DOMINATED BY RESOURCES:

- Solar PV – +800 MW installed at [new power plants](#)
- Wind power – winds well [below average](#) in the **Northeast (1<sup>st</sup> quarter)**
- Small HPPs – adverse hydrology in the **South**

Despite the significant load reduction, generation by source is strongly influenced by the availability of energy resources, given that the Brazilian electricity mix is predominantly renewable. Adverse hydrology led to high thermal dispatch in January 2020.

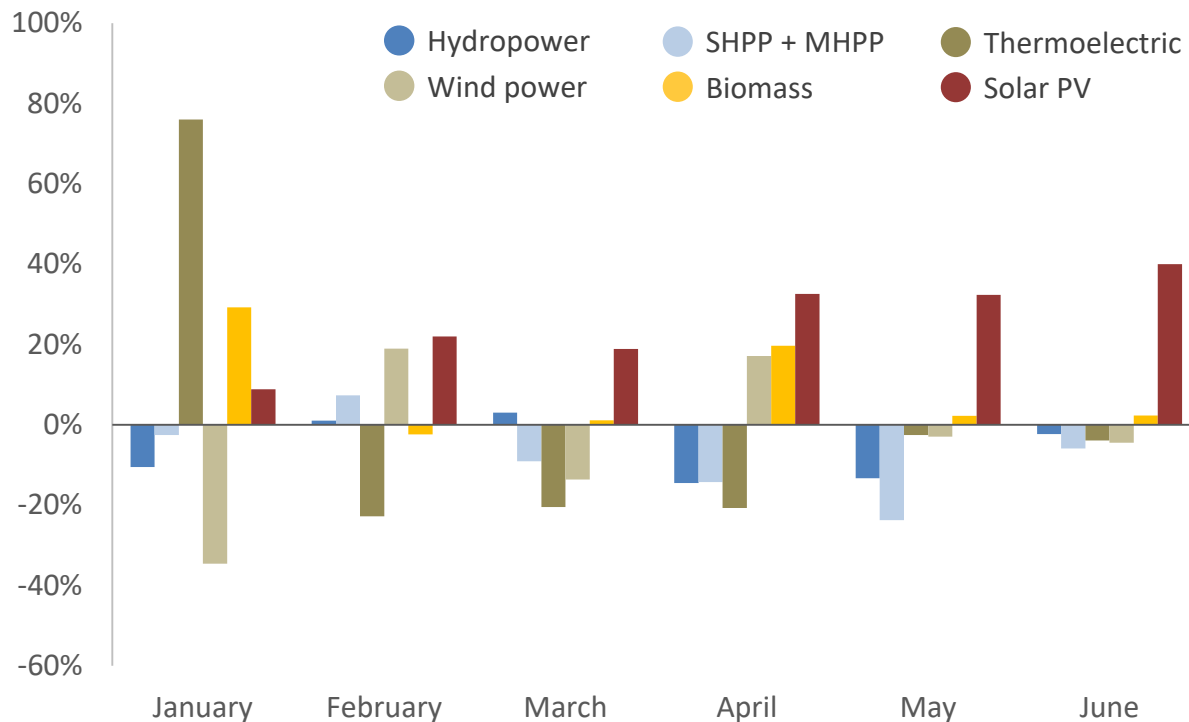


# Impacts on power generation



## Power generation variation in the 1<sup>st</sup> semesters of 2019 and 2020 (%)

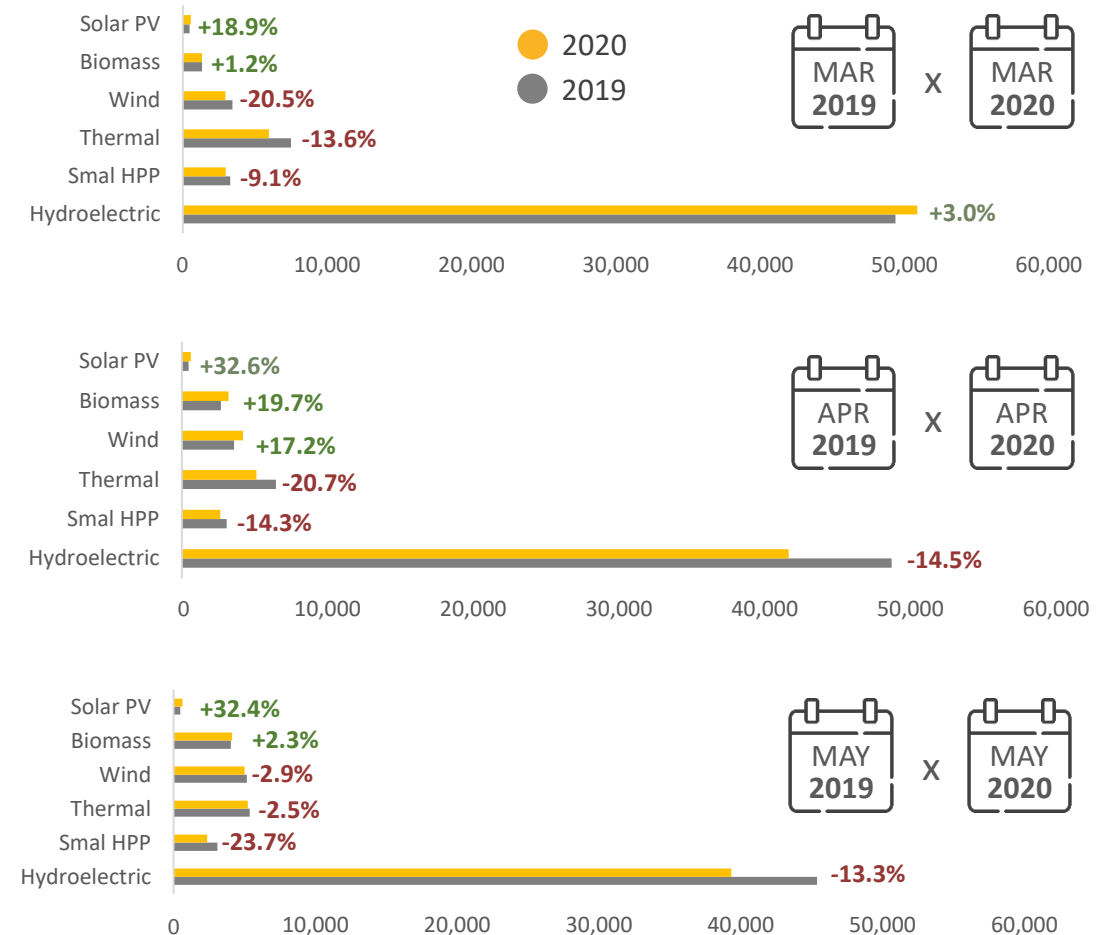
Source: CCEE, 2020



**Significant reductions in thermal (March and April) and hydroelectric (April and May) power generation, influenced by reduced demand.**

