

BRAZIL'S COUNTRY REPORT

COURSE: ENERGY POLICY – JICA

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Ministry of Mines and Energy

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BRAZIL – COUNTRY PROFILE



1 GENERAL

7th
**Largest by
population**
(over 212 million
people)

- ❑ Federation composed by 26 states and 1 federal district
- ❑ Capital: Brasília / Most populous city: São Paulo
- ❑ Official language: Portuguese
- ❑ Federal republic with a presidential system
- ❑ President is both head of state and government, elected every four years with one reelection

Climate

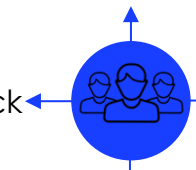
- ❑ Tropical in most regions (warm year-round)
- ❑ Amazon region is hot and humid
- ❑ Southern areas experience more temperate weather

Geography

- ❑ Largest country in South America (8.5 million square kilometers)
- ❑ 5th-largest country in the world by area
- ❑ Diverse landscape, including the Amazon Rainforest, Pantanal wetlands, mountains, and long coastlines



45,3% Mix Race



0,6% Indigenous

49% Catholicism



14% No religion

11% Others

26% Protestantism

Ethnic and
Religions groups
(2022)

BRAZIL – ECONOMIC PROFILE



GDP

USD 2,1 trillion

(10TH largest)

GDP

per capita

USD 11,3 thousand

(76TH largest)

The Brazilian economy is diversified, with agricultural, industrial and service sectors



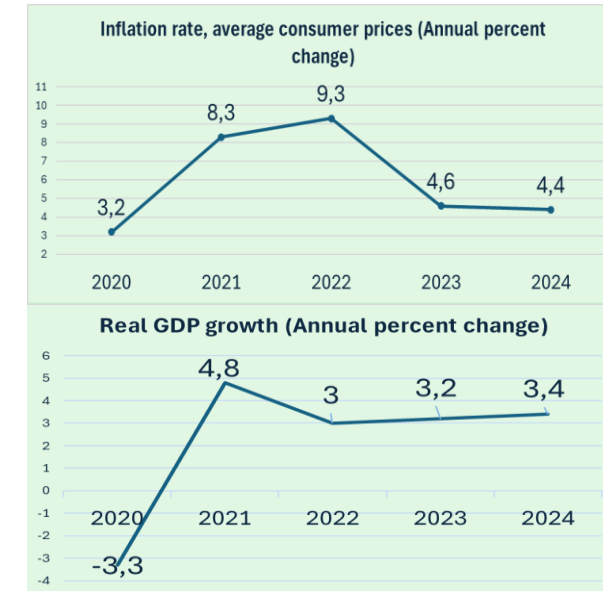
Main Economic Sectors

- ❑ **Agriculture:** Highlights for soybeans (2nd), coffee (1st), corn (3th), beef (1st) and chicken.
- ❑ **Industry:** vehicles, steel, oil and gas.
- ❑ **Services:** most important sector, including trade, tourism, education and health.



Investments and Perspectives

- ❑ Investments in renewable energy,
- ❑ Technology and infrastructure
- ❑ Sustainable growth with a focus on innovation and sustainability.



