BEN

Summary Report 2026

Base year 2025

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Ministry of Mines and Energy – MME

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Contents

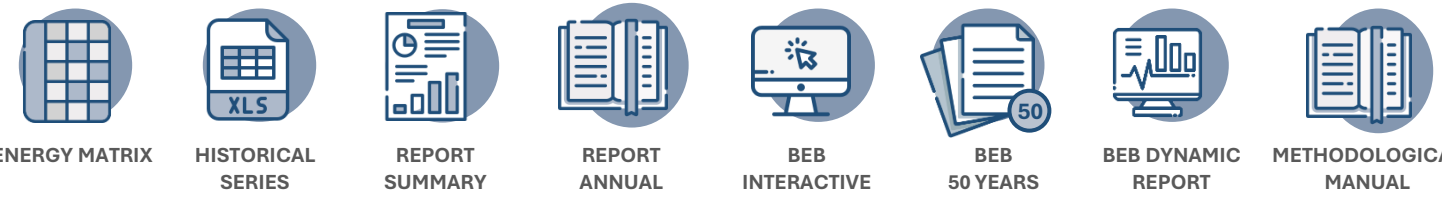
Public value

In compliance with its founding law, the Energy Research Office (EPE) prepares and publishes annually the Brazilian Energy Balance (BEB), continuing a tradition started by the Ministry of Mines and Energy. The BEB aims to present the accounting of energy supply and consumption in Brazil, covering activities of extraction of primary energy resources, their conversion into secondary forms, import and export, distribution, and final use of energy.

BEB is the result of extensive research, constituting a broad and systematized database, updated in annual cycles. Of utmost importance for studies related to national energy planning, BEB has also proven to be an important research tool for sectoral studies, as it presents reliable statistics, often revealing trends in energy supply and consumption. The document is considered a reference for the country's energy data. The Summary Report of the Brazilian Energy Balance 2026 – base year 2025 presents consolidated information on how much and how energy was used in Brazil in 2025.

The BEB product portfolio

Energy statistics monitoring tools



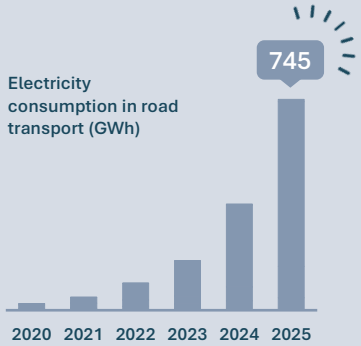
The National Energy Balance product portfolio originates from energy statistics and seeks to diversify the ways of consolidating, providing, and visualizing this data according to the different audiences interested in learning about the statistics. Recently this portfolio has gained new products, such as the Interactive Energy Balance, BEB 50 Years, and the BEB Dynamic Report. The Summary Report of the Brazilian Energy Balance is a traditional EPE publication now in a new format, more modern, didactic, and explanatory for Brazilian and international society.

What's new in the 2026 Summary Report?

See below the new features presented this year in the national energy matrix and in BEB summary report:

Introduction of electricity consumption in the road transport sector

The National Energy Balance accounted for electricity consumption in the road transport sector within the Brazilian energy matrix starting from the year 2020.



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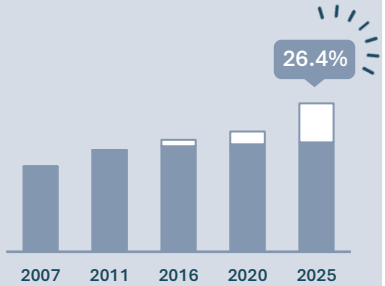
Evolution of the share of wind and solar sources in total electricity generation

Presentation of the evolution curve of the share of wind and solar sources in the Brazilian electricity matrix, indicating a 26.4% share for these sources in 2025.



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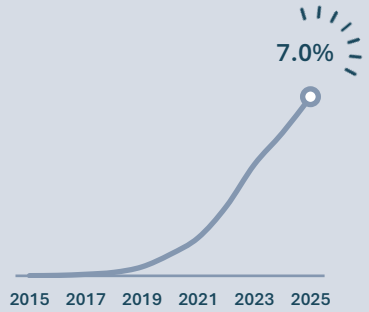
Share of micro and mini generation in total electricity generation

Presentation of the evolution curve of the share of distributed micro and mini generation in total electricity generation, indicating that this category reached 7.0% in 2025.



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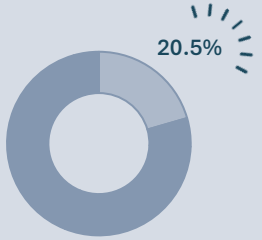
Share of the energy sector in total national emissions

Contextualization of energy sector emissions within total national emissions according to the National Inventory of Greenhouse Gas (GHG) Emissions, identifying that in 2022 this sector represented 20.5% of national net emissions.



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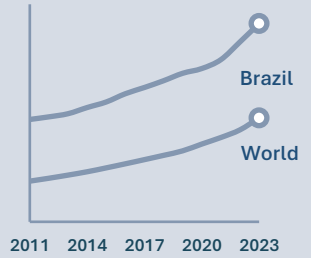
Indicators developed in partnership between EPE and IBGE for SDG 7: Clean and Affordable Energy

Presentation of Brazilian indicators of the Sustainable Development Goals (SDG 7) compared with selected countries and the World.



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Total Energy Supply

In 2025, domestic energy supply (total energy made available[2] in the country) reached 328.5 Mtoe, recording an increase of 1.9% compared to the previous year. The supply of renewable sources in the energy matrix featured a reduction in the share of hydropower, an increase in other renewables (such as black liquor and biodiesel), and growth in wind and photovoltaic solar generation. Non-renewable sources grew 3.0%, with natural gas being the most relevant, expanding by 9.5%.

These movements contributed to keeping the Brazilian energy matrix at a high level of renewability, much higher than that observed in the rest of the world and in OECD[1] countries.

Electricity Supply

In the case of electricity, the supply grew by 20.4 TWh (+2.7%) compared to 2024.

The main highlights were as follows:

- The share of renewables in the electricity matrix was 86.8% in 2025.
- Photovoltaic solar generation reached 88.1 TWh (centralized generation and Micro and Mini Distributed Generation - MMGD), growing 24.7%, and its installed capacity reached 64,793 MW, an expansion of 33.7% compared to the previous year.
- Hydroelectric generation decreased by 20.4 TWh, representing a 4.8% drop compared to 2024.
- Wind generation reached 116.5 TWh (8.2% growth) and its installed capacity reached 34,707 MW, an expansion of 17.5%.
- 12.3% increase in thermoelectric generation, totaling 169.9 TWh in 2025.
- In 2025, 38.9% of thermal generation came from biomass.

[1] Organisation for Economic Co-operation and Development
[2] Energy made available in the country includes the net balance of imports.

Final Consumption

Final consumption (energy and non-energy) grew 1.0% compared to the previous year.

Industry

The industrial sector showed an increase of 0.9 million toe. Among the sources that contributed to the increase, the highlights were electricity (+3.2%), natural gas (+7.4%), and black liquor (+6.3%). In 2025, the main reductions were in the use of sugarcane bagasse (-1.7%) and fuel oil (-41.2%), compared to 2024.

The main energy-intensive segments that showed growth were Non-ferrous and other metallurgy (+3.2%), Pulp and paper (+3.6%), and Cement (+2.0%).

Industry renewability was 65.1%.

Transport

Energy consumption in transport in 2025 showed an increase of 3.5% compared to 2024. The main highlights were the 4.3% increase in ethanol and 8.2% in biodiesel. The biodiesel movement was due to the increase in diesel oil consumption and the increase in its blend content with mineral diesel to 15% (B15) starting in August 2025. In the light vehicle market, gasoline C (automotive) showed growth of 6.8% compared to 2024.

In 2025, the transport sector showed 26.1% renewability.

This year, the National Energy Balance presents electricity consumption in the road sector for the years from 2020 to the base year 2025.

Final Consumption by source

Electricity

Final electricity consumption in the country grew 2.7% in 2025. The sectors that contributed most to this advance in absolute terms were Industrial, which grew 7.5 TWh (+3.2%), and Residential, which grew 5.0 TWh (+2.7%).

Ethanol

Final ethanol consumption in the country (m^3) recorded an increase of 3.6% compared to 2024 and reached approximately 38.5 million cubic meters in 2025.

Biodiesel

Final biodiesel consumption in the country (m^3) increased 9.5% in 2025. The mandatory blend percentage in petroleum-derived diesel was changed to 15% (by volume) starting in August 2025.

Emissions

In 2025, the total anthropogenic emissions associated with the Brazilian energy matrix reached 442.3 million tonnes of carbon dioxide equivalent (Mt CO_2 eq), with the largest share (220.8 Mt CO_2 eq) generated in the transport sector.

In terms of emissions per capita, each Brazilian, producing and consuming energy in 2025, emitted on average 2.1 t CO_2 eq.

According to the latest data released by the International Energy Agency (IEA) for 2023, each Brazilian emitted the equivalent of 15% of what a U.S. citizen emitted, 40% of what a European Union citizen emitted, and 26% of what a Chinese citizen emitted.

For each tonne of oil equivalent (toe) made available, Brazil emitted in 2023 the equivalent of 74% of the emissions of the European countries of the European Union, 66% of the emissions of the United States (USA), and 49% of the emissions of China.

The Brazilian electricity sector emitted, on average, only67.4kg CO_2 eq to produce 1 MWh, a very low index compared with OECD European countries, the United States (USA), and China.

The digital version of this document can be accessed by clicking **HERE**.

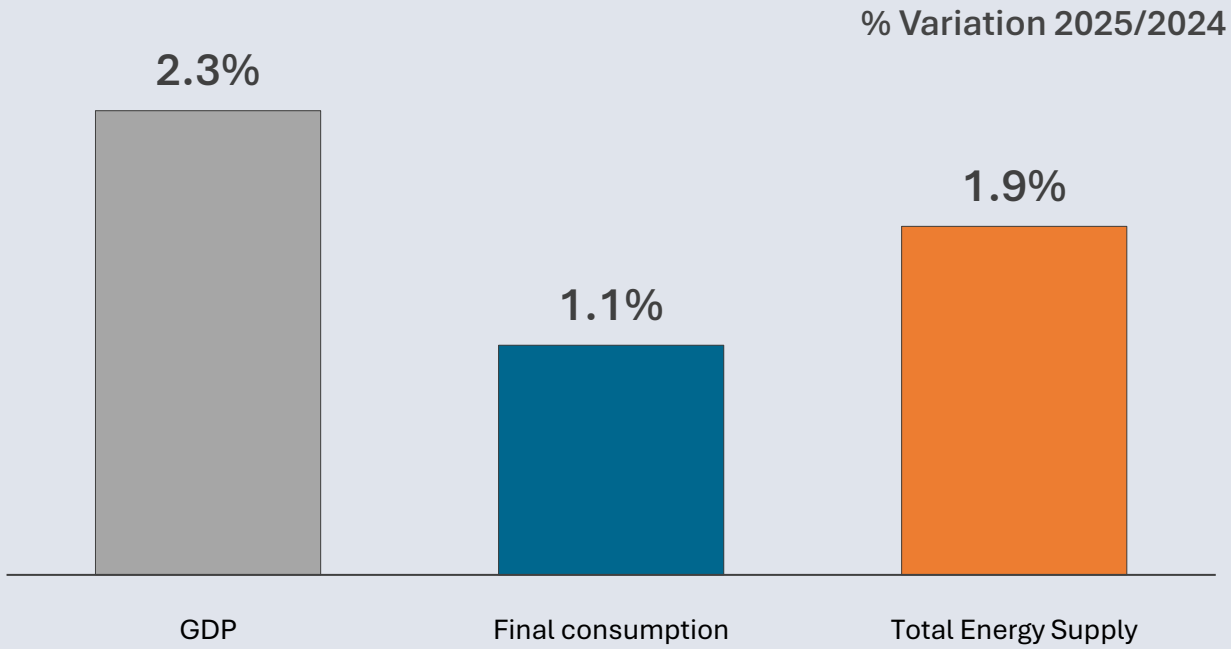
[1] Based on purchasing power parity

How much energy is used in Brazil?

The **Total Energy Supply (TES)** in Brazil recorded an advance of 1.7% in 2025 compared to the previous year, with highlights for natural gas, wind, and solar. The growth rates of TES and Final Energy Consumption were lower than the GDP growth rate, implying a reduction in the energy intensity of the Brazilian economy.

Values in 10^6 toe		2024	2025
Total energy supply	↑	322.4	328.5
Final Consumption	↑	288.4	291.7

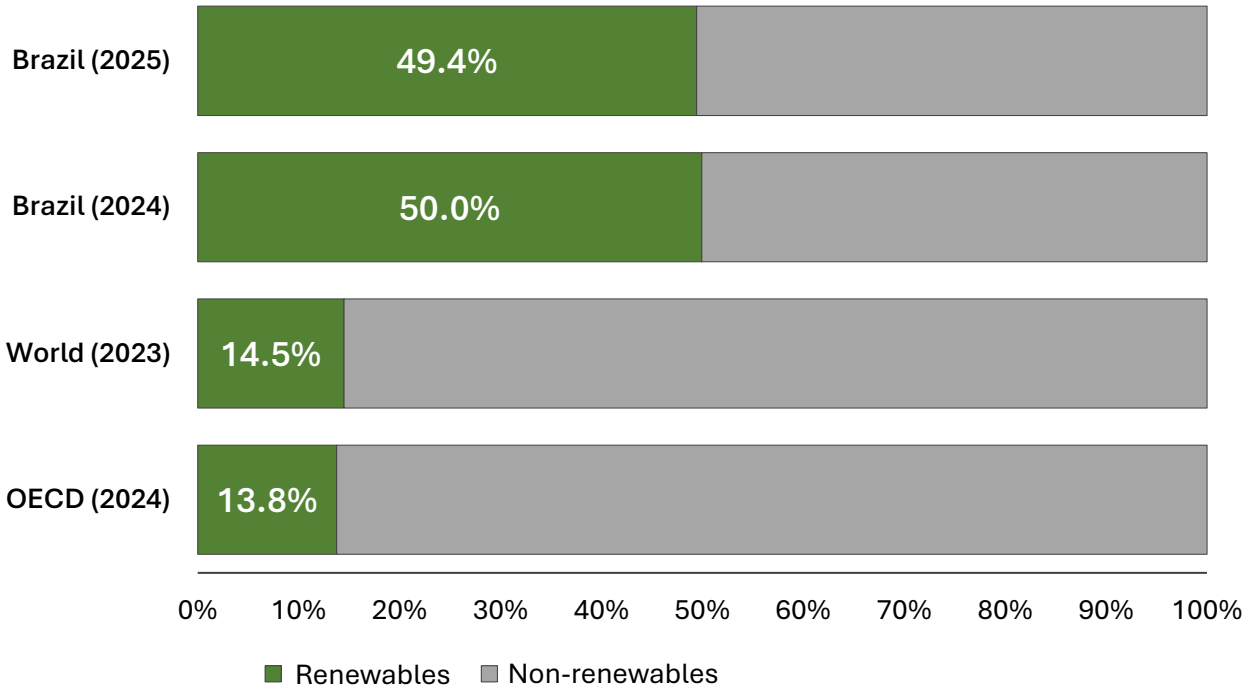
Energy Intensity toe/10^3 US$ [ppp2010]		2024	2025
TES/GDP	↓	0.097	0.096
Final Consumption/GDP	↓	0.086	0.085

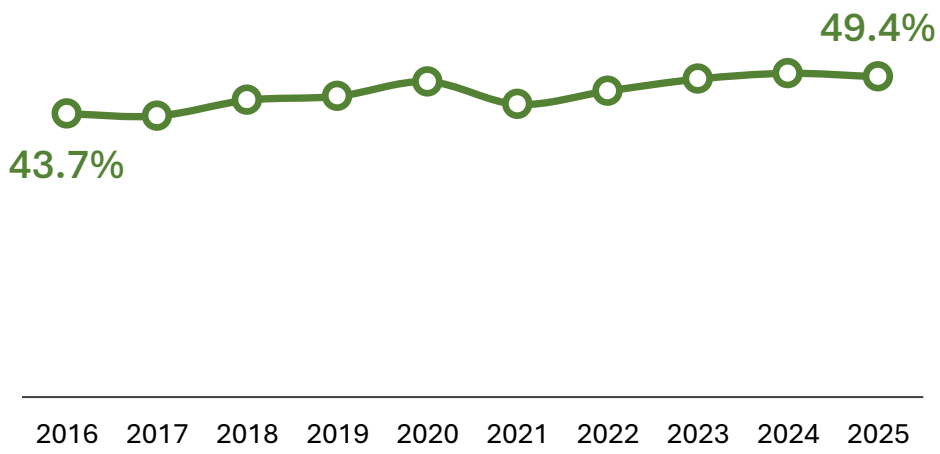


The **share of renewable sources in the energy mix**[1] was marked by the increase in total supply of wind and solar, associated with the decline of hydropower. On the non-renewables side, growth in natural gas is observed. Thus, the level close to 50% renewability[2] was maintained.

Share of renewables in TES

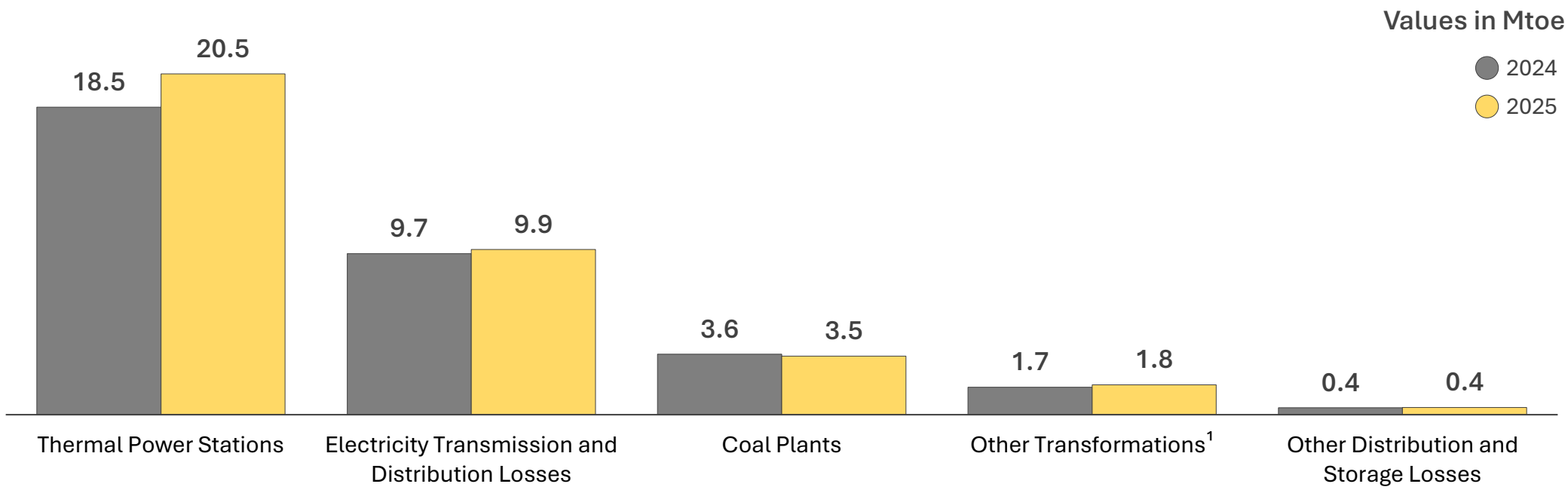
Source: International Energy Agency (IEA) and EPE for Brazil. Prepared by: EPE





[1] Renewability is calculated based on Total Energy Supply – TES
[2] The complete historical series of TES renewability can be found in Table 1.3.b (Chapter 1) of the historical series of the National Energy Balance, available by clicking HERE.

Losses by segment (values in Mtoe)



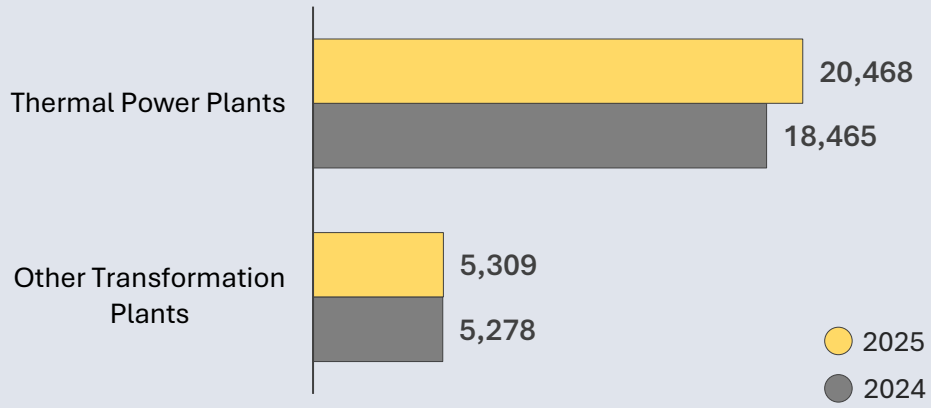
The main segments responsible for losses in the national energy matrix were: power plants, electricity transmission and distribution, and charcoal plants. Losses in Power Plants were higher in 2025, due to the increase in generation from thermal sources, such as natural gas and black liquor.

[1] Other transformations include charcoal plants, refineries and natural gas plants, coking plants, nuclear fuel cycle, distilleries, biodiesel, petrochemical effluents and reformers.

