



Empresa de Pesquisa Energética

Brazil's Short-Term Fuel Market Outlook

April 2023

MINISTÉRIO DE
MINAS E ENERGIA



This report presents Energy Research Office's (EPE) view on future events regarding the short-term outlook for the fuel market in Brazil. However, such projections involve a wide range of known and unknown risks and uncertainties and, therefore, the data, analysis, and any other information contained in this document is not a guarantee of future achievements and events.

This document is informative and is intended to support the planning of the national energy sector. Therefore, any forwarding decisions (such as formulation of public policies, definition of strategic guidelines, investment decisions or business strategies) depend on other public and private institutions.

EPE expressly disclaims any responsibility for any actions and decision-making taken by economic agents and anyone based on information contained in this document.

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About “Brazil’s Short-Term Fuel Market Outlook”



Brazil’s Short-Term Fuel Market Outlook is a bimonthly report of EPE that presents projections for monthly demand of liquid fuels – petroleum products and biofuels, in Brazil.



These projections are derived from classic econometric models, deep learning models and sector models for energy demand, as well as authors’ expectations and insights.



The information contained in this report may differ from EPE's medium and long-term studies and projections, due to the frequency of its updating and differences in terms of assumptions and methodology.

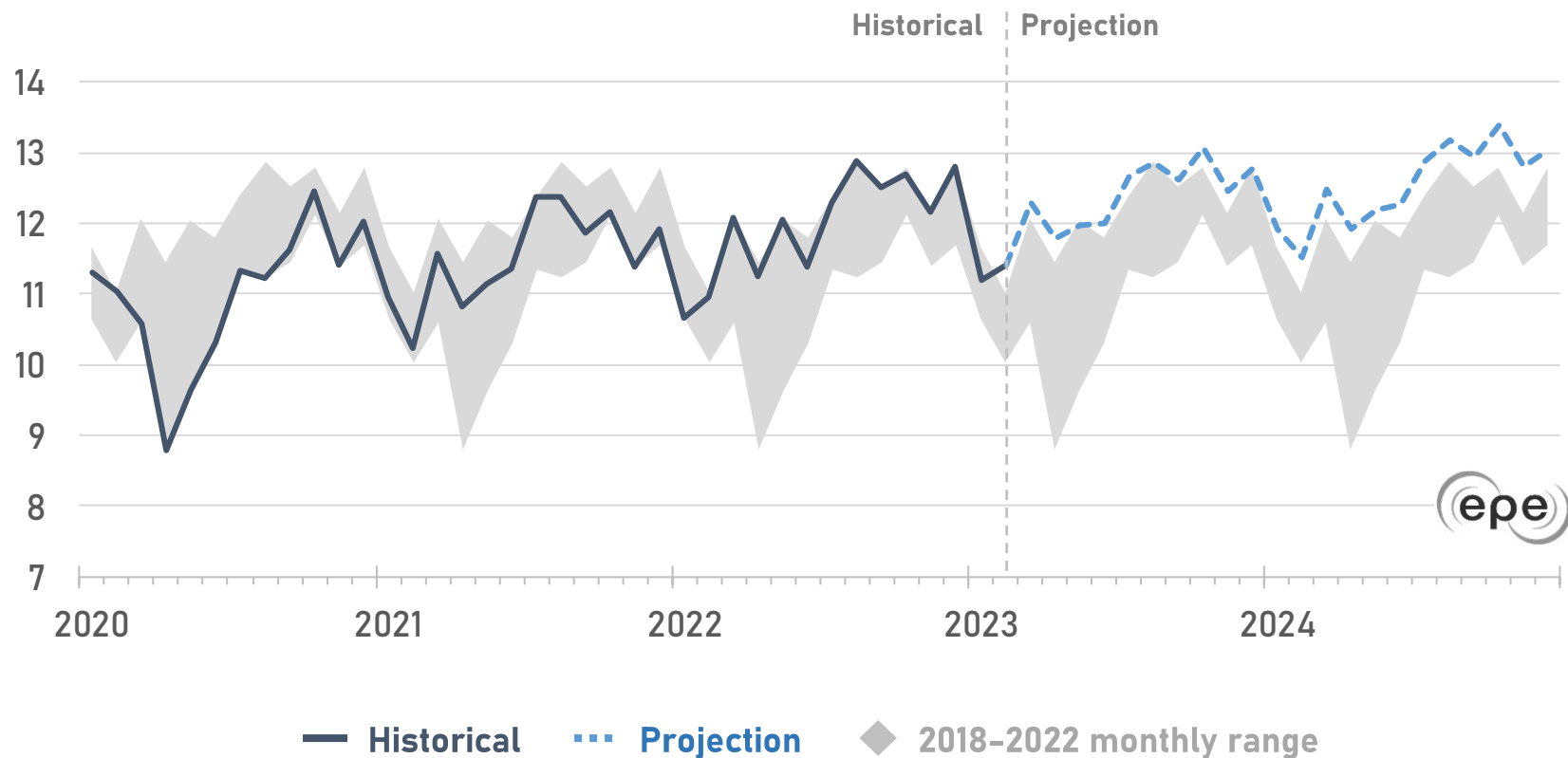


This publication is in line with EPE's Strategic Planning 2023-2027, aiming to reduce information asymmetry, favoring decision-making in the energy sector.

Images: Freepik / Flaticon.

Liquid fuel market in Brazil

Monthly fuel demand (diesel + gasoline + hydrous ethanol + jet fuel + LPG)
billion liters

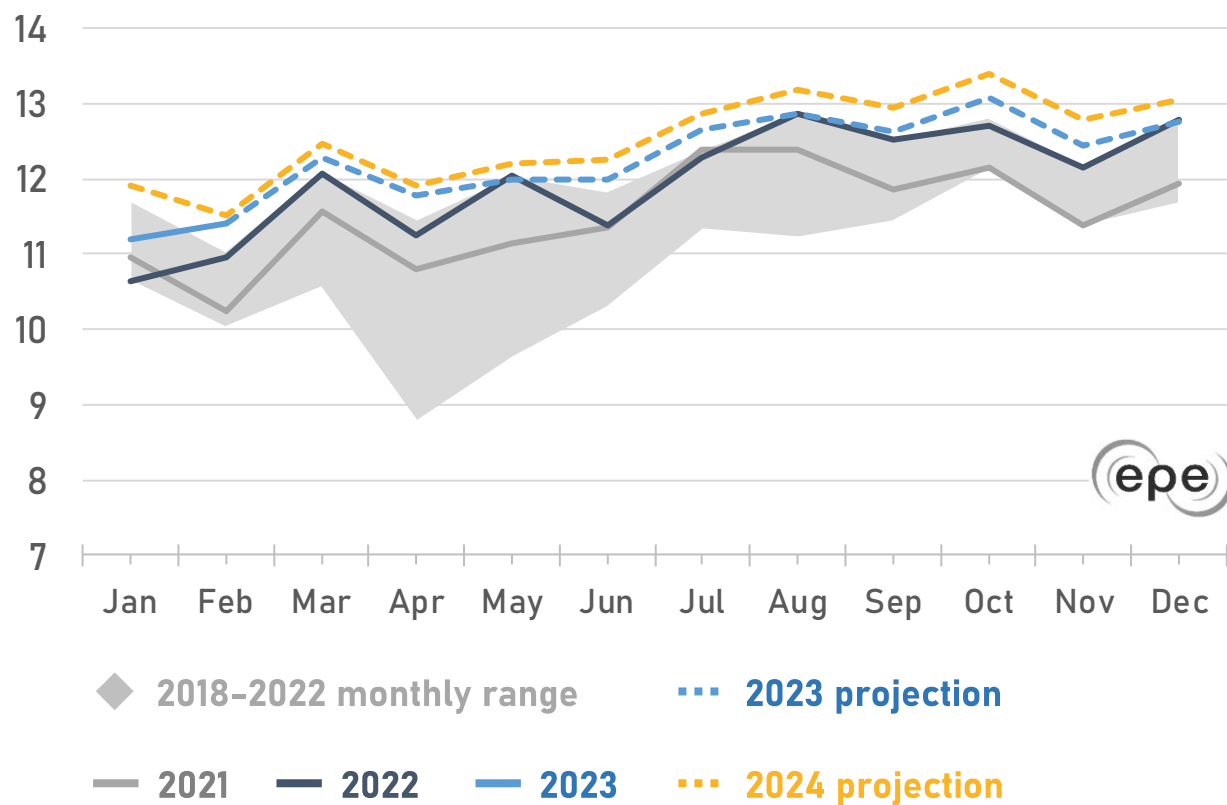


Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).



Liquid fuel market in Brazil

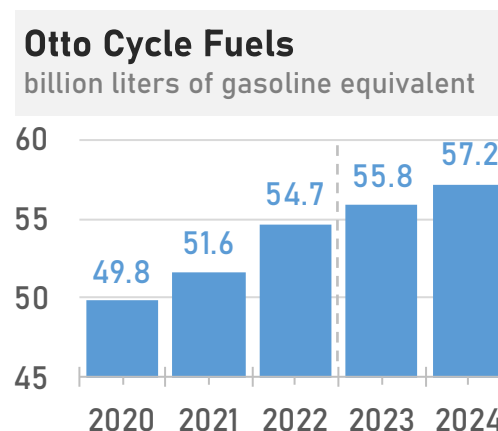
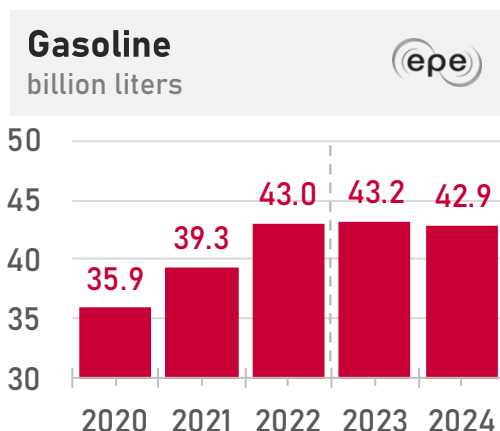
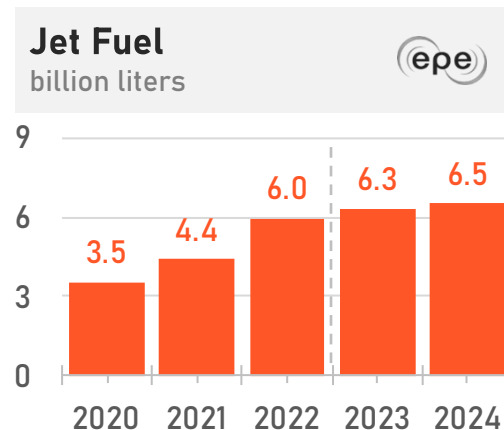
Monthly fuel demand (diesel + gasoline + hydrous ethanol + jet fuel + LPG)
billion liters