Challenges

Social inequality

Infrastructure

Public safety

Opportunities

Agricultural potential

Abundant natural resources

Large and young domestic market

BRAZIL – ORGANIZATIONAL STRUCTURE



SECTOR POLICY



Conselho Nacional de
Política Energética

REGULATION, SURVEILLANCE AND MEDIATION



MARKET AND SYSTEM OPERATION



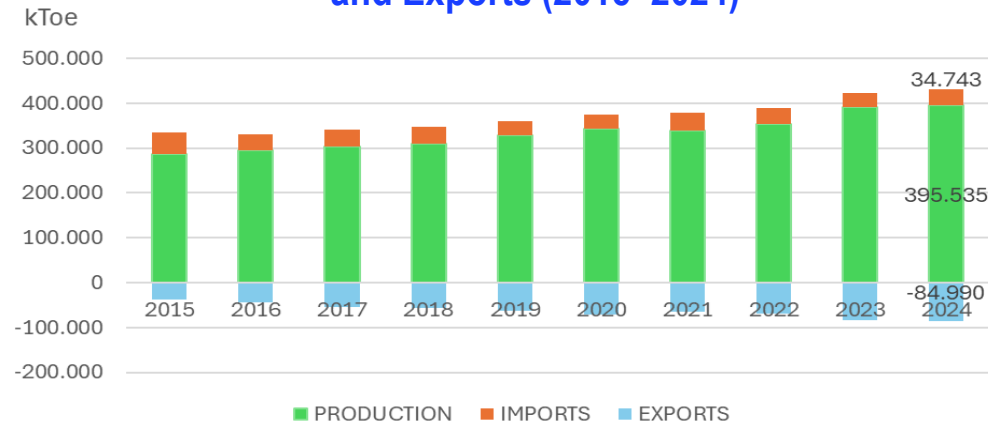
PLANNING



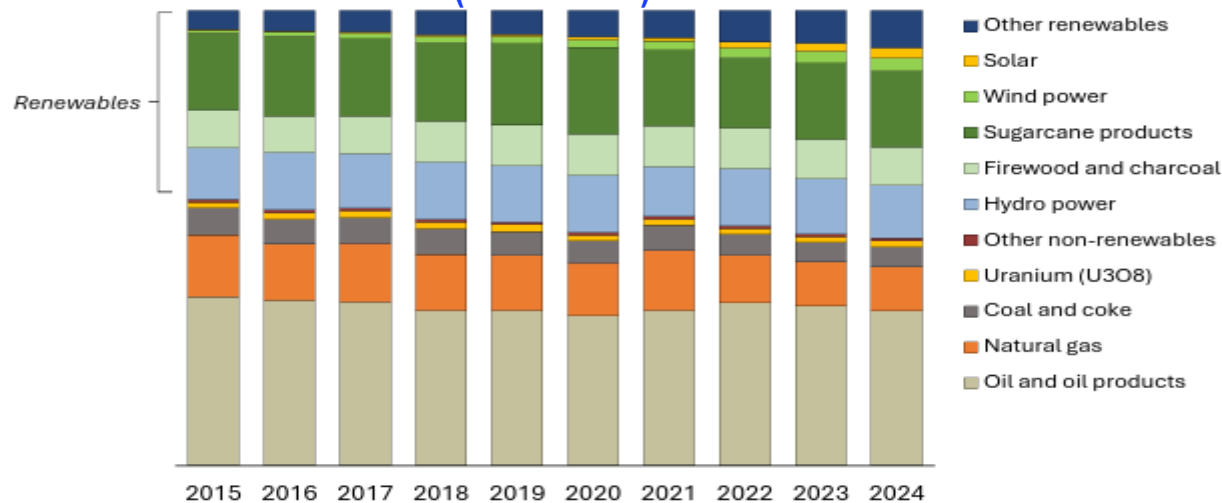
BRAZIL – TOTAL ENERGY SUPPLY 2015-2024



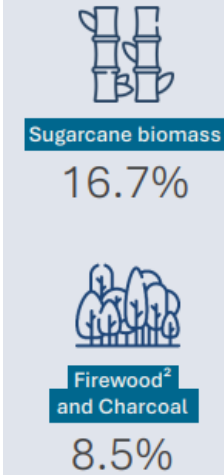
Energy Balance: Production, Imports, and Exports (2015–2024)



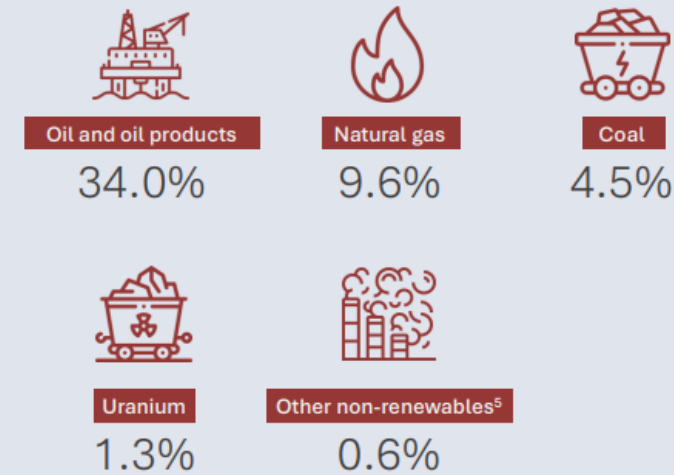
Energy Supply Mix (2015–2024)



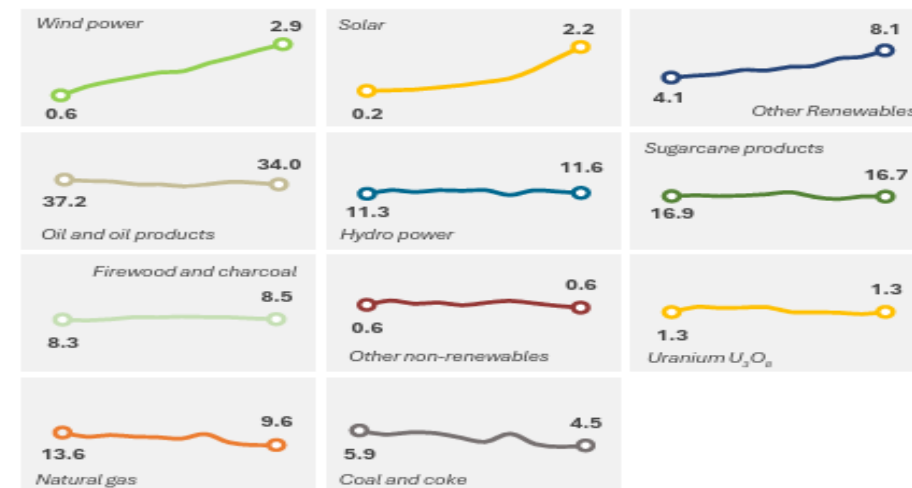
RENEWABLES ▶ 50.0%



NON-RENEWABLES ▶ 50.0%



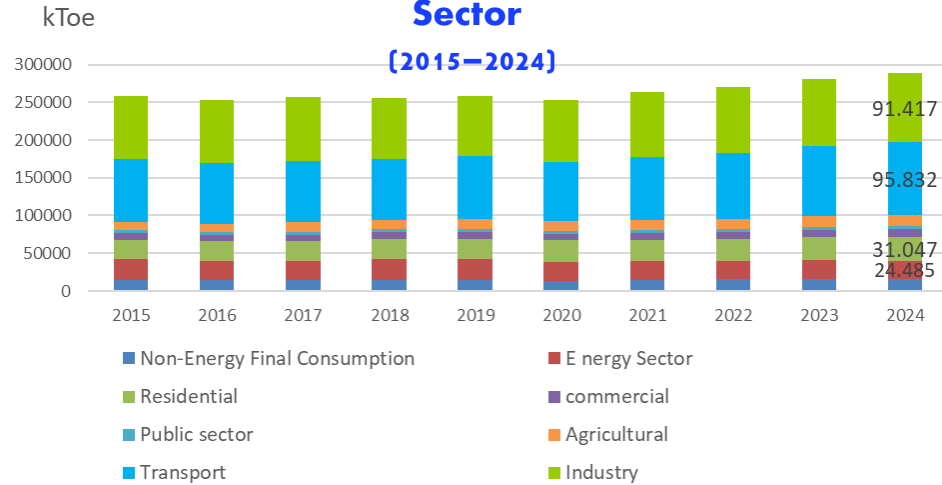
Share of sources in TES (%) between 2015 and 2024



