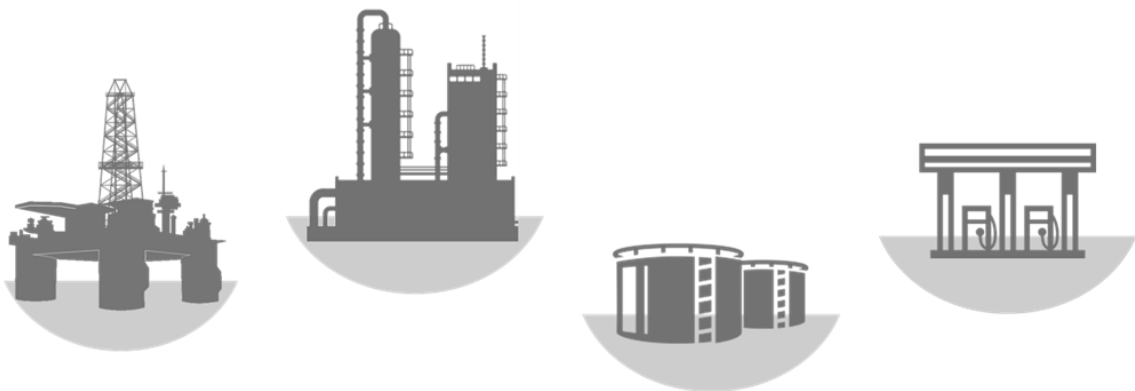




# **BRAZILIAN OIL & GAS REPORT**

## **2023/2024**

**TRENDS AND RECENT DEVELOPMENTS**



**December 2024**  
**Rio de Janeiro, Brazil**



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The Energy Research Office (*Empresa de Pesquisa Energética* - EPE) is a government-owned entity under Brazil's Ministry of Mines and Energy. EPE's mission is to provide data, studies, and research to support the planning and development of the country's energy sector.

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## List of Abbreviations

**ANP** – National Agency of Petroleum, Gas and Biofuels (Agência Nacional do Petróleo, Gás e Biocombustíveis)

**boe/d** – barrels of oil equivalent per day

**b/d** – barrels per day

**CADE** – Administrative Council for Economic Defense (Conselho Administrativo de Defesa Econômica)

**CDESS** – Sustainable Economic and Social Development Council (Conselho de Desenvolvimento Econômico Social Sustentável)

**CEL** – Special Bidding Committee (Comissão Especial de Licitação)

**CCS** – Carbon Capture and Storage

**CCUS** – Carbon Capture, Utilization and Storage

**CNOOC** - China National Offshore Oil Corporation

**CNPE** – National Energy Policy Council (Conselho Nacional de Política Energética)

**E&P** – Exploration and Production

**FPSO** – Floating Production Storage and Offloading Unit

**FSRU** - Floating Storage Regasification Unit

**GOM** – Mato Grosso West Gas Ltd. (GasOcidente do Mato Grosso Ltda.)

**IPCA** – National Consumer Price Index

**LNG** – Liquefied Natural Gas

**LPG** – Liquefied Petroleum Gas

**Mover** – National Green Mobility and Innovation Program (Programa Nacional de Mobilidade Verde e Inovação)

**NFE** – New Fortress Energy

**NTS** – Southeast New Transporter (Nova Transportadora do Sudeste)

**PNDV** – National Green Diesel Program (Programa Nacional de Diesel Verde)

**PPSA** – Pre-Salt Petroleum S.A. (Pré-Sal Petróleo S.A.)

**ProBioQAV** – National Sustainable Aviation Fuel Program (Programa Nacional de Combustível Sustentável de Aviação)

**R&D** – Research and development

**RefTOP** – World-Class Refining

**RIA** – Regulatory Impact Analysis

**RNEST** – Abreu & Lima Refinery

**SAF** – Sustainable Aviation Fuel

**STF** – Supreme Federal Court

**SIE-BC** – Integrated Flow System of the Campos Basin (Sistema Integrado de Escoamento de gás natural da Bacia de Campos)

**SSLNG** – Small Scale Liquefied Natural Gas

**TAG** – Associated Gas Transport (Transportadora Associada de Gás)

**Tecab** – Cabiúnas Terminal (Terminal de Cabiúnas)

**TBG** – Bolivia-Brazil Gas Pipeline Brazilian Transport (Transportadora Brasileira Gasoduto Bolívia-Brasil)

**TSB** – Southern Brazilian Gas Transporter S.A. (Transportadora Sulbrasileira de Gás S.A.)

**UTGC** – Cacimbas Gas Treatment Unit (Unidade de Tratamento de Gás de Cacimbas)

## Introduction

The Brazilian Oil & Gas Report is an annual publication that offers a comprehensive analysis of key trends and developments in the national oil sector. This edition focuses on events occurring between July 2023 and June 2024. Any events after June 2024 are outside the report's scope but can be found in the semiannual publication, *Boletim de Conjuntura da Indústria do Óleo & Gás* (BOG), published in Portuguese.

The second half of 2023 saw record national production of oil and natural gas, highlighting the sector's continued growth in Brazil, alongside announcements of new investments. Companies outlined plans to restructure certain refining activities in line with decarbonization strategies. Meanwhile, the advancement of Tax Reform was viewed as a significant milestone for the country's development, shaping policies aimed at enhancing market openness and competitiveness in the oil and gas sector.

In the first half of 2024, despite four consecutive monthly production reductions, oil and natural gas output remained higher than in the same period of the previous year. During this time, progress was made in the regulation of natural gas and fuels, as well as in mobility and innovation. Key highlights from the period include the beginning of expansion work at the Abreu & Lima Refinery (RNEST), the postponement of the 4th Cycle of Open Acreage bidding rounds, the commissioning of new natural gas infrastructure, gas trading rounds, investments in storage and liquefaction, renewed investments in the fertilizer sector, and initiatives in carbon capture and storage (CCS).

## Economic Context

The Brazilian GDP grew by 2.0% in the third quarter of 2023 compared to the same quarter in 2022, and by 0.1% compared to the previous quarter ([IBGE](#)). In the first quarter of 2024, the economy expanded by 0.8% compared to the previous quarter, accumulating a 2.5% growth between April 2023 and March 2024. This growth was primarily driven by the following sectors: Industry grew by 2.8%, and Services by 3.0%, while Agriculture declined by 3.0% ([IBGE](#)). The National Consumer Price Index (IPCA) ended 2023 with an accumulated variation of 4.62%, down from 5.79% in 2022. Notably, despite a turbulent geopolitical scenario, including conflicts in the Middle East, fuel prices declined in line with falling oil prices ([IBGE](#)). From July 2023 to June 2024, as measured by the IPCA, inflation accumulated 3.93% over 12 months, with key components being Education at 6.93%, Health at 5.63%, and Transportation at 4.32% ([IBGE](#)).

A major development in September 2023 was Petrobras's decision to halt the sale of several key assets, considered strategic<sup>1</sup>. The state-owned company officially announced it would no longer sell the Urucu and Bahia-Terra onshore clusters, the Manati oilfield<sup>2</sup>, and its Argentine subsidiary, Petrobras Operaciones. These moves come after a thorough review of asset sales that had not yet reached the agreement stage, as part of the company's broader shift in strategy. While the company will maintain its focus on maximizing portfolio value and exploring new oil and gas reserves, its revised strategy now also emphasizes decarbonization and long-term sustainability. The market's reaction to the halted Exploration & Production (E&P) asset sales was largely unsurprising, with Petrobras' shares seeing only minor fluctuations. Analysts had anticipated a shift in the company's strategy under the new administration, with Petrobras now reassessing its approach to asset management while leaving the door open for future divestitures based on profitability and environmental considerations<sup>3</sup> ([Valor](#); [Petrobras](#); [Reuters](#)).

