

BRAZIL

Country Report

June 2026

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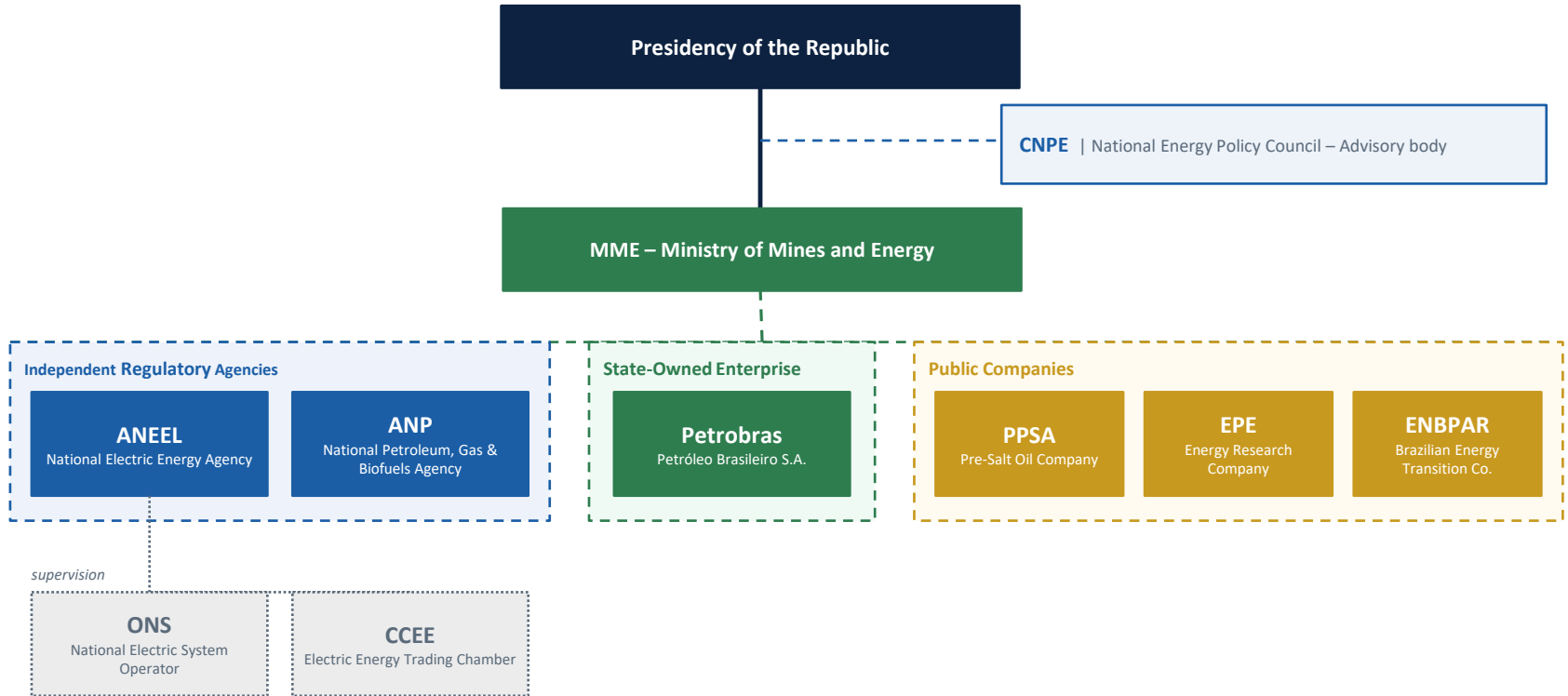
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Energy Prices · Investments · Additional Data

1.1 · Country Profile & Economic Indicators

Country Profile		Key Economic Indicators		
Official Name	Federative Republic of Brazil	GDP (nominal)	USD 2.64 trillion	IMF 2026 — 10th globally
Political System	Presidential Federal Republic	GDP per capita	USD 12,310	IMF 2026
Capital	Brasília	GDP growth (real)	+1.9%	IMF 2026 (estimate)
Territory	8.51 million km² (5th largest in the world)	Inflation (IPCA)	4,39%	IBGE 2026 (last 12 months)
Administrative	26 States + Federal District; 5,570 municipalities	Unemployment	6.1%	IBGE 2026 (1 st quarter)
Population	~213 million inhabitants (IBGE 2025)	HDI	0.805	High Human Development (UNDP 2024)
Urban Population	~87.2% of total population	Life expectancy	76.6 years	IBGE 2025
No. of Households	~91 million (IBGE Census 2022)	Literacy rate	94.7%	Adults ≥15 yrs, IBGE 2025
Currency	Brazilian Real (BRL)	Fertility	1.55	Children per woman IBGE CENSO 2022
Official Language	Portuguese	Government debt	96.5%	Percent of GDP IMF 2026