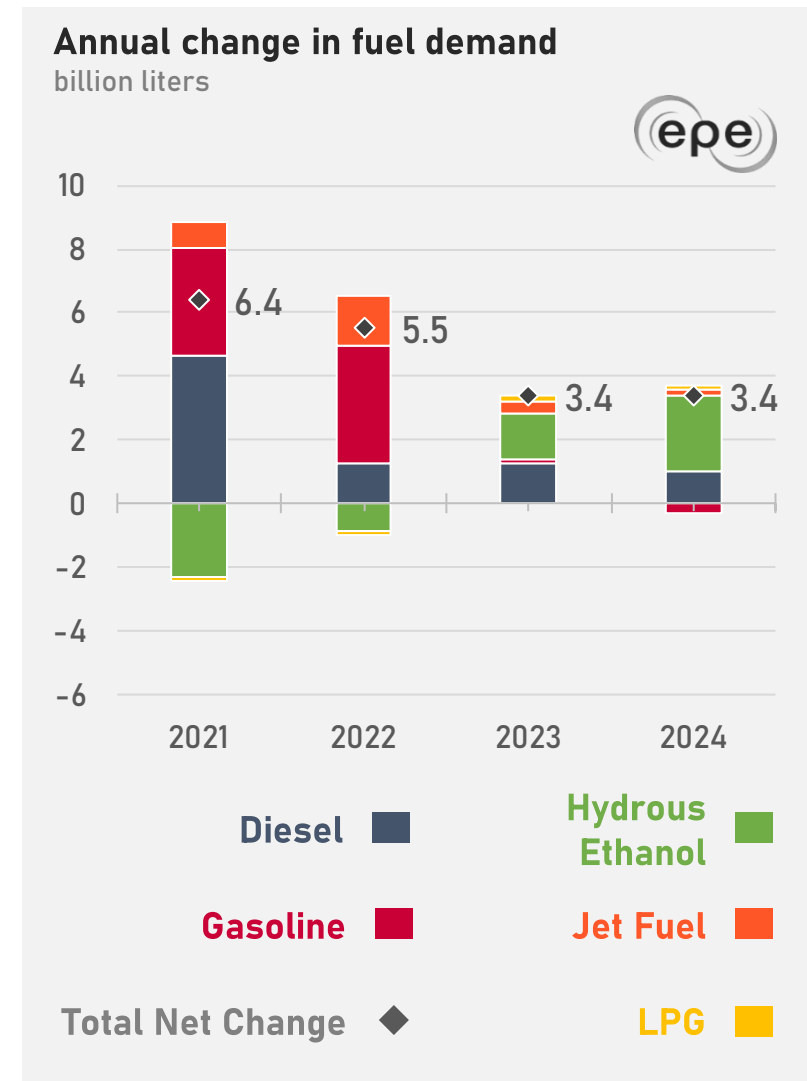
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).



Annual fuel demand in Brazil



Note: Otto cycle fuels include gasoline C and hydrous ethanol, and do not include CNG – compressed natural gas.

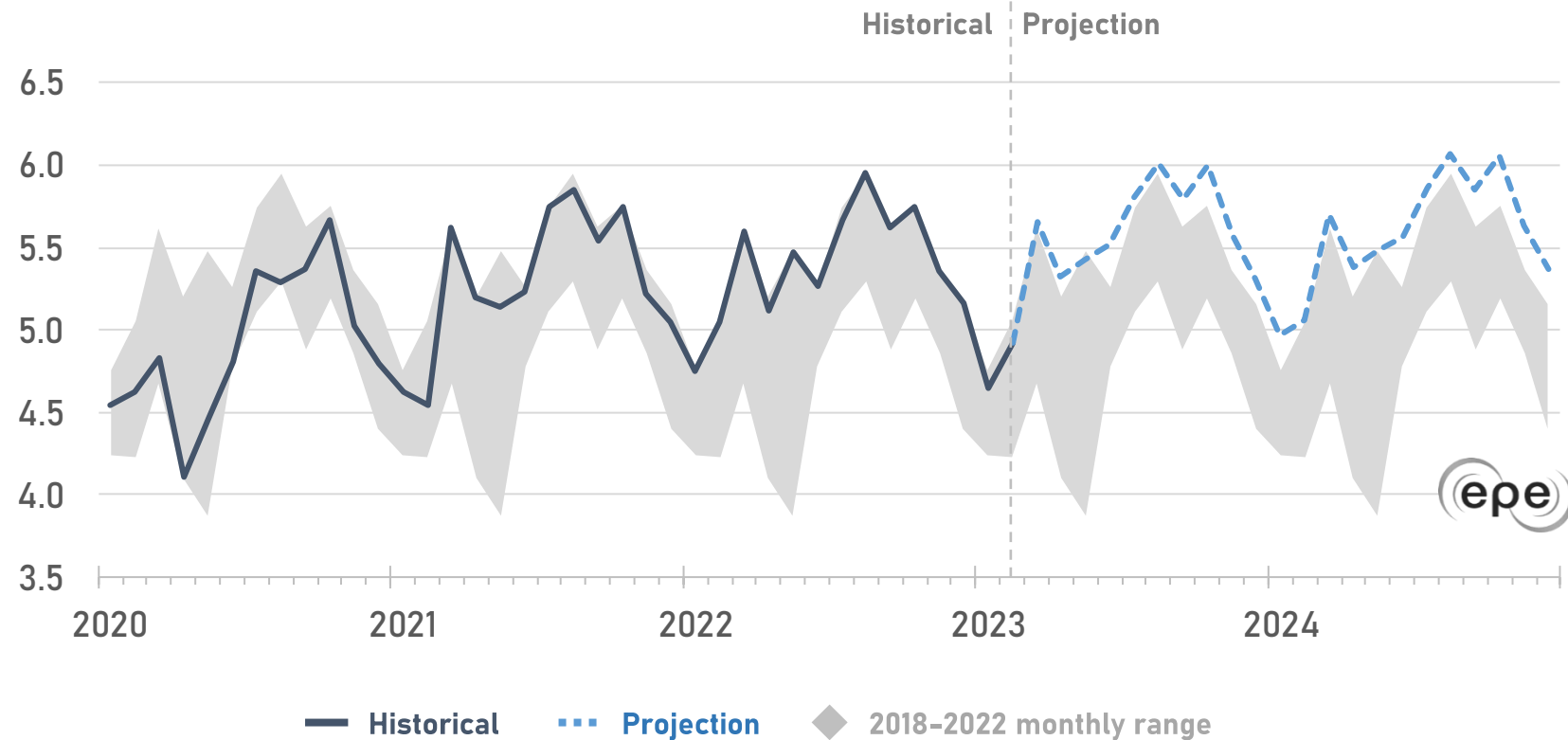


Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

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Diesel market in Brazil

Monthly diesel demand billion liters



Note: Diesel values include the biodiesel blend.

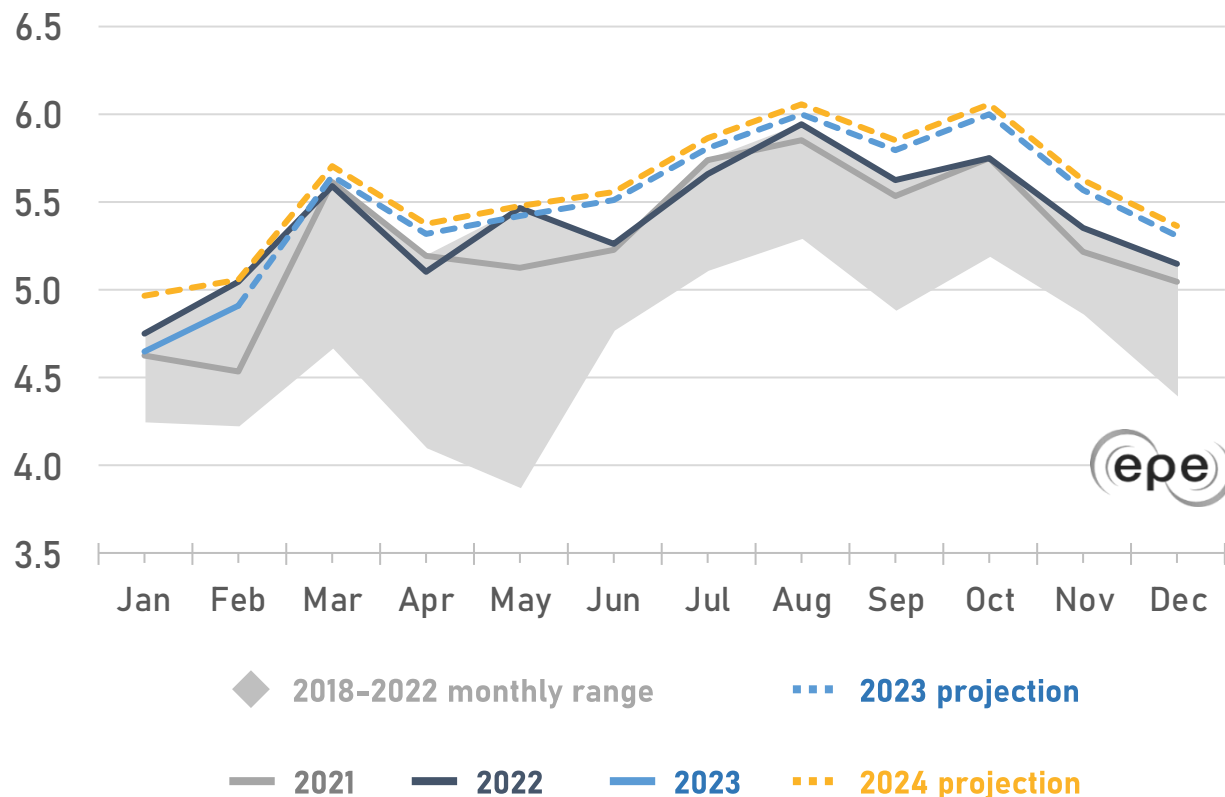
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).



Diesel market in Brazil



Monthly diesel demand billion liters



Note: Diesel values include the biodiesel blend.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).