## Power generation comparison (March, April and May) 2019 and 2020 (%)

Source: CCEE, 2020

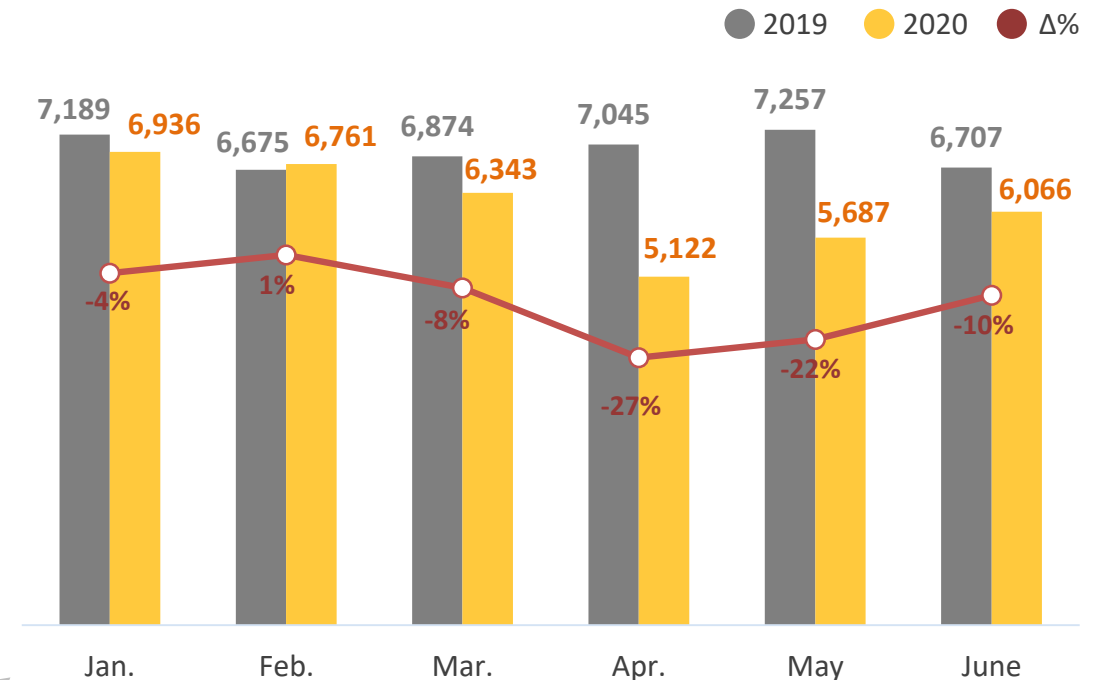




- The most affected energy sources were, respectively, Aviation Kerosene, CNG and hydrous ethanol.
- Covid-19 outbreaks in São Paulo and Rio de Janeiro were particularly severe, resulting in restrictions on mobility, which reflected particularly on the demands for CNG and hydrous ethanol.
- Individual transport was severely affected with restrictions on mobility, but is starting to recover due to the gradual reopening of cities and amid fears of contamination in public transport.
- At the beginning of the pandemic, cargo transportation was affected by restrictions on vehicle circulation and a drop in domestic demand. However, the increase in exports, the consumption induced by income distribution programs and the spread of digital purchases have made diesel demand recover.

## Energy demand in transportation sector (ktoe)

Sources: Prepared by EPE, from ANP, Mapa and MME data



\* June CNG demand was estimated.

**The gradual resumption of circulation allowed the partial recovery of energy demand in the transportation sector.**  
**The need for goods circulation stimulated a faster recovery of cargo transport.**

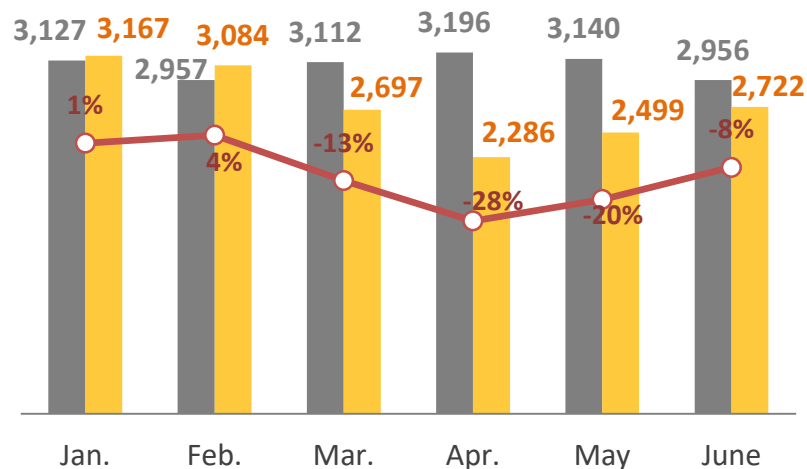


- Energy consumption in individual passenger transport was largely impacted by traffic restrictions and reduced travel to work.
- The wide range of products and services available on digital platforms has reduced consumer travel and altered the logistics required to access them.
- Demands for CNG and hydrous ethanol were greatly influenced by the situation in Rio de Janeiro and São Paulo, locations highly impacted by Covid-19 and the need for less social interaction.
- In the sugar-energy sector, there was an increase in the share of sugar in the production mix, in order to reduce the sector economic losses with the retraction in the demand for ethanol.

