ONIP Organização Nacional da Indústria do Petróleo

# Investment Opportunities

# In The Brazilian O&G Industry

MAY 2025 – 1st EDITION

ONIP Associate Members:

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**EPE** - Energy Research Office

**Firjan** - Federation of Industries of the State of Rio de Janeiro

**Petrobras -** Petróleo Brasileiro S.A.

**PPSA -** Pré-Sal Petróleo S.A.

**SENAI** - National Service for Industrial Training

**SINAVAL -** National Union of the Shipbuilding and Offshore Construction Industry

**Commissioned by National Organization of the Petroleum Industry and prepared by ENSOTEC.**

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# Foreword

In an era of dynamic energy markets, the Brazilian oil and gas (O&G) industry emerges as a key sector, rich with investment opportunities and set for sustainable growth.

This study aims to provide a clear, in-depth look at the investment landscape in Brazil's oil and gas sector. It was designed for a wide audience — from investors and policymakers to industry experts and researchers. By bringing together public available information on planned projects into this single document, our goal is to create a practical tool that supports informed decision-making and better strategic planning.

ONIP's commissioning of this study pursued two primary objectives: first, to spotlight emerging investment opportunities across Brazil's diverse O&G sector; and second, to emphasize the crucial role of strong partnerships throughout the supply chain . As Brazil solidifies its position as a major player in global energy production—driven by recent advancements in deep-water drilling and the development of pre-salt reserves—it is increasingly important for industry participants to access up-to-date, comprehensive information tracking market trends, regulatory shifts, and technological innovations.

Having this information in one document not only streamlines the research process but also enables stakeholders to monitor progress in the sector effectively. Additionally, it emphasizes the necessity for the Brazilian supply chain to be well-prepared to adapt to the evolving market demands and develop technical partnerships that can drive innovation and operational efficiency.

The Brazilian supply chain industry in the oil and gas (O&G) sector is uniquely positioned to capitalize on the country's rise as a relevant force in global energy

markets. Several strategies can help the supply chain ecosystem maximize this opportunity:

- **Local Content Development:** Brazil's regulatory environment encourages local content requirements, especially in offshore and pre-salt projects. Supply chain companies can invest in capacity building, certification, and technology to meet these standards, positioning themselves as preferred partners for both domestic and international operators.

- **Technological Innovation:** advancements in deep-water drilling, digital oilfield technologies, and environmental solutions (like carbon capture) are reshaping the industry. Brazilian supply chain firms through partnerships with tech firms, universities, and R&D centers can embrace innovation and offer cutting-edge services that meet the industry's evolving demands.

- **Strategic Partnerships and Joint Ventures:** collaboration with international players can bring capital, expertise, and global market access. Brazilian firms can leverage such partnerships to expand their service offerings, share risks, and build competitiveness for future export of services and equipment.

- **Exporting Expertise:** as Brazil masters complex offshore operations, supply chain companies can package and export their know-how to other emerging offshore regions (e.g., West Africa, Gulf of Mexico). Internationalization strategies could become a major growth avenue.

- **Sustainability and ESG Leadership:** global investors and operators increasingly prioritize Environmental, Social, and Governance (ESG) criteria. Brazilian supply chain players proactively adopt sustainable practices—such as low-carbon logistics or environmentally safe drilling support.

- **Talent Development and Workforce Upskilling:** the growing sophistication of Brazil's O&G projects demands highly skilled labor. Investing in workforce training programs with the support of SENAIs – Brazilian National Service for Industrial Training, especially in specialized technical areas, will gain a competitive edge.

- **Agility in Regulatory Compliance:** The Brazilian O&G sector is heavily regulated, and policies can shift with political or market conditions. Having a local partnership with Brazilian companies that develop strong compliance frameworks and maintain agility in adapting to new regulations will mitigate risks and seize emerging opportunities faster.

The supply chain's success relies on combining local strength with global vision, technological adaptation, and a strong commitment to sustainability and innovation.

In summary, the insights provided in this study are invaluable for navigating the complexities of the Brazilian oil and gas industry. By establishing a clear understanding of the current landscape and future potentials, stakeholders can seize opportunities, establish parternships, mitigate risks, and contribute to the sustainable development of Brazil's O&G sector.

SUMMARY

MAY/2025

# INVESTMENT AND BUSINESS OPPORTUNITIES

# IN THE BRAZILIAN O&G INDUSTRY

This report, commissioned by ONIP (the Portuguese acronym to National Organization of the Petroleum Industry), in March 2025, to support the supply chain and the potential foreign investors, which are looking for opportunities in the Brazilian Oil&Gas (O&G) industry, provides public information prepared by the followings organizations related with the different sectors along the O&G production chain (with a wide, but not exhaustive, perspective):

1. ONIP, partnership opportunities and industry demands
2. ANP's blocks permanent offers - "Open Acreage" Opportunities
3. E&P other opportunities - ANP's bidding rounds
4. Natural Gas opportunities (transportation, LNG, etc.)
5. Downstream Opportunities
6. EPE's infrastructure project proposals – terminals and oil pipelines
7. PETROBRAS' main projects
8. TRANSPETRO
9. SINAVAL and the shipyards
10. FIRJAN (and other industry federations) viewpoint over the O&G industry
11. PPSA - opportunities related with the pre-salt layers
12. R&D projects – opportunity for partnership in Brazil
13. SENAI – technological support, training, and laboratory facilities
14. Final remarks

As a reminder, beyond the above-listed Chapters, there are specific 14 Annexes, with summary information about each segment, they are a fast track to newcomers realize the businesses opportunities in the Brazilian O&G market.

The Brazilian O&G business environment is huge with strong potential for growing quickly, as could be observed in the next infographic (updated Feb/2025):

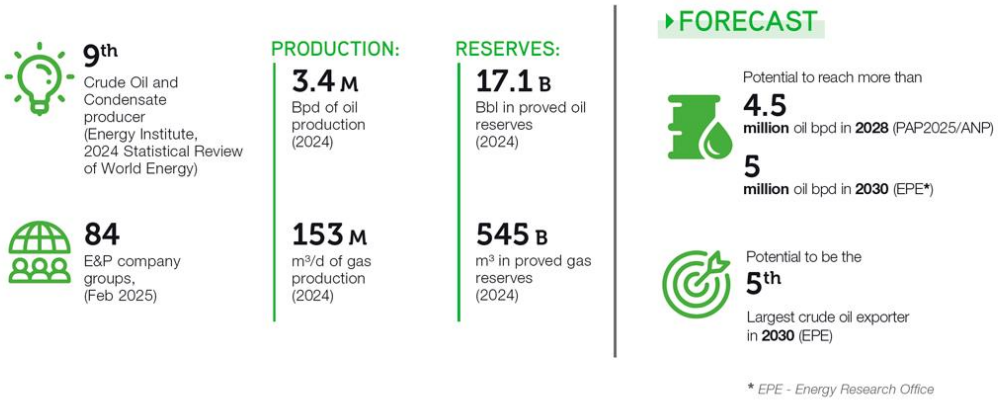



Figure 1.1 – Brazilian O&G market “at a glance” - Source: ANP website

The next 14 Chapters will spread the information in several segments of the O&G industry in Brazil, discussing about the business environment, the opportunities and listing the companies where the businesses are happening and will happen in a close future.

## 1. ONIP- PARTNERSHIP OPPORTUNITIES AND INDUSTRY DEMANDS

ONIP is a private, non-profit organization that congregates principal stakeholders of the oil and gas sector, fostering coordinated action and representing their collective interests. The associated institutions (updated Mar./2025), representing the supply-chain, are (alphabetical order, of the acronyms in Portuguese):

| | |
|---|---|
| ABEMI | Brazilian association of industrial engineering |
| ABIMAQ | Brazilian Association of Machinery and Equipment Industry |
| CNI | National confederation of the industry |
| FIEB | Federation of industries of Bahia state |
| FIEMA | Federation of industries of Maranhão state |
| FIEMG | Federation of industries of Minas Gerais state |
| FIERN | Federation of industries of Rio Grande do Norte state |
| FIESP | Federation of industries of São Paulo state |
| FINDES | Federation of industries of Espirito Santo state |
| FIRJAN | Federation of industries of Rio de Janeiro state |
| SINAVAL | Patronal syndicate that represents the Brazilian shipyards |

Each of these entities represents their associates, companies able to supply goods and services (G&S) to the O&G industry, from a small metallic connector to a huge and complex FPSO.

Each industry federation represents a huge number of associates, with industries of all the businesses segments. The table below shows an approximate number of industrial associates that each one congregate:

| Federation | Approximate number of associates |
|---|---|
| FIEB | +22,500 |
| FIEMA | +5,500 |
| FIEMG | +77,500 |
| FIERN | +8,000 |
| FIESP | +146,000 |
| FINDES | +13,500 |
| FIRJAN | +27,500 |

ONIP also counts with two institutional partners:

| | |
|---|---|
| APEX-BRASIL | Federal agency for supporting Brazilian companies in export activities and the attraction of foreign investments to Brazil |
| EPE | Brazilian state-owned company Federal Government, in charge of the energy sector research and planning |

ONIP is responsible for keeping updated information about the industrial class associations, as well as about goods manufacturers and service providers (almost 650 companies), which are essential for oil companies, for asset operators and for the first tiers of the O&G industry supply chain.

It means ONIP could be the first information provider to a foreign company starting businesses in Brazil, in one of these paths:

- Manufacturing partnership with a local industry (producing in Brazil under licensing of the foreign company);
- Maintenance partnership, with a local company, technically able to take care of the after-sales and programmed maintenance;
- Installation partnership, with a local company, technically able to take care of the equipment installation at the Brazilian client facility (and perform the commissioning and future decommissioning);
- Partnership with a local company, technically able to manage the calibration, metering or certification tests, executed in equipment that, the Brazilian law requires it (or even the local industry practices).

Located downtown Rio de Janeiro (the O&G companies preferred choice to be headquartered) and installed at the FIRJAN's (acronym in Portuguese to Industry Federation of the Rio de Janeiro State) building, ONIP is an **"one stop solution provider"** for newcomers of the O&G supply chain and an important source of information for oil companies and operators, looking for new suppliers in Brazil.

More information could be found at https://www.onip.org.br/

Concerning the Brazilian O&G industry demands of items (goods and services – G&S), it could be highlighted (a non-exhaustive list and in alphabetical order):

- Christmas Tree (WCT) for deep water applications.
- Drilling bits.
- Drilling rigs and E&P offshore unities (SS, FPSO, FSO, etc.).
- Environmental monitoring systems (offshore and onshore).
- EPC services (offshore and onshore).
- Equipment for the exploration and production of O&G.
- Equipment and services for pipelines (valves, compressors, gauges, metering, calibration, safety systems, automation and control systems, spill detection systems, etc.).
- Flexible risers and flowlines, and related accessories (connectors, bending restrictors, bolts/nuts, flanges, buckling arrestors, monitoring devices, etc.).
- Intelligent well equipment.
- Offshore supply boats (most with DP systems).
- Parts and accessories for drilling rigs and seismic services.
- Pipes (OCTG) for oil pipelines, well completion and gas pipelines.
- Pressure vessels for natural gas storage and transportation, and tanks for liquid storage.
- Produced water treatment systems.
- Project and design of refining facilities (mostly thermal projects).
- Seismic data processing and reservoir data evaluation analysis.
- Services for wells, such as drilling and completion.

- Systems and large equipment for drilling rigs.
- Valves, connectors, tubing for: pipelines, onshore facilities and topside.

Most of these G&S items could be found in the Brazilian supply market, but newcomers are necessary because of the growing demand, and the chance of incorporation new technologies (targeting more safety, lower operational costs, more efficiency, more environmental friendship, more operational reliability, etc.).