1.2 · Organizational Structure Related to Energy



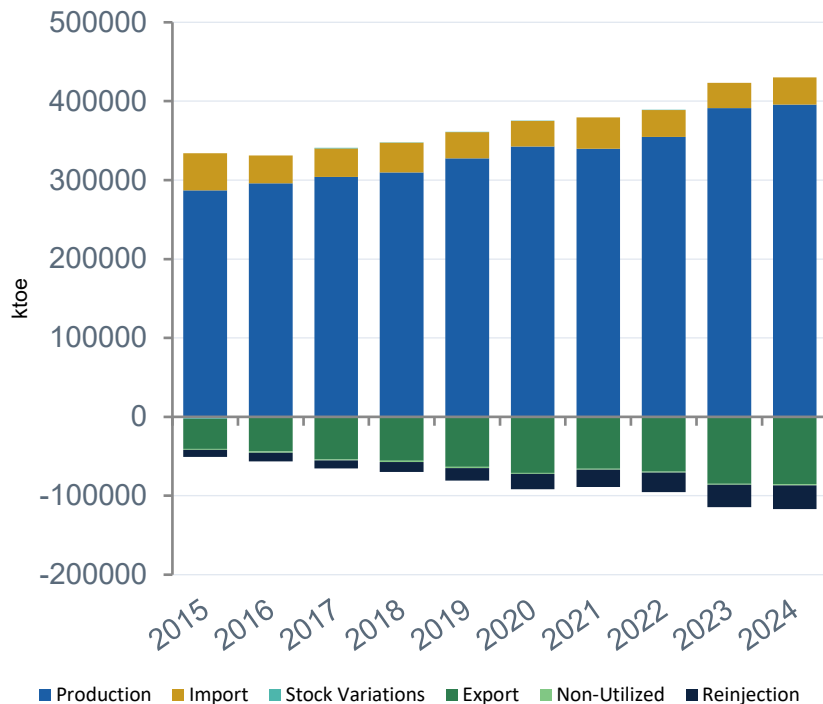
— Line of command (hierarchical subordination)

- - - Affiliation (no hierarchical subordination)

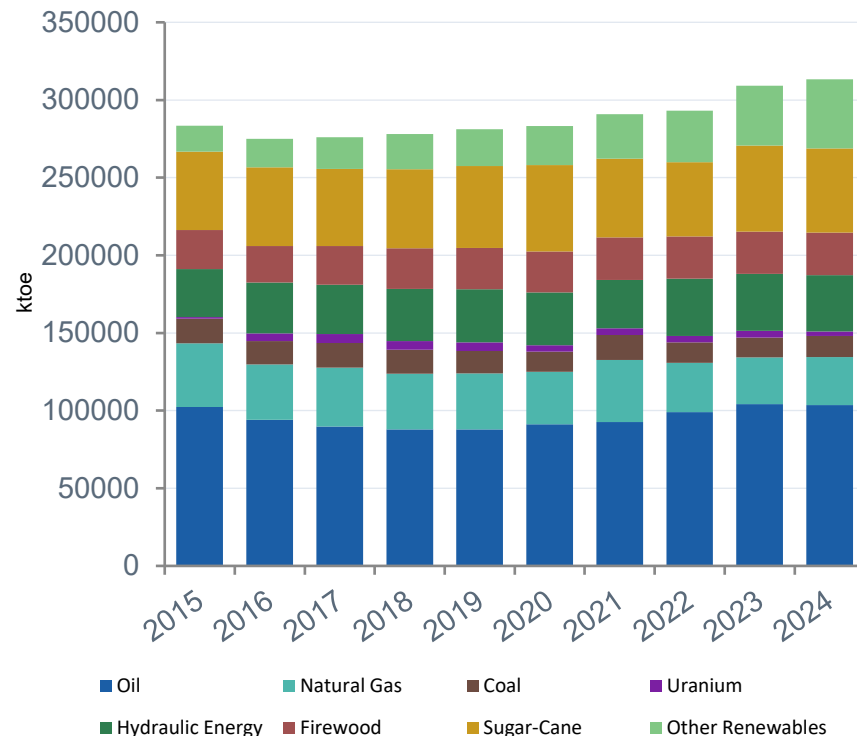
..... Supervision (non-subordinate entity)

2.1 · Primary Energy Supply (2015–2024)

By Source: Production, Imports, Exports & Adjustments (ktoe)