## "C" Gasoline demand (10<sup>3</sup> m<sup>3</sup>)

Source: Prepared by EPE, from ANP data

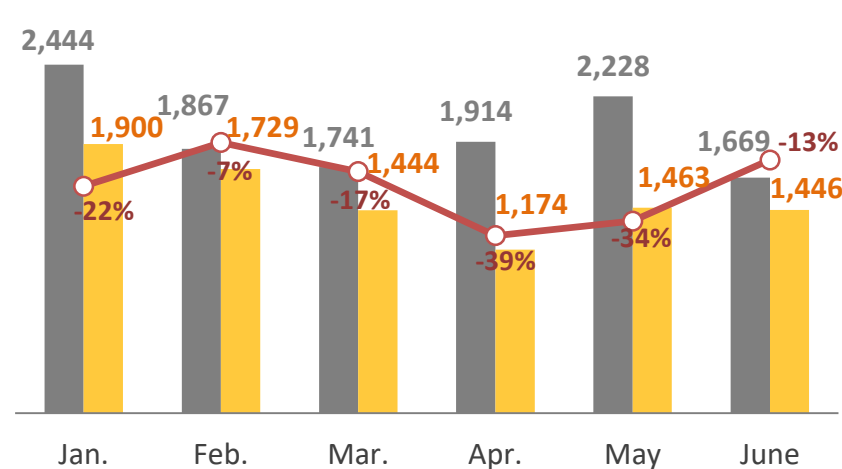
● 2019 ● 2020 ● Δ%



## Hydrous ethanol demand (10<sup>3</sup> m<sup>3</sup>)

Source: Prepared by EPE, from Mapa data

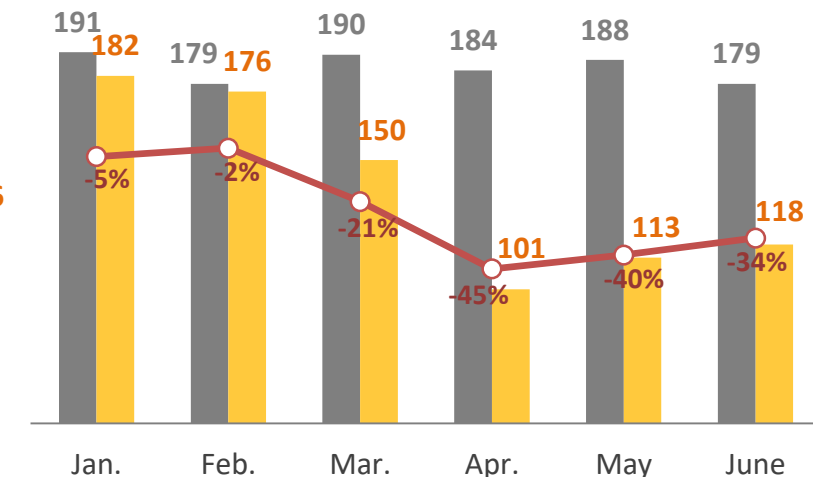
● 2019 ● 2020 ● Δ%



## CNG demand<sup>1</sup> (10<sup>6</sup> m<sup>3</sup>)

Source: Prepared by EPE, from MME data

● 2019 ● 2020 ● Δ%



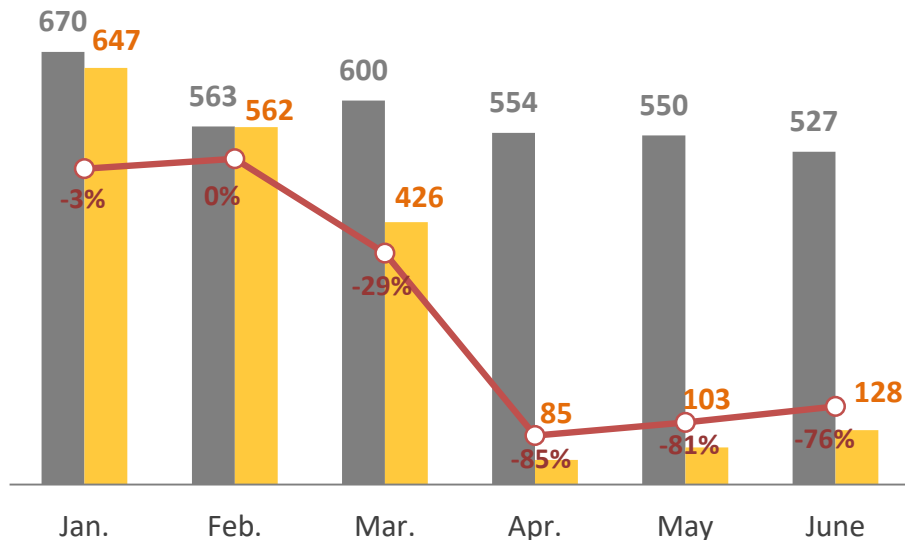
<sup>1</sup>June CNG demand was estimated.



- Aviation kerosene for international flights suffered the most significant drop due to the closure of borders;
- Less relevant commercial routes were interrupted, and the most relevant routes were maintained due to National Civil Aviation Agency requirements;
- Air cargo transportation partially recovered with the import of PPE's and inputs for laboratory tests, in addition to the resumption of consumption.
- Agricultural and private aviation (aviation gasoline) were little affected when compared to commercial aviation;
- Reduction in aviation gasoline production and import of batches with different properties from those previously acquired, although in accordance with the quality requirements demanded by the National Agency of Petroleum, Natural Gas and Biofuels, caused temporary shortages of the product.