Last 12 Months Demand ▲ 0.6%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

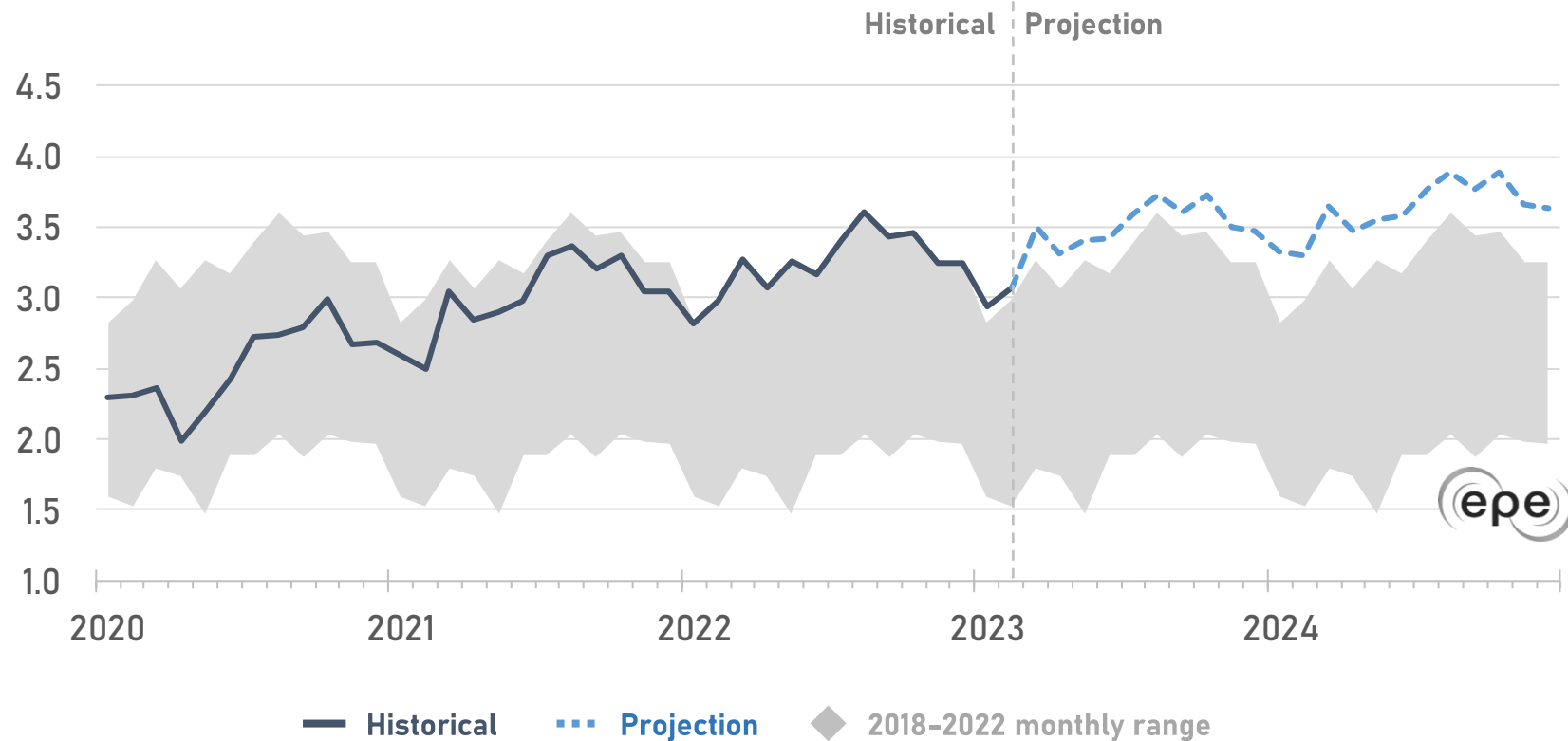
2023 Demand ▲ 1.9% (66.0 billion liters)

2024 Demand ▲ 1.5% (67.0 billion liters)

- >> Brazilian diesel demand increased by 2.0% in 2022, below GDP growth of 2.9% ([IBGE](#)), reaching an all-time high of 64.7 billion liters.
- >> Diesel consumption growth in 2022 was mainly driven by the agricultural production and the strong performance of Brazilian exports ([NTC&Logística](#)).
- >> Projections of a record grain harvest in 2022/23, with an expected production of 313 million tons, a 15% growth ([Conab](#)), increase the demand for heavy truck freight.
- >> Other sources of diesel demand growth in the short-term are the gradual recovery of public transport bus service, reaching pre-pandemic levels in 2023/24, and record sales of diesel cars and light commercial vehicles in Brazil ([Anfavea](#)).

Ultra-low sulphur diesel market in Brazil

Monthly ultra-low sulphur diesel demand billion liters



Notes: Diesel values include the biodiesel blend. Ultra-low sulphur diesel (ULSD) has a sulphur level no higher than 10 parts-per-million (ppm).

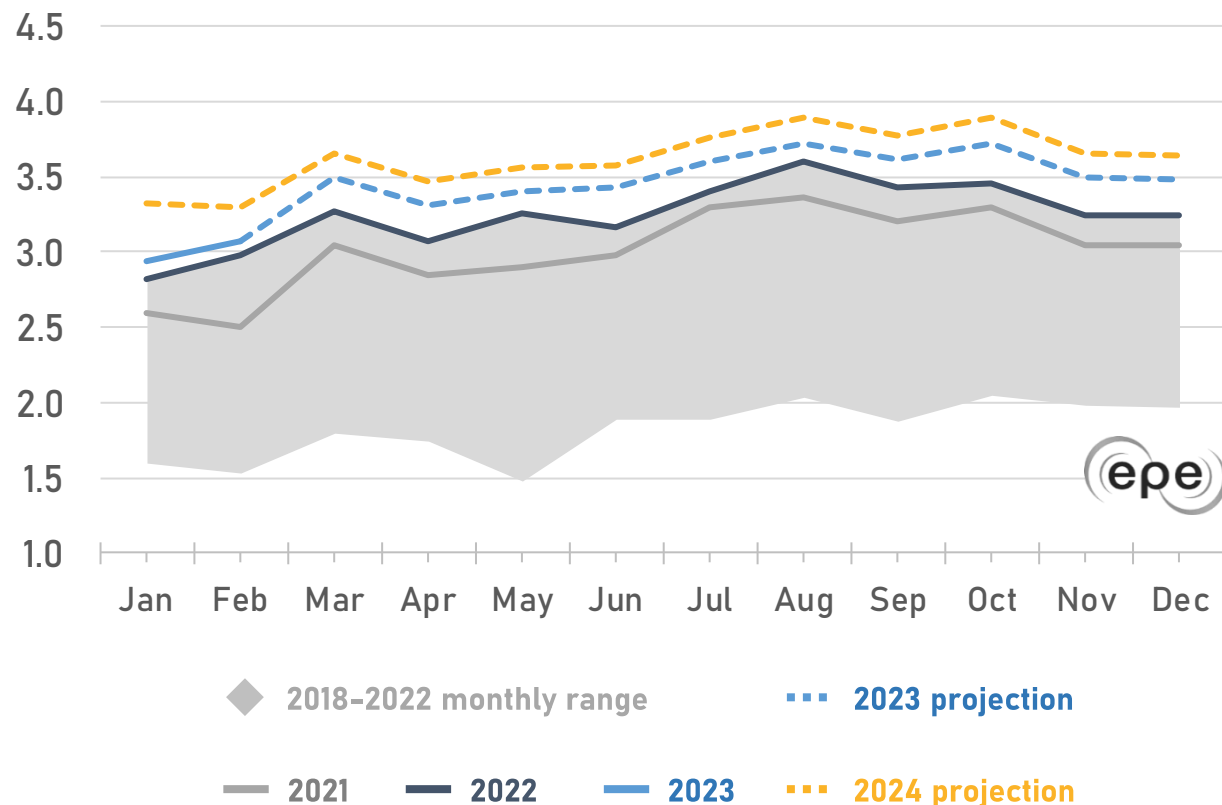
Sources: [EPE](#); [ANP](#).



Ultra-low sulphur diesel market in Brazil



Monthly ultra-low sulphur diesel demand billion liters



Notes: Diesel values include the biodiesel blend. Ultra-low sulphur diesel (ULSD) has a sulphur level no higher than 10 parts-per-million (ppm).

Sources: [EPE](#); [ANP](#).

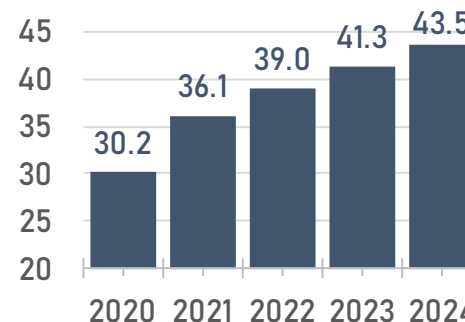
Last 12 Months Demand ▲ 6.4%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 6.0% (41.3 billion liters)