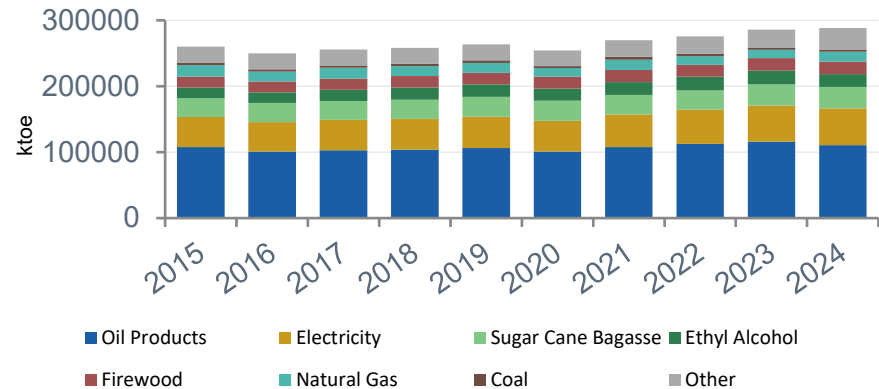


By Energy Source (ktoe)

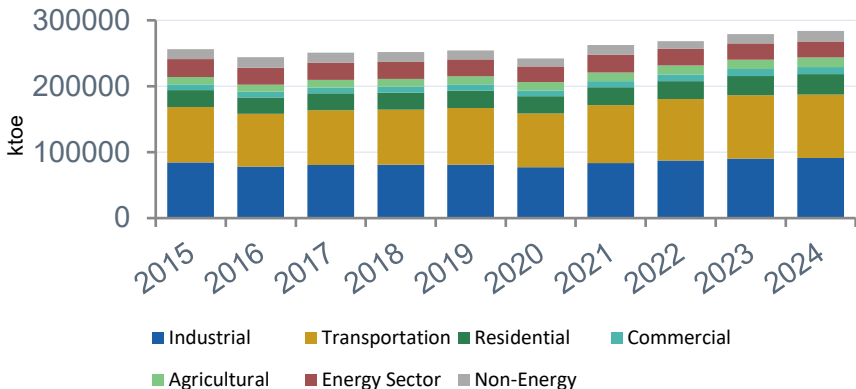


2.2 · Final Energy Consumption & Electricity Generation (2015–2024)

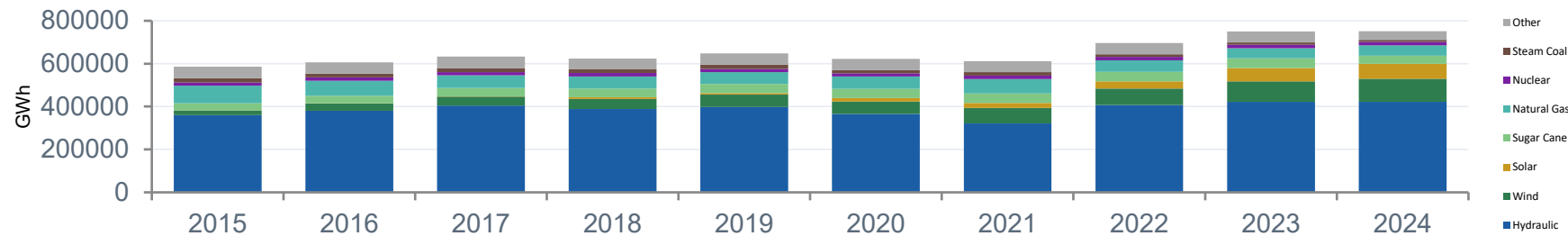
Final Energy Consumption by Source (ktoe)



Final Energy Consumption by Sector (ktoe)