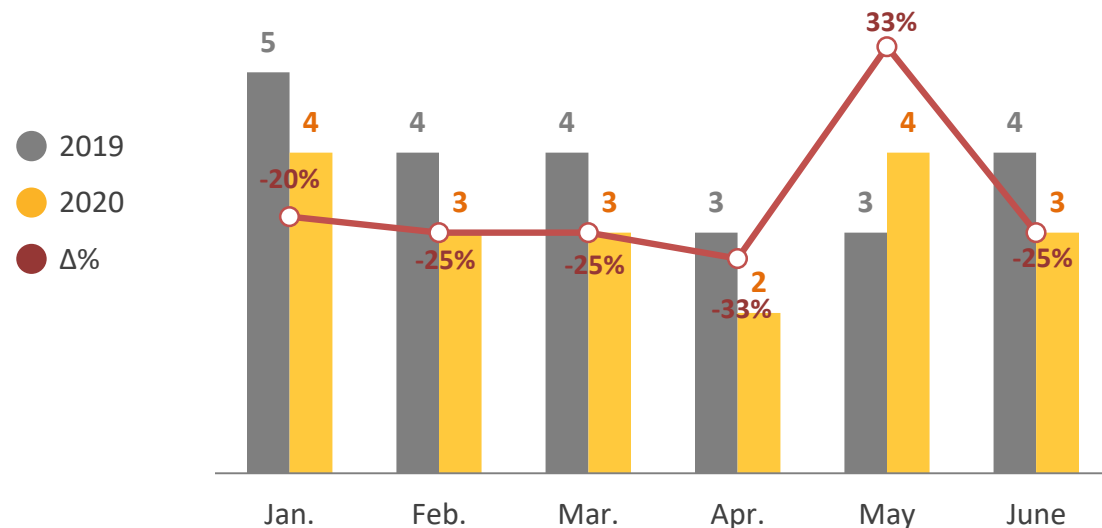
## Aviation kerosene demand (10<sup>3</sup> m<sup>3</sup>)

Source: Prepared by EPE, from ANP data



## Aviation gasoline demand (10<sup>3</sup> m<sup>3</sup>)

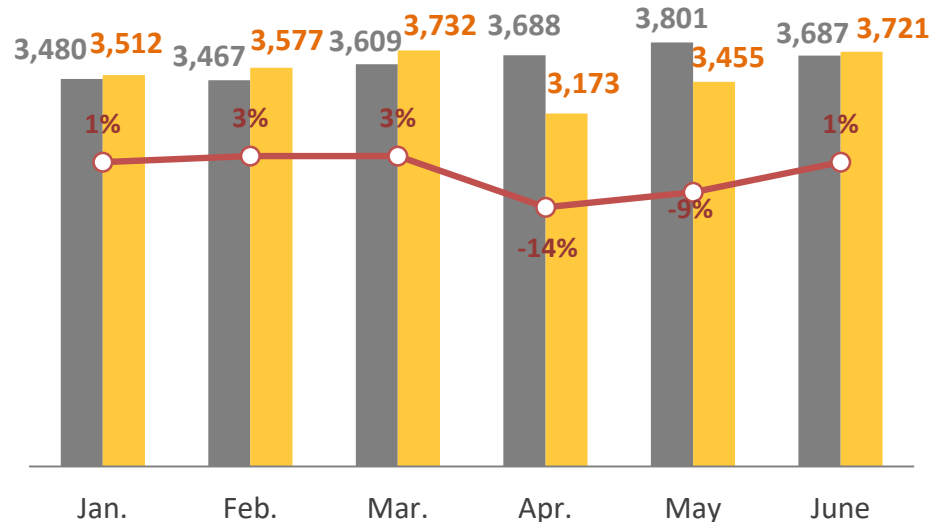
Source: Prepared by EPE, from ANP data



- Local restrictions on mobility hindered collective transportation of passengers and cargo in April, bringing down diesel consumption;
- The accelerated reversal of this decline was due to record exports, increased digital purchases, and increased consumption in response to income distribution programs;
- There was an increase in the blend of biodiesel in diesel from 11% to 12% in March;
- Diesel demand exceeded pre-crisis levels in June;
- Delay in soybean harvest affected fuel oil demand for shipping in February;
- Record grain production, China vs. USA trade dispute, a devalued exchange rate and higher sugar production spurred record commodity exports, reversing fuel oil demand from the shipping industry.