<sup>1</sup> The sale of thermoelectric generators was not put on hold. Petrobras will continue with the sale of a 20% stake in the Termocabo and Suape II fuel oil thermal plants, as well as its 18.8% share in the Araucária gas-fired plant, aligning with decarbonization goals and active management of its portfolio. The Araucária plant, co-owned with Copel, is part of a broader effort to shift to more sustainable energy generation ([Petrobras](#)).

<sup>2</sup> The Urucu cluster, located in the Amazon, is Brazil's largest onshore oil and gas reserve and has been a contested asset, with companies like Eneva and 3R Petroleum vying for it. However, negotiations ended in 2022 without an agreement. Similarly, Petrobras backed out of selling its 35% stake in the Manati natural gas field in Bahia, where it partners with Enauta, GeoPark, and PetroRio. The Bahia-Terra cluster was also withdrawn from the market, but Petrobras indicated it might still explore partnerships with Petroreconcavo and Eneva, with whom it had been negotiating ([Petrobras](#)).

<sup>3</sup> In parallel, Petrobras is also exploring potential investments in biofuels, having signed a Memorandum of Understanding with Mubadala Capital to develop a biofuel project in Brazil ([Petrobras](#)).

Another highlight at the end of 2023 was the approval of the Tax Reform ([Constitutional Amendment No. 132/2023](#)), which may impact the allocation, redistribution, and balance of the economy. The reform introduces a selective tax on the production, extraction, commercialization, or importation of goods and services harmful to health or the environment ([Senate](#)). It is important to note that the reform has altered constitutional foundations to enhance the national tax system by making it simpler and more transparent<sup>4</sup>, while reducing costs and barriers to investment in Brazil<sup>5</sup>. As a major and growing player in the oil sector, the country could significantly boost investment volumes across all segments of the national supply chain and export markets.

Regarding market indicators and strategic plans of companies in the sector, Petrobras reported a net profit of BRL 23.7 billion in the first quarter of 2024. This result is 23% lower than the previous quarter and 38% lower compared to the same period last year (Figure 1). The depreciation of the Brazilian real at the end of the period and reduced sales volumes of oil and oil products contributed for these numbers. A notable aspect of the first-quarter results was the USD 2.5 billion increase in E&P investments for projects expected to sustain the production curve in the coming years ([Petrobras](#)).

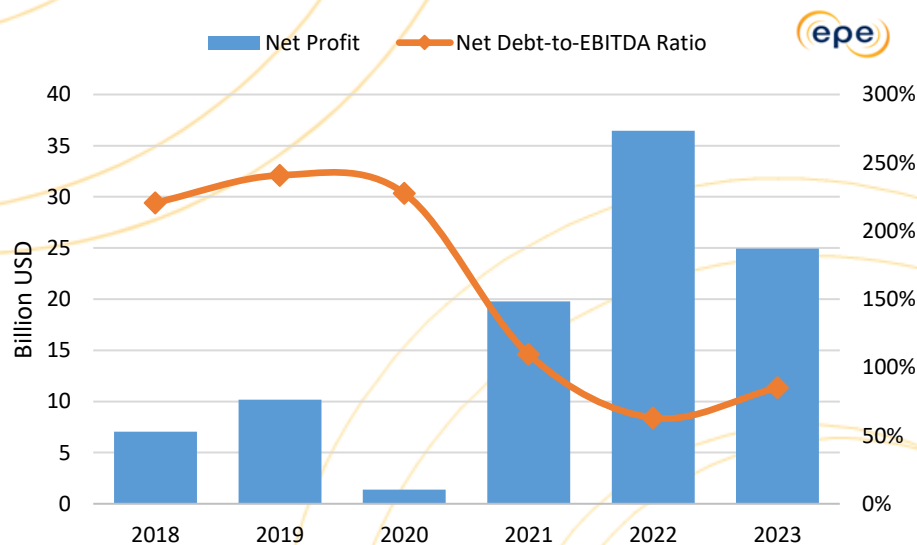


Figure 1 – Petrobras' Yearly Net Profit and Net Debt-to-EBITDA<sup>6</sup> Ratio

Source: [Petrobras](#).

<sup>4</sup> The new constitutional text includes a provision stating that the National Tax System must adhere to the principles of simplicity, transparency, tax fairness, cooperation, and environmental protection.

<sup>5</sup> In addition to the timeline set forth by Constitutional Amendment No. 132/2023, the process of tax system improvement requires further steps, including the regulation of the new rules established in the Federal Constitution.

<sup>6</sup> Earnings Before Interest, Taxes, Depreciation, and Amortization



## Upstream

### Licensing Rounds

The latter half of 2023 saw an influx of investments in upstream activities. The National Agency of Petroleum, Gas and Biofuels (ANP) held two Open Acreage<sup>7</sup> cycles. In the 2nd Cycle under the Production Sharing auction, only the Tupinambá block was acquired by BP Energy in the Santos Basin ([ANP](#)), while the 4th Cycle of Open Acreage under the Concession regime resulted in the award of 192 blocks (Table 1). In the Pelotas Basin, 44 blocks were awarded, with 29 operated by Petrobras (in partnership with Shell and CNOOC – China National Offshore Oil Corporation) and 15 by Chevron<sup>8</sup> ([EBC](#); [ANP](#)). In the Amazon Basin, one block (Japiim marginal accumulation area) was acquired by Eneva and Atem, and four blocks solely by Atem. Newcomer Elysian secured blocks in the Potiguar, Espírito Santo, and Sergipe-Alagoas basins. Blueshift acquired a block in the Paraná Basin. Additionally, Equinor won the auction for the first exploratory area outside the continental shelf, in the Santos Basin ([EPBR](#); [EPBR](#); [ANP](#)).

Table 1 – Relevant Results for Open Acreage Cycles

Winning bidder(s)	Basin	No. of Blocks	Signing bonus	Cycle
Elysian (100%, op. <sup>9</sup> )	<b>Potiguar/ Sergipe-Alagoas/ Espírito Santo</b>	122	USD 1.10 million (BRL 6.22 million)	4 <sup>th</sup> (Concession)
Chevron (100%, op.)	<b>Pelotas</b>	15	USD 22.59 million (BRL 127.65 million)	4 <sup>th</sup> (Concession)
Eneva/ATEM (80%, op./ 20%)	<b>Amazonas</b>	1 (Japiim)	USD 29,205 (BRL 165,000)	4 <sup>th</sup> (Concession)
BP Energy (100%, op.)	<b>Santos</b>	1 (Tupinambá)	USD 1.25 million (BRL 7.05 million)	2 <sup>nd</sup> (Production Sharing)

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

Additionally, the Special Bidding Committee approved the postponement of the bidding rounds for the 4th Cycle of Open Acreage under the Concession regime ([ANP](#)). The indicative schedule had been published in the Official Gazette in August 2023 ([DOU](#)).

<sup>7</sup> Up until December 2021, the Open Acreage system involved the continuous offering of exploratory blocks and areas with marginal accumulations in onshore or offshore basins that had been returned to, or were in the process of being returned to, the ANP. With the enactment of CNPE Resolution No. 27/2021, the Open Acreage system prioritized the availability of areas for the exploration and production of oil, natural gas, and other fluid hydrocarbons. This resolution grants the ANP the authority to define and offer, under the concession regime, blocks in any onshore or offshore basins, as well as fields that are being returned or are scheduled for return ([ANP](#)).

<sup>8</sup> Over the past two decades, the Pelotas Basin has garnered limited attention, primarily due to the focus on pre-salt activities.

<sup>9</sup> Operator.