2024 Demand ▲ 5.4% (43.5 billion liters)

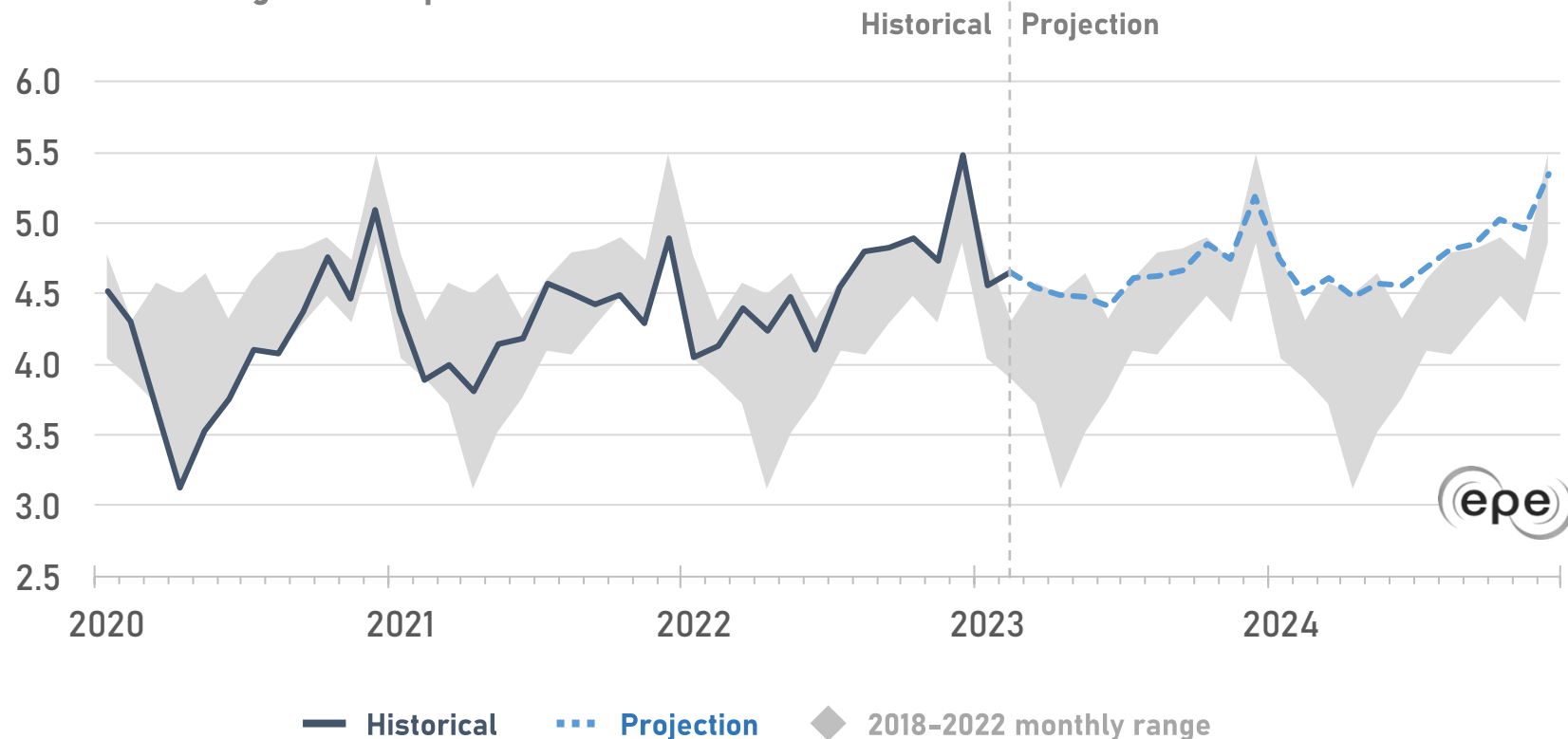
ULSD billion liters



[Click here](#) for more information on quarterly and annual demand by type of diesel/gasoi.

Otto cycle fuel market in Brazil (gasoline and ethanol)

Monthly Otto cycle fuel demand billion liters of gasoline equivalent



Note: Otto cycle fuels include gasoline C and hydrous ethanol, and do not include CNG – compressed natural gas.

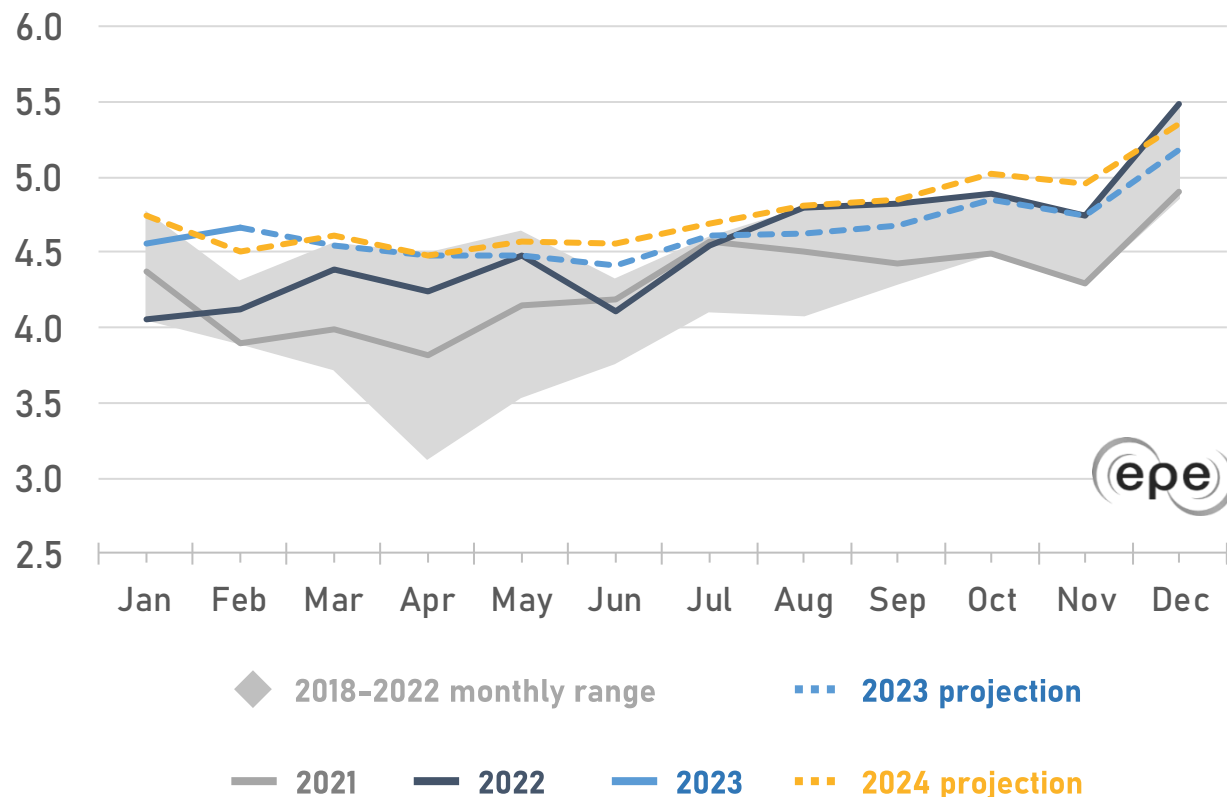
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).



Otto cycle fuel market in Brazil (gasoline and ethanol)



Monthly Otto cycle fuel demand billion liters of gasoline equivalent



Last 12 Months Demand ▲ 8.2%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 2.1% (55.8 billion liters)

2024 Demand ▲ 2.4% (57.2 billion liters)

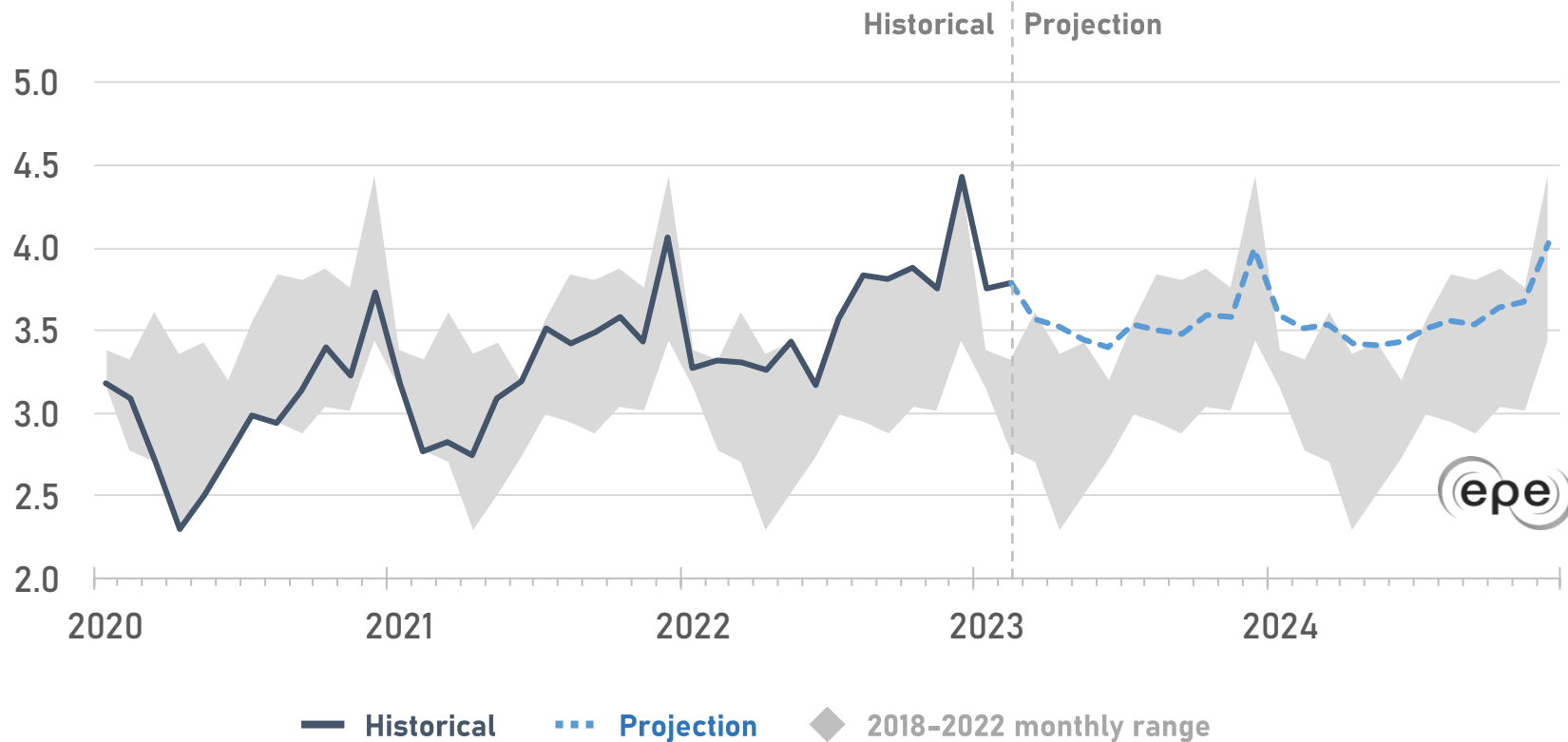
- >> Provisional Measure nº 1,163/2023 resumed federal taxes (PIS/Cofins) on gasoline and ethanol as of March, at R\$ 0.47/liter and R\$ 0.02/liter, respectively. Cide (federal contribution on fuels) remains zero. These changes are in effect until end of June 2023.
- >> Some Brazilian states have increased their state tax rates on gasoline and/or ethanol ([Fecombustíveis](#)).
- >> Following these federal and state measures, fuel prices have risen in recent months, especially gasoline prices.
- >> For 2023, EPE estimates that Otto cycle fuel consumption will continue to grow, reaching 55.8 billion liters of gasoline equivalent. This trend will continue into 2024.

Note: Otto cycle fuels include gasoline C and hydrous ethanol, and do not include CNG – compressed natural gas.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

Gasoline market in Brazil

Monthly gasoline demand billion liters



Note: Gasoline values include the ethanol blend mandate of 27% for regular gasoline and ethanol blend mandate of 25% for premium gasoline.