BRAZIL – TOTAL ENERGY CONSUMPTION



Final Energy Consumption by Sector
[2015–2024]



Transports
33.2%



Industries
31.7%



Households
10.8%



Energy Sector
8.5%



**Agriculture
And Livestock**
5.0%



Services
5.3%



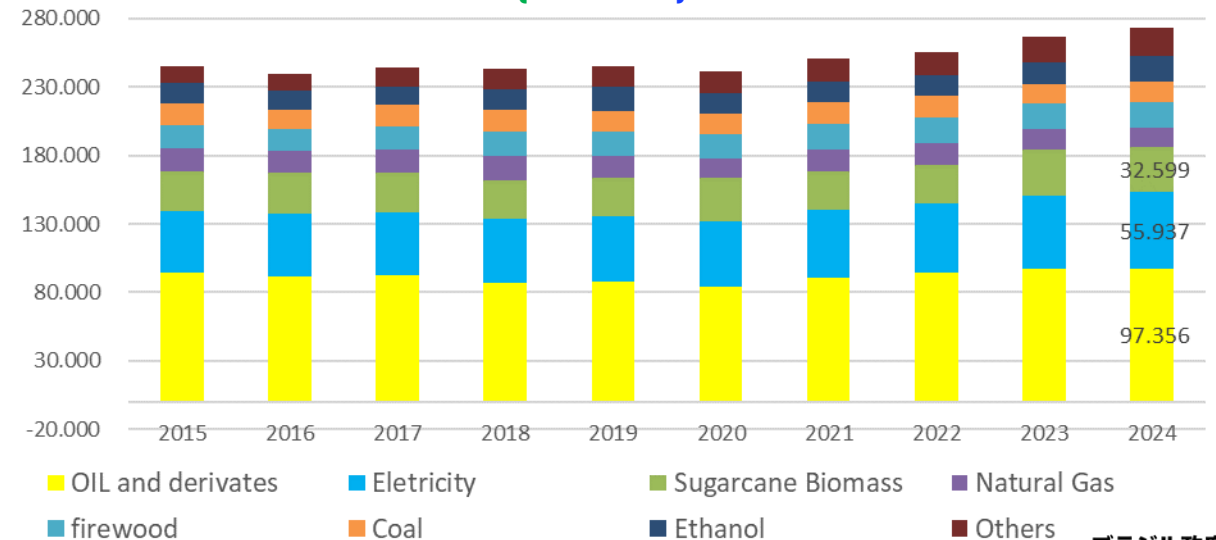
Non-energy Use
5.5%

2024
288.3 Mtoe

2023
282.9 Mtoe

↑ 1.9% increase

Final Energy Consumption by Source
[2015–2024]



Industry: 64% renovability

Transport: 26% renewability

Electricity: 88% renewability

Biodiesel: Mandatory blend 14% in diesel

Ethanol: Mandatory blend 27% in gasoline

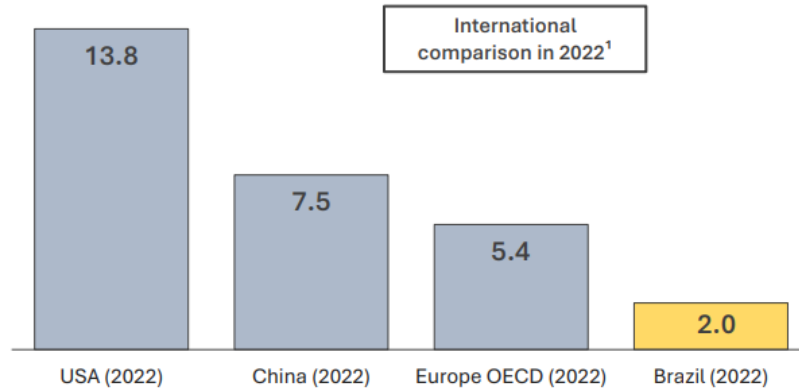
BRAZIL – CO₂ EMISSIONS



CO₂ emissions per capita

CO₂ emissions per capita (2022) em t CO₂/inhab.

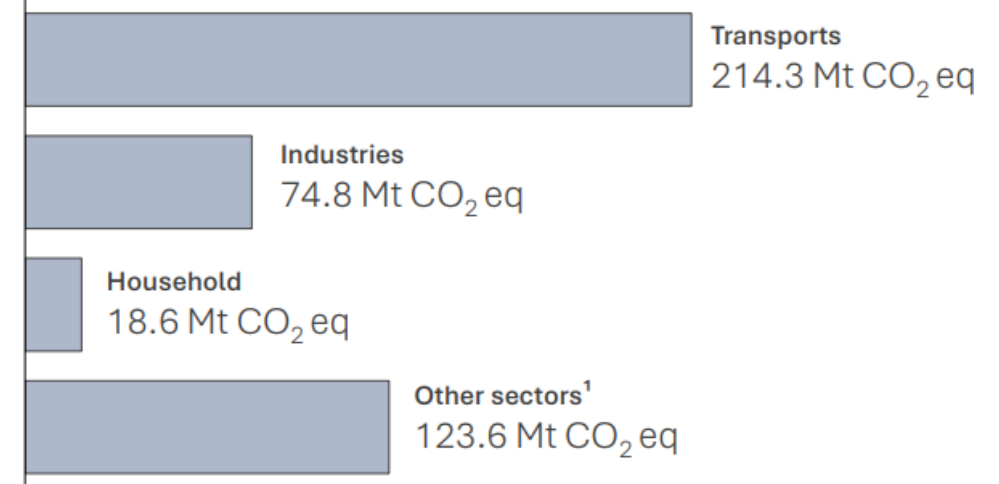
Source: International Energy Agency. Prepared by: EPE