The National Energy Policy Council (CNPE), through Resolution CNPE No. 11 of December 20, 2023, authorized the bidding of 11 blocks in the Open Acreage system under the production sharing regime<sup>10</sup> and established the mandatory minimum local content for future Open Acreage cycles in both concession and production sharing regimes. The minimum local content will no longer be used as a criterion for evaluating bids in the auction, but will instead be incorporated into the contractual clauses, differing from past practices ([CNPE](#))<sup>11</sup>.

Pré-Sal Petróleo S.A. (PPSA) set a record in 2023, raising BRL 6.02 billion from the sale of oil and natural gas, a 28% increase compared to 2022. In 2024, it hired B3, in São Paulo, to conduct auctions<sup>12</sup> for the Union's oil and natural gas shares under production sharing contracts and the Tupi Unitized Reservoir over the next three years ([MME](#)).

### Exploration & Production of Oil & Gas

From July to December 2023, Brazil's national oil production averaged 3.575 million barrels per day (MMb/d), exceeding the first-half average of 3.199 MMb/d, while natural gas production averaged 155 million cubic meters per day (MMm<sup>3</sup>/d), reflecting a 7.3% increase over the first half (Table 2). November set new records, reaching 3.678 million barrels of oil equivalent per day (MMboe/d) and 162 MMm<sup>3</sup>/d of natural gas. Throughout this period, the technical reinjection of natural gas remained above 50% ([EBC](#); [ANP](#)).

Table 2 – Oil & Gas Production in Brazil

PERIOD	2023	2023 Q3	2023 Q4	2024 Q1	2024 APR	2024 MAY	2024 JUN
<b>Oil (MMb/d)</b>	3.401	3.549	3.602	3.441	3.194	3.428	3.409
<b>Offshore</b>	2.600	2.686	2.763	2.638	3.109	3.342	3.326
<b>Onshore</b>	0.078	0.085	0.084	0.084	0.085	0.086	0.082
<b>Natural Gas (MMm<sup>3</sup>/d)</b>	150	153	157	149	137	150	150
<b>Offshore</b>	112	115	118	114	117	129	130
<b>Onshore</b>	21	21	23	21	20	21	20

Source: [ANP](#).

In November 2023, Petrobras approved its 2024-28 Strategic Plan, which includes a 31% increase in planned investments compared to the previous plan, totaling USD 102 billion. The E&P sector is the focus of these investments, followed by refining, and gas & energy. The E&P investments aim to maximize portfolio value, replenish reserves, and focus on profitable assets ([Petrobras](#)).

<sup>10</sup> This region includes the blocks of Itaimbezinho, Ametista, Ágata, Mogno, Jaspe, Amazonita, Safira Leste, Safira Oeste, Citrino, Larimar, and Ônix.

<sup>11</sup> Regarding local content, the ANP published Resolution No. 963, which aims to simplify the accreditation procedures for certification bodies ([ANP](#)).

<sup>12</sup> The first auction for the sale of the Union's oil was scheduled for and took place in July 2024. Another auction is scheduled for April 2025 ([PPSA](#)).

For the entire year of 2023, Brazil achieved record oil and gas production levels, with an average daily output of 4.344 MMboe/d (Figure 2), marking an 11.69% increase over the previous record set in 2022 and surpassing the 4 MMboe/d milestone for the first time. Separate records were set for oil production, which averaged 3.402 MMb/d, a 12.57% increase from 2022, and for gross natural gas production, which reached 150 MMm<sup>3</sup>/d, an 8.7% rise from the previous year's 138 MMm<sup>3</sup>/d ([ANP](#)).

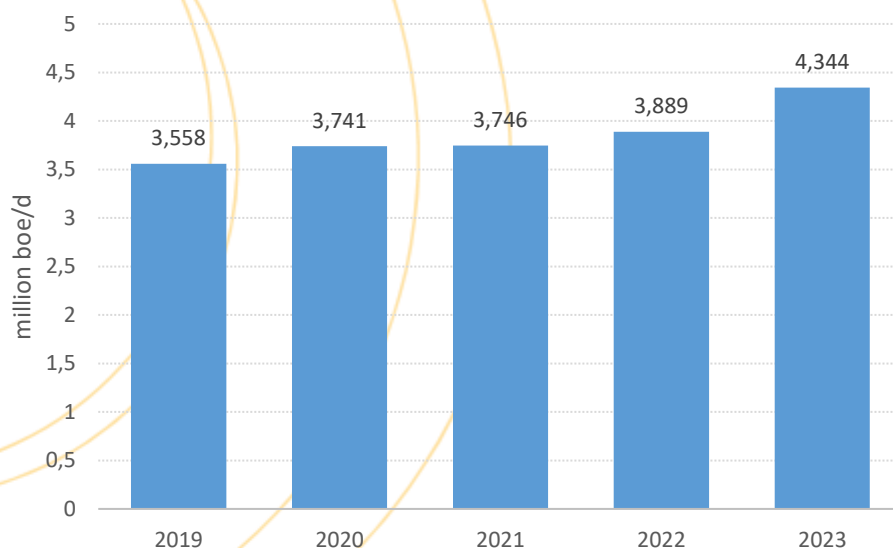


Figure 2 – Total Brazilian Oil & Gas Production in Recent Years

Source: [ANP](#).

In 2023, there was a 6.98% increase in proven oil reserves (1P) compared to 2022. There was a 3.81% rise in the combined volume of proven and probable reserves (2P) and a 2.26% increase in the total of proven, probable, and possible reserves (3P). For natural gas, 517 billion m<sup>3</sup> of 1P reserves, 641 billion m<sup>3</sup> of 2P reserves, and 705 billion m<sup>3</sup> of 3P reserves were declared, reflecting absolute increases of 27%, 23%, and 25%, respectively, compared to 2022<sup>13</sup> ([ANP](#)).

<sup>13</sup> In this context, in May 2024, ANP's board approved geological studies for four new exploratory blocks located in the Santos Basin pre-salt: Rodocrosita, Cerussita, Aragonita, and Malaquita ([ANP](#)). These areas were forwarded to the Ministry of Mines and Energy (MME), which will assess their inclusion in future bidding rounds. However, the agency estimates that the review of available exploration blocks for future auctions will only be completed by 2025 ([ANP](#)).

Specifically for natural gas, ANP data shows that the national supply in the first three months of 2024 averaged 43.36 MMm<sup>3</sup>/d, a 9.2% decline compared to the 2023 annual average. In contrast, imported supply increased by 8.1% compared to the 2023 average, reaching 18.34 MMm<sup>3</sup>/d. The total supply averaged 61.7 MMm<sup>3</sup>/d, 4.64% lower than the total average supply for 2023. Meanwhile, total demand decreased by 3.5% compared to the 2023 average, amounting to 60.2 MMm<sup>3</sup>/d. Imported LNG continued to show price volatility as a reflection of international tensions<sup>14</sup>, currently supplying only 1.5% of Brazil's gas consumption, with a slight recovery since the price surge in 2022 ([ANP](#)).

The increase in Brazilian oil and gas production is strongly associated with more Floating Production Storage and Offloading (FPSO) units starting operations (Figure 3). Petrobras initiated production with the fifth FPSO in the Búzios Field, which has an output of 150,000 b/d of oil and 6 MMm<sup>3</sup>/d of natural gas ([EPBR](#)). Additionally, the FPSO Anita Garibaldi started operations in the Marlim and Voador fields, with a capacity of 80,000 b/d of oil and 7 MMm<sup>3</sup>/d of gas. This unit, along with the FPSO Anna Nery, will replace nine platforms scheduled for decommissioning ([Petrobras](#)). In the Santos Basin, production from the FPSO Sepetiba commenced in the Mero field, with a capacity of 180,000 b/d of oil and 12 MMm<sup>3</sup>/d of natural gas ([EBC](#)).