Other information about the ONIP's activities, about the database of the O&G supply chain and the O&G industry (both in Brazil), could be obtained at the website www.onip.org.br.

## 2. ANP'S BLOCKS PERMANENT OFFERS- "OPEN ACREAGE" OPPORTUNITIES

### The Open Acreage Process

ANP (National Agency of Petroleum, Natural Gas and Biofuels), the Brazilian regulatory agency for petroleum, natural gas (NG), and biofuels issues, responsible for the O&G blocks bidding rounds (public auctions), created a special way of acquiring exploratory blocks and mature fields, the so-called Open Acreage, by means of which a company presents its interests on one or more available areas directly to the agency.

The projects that an investor could be interested to bid by means of the Open Acreage process are shown in **Annex 1** of this report.

The process consists in the **continuous offer** of relinquished marginal oil fields (or during a process of devolution) and exploration blocks offered in past bid rounds that were not awarded, or which had been returned to the agency.

Presently ANP is announcing the **5th cycle of the Open Acreage of Concession** (OPC, in the Portuguese acronym), it was published on 12th/Feb 2025, starting the aforementioned cycle, where 332 exploration blocks are available, located in various sectors listed in the ANP's current version of the Tender Protocol of OPC ( www.gov.br/anp ).

Companies interested in participating in the 5th Cycle of OPC registered in ANP system, and a list of the eligible companies is presented at the next table (in alphabetical ordering).

| | |
|---|---|
| 1. | Aguila Energia e Participações Ltda. |
| 2. | Apoema Consultores em Óleo e Gás Ltda. |
| 3. | ATEM PARTICIPAÇÕES S.A. |
| 4. | BP ENERGY DO BRASIL LTDA. |
| 5. | CHEVRON BRASIL ÓLEO E GÁS LTDA. |
| 6. | CNODC BRASIL PETRÓLEO E GÁS LTDA. |
| 7. | CNOOC PETROLEUM BRASIL LTDA. |
| 8. | DILLIANZ PETRÓLEO&GÁS NATURAL - BIOCOMBUSTÍVEL S.A. |
| 9. | DIMENSIONAL ENGENHARIA LTDA. |
| 10. | ECOPETROL ÓLEO E GÁS DO BRASIL LTDA. |
| 11. | ENERGIZZI ENERGIAS DO BRASIL LTDA. |
| 12. | EQUINOR BRASIL ENERGIA LTDA. |
| 13. | EXXONMOBIL EXPLORAÇÃO BRASIL LTDA. |
| 14. | FEDERAL ENERGIA S/A |
| 15. | FLUXUS ÓLEO, GÁS & ENERGIA LTDA. |
| 16. | GRUPO UBUNTU LTDA. |
| 17. | KAROON PETRÓLEO E GAS LTDA. |
| 18. | LUX OIL LTDA. |
| 19. | MANDACARU ENERGIA LTDA. |
| 20. | NEWO ÓLEO E GÁS LTDA. |

| | |
|---|---|
| 21. | NTF ÓLEO E GÁS LTDA. |
| 22. | ORIGEM ENERGIA S.A. |
| 23. | PETROBORN ÓLEO E GÁS S.A. |
| 24. | PETROGAL BRASIL S.A. |
| 25. | PETRÓLEO BRASILEIRO S.A. - PETROBRAS |
| 26. | PETRORECÔNCAVO S.A. |
| 27. | QATARENERGY BRASIL LTDA. |
| 28. | SHELL BRASIL PETRÓLEO LTDA. |
| 29. | SINOPEC EXPLORATION AND PRODUCTION (BRAZIL) LTDA. |
| 30. | TOTALENERGIES EP BRASIL LTDA. |
| 31. | WESTLAWN ENERGIA BRASIL LTDA. |

Several of these listed companies are already operating in Brazil, it means, for newcomers in the Brazilian O&G market, these companies (as contractors) could be (or may become) customers of the O&G supply chain (goods and services).

The next steps of the 5th OPC are scheduled to April and May/2025, after which the winners will be announced.

The figure below shows the closed cycle of the OPC:

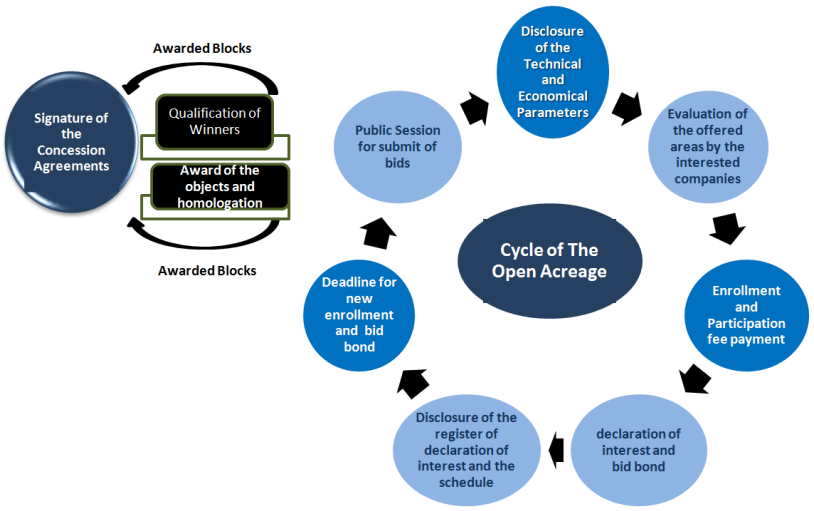



Figure 2.1 – OPC - Open Acreage process - Source: ANP website

Bidders that satisfy all registration requirements set forth in the ANP Tender Protocol will be deemed eligible for evaluation by the Special Bidding Commission. Upon approval, registered bidders may indicate interest in any available blocks or areas, provided they submit a bid guarantee accompanied by a formal declaration of interest.

The agenda of any Open Acreage Cycles will begin with the approval of one offer guarantee accompanied by an interest declaration presented by the submitted bidder.

When these declarations have been submitted, the ANP's Bidding Special Commission will announce a schedule for conducting a cycle for the submission of bids, containing all the dates to be met by companies that are already registered or by those that are not yet and want to participate in a cycle, which should occur in a maximum period of 90 days, following the intervals shown in the next figure:

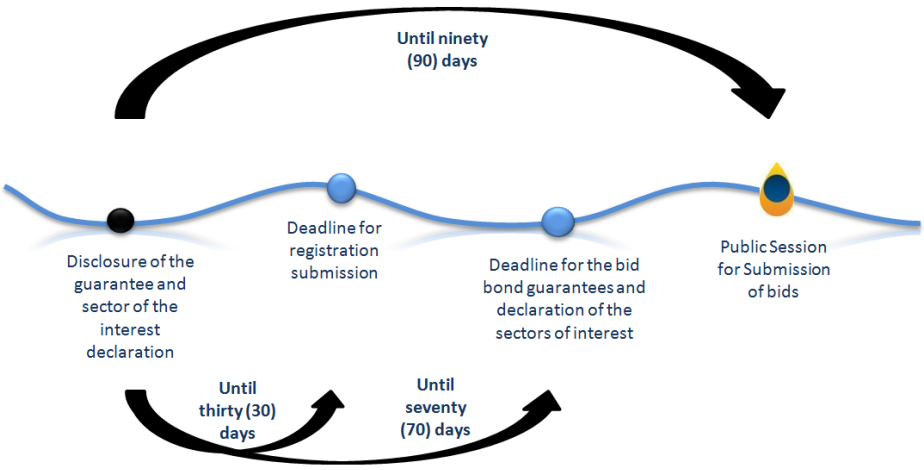



Figure 2.2 – OPC – Steps of an Open Acreage process – Source: ANP website

The commission will disclose the submission and payment fee dates, offer guarantee and interest declaration presentation and public session for offer presentation date, the bidders' qualification, the adjudication of the bid object as well as the homologation of the bid and the concession agreement celebration. A period of 90 days will be observed between the approval of the offer with the interest declaration and the public session for offers presentation as above mentioned.

Since December 2021, according to a CNPE (National Council on Energy Policy) Resolution, it was established the Open Acreage system as preferential for the offer of areas for exploration and production of oil and natural gas and other fluid hydrocarbons. Thus, the ANP is authorized to define and bid in an Open Acreage Process (OPC), under the concession regime, blocks in any onshore or offshore basins, as well as to bid for fields returned or in the process of being returned.

**Exploratory Blocks**

The selected exploratory blocks are in the basins of different environments and exploratory models. The different environments and models aim to expand reserves and Brazilian oil and natural gas production, expand knowledge of sedimentary basins, decentralize exploratory investment in Brazil, establish

national and foreign companies in the country, as well as offer opportunities to small and medium-sized companies.

The current version of the tender protocol of the Open Acreage of Concession (5th OPC) includes a total of 332 exploratory blocks. These blocks comply with the provisions of CNPE Resolution No. 17/2017, which determines that the areas offered must be previously analyzed for environmental viability by the competent environmental agencies agreed upon in a Joint Statement.

Considering that the resolutions and any other documents do not have an English version, the files could be consulted (in Portuguese - maps and information about the blocks) on the following page:

https://www.gov.br/anp/pt-br/rodadas-anp/oferta-permanente/opc/blocos-exploratorios

**Bidders Submission**

For the next OPC's cycles, the interested oil companies must realize that the process is individual and mandatory for each interested company, even for those intending to submit through a consortium.

To participate, the interested company, shall:

- Fulfill the ANP's submission electronic form.
- Submit the documents detailed on the Tender Protocol; and
- Pay the participation fee.

Since all the Tender Protocol requirements are satisfied, as well as the law dispositions, can participate the domestic and foreign legal entities, individually or in a consortium, and the private equity funds (FIPs), as non-operator, being allowed only to submit the bid through a consortium.

In 2025, beyond the 5th Open Acreage (concession - OPC) bidding (mentioned herein and ongoing) other bigging is programmed (not scheduled up to the issue of this report), it means the 3rd Open Acreage – Production Sharing (OPPP).

Forecast (in the OPPP) of offering of 14 offshore blocks, 8 in the Santos Basin and 6 in the Campos Basin. The new version of the notice is in the process of validation by other governmental institutions and its publication is scheduled for May 2025 (the **Annex 2** highlights the project).

**Environmental Guidelines**

In compliance with the provisions of CNPE Resolution Nº 17/17, amended by CNPE Resolution number 3/2020, the inclusion of areas in the bidding rounds promoted by the ANP should consider the conclusions of the Environmental Assessments of Sedimentary Areas (AAAS).

Alternatively, for areas not considered in one of the AAAS, possible environmental restrictions will be supported by a joint statement by the Ministry

of Mines and Energy and the Ministry of the Environment, or by their delegates, and complemented by opinions issued by the State Environmental Bodies with respect to terrestrial sedimentary basins.

The objective of this work is to exclude areas due to environmental restrictions due to the overlap with locations where oil and natural gas exploration and production (E&P) activities are not possible or recommended, providing more security and predictability to the environmental licensing process of petroleum enterprises.

**Offshore basins**

Environmental licensing of maritime activities and in an E&P transition zone is carried out by the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), through CGMAC (General Coordination of Environmental Licensing of Marine and Coastal Enterprises).

Environmental Licensing – (in Portuguese):
https://www.ibama.gov.br/empreendimentos-e-projetos/licenciamento-ambiental-processo-de-licenciamento

**Onshore basins**

States' Environmental Entities (OEMAs) are responsible for the environmental licensing of land activities restricted to the boundaries of a single state.