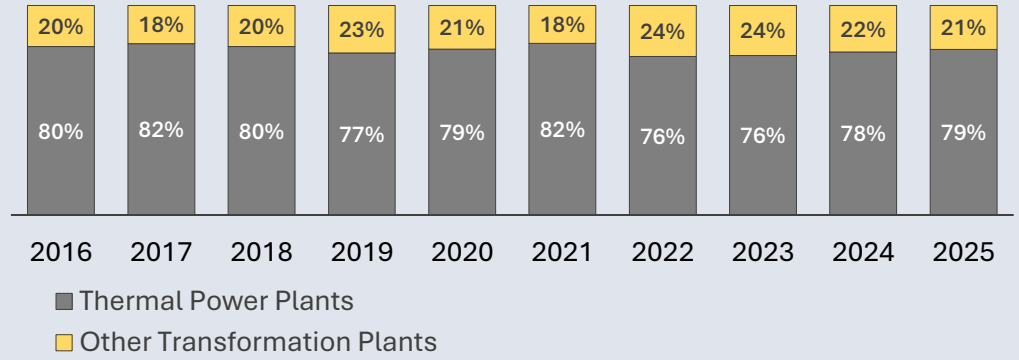
Losses in Transformation Centers

Losses by transformation center (10^3 toe)

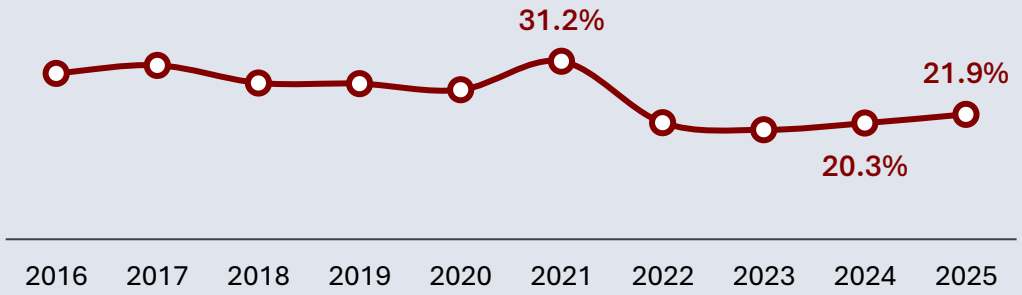
Source: EPE



Evolution of loss distribution



Share of thermal plants in generation



Thermal Power Plants[1] (including nuclear plants)

Concentrate all losses in power plants. Therefore, the greater the share of this type of plant in the generation matrix, the greater the losses associated with power plants.

Other Transformation Centers

Include oil refineries, natural gas plants, coking plants, nuclear fuel cycle, charcoal plants, distilleries, and other transformations.

[1] Thermal Power Plants include thermal plants using biomass, fossil fuels, industrial effluents, and the Angra I and II thermonuclear plants. More information can be found in Table I.2 of Annex I of the historical series of the National Energy Balance, available by clicking HERE.

What energy is used in Brazil?

Breakdown of Total Energy Supply (TES) 2025

↑ Indicates higher share compared to the previous year.

RENEWABLES ▶ 49.4%

Sugarcane Biomass

15.8%

Hydropower[1]

10.7%

Wind

↑ 3.0%

Firewood[2] and Charcoal

8.3%

Black liquor and Other renewables[3]

↑ 8.9%

Solar[4]

↑ 2.7%

NON-RENEWABLES ▶ 50.6%

Oil and oil products

33.7%

Natural Gas

↑ 10.3%

Coal

4.5%

Uranium

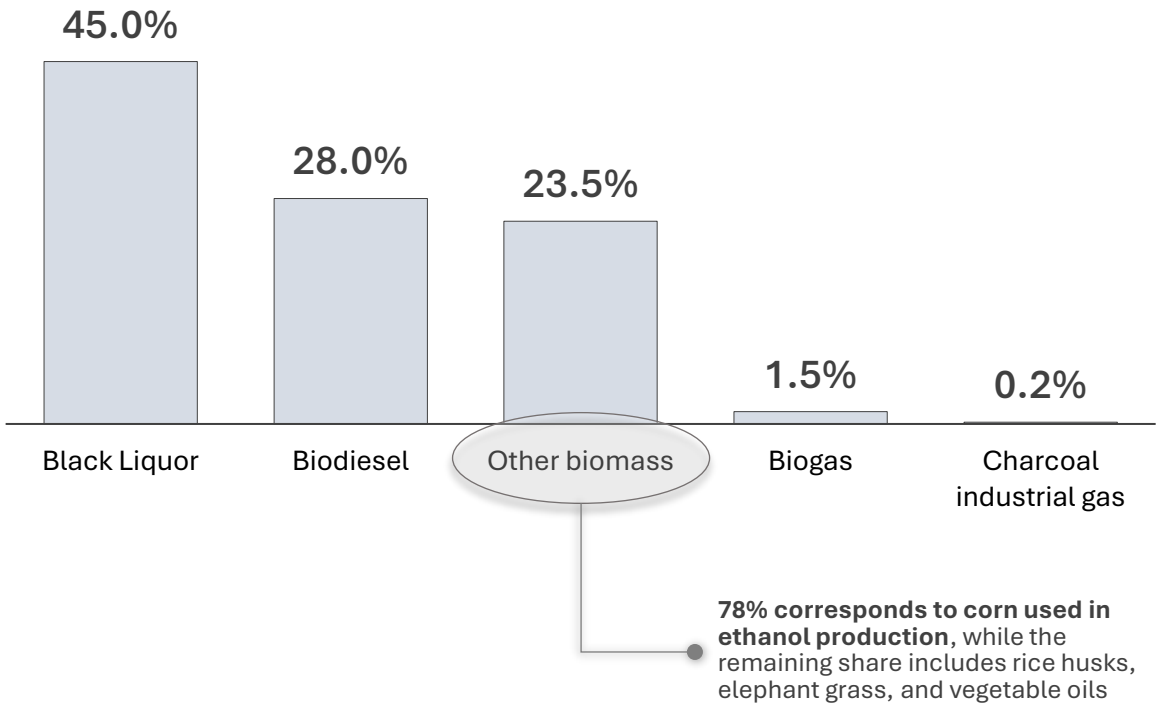
1.3%

Other non-renewables[5]

↑ 0.8%

[1] Includes electricity imports; [2] Includes wood chips; [3] Includes Black liquor, Biodiesel, Other biomass, biogas, and Industrial charcoal gas; [4] Includes Photovoltaic Solar (MMGD and centralized generation) and Solar termal sources; [5] Other non-renewables include natural gas liquids, blast furnace gas, steel mill gas, sulfur gas, and others.

The breakdown of supply of "Black liquor and Other renewables" is distributed across 5 categories of energy sources. Black liquor, biodiesel, and other biomass account for 98% of the category.

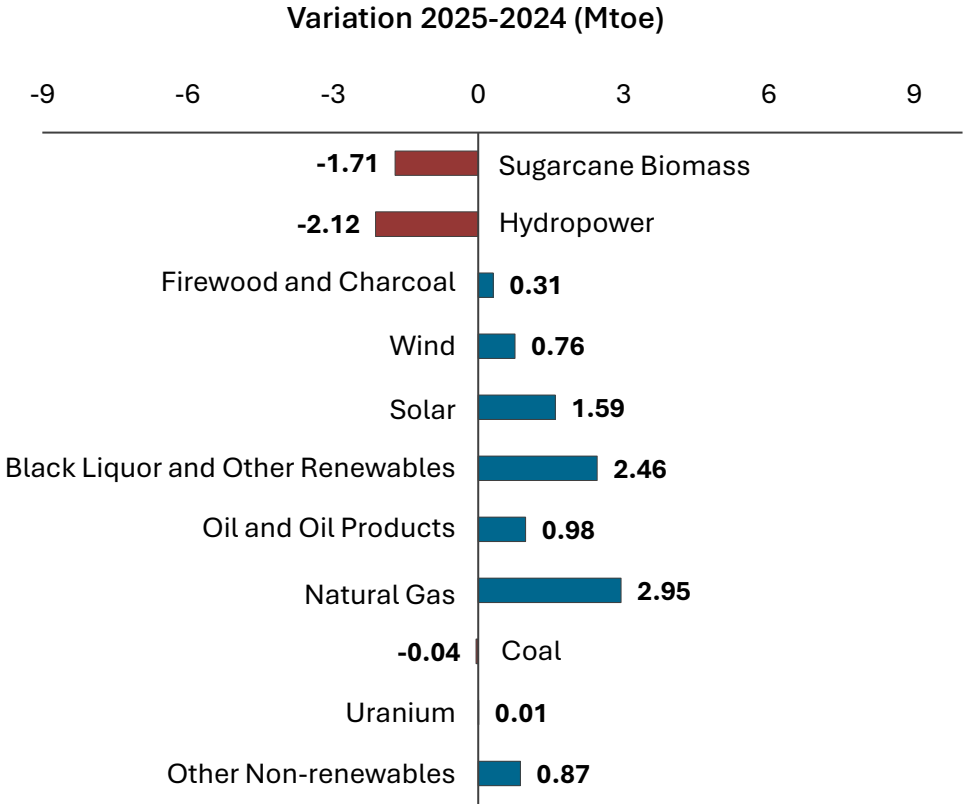


Black Liquor and Other renewables (10^6 toe)	2024	2025	Δ% 25/24
Black Liquor	12.0	13.2	9.3%
Biodiesel	8.0	8.2	2.9%
Other biomass	6.2	7.4	19.2%
Biogas	0.5	0.4	-2.9%
Charcoal industrial gas[1]	0.1	0.1	-50.5%
Total	**26.8**	**29.2**	**9.2%**

[1] Gas from the steel production process from charcoal.

Total Energy Supply 2024-2025 (Mtoe)

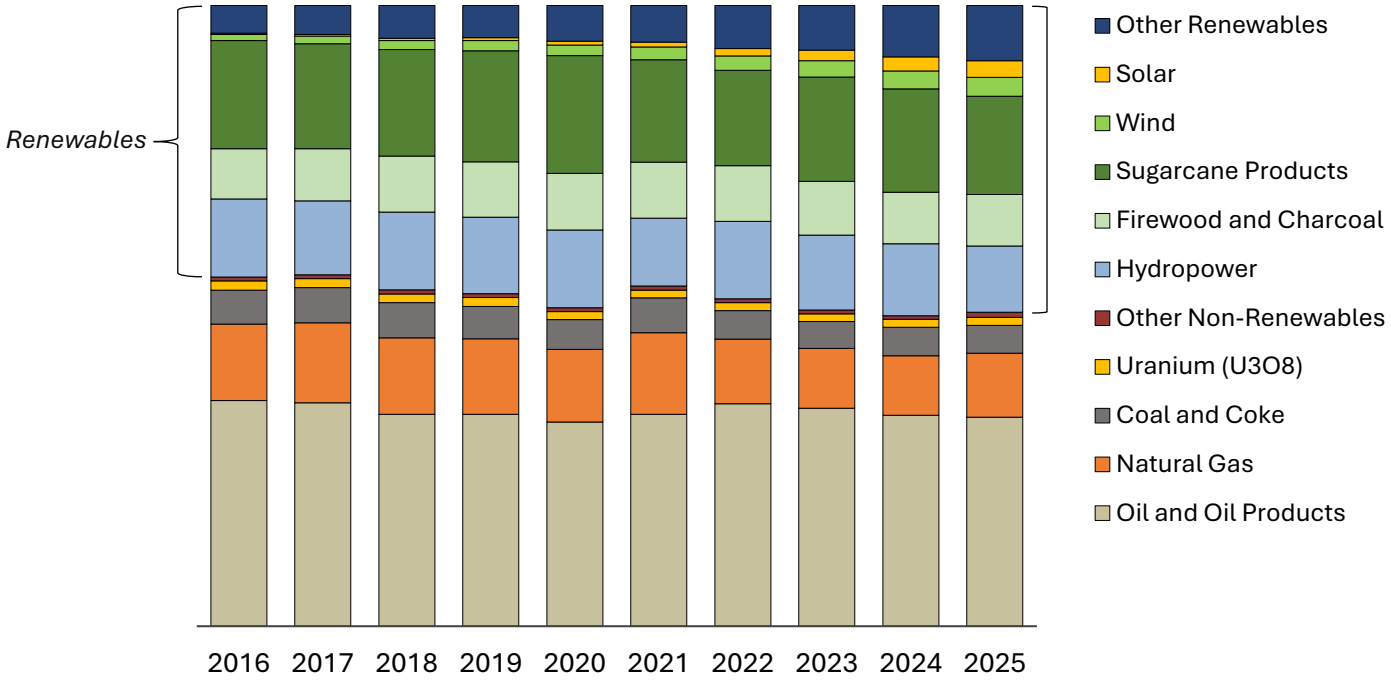
Source (Mtoe)	2024	2025	Δ% 25/24
RENEWABLES	**161.1**	**162.4**	**0.8%**
Sugarcane biomass	53.7	52.0	-3.2%
Hydropower[1]	37.3	35.2	-5.7%
Firewood and charcoal	26.8	27.1	1.2%
Wind	9.3	10.0	8.2%
Solar[2]	7.2	8.8	22.0%
Black liquor and Other renewables	26.8	29.2	9.2%
NON-RENEWABLES	**161.3**	**165.6**	**3.0%**
Oil and oil products	109.6	110.6	0.9%
Natural gas	31.0	33.9	9.5%
Coal	14.8	14.2	-0.3%
Uranium (U_3O_8)	4.2	4.2	0.3%
Other non-renewables	1.8	2.7	47.5%
TOTAL	**322.4**	**328.5**	**0.8%**



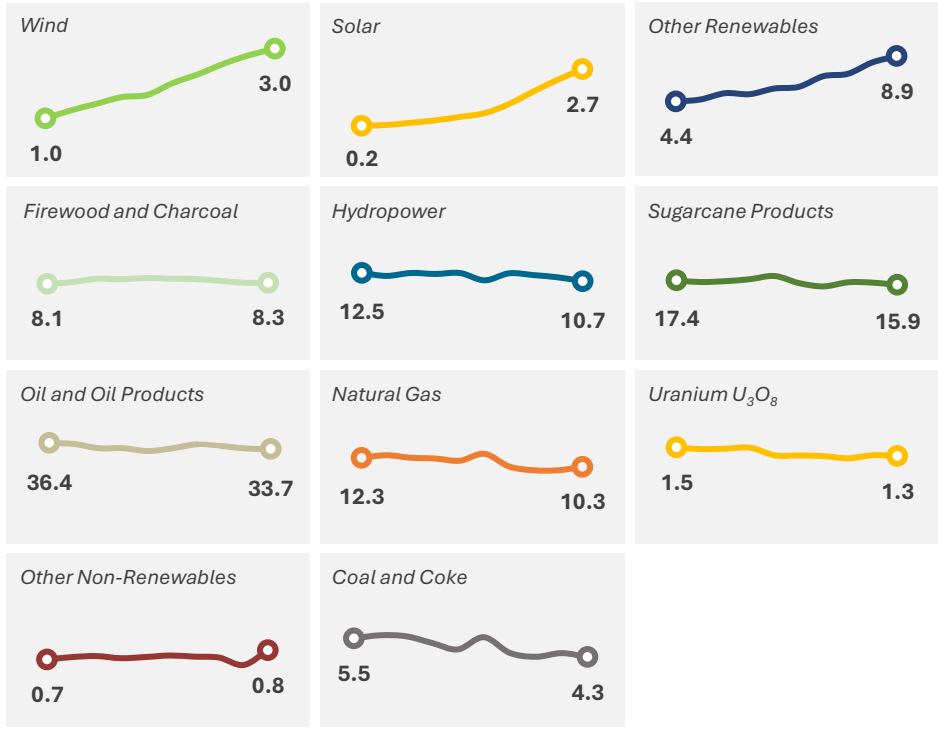
Main movements: increases in Black liquor (associated with pulp production) and Other renewables, and in Natural Gas (related to electricity generation and industrial consumption); decreases in Hydropower and Sugarcane Biomass; and Wind and Solar continued the upward trend of previous years.

[1] Includes electricity imports
[2] Includes Photovoltaic Solar and Solar thermal

Total Energy Supply 2016-2025

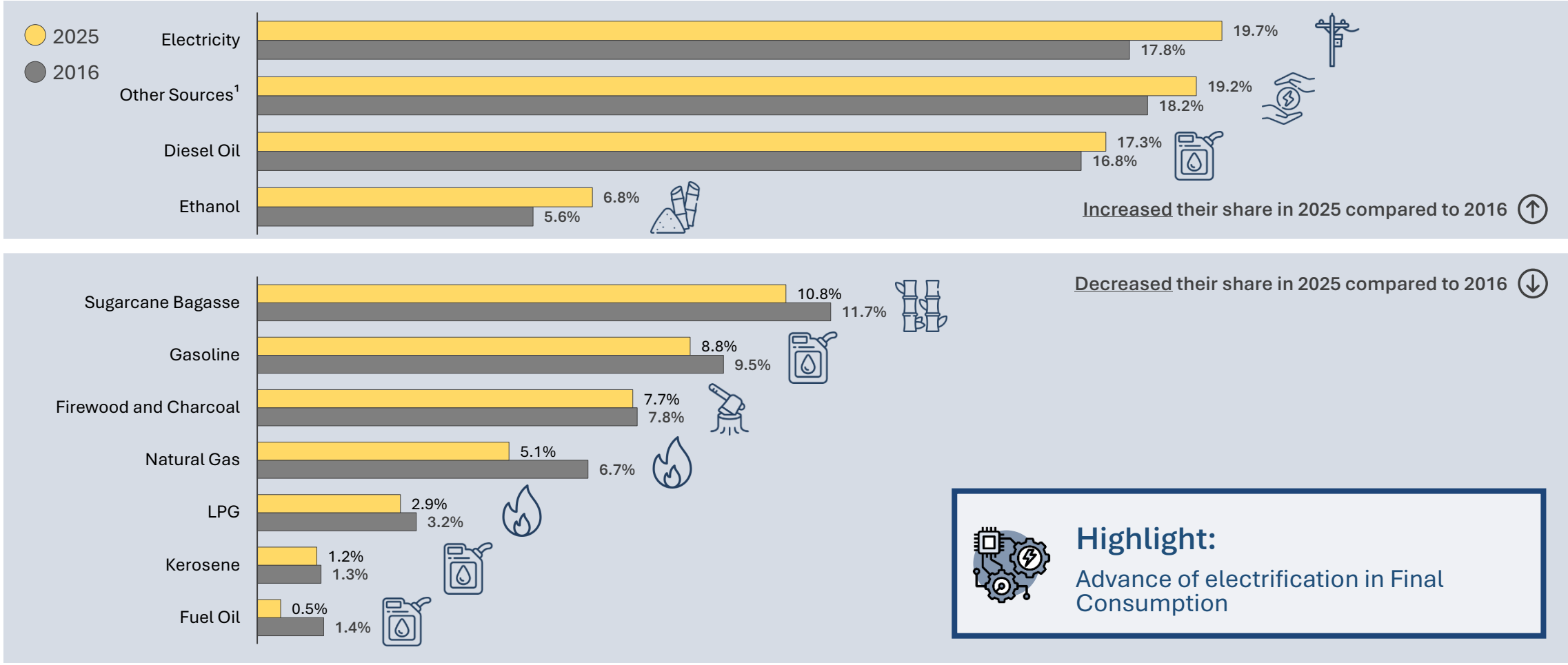


Share of sources in TES (%) between 2016 and 2025



Renewable sources have shown a growth trajectory over the past **10 years**, reaching almost **50% share in 2025**, with highlights for the increase in electricity generation from sources such as Wind, Solar, and Other Renewables. On the other hand, there was a reduction in the share of non-renewable sources Oil and Oil Products, Natural Gas, and Coal and Coke.

Variation in the share of Final Energy Consumption by source over 10 years



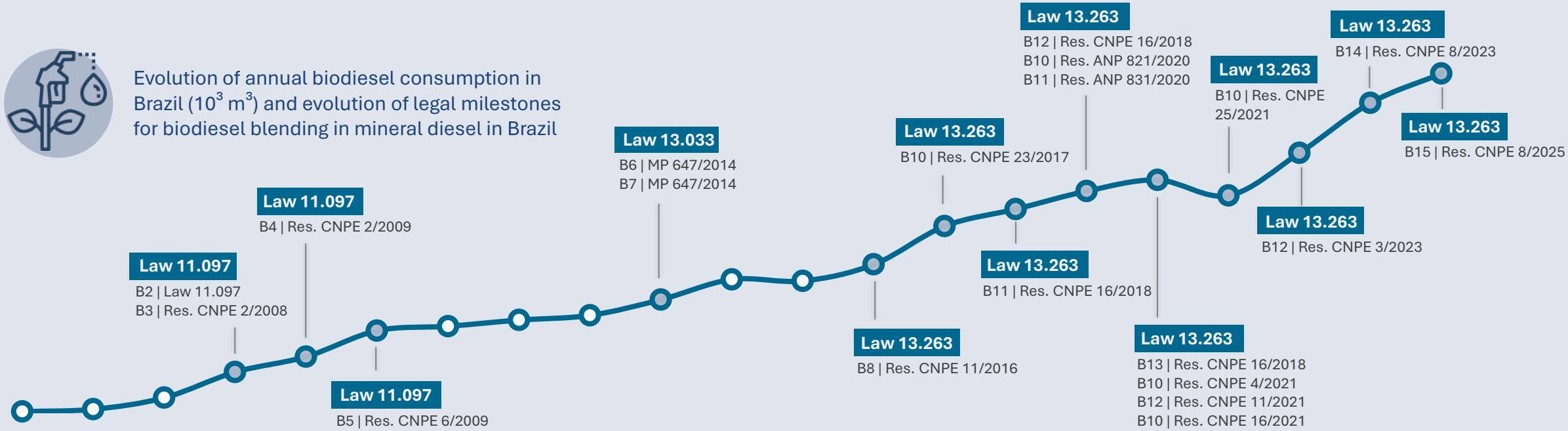
[1] Other sources include sources with smaller representation in final energy consumption, such as Coal and its products (coke and tar), other primary sources, biodiesel, coke oven gas, naphtha, piped gas, other oil secondary products, and non-energy products.

Note: Final Energy Consumption does not include feedstock used in transformation centers.