Brazil's oil and natural gas production is projected to experience substantial growth over the next decade. By 2034, oil production is estimated to reach 4.4 million barrels per day (b/d), peaking at 5.3 million b/d in 2030 — an increase of up to 47% compared to 2023 levels. This growth, however, may not be sustained throughout the decade, even with new discoveries. Approximately 94% of oil production is expected to come from already discovered resources (RD), with the Pre-salt basin projected to account for 76% of national output by 2034 ([MME](#)). Brazilian oils generally have a moderate carbon intensity compared to other international oils, positioning them as a potential supply option in a world where fossil fuels will still play an expressive role. Lower-carbon-intensity oils and fuels are anticipated to hold higher economic value in the global oil and gas market ([EPE](#)).

<sup>14</sup> The continuation of the Russia-Ukraine conflict and the Israel's offensive in Gaza, the latter of which has led to increasing restrictions on the movement of ships in the Red Sea.

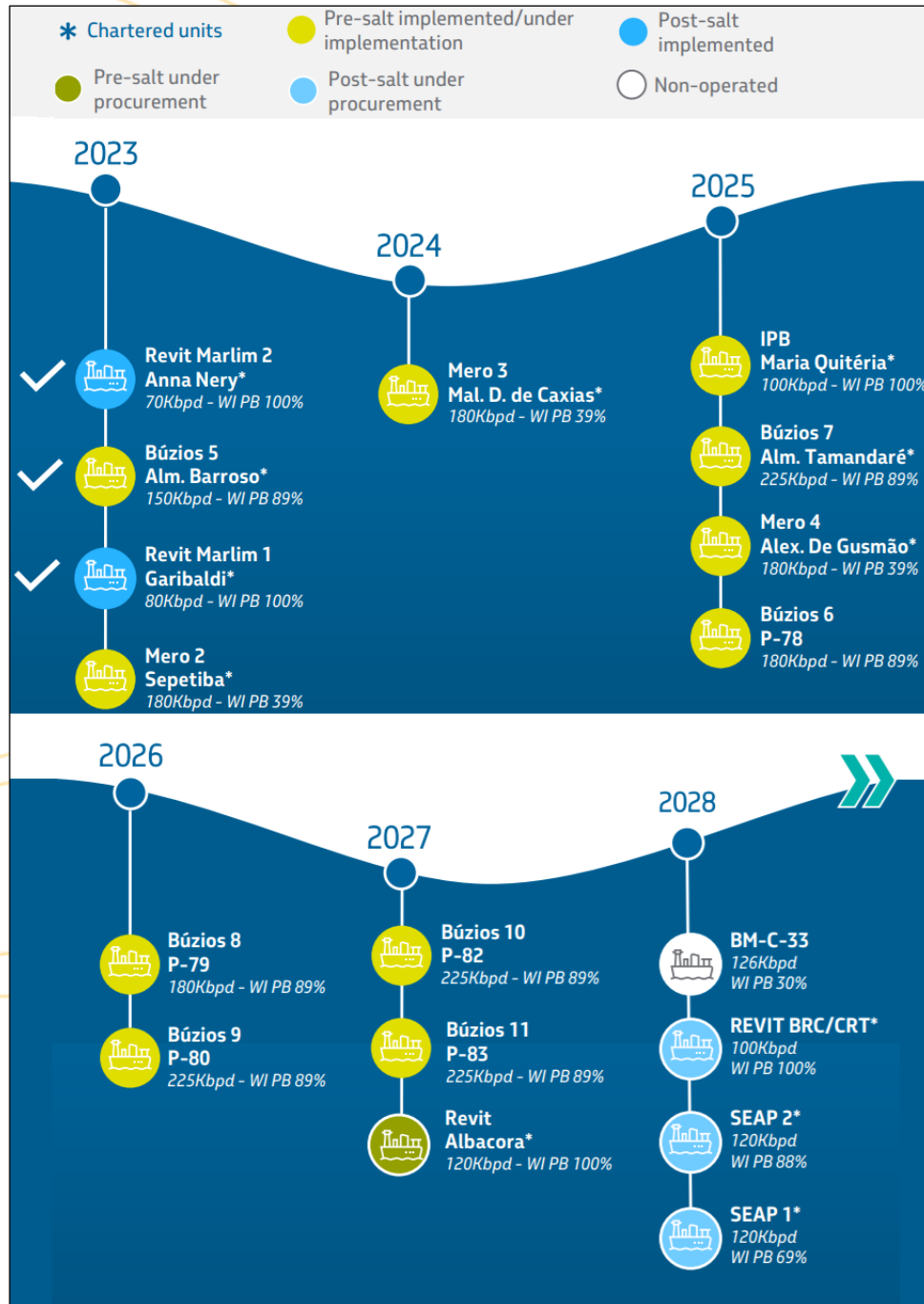


Figure 3 – Petrobras' FPSO Roadmap

Source: [Petrobras](#).

Within the Equatorial Margin, the Foz do Amazonas Basin is Petrobras' top priority for reserve replenishment, followed by the Potiguar and Barreirinhas Basins ([EPBR](#)). In the Potiguar Basin, the company initiated drilling at the Pitu Oeste well ([Petrobras](#)) and plans to drill 16 wells over the next five years. In April, the presence of hydrocarbons was confirmed in the second exploration well, Anhangá, near the border between Ceará and Rio Grande do Norte ([OGJ](#); [Petronotícias](#)). However, the region has been under environmental analysis. In 2023, Ibama denied the license for drilling the first well in block FZA-M-59 in the Foz do Amazonas Basins (Figure 4) ([Ibama](#)).