Some OEMAs developed a specific opinion for the Open Acreage of areas while others validated the analysis performed on previous rounds. It is important to be fully informed about each of the local scenarios.

**Note:**

It is important to highlight that the documents: Joint Manifestations, Reports and any other forms do not have an English version, the files are on the corresponding page (in Portuguese):
https://www.gov.br/anp/pt-br/rodadas-anp/oferta-permanente/opc/diretrizes-ambientais

Business opportunities in the 3rd Open Acreage – Production Sharing (OPPP), as well as other bidding rounds, are highlighted at **Annex 3** (for oil companies) and **Annex 4** (for the supply chain).

## 3. OTHER E&P OPPORTUNITIES – ANP'S BIDDING ROUNDS

Other opportunities are managed by ANP, that conducts block bidding rounds. The next paragraphs will show up how to be updated and participate in the new opportunities (different to Open Acreage permanent bidding, presently ongoing).

General biddings information (source - ANP):

The Bidding Rounds are auctions through which the Brazilian Federal Union grants the right to explore and produce oil and natural gas in Brazil. Since 1999, multiple bidding rounds have been carried out: 17 of exploratory blocks and four of mature fields under the concession regime, and six in the pre-salt area, under the production sharing agreement.

In addition to the above-mentioned rounds, in 2019, public offering sessions of the first cycle of the Open Acreage (OPC) were held, under the concession regime, and the Transfer of Rights Surplus Bidding Round, under the production sharing regime.

More than 100 companies, national and foreign, of different sizes, have already participated in the competitions. Currently, most of the Brazilian production comes from blocks auctioned in the ANP rounds.

At any time, it is possible to follow the ongoing bidding rounds and the future rounds in planning consulting (presently no bidding, different than Open Acreage OPC and OPPP, is programmed by ANP):

https://www.gov.br/anp/en/rounds-anp/about-the-bidding-rounds/the-bidding-rounds

For the ones interested in knowing about how the ANP conducts the bidding rounds, here is a quick view, with the main points:

The biddings rounds are organized by the ANP according to the guidelines of the National Energy Policy Council (CNPE). Based on these orientations, the ANP performs the studies and indicates the areas with the characteristics determined by the CNPE, which, after approving them, authorizes the Agency to carry out the rounds.

ANP publishes the draft of the tender protocol and the draft of concession agreement, which are subject to consultation and public hearing. The draft of the tender protocol comprehends the schedule of mandatory events and publications, which include technical, legal, fiscal and environmental seminars, announcement of the areas of the blocks, among others.

At this stage, the companies must submit documents to express interest in participating in the round. Such requests are analyzed by the Special Bidding Commission, which approves or not the companies' registration. The whole process is widely publicized and involves all the stakeholders.

In general, the public session for submission of bids happens in a single day, in an event open to the public that counts with the presence of authorities, companies and the press. The qualified companies (alone or in a consortium) present their offers, inside a sealed envelope.

The offers must include:

- the signature bonus and

- the Minimum Exploratory Program (PEM), in the case of bidding rounds under the concession regime, or

- the exceeding oil portion, in the case of bidding rounds under the production sharing agreement.

The offers are judged immediately, according to the norms of the tender protocol, and the winner is then announced.

**Supply chain opportunities:**

Foreign companies, looking for new clients in the Brazilian O&G market, and interested to identify the winners of last bidding rounds, have to realize that the winners are potential clients, and all the bidding results could be reached at:

https://www.gov.br/anp/pt-br/rodadas-anp/rodadas-concluidas/concessao-de-blocos-exploratorios

Just as example, the last four bids' results are (Source – ANP):

17th Bidding round – Out/2021

| Company Name | Group | Origin of the group | Presented offers | Blocks auctioned |
|---|---|---|---|---|
| Ecopetrol Óleo e Gás do Brasil Ltda. | Ecopetrol S.A. | Colombia | 1 | 1 |
| Shell Brasil Petróleo Ltda. | Royal Dutch Shell PLC | UK | 5 | 5 |

16th Bidding round – Aug/2021

| Company Name | Group | Origin of the group | Presented offers | Blocks auctioned |
|---|---|---|---|---|
| BP Energy do Brasil Ltda. | BP | UK | 4 | 2 |
| Chevron Brasil Óleo e Gás Ltda. | Chevron | USA | 6 | 5 |
| Equinor Brasil Energia Ltda. | Equinor | Norway | 3 | 0 |
| ExxonMobil Exploração Brasil Ltda. | Exxon Mobil Corporation | USA | 1 | 1 |
| Petróleo Brasileiro S.A. | Petrobras | Brazil | 2 | 1 |
| Petronas Petróleo Brasil Ltda. | Petronas | Malaysia | 4 | 3 |
| QatarEnergy Brasil Ltda. | Qatar Petroleum | Qatar | 4 | 3 |
| Repsol Exploração Brasil Ltda. | Repsol YPF | Spain | 4 | 4 |
| Shell Brasil Petróleo Ltda. | Royal Dutch Shell PLC | UK | 3 | 2 |
| TotalEnergies EP Brasil Ltda. | Total | France | 1 | 1 |
| Wintershall DEA do Brasil Exploração e Produção Ltda. | Wintershall | Germany | 2 | 2 |

15th Bidding round (offshore) – Oct/2021

| Company Name | Group | Origin of the group | Presented offers | Blocks auctioned |
|---|---|---|---|---|
| BP Energy do Brasil Ltda. | BP | UK | 4 | 4 |
| Chevron Brasil Óleo e Gás Ltda. | Chevron | USA | 9 | 4 |
| Enauta Energia S.A. | QGEP Participações S.A. | Brazil | 2 | 2 |
| Equinor Brasil Energia Ltda. | Equinor | Norway | 6 | 4 |
| ExxonMobil Exploração Brasil Ltda. | Exxon Mobil Corporation | USA | 9 | 8 |
| Murphy Exploration & Production Company | Murphy Oil Corporation | USA | 2 | 2 |
| Petrogal Brasil S.A. | Galp Energia | Portugal | 5 | 1 |
| Petróleo Brasileiro S.A. | Petrobras | Brazil | 11 | 7 |
| Petronas Petróleo Brasil Ltda. | Petronas | Malaysia | 4 | 3 |
| QatarEnergy Brasil Ltda. | Qatar Petroleum | Qatar | 5 | 4 |
| Repsol Exploração Brasil Ltda. | Repsol YPF | Spain | 3 | 3 |
| Shell Brasil Petróleo Ltda. | Royal Dutch Shell PLC | UK | 12 | 4 |
| TotalEnergies EP Brasil Ltda. | Total | France | 2 | 0 |
| Wintershall DEA do Brasil Exploração e Produção Ltda. | Wintershall | Germany | 7 | 7 |

14th Bidding round – Jul/2021

| Company Name | Group | Origin of the group | Presented offers | Blocks auctioned |
|---|---|---|---|---|
| Bertek Produtos, Serviços e Mineração Ltda. | Stile | Brazil | 3 | 2 |
| CNOOC Petroleum Brasil Ltda. | CNOOC | China | 4 | 1 |
| Enauta Energia S.A. | QGEP Participações S.A. | Brazil | 2 | 2 |
| ExxonMobil Exploração Brasil Ltda. | Exxon Mobil Corporation | USA | 10 | 10 |
| Geopark Brasil Exploração e Produção de Petróleo e Gás Ltda. | Geopark Limited | Bermudas | 1 | 1 |
| Great Energy S.A. | Great | Brazil | 1 | 1 |
| Greenconsult Energia Ltda. | Greenconsult | Brazil | 1 | 1 |
| Guindastes Brasil Óleo e Gás Ltda. | Guindastes | Brazil | 2 | 2 |
| Imetame Energia S.A. | Imetame | Brazil | 5 | 5 |
| Karoon Petróleo e Gás Ltda. | Karoon | Australia | 3 | 1 |
| Murphy Exploration & Production Company | Murphy Oil Corporation | USA | 2 | 2 |
| Parnaíba Gás Natural S.A. | ENEVA | Brazil | 5 | 5 |
| Petroil Óleo e Gás Ltda. | Petroil | Brazil | 3 | 3 |
| Petróleo Brasileiro S.A. | Petrobras | Brazil | 8 | 7 |
| Repsol Exploração Brasil Ltda. | Repsol YPF | Spain | 3 | 1 |
| Shell Brasil Petróleo Ltda. | Royal Dutch Shell PLC | UK | 2 | 0 |
| Tek Óleo e Gás Ltda. | HLJW | China | 3 | 2 |
| TotalEnergies EP Brasil Ltda. | Total | France | 2 | 0 |
| Vipetro Petróleo S.A. | Vipetro | Brazil | 2 | 1 |

These projects are, presently, in different stages of development, representing business opportunities for different service and goods suppliers.

Other opportunities are related to the pre-salt reservoirs, managed by the state-owned company PPSA (specific chapter in this report) and the opportunities are resumed at **Annex 8**.

Timeline (understanding the present scenario):

The Brazilian O&G market (production and refining), for decades, was a state monopoly with the full presence of the NOC Petrobras in the E&P and almost 100% domination in the refining market (decades ago, just two medium sized refineries were private). The fuel distribution market was spread between the BR Distribuidora (a former Petrobras subsidiary, sold a few years ago to Vibra, a private company, the market is also shared by other foreign headquartered companies (as Shell, Texaco, Exxon, etc.) and local companies (as Ipiranga, Ale, Forza, etc.).

Since the 1990ties, the federal government decided to change the O&G market, opening opportunities to private and foreign companies to participate in the Brazilian market. Onshore and offshore blocks were offered, but offshore attractivity was more relevant and several foreign companies bet in partnership with Petrobras, to explore deep-water blocks (Shell, Total, Equinor, Total, etc.).

After this first movement, and accumulating more experience in the Brazilian offshore scenario, these companies decided to bid by themselves, and presently are owners of their own blocks (Shell and Equinor are ahead of the others).

During the 2000 years first decade, the discovery of oil in the pre-salt layers opened a new era in the O&G market in Brazil, with wide reservoirs and high productivity wells. The blocks started to attract more investors, looking for the profit that fields could represent.

It is important to point out, most of the new technologies necessary to explore below the salt layer was developed by Petrobras in partnership with its goods and services (G&S) suppliers, in Brazil and abroad.

## 4. NATURAL GAS OPPORTUNITIES (TRANSPORTATION, LNG, ETC.)

Natural gas (NG) is a relevant growing market, with a recent and modern regulation mark in Brazil. Several companies are investing in NG's segments (LNG, transportation, petrochemical, generation, etc.). Among other measures that led to an unprecedent transformation in the O&G industry in Brazil and a *de facto* progress to opening the sector, the fact that Petrobras has left the transportation and distribution of NG. This is the first-ever effective opening in the NG market.

Presently, because of the lack of feasible and economical transportation, most of the huge amount of NG produced in the pre-salt fields is reinjected in the reservoirs, to be explored in the future, with more availability transportation of infrastructure.

The uncertain scenarios created with the Russia-Ukraine war, that affected the NG supply to Europe, that accelerated a relevant increase of the prices of the barrel and the NG $Nm^3$, could turn NG from pre-salt more economically attractive, changing the balance of the viability of NG produced in the pre-salt layers.

It is important to highlight that there is no technological barrier to it happen, just, and up to now, a negative economical balance on most of pre-salt NG production projects, leading operators to reinject huge amounts of NG in the reservoirs.

It is very important to pay attention that, NG in Brazil has a limited distribution pipe network, as could be observed in the Picture 4.1, it means, there are very few gas pipelines crossing the interior market in Brazil (the picture issued by ANP – National Agency of Petroleum, Natural Gas and Biofuels – in 2016**, is still almost the same up to now**).