Highlight: Final biodiesel consumption and CNPE resolutions

Brazil is one of the world's largest biodiesel producers and soybean oil is the main national feedstock. Consumption of this biofuel in the country is favored by the policy of adding biodiesel to fossil diesel, defined by the **National Energy Policy Council (CNPE)**, an advisory body to the President of the Republic for the formulation of energy policies and guidelines, chaired by the Minister of Mines and Energy.

Evolution of annual biodiesel consumption in Brazil (10^3 m^3) and evolution of legal milestones for biodiesel blending in mineral diesel in Brazil



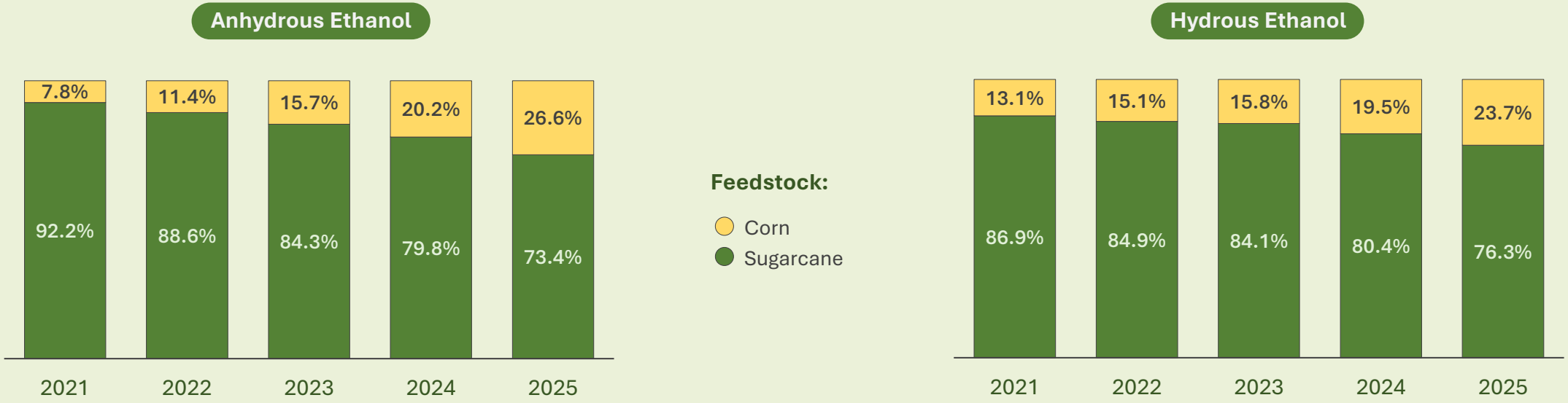
Annual biodiesel consumption (10^3 m^3)

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	66	391	1,111	1,543	2,272	2,397	2,571	2,702	3,144	3,711	3,768	4,131	5,208	5,683	6,189	6,502	6,065	7,263	8,664	9,488

Note: The figure above shows the CNPE resolutions related to the evolution of biodiesel content in mineral diesel, in addition to the Provisional Measures (MP) of 2014 and resolutions of the Brazilian National Petroleum, Natural Gas and Biofuels Agency (ANP) in 2020.

Highlight: Diversification of feedstocks for ethanol production

Growth of corn ethanol has been favored by the increase in grain production, with second-crop planting becoming predominant for biofuel production. This practice uses the same area in rotation with other crops, notably soybean. Corn ethanol production reached 9.4 billion liters in 2025. **This industry, concentrated in the Center-West region, generates important co-products such as distiller's dried grains[1] and corn oil, and is able to operate throughout the year, since corn can be stored.**



Corn, used as raw material for ethanol production, was responsible for about 25% (by volume) of total production of this biofuel in 2025. Soybean and other biomass contributed less than 0.01% of hydrous ethanol production.

[1] Distiller's dried grains (in English *distiller's dried grains with solubles* – DDGS), used for animal nutrition.

Who uses energy in Brazil?

Breakdown of Final Energy Consumption 2025

The combined share of **transport** and **industry** represented about 66% of energy consumption in the country in 2025...

Transport
34.0%

Industry
31.6%

Residential
10.6%

Energy Sector
7.9%

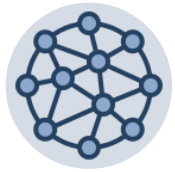
Services
5.2%

Agriculture and Livestock
5.0%

2025
291.7 Mtoe

2024
288.4 Mtep

1.1% increase

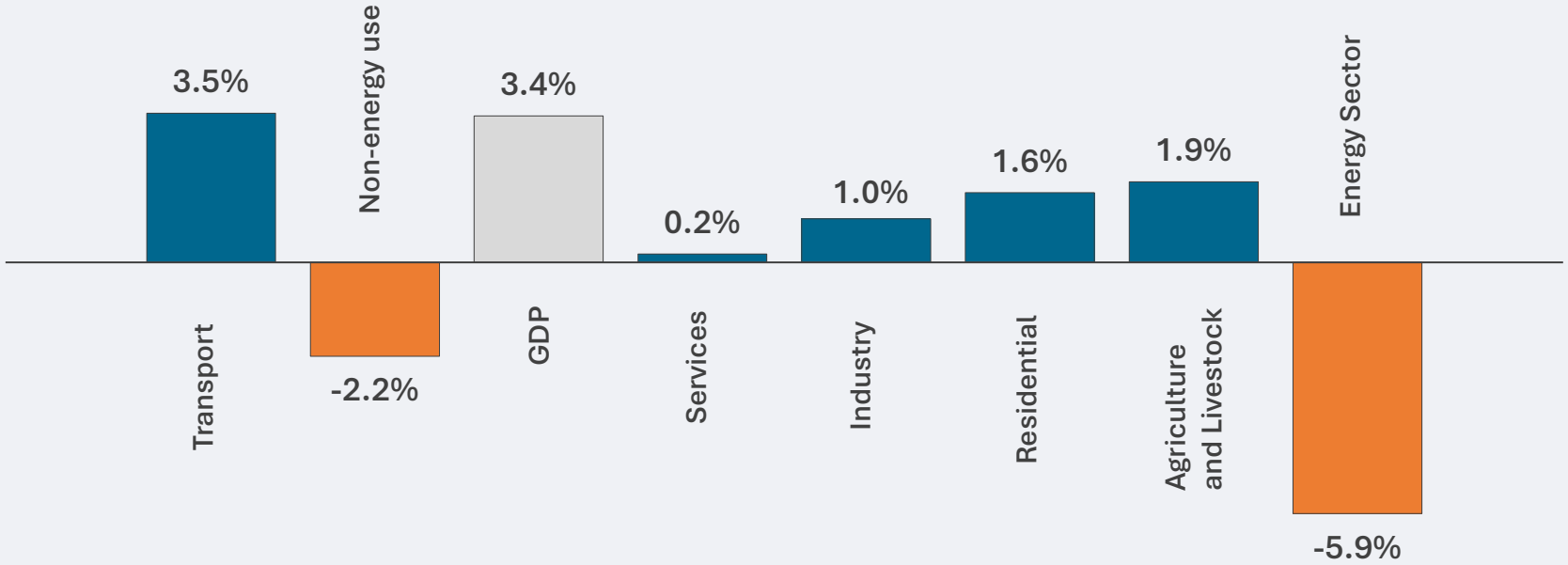


Non-energy use
5.6%

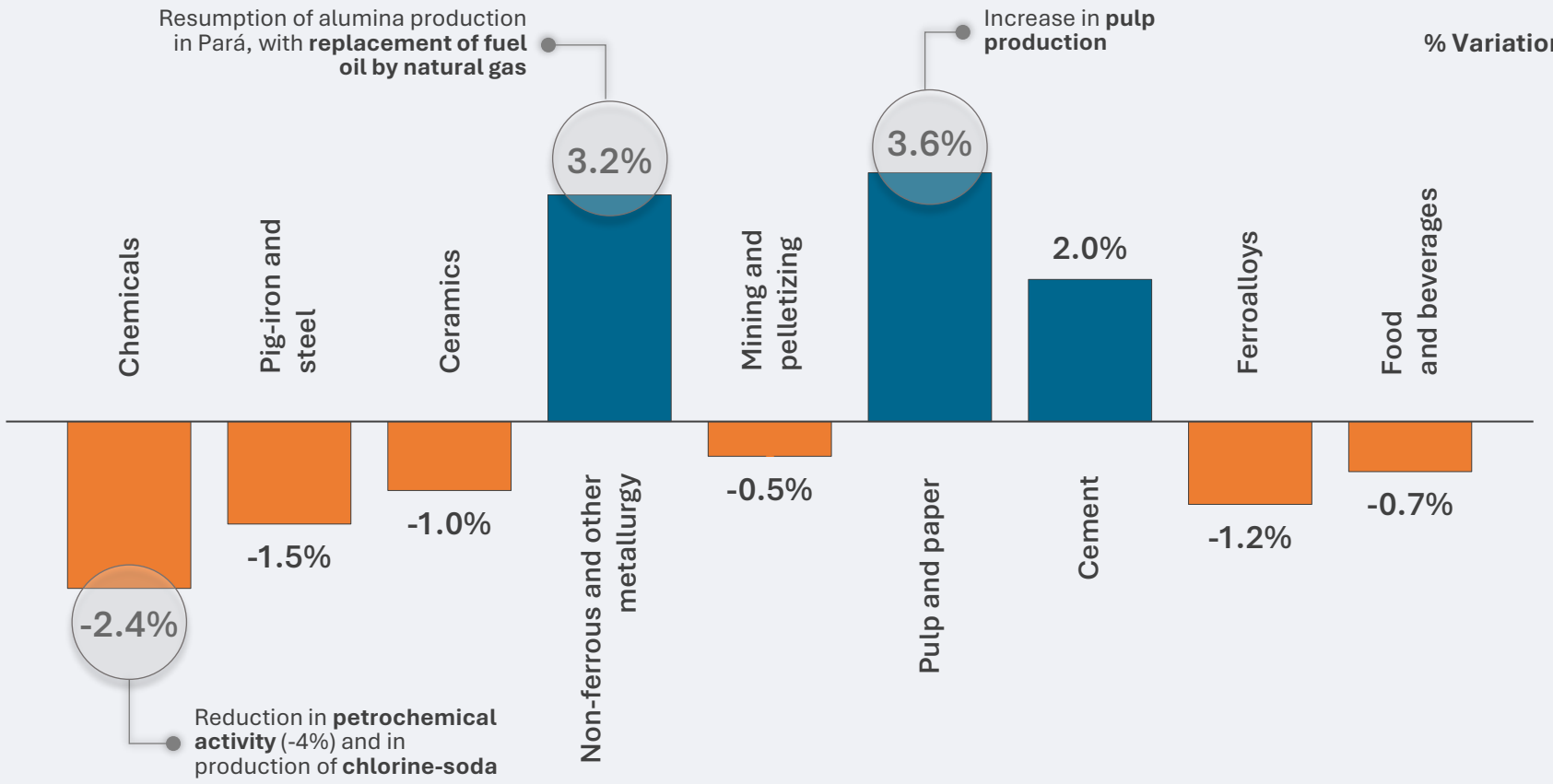
There was a 1.1% increase in final energy consumption in 2025 compared to 2024. In this scenario, the transport sector showed the largest share among sectors and remains the leader in the country in terms of energy consumption.

Note: Non-energy use can be exemplified by the use of feedstock in petrochemical production.

...but **how did sector energy consumption vary** in relation to Brazilian economic activity, between 2024 and 2025?



Energy consumption in **energy-intensive industrial segments** showed the following movements:



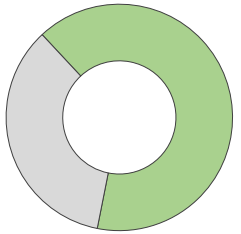
Energy consumption in industry increased 1.0% compared to 2024, reaching 65.1% renewability in its energy matrix.

Total energy consumption:

2025
92.2 Mtep

2024
91.3 Mtep

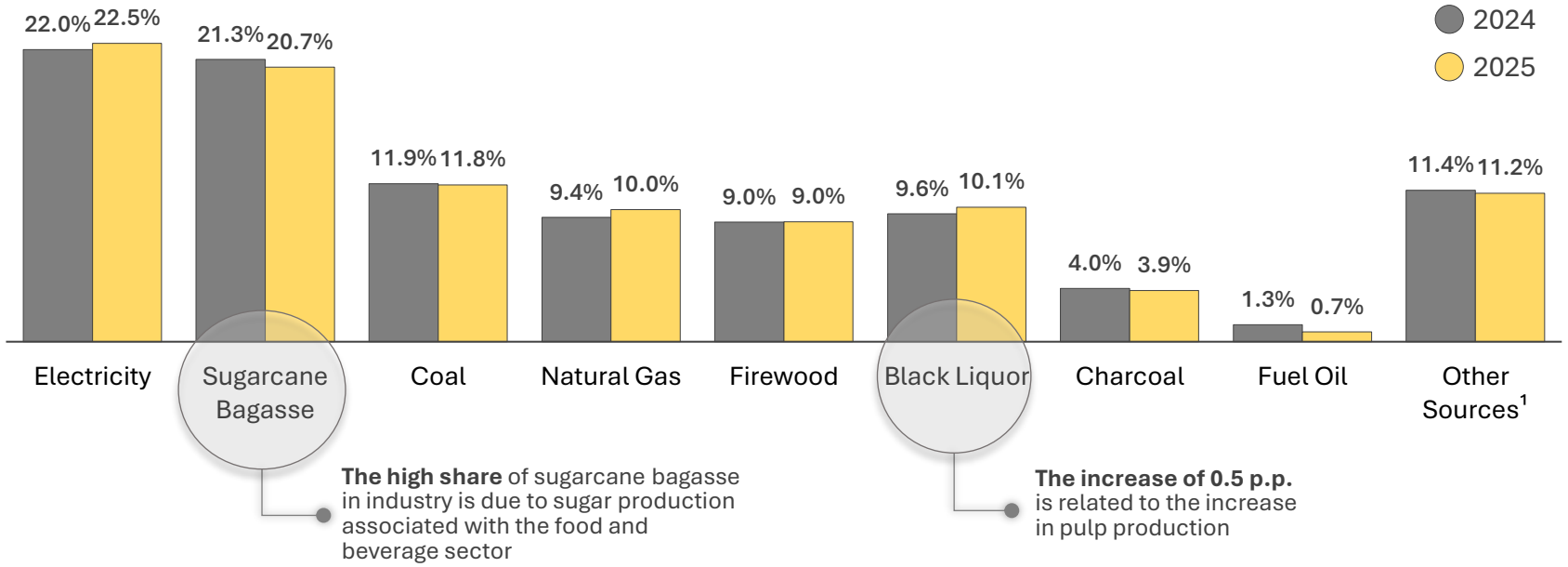
1.0% increase



65.1%
renewable

Note: For Electricity, only the portion generated from renewable sources is considered, which corresponded to 86.8% of total electricity generation in 2025.

Share of energy sources in industry:



The high share of sugarcane bagasse in industry is due to sugar production associated with the food and beverage sector

The increase of 0.5 p.p. is related to the increase in pulp production

[1] "Other sources": includes diesel oil, LPG, naphtha, kerosene, coke oven gas, tar, refinery gas, petroleum coke, among other renewables and non-renewables.

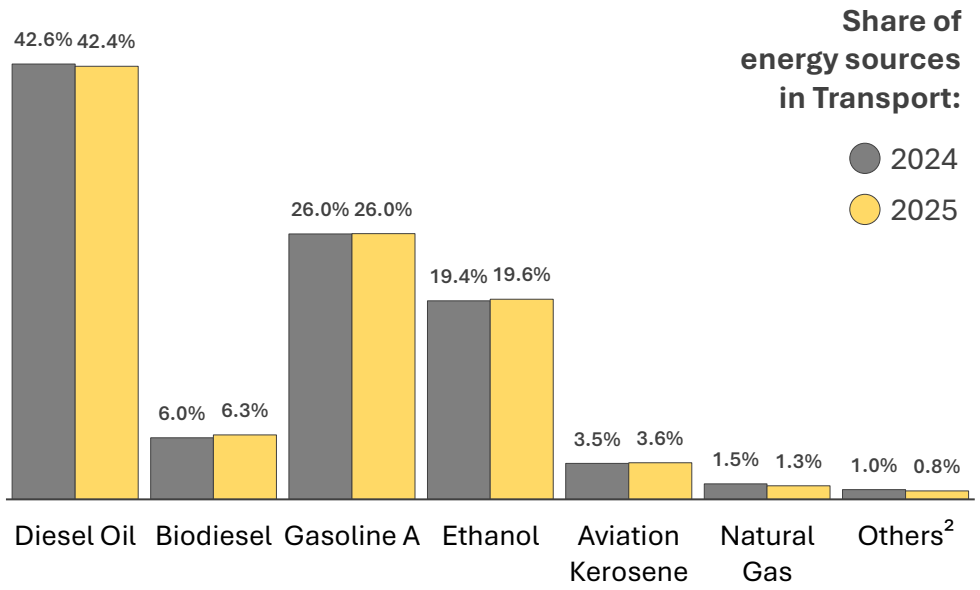
In the transport sector, energy consumption[1] in 2025 showed an increase of 3.5% compared to 2024. Highlight: growth in consumption of biodiesel (+8.2%) and ethanol (+4.3%), contributing to the sector's renewability, which reached 26.1%.

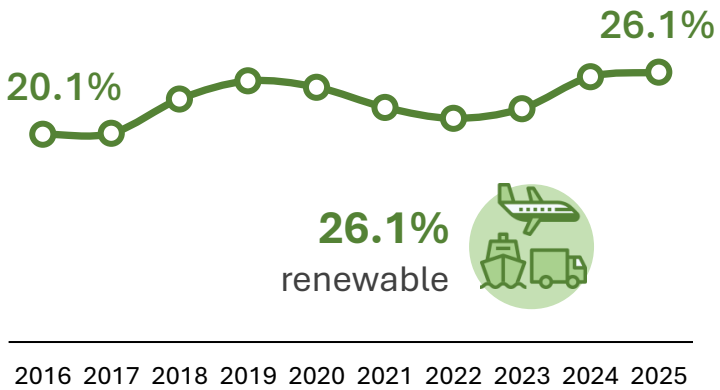
Total energy consumption:

2025
99.2 Mtoe

2024
95.8 Mtep

3.5% increase





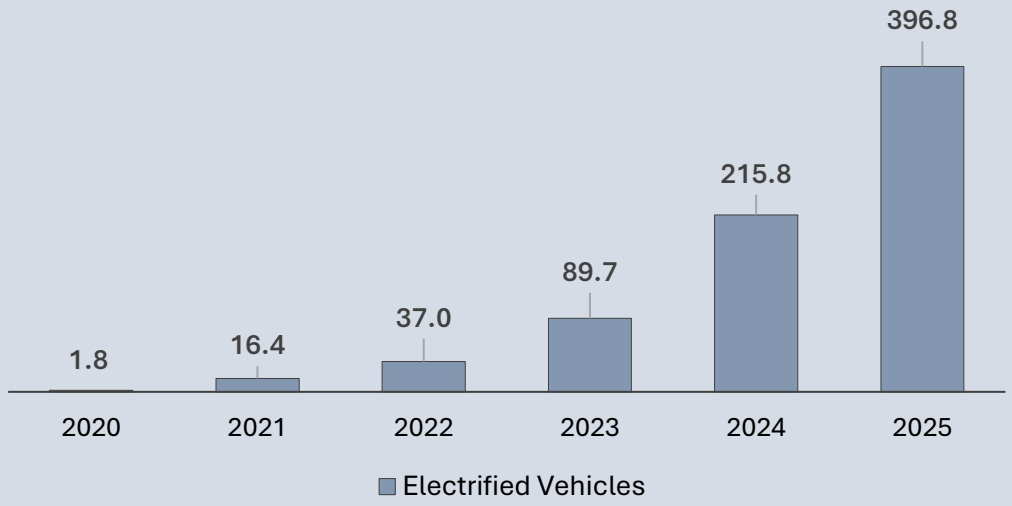
Growth in Ethanol Anhydrous consumption was largely due to the increase in its blend content in Gasoline A (from 27% to 30%, starting in August 2025). The increase in Biodiesel consumption was driven by the increase in diesel consumption, associated with the rise in the biodiesel blend percentage in mineral diesel to 15% by volume (B15), starting in August 2025.

[1] The percentage variation in consumption is expressed on an energy basis, not a volumetric one.
[2] Other corresponds to Fuel oil and Electricity.

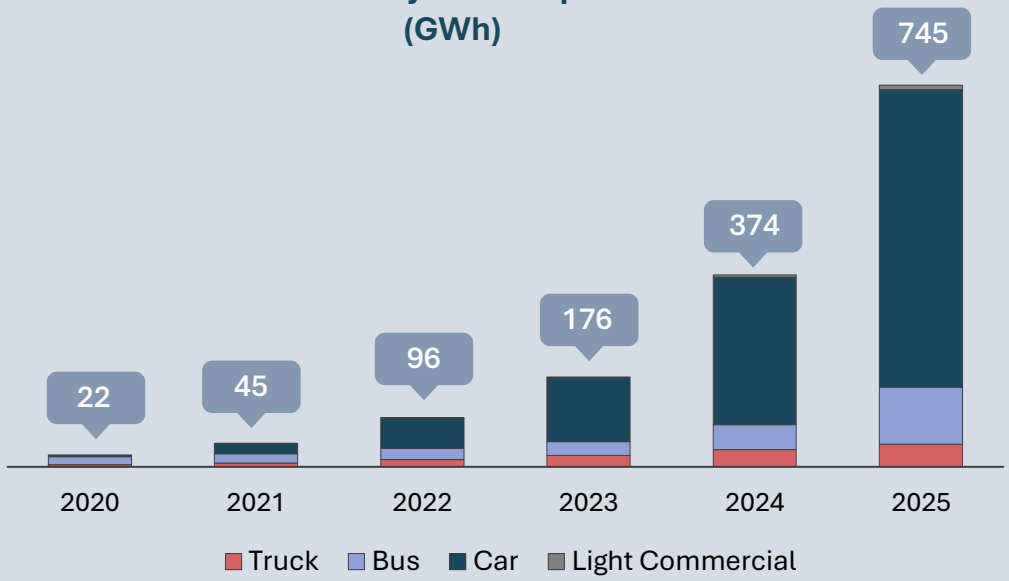
Highlight: Electricity consumption in road transport

Electricity consumption in road transport reached 745 GWh. The licensing data includes electrified trucks, buses, cars, and light commercial vehicles, with cars accounting for more than 90% of the total.