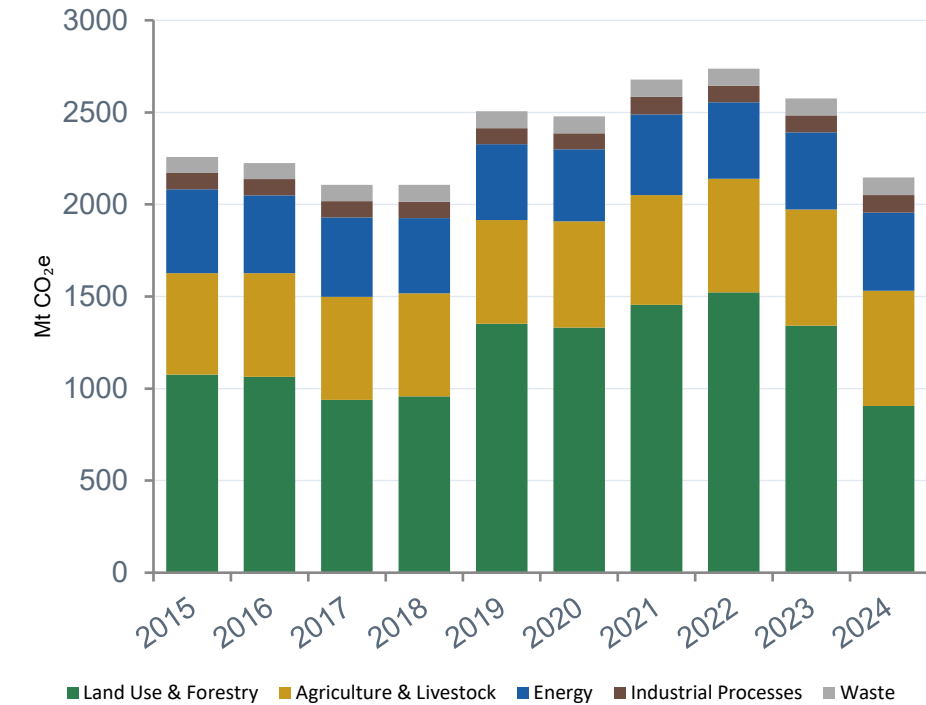


Electricity Generation by Energy Source (GWh)

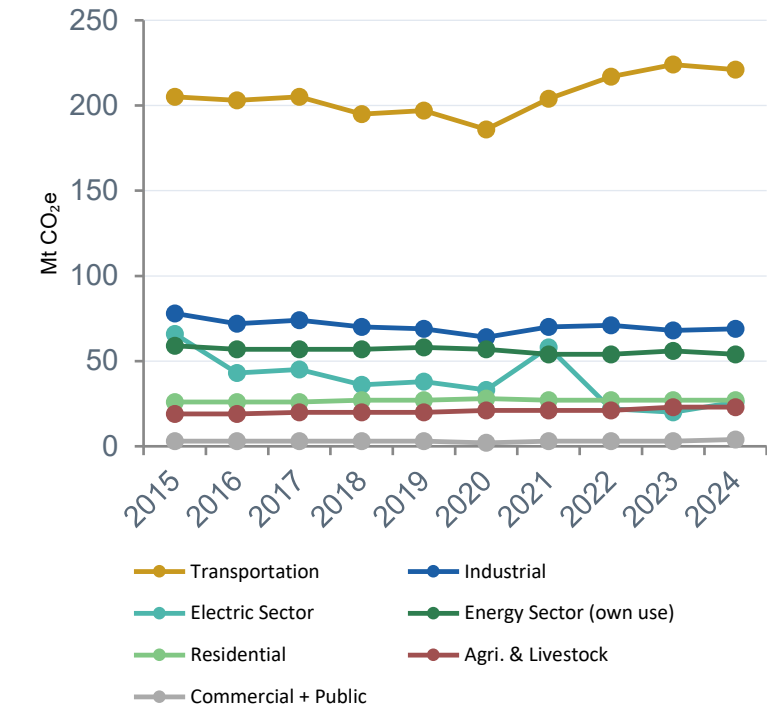


2.3 · CO₂e Emissions (2015–2024)

Total GHG Emissions by Sector (Mt CO₂e)