The new regulation market is accelerating the spreading of the NG as a fuel alternative to the interior of Brazil. Potential projects (most of data compiled from several sources by FIRJAN – Industry Federation of Rio de Janeiro), to be invested in the following years, are presented at Chapter 10 and at **Annex 12**.

Regarding the natural gas market, ANP is responsible for regulating activities such as exploration and production, processing, liquefaction, transport, regasification, storage and marketing of natural gas within the Federal State scope of competence (before the product is delivered to state distribution companies, i.e., to the city-gate).

In 2021, Law 14.134, called the New Gas Law, was published, which brought new attributions to the Agency. Since then, ANP has been taking a series of measures with the aim of bringing more openness and competition to this market, including regulatory actions, issuing grants for the entry of new agents and disclosure of contracts and information on prices and volumes sold.

Brazil produced an average 154 million $m^3/d$ in 2024 of NG (partially reinjected in the reservoir), with a proved reserve of 545 billion $m^3$.

NG market production in Brazil is mainly associated to the oil produced from offshore fields. Other sources include imports through pipelines from Bolivia and LNG through regasification terminals. Only around 40% of the national production is consumed by the Brazilian market due to the lack of demand and infrastructure besides the high prices of the gas. Recently, the country saw a great increase in gas demand due to the economic recovery and the worst drought in more than 90 years, which requested the operation of all thermopower plants for longuer period.

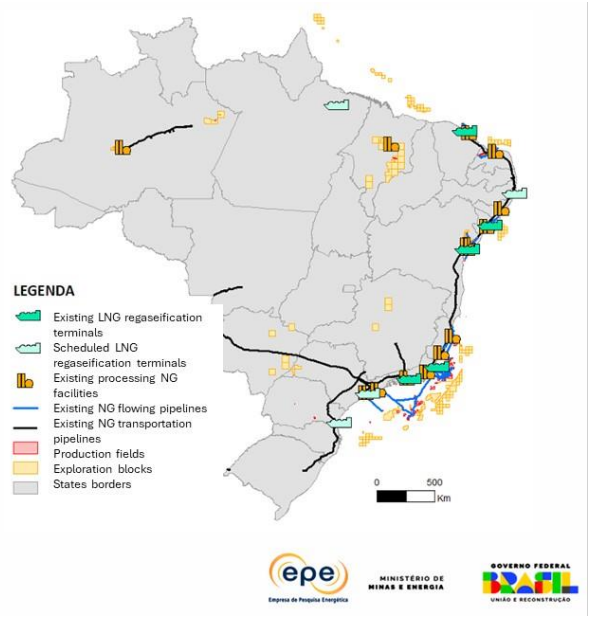
The average consumption of natural gas in 2024 throughout Brazil reached approximately 52,5 million cubic meters/day, an increase of 0.7% compared to 2023 (Source – ABEGÁS).

These data represent the sum of the volumes consumed by customers in the industrial, automotive, commercial, residential, electric generation, cogeneration, industrial raw material and other segments, based on a monthly statistical survey by ABEGÁS with piped gas distribution concessionaires throughout the country.

The highlight in 2024 was the growth in average consumption in natural gas-fired electricity generation, with an increase of 22.9% – due to the increase in the dispatch of natural gas to thermoelectric plants by the National Interconnected System Operator (ONS). In 2024, the dispatch was 14.66 million cubic meters/day. Brazil has a huge potential for NG in the Pre-Salt offshore reservoirs, the most prolific nowadays.

Today, natural gas reaches more than 4.7 million consumers via 45 thousand kilometers of (local) distribution networks spread throughout the country.

ANP is leading a big effort to this gas be monetized. Regarding the potential in onshore basins, there are four Paleozoic basins with potential for NG: Parnaíba, Solimões, Amazonas, and Paraná basins. Most of the onshore exploration in new frontier basins is to produce NG. Relevant reservoir-to-wire projects are underway in Parnaíba and Amazonas basins.




Picture 4.1 – Pipe net map – Source ANP

- The named “The New Gas Law”, published in 2021, is a decisive step towards an open, transparent, feasible and competitive market.
- A robust regulatory agenda is underway to build the new natural gas market, which is creating big opportunities in Brazil.
- All efforts are being made so that the huge gas potential in the pre-salt can be monetized.

On the other hand, most of the onshore exploration in new frontier basins is to produce gas and there are relevant “reservoir-to-wire” projects in Parnaiba and Amazonas Basins.

**The Brazilian infrastructure for the natural gas transportation and distribution**

To realize the businesses opportunities in NG in Brazil, it is important to be informed about several scenarios:

- The Infrastructure of Natural Gas in Brazil (source EPE - Feb/24)

- 9,4 thousand km of natural gas transportation pipelines
- 6,3 thousand km of flow and transference gas pipelines
- 16 gas processing unities
- 5 operating terminals of LNG re-gasification (it could reach 11 in the next years, including the under construction and the planned terminals)
- 3 operational flow routes (subsea pipelines) from pre-salt offshore production region and Rota-3 (Route 3) in final construction steps and commissioning processes
- There will be at least 2 other routes to be constructed during the next years (named SEAP and Raia).

**Gas transportation companies**

In Brazil, natural gas is carried to distributors through transportation pipelines. It is through this means of transport that natural gas is exported after its production, to go through various processes until it reaches the distributors, which then takes the gas to the final consumer. The installations of these pipelines also include the reception and delivery points, interconnection and compression stations.

Under the current Brazilian federal regulation, the transporter cannot buy or sell gas, except for the volume needed to supply its transport facilities and operational stock. In this way, the one who acquires the gas from the producer is the shipper, which then hires the transporter’s service to carry the gas to the delivery point.

Brazil has 110 gas pipelines, with an extension of about 11,700 km of pipeline network for the movement of natural gas. Of this total, 48 (9,4 thousand km) are used for transport and 62 (2,3 thousand km) are used for transfer.

The country has one of the worst relations in the world regarding the internal transport of natural gas. These pipelines are responsible for carrying the gas to

187 delivery points (city-gates), 33 compression stations, 14 processing plants with a capacity of 96 million m³/d, and 3 LNG regasification terminals with a capacity of 47 million $m^3$/d.

Currently, Brazil has 5 natural gas transportation companies.

The five NG's transporters are:

1. TRANSPORTADORA ASSOCIADA DE GÁS S.A. – TAG / ENGIE:

The company operates in the North, Northeast and Southeast regions, with a natural gas handling capacity of 74.7 million m³/day.

Presently TAG is owned by ENGIE (the transnational French headquartered energy company), that is responsible for the most extensive natural gas transportation network in the country, with 4,500 km of pipelines, which crosses 10 states and 191 municipalities (the acquisition of TAG was completed in 2020).

In Brazil, ENGIE is also the country's leading renewable energy company, operates in generation, commercialization and transmission of electricity, gas transportation and energy solutions. With its own installed capacity of about 10 GW in 82 plants, which represents about 6% of the national capacity, the company has 100% of its installed capacity coming from renewable sources and with low emissions of Greenhouse Gases (GHG), such as hydroelectric, wind, solar and biomass plants.

With about 2,600 employees, ENGIE had revenues of R$ 11,7 billion (about US$ 2,2 billion) in Brazil during 2023.

2. TRANSPORTADORA BRASILEIRA GASODUTO BOLÍVIA-BRASIL S.A. – TBG:

The company operates through the Bolivia-Brazil gas transport pipeline in the Midwest, Southeast and South regions. The company delivers up to 30 million m³/day of natural gas to seven local distributors that, together, serve 1,2 million end consumers.

3. TRANSPORTADORA SULBRASILEIRA DE GÁS – TSB:

The company operates in the Southern region and has a gas pipeline that will connect the cities of Uruguaiana and Canoas in the State of Rio Grande do Sul. The first phase of the pipeline, Phase I, was completed in May/2000 and consists of two 25 km sections at each of the two ends of the pipeline. The company is currently building and managing the Uruguaiana – Porto Alegre Gas Pipeline. The project foresees 615 km of pipelines in the State of Rio Grande do Sul, of

which 50 km have already been built in Phase I. The stretch will have a flow of 15 million m³/d.

4. GASOCIDENTE DO MATO GROSSO LTDA. – GOM:

The company owns the Brazilian section of the pipeline that brings natural gas from Bolivia to the state of Mato Grosso. The Bolivia – Mato Grosso Gas Pipeline, in its Brazilian section, starts at the border with Bolivia, in the municipality of Cáceres – MT, and is 645 km long, 362 km in Bolivian territory and 283 km in Brazilian territory. Its maximum capacity is 4 million m³/d, and can reach 5.74 million m³/d.

5. NOVA TRANSPORTADORA DO SUDESTE S.A. – NTS:

NTS's pipelines connect the states of Rio de Janeiro, Minas Gerais and São Paulo (responsible for about 50% of gas consumption in Brazil) to the Bolivia-Brazil pipeline, beyond LNG terminals and gas processing plants. There are more than 2,000 km of network with a contractual transport capacity of 158.2 million m³/d.

**Annex 5** presents the opportunities for the transporting segment,

The NG consumption and distribution (Source – ABEGÁS):

Industrial — Recorded a 3.6% decrease in consumption compared to 2023, due to the slower growth of the economy in 2024 and the high price of the molecule.

Automotive — The use of CNG in light vehicles fell 14.3% in 2024. The high cost of the molecule is also reflected in the automotive segment, with a loss of competitiveness in relation to liquid fuels, such as ethanol.

Commercial — The segment grew 2.4% in 2024, following the positive curve of the services sector in the country, with an average consumption of 897,6 thousand m³/day.

Residential — Residential consumption showed a slight increase of 1.4% in 2024 compared to the previous year, registering an average consumption of 1.4 million m³/day and showing that distributors continue to invest in the expansion of piped gas service.

Cogeneration and Raw Material — Consumption in the segments retracted 28.4% and 11.4%, showing less resilience to the slower pace of the economy in 2024.

Electricity generation — In 2024, gas-fired thermal plants were more activated to ensure the country's energy security, mainly due to another water crisis with a

prolonged climate dry period and also the unexpected heat waves where there was a significant increase in electricity consumption, resulting in a 22.9% increase in the volume of natural gas destined for thermoelectric generation, totaling 14,6 million m³/day.

To support the understanding of the NG businesses in Brazil, the next two figures are maps of Brazil and its international borders, showing up the geographical regions and the Brazilian federation's states.


Picture 4.2 - Brazilian map (geographical regions – source IBGE)


Picture 4.3 - Brazilian map, states and bordering countries (source IBGE)

**NG Distribution companies** (source - ABEGAS)

Local natural gas distribution companies (LDC's) are regionally acting in Brazil, supplying (locally) natural gas to residences, industries, and commercial consumers. These companies are represented by an association, named ABEGAS (the Brazilian Association of Natural Gas Distribution Companies – www.abegas.org.br - Av. Ataulfo de Paiva, 245 - Rooms 601 to 605 – Leblon/ Rio de Janeiro – CEP: 22440-032 - phone +55 21 3995-4325).

In order to follow their project, we suggest accessing directly in their website listed below

For example, Minas Gerais State Gas Distribution Company (Gasmig), reported the construction of the Midwest Gas Pipeline recently started, which will allow an increase of 300 kilometers in the pipeline state's network, representing 23% of the company's current network.

The project involves an estimated investment of around US$ 140 million. Gasmig plans to invest R$ 910 million by 2032 in the expansion of its gas pipeline network.

The construction of the gas pipeline will initially serve eight municipalities — Betim, Divinópolis, Igarapé, Itaúna, Juatuba, Mateus Leme, São Joaquim de Bicas and Sarzedo. Together, these municipalities represent 10% of the Industrial Gross Domestic Product (GDP) and 7% of the total GDP of Minas Gerais. The municipalities are home to one million inhabitants, about 5% of the Minas Gerais' population.