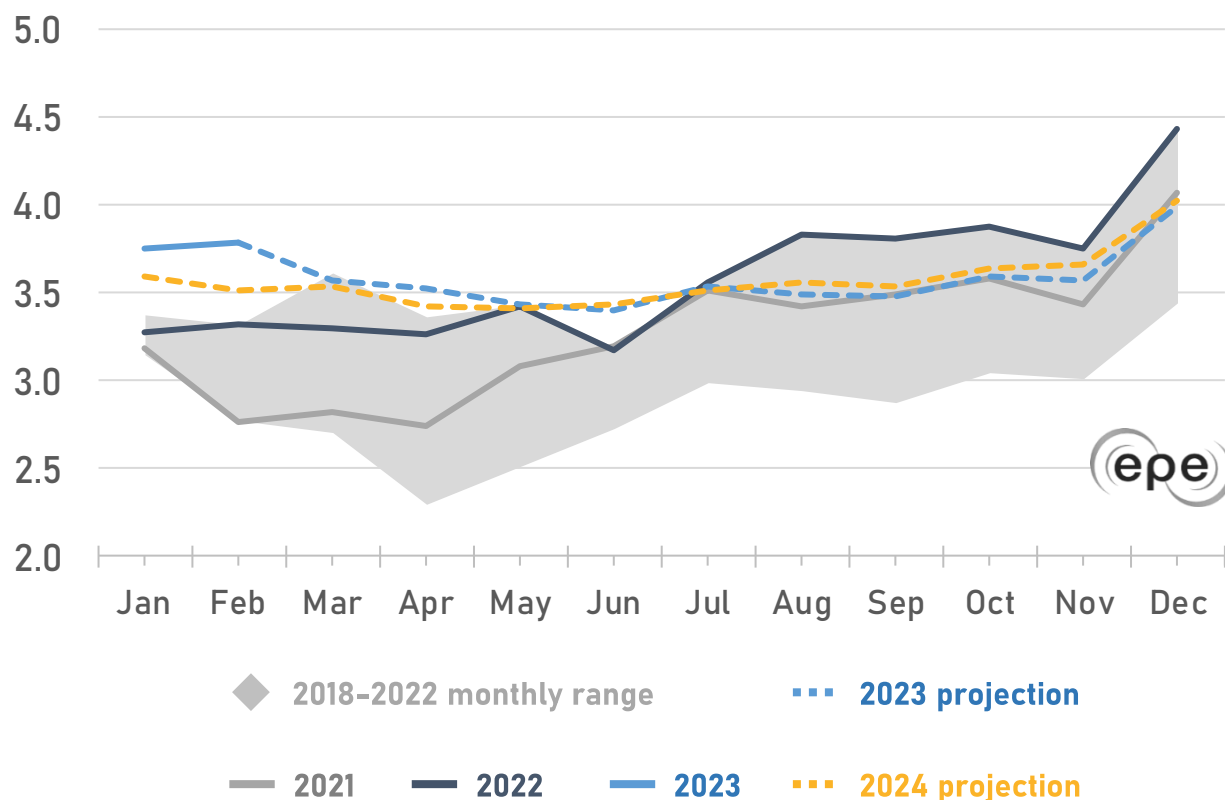
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).



Gasoline market in Brazil



Monthly gasoline demand billion liters



Note: Gasoline values include the ethanol blend mandate of 27% for regular gasoline and ethanol blend mandate of 25% for premium gasoline.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).

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Last 12 Months Demand ▲ 10.1%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 0.3% (43.2 billion liters)

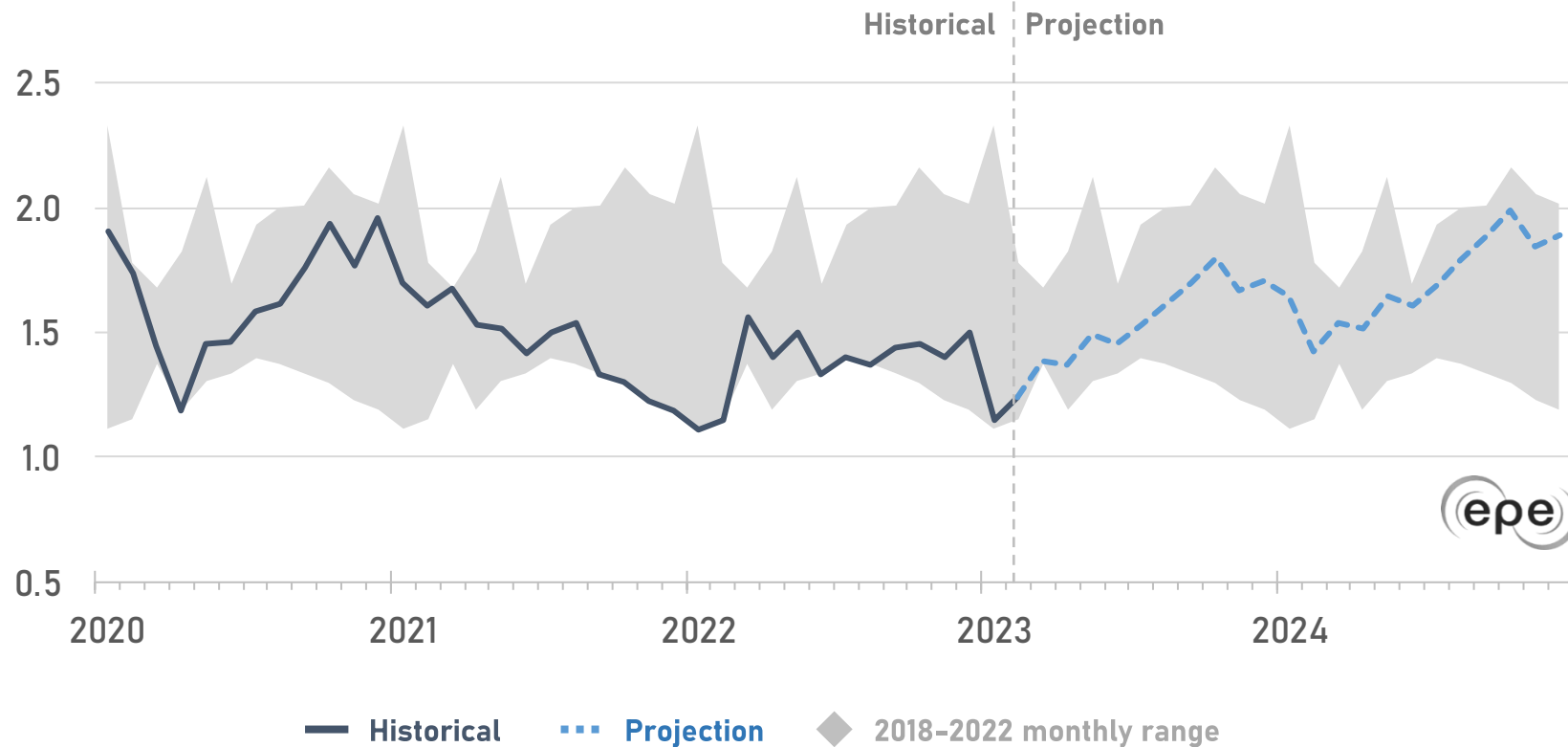
2024 Demand ▼ -0.7% (42.9 billion liters)

- >> With the changes in Provisional Measure n° 1,163/2023, federal tax rates on gasoline C are R\$ 0.3485/liter¹ as of March.
- >> At the end of February, Petrobras reduced gasoline prices by 3.9% at refineries. However, from February to March, gasoline prices surged almost 10% (Brazil average).
- >> National Council of Finance Policy (Confaz) determined that state tax rates on gasoline and anhydrous ethanol will be single-phase and levied at a specific value (*ad rem*) of R\$ 1.22/liter in all states, as of June 2023.
- >> EPE estimates that, in 2023, the share of gasoline in the Otto Cycle fuel demand will remain at a high level, which should also be observed in 2024.

Note: (1) Federal tax rates are R\$ 0,47/liter on gasoline A and R\$ 0,02/liter on anhydrous ethanol.

Hydrous ethanol market in Brazil

Monthly hydrous ethanol demand
billion liters



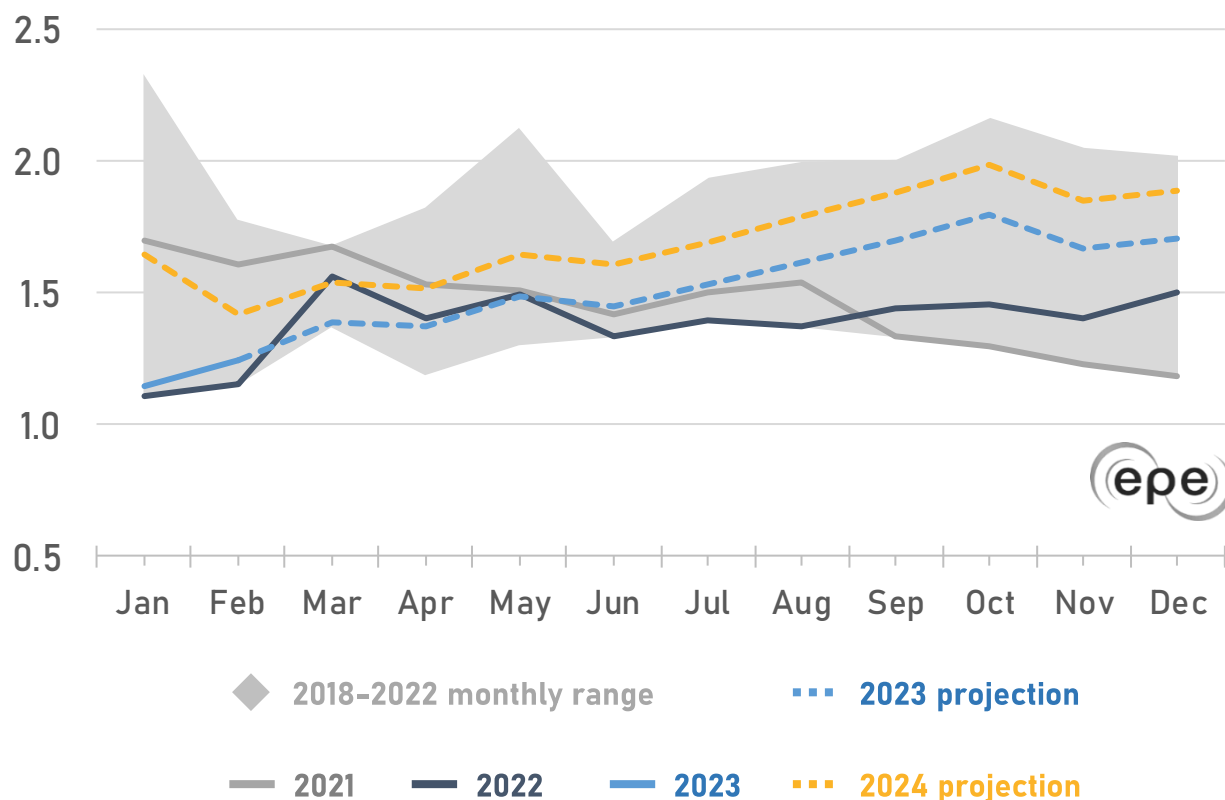
Sources: [EPE](#) (Energy Research Office); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).