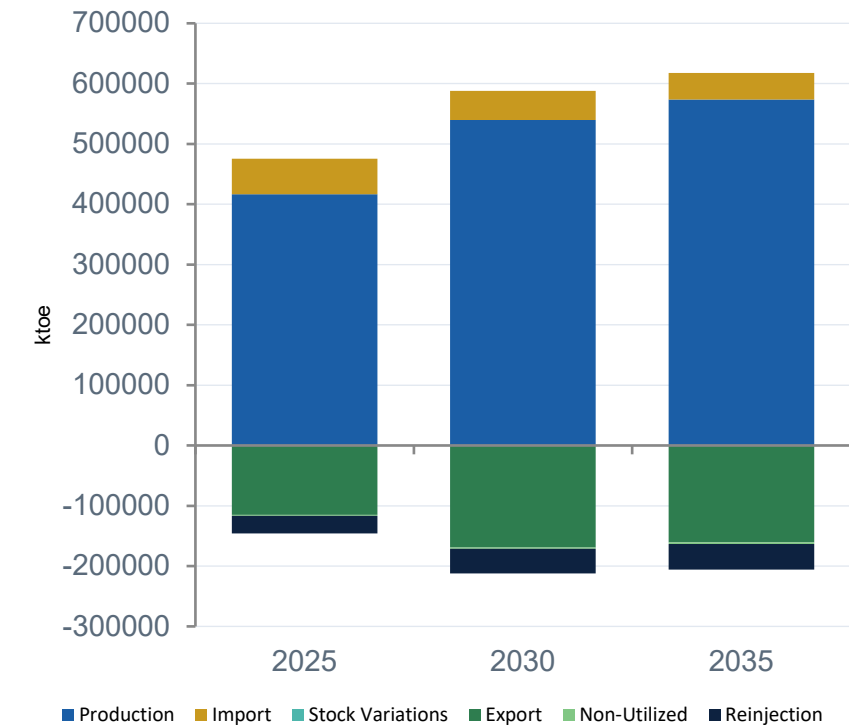


Energy Sector GHG by Category (Mt CO₂e)

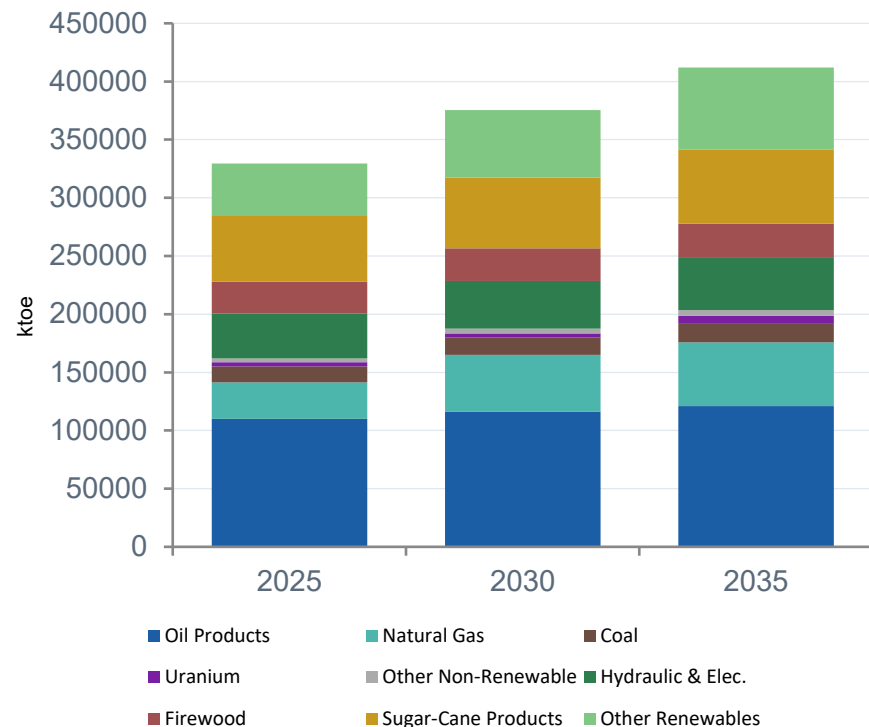


3.1 · Primary Energy Supply Outlook – 2025, 2030 & 2035

By Source: Production, Imports, Exports & Adjustments (ktoe)

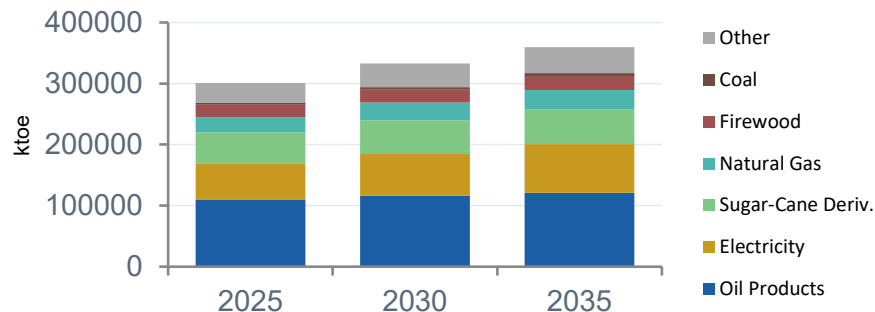


By Energy Source (ktoe)