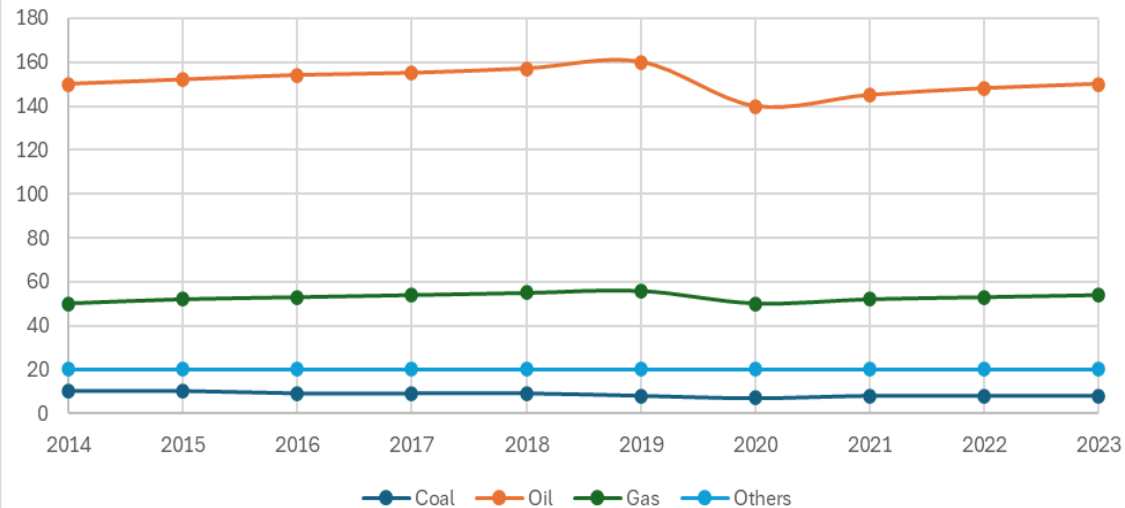
✓ 2,8% of Global Emissions

✓ 16th world's global emissor

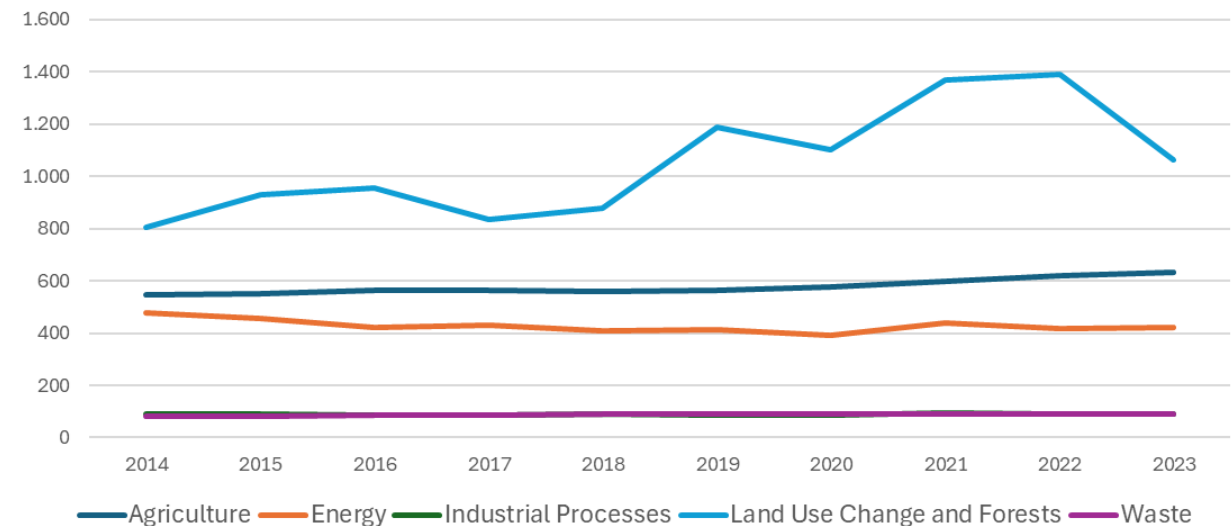
Total emissions (2024) in Mt CO₂ eq