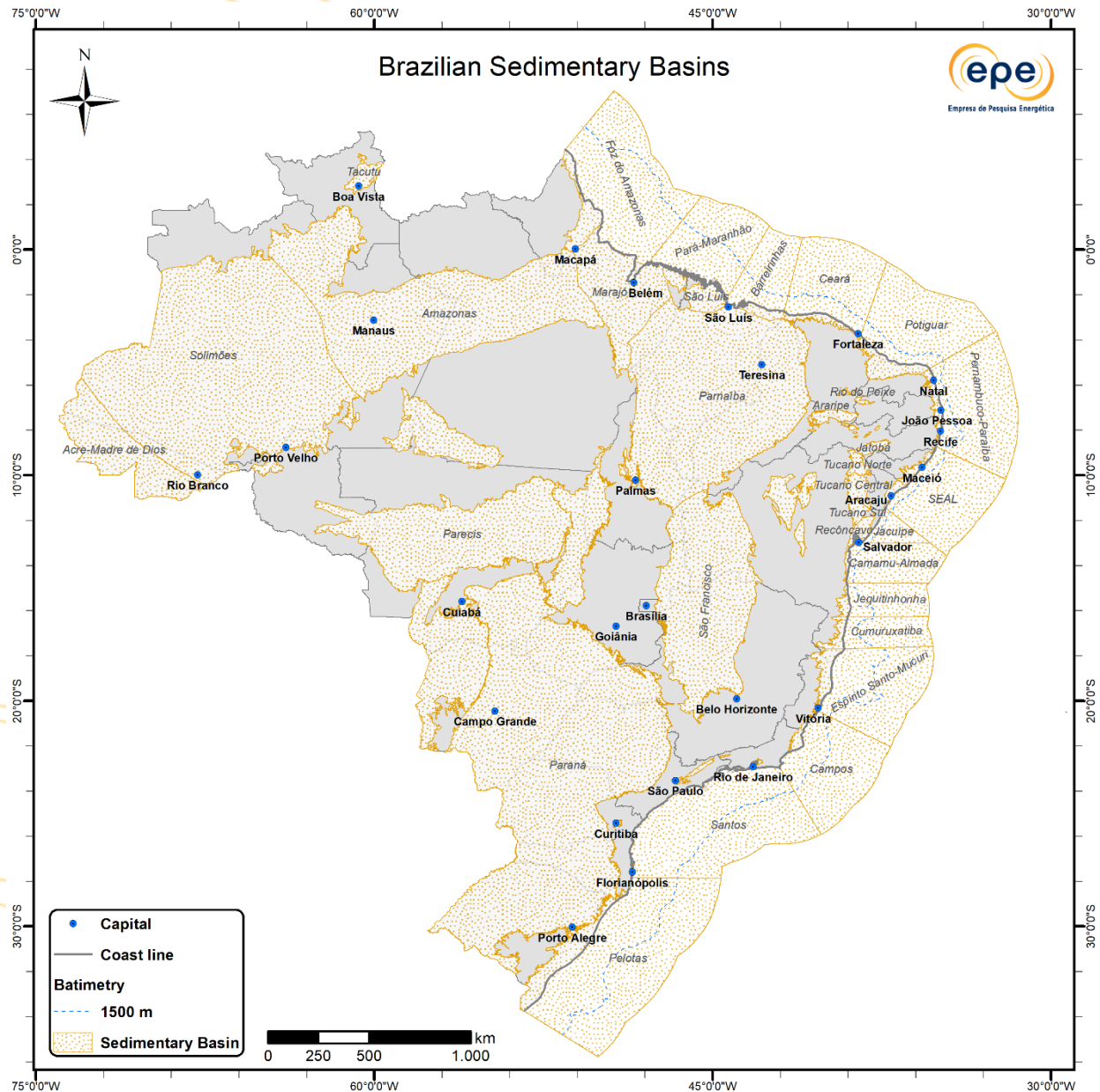


Figure 4 – Brazilian Basins

Source: [EPE \(2024\)](#)

Furthermore, Petrobras added 1.5 billion boe to its reserves in 2023, primarily from new oil volumes found in the Búzios, Tupi, and Atapu fields in the Santos Basin, and the commercial declaration of the Raia Manta and Raia Pintada, gas fields in the Campos Basin ([Petrobras](#)). The company's total proven reserves stand at 10.9 billion boe, 84% of which are oil and condensate, and 16% natural gas, sufficient for over 12 years of production at current levels ([Petrobras](#)).

In the first quarter of 2024, Petrobras produced an average of 2.8 MMb/d oil, natural gas, and condensate, representing a 5.4% decrease compared to the previous quarter ([ANP](#)). The reduction was attributed to maintenance shutdowns of platforms and the natural decline of mature fields in the Campos Basin. Despite this, projections suggest oil and gas production in Brazil will continue to rise in 2024, although at a slower pace than the previous year ([S&P Global](#)).

In onshore exploration, the Tucano Grande and Tucano Grande Sul development areas in the Tucano Sul Basin, Bahia, were declared partially commercial. These areas will be operated by Imetame Energia, with a 70% stake held by Energy Paranã ([ANP](#)). In the Parnaíba Basin, Eneva continues to develop the Gaviões Park, having launched its seventh natural gas-producing well ([ANP](#)).



## Mid- and Downstream

### Natural Gas – Regulation

The country has been working to stimulate investment in the Natural Gas sector, and recent regulatory changes aim to unlock new opportunities. Key initiatives, including legislative adjustments to support the commercialization of government-owned gas and ANP's simplified pipeline contracting processes, emphasize the government's commitment to overcoming existing bottlenecks and attracting new players. These efforts, along with expanded fiscal incentives and enhanced infrastructure access regulations, represent a strategic push toward a more competitive and accessible natural gas market in Brazil.

2023 saw notable regulatory developments in the natural gas sector. The “Gás para Empregar<sup>15</sup>” (Gas for Employment) program committees were extended by 120 days, with initial findings identifying bottlenecks hindering the sector's growth in the country. The program highlighted challenges in the commercialization of the federal government's share of gas under production-sharing agreements. In response, the MME proposed a bill to expand the powers of the PPSA, allowing the sale of gas at the city gate—the point of delivery to distributors—rather than solely at the wellhead ([MME](#); [MME](#)).

To facilitate entry of new players into the natural gas market, ANP approved Resolution No. 961/2023, which simplifies the contracting of existing capacity in transportation pipelines by waiving the requirement for public tenders ([EPBR](#); [ANP](#)). The agency approved tariff proposals submitted by transportation pipeline operators (Figure 5) Bolivia-Brazil Gas Pipeline Brazilian Transport (TBG), Southern Brazilian Gas Transporter S.A. (TSB), and Associated Gas Transport (TAG) applying a 90% discount to interconnection tariffs. This measure aims to lower the cost of gas movement within the interconnected system ([ANP](#)).

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<sup>15</sup> The objective of the Gas for Employment Program is to develop studies aimed at promoting the optimal utilization of natural gas produced in Brazil. This includes, among other goals, increasing the supply of natural gas from the Union in the domestic market and enhancing the social and economic benefits of national natural gas production ([MME](#)).





Figure 5 – Gas pipeline networks of transport companies

Source: [EPE \(2024\)](#)

Progress has also been made through the publication of ANP Resolution No. 961/2023, which amended ANP Resolutions No. 51/2016, simplifying the process for offering and contracting transportation capacity in gas pipelines, aligning it with the guidelines of the New Gas Law ([ANP](#)). Another regulatory improvement is the Tax Regime for Incentivizing the Modernization and Expansion of Port Infrastructure (Reporto), which was set to expire in December 2023, and has been extended until 2028. Reporto offers fiscal incentives, such as exemptions from federal taxes, and import duties for investments in ports, including the acquisition of machinery and equipment ([Câmara](#)).

In April 2024, ANP approved the start of the Natural Gas Transportation Capacity Offering and Contracting Process for the 2024-2028 period for the Southeast New Transporter (NTS), under the Agency's supervision. The process will utilize the tariff proposal approved by ANP's Collegiate Board ([ANP](#)). In May, ANP's board approved the Regulatory Impact Analysis (RIA) report from the working group (GT) formed to regulate the guidelines and principles for the negotiated and non-discriminatory access of third parties to essential natural gas infrastructure—such as transport pipelines, processing units, and LNG terminals. Along with the approval of the RIA report, ANP's board extended the working group's activities for an additional six months to finalize the regulation—one of the agency's priorities for 2024 ([ANP](#); [EPBR](#))<sup>16</sup>.

### Natural Gas – Infrastructure

Regarding natural gas supply, Petrobras will offer a new portfolio of products with more customized and competitive conditions for free consumers, which includes a price reduction mechanism of up to 10% in contracts with distributors, depending on the contracts and volumes transacted ([Petrobras](#)). The company's 2024-2028 Strategic Plan also includes mid-term investments planned to further expand natural gas infrastructure. The Sergipe Deep Waters Project (SEAP) pipeline, with a capacity of 18 MMm<sup>3</sup>/d, initially scheduled for 2028, is expected to come online in 2029 ([Petronotícias](#); [Petrobras](#))<sup>17</sup>.

At the end of 2023, Petrobras finally deactivated its regasification terminal in Pecém, which had been operating for years with high idle utilization ([Complexo do Pecém](#); [EPBR](#)). In terms of improvements, the company aims to complete the installation of the Rota 3 pipeline<sup>18</sup>, connecting the Santos Basin pre-salt fields to the Gaslub petrochemical complex in Itaboraí, in the State of Rio de Janeiro, in the second half of 2024<sup>19</sup> ([INFRA](#); [EPBR](#)).

In September 2024, the consortium composed of Equinor, Repsol Sinopec Brasil, and Petrobras submitted the declaration of commerciality and development plans for two areas<sup>20</sup> within the BM-C-33 pre-salt concession block in the Campos Basin to the ANP. The project is expected to begin operations in 2028 and will feature gas processing to specification directly on the FPSO, with a pipeline connected to the integrated transport network via the Cabiúnas Terminal in Macaé<sup>21</sup>, in the State of Rio de Janeiro ([Equinor](#); [Petrobras](#)).