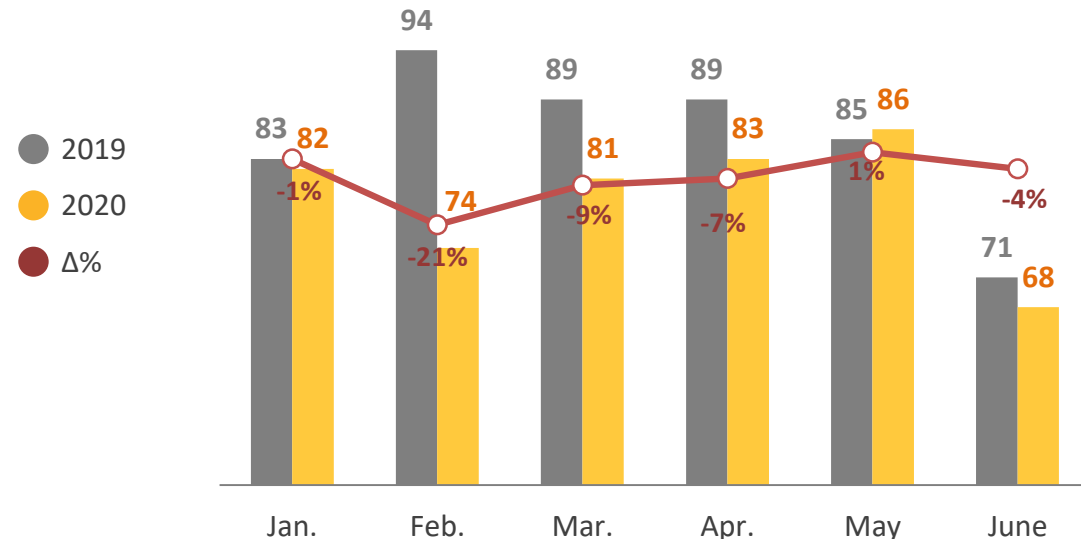
## Diesel demand – Transportation sector (10<sup>3</sup> m<sup>3</sup>)

Source: Prepared by EPE, from ANP data