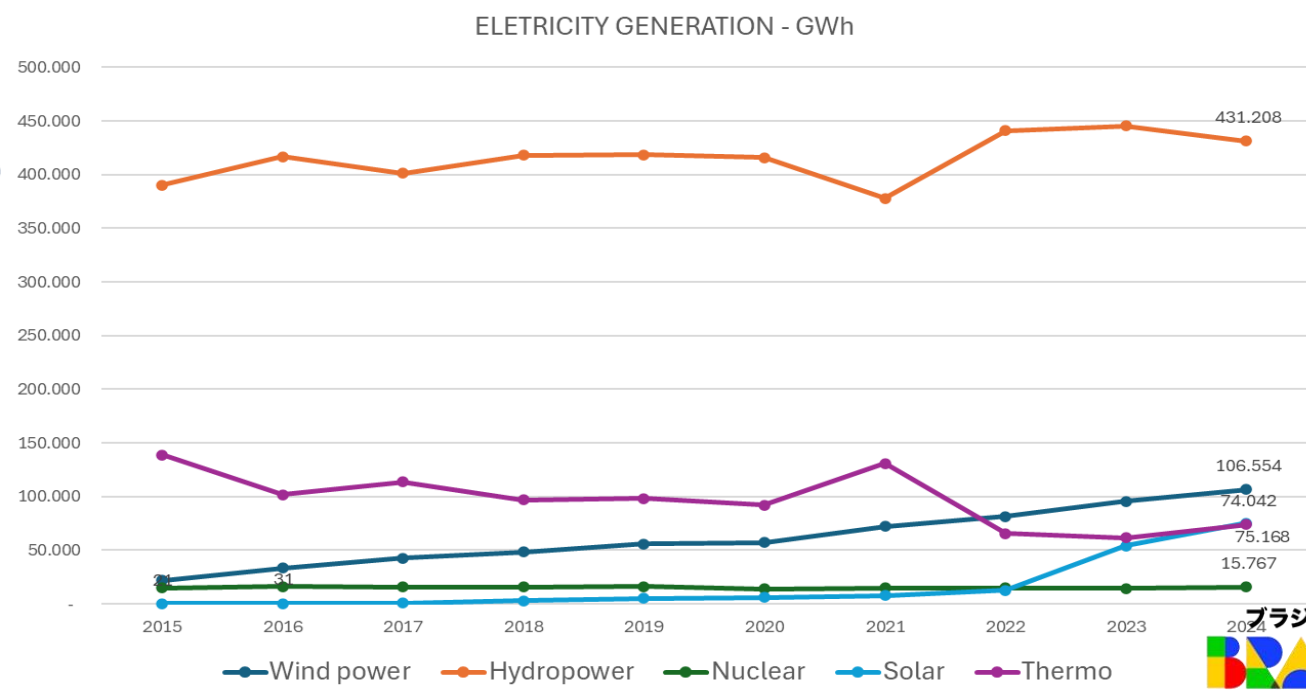
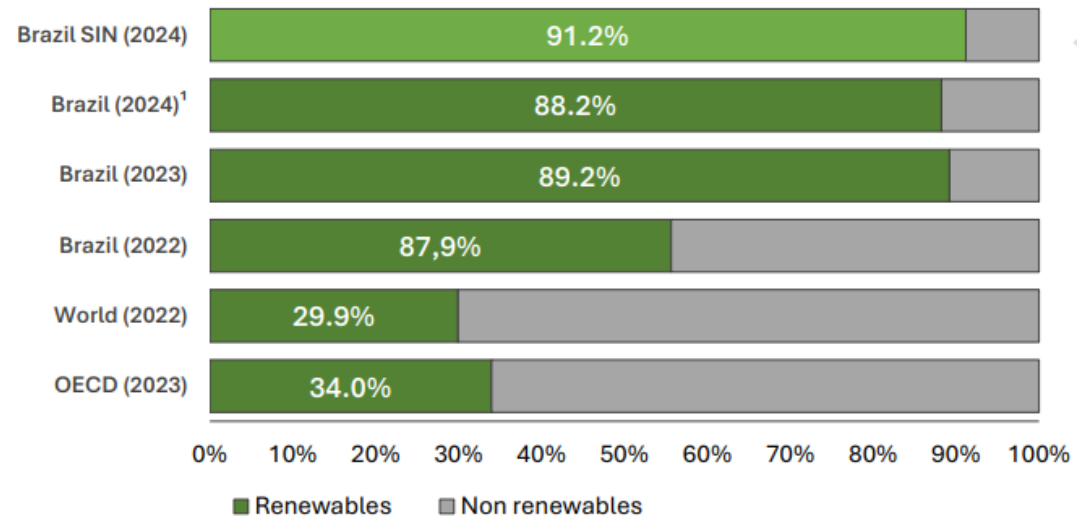
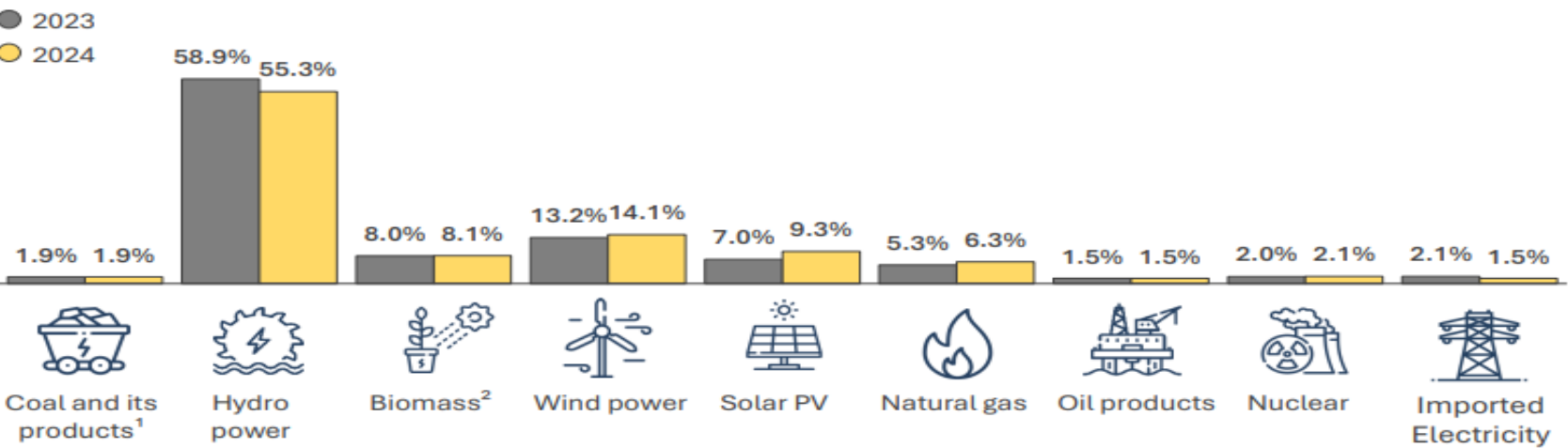
CO₂ EMISSIONS - Mt