According to Gasmig, the project's potential consumption is approximately 230 thousand cubic meters per day, with an estimated capture of one thousand new industrial and commercial customers. The main pipeline will be built in an industrial region of the state of Minas Gerais.

Currently, Gasmig has a presence in 47 municipalities in Minas Gerais and has a network of 1,675 kilometers in operation, which serves 95,887 business and residential customers.

The more relevant regional NG distribution companies are listed in the following table (in alphabetical order):

| Name - Region | Address |
|---|---|
| 1. ALGÁS – Gás de Alagoas S/A - NE | phone: +55 (82) 3218-7700<br>Website: www.algas.com.br |
| 2. BAHIAGÁS – Companhia de Gás da Bahia - NE | phone: + 55 (71) 3206-6000<br>Website: www.bahiagas.com.br |
| 3. CEBGAS – Companhia Brasiliense de Gás - MW | phone: +55 (61) 3322-2100<br>Website: www.cebgas.com.br |
| 4. Companhia de Gás do Ceará - NE | phone: +55 (85) 3266-6900<br>Website: www.cegas.com.br |
| 5. Companhia de Gás do Amazonas S/A - N | phone: +55 (92) 3303-3200<br>Website: www.cigas-am.com.br |
| 6. COMGÁS – Companhia de Gás de São Paulo - SE | phone: +55 (11) 3325-6600<br>Website: www.comgas.com.br |
| 7. COMPAGAS – Companhia Paranaense de Gás - S | phone: +55 (41) 3312-1900<br>Website: www.compagas.com.br |
| 8. COPERGÁS – Companhia Pernambucana de Gás - NE | phone: +55 (81) 3184-2000<br>Website: www.copergas.com.br |
| 9. ES Gás – Companhia de Gás do Espírito Santo - SE | phone: +55 (27) 3347-8971<br>Website: www.esgas.com.br |
| 10. Companhia de Gás do Pará - N | phone: +55 (91) 3224-2663<br>Website: www.gasdopara.com.br |
| 11. GASMAR – Companhia Maranhense de Gás - NE | phone: +55 (98) 2109-7179<br>Website: www.gasmar.com.br |
| 12. GASMIG – Companhia de Gás de Minas Gerais - SE | phone: +55 (31)3265-1000<br>Website: www.gasmig.com.br |

| | |
|---|---|
| 13. MSGÁS – Companhia de Gás do Estado do Mato Grosso do Sul – MW | phone: +55 (67) 3312-2400<br>Website: www.msgas.com.br |
| 14. NATURGY – Rio de Janeiro - SE | phone: +55 (21) 3115-6565<br>Website: www.naturgy.com.br |
| 15. Necta Gás Natural S/A – São Paulo - SE | phone: +55 (16) 3305-1800<br>Website: https://nectagas.com.br |
| 16. PBGÁS – Companhia Paraibana de Gás - NE | phone: +55 (83) 3219-1700<br>Website: www.pbgas.com.br |
| 17. POTIGÁS – Companhia Potiguar de Gás - NE | phone: +55 (84) 3204-8500<br>Website: www.potigas.com.br |
| 18. SCGÁS – Companhia de Gás de Santa Catarina - S | phone: +55 (48) 3229-1200<br>Website: www.scgas.com.br |
| 19. SULGÁS – Companhia de Gás do Estado do Rio Grande do Sul - S | phone: +55 (51) 3287-2200<br>Website: www.sulgas.rs.gov.br |

**Main natural gas producers and importers**

More than 50 oil companies are qualified at ANP as oil and/or natural gas producers, the ones with the most relevant gas output are listed in the following table (alphabetical order):

| BRAZILIAN NG PRODUCERS | website |
|---|---|
| BRAVA ENERGIA<br>(a merging of 3R PETROLEUM and ENAUTA) | https://bravaenergia.com |
| ENEVA | https://eneva.com.br |
| ENGIE | https://www.engie.com.br |
| EQUINOR | https://www.equinor.com.br |
| PETROBRAS | www.petrobras.com.br |
| PETRO RIO - PRIO | https://prio3.com.br |
| SHELL | www.shell.com.br |
| TOTAL ENERGIES | https://totalenergies.com.br |
| TRIDENT ENERGY | www.trident-energy.com/pt |
| and several others | |

On the other hand, just as an example, during the months of August and September/2024, the main natural gas importers in Brazil were those presented in the following table (source ANP):

| **Natural gas importing company** (Random sequence) | **Customs City** | **Country of origin of the natural gas** |
|---|---|---|
| YPFB ENERGIA DO BRASIL LTDA. | Corumbá | Bolivia |
| KARPOWERSHIP BRASIL ENERGIA LTDA | Rio de Janeiro | UK |
| ENEVA S.A. | Aracajú | USA |
| PETRÓLEO BRASILEIRO SA PETROBRAS | Salvador | USA |
| COMPASS COMERCIALIZAÇÃO SA | Santos | USA |
| UTE GNA I GERAÇÃO DE ENERGIA SA | Campos dos Goytacazes | UK |
| COMPANHIA MATO-GROSSENSE DE GAS - MTGAS | Cáceres | Bolivia |
| MGAS COMERCIALIZADORA DE GÁS NATURAL LTDA | Corumbá | Bolivia |
| CELBA - CENTRAIS ELÉTRICAS BARCARENA SA | Belém | USA |
| EXCELERATE ENERGY COMERCIALIZADORA DE GÁS NATURAL LTDA. | Salvador | USA |

Detailed information about these and other months (since 2002 and monthly updated), can be consulted at ANP's database (in Portuguese), at https://www.gov.br/anp/pt-br/assuntos/importacoes-e-exportacoes/relatorios

Business opportunities in the NG segment are highlighted at **Annexes 4 and 5.**

**Regasification terminals operating presently**

Brazil is currently home of eight regasification terminals (presently potential clients):

- in Guanabara Bay (PETROBRAS) and Port of Açu (GNA), both in Rio de Janeiro state;
- at the Port of Pecém (PETROBRAS), in Ceará state;
- at the Port of Sergipe (ENEVA), in Sergipe state;
- in Todos os Santos Bay (leased by PETROBRAS to EXCELERATE ENERGY), in Bahia state;
- Barcarena (PA), owned by NFE (New Fortress Energy);

- Porto de Santos (SP), owned by COMPASS Gás e Energia;
- Baía de Babitonga (SC), owned by NFE.

### Entities related to natural gas (NG) businesses

The following institutions and associations have close participation in the NG businesses, with influencing capacity in different steps of the NG businesses, joining interests of NG companies, as can be seen in the next table:

| Name acronym | website | Translation of the name in Portuguese | Meaning |
|---|---|---|---|
| ABEGÁS | www.abegas.org.br | Brazilian association of natural gas distributers | Regional natural gas distributors (dealers) |
| ABEP / IBP | www.abep.org.br | Brazilian association of exploration and production | Natural gas and oil producers (hosted by IBP) |
| ABNT | https://abnt.org.br | Brazilian association of technical standards (norms) | Private and non-profit entity, is the National Standardization Forum recognized by Brazilian society since its foundation (1940) and confirmed by the federal government through several legal instruments |
| ABPIP | https://abpip.org.br | Brazilian association of petroleum independent producers | Natural gas and oil independent producers |
| ABRACE | https://abrace.org.br | Brazilian association of large consumers | Natural gas large consumers |
| ABRACEEL | https://abraceel.com.br | Brazilian association of energy traders | Natural gas traders |

| | | | |
|---|---|---|---|
| ABRAGET | https://abraget.com.br | Brazilian association of thermo-powered electric generation facilities | Natural gas fueled power plants |
| ANP | https://www.gov.br/anp | Brazilian national agency of petroleum, gas and biofuels | Federal authority and regulator for the oil and gas sector |
| ATGÁS | www.atgas.org.br | Brazilian association of natural gas carriers | Non-profit civil association of natural gas pipeline transporting companies. |
| CBIE | https://cbie.com.br/ | Brazilian Center of Infrastructure | Private consulting company, with expertise in Regulatory Intelligence and Business Management services in the energy sector |
| EPE | www.epe.gov.br | Brazilian state-owned company dedicated to energetic research | Federal company supporting the federal government's energy strategies and planning |
| IBP | www.ibp.org.br | Brazilian institute of petroleum and gas | Private organization that represents the interests of the oil companies |
| ONIP | www.onip.org.br | National Organization of the Petroleum Industry | Private organization that represents the interests of the O&G supply chain |

# 5. DOWNSTREAM OPPORTUNITIES

## Refining, Transportation and Storage

It is important to realize that ANP's duties also include authorization for companies to build, operate and expand refineries, natural gas processing and storage plants, as well as for the transportation of natural gas, oil and refined products. All these activities must also be inspected by the Agency.

## The refining facilities in Brazil.

From the yearbook, issued by ANP in Aug./2024 (with information about the year 2023), it could be extracted the refining capacity of each of the facilities in Brazil.

| Refinery name | State | Refining capacity (barrels/day) |
|---|---|---|
| Riograndense | Rio Grande do Sul | 17.014 |
| Lubnor | Ceará | 10.378 |
| Manguinhos | Rio de Janeiro | 14.303 |
| Recap | São Paulo | 62.898 |
| Reduc | Rio de Janeiro | 251.592 |
| Refap | Rio Grande do Sul | 220.143 |
| Regap | Minas Gerais | 166.051 |
| Refman | Amazonas | 45.916 |
| Repar | Paraná | 213.854 |
| Replan | São Paulo | 433.996 |
| Revap | São Paulo | 251.592 |
| Refmat | Bahia | 377.388 |
| RPBC | São Paulo | 179.184 |
| RPCC | Rio Grande do Norte | 44.658 |
| Rnest | Pernambuco | 115.009 |
| Univen | São Paulo | 5.158 |
| Dax Oil | Bahia | 4.007 |
| Ssoil | São Paulo | 12.498 |
| Paraná Xisto | Paraná | - |
| Total (barrel/calendar-day) | | 2.425.639 |

Several other information could be downloaded at:

https://www.gov.br/anp/pt-br/centrais-de-conteudo/publicacoes/anuario-estatistico/oil-natural-gas-and-biofuels-statistical-yearbook-2024

It is important to highlight that comparing the refineries capacities and the daily average production, the number is about 90%, it means, almost all the refining capacity in Brazil is used.

The next table show-up the companies controlling each refinery operating in Brazil. In the supply chain viewpoint, all are relevant contractors of services (revamps, programed maintenance stops, installations up-grading and systems up-dating, etc.) and could became clients of new suppliers landing in the Brazilian O&G market, but it is important to pay attention to the contracting decision center of each one. The refineries controlled by foreign groups can trace and execute the supply strategy abroad Brazil, in their headquarters.

| Refinery name | Controlling group |
|---|---|
| Riograndense (RS) | Petrobras, Ultrapar and Braskem |
| Lubnor (CE) | Petrobras |
| Refit/Manguinhos (RJ) | Grupo Andrade Magro |
| Recap (SP) | Petrobras |
| Reduc (RJ) | Petrobras |
| Refap (RS) | Petrobras |
| Regap (MG) | Petrobras |
| Refman (AM) | Atem Group |
| Repar (PR) | Petrobras |
| Replan (SP) | Petrobras |
| Revap (SP) | Petrobras |
| Refmat (BA) | Mubadala Capital |
| RPBC (SP) | Petrobras |
| RPCC (RN) | 3R Petroleum |
| Rnest (PE) | Petrobras |
| Univen (SP) | Grupo Vibrapar |
| Dax Oil (BA) | Dax Oil Refino SA |
| Ssoil (SP) | SSOoil Energy SA |
| Paraná Xisto (PR) | Forbes Resources Brazil Holding S.A. (Group Forbes&Manhattan Resources) |

Other activities which also require authorization from ANP and are inspected by the Agency are:

- import and export of oil, gasoline, diesel, biodiesel and ethanol;
- gas stations
- production and warehousing of biodiesel and ethanol;
- natural gas and refined products pipeline transportation
- distribution of compressed natural gas (CNG) and liquefied natural gas (LNG).