Cumulative licensing of electrified vehicles (thousand units)



Electricity consumption (GWh)



The significant increase in road transport electricity demand observed since 2020 is mainly linked to the increase in the number of electrified vehicle models available in the Brazilian market, the reduction in prices, and the increased range of these new models.

For more information, access:
(a) Technical Note on Light Vehicle Energy Demand: 2025-2034; (b) E-Mobility Notebook: Road Transport; (c) Transport Sector Energy Demand Notebook

In the residential sector, energy consumption showed a growth of 1.6% compared to the previous year, with the following distribution in the use of energy sources:

Total energy consumption:

2025
31.0 Mtoe

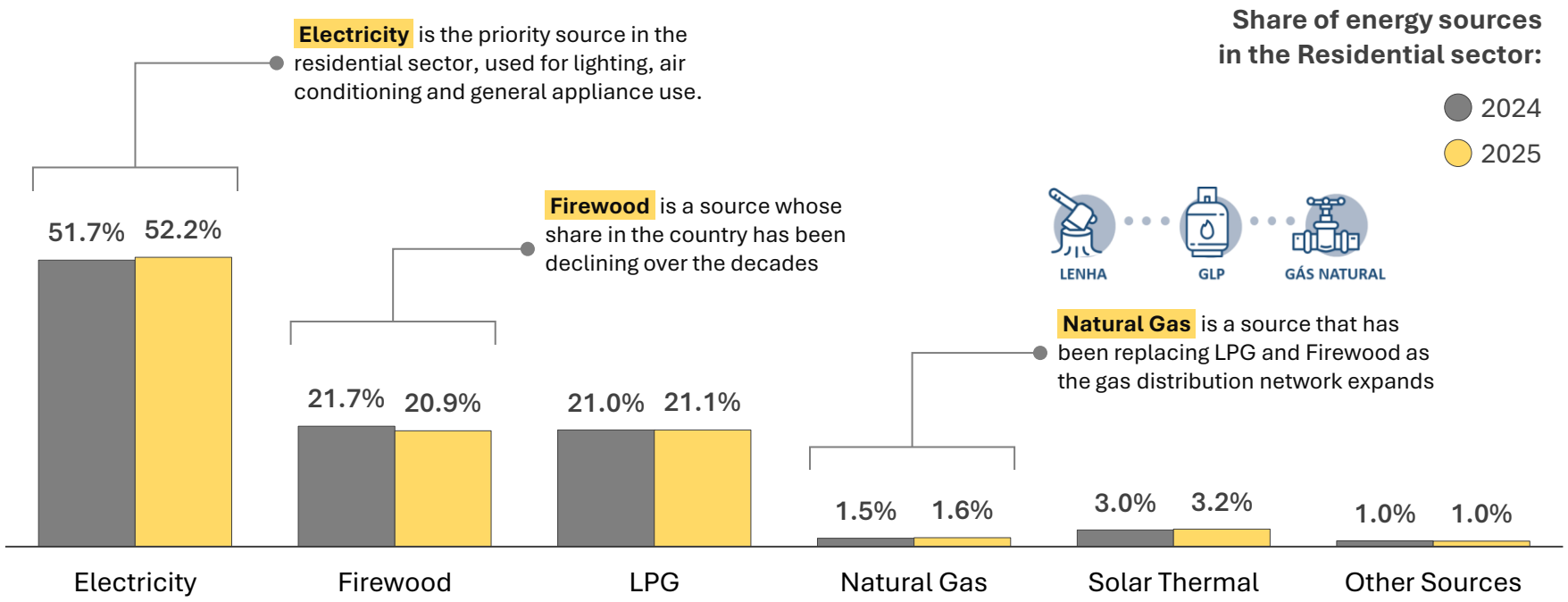
2024
30.5 Mtoe

1.6% increase

Electricity is the priority source in the residential sector, used for lighting, air conditioning and general appliance use.

Firewood is a source whose share in the country has been declining over the decades

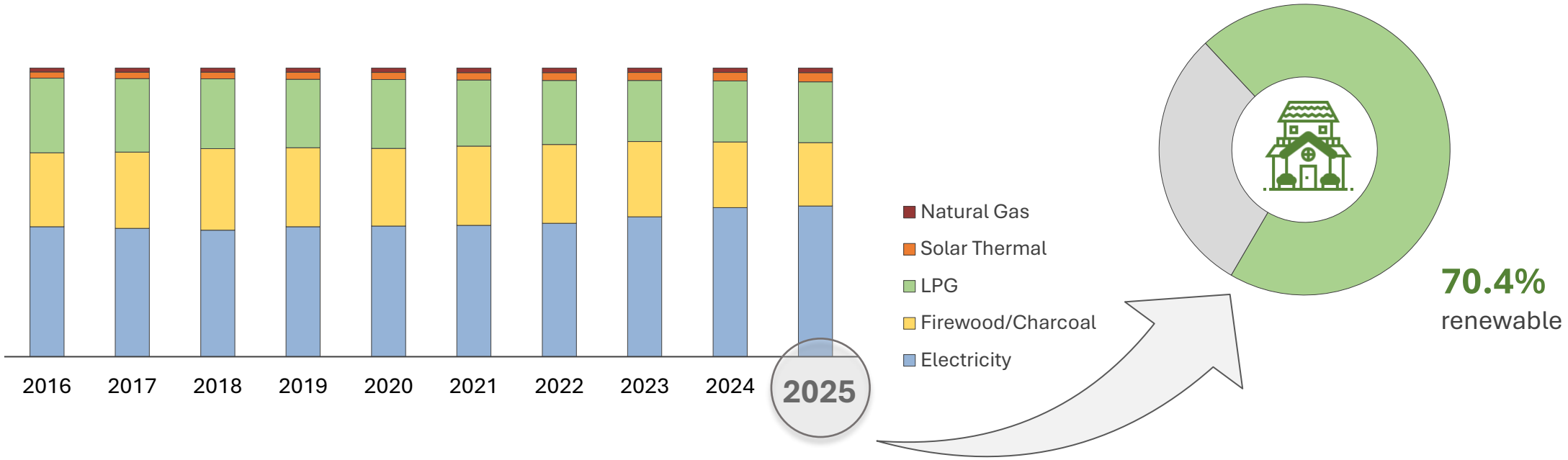
Natural Gas is a source that has been replacing LPG and Firewood as the gas distribution network expands



Firewood consumption in households fell 2.2%, leading to a reduction in its share of the residential sector's energy matrix by 0.8 p.p. On the other hand, LPG and Natural Gas increased their shares in 2025.

[1] Kerosene and charcoal. **Note:** More details on energy consumption in the residential sector can be found in the Fact Sheet "Residential Consumption by Income Class", published by EPE and available HERE.

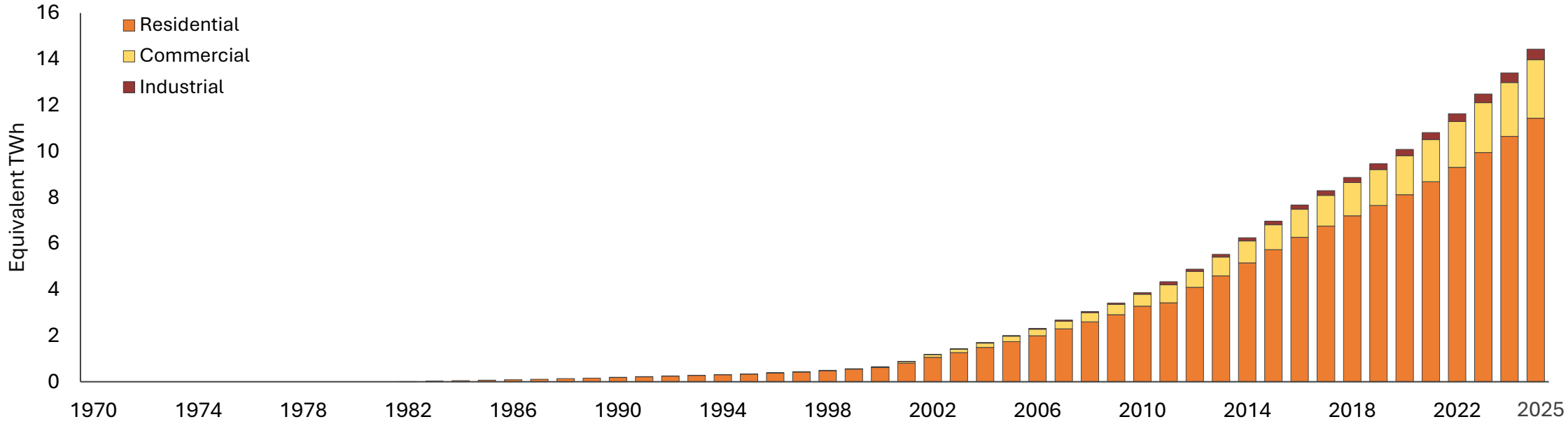
The evolution of the share of **sources in the residential sector energy matrix** is marked, over the last ten years, by the use of electricity, firewood and charcoal, and LPG.



The renewability index of the residential sector reached 70.4% due to the use of renewable sources such as Electricity (mostly from renewable sources), Firewood, Charcoal, and Solar Thermal energy. The electrification process in residential energy consumption is essentially due to the increase in ownership of household appliances.

Note: Warning: wood-burning stoves have an efficiency around one-tenth that of gas stoves.

The **Solar Thermal** source, used for water heating in open, closed and vacuum tube collectors, reached equivalent levels[1] of 14.4 TWh, if this energy service were supplied by electrical equipment.

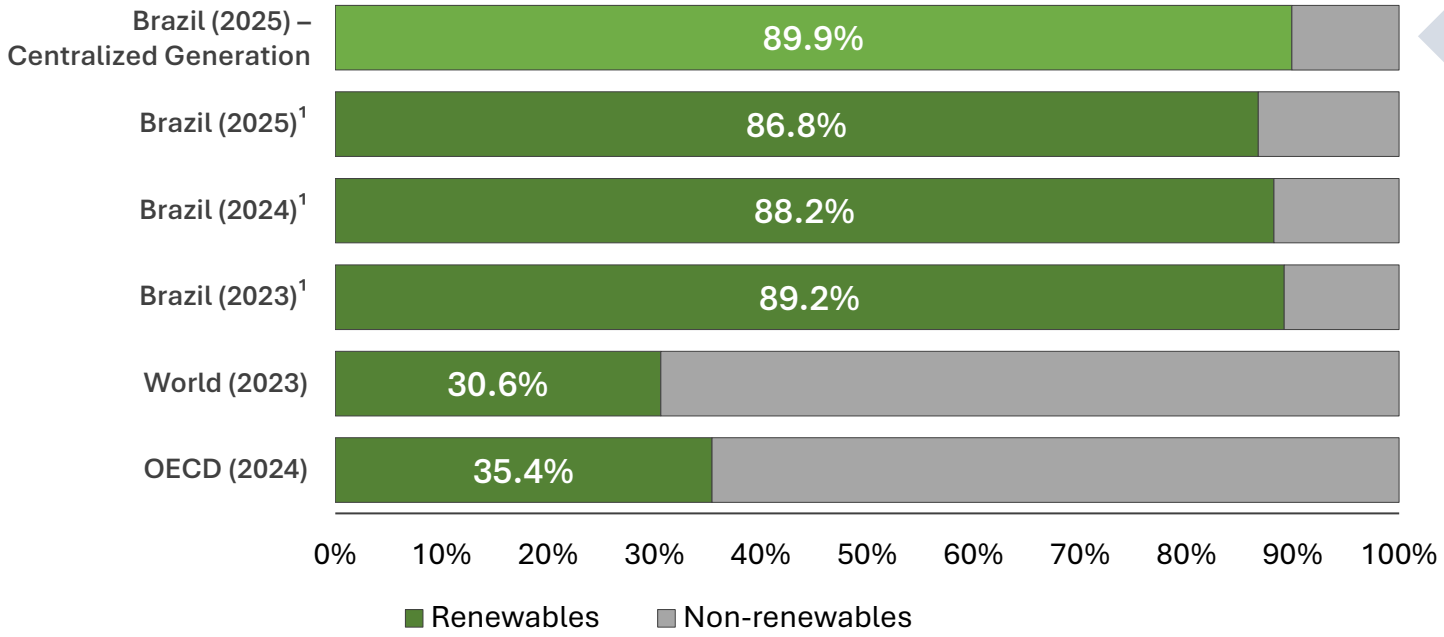


In 2025, the residential sector accounted for 79.2% of solar thermal consumption in Brazil. In second place, the commercial sector was responsible for 17.6% of consumption. Lastly, industry with 3.2%.

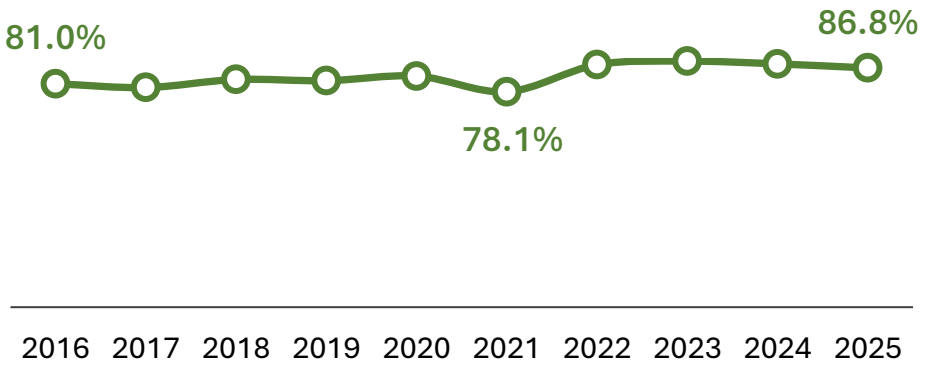
[1] The equivalent TWh value represents a theoretical equivalence of how much electricity would be required in electric showers, for example, to provide the same water heating that solar thermal provides.

The use of **electricity**

The share of renewables in the electricity matrix Brazilian (includes the entire "National Interconnected System (SIN)", the "Isolated Systems" and "Self-production not injected into the grid") reached 86.8% renewability in 2025...



Centralized generation: excludes Isolated Systems, Electricity Imports, Self-production not injected into the grid, and MMGD.



The renewability of the Brazilian electricity matrix in 2025 showed a decrease of 1.4 p.p. due to the reduction in national hydropower generation and electricity imports from Itaipu, associated with the increase in natural gas generation. **It is important to highlight that the growth of wind and photovoltaic solar generation helped maintain the high degree of renewability of the Brazilian electricity matrix.**

[1] Renewability is calculated based on the Internal Electricity Supply, that is, all national generation plus net imports, which includes the imported share of Itaipu.

Breakdown of Total Electric Power Supply 2025

↑ Indicates higher share compared to the previous year.

RENEWABLES ▶ 86.8%

Biomass[1]

↑ 8.4%

Hydropower

51.2%

Wind

↑14.9%

Solar

↑11.4%

Imported Electricity

0.9%

NON-RENEWABLES ▶ 13.2%

Oil Products

1.5%

Natural Gas

↑7.5%

Coal and Products[2]

2.2%

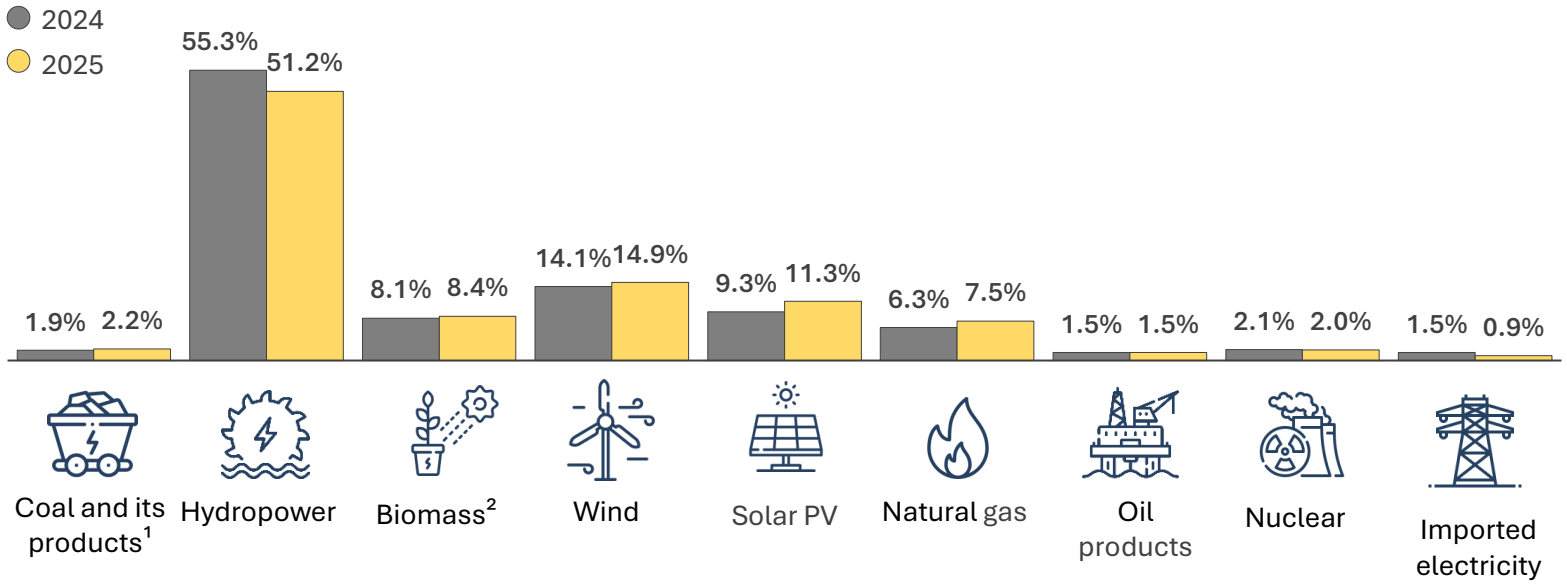
Nuclear

2.0%

[1] Includes firewood, sugarcane bagasse, black liquor, biodiesel and other primary sources
[2] Includes coke oven gas, blast furnace gas, steelmaking gas and tar

The Brazilian electricity matrix in 2025 showed a decline in the share of hydropower associated with an increase in the shares of wind, solar, and natural gas.

Share of sources in the electricity matrix:



2025 (TWh)
Total Supply: 783.3
Hydropower Supply: 408.8

2024 (TWh)
Total Supply: 762.9
Hydropower Supply: 433.4

2.7% increase in Total Supply

5.7% decrease in Hydropower Supply

Electricity generation in 2025 was marked by the expansion of Solar (+24.7%) and Wind (+8.2%) sources, the decline in Hydropower generation (-4.8%), and the increase in generation from natural gas (+22.7%).

[1] Includes coke oven gas, blast furnace gas, steelmaking gas and tar
[2] Includes firewood, sugarcane bagasse, black liquor, biodiesel and other primary sources

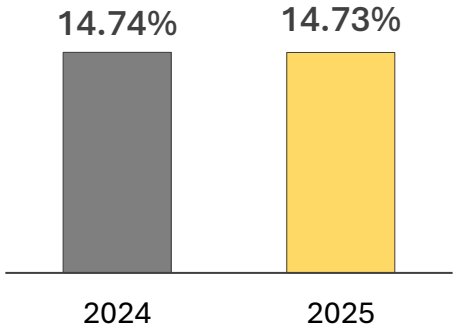
Electricity consumption grew 2.7% in Brazil, the same pace of expansion as the electricity made available to the population.

Values in TWh		2024	2025	Δ% 25/24
Total Electric Power Supply[1]	↑	762.9	783.3	2.7%
Public Service Power Plants[2]	↑	594.7	599.8	0.9%
Self-producer Power Plants[3]	↑	156.6	176.1	12.4%
Electricity imports[4]	↓	11.6	7.4	-36.5%
Final Consumption[5]	↑	650.4	667.8	2.7%

↑ **Increase of 2.7%** in Electricity Made Available

↑ **2.7% increase** in Final Electricity Consumption

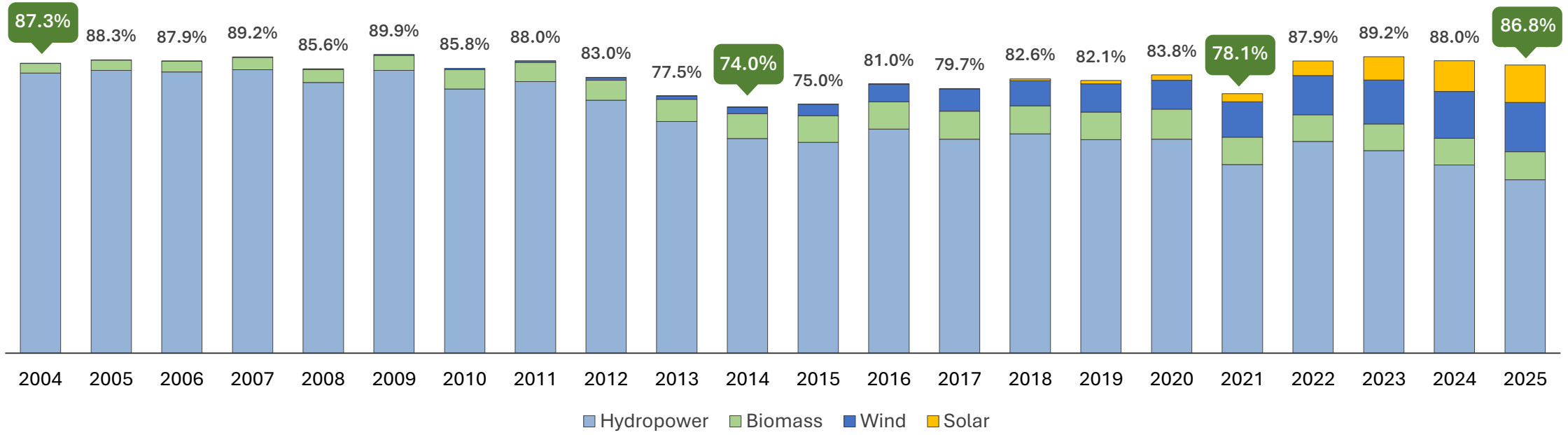
Losses measured in 2024 and 2025



Losses (commercial + technical) remained stable compared to 2024, with a slight increase of 0.01 percentage point.