CO₂ EMISSIONS - Mt



BRAZIL – ELETRICITY GENERATION



BRAZIL – OUTLOOK ON ENERGY DEMAND AND SUPPLY



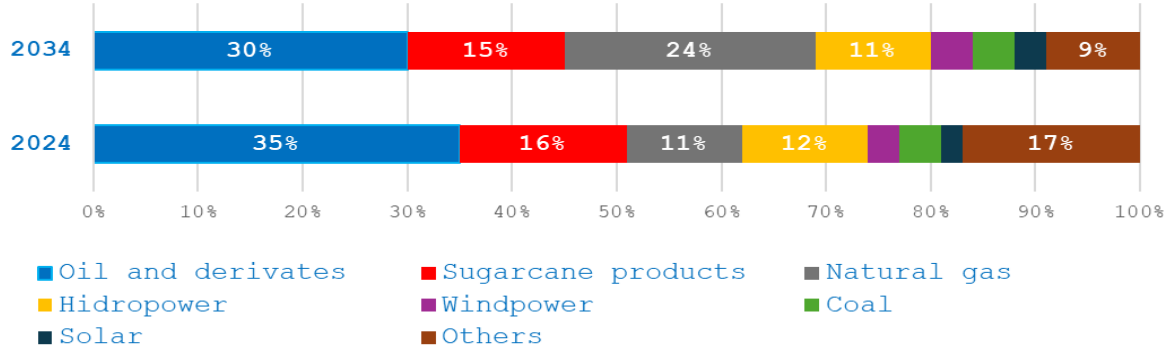
TPE [MM toe]

	2024	2034	CAGR
	318	401	2,1% p.a

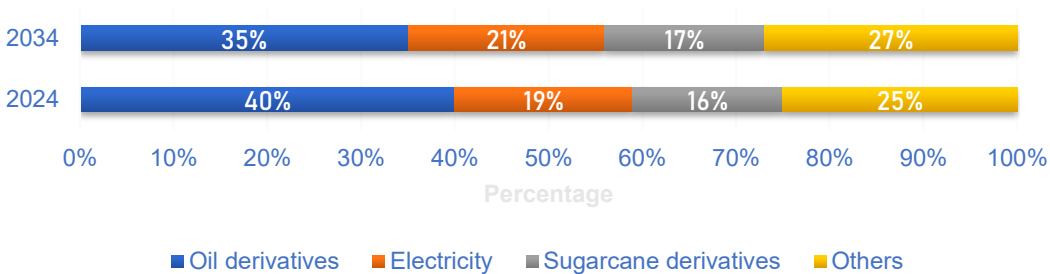
Final Consumption [MM toe]

	2024	2034	CAGR
	288	353	2,1% p.a

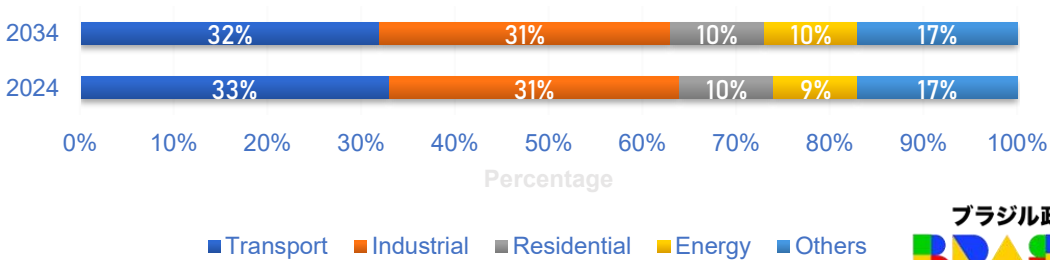
Energy Supply Mix



Final Energy Consumption Matrix



Final Energy Consumption by Sector



BRAZIL – OUTLOOK ON ELETRICITY GENERATION AND CO2 EMISSION

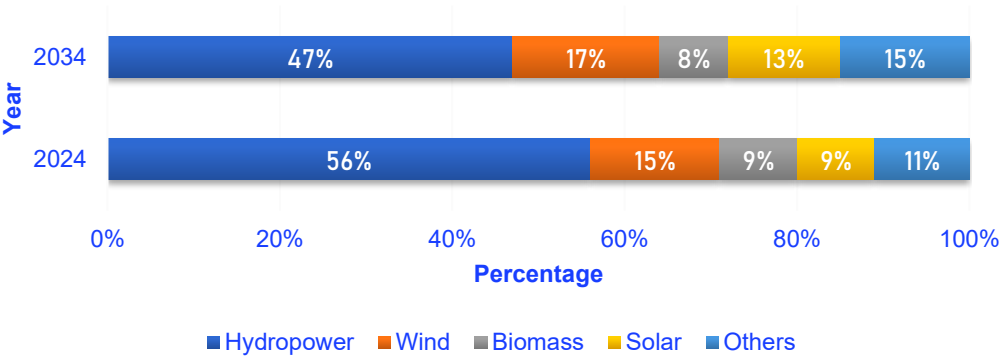


More **diversification** of the Brazilian electricity matrix over the period, with the reduction in hydroelectric participation being **offset by the growth** of **wind** and **solar** generation