<sup>16</sup> Beyond the first half of the year, in July 2024, ANP Resolution No. 971/2024 regulated the bulk transportation and storage of liquefied natural gas (LNG) by non-pipeline modes, such as road, rail, and waterways. The regulation also extends to biomethane, which will be treated similarly. This measure enhances legal certainty for small-scale LNG businesses, providing greater stability and clarity for the sector ([IN](#)).

<sup>17</sup> Petrobras opted to reduce the local content percentage of the FPSOs in the SEAP project to facilitate contracting, subject to penalties imposed by the regulatory authority ([Petrobras](#); [Petróleo Hoje](#); [CNPE](#)).

<sup>18</sup> The Rota 3 pipeline will have a transportation capacity of 18 MMm<sup>3</sup>/d, while the Gaslub UPGN will process 21 MMm<sup>3</sup>/d ([Petrobras](#)).

<sup>19</sup> Initial tests on the infrastructure will be conducted, with full operation expected to begin in August. The Gaslub UPGN will start operations alongside the pipeline.

<sup>20</sup> These areas, named Raia Manta and Raia Pintada, contain recoverable volumes of natural gas and condensate exceeding 1 billion boe. The pipeline for the Raia Project will have a capacity of 16 MMm<sup>3</sup>/d, with an average export rate of 14 MMm<sup>3</sup>/d.

<sup>21</sup> Operations began for the Marlim Azul thermal power plant in Macaé, with a rating of 565 MW, marking the first facility to use 100% pre-salt gas ([MME](#)).

Petrobras has also finalized commercial operations to unbundle its natural gas production chain, granting partner companies access to its infrastructure. In this regard, the acquisition of the Polo Potiguar<sup>22</sup> by 3R Petroleum was completed ([Petrobras](#)). Both Petrobras and 3R Petroleum have entered into an agreement for access to the Cacimbas Gas Treatment Unit (UTGC) in Linhares for processing gas from the Peroá field in the Espírito Santo Basin ([Petrobras](#)). Similarly, in December 2023, Equinor signed a contract to join the Integrated Flow System of the Campos Basin (SIE-BC)<sup>23</sup>, enabling it to utilize the pipeline network to transport gas from the Roncador field (in which it holds a 25% stake) and access the Cabiúnas UTGC starting January 2024 ([Petrobras](#)).

The Bolivian state company YPFB negotiated a contract addendum with Petrobras for 2024-2025, maintaining a maximum volume of 20 MMm<sup>3</sup>/d of natural gas while easing firm delivery commitments ([Petrobras](#)).

Petrobras has begun to offer a greater variety of supply contracts to gas distributors, with the option for indexing to Henry Hub and contract terms ranging from 4 to 11 years. However, only 20% of the volume contracted and reported in the second half adhered to the new index, and 10% of the traded volume was contracted for delivery at the hub<sup>24</sup>. Indexing to Brent, adopted by most state concessionaires, followed an oil price factor of 11.9% ([EPBR](#)).

<sup>22</sup> This acquisition comprises concession contracts for 22 oil and gas fields in the Potiguar Basin and facilities of the Guamaré Industrial Asset (AIG), which includes the Natural Gas Processing Unit (UPGN) and the Potiguar Clara Camarão Refinery (RPCC).

<sup>23</sup> The SIE was established in 2020 following an agreement between Petrobras and CADE, initially focused solely on the Santos Basin and consisting of Petrobras, Shell, Repsol Sinopec, and Petrogal ([Petrobras](#); [Petrobras](#)).

<sup>24</sup> In the hub model, Petrobras covers the entry fee into the transportation system, while the customer is responsible for the exit fee.

The biogas and biomethane markets have shown gradual growth, driven by companies' increased access to natural gas infrastructure. Compagás has expressed interest in securing biomethane supply for 2024 ([Compagas](#); [EnergiaHoje](#)), and Copergás has signed an additional contract for the purchase of methane from Orizon VR, totaling 130,000 m<sup>3</sup>/d for a duration of 10 years ([EPBR](#)). TBG offered capacity for the Gasbol pipeline for the period from 2024 to 2028, contracting a total of 20.9 MMm<sup>3</sup>/d for entry and 11 MMm<sup>3</sup>/d for exit in 2024. Meanwhile, TAG signed 35 capacity contracts, totaling 4.3 MMm<sup>3</sup>/d for entry and 4.7 MMm<sup>3</sup>/d for exit capacity ([TAG](#); [Portal de Oferta de Capacidade](#)). TAG also announced a strategic partnership with Origem Energia to jointly develop a pioneering natural gas storage project in Brazil, which could benefit domestic gas production and encourage the entry of new suppliers and consumers into the national network<sup>25</sup> ([TAG](#)). New Fortress Energy (NFE) has taken over the capacity reservation contract for the Portocem thermal power plant, which has a rating of 1.6 GW, in Ceará, and intends to transfer the contracted output to units connected to its regasification terminals<sup>26 27</sup> ([New Fortress Energy](#)).

Eneva has inaugurated its Natural Gas Operations Desk to offer flexible solutions to the market. The product will be provided through the Sergipe Hub, the company's private LNG terminal connected to the national transportation network using the TAG pipeline. This positions Eneva as the first private entity linked to the gas grid<sup>28</sup> ([Eneva](#); [EPBR](#)). The company also plans to begin commercial operations of its Parnaíba Small Scale LNG (SSLNG) unit in the second half of 2024, with the project having achieved 88% physical progress<sup>29</sup> ([Abegás](#); [EPBR](#)).

In the fertilizer sector, Petrobras announced a tolling<sup>30</sup> agreement with Unigel for the production of nitrogen fertilizers at the Sergipe and Bahia plants ([Petrobras](#)). These two units had halted production during the second half of 2023 due to a drop in product prices, which was not matched by a decrease in natural gas prices ([UNIGEL](#)). The reactivation aligns with the National Fertilizer Plan, approved in November by Confert, aiming to reduce the sector's dependence on external sources ([MDIC](#)).

<sup>25</sup> The estimated investment for the project is approximately USD 200 million. Initially, the storage capacity will be 106 million m<sup>3</sup> per year, with the potential to reach 500 million m<sup>3</sup> per year in the long term ([TAG](#)).

<sup>26</sup> TGS, located in Santa Catarina, and Barcarena, in Pará.

<sup>27</sup> NFE also announced the expansion of its regasification facility in Barcarena, with the start of operations for a new FSRU in the first half of 2024. The terminal will have the capacity to regasify 15 MMm<sup>3</sup>/d of gas and will supply the Novo Tempo thermal power plant, with a capacity of 630 MW, expected to be completed by 2025, as well as the Alunorte alumina refinery, which is preparing to convert its energy matrix from fuel oil to natural gas ([New Fortress Energy](#); [LNG Prime](#); [Hydro Alunorte](#)). This operation aligns with the trend in the oil and gas consumer market to seek alternatives for energy matrices, considering commitments to reduce greenhouse gas emissions.

<sup>28</sup> Kicking off negotiations through the Gas Trading Desk, the company announced a deal to supply up to 1.07 MMm<sup>3</sup>/d of natural gas to the Luiz Oscar Rodrigues de Melo Power Plant (UTE) operated by Linhares Geração, under a fully flexible contract valued at R\$ 1.2 billion. This marks the first private-sector gas supply agreement for thermoelectric plants in the country.

<sup>29</sup> Eneva has already secured two contracts to supply LNG from the unit, one with Suzano, signed in May 2022, and another with Vale, signed in July 2022.

<sup>30</sup> A tolling agreement, also known as contract manufacturing, is a type of contract where the owner of the raw material pays for the processing service provided by the manufacturing facility and receives the processed product in return ([Nasdaq](#)).