Hydrous ethanol market in Brazil



Monthly hydrous ethanol demand billion liters



Sources: [EPE](#) (Energy Research Office); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

Last 12 Months Demand ▲ 1.6%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 8.9% (18.1 billion liters)

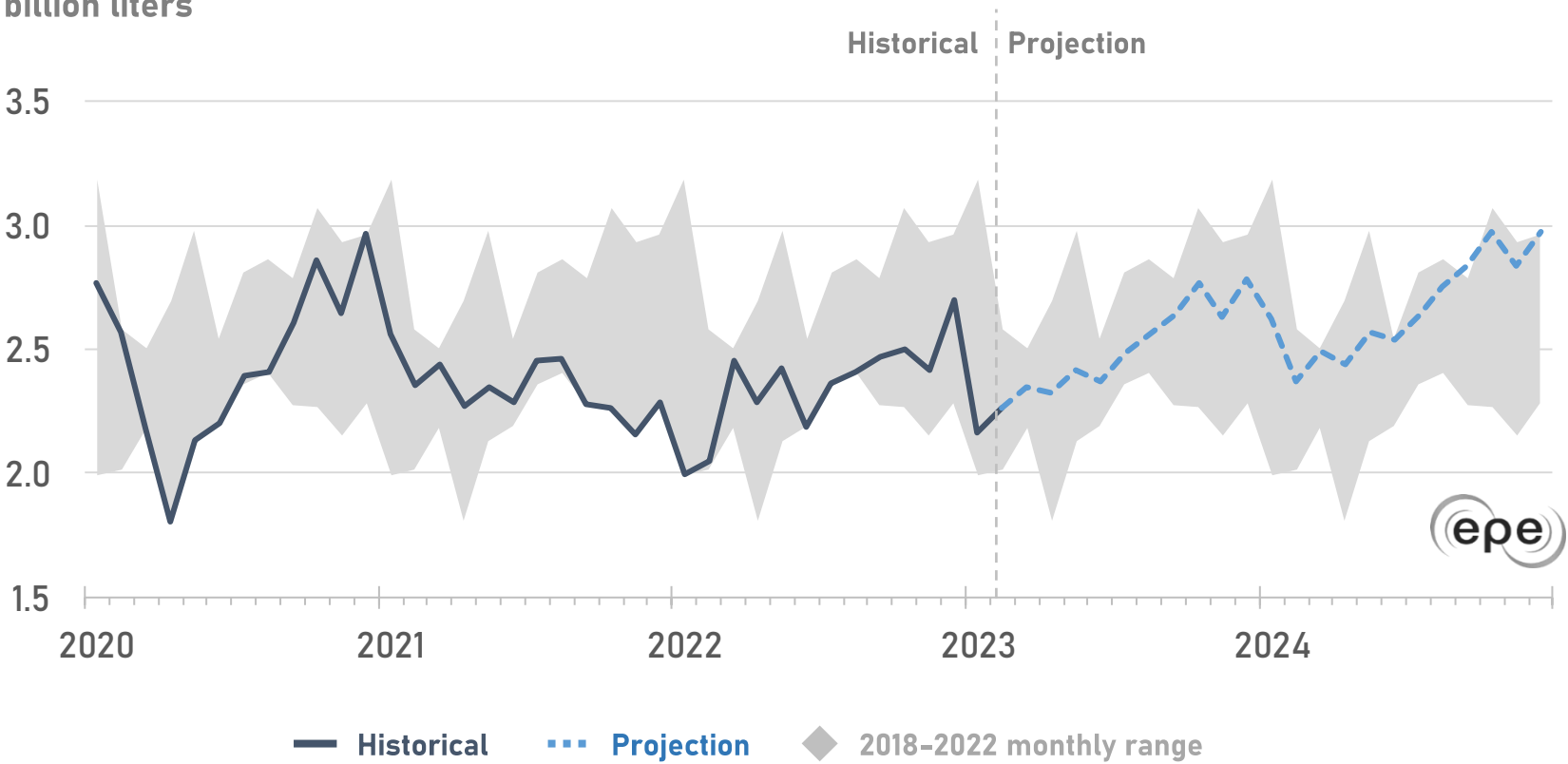
2024 Demand ▲ 13.1% (20.5 billion liters)

- >> Hydrous ethanol demand are influenced by international sugar market, among other factors. The price of the commodity continues to maintain its good attractiveness.
- >> For hydrous ethanol, federal tax rates are R\$ 0.02/liter (Provisional Measure nº 1,163/2023) since March. State tax rates will continue to be determined by each state.
- >> From February to March, hydrous ethanol prices increased by 4% (Brazil average). In some states, the ratio between ethanol and gasoline prices has approached 70%, while in Mato Grosso and Amazonas states the values were lower, 66% and 69%, respectively. There is also an increase in the absolute difference between hydrous ethanol and gasoline prices.
- >> For 2023/2024 sugarcane harvest, a recovery is expected compared to the 2022/23 harvest. Corn ethanol will continue to grow consistently, which contributes to expanding the supply of this biofuel.

Total ethanol market in Brazil



Monthly total ethanol demand
billion liters



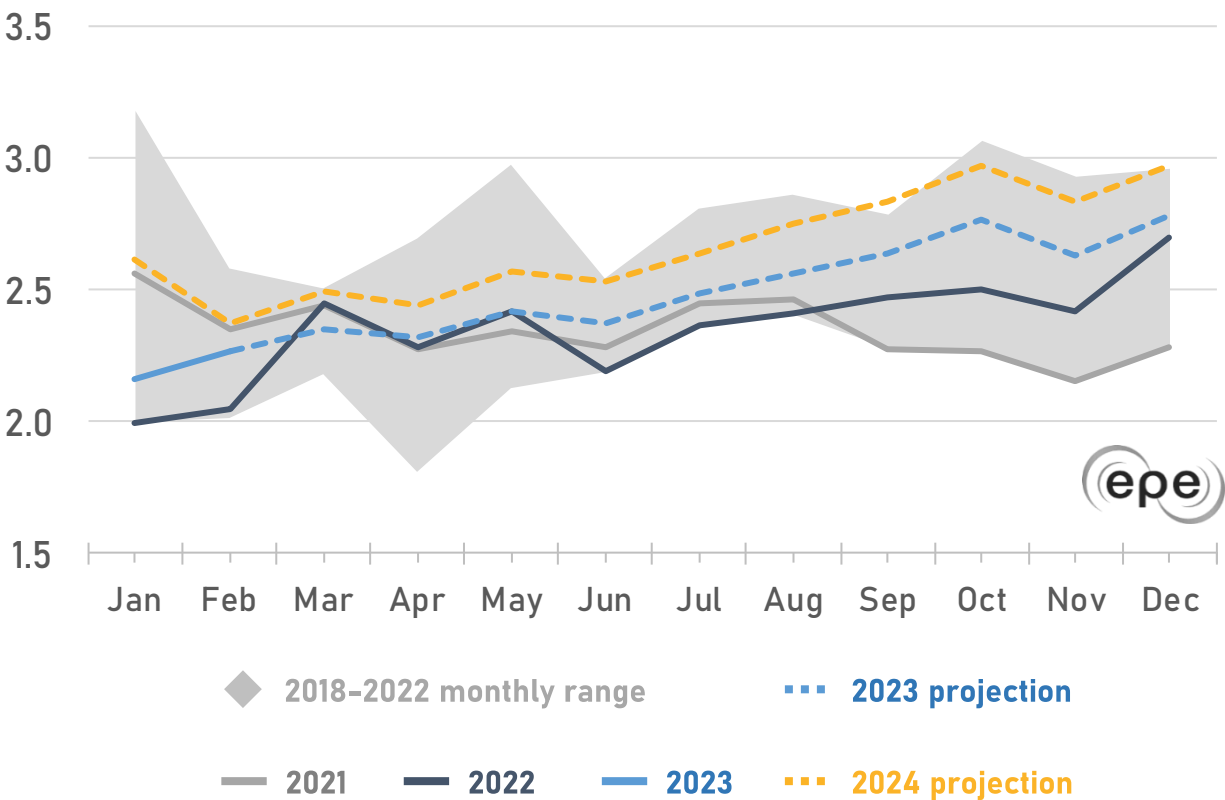
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).