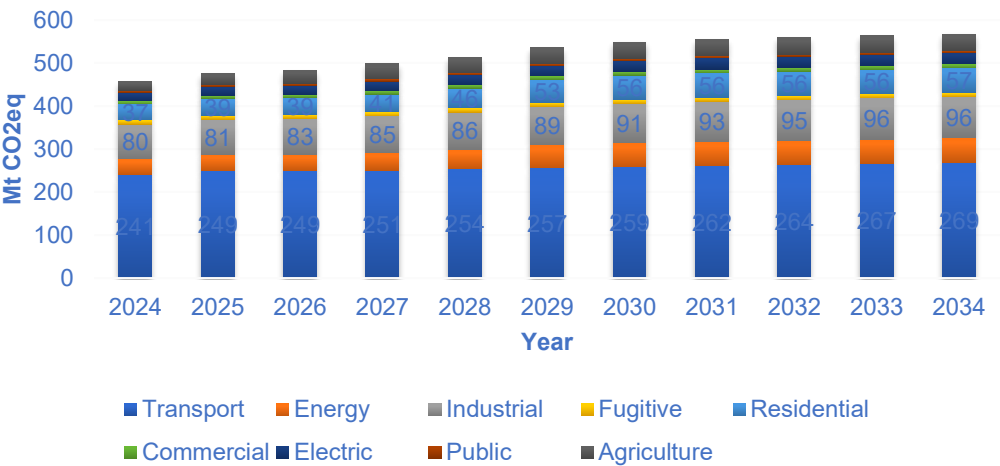
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Greenhouse gas emissions (GHG) are expected to rise steadily, mainly driven by the **transport and industrial sectors**.

Electric Matrix



GHG Emissions by Sector





Challenges

High penetration of intermittent energy resources

Necessitates stronger grid flexibility and energy storage to ensure reliability and stability.

Promote opening of the low voltage market

Expanding market access could increase competition, lower prices, and foster innovation among small consumers.

Control and reduce subsidies

Essential to improve market efficiency, reduce fiscal burdens, and ensure cost-reflective tariffs.



SUBJECTS OF INTEREST

- ✓ MARKET DESIGN
- ✓ ECONOMIC REGULATION OF PUBLIC SERVICES
- ✓ ENERGY ECONOMICS

EXPECTATION OF SUPERIOR

The knowledge and methodologies acquired during the course to improve the regulatory and economic frameworks that underpin our national energy policy.