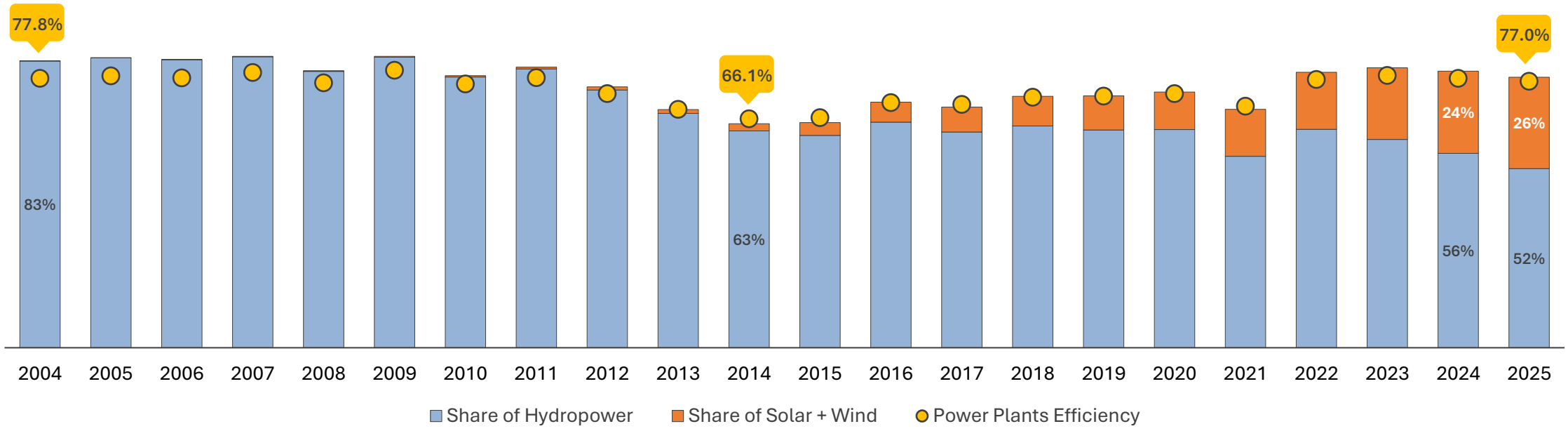
[1] Total Electricity Supply: Import and Export balance + Total national generation;
[2] Public Service; [3] Electricity self-producers; [4] Imports (-) exports;
[5] Final consumption: National Interconnected System + Isolated + Self-production

Since 2004, the share of renewable sources in the electricity matrix has remained above 70%, a level considered high compared to global figures, indicating that the energy transition process has been underway for several years...



In this period, the growth of wind and photovoltaic solar generation helped maintain the renewability of the Total Electricity Supply, even in periods of greater water stress in the country. Policies to incentivize electricity generation from renewable sources have contributed to diversifying the electricity matrix, demonstrating the country's effort to continue the **energy transition**, aiming to reduce emissions and ensure energy security.

In addition to the high renewability index, **the Brazilian electricity matrix is highly efficient**. Power plants reached **77.0% efficiency in 2025**, due to the large share of sources such as hydropower, wind, and solar.

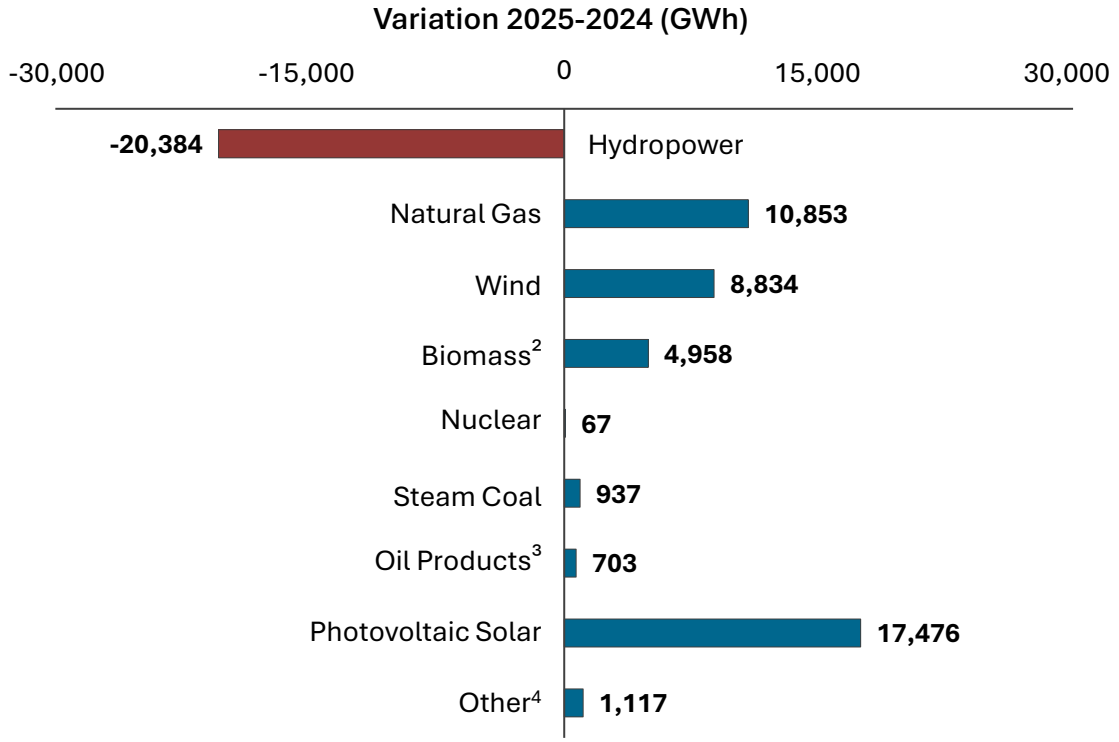


Primary sources such as hydropower, wind, and solar are, by convention, fully converted into electricity at power plants and therefore show no losses in generation. The lowest efficiency rates occurred in 2014 and 2015, when the hydropower share reached its lowest values. **In subsequent years, this trend began to be offset by wind and solar sources, enabling higher efficiency levels, even in periods of water stress.**

Note: More details can be found in the Factsheet "The profile of the Brazilian electricity matrix".

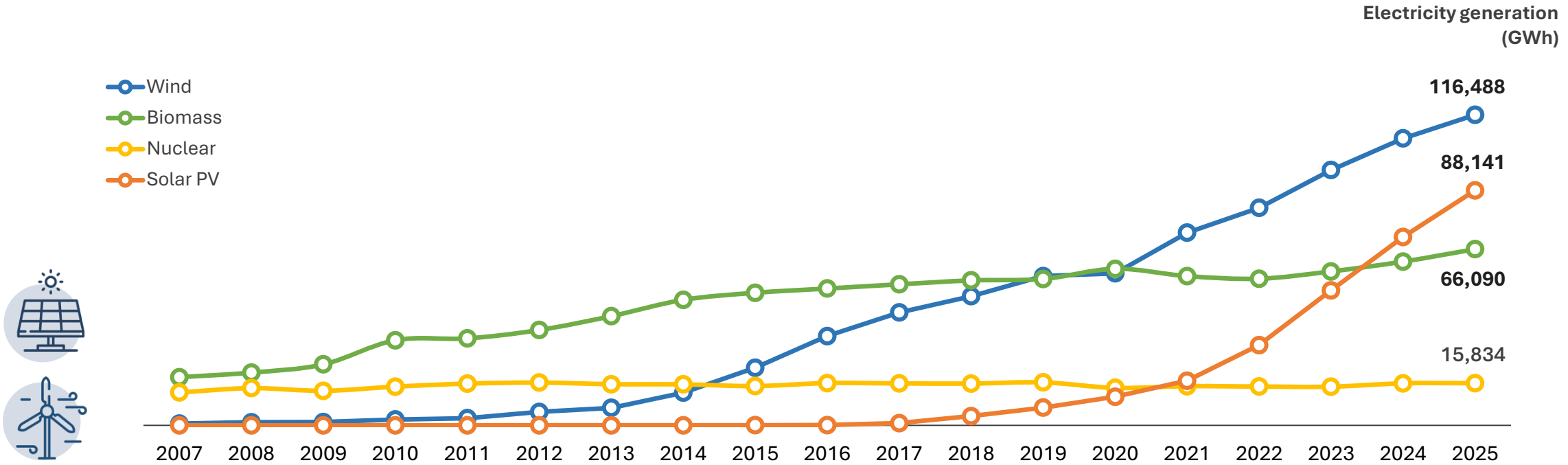
When analyzing **electricity generation[1] (GWh)** in 2025, it is possible to identify the combination of factors that influenced the renewability of the electricity matrix.

Source (GWh)	2024	2025	Δ% 25/24
Hydropower	421,799	401,415	-4.8%
Natural Gas	47,792	58,645	22.7%
Wind	107,654	116,488	8.2%
Biomass[2]	58,033	62,991	8.5%
Nuclear	15,767	15,834	0.4%
Steam Coal	10,247	11,184	9.1%
Oil Products[3]	5,954	6,657	11.8%
Photovoltaic Solar	70,665	88,141	24.7%
Other[4]	13,425	14,541	8.3%
Total Generation	**751,335**	**775,896**	**3.3%**



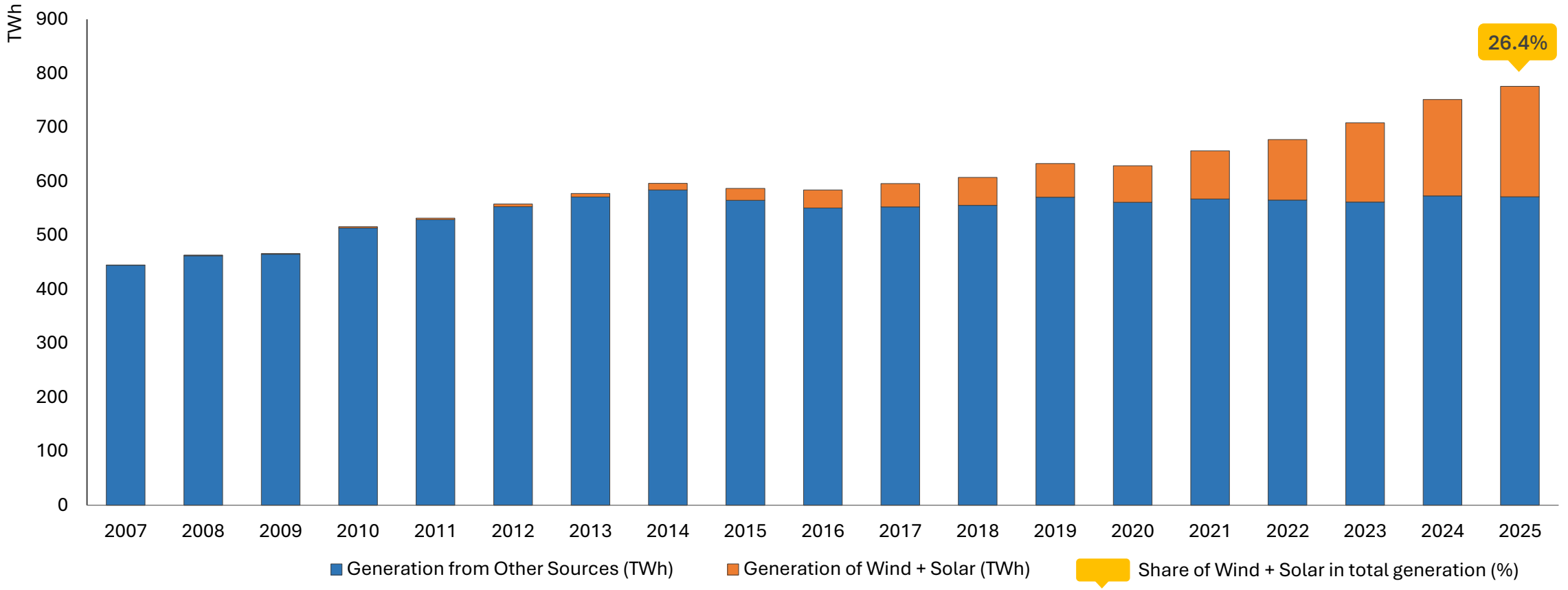
[1] Includes distributed generation
[2] Includes firewood, sugarcane bagasse, biodiesel and black liquor
[3] Inclui óleodiesel and fuel oil
[4] Includes other primary sources, coke oven gas and other secondary sources

In 2025, **wind generation** grew 8.8 TWh, while photovoltaic solar generation showed growth of 17.5 TWh.



Wind generation grew 8.2% compared to 2024, maintaining the lead among the four sources. However, the largest growth was in Photovoltaic Solar, with 24.7% growth compared to 2024.

Together, **wind and photovoltaic solar represented 26.4% of total electricity generation** in the country in 2025, demonstrating the evolution of these sources in the Brazilian electricity matrix.



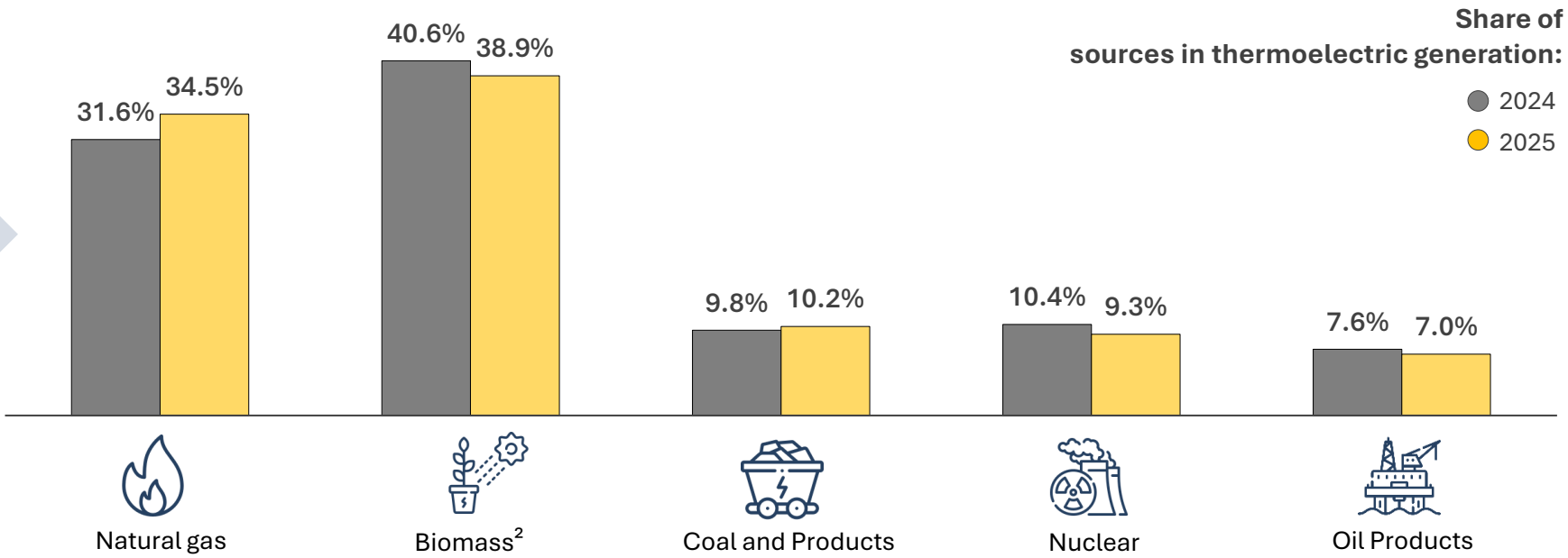
Thermoelectric generation, in 2025, showed an increase of 12.3%. As a result, its **share** in total electricity generation[1] grew from 20.1% in 2024 to 21.9% in 2025.

Total thermoelectric generation:

2025
169.9 TWh

2024
151.2 TWh

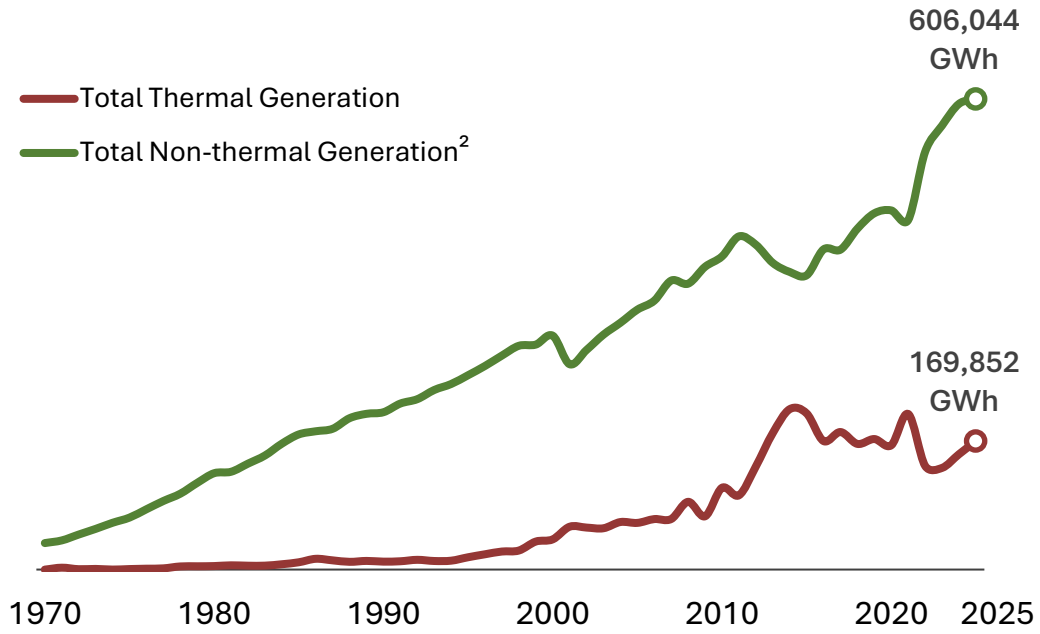
Increase of 12.3%
in thermal generation

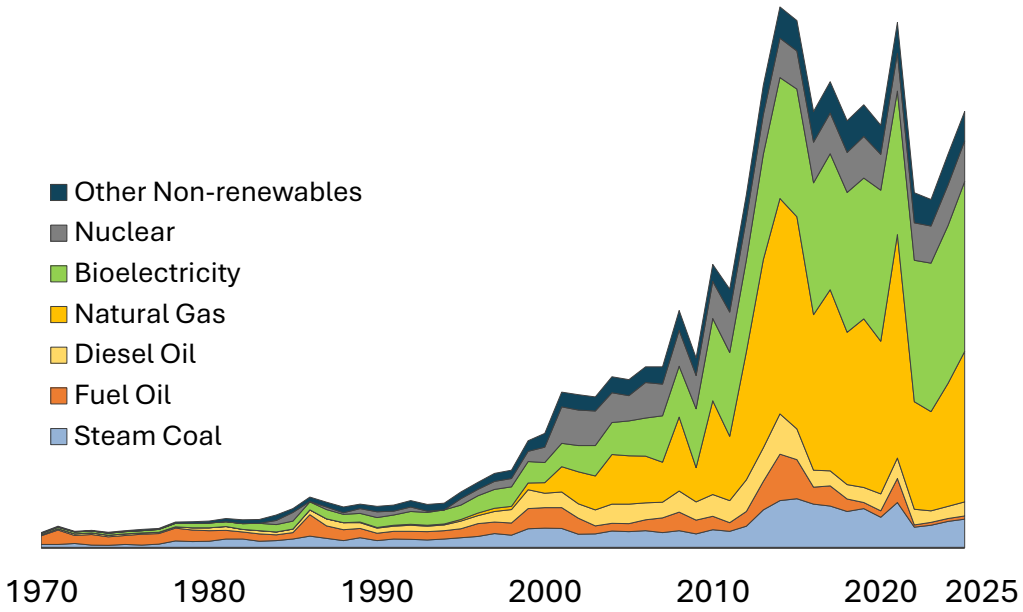


The increase in thermoelectric generation highlighted the growth of natural gas (22.7%), above the average of thermal plants (12.3%).

[1] Does not include (hydropower) imports in total electricity generation.
[2] Includes sugarcane bagasse, black liquor, firewood, and other primary sources.
Note: details on losses in power plants on page 15.

Among the **thermal sources**, the uses of natural gas (34.5%) and **bioelectricity**[1] (38.9%) stood out in 2025.