Another relevant and correlated market, also regulated by ANP, are the biofuels (BECCS), which in Brazil are mostly represented by ethanol (as fuel, very often produced from sugar cane) and biodiesel (produced from several vegetable sources).

As Brazil is currently one of the most attractive emerging markets for investments in renewable energy, and the country is the 2$^{nd}$ largest producer and consumer

of biofuels, it is important to emphasize that 30% of the vehicle matrix is powered by renewable energies more than 70% of the running cars are flex-fuel (Otto engines). Incentives are reaching positive results:

- RenovaBio Program: In 2020, more than 14 million tons of greenhouse gas emissions were avoided thanks to the RenovaBio program, which aims to expand the production of biofuels in Brazil.

- "Combustível do Futuro" (Fuel of the Future, in a free translation from Portuguese), a federal government program, which encourages:

- the large-scale use of 2nd generation ethanol;
- R&D to encourage fuel cell technology;
- creation of green corridors to supply heavy vehicles powered by biomethane.
- market introduction of BioJetFuel;
- BioCCS, etc.

**General overview of the biofuels market.**

Brazil started one of the first biofuels large scale project in the early 1980ties, the implementation of Otto cycle engines burning ethanol (produced from sugar cane) powering all kind of cars (from small popular cars to medium sized trucks). At that time, and since now, a percentage of ethanol was incorporated the regular gasoline (today it is 30% of ethanol in any liter of "gasoline" in the fuel station). Several years later, the same happened with diesel, incorporating up to 15% of biodiesel in the regular diesel (from petroleum) in the diesel fueling stations.

Ethanol and biodiesel, so called BECCS (bioenergy with carbon capture and storage), are produced for private companies and mixed with the petroleum derivate fuels in the distribution basis. The more often "fuel generating plants" are sugar cane, soy, colza, corn and palm.

As is well known, greenhouse gas emissions from bioenergy can be low because when vegetation is harvested for bioenergy, new vegetation can grow and will absorb carbon dioxide ($CO_2$) from the air.

During the 1990ties a technology developed by cars manufacturers in Brazil was implemented, also in large scale, the "flex fuel" Otto engines, able to burn any proportion of conventional gasoline and ethanol. Since the 1980ties the consumers can find ethanol and gasoline (with 30% of ethanol) in any fuel station all over Brazil.

Today, almost 100% of the (Otto engine powered) cars, motorcycles and small trucks, produced in Brazil, are "flex", it means the original ethanol project (named PRO-ALCOOL) is today the largest renewable vehicle fuel project in the world. All the Otto cycle engines sold in Brazil are prepared to burn at least 30% (of ethanol and 70% of gasoline (but can burn any ethanol/gasoline proportion, up to 100% of ethanol). All diesel engines (old or new) are prepared to burn up to 15% of biodiesel together with regular diesel (presently it is 10%).

It is very important to point out that recent independent studies about the energy and environmental balances comparing ethanol, gasoline, diesel, hydrogen and electrical cars are verifying that ethanol balance is the more environmentally friendly, while being competitive in the energy approach. It means it could be one of the priority paths for close future investments in the fuel production for transportation.

**General overview of downstream opportunities for the Brazilian EPC companies at the O&G industry**

Since the la 1960ties, large EPC companies was established in Brazil, able to construct refineries, hydro-powered plants, steel mills, ports, airports, roads, bridges, rail roads, petroleum terminals, offshore platforms, full scale ships, war ships and submarines, fuel powered generation plants, petrochemical plants, and any king of industrial plants, including the construction of nuclear plants.

These several EPC companies can count with a wide supply chain industry. In the O&G business, it could be mentioned steel mills, heavy duty equipment manufacturers (processing towers, compressors, turbines, separators, tanks, piping, special metallurgy wide width pressure vessels, electro-electronical equipment manufacturers, automation and control equipment, heavy duty lifting systems, deep water subsea equipment, heavy duty construction equipment, and several others.

This supply chain capacity and the engineering competency together, leveraged the EPC companies to an international business level, enabling these companies to win bids in Brazil and abroad.

**Potential opportunities.**

For an EPC companies in Brazil, focusing its business on O&G industry, the more attractive potential segments for the next years are:

- revamps in former Petrobras' assets acquired by private companies,
- updating of shallow water platforms, including innovative automation control systems and AI,
- construction of small refineries planned and spread in several Brazilian states,
- construction of LNG terminals,
- biofuels and sugar cane refineries updating and constructions,
- NG and bio-mass power plants,
- NG pipeline and terminals installation,
- NG, diesel, and bio-mass power plants updating (open-cycle to close-cycle),
- Onshore and offshore facilities decommissioning.

Opportunities are presented at **Annex 7**.

# 6. EPE'S INFRASTRUCTURE PROJECT PROPOSALS

The Energy Research Office (EPE in its Portuguese acronym) aims at supporting the Brazilian Ministry of Mines and Energy (MME) energy policies with studies and research on energy planning covering electricity, oil, natural gas and its derivatives and biofuels. Its studies cover the areas of engineering, economics, modeling, policy and environment and where they overlap. EPE is 100 % state-owned and its purpose is to ensure the basis for the sustainable development of the country's energy infrastructure. EPE's role has been consolidated as a fundamental part of the energy policy design and implementation that begin with the definition of policies and guidelines within the scope of CNPE - National Council of Energy Policy and MME. Its studies and research support the development of the Brazilian energy industry.

The Division of Oil, Gas & Biofuels Studies is responsible for conducting studies on the management of oil and gas resources and reserves, the supply, demand, trading, and infrastructure of oil and its byproducts, natural gas, and biofuels, among others. The Department of Oil Studies conducts studies on the management of oil and gas resources and reserves, and the production, trading, and infrastructure of oil and oil products and their regulations and market perspectives. The Department of Natural Gas & Biofuels Studies conducts studies on the management of the infrastructure, processing, and supply of natural gas and biofuels, and on their market conditions, regulations and perspectives.

## Expected Investments in the Exploration and Production (E&P) sector

Expected investments total around US$ 450 billion. From this value, production development accounts for 86 %, exploration for 8 %, and operational support, infrastructure and research, development and innovation (RD&I) for 6 %. Production development confirmed projects, such as Tupi, Búzios, Atapu, Itapu, Sépia and Mero, revitalization of Marlim, Parque das Baleias (Park of the Whales), and other areas in Campos Basin, in addition to Bacalhau projects, sum up US$ 63.6 billion. Other Investments are foreseen, such as onshore production enhancement due to Petrobras disinvestment of areas for exploration that were acquired by small and medium size companies, that, by means of specific investments, concur to increase the recovery factor of such fields.

E&P projects encompass a series of activities that were grouped in four main segments, in the Brazilian sedimentary basins, as seen: those associated to abandonment and decommissioning of assets operations; production development, gathering large Investments from production wells drilling to installation of PSU (Production Stationary Unit); environmental recovery; and exploration. The following table presents, divided by sedimentary basin,

approximated figures for estimated investments for E&P projects from 2025 to 2030.

*Investments for the main E&P activities estimated for the period 2025-2030*

| Basin | Activity | Investments until 2030 (US$ million) |
|---|---|---|
| **Alagoas** | Abandonment, Decommissioning and Removal | 1,243 |
| | Production Development | 229,323 |
| | Environmental Recovery | 168.3 |
| | Exploration | - |
| **Amazonas** | Abandonment, Decommissioning and Removal | 103,801 |
| | Production Development | 97,219 |
| | Environmental Recovery | 2,014 |
| | Exploration | 17,571 |
| **Barreirinhas** | Abandonment, Decommissioning and Removal | - |
| | Production Development | 336.0 |
| | Environmental Recovery | - |
| | Exploration | 1,636 |
| **Camamu** | Abandonment, Decommissioning and Removal | 152.391,14 |
| | Production Development | 20,00 |
| | Environmental Recovery | 4,49 |
| | Exploration | 100,00 |
| **Campos** | Abandonment, Decommissioning and Removal | 11,810,051 |
| | Production Development | 27,728,983 |
| | Environmental Recovery | 38,363 |
| | Exploration | 809,572 |
| **Ceará** | Abandonment, Decommissioning and Removal | 540,227 |
| | Production Development | - |
| | Environmental Recovery | - |
| | Exploration | - |
| **Espírito Santo** | Abandonment, Decommissioning and Removal | 165,717 |
| | Production Development | 1,109,928 |
| | Environmental Recovery | 2,202 |
| | Exploration | 9,522 |
| **Paraná** | Abandonment, Decommissioning and Removal | - |
| | Production Development | - |
| | Environmental Recovery | 6,000 |
| | Exploration | - |

| | | |
|---|---|---|
| **Parnaíba** | Abandonment, Decommissioning and Removal | - |
| | Production Development | 207,693 |
| | Environmental Recovery | - |
| | Exploration | 710 |
| **Potiguar** | Abandonment, Decommissioning and Removal | 404,038 |
| | Production Development | 1,185,153 |
| | Environmental Recovery | 370 |
| | Exploration | 26,400 |
| **Recôncavo** | Abandonment, Decommissioning and Removal | 59,303 |
| | Production Development | 1,266,095 |
| | Environmental Recovery | 5,067 |
| | Exploration | 596 |
| **Santos** | Abandonment, Decommissioning and Removal | 1,795,932 |
| | Production Development | 67,601,010 |
| | Environmental Recovery | 121,798 |
| | Exploration | 1,530,256 |
| **Sergipe** | Abandonment, Decommissioning and Removal | 2,145,307 |
| | Production Development | 5,802,344 |
| | Environmental Recovery | 1,751 |
| | Exploration | 11,548 |
| **Solimões** | Abandonment, Decommissioning and Removal | 59,187 |
| | Production Development | 265,213 |
| | Environmental Recovery | 42,471 |
| | Exploration | 36,022 |
| **Tucano Sul** | Abandonment, Decommissioning and Removal | 309 |
| | Production Development | 21,533 |
| | Environmental Recovery | 79.4 |
| | Exploration | - |
| **Total Investments** | | **US$ 125,416,576** |

Source: Petrobras Business Plan 2025-2029; Compilation of EPE Annual Working Program

**Estimation of investments in natural gas sector**

The estimation of investments in natural gas sector comprises processing infrastructure, and pipelines as well.