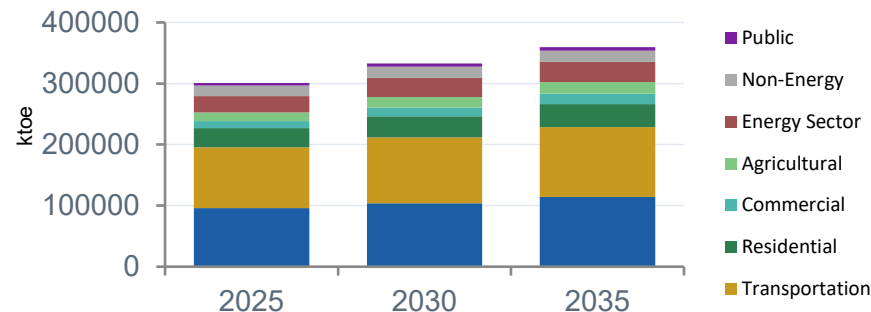


3.2 · FEC, Electricity Generation & CO₂e Outlook – 2025, 2030 & 2035

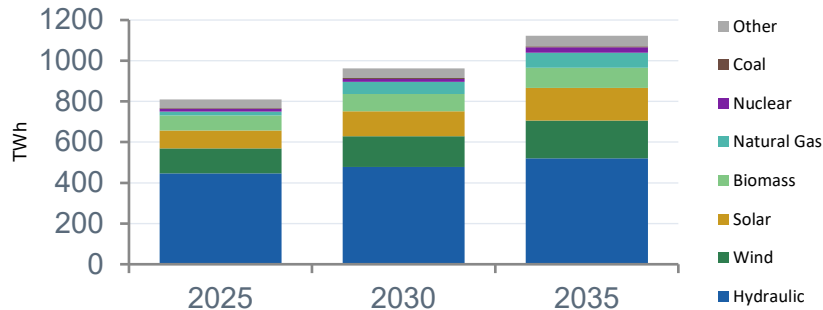
Final Energy Consumption by Source (ktoe)



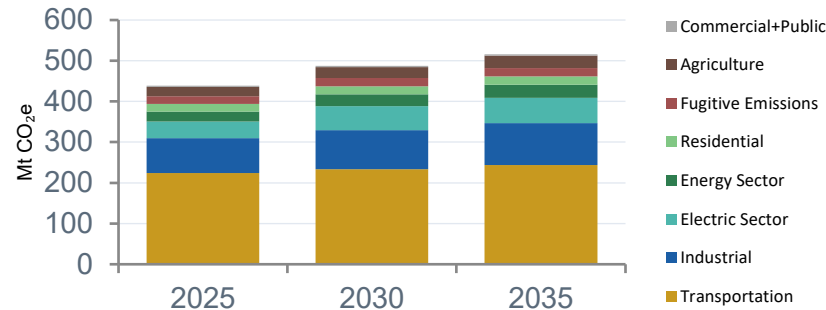
Final Energy Consumption by Sector (ktoe)



Electricity Generation by Source (TWh)



CO₂e – Energy Sector by Category (Mt CO₂e)



3.3 · Long-Term Energy Outlook (2040–2050)

Vision for 2050

Brazil is expected to maintain one of the world's cleanest energy systems while supporting economic growth, energy security and decarbonization objectives.

1. Expansion of Renewable Energy

- Continued growth of wind and solar generation.
- Greater diversification of renewable energy sources.
- Maintenance of a predominantly renewable electricity matrix.

2. Electrification of End-Use Sectors

- Increased electricity use in transport, industry and residential sectors.
- Expansion of electric mobility and digital infrastructure.
- Growing role of electricity in the low-carbon economy.

3. Smart Grids and Digitalization of End-Use Sectors

- Deployment of advanced metering infrastructure and smart grids.
- Increased use of digital technologies to improve system efficiency and reliability. More active consumer participation in electricity markets.

4. Energy Storage and System Flexibility

- Expansion of battery storage and other flexibility solutions.
- Better integration of variable renewable resources.
- Improved resilience and operational efficiency of the power system.

5. Low-Carbon Fuels and New Energy Markets

- Growth of advanced biofuels, biomethane and low-carbon hydrogen.
- Development of new energy value chains supporting decarbonization.
- Stronger integration between electricity and fuel markets.

By 2050, Brazil aims to consolidate a highly renewable, digitalized and consumer-centered energy system, supported by smart grids, distributed energy resources, energy storage technologies and low-carbon fuels.

4.1 · Current Energy Policies – 3 Main Points

01

RenovaBio – National Biofuels Policy

- Established by Law 13,576/2017 and operational since 2020.
- Sets annual decarbonization targets for fuel distributors via Decarbonization Credits (CBIOS).
- Positions Brazil as the world leader in biofuels as a climate solution, reducing transport CO₂ at scale.

02

Tariff Sandboxes (ANEEL)

- ANEEL is conducting real-world pilot projects to test innovative electricity tariff structures with residential consumers.
- The initiative evaluates dynamic pricing, prepaid models, time-based tariffs and consumer engagement mechanisms.
- The objective is to generate evidence for future tariff modernization while preserving affordability and consumer protection and the project supports a more flexible, digital and consumer-centered electricity sector.