Total ethanol market in Brazil



Monthly total ethanol demand
billion liters



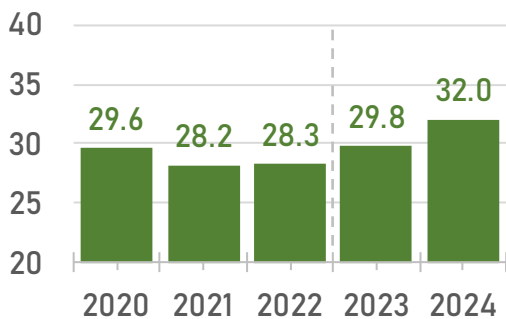
Last 12 Months Demand ▲ 5.0%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 5.4% (29.8 billion liters)

2024 Demand ▲ 7.7% (32.0 billion liters)

Total Ethanol
billion liters

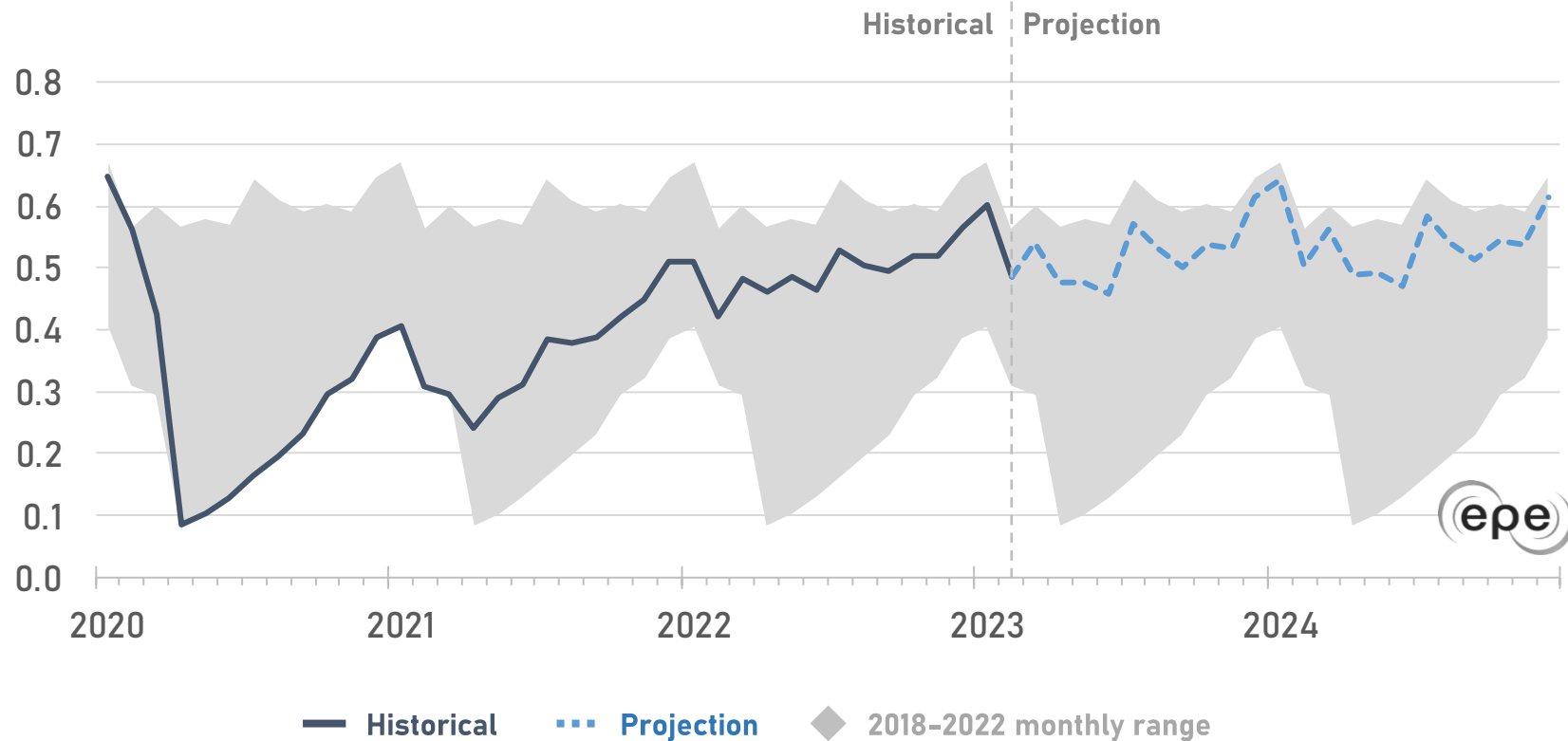


Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

Jet fuel market in Brazil



Monthly jet fuel demand billion liters



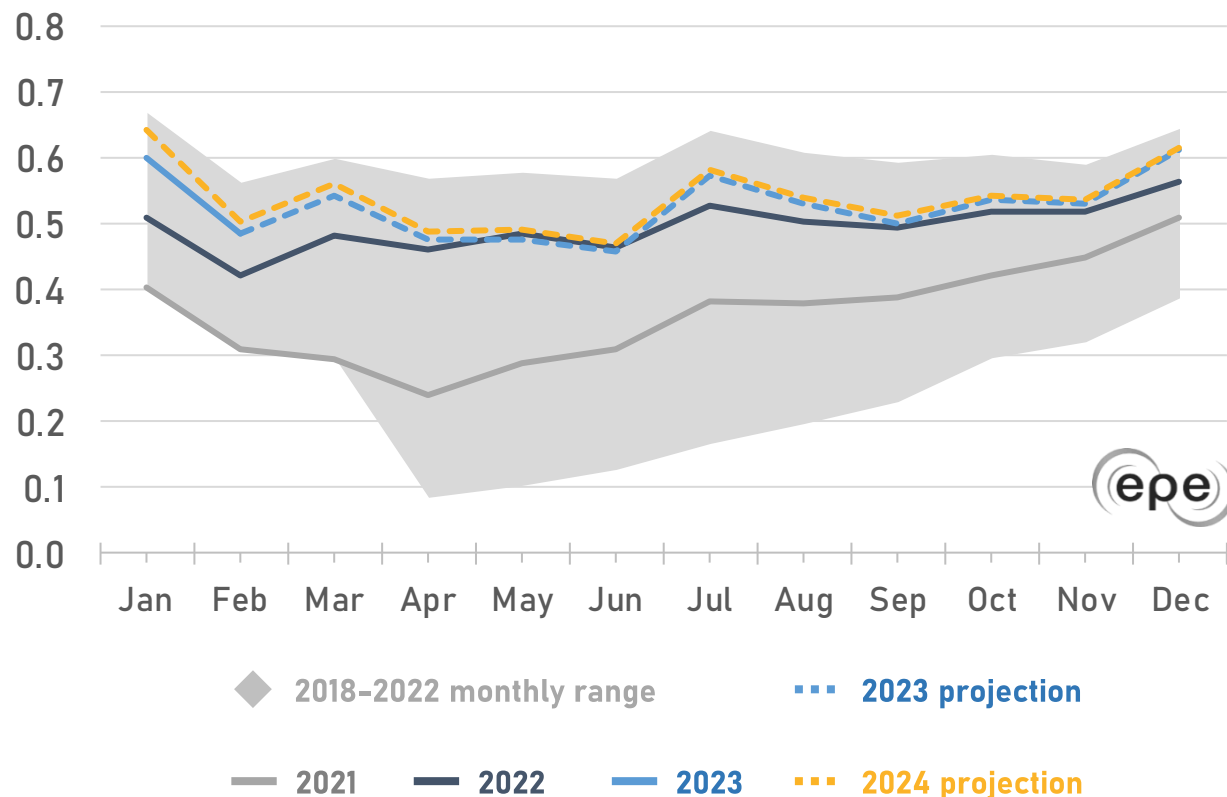
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).



Jet fuel market in Brazil



Monthly jet fuel demand billion liters



Last 12 Months Demand ▲ 32.8%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand ▲ 6.2% (6.3 billion liters)

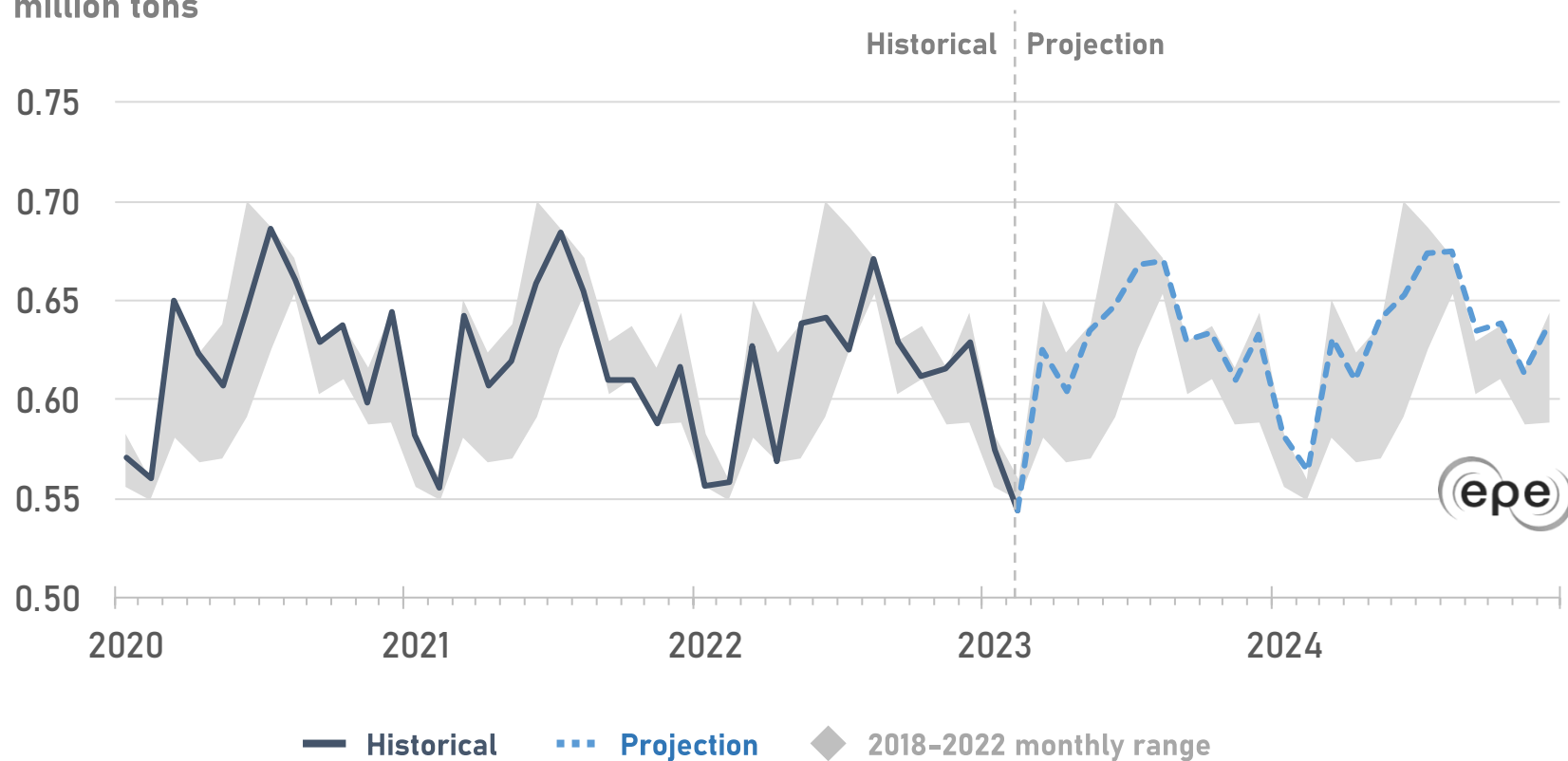
2024 Demand ▲ 2.6% (6.5 billion liters)

- >> The population is gradually returning to air travel, especially for domestic flights, although corporate demand hasn't recovered yet ([Valor](#)). In turn, international air travel remains more affected, especially by the negative effects of the devalued exchange rate and high air fares.
- >> In January and February 2023, demand for domestic flights (measured in available seat kilometer, ASK) was 5% below the same period in 2020 (pre-pandemic). The demand for international flights was 18% below ([ANAC](#)).
- >> Brazilian airlines have announced new aircraft orders and the expansion of its operations, aiming to increase flights in the coming years ([Azul](#), [Embratur](#), [Gol](#), [Latam](#)).