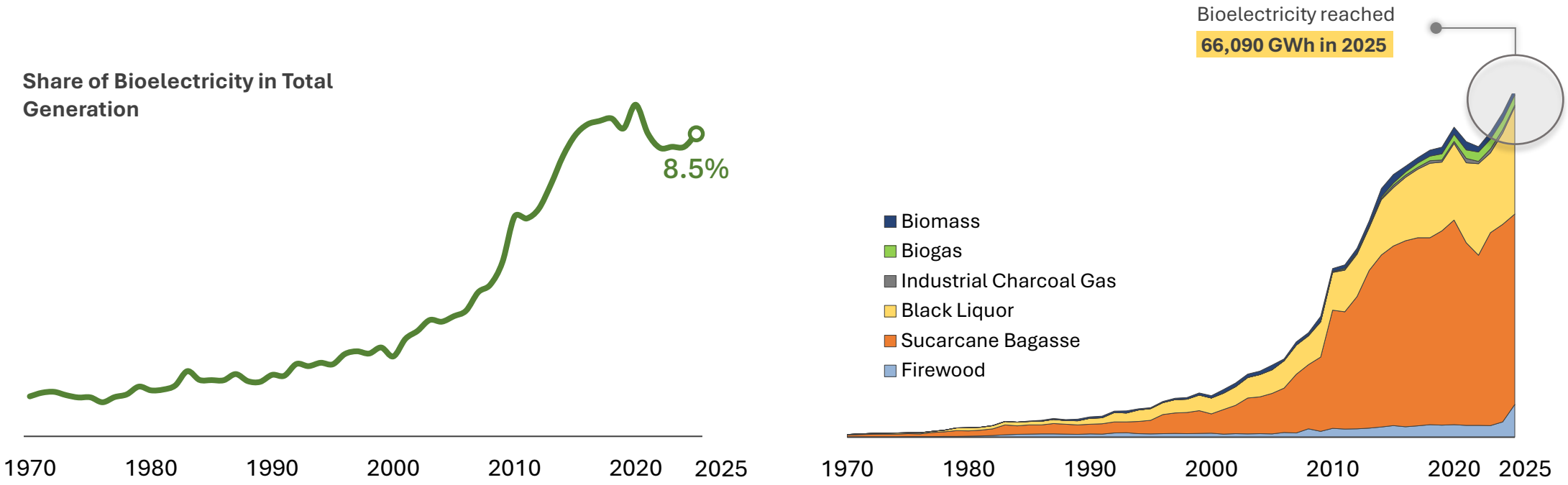




Bioelectricity has shown an average growth rate over the last 10 years of 2.8% per year.

[1] Bioelectricity consists of Firewood, Sugarcane bagasse, Black liquor, Industrial charcoal gas, Biogas and Vegetable oils.
[2] Hydropower, Wind and Solar (Photovoltaic Plant – PV)

The **bioelectricity**, composed mainly of sugarcane bagasse (54.6%) and black liquor (30.8%), increased its share to 8.5% of total electricity generation[1] in 2025.



Bioelectricity generation reached its highest value in the historical series in 2025, reaching 66,090 GWh.

[1] Does not include (hydropower) imports in total electricity generation

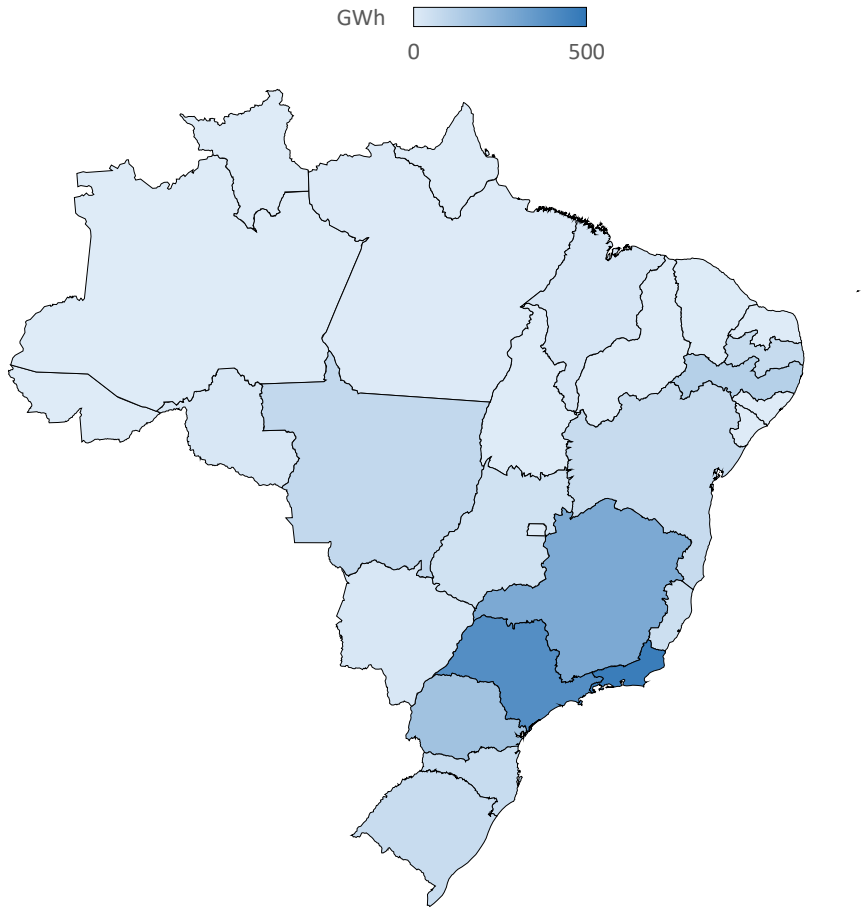
The **Biogas Electricity Generation by State (GWh)** is more concentrated in regions with greater potential for production of organic matter, agricultural, urban, industrial, and forest waste.

Did you know?

Biogas is an energy source produced by bacteria acting on the decomposition of organic matter, agricultural, urban, industrial, and forest waste, among others.

Present in the Brazilian energy matrix, it is a renewable biofuel with good calorific value, and can be used for electricity generation.

The map alongside shows electricity generation from biogas in Brazilian states.



Highlight: electricity generation in **Isolated Systems**

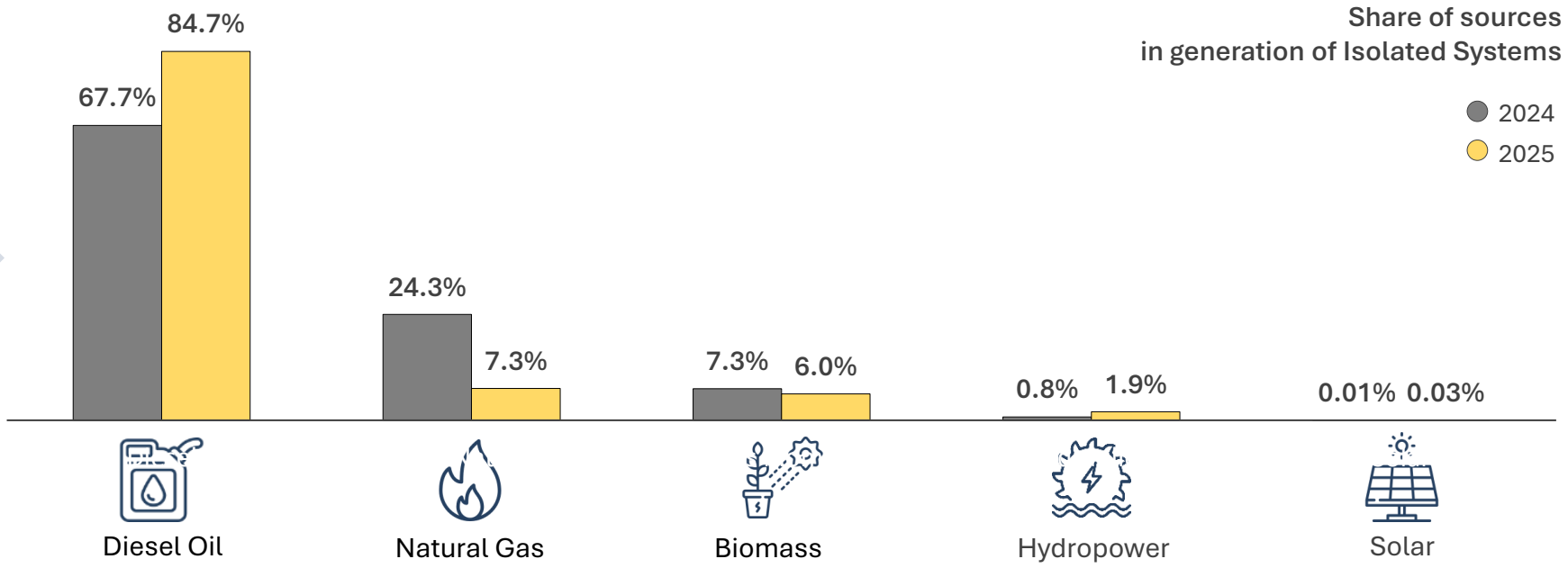
Electricity generation in Isolated Systems was **2,870 GWh in 2025** compared to 4,221 GWh in 2024, **a large reduction of 32%**. This decrease is attributed to the interconnection of some thermoelectric plants to the SIN.

Generation in Isolated Systems (GWh):

2025
2,870 GWh

2024
4,221 GWh

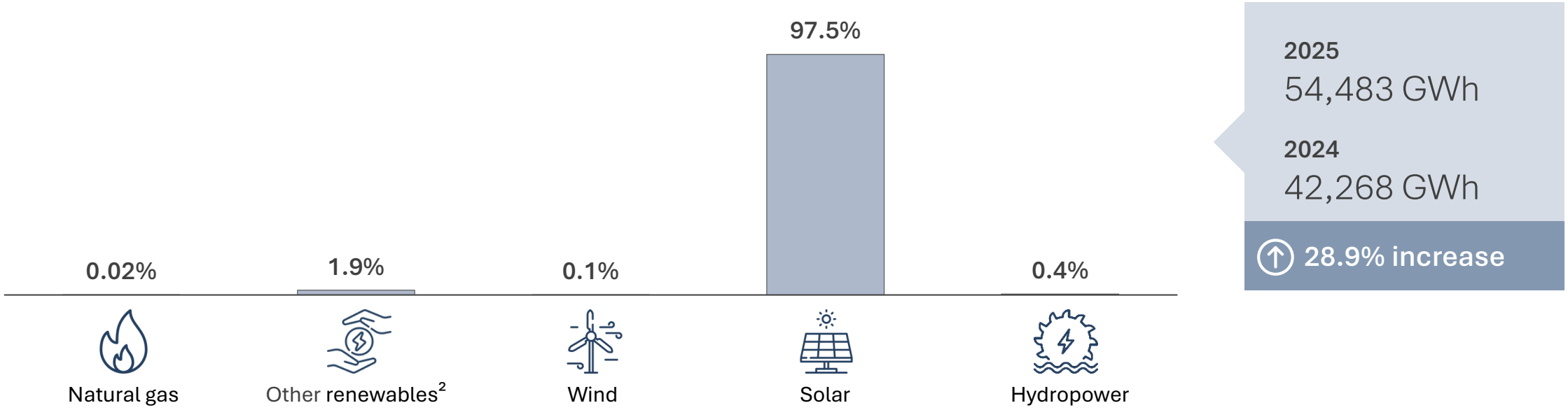
Decrease of 32%



Most electricity generation comes from diesel oil and natural gas. However, isolated systems represent only 0.4% of Brazil's total electricity generation. In 2025, Boa Vista, in Roraima, was interconnected to the SIN.

Note: more information can be accessed at: Fact Sheet on Isolated Energy Systems in Brazil; Isolated Systems Monitoring and Information Portal (PASI); Isolated Systems Service Planning Notebook – Cycle 2024 | Horizon 2025 to 2029

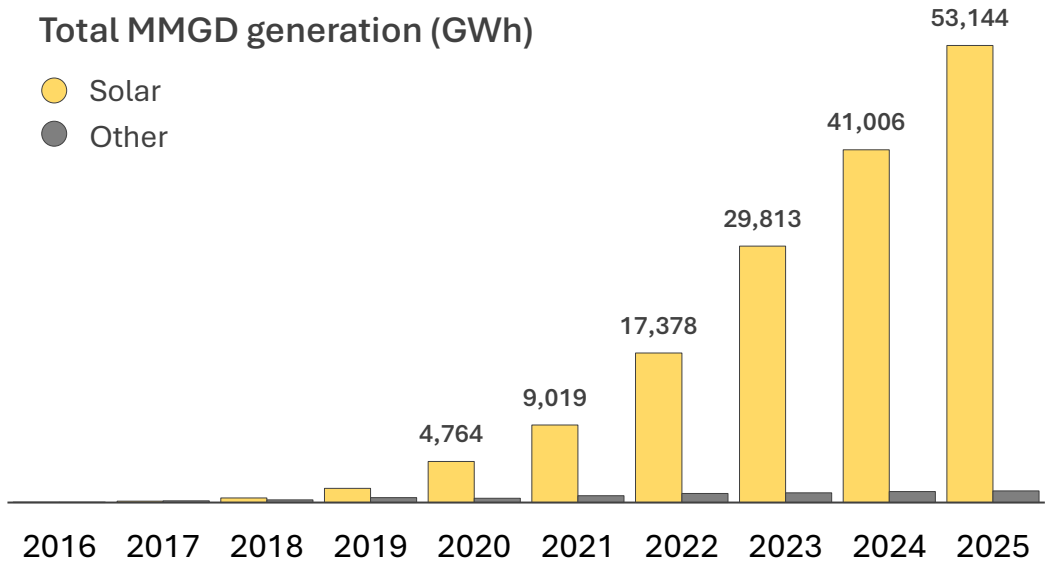
The **Micro and Mini Distributed Generation (MMGD)**[1] in 2025 increased 28.9% compared to 2024, maintaining the following source share configuration in electricity generation:

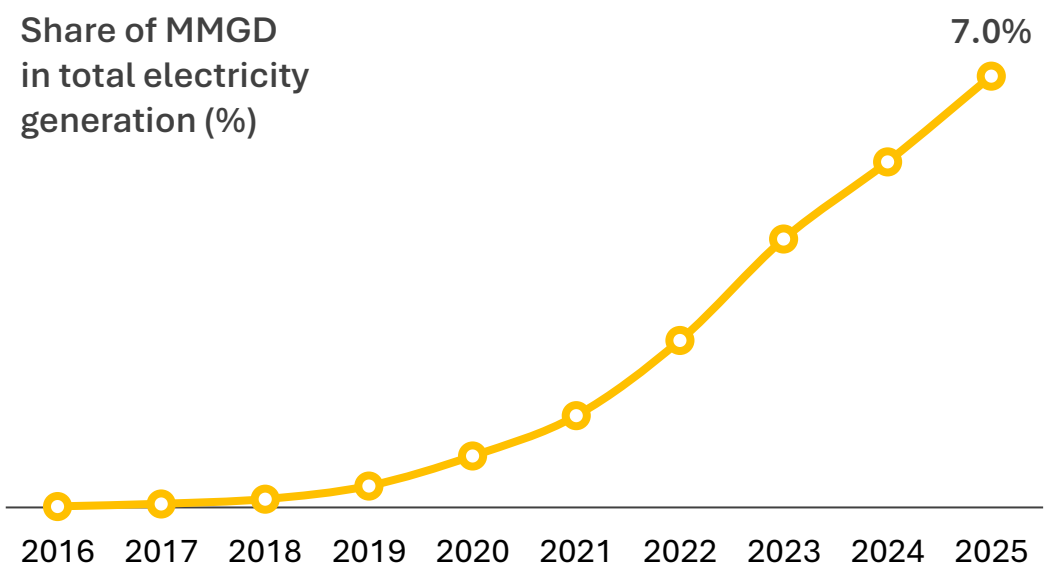


The **photovoltaic solar energy** represented 97.5% of MMGD in 2025, being the main **source responsible for the increase recorded in distributed micro and mini generation in the country.**

[1] Law 14,300/2022;
[2] Includes biogas from agricultural and urban waste, rice husk, blast furnace gas (biomass) and forest waste.

This trend has been building over time; note that the evolution of **MMGD**[1] indicates the trajectory of continuous growth of **photovoltaic solar generation** at a pace higher than other sources...

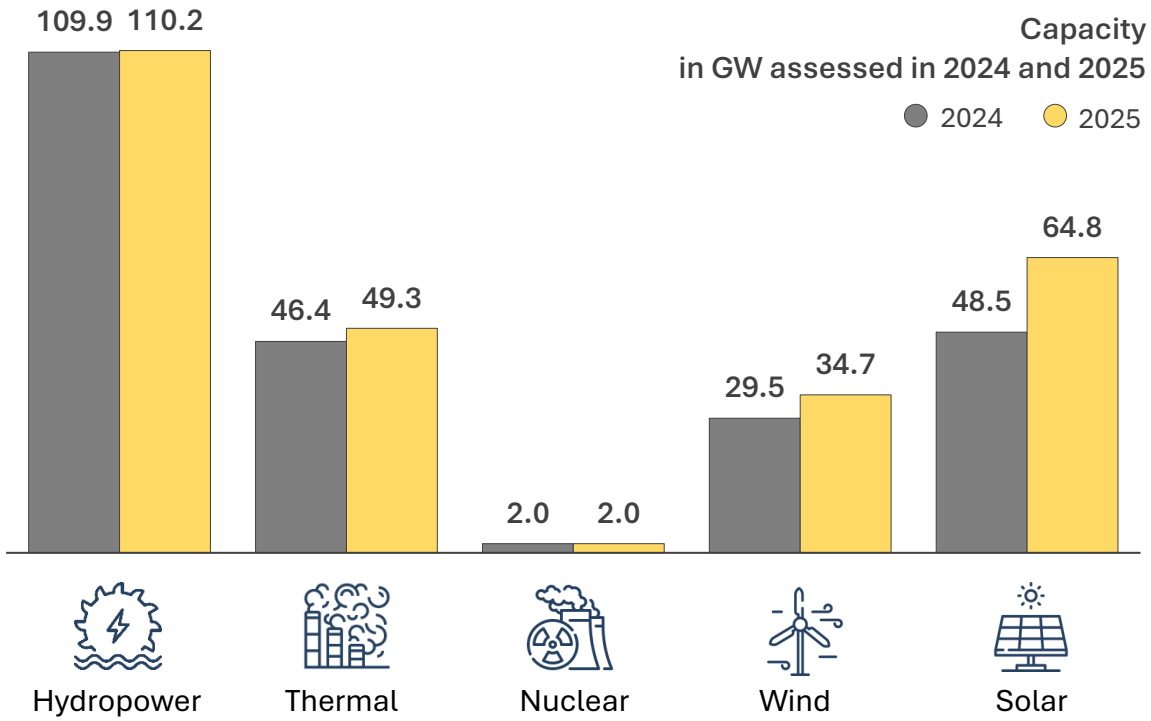




Photovoltaic solar distributed micro and mini generation in Brazil reached **53,144 GWh** in 2025, representing **7.0% of total electricity generation in Brazil.** In addition, solar MMGD accounted for 60.3% of total photovoltaic solar generation.

[1] Law 14,300/2022

A **Installed Capacity (GW)**[1] in 2025 increased by 10.4% compared to 2024, with highlights for wind and solar, which grew 17.5% and 33.7%, respectively.

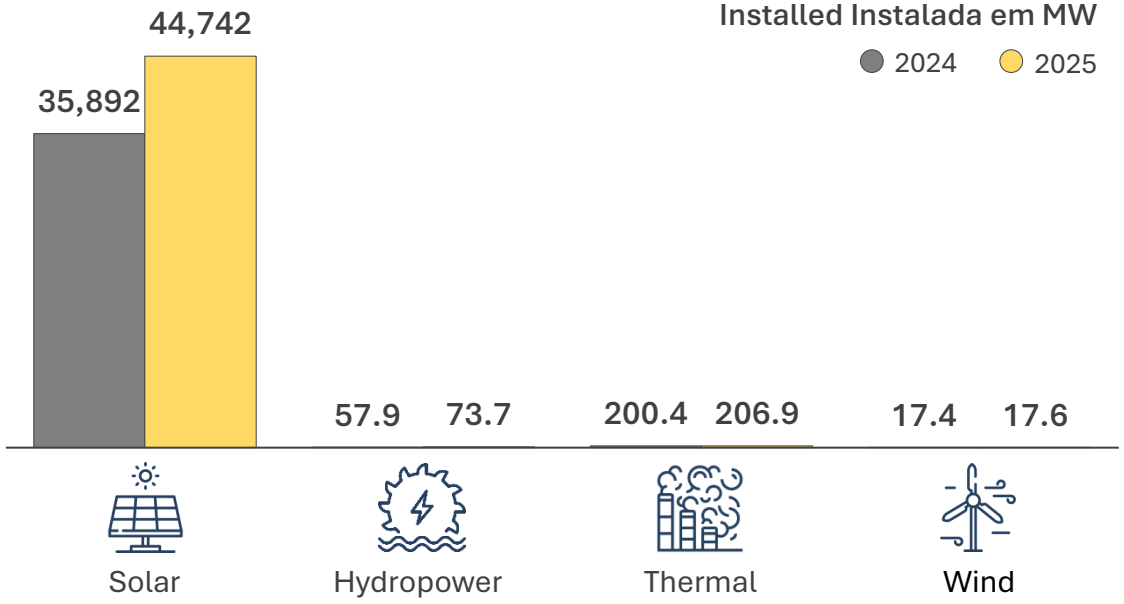


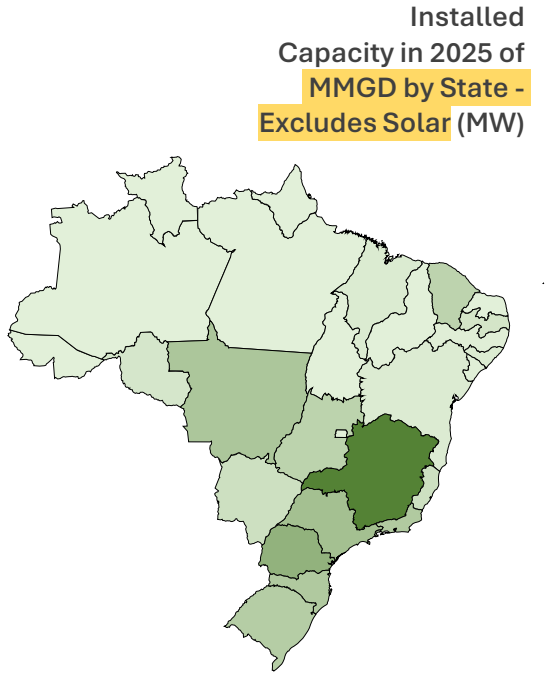
Variation in installed Capacity per source (MW)

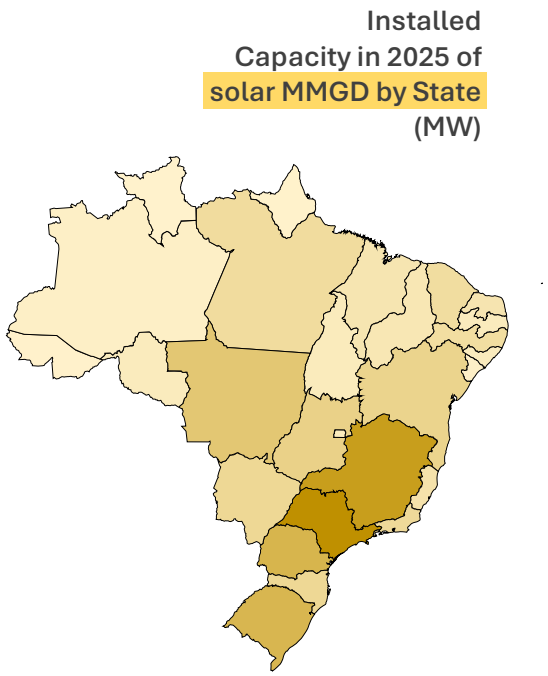
Source	2024	2025	Δ% 25/24
Hydroelectric	109,922	110,237	0.3%
Thermal[2]	46,439	49,252	6.1%
Nuclear	1,990	1,990	0.0%
Wind	29,550	34,707	17.5%
Solar	48,468	64,793	33.7%
Available capacity	236,370	260,979	10.4%

[1] Includes distributed micro and mini generation
[2] Includes biomass, natural gas, oil and coal

The installed capacity of MMGD[1] was concentrated in the Center-South of the country, influenced by the expansion of solar in federative units such as Minas Gerais, São Paulo, Santa Catarina, Rio Grande do Sul and Mato Grosso.