There are also indications that Petrobras will return to the fertilizer sector by creating a holding company, which will include the resumption of operations at Araucária Nitrogenados S.A (Ansa) ([Petrobras](#)) in Paraná, by the end of the year and the unit in Três Lagoas (Mato Grosso do Sul), with operations scheduled for 2028. However, the challenge remains of restarting operations at the Sergipe and Bahia units, which have been leased to Unigel ([EPBR](#)). This initiative has been reinforced, along with the company's intention to expand the availability of gas to the market, directing production toward higher value-added uses, such as petrochemicals and fertilizers ([Petrobras](#); [EPBR](#)).

By 2034, gross natural gas output is forecasted at 315 million cubic meters per day (m<sup>3</sup>/d), with a peak of 316 million m<sup>3</sup>/d in 2031 — a 110% increase from 2023 levels. The majority (96%) of gross natural gas production will come from discovered resources, with the Pre-salt region contributing around 80% of total output by 2034. Net natural gas production is expected to peak at 134 million m<sup>3</sup>/d by the end of the decade, representing a 158% increase from 2023, with discovered resources accounting for nearly all this output ([MME](#)).

### Refining & Logistics

In refining, notable investments include the expansion of Petrobras' World-Class Refining (RefTOP) program, aimed at improving operational and energy efficiency, with USD 776 million allocated. Petrobras reaffirms its focus on high-value-added, low-carbon products, with USD 11.5 billion earmarked for investments in onshore wind and solar projects, offshore wind, carbon capture, utilization and storage (CCUS) and hydrogen research and development (R&D) projects, and the expansion of biorefining projects ([Petrobras](#)). At the same time, the company sought to renegotiate the terms established with CADE (Administrative Council for Economic Defense) regarding refining<sup>31</sup> and natural gas assets ([Petrobras](#)).

In January, Petrobras announced the start of expansion works at the RNEST refinery, in Pernambuco. The plan includes the construction of RNEST's second processing unit, which will increase its current capacity from 100,000 b/d to 260,000 b/d by 2028. With this expansion, the company expects to boost national production capacity by adding 81,200 b/d of S10<sup>32</sup> diesel — about 17% of the fuel's 2023 production levels ([ANP](#)). Additionally, the state-owned company aims to eventually produce R5 diesel, green hydrogen, and e-methanol at RNEST, targeting domestic consumption. The project is expected to be completed by 2028, with Petrobras' business plan forecasting USD 17 billion in investments for manufacturing oil products (Figure 6), marketing, and logistics sectors ([EPBR](#); [EPBR](#); [Petrobras](#)).

<sup>31</sup> The original agreement stipulated the sale of eight refineries, of which three transactions have been completed (RIam, Reman, and SIX), while the sale contract for Lubnor has been rescinded ([Petrobras](#)).

<sup>32</sup> Ultra-low sulfur diesel, containing only 10 ppm sulfur.

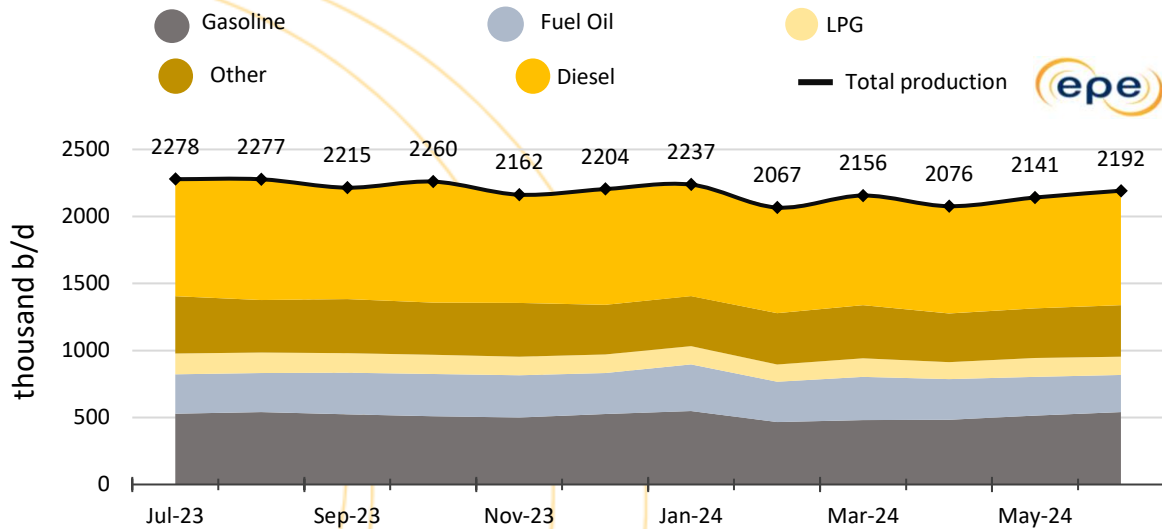


Figure 6 – Oil Products Manufacturing in Brazil

Source: ANP.

### Oil Products Demand & Prices

In the downstream, Petrobras' decision to resume investments in the Gaslub hub (nowadays Boaventura Energy Complex) stood out. The complex has been redesigned and will include units focused on diesel production, with operations expected to begin in 2028. Additionally, units for the production of sustainable aviation fuel (SAF) and renewable diesel are planned for after 2028 ([Petrobras](#))<sup>33</sup>.

Regarding oil products, one of the highlights by the end of 2023 was the record import of diesel oil from Russia (Figure 7), primarily due to its discounted price compared to the product offered on the Gulf Coast, which accounted for 87% of the country's diesel imports in December ([ComexStat](#)). In contrast, natural gas imports declined throughout the year, with a 24% decrease in the third quarter compared to the average of the first half ([MME](#)).

<sup>33</sup> The UPGN of the complex is scheduled to begin operations in the second half of 2024. The project includes integration with the Duque de Caxias Refinery (Reduc), which will receive the processed gas and liquid fractions ([Petronoticias](#)).

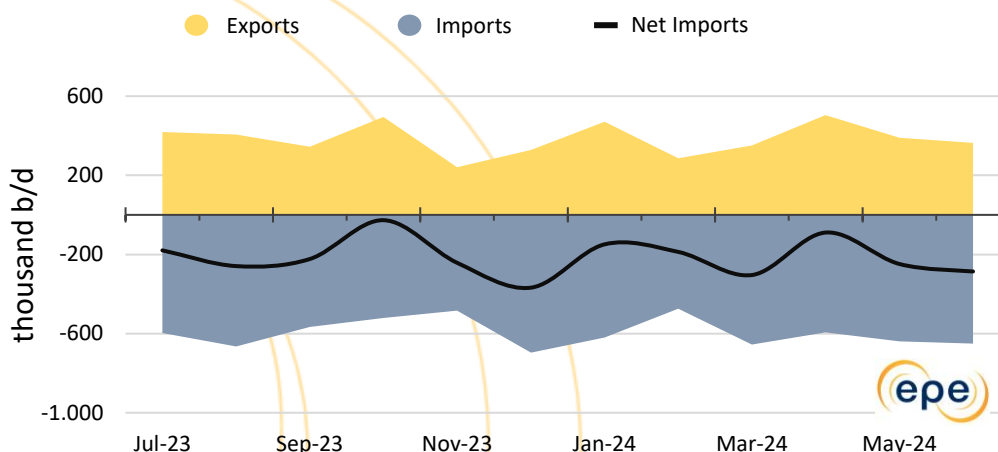


Figure 7 – Brazilian Oil Products Imports and Exports

Source: [ANP](#).