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).

Liquefied petroleum gas – LPG market in Brazil

Monthly LPG demand million tons



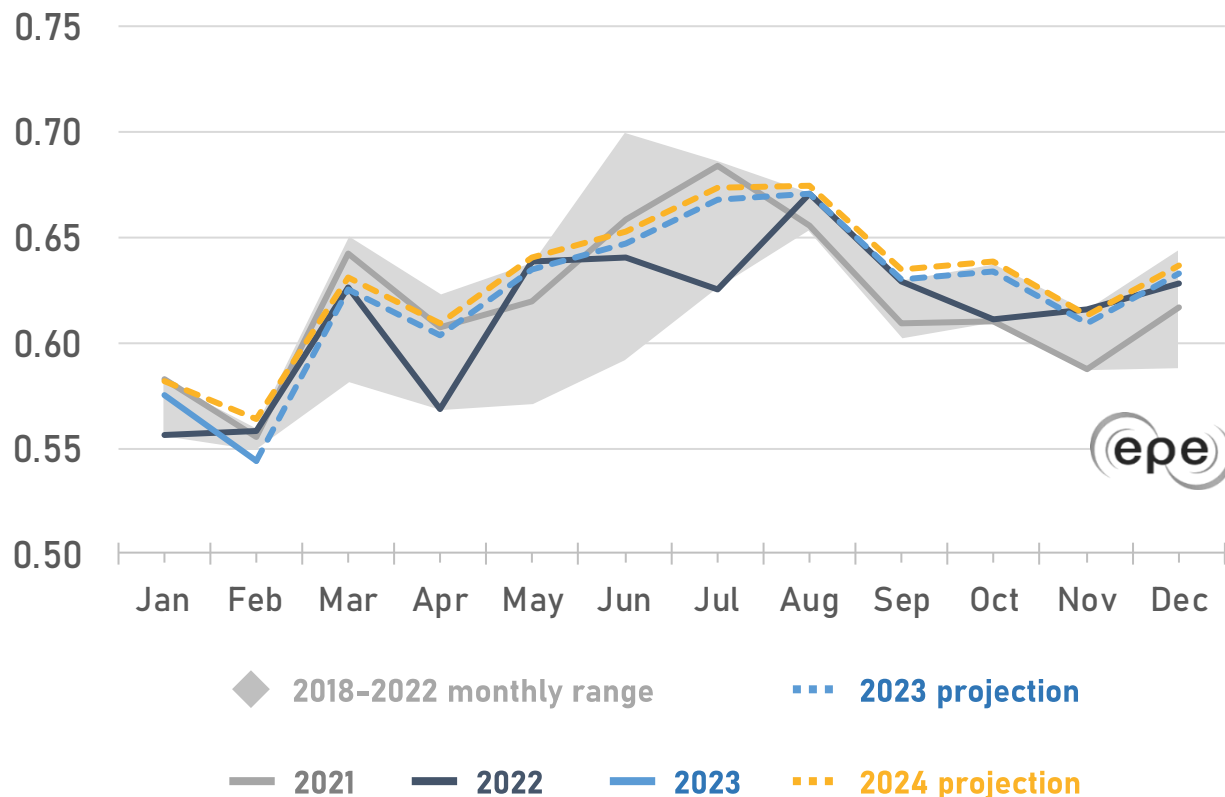
Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).



Liquefied petroleum gas – LPG market in Brazil



Monthly LPG demand million tons



Last 12 Months Demand ▼ -0.4%
(Mar 22 to Feb 23 vs. Mar 21 to Feb 22)

Annual growth:

2023 Demand
▲ 1.4% (7.5 million tons)

2024 Demand
▲ 1.0% (7.6 million tons)

>> After a weak performance between January and July 2022 (a 3.1% decrease), LPG consumption in Brazil resumed its growth trend in the last months of 2022 (a 2.5% increase between August and December).

>> From August 2022, the Brazilian government doubled its support to low-income families under the *Auxílio Gás dos Brasileiros* program, in compliance with Constitutional Amendment 123 ([Brasil](#)). Along with the reduction in the unemployment rate ([IBGE](#)), these factors contributed to reversing the early 2022 downward trend in LPG consumption.

>> In January and February 2023, LPG consumption in Brazil increased by 0.5% compared to the same period last year.

>> EPE projects a 1.4% growth in LPG demand in 2023.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).

Brazilian fuel market in the short-term



Monthly fuel demand

													Projection											
	2022												2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Diesel / Gasoil																								
billion liters	4.75	5.05	5.59	5.11	5.47	5.26	5.66	5.95	5.62	5.75	5.36	5.16	4.65	4.92	5.65	5.32	5.43	5.51	5.81	6.01	5.80	6.00	5.57	5.31
Otto Cycle Fuel																								
billion liters of gasoline equivalent	4.05	4.13	4.39	4.24	4.48	4.10	4.55	4.80	4.82	4.90	4.74	5.49	4.56	4.66	4.54	4.49	4.48	4.42	4.61	4.63	4.67	4.85	4.74	5.19
Gasoline																								
billion liters	3.27	3.32	3.30	3.26	3.43	3.17	3.57	3.84	3.81	3.88	3.76	4.44	3.76	3.79	3.57	3.53	3.44	3.40	3.53	3.50	3.48	3.59	3.58	3.99
Hydrous Ethanol																								
billion liters	1.11	1.15	1.56	1.40	1.50	1.33	1.40	1.37	1.44	1.45	1.40	1.50	1.15	1.24	1.39	1.37	1.49	1.45	1.53	1.62	1.70	1.80	1.67	1.71
Jet Fuel																								
billion liters	0.51	0.42	0.48	0.46	0.49	0.46	0.53	0.50	0.49	0.52	0.52	0.57	0.60	0.49	0.54	0.48	0.48	0.46	0.57	0.53	0.50	0.54	0.53	0.61
Liquefied Petroleum Gas – LPG																								
million tons	0.56	0.56	0.63	0.57	0.64	0.64	0.63	0.67	0.63	0.61	0.62	0.63	0.57	0.54	0.63	0.60	0.63	0.65	0.67	0.67	0.63	0.63	0.61	0.63

Note: Diesel values include the biodiesel blend, and gasoline values include the ethanol blend.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

Brazilian fuel market in the short-term



Quarterly and annual fuel demand

	Projection												Projection				Projection		
	2022				2023				2024				2021	2022	2023	2024	2022 %	2023 %	2024 %
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4							
Diesel / Gasoil																			
billion liters	15.4	15.8	17.2	16.3	15.2	16.3	17.6	16.9	15.7	16.4	17.8	17.1	63.5	64.7	66.0	67.0	2.0%	1.9%	1.5%
Otto Cycle Fuel																			
billion liters of gasoline equivalent	12.6	12.8	14.2	15.1	13.8	13.4	13.9	14.8	13.9	13.6	14.4	15.3	51.6	54.7	55.8	57.2	6.0%	2.1%	2.4%
Gasoline																			
billion liters	9.9	9.9	11.2	12.1	11.1	10.4	10.5	11.2	10.6	10.3	10.6	11.3	39.3	43.0	43.2	42.9	9.5%	0.3%	-0.7%
Hydrous Ethanol																			
billion liters	3.8	4.2	4.2	4.4	3.8	4.3	4.8	5.2	4.6	4.8	5.4	5.7	17.5	16.6	18.1	20.5	-5.2%	8.9%	13.1%
Jet Fuel																			
billion liters	1.4	1.4	1.5	1.6	1.6	1.4	1.6	1.7	1.7	1.5	1.6	1.7	4.4	6.0	6.3	6.5	36%	6.2%	2.6%
Liquefied Petroleum Gas – LPG																			
million tons	1.7	1.8	1.9	1.9	1.7	1.9	2.0	1.9	1.8	1.9	2.0	1.9	7.4	7.4	7.5	7.6	-0.8%	1.4%	1.0%

Note: Diesel values include the biodiesel blend, and gasoline values include the ethanol blend.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels); [MAPA](#) (Ministry of Agriculture, Livestock and Food Supply).

Brazilian fuel market in the short-term



Quarterly and annual diesel demand by type

	Projection												Projection				Projection		
	2022				2023				2024				2021	2022	2023	2024	2022 %	2023 %	2024 %
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4							
Ultra-low sulphur diesel (10 ppm)																			
billion liters	9.1	9.5	10.4	10.0	9.5	10.2	10.9	10.7	10.3	10.6	11.4	11.2	36.1	39.0	41.3	43.5	7.9%	6.0%	5.4%
Low sulphur diesel (500 ppm)																			
billion liters	5.6	5.6	6.1	5.5	5.0	5.4	5.9	5.3	4.8	5.1	5.5	5.0	24.7	22.9	21.6	20.4	-7.3%	-5.5%	-5.8%
Diesel / gasoil (others)																			
billion liters	0.7	0.7	0.7	0.8	0.7	0.7	0.8	0.8	0.7	0.7	0.8	0.9	2.7	2.9	3.0	3.1	7.0%	5.7%	1.7%
Share in total diesel demand (%)																			
Ultra-low sulphur diesel (10 ppm)	59%	60%	61%	61%	62%	62%	62%	63%	65%	65%	64%	66%	57%	60%	63%	65%			
Low sulphur diesel (500 ppm)	37%	36%	35%	34%	33%	33%	33%	32%	30%	31%	31%	29%	39%	35%	33%	30%			
Diesel / gasoil (others)	4%	4%	4%	5%	5%	4%	5%	5%	4%	4%	5%	5%	4%	5%	5%	5%			

Note: The methodology for Brazilian diesel demand by type was changed in this April 2023 edition. The volume of diesel for own consumption by producers, which is not included in ANP statistics of fuel sales by distributors, was recalculated. Most of this own consumption is carried out in self-production of energy and as a marine fuel for its own fleet.

Note: Diesel values include the biodiesel blend. The item 'Diesel / gasoil (others)' includes offroad diesel (1,800 ppm), marine gasoil (5,000 ppm) and other types. Percentages may not total 100 due to rounding.

Sources: [EPE](#) (Energy Research Office); [ANP](#) (National Agency for Petroleum, Natural Gas and Biofuels).



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BRASIL
UNIÃO E RECONSTRUÇÃO