## Fuel oil demand – Transportation sector (10<sup>3</sup> m<sup>3</sup>)

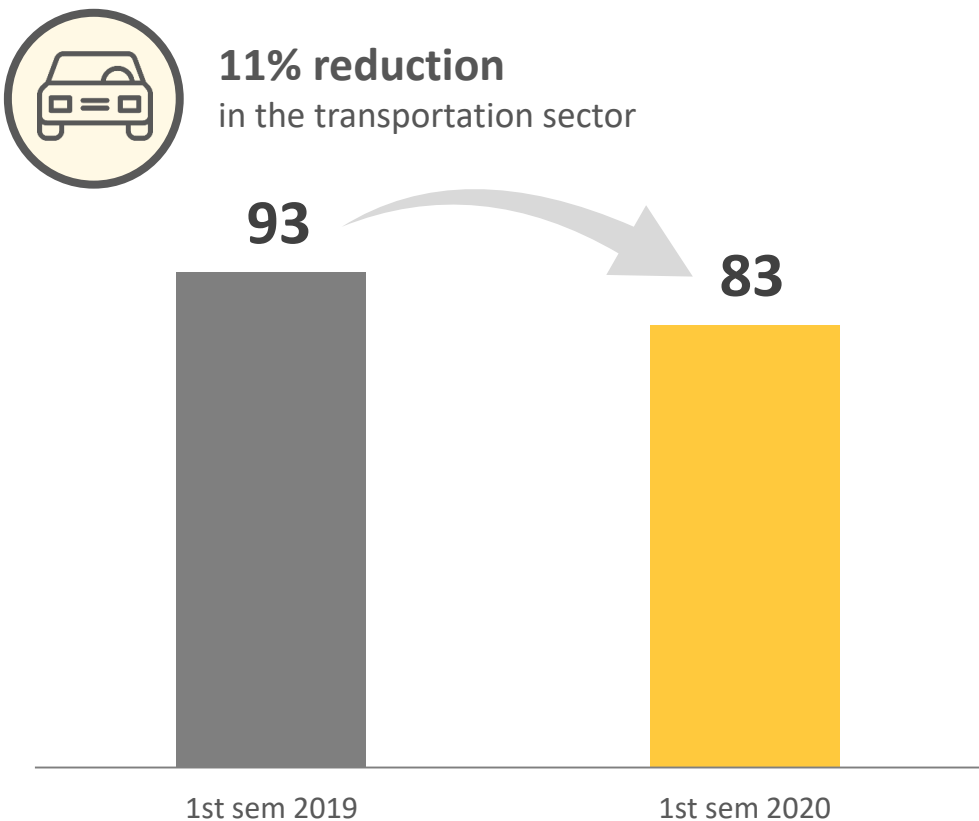
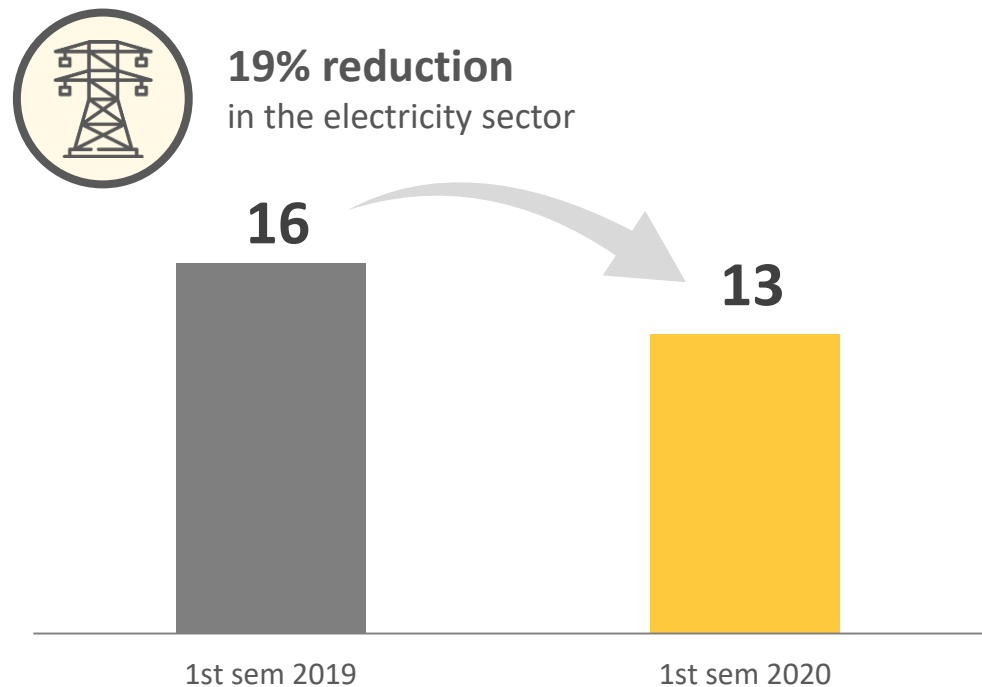
Source: Prepared by EPE, from ANP data