Distributed solar photovoltaic micro and mini generation in Brazil reached **44,742 MW** of installed capacity. **The majority share of installed capacity through photovoltaic panels sets the pace of expansion of the MMGD segment in Brazil**

[1] Law 14,300/2022

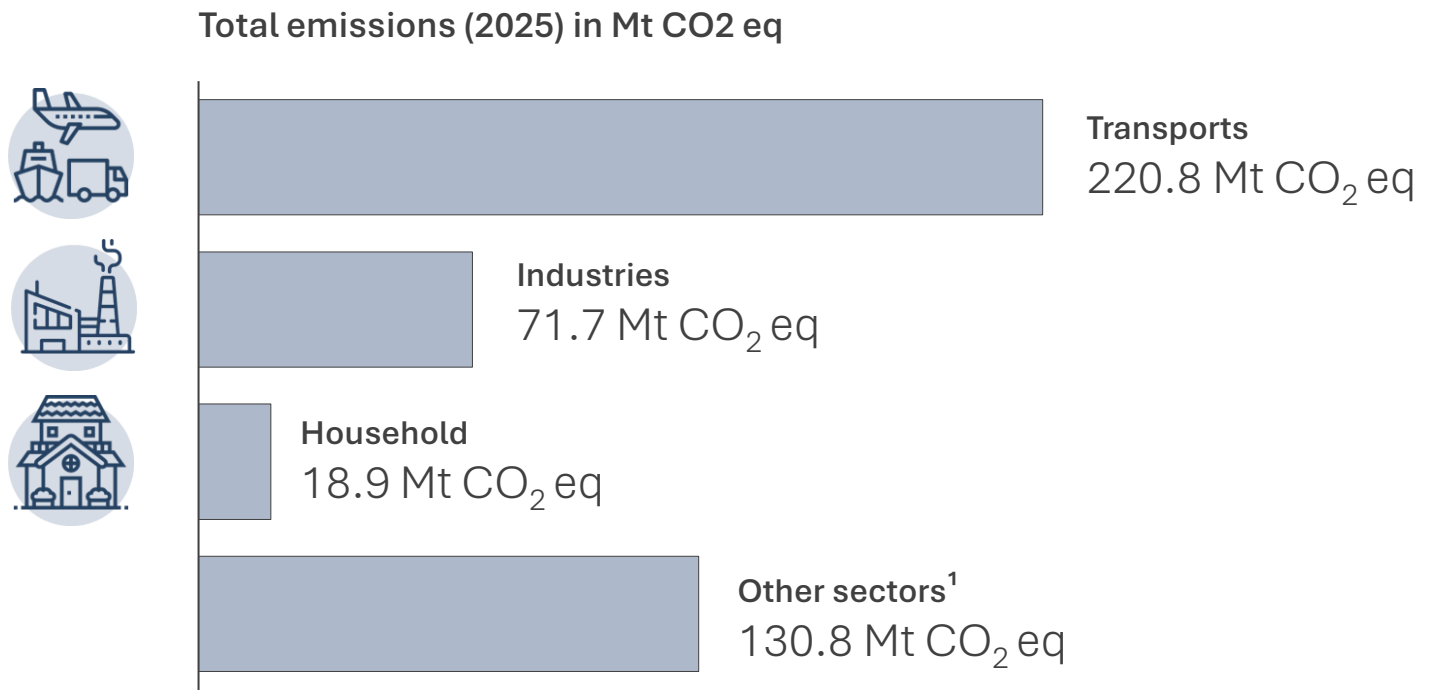
Emissions in production and use of energy

In 2025, the total **CO_2** anthropic emissions associated with the Brazilian **energy matrix** reached 440.2 million tonnes of CO_2 equivalent, an increase of 2.5% compared to 2024.

2025
442.3 Mt CO_2 eq

2024
429.5 Mt CO_2 eq

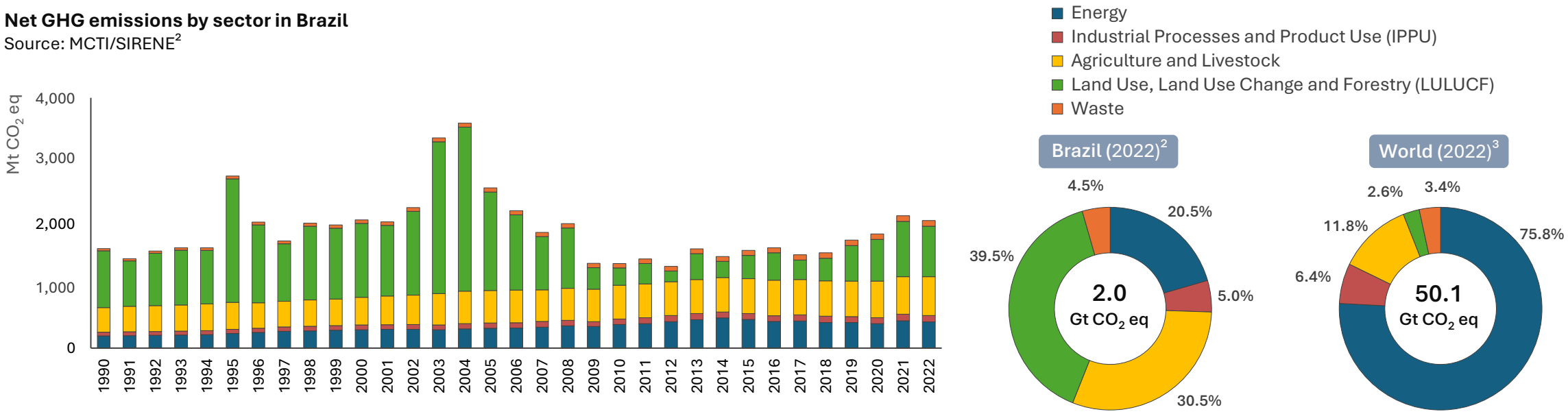
3.0% increase



[1] Includes the Agriculture, Services, Energy, Power Plants sectors and Fugitive Emissions

About 70% of Brazilian GHG emissions[1] are focused on the Agriculture and Land Use, Land Use Change and Forestry (LULUCF) sectors, while emissions from the Energy sector corresponded to 20.5% of the total inventoried in 2022.

Net GHG emissions by sector in Brazil
Source: MCTI/SIRENE[2]

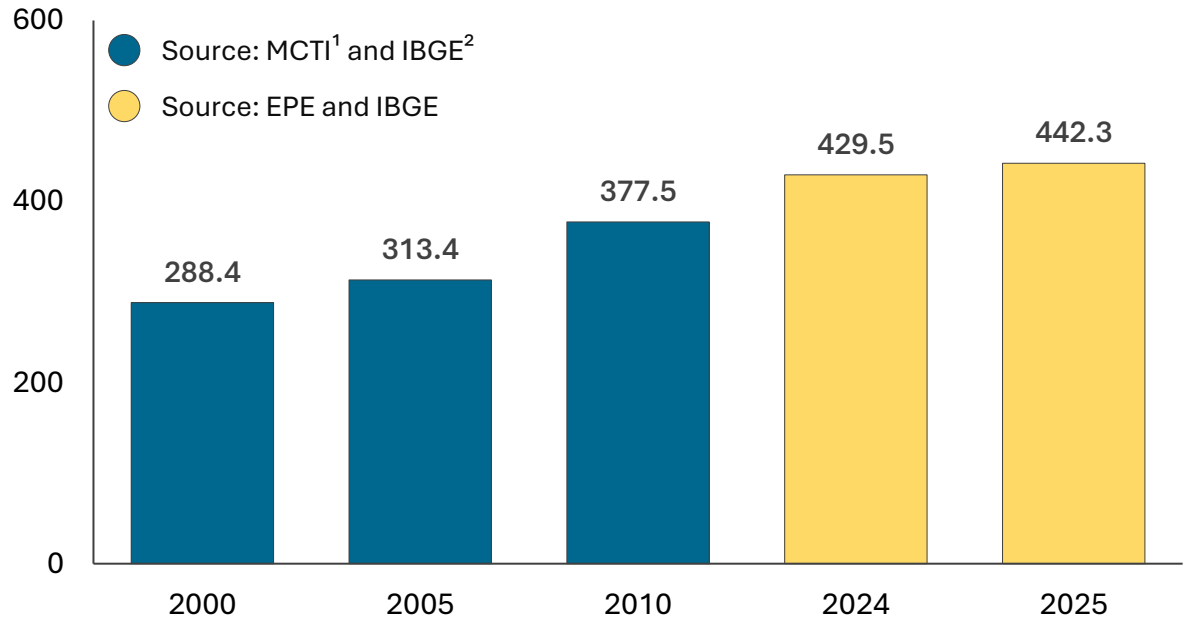


While the **energy sector in the world** accounts for **75.8% of net GHG emissions**, in Brazil the emissions profile is in a different position due to the high renewability of its energy matrix.

[1] GHG refers to Greenhouse Gases; [2] Access the National Inventory data by clicking HERE.
[3] Access the data on global net emissions by clicking HERE.

Evolution of total CO_2 (Mt CO_2 eq) associated with the energy matrix

Total Emissions Growth - Mt CO_2 eq	
Indicator	2000 a 2025
Average annual growth rate	1.73%

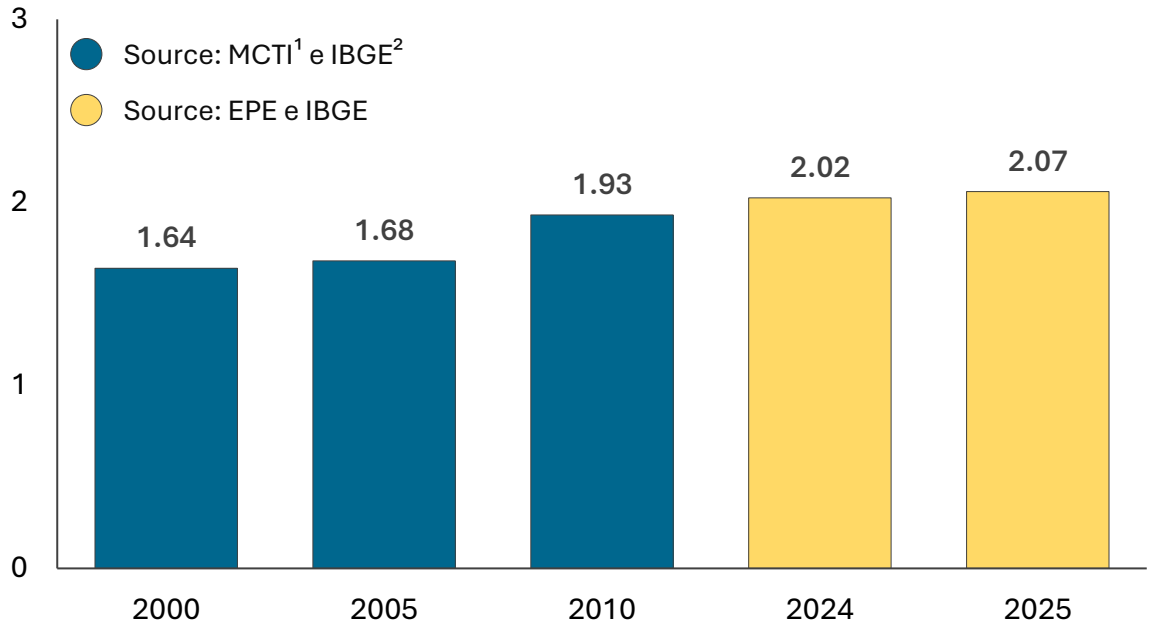


There was an **increase in emissions in 2025 (+3.0%)**, due to the greater share of non-renewable sources in TES.

[1] Ministry of Science, Technology and Innovation
[2] Brazilian Institute of Geography and Statistics

Evolution of per capita CO_2 (t CO_2 eq/inhabitant) associated with the energy matrix

Emissions per capita growth – t CO_2 eq/inhabitant	
Indicator	2000 a 2025
Average annual growth rate	0.93%



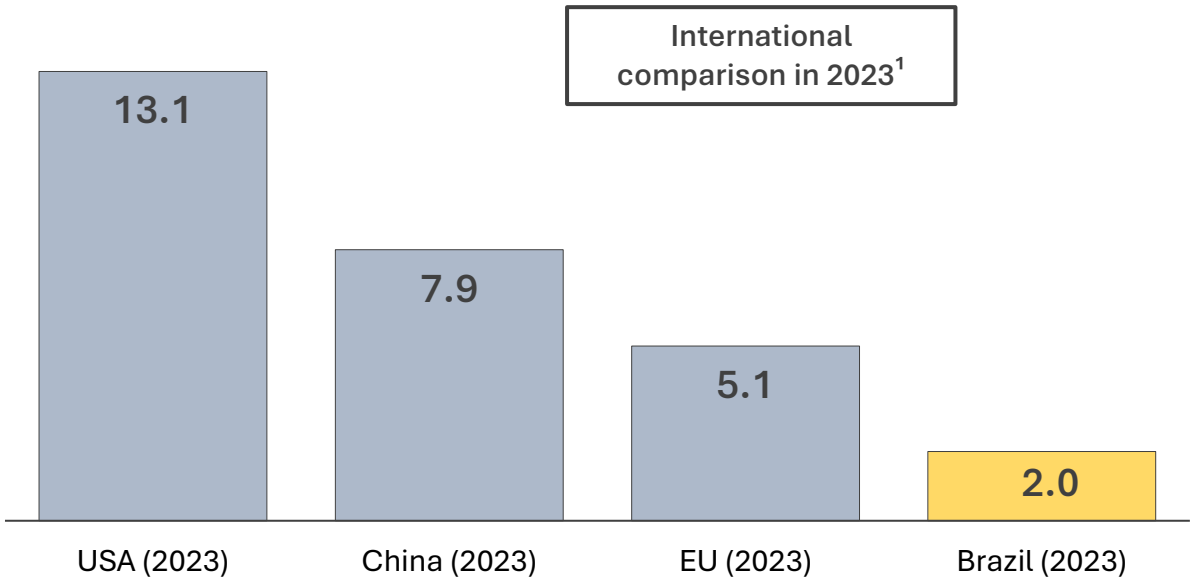
Per capita CO **emissions associated with the Brazilian energy matrix $_2$remained stable**, reflecting the strong performance of renewable sources in 2025.

[1] Ministry of Science, Technology and Innovation
[2] Brazilian Institute of Geography and Statistics

CO_2 per capita emissions

CO_2 per capita emissions (2023) in t CO_2/inhab.

Source: International Energy Agency. Prepared by: EPE



Brazil in 2025

Brazilian per capita emissions

2.1 t CO_2 eq/inhab.

Source: EPE

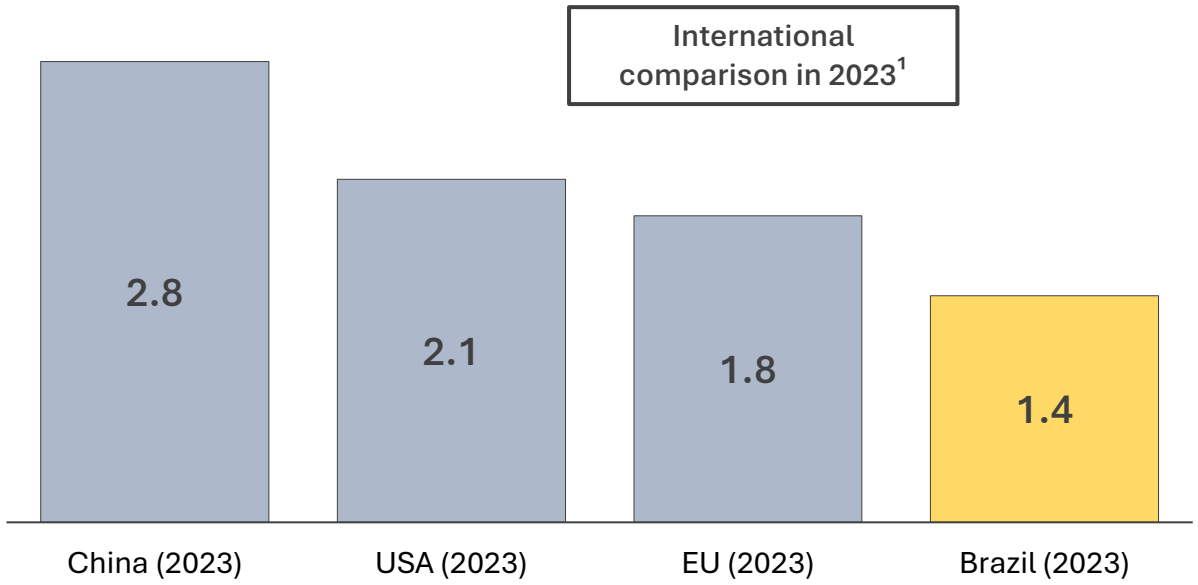
On average, in energy production and consumption, **each Brazilian emits the equivalent of 15% of a U.S. citizen, 40% of a European Union citizen, and 26% of a Chinese citizen.**

[1] 2023 data for international comparison due to the availability of data from the International Energy Agency for the U.S., China and the European Union.

Emissions per unit of Total Energy Supply

CO_2 emissions (t) per toe (2023)

Source: International Energy Agency. Prepared by: EPE



Brazil in 2025

Emissions associated with the Total energy supply in Brazil

1.3 t CO_2 eq/toe

Source: EPE

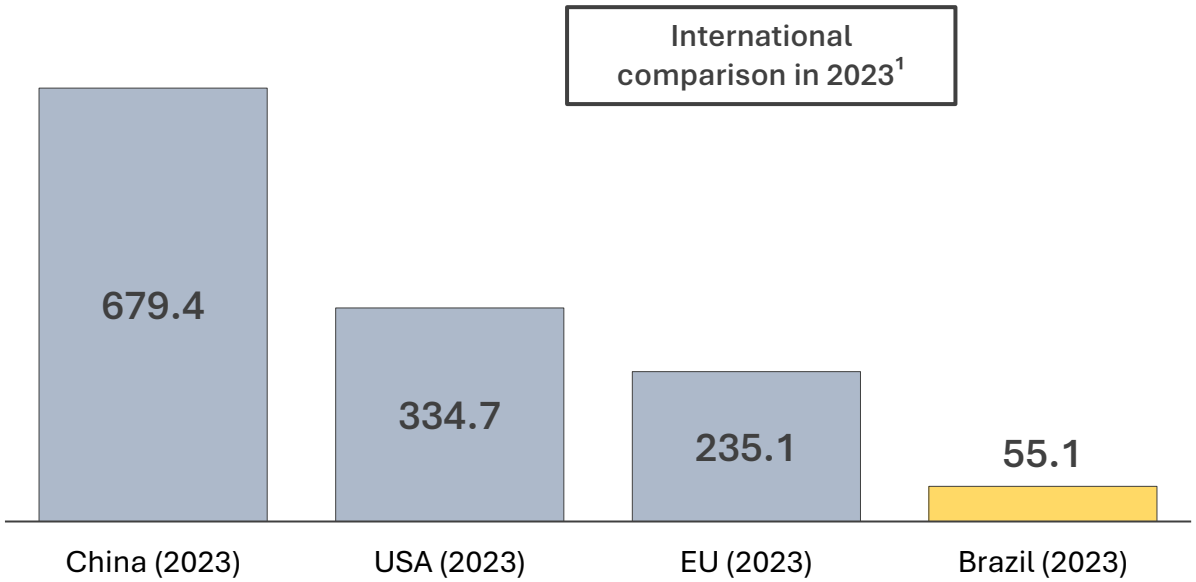
For each tonne of oil equivalent (toe) made available, Brazil emits the equivalent of **74% of what the European Union emits, 66% of what the United States (U.S.) emits and 49% of what China emits.**

[1] 2023 data for international comparison due to the availability of data from the International Energy Agency for the U.S., China and the European Union.