*Expected investments in logistic infrastructure of petroleum and byproducts (other than Petrobras)*

| Item | Category | Project | Description | Investment (US$ million)[1] |
|---|---|---|---|---|
| 1 | UPGN[2] | São Roque | UPGN at Mata de São João, state of Bahia, belonging to Petrorecôncavo | 4.79 |
| 2 | UPGN | Miranga | UPGN at Pojuca, state of Bahia, belonging to Petrorecôncavo | 65.1 |
| 3 | Transportation Pipeline | GASFOR II Horizonte - Caucaia | Pipeline belonging to TAG | 82.4 |
| 4 | Transportation Pipeline | Pre-Salt South Corridor | Pipeline belonging to NTS | 1,341 |
| 5 | ECOMP[3] | Japeri | ECOMP belonging to NTS | 95.8 |
| 6 | ECOMP | Itajuípe | ECOMP belonging to TAG | 134.1 |
| 7 | ECOMP | Expansion of GASBOL[4] Compression | ECOMP belonging to TBG | 27.8 |
| 8 | LNG Terminal | Suape | LNG Terminal at Port of Suape | 57.5 |
| 9 | Gas Pipeline | Raia | Gas pipeline to export Raia Manta and Raia Pintada fields production, belonging to Equinor | 383 |
| 10 | Gas Pipeline | SEAP | Gas pipeline to export Sergipe-Alagoas Basin deep water fields production, belonging to Petrobras | 441 |
| **Total investments in natural gas** | | | | **2,632** |

Source: EPE's PDE 2034

Considering expected investments in the refining an separates the investments into two groups:

- investments in petroleum refining; and

[1] Reference exchange rate R$ 5.22/US$ 1.00
[2] Natural Gas Processing Unit
[3] Compression station
[4] Gas Pipeline from Bolivia to Brazil

- investments in logistics (transportation) of petroleum and byproducts.

### Petroleum refining

Investments comprise *greenfield*[5] and *brownfield*[6] projects, and other associated to maintenance, operational reliability and energy efficiency of existing assets. The following table presents projects for the refining complex of Petrobras, Dax *Oil and SSOil Energy.*

[5] *Greenfield* projects are those that comprises the construction of a new plant at a place never used for that purpose before.

[6] *Brownfield* projects refer to the expansion, renovation or modernization of an existing plant.

*Main expected projects for the country's refining complex (2025-2034)*

| Company | Projects | Expected start of operations | Item | Source |
|---|---|---|---|---|
| Petrobas | Rnest, Revamp 1st train | 2025 | 1 | Petrobras Business Plan 2025-2029 |
| | Rnest, 2nd train | 2029 | 2 | |
| | Replan, HDT Diesel | 2025 | 3 | |
| | Replan, Revamp UGHs | 2025 | 4 | |
| | Replan, Revamp UCRs | 2029 | 5 | |
| | Replan, HDS | 2030+ | 6 | |
| | Revap, Revamp HDT Diesel | 2026 | 7 | |
| | Replan, Reduc, Regap, RPBC, Repar, Revap, Revamp of Atmospheric Distillation Units | 2029 | 8 | |
| | Boaventura Energy Complex, Refining units | 2028 | 9 | |
| Dax Oil | Dax Oil, Revamp | 2025 | 10 | Refina Brasil (2024) |
| SSOil Energy | SSOil Energy, Revamp | 2026 | 11 | Refina Brasil (2024) |

Source: Petrobras Business Plan 2025-2029 and Refina Brasil

The next table presents investment estimates of Petrobras for the refining sector for the period 2025 a 2029, in US$. This information was obtained from Petrobras Strategic Plan 2025-2029.

*Investments estimates at Petrobras refining complex – 2025 a 2030*

| Petrobras investments is at refining complex | Investment 2025-2030 (US$ billion) |
|---|---|
| *Brownfield* and *greenfield* projects (items from 1 to 9 in the previous Table) | 10.6 |
| Maintenance and operational reliability of existing assets (programmed shutdowns) | 3.8 |
| RefTop Program | 0.826 |
| **Total investments in petroleum refining** | **15.2** |

Source: Petrobras Business Plan 2025-2029

In turn, the following **Erro! Fonte de referência não encontrada.** presents the amount of investments of private refineries in the country, obtained from data provided in 2024 by the Association of Private Refineries (Refina Brasil).

*Investments Estimates in petroleum refining by private refineries – 2025 a 2034*

| Investiments in petroleum refining by private refineries | Investment 2025-2034 (US$ million) |
|---|---|
| Expansion of Dax Oil (item 10 of **Erro! Fonte de referência não encontrada.** above) | 60[7] |
| Expansion of SSOil Energy (item 11 of **Erro! Fonte de referência não encontrada.**) | 24[8] |
| **Total investments in petroleum refining by private refineries** | **84** |

Source: Refina Brasil

Petrobras and private refineries associated to Refina Brasi projects portfolios together totalize US$ 16 billion in investments in the petroleum refining sector, for the period from 2025 to 2034.

**Investments in petroleum and byproducts logistic infrastructure**

Investments in petroleum and byproducts logistic infrastructure estimates comprise *greenfield* and *brownfield* projects and actions aiming at the efficiency of existing assets. The following informations were collected from Petrobras Strategic Plan 2025-2029 and from the projects that take part in the Federal Government Investments Partnership Program (PPI).

The next **Erro! Fonte de referência não encontrada.**presents the enterprises that take part in the portfolio of estimated investments in petroleum and byproducts logistic infrastructure, except Petrobras, for the period 2025-2034.

7. For a reference exchange rate of R$ 5.22/US$1.00, estimated cost of US$ 7,500 per barrel and capacity expansion by 8 thousand barrels per day (b/d).
8. For investments of R$ 125 million and reference exchange rate of R$ 5.22/US$1.00.

*Estimated investments in petroleum and byproducts logistic infrastructure (except Petrobras)*

| Item | Category | Project | Enterprise Description | Source | Investment (US$ million) |
|---|---|---|---|---|---|
| 1 | Terminals | BEL09 | BEL09 – Miramar Liquid Bulks Terminal at the Port of Belém, state of Pará | PPI | 25 |
| 2 | Terminals | CODESA | CODESA – Docks Company of Espírito Santo | PPI | 64 |
| 3 | Terminals | IMB05 | IMB05 – liquid bulk handling and storage – Porto de Imbituba, state of Santa Catarina | PPI | 5 |
| 4 | Terminals | MAC11 | MAC11 – Liquid Bulks Terminal at the Port of Maceió, state of Alagoas | PPI | 4 |
| 5 | Terminals | MAC11 A | MAC11 A – Liquid Bulks Terminal at the Port of Maceió, state of Alagoas | PPI | 9 |
| 6 | Terminals | MAC12 | MAC12 – Liquid Bulks Terminal at the Port of Maceió, state of Alagoas | PPI | 7 |
| 7 | Terminals | PAR50 | PAR50 – Leasing of Liquid Bulks Terminal at the Port of Paranaguá, state of Paraná | PPI | 65 |
| 8 | Terminals | STM04 | STM04 – Fuel Terminal at Santarém, state of Pará | PPI | 4 |
| 9 | Terminals | STM05 | STM05 – Fuel Terminal at Santarém, state of Pará | PPI | 2 |
| 10 | Terminals | STS08A | STS08A – Liquid and Gas Bulks Terminal at the Port of Santos, state of São Paulo | PPI | 130 |
| 11 | Terminals | OT Gás Nordeste (OTGN) | LPG Terminal at Suape, state of Pernambuco | COPA ENERGIA | 307 |
| **Total investimentos in logistic infrastructure (except Petrobras)** | | | | | **622** |

Source: Investments Partnership Program - PPI

Regarding Petrobras logistic infrastructure investments, the following enterprises shall be highlighted, according to the table below.

*Estimated investments in petroleum and byproducts logistic infrastructure – 2025 to 2030*

| Item | Category | Project | Enterprise description | Start forecast | Investment (US$ billion) |
|---|---|---|---|---|---|
| 12 | Pipeline/Terminal | OSBRA | Senador Canedo Terminal | 2025 | 3.6 |
| 13 | Pipeline/Terminal | OSBRA | Uberlândia Terminal | 2025 | |
| 3 | Terminal | Port of Santos | Alemoa Terminal | 2026 | |
| | Ships | Construction of coastal ships | 8 Gas Ships and 4 Medium Range 1 - MR Ships | 2028 | |
| 6 | Pipelines/Terminals/Ships | Operacional assurance | | 2025 / 2029 | |

Source: Petrobras Business Plan 2025-2029

Investments in fuel terminals and logistic account for US$ 4.2 billion for the period from 2025 to 2034.

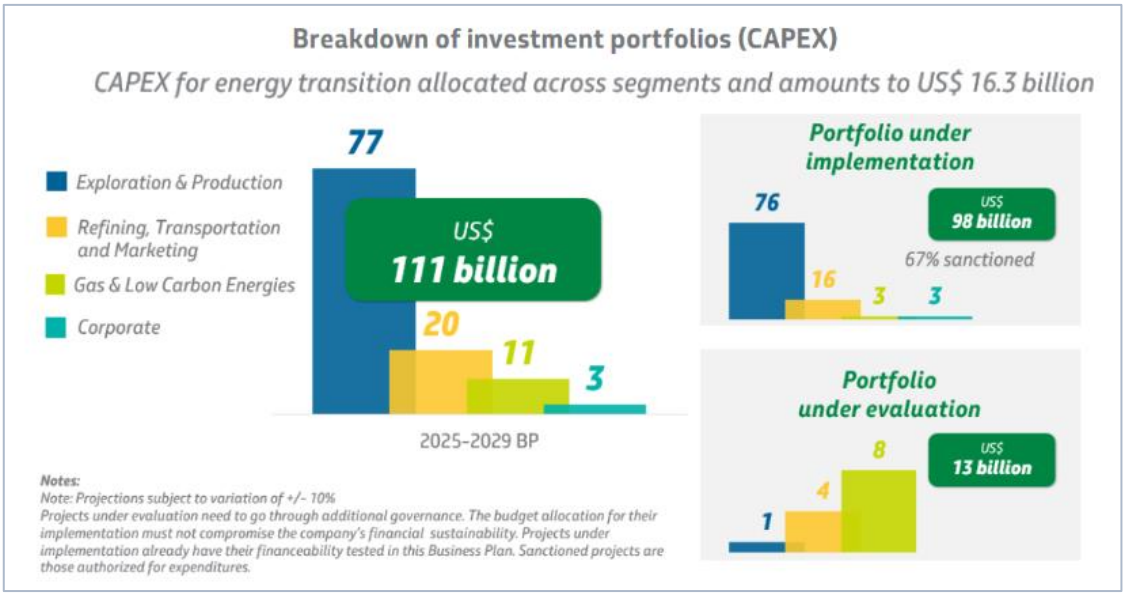
## 7. PETROBRAS' MAIN PROJECTS

PETROBRAS (Petróleo Brasileiro S.A.) is a state-owned integrated oil company, which main shareholder is the Federal Government of Brazil. The company was ranked # 99 in the 2024 Fortune Global 500 list. Its mission is to supply energy to guarantee prosperity in an ethical, fair, safe, and competitive way.

The company operates in six business areas:

- Refining, transportation and marketing – refining, logistics, transportation, trading operations, oil products and crude oil exports and imports and petrochemical investments in Brazil;
- Exploration and production – crude oil, natural gas liquids (NGL) and natural gas exploration, development and production in Brazil;
- Distribution – distribution of oil products, ethanol, biodiesel and natural gas to wholesalers;
- Gas and power – transportation and trading of natural gas and LNG, and generation and trading of electric power, and the fertilizer business;
- International – exploration and production of oil and gas, refining, transportation and marketing, distribution and gas and power operations outside of Brazil; and
- Biofuels – production of biodiesel and its co-products and ethanol-related activities such as equity investments, production and trading of ethanol, sugar and the excess electricity generated from sugarcane bagasse.

In the Business Plan 2025-2029 horizon, Petrobras foresees investments of US$ 111 billion, of which US$ 98 billion in the Portfolio of Projects in Implementation and US$ 13 billion in the Portfolio of Projects under Evaluation, made up of opportunities with a lower degree of maturity and subject to additional studies on their financing before they begin to be implemented.