## Emissions in the 1<sup>st</sup> semesters of 2019 and 2020 (MtCO<sub>2</sub>)

Source: Prepared by EPE, with CCEE and ANP (2020) data

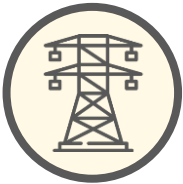


The Covid-19 pandemic caused a reduction in GHG emissions worldwide, however this effect is expected to be temporary and without significant consequences in the long run. In Brazil, the GHG emissions in the energy sector are already aligned with the country's commitments established in the Paris Agreement, even without this temporary reduction in emissions.

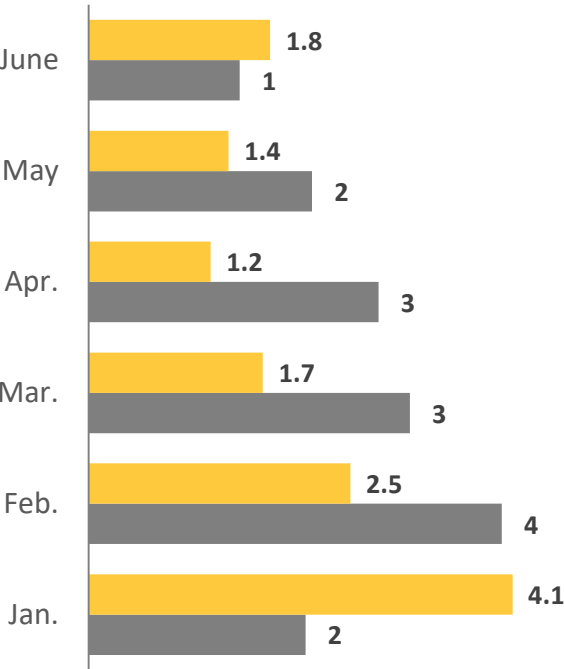
## Emissions in the 1st semesters of 2019 and 2020 (MtCO<sub>2</sub>)