03

Universal Energy Access in Remote Areas - Light for All and More Light for the Amazon

- Brazil continues to expand electricity access to remote and isolated communities, particularly in the Amazon region.
- The program combines grid extension, distributed renewable generation and social inclusion policies.
- Special attention is given to indigenous, riverside and traditional communities and the initiative contributes to a just and inclusive energy transition

4.2 · Major Difficulties & Bottlenecks in Energy Policy Formulation

01

Regulatory Fragmentation & Coordination Failures Across Institutions

- Brazil's energy sector is governed by multiple agencies with complex and expanding responsibilities.
- Budget constraints and staffing limitations affect the capacity of regulatory agencies to keep pace with the energy transition. Ensuring adequate institutional capacity is essential for effective regulation, planning and market oversight.
- Regulatory institutions are increasingly required to address new topics such as distributed energy resources, storage, hydrogen, digitalization and energy security.

02

Integration of Distributed Energy Resources and Grid Modernization

- Brazil is experiencing rapid growth in distributed solar generation and other distributed energy resources.
- Distribution networks require modernization to accommodate bidirectional power flows and increasing electrification.
- The integration of storage systems, electric vehicles and smart technologies demands new regulatory approaches.

03

Oil & Gas Sector Transition Risk vs. Energy Security and Fiscal Revenue

- Pre-salt oil production is projected to grow, creating a fiscal dependence conflict with decarbonization goals.
- Oil royalties are a major municipal revenue, and abrupt shifts could destabilize public finances.
- Decommissioning oil facilities poses environmental, financial, and regulatory challenges without an established fund or strong regulatory framework.

5 · Learning Objectives & Supervisor's Expectations

WHAT I WOULD LIKE TO LEARN

1. Energy Demand Modeling

Gain hands-on expertise in energy balance tables and demand forecasting methodologies applicable to Brazil's regulatory context.

2. Japan's Decarbonization Policies

Understand how Japan manages the energy trilemma (security, sustainability, affordability) through its Strategic Energy Plan and carbon-neutral roadmap.

3. Regulatory Best Practices

Comparing Japan's institutional framework regarding financial guarantees for energy installations aims to improve Brazil's regulatory design.

SUPERVISOR'S EXPECTATIONS

1. Action Plan for Decommissioning Policy

Develop a concrete action plan to incorporate international best practices in E&P decommissioning into Brazil's regulatory framework, leveraging Japan's experience with aging industrial infrastructure.

2. Regulatory Innovation for Consumer-Centered Energy Systems

Identify international best practices on smart grids, demand response, advanced metering and innovative tariff structures. Evaluate how these approaches could support Brazil's electricity sector modernization agenda.

3. Institutional Capacity Building

Produce a technical report disseminating key learnings to ANP/ENEEL teams, contributing to the agency's strategic planning and Brazil's energy transition roadmap. Foster institutional learning and support future policy and regulatory initiatives related to energy transition, digitalization and consumer participation in the energy sector.

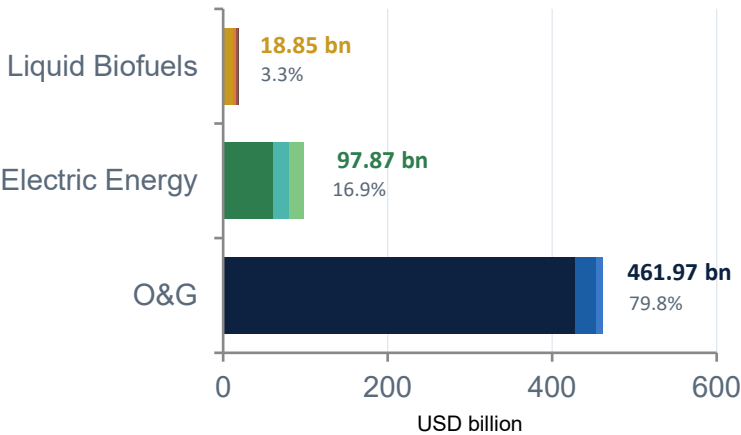
Appendix A · Energy Prices – Historical Series (2015–2024)