Emissions from electricity production

CO_2 emissions (kg) per MWh generated (2023)

Source: International Energy Agency. Prepared by: EPE



Brazil in 2025

Carbon emissions in Brazilian electricity generation

67.5 kg CO_2 eq/MWh

Source: EPE

To produce 1 MWh, the Brazilian electricity sector emits about **16% of the amount emitted by the U.S. electricity sector, 8% of what is emitted by the Chinese electricity sector, and 23% of what is emitted by the electricity sector of European Union countries**.

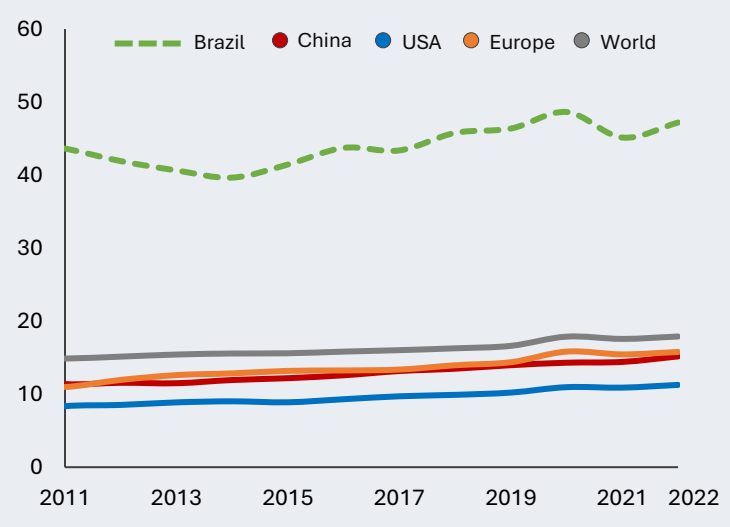
[1] 2023 data for international comparison due to the availability of data from the International Energy Agency for the U.S., China and the European Union.

SDG 7 Indicators (Affordable and Clean Energy)

The figures below show the Sustainable Development Goals indicators for Brazil compared to the World and selected countries. Brazil's indicators are calculated annually by EPE and IBGE. For the Energy Intensity of TES, for international comparison purposes, EPE calculated from a GDP series in 2021 US$ppp.

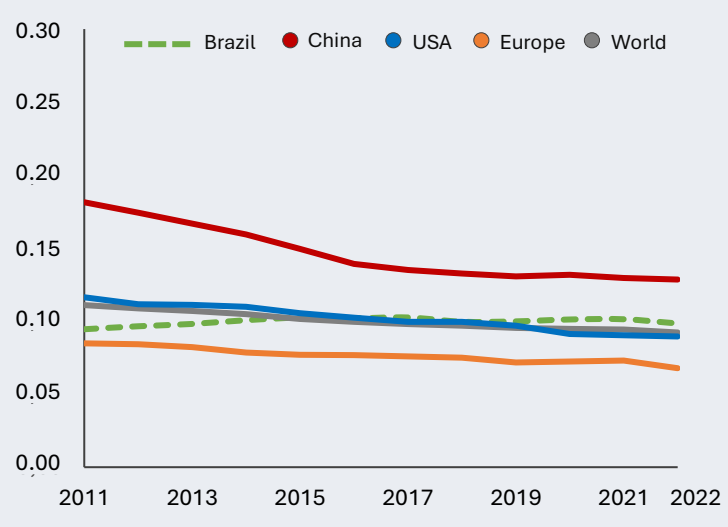
SDG 7.2.1

Share of renewables in Total Energy Supply (TES)



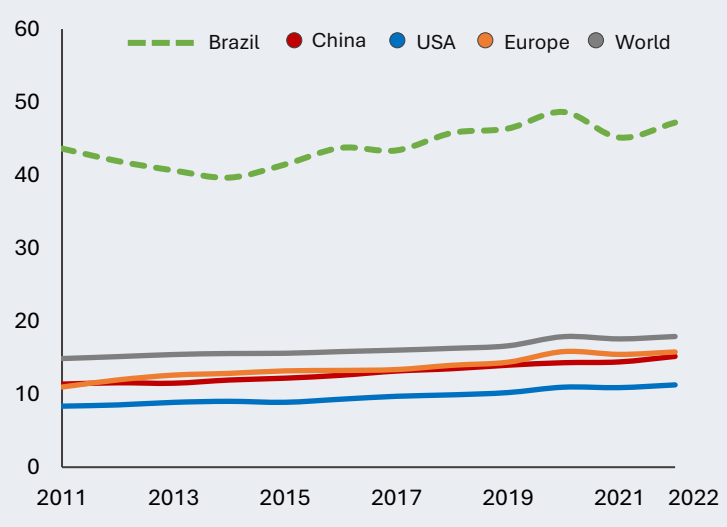
SDG 7.3.1

Energy intensity of TES [toe/thousand US$ppp (2021)]



SDG 7.b.1

Installed renewable capacity per capita [W per capita]



The SDG 7 indicators are available on the IBGE portal and can be accessed by clicking HERE

Note: PPP stands for Purchasing Power Parity

Main movements in 2025

Total Supply and Energy Consumption:

- Renewable sources reached a share of 49.4% in the Brazilian energy matrix;
- The share of renewables in the national electricity matrix was 86.8% in 2025;
- Total photovoltaic solar generation grew 24.7% and its installed capacity expanded 33.7% compared to the previous year;
- Wind generation grew 8.2%;
- Industry renewability reached 65.1%, with highlights for sugarcane bagasse and black liquor sources;
- The transport sector reached 26.1% renewability in 2025, with increases of 8.2% in biodiesel and 4.3% in ethanol.

Emissions:

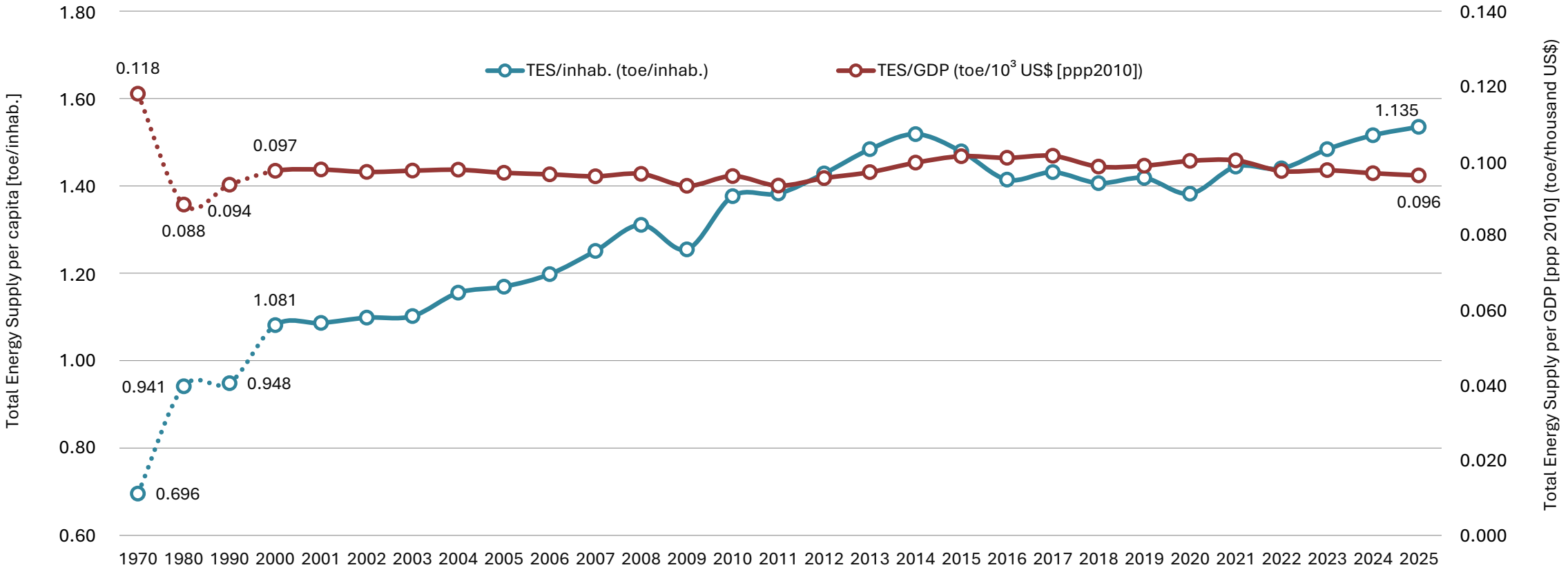
- According to the National Emissions Registry System report from MCTI, published in 2022, only 20% of Brazil's total emissions are associated with the energy sector, below the global average of 76%;
- Brazil's per capita emissions in energy production and use represented 40% of the emissions of a European Union citizen;
- Brazilian electricity sector emissions remained low compared to European Union, US and China countries.

Annexes

Evolution of indicators: energy

Total Energy Supply per capita vs. Total Energy Supply per GDP

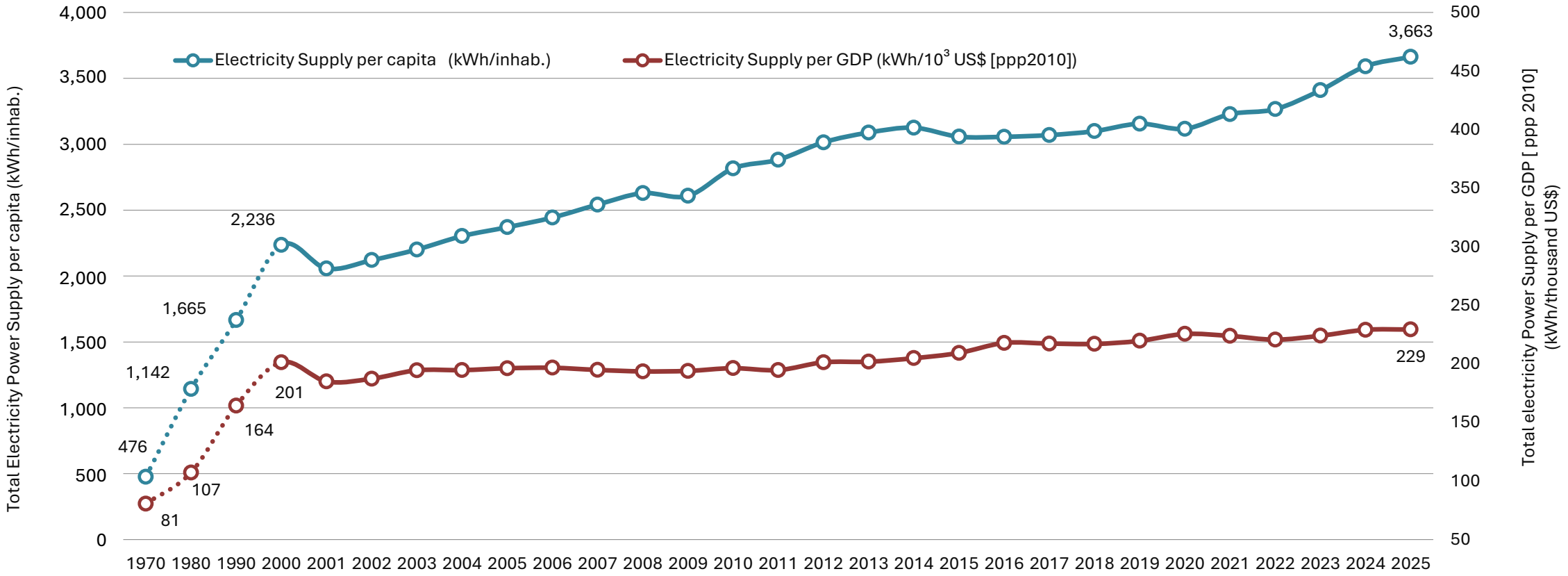
Source: EPE



Evolution of indicators: electricity

Total Electricity Supply per capita vs. Total Electricity Supply per GDP

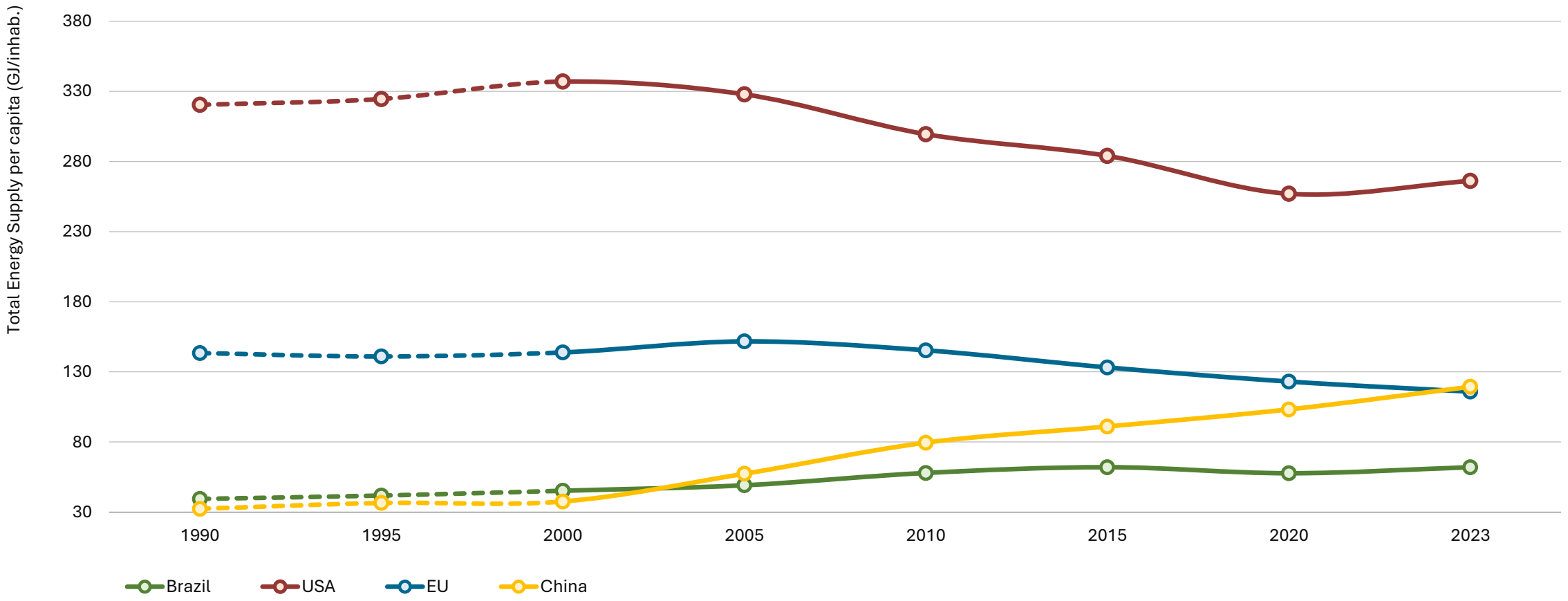
Source: EPE



Evolution of indicators: Brazil and the World

Total Energy Supply per capita

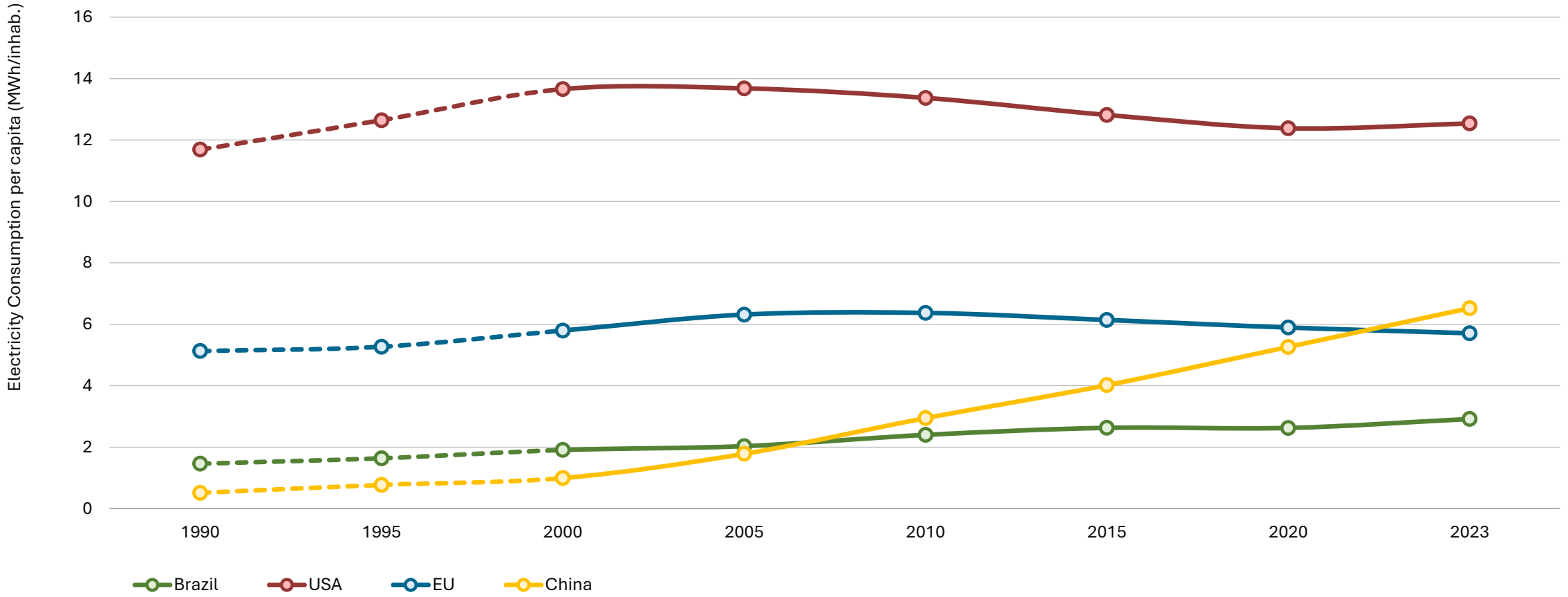
Source: International Energy Agency. Prepared by: EPE



Evolution of indicators: Brazil and the World

Electricity consumption per capita

Source: International Energy Agency. Prepared by: EPE



Key statistics

Source	Unit	2024	2025	Δ% 25/24
Oil Production[1]	10^3 bbl/day	3,372.1	3,774.1	11.9%
Natural Gas Production	10^6 m^3/day	153.5	179.2	16.7%
Electricity Generation	TWh	753.3	775.9	3.0%
Liquid Fuel Consumption	10^6 L/day	426.1	437.6	2.7%
Electricity Consumption	TWh	652.4	667.8	2.4%
Total Energy Supply (TES)	10^6 toe	322.9	328.2	1.7%
Total Electricity Supply[2]	TWh	764.9	783.3	2.4%
Population	10^6 inhab.	211.3	212.1	0.4%
GDP [2010][3]	10^9 US$	3,126.9	3,228.2	3.2%

[1] bbl: barrel; includes natural gas liquids and LPG
[3] Includes imports and self-production
[3] Values in constant 2010 reais converted to dollars at 2010 purchasing power parity (ppp).

Final energy consumption by source[1]

Unit: 10^3 toe

Source	2024	2025	Δ% 25/24
Diesel Oil[2]	56,593	58,043	2.6%
Electricity	56,107	57,434	2.4%
Sugarcane Bagasse	32,602	31,476	-3.5%
Gasoline[3]	24,878	25,782	3.6%
Natural Gas	14,467	14,755	2.0%
Firewood	18,513	18,405	-0.6%
Ethanol	18,632	19,440	4.3%
LPG	8,411	8,521	1.3%
Black Liquor	8,802	9,352	6.3%
Fuel Oil	2,005	1,414	-29.5%
Kerosene	3,372	3,532	5.0%
Other Sources[4]	27,578	27,253	-1.2%
TOTAL	**271,960**	**275,417**	**1.3%**

[1] Excluding non-energy final consumption;
[2] Includes biodiesel; [3] Includes gasoline A and aviation gasoline;
[4] Includes refinery gas, coal coke and charcoal, among others

Selected indicators

Indicators	Unit	2024	2025	Δ% 25/24
GDP per capita	US$/inhab	14,800	15,218	2.8%
TES per capita	toe/inhab	1.528	1.547	2.0%
TES per GDP [2010]	toe/10^3 US$	0.103	0.102	-1.5%
Electricity Supply per capita	kWh/inhab	3,620	3,692	2.0%
Electricity Suppy per GDP [2010]	kWh/10^3 US$	245	243	-0.8%

Evolution of indicators

Parâmetros	Unit	1970	1980	1990	2000	2010	2023	2024	2025
Total Energy Supply (TES)	10^6 toe	66.9	114.7	142.0	190.1	269.0	314.5	322.9	328.2
Total Electricity Supply[1]	TWh	45.7	139.2	249.4	393.2	550.4	723.2	764.9	783.3
Population	10^6 hab	95.7	122.2	148.1	174.7	196.4	211.3	211.3	212.1
GDP [2010][2]	10^9 US$	567.3	1,297.7	1,517.1	1,953.0	2,803.6	3,126.9	3,126.9	4,474.3
Indicators	**Unit**	**1970**	**1980**	**1990**	**2000**	**2010**	**2023**	**2024**	**2025**
GDP per capita	US$/inhab	5,928	10,619	10,244	11,179	14,275	14,800	14,800	15,218
TES per capita	toe/inhab	0.699	0.939	0.959	1.088	1.370	1.488	1.528	1.547
TES per GDP [2010]	toe/10^3 US$	0.118	0.088	0.094	0.097	0.096	0.101	0.103	0.102
Electricity Supply per capita	kWh/inhab	478	1,139	1,684	2,251	2,802	3,423	3,620	3,692
Electricity Supply per GDP [2010]	kWh/10^3 US$	81	107	164	201	196	231	245	243

[1] Includes imports and self-production
[2] Values in constant 2010 reais converted to dollars at 2010 purchasing power parity (ppp)

Matrices

The matrices are available on the EPE portal, by scanning the QR code below or clicking the following link: https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/BEN-Series-Historicas-Completas

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Base year 2025

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