Sources: CCEE and ANP, 2020

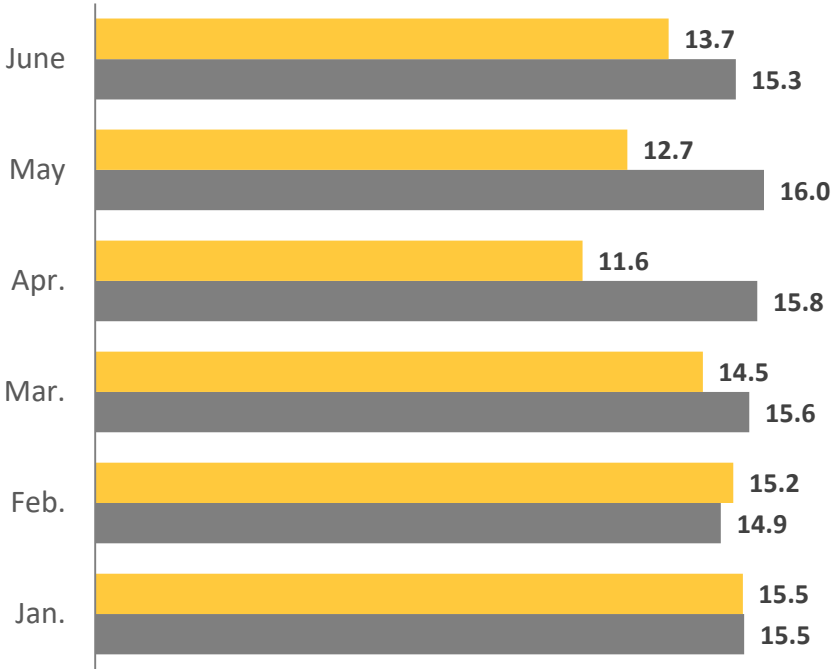
● 2020  
● 2019



**19% reduction  
in the electricity  
sector**



**11% reduction in  
the transportation  
sector**

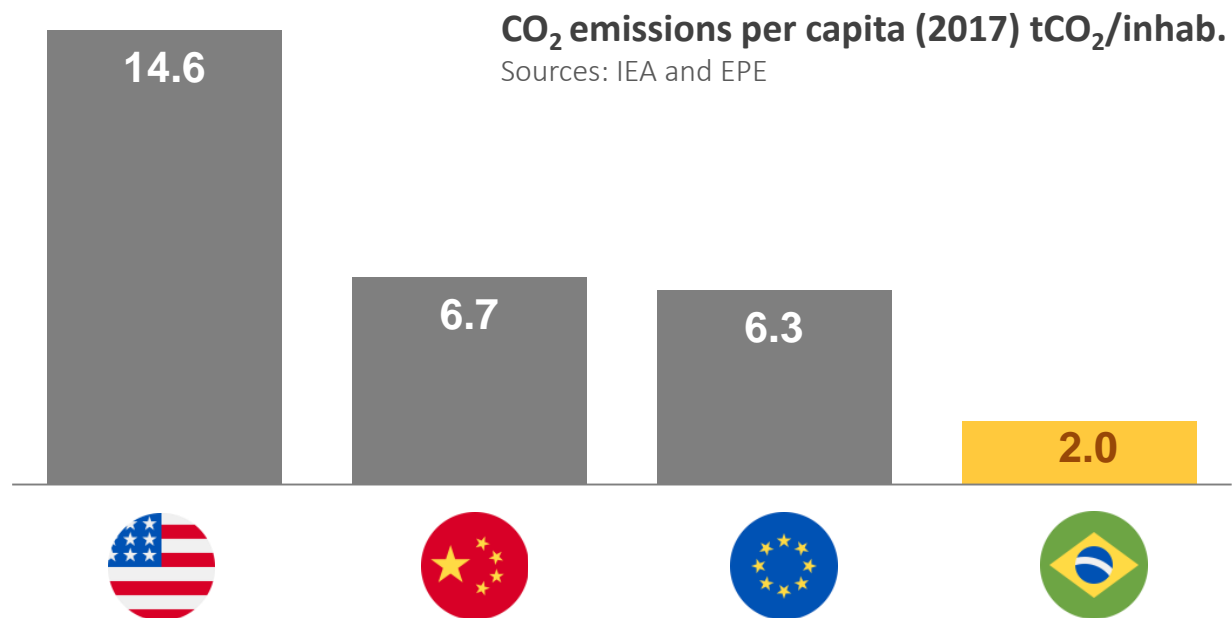


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# International comparison of CO<sub>2</sub> emissions per capita

In terms of CO<sub>2</sub> emissions per capita, Brazil is well positioned worldwide, with emission levels far below several countries...



On average, each Brazilian emits 1/7 of what an American emits and 1/3 of what a European or a Chinese emits in energy production and consumption.



# Recovery Trajectories

Read our  
[PDE 2030 Economy  
Report](#) (portuguese  
only)





Photo by [Maxime VALCARCE](#) on  
Unsplash

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