Energy Source	Unit	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Diesel Oil	m ³	847	886	996	954	909	656	846	1273	1152	1098
Fuel Oil	t	390	385	425	528	508	367	574	835	724	658
Gasoline	m ³	1001	1057	1177	1206	1109	820	1071	1184	1102	1099
Hydrous Ethanol (Alcohol)	m ³	668	762	843	790	735	561	803	857	751	716
LPG	t	1113	1194	1422	1431	1346	1041	1290	1636	1605	1478
Natural Gas – Industry	10 ³ m ³	442	424	507	533	588	415	519	769	757	695
Industrial Electricity	MWh	172	155	170	168	165	126	139	150	154	159
Residential Electricity	MWh	215	184	200	196	196	146	159	164	168	165
Steam Coal	t	41	46	61	34	33	26	56	64	63	73
Charcoal	m ³	48	52	58	53	54	46	49	54	n/d	n/d
Firewood from Reforestation	m ³	23	25	25	26	26	27	30	34	n/d	n/d
Dollar/selling (year avg.)	BRL/US\$	3.34	3.48	3.19	3.66	3.95	5.16	5.4	5.17	5	5.39

¹Exchange rate: BCB/PTAX annual average. n/d = not available.

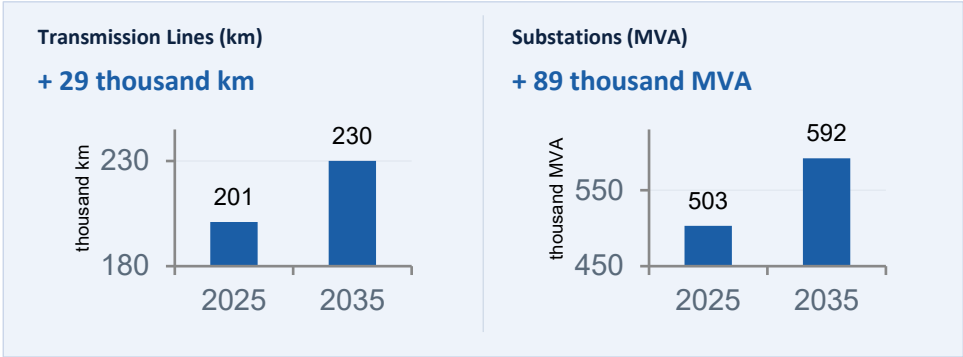
Appendix B • Estimated Energy Investment 2025–2035

Estimated Investment by Sector (USD billion, 2025–2035)



TOTAL **USD 578.7 billion**

E&P	428.0	Micro Generation	17.4
Petroleum Derivatives	25.7	Ethanol	11.8
Natural Gas	8.2	SAF/Green Diesel	4.6
Centralized Generation	61.3	Biodiesel	1.6
Transmission	19.2	Biomethane	0.8



Activity	Expansion
E&P – Oil & Natural Gas	105 UPs (contracted areas); 35 permanent-offer blocks / 7 UPUs (uncontracted areas)
Refineries, UPGNs & LNG Terminals	8 expanded refineries + 1 refining asset set; 2 UPGNs; 1 LNG regasification terminal
Pipelines	8 transport pipelines; 4 flow-assurance pipelines; 3 compressor stations
Ethanol	10.2 billion litres (incl. 2.2 bn corn ethanol); 61 plants
Biodiesel	3.0 billion litres of biodiesel; 5 plants
Biomethane	0.77 million Nm³/day; 25 plants

Appendix C · Additional Information – Brazil's Energy Highlights

Pre-salt Oil Production

- Brazil's pre-salt fields (Tupi, Búzios, Libra) produce ~3.8 million boe/day (2024), accounting for ~80% of national output.
- Búzios is the largest deep-water oil field globally; Petrobras aims to reach 4.0 million boe/day by 2026.
- The decommissioning of oil production facilities represents the next major regulatory and environmental challenge for the ANP (~70 billion USD).

Ethanol & Sugarcane Sector

- Brazil is the world's 2nd largest ethanol producer (~37 billion liters in 2025), behind the USA.
- Sugarcane ethanol has a GHG intensity ~90% lower than gasoline on a lifecycle basis.
- The RENOVABIO project aims to achieve 10% decarbonization of the fuel matrix by 2030.

Renewable Electricity Leadership

- More than 85% of Brazil's electricity generation comes from renewable sources.
- Hydropower remains the backbone of the system, complemented by rapidly expanding wind and solar generation.
- Brazil operates one of the world's largest renewable electricity systems.

Digitalization, Smart Grids and Consumer Participation

- Distributed solar generation already represents an important share of electricity consumption and continues to grow rapidly.
- Brazil is advancing discussions on smart grids, advanced metering, energy storage and virtual power plants.
- Tariff Sandboxes are helping regulators understand how consumers respond to innovative tariff structures and digital energy services.

Brazil's energy transition is characterized by the combination of renewable resources, regulatory innovation, universal energy access and increasing consumer participation in the electricity sector.