The overall increase in transportation costs is linked to the implementation of new state tax rates on the circulation of goods (ICMS) applied by 2024. As a result, the ICMS on gasoline rose by BRL 0.15 per liter, reaching BRL 1.37 per liter. According to ANP data, the average price of gasoline increased from BRL 5.56 to BRL 5.71 per liter. Diesel also saw a tax increase of BRL 0.12 per liter, pushing the price of Ultra Low Sulphur Diesel (ULSD) above BRL 6 per liter. The ICMS rate for liquefied petroleum gas (LPG) rose by BRL 0.16 per kilogram, raising the average price of a 13-kilogram cylinder to BRL 103.60. According to LPG distributors, in 18 states, the tax rate on the cylinder exceeded 18% of its price, surpassing the legal ceiling for taxing essential products ([Folha de São Paulo](#); [Sindicágas](#)).

In the regulatory field, the ANP approved a resolution establishing new national specifications for diesel oils and their quality control measures. Among the changes introduced by the resolution are the modification of parameter limits for ULSD and high 500ppm diesel specifications, the introduction of vegetable oil coprocessing as an alternative method for diesel production, and the discontinuation of 500ppm diesel for road use and 1800 ppm for off-road use. The agency announced that within six months, a plan will be developed and timeline for replacing 500ppm and 1800ppm diesel with ULSD ([ANP](#)).

Domestic demand for oil products is projected to grow through 2050. Although, it could stabilize around 2.4 million barrels per day if a comprehensive set of biofuel policies and accelerated electrification for light and heavy vehicles are implemented. With oil production relying primarily on discovered resources and only modest growth in domestic refining capacity, Brazil could see a significant increase in its dependence on imported oil and oil products through 2050 ([EPE](#)).



## Energy Transition

In the wake of the energy transition, the Brazil's government submitted to the National Congress a Bill containing the Future Fuel program, which comprises a set of initiatives to promote low-carbon mobility<sup>34</sup>. The text of the proposal suggests amendments to the maximum and minimum blending ratios of anhydrous ethanol in gasoline and biodiesel in diesel sold to the final consumer. Additionally, the bill states, "It addresses the promotion of low-carbon sustainable mobility and the capture and geological storage of carbon dioxide; it establishes the National Sustainable Aviation Fuel Program (ProBioQAV), the National Green Diesel Program (PNDV), and the National Decarbonization Program for Natural Gas Producers and Importers and Incentives for Biomethane ([Câmara](#); [Senado](#)).

Furthermore, the Ministry of Development, Industry, Trade, and Services launched the National Green Mobility and Innovation Program (Mover)<sup>35</sup> in December, 2023. The program aims to enhance sustainability requirements for the automotive fleet and stimulates the production of new technologies in the areas of mobility and logistics, expanding the previous Rota 2030 program ([MDIC, 2023](#)). After passing through the Chamber of Deputies and the Senate, Bill 914/2024, which establishes the Mover program, was sanctioned into Law n. 14.902/2024 during the third meeting of the Sustainable Economic and Social Development Council (CDESS). The incentive program<sup>36</sup> for the automotive industry will allocate BRL 19.3 billion in credits<sup>37</sup> between 2024 and 2028 for the sector to invest in the production of cars, buses, and trucks in accordance with sustainability and innovation requirements ([Fecombustíveis](#); [Planalto](#)).

<sup>34</sup> Among the measures are the creation of the National Sustainable Aviation Fuel Program (ProBioQAV), the National Green Diesel Program (PNDV), and the increase of the minimum and maximum blending ratios of anhydrous ethanol in gasoline to 22% and 35%, respectively. Additionally, it includes proposals for regulatory frameworks for synthetic fuels and geological carbon capture and storage. This Bill was converted into the Law n. 14.993/2024 in October, 8<sup>th</sup>, 2024 ([Planalto](#)).

<sup>35</sup> The program, established via Provisional Measure No. 1205, dated December 30, 2023, aims to promote the expansion of investments in energy efficiency, set minimum recycling limits in vehicle manufacturing, and reduce taxes for those who pollute less, creating the Green IPI ([Brasil, 2023](#)).

<sup>36</sup> The program is set to last for five years and, according to Anfavea, the industry is expected to invest over BRL 100 billion, including in R&D to decarbonize vehicles ([Anfavea](#); [EPBR](#); [EPBR](#)).

<sup>37</sup> The condition for granting the credits is that the light vehicle manufacturing company invests more than 0.3% of its gross revenue in new technologies and sustainability. For heavy vehicle manufacturers, the requirement is 0.6% of revenue ([AB](#); [AB](#)), and the import tax on light vehicles has been reinstated ([Fecombustíveis](#)).

Regarding oil and natural gas, CCS technology has gained increasing attention in discussions. Petrobras estimates that it is possible to store approximately 250 million tons<sup>38</sup> of carbon annually in saline aquifers in Brazil over a span of 50 years ([EPE](#)). The company is already in talks with major players in the steel sector that have voluntary emission reduction targets to provide this service. It is expected that the approval of the carbon market will enhance the potential of this business ([EPBR](#)). To this end, Petrobras has approved the construction of a CCS pilot plant in saline aquifers in the northern region of the State of Rio de Janeiro, which will have the capacity to store 100,000 tons of CO<sub>2</sub> per year and will utilize the infrastructure of the Cabiúnas Terminal (Tecab) for the movement and storage of CO<sub>2</sub> in the region.

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<sup>38</sup> This volume corresponds to five times the annual emissions from the state-owned company's operations, which are around 50 million tons, and there are intentions to offer CO<sub>2</sub> capture as a service to other industries ([EPBR](#); [EPE](#)).

## Conclusions

Brazil's energy sector is experiencing steady growth in its oil and gas (O&G) industries while striving to balance this with sustainability and decarbonization. In the second half of 2023, the country recorded high levels of oil and gas production, alongside efforts to further boost resource availability in the coming years. Simultaneously, ongoing investments in oil and gas are important for supporting the sector's decarbonization and the broader energy transition. Key advancements in fuel regulation, mobility, and innovation, along with the expansion of the RNEST refinery, illustrate the country's strategic focus on fostering a balanced energy future.

Brazil's oil and gas production is expected to continue growing, with oil output projected to peak around 2030. However, most future production will rely on existing resources, particularly from the Pre-salt basin, emphasizing the need for new exploration and strategic investments to sustain production. As global demand for lower-carbon energy sources increases, Brazil's moderate-carbon-intensity oils will likely see greater economic value, positioning the country as a competitive player in the energy market. In this context, in 2023, the National Energy Policy Council (CNPE) authorized the bidding of 11 blocks in the Open Acreage system under the production sharing regime.

While the natural gas market in Brazil is evolving, the focus is also on regulatory progress and infrastructure development. 2023 saw notable regulatory developments in the natural gas sector. The "Gás para Empregar" (Gas for Employment) program committees and resolutions approved by ANP (Regulatory Agency) have been promoting the sector's growth in the country. Many investments in transportation sector and infrastructure were announced in 2023. Growing initiatives such as natural gas storage, small-scale LNG, and carbon capture and storage (CCS) reflect the country's commitment to reducing emissions.

As a leader in renewable energy within the G20, Brazil is also investing in biofuels, solar, and wind power, in line with global energy transition trends. Despite these advancements, the O&G sector is expected to remain a key component of Brazil's energy mix for the foreseeable future. Further investments in exploration, refining, and infrastructure will ensure that oil production, along with the demand for oil products, continues to play a vital role in the country's energy landscape. Notable investments include the expansion of the capacity and an operational and energy efficiency program of the major oil Brazilian company (Petrobras), with USD 776 million allocated.

Brazil is poised to remain a crucial player in global energy markets, balancing the growth of renewable energy with the sustained relevance of oil and gas production. While the country's energy mix diversifies, oil and gas will continue to be essential for energy security and economic development. Achieving this balance requires continued investment, innovation, and a focus on decarbonization, ensuring Brazil meets its energy needs sustainably while contributing to global environmental goals.