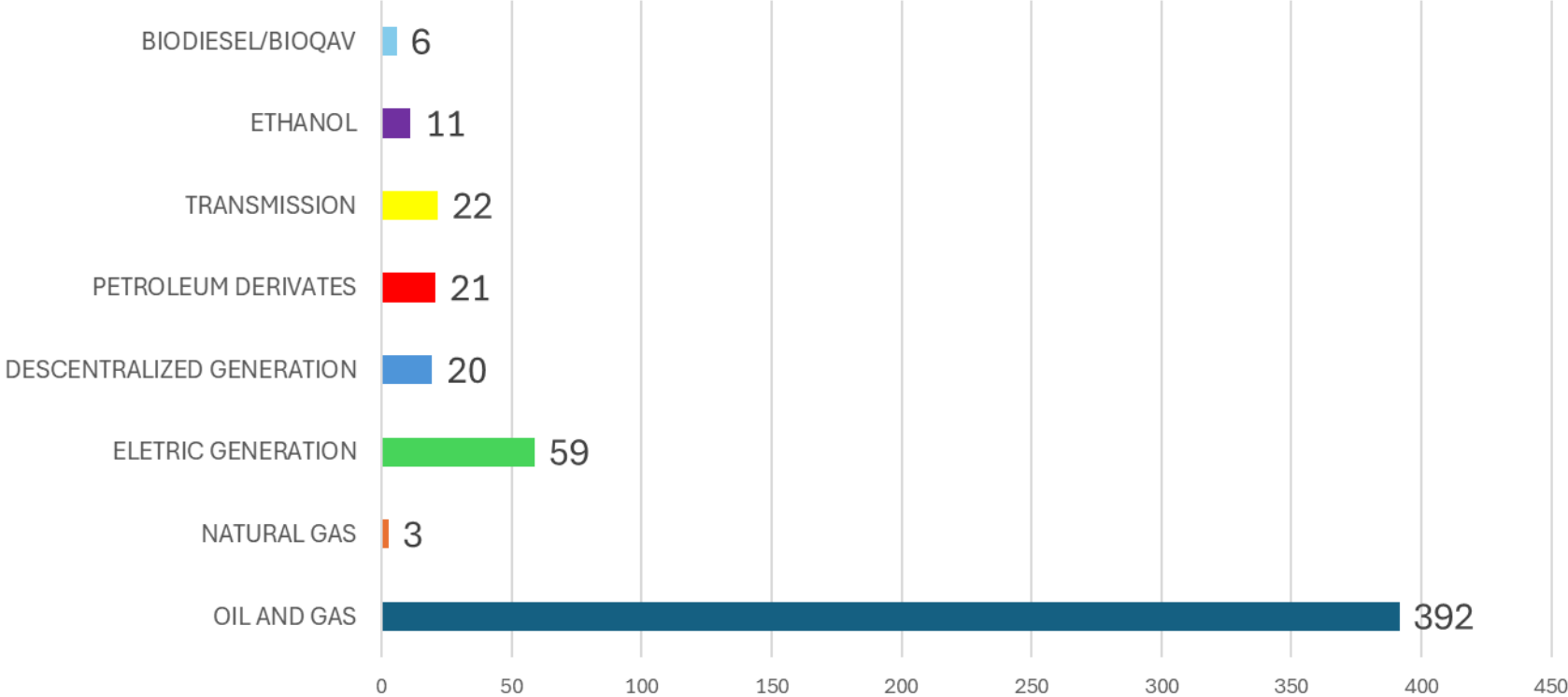


APPENDIX

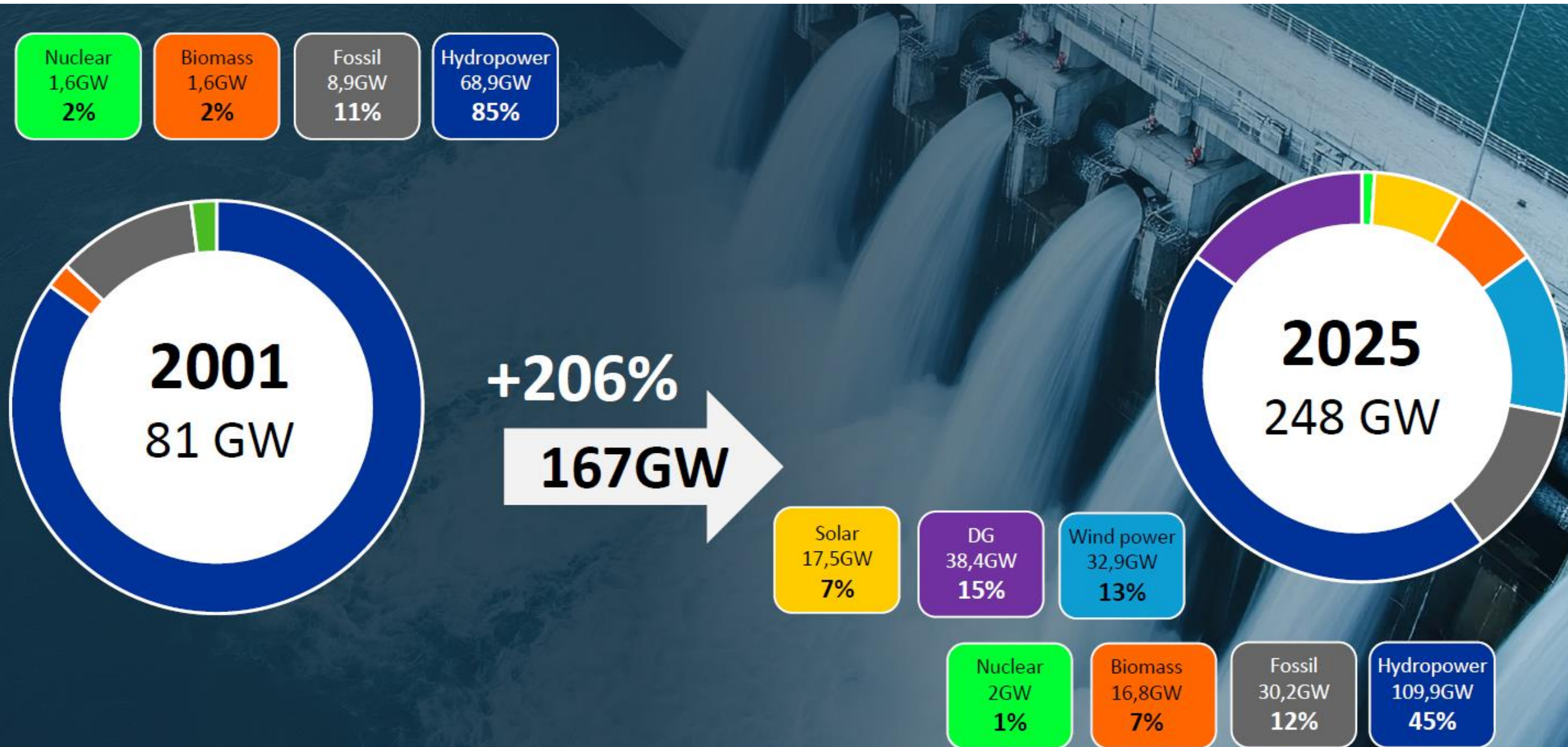
OUTLOOK ON INVESTMENTS 2034-2034



USD BILLIONS



BRAZIL – EVOLUTION OF ELETRICITY MIX



BRAZIL – TRANSMISSION EXPANSION



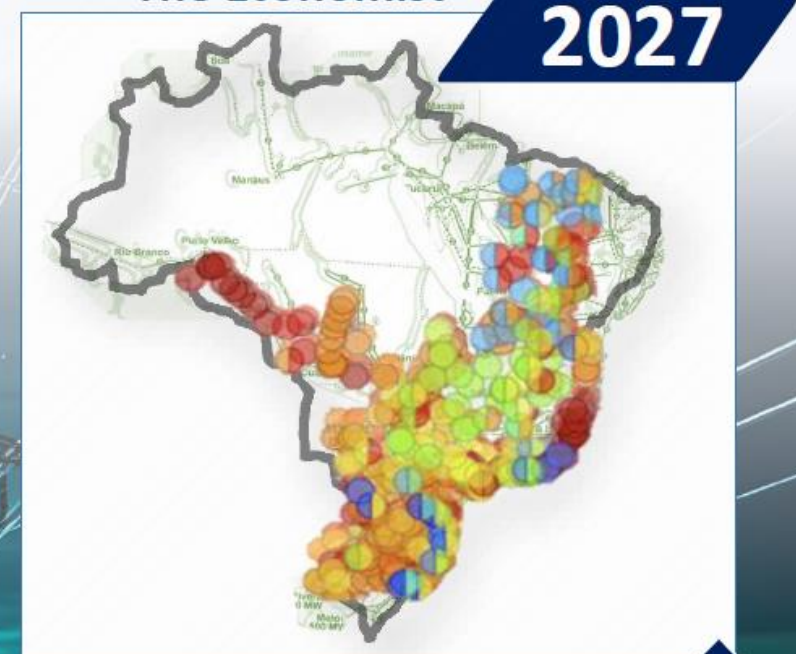
2001

70,000 km



2023

171,000 km



2027

216,000 km



- 84 transmission lines under construction
- Auction 001/2024: R\$ 18.2 billion
- Auction 002/2024: R\$ 4.6 billion

- 1 Auction planned for 2025