Source: Petrobras

Petrobras business strategy aims to reconcile the company leadership in the fair energy transition with its responsible exploration and production of oil and gas in Brazil. Petrobras oil has a carbon intensity ranked among the lowest in the world. They are adopting different strategies for the specific segments in which the company operates, investing in the decarbonization of its operations, in the generation of renewable energy, and in sustainable fuels.

In the exploration and production activities, Petrobras intends to maximize the value of the portfolio with a focus on profitable assets, replace oil and gas reserves including exploration of new frontiers, increase the supply of natural gas, and promote the decarbonization of operations.

Regarding refining, transport and marketing, the company acts competitively and safely, maximizing the capture of value by the adequacy and improvement of its industrial park and supply chain and logistics, seeking self-sufficiency in oil products, with vertical integration, more efficient processes, improvement of existing products and development of new products towards a low-carbon market.

Gas and Low Carbon Energies are also in the focus of the company. Petrobras acts in a competitive and integrated manner in the operation and commercialization of gas and energy, optimizing the portfolio and acting in the insertion of renewable sources. It acts in low carbon businesses, diversifying the portfolio in a profitable way and promoting the perpetuation of Petrobras as well.

Obviously, Sustainability must integrate any company strategy nowadays. Petrobras acts in its businesses with integrity and sustainability with safety, seeking decreasing emissions, promoting diversity and social development, contributing to a fair energy transition. Innovating to generate value for the company's business, supporting operational excellence and enabling solutions in new energies and decarbonization is a must, too.

In 2024, Petrobras had activities in seven countries besides Brazil (i.e., Argentina, Bolivia, Colombia, the U.S., the Netherlands, Democratic Republic of São Tomé and Príncipe, and Singapore). In Latin America, the company operations include upstream, marketing and retail services. In North America, it produces oil and gas through an interest in a joint venture. Petrobras has subsidiaries that support its trading and financial activities in Rotterdam, Houston, Buenos Aires and Singapore. These companies act as complete and active trading desks for markets worldwide and are responsible for market intelligence and trading of oil, oil products, natural gas, biofuels, commodity derivatives and shipping. In Africa, the company has exploratory operations in the Democratic Republic of São Tomé and Príncipe

Petrobras operates through 13 direct subsidiaries (11 incorporated under the laws of Brazil and two incorporated in other countries) and one direct joint operation as listed below. The company also has indirect subsidiaries, including Petrobras Global Trading B.V., Petrobras Global Finance B.V., Petrobras America Inc. and Petrobras Netherlands B.V.

| COMPANY | LOCATION | PETROBRAS SHAREHOLDING | OTHER SHAREHOLDERS |
|---|---|---|---|
| Petrobras Transporte S.A. – Transpetro | Brazil | 100 % | - |
| Petrobras Logística de Exploração e Produção S.A. – PB-LOG | Brazil | 100 % | - |
| Petrobras Biocombustível S.A. | Brazil | 100 % | - |
| Transportadora Brasileira Gasoduto Bolívia-Brasil S.A. – TBG | Brazil | 51,0 %. | BBPP Holdings Ltda. (29 %)<br>YPFB Transporte S.A. (19.88 %)<br>Corumba Holding S.À.R.L. (0.12 %) |
| Procurement Negócios Eletrônicos S.A. | Brazil | 72.0 % | SAP Brasil Ltda. (17 %)<br>Accenture do Brasil S.A. (11 %) |
| Araucária Nitrogenados S.A. | Brazil | 100 % | - |
| Termomacaé S.A. | Brazil | 100 % | - |
| Termobahia S.A. | Brazil | 98.85 % | Petros (1.15 %) |
| Baixada Santista Energia S.A. | Brazil | 100 % | - |
| Fundo de Investimento Imobiliário RB Logística – FII | Brazil | 99.15 % | Pentágono SA DTVM (0.85 %) |

| | | | |
|---|---|---|---|
| Petrobras Comercializadora de Gás e Energia e Participações S.A. – PBEN-P | Brazil | 100 % | - |
| Fábrica Carioca de Catalisadores S.A. – FCC [1] | Brazil | 50.0 % | Ketjen Brazil Holding Ltda. (50 %) [2] |
| Petrobras International Braspetro – PIB BV | Netherlands | 99.9993 % | Petrobras Comercializadora de Gás e Energia e Participações S.A. (formerly 5283 Participações S.A.) (0.0007 %) |
| Braspetro Oil Services Company – Brasoil | Cayman Islands | 100 % | - |
| Associação Petrobras de Saúde - APS [3] | Brazil | 93.12 % | Transpetro (6.34 %)<br>TBG (0.35 %)<br>Pbio (0.14 %)<br>Termobahia (0.05 %) |

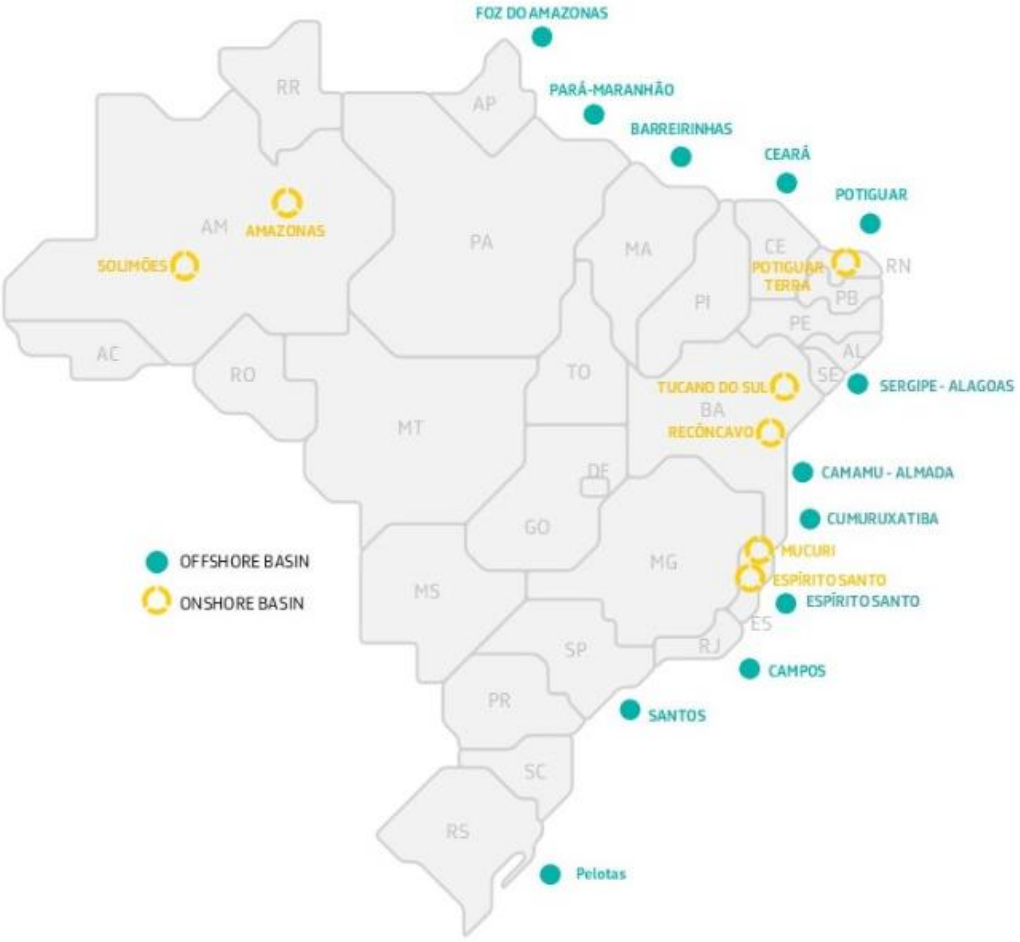
[1] Joint operations.

[2] Former Albemarie Brazil Holding Ltda.

[3] A non-profit association that operates our supplementary health care plan (AMS - Saúde Petrobras) since 2021.

## Exploration and Production

Petrobras oil and natural gas exploration and production activities are the major components of its portfolio and include offshore and onshore exploration, appraisal, development, production and incorporation of oil and natural gas reserves, producing oil and natural gas in a safe and profitable way. The company activities are focused on deepwater and ultra-deepwater oil reservoirs in Brazil, which accounted for 98 % of its total production in 2024. Petrobras also has activities in mature fields in shallow waters and onshore, as well as outside Brazil. Brazilian exploration and production assets represent 88 % of Petrobras' worldwide blocks and fields, 99% of its global oil production and 99.6 % of its oil andnatural gas reserves (see figure below).




Source: Petrobras

As of December 31, 2024, Petrobras had 232 blocks and fields in exploration and production, including 105 owned by consortia with other oil and gas companies in Brazil and other countries. Of the 232 blocks and fields, 201 are under Concession Agreements, 22 are under Production Sharing Agreements and nine are regulated by Transfer of Rights Agreements. Additionally, the company approved the acquisition of participation in the Deep Western Orange Basin (the "DWOB") block in the Republic of South Africa.

According to Petrobras Strategic Plan, the company expects to install 10 new FPSOs in the next five years (see below).

MAIN SYSTEMS TO BE INSTALLED IN THE NEXT YEARS

| Start up (Expected year) | Basin | Field/Area | Production unit | Crude oil nominal capacity (bbl/d) | Gas nominal capacity (mmcf/d) | Water depth (meters) | Fiscal regime | Main production source | Type |
|---|---|---|---|---|---|---|---|---|---|
| 2025 | Santos | Búzios 7 | Almirante Tamandaré (1) | 225,000 | 423.8 | 1,985 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| | Santos | Búzios 6 | Petrobras 78 | 180,000 | 254.3 | 2,030 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| | Santos | Mero 4 | Alexandre de Gusmão | 180,000 | 423.8 | 1,890 | Production Sharing | Pre-salt | FPSO |
| 2026 | Santos | Búzios 8 | Petrobras 79 | 180,000 | 254.3 | 1,770 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| 2027 | Santos | Búzios 9 | Petrobras 80 | 225,000 | 423.8 | 2,100 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| | Santos | Búzios 10 | Petrobras 82 | 225,000 | 423.8 | 1,880 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| | Santos | Búzios 11 | Petrobras 83 | 225,000 | 423.8 | 2,045 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| 2028 | Campos | Raia Manta e Raia Pintada | FPSO Raia | 126,000 | 565.0 | 2,750 | Concession | Pre-salt | FPSO |
| 2029 | Campos | Barracuda e Caratinga | To be defined | 100,000 | 211.9 | 950 | Concession | Post-salt and Pre-salt | FPSO |
| | Santos | Atapu 2 | Petrobras 84 | 225,000 | 353 | 2,300 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| 2030+ | Campos | Albacora | To be defined | 120,000 | 211.9 | 670 | Concession | Post-salt and Pre-salt | FPSO |
| | Campos | Marlim Sul e Marlim Leste | Petrobras 86 | 140,000 | 247.2 | 1,090 | Concession | Post-salt and Pre-salt | FPSO |
| | Santos | Sépia2 | Petrobras 85 | 225,000 | 353 | 2,150 | Transfer of Rights/ Production Sharing/ Concession | Pre-salt | FPSO |
| | Santos | SEAP 2 | To be defined | 120,000 | 424 | 2,550 | Concession | Post-salt | FPSO |
| | Santos | SEAP 1 | To be defined | 120,000 | 353 | 2,550 | Concession | Post-salt | FPSO |

(1) The FPSO Almirante Tamandaré (Búzios 7) started production in February 2025.

Source: Petrobras

## Critical Resources in Exploration & Production

Petrobras seeks to procure, develop and retain all of the critical resources that are necessary to meet its production targets. Drilling rigs, special vessels, supply vessels and helicopters are important resources for the company's exploration and production operations and are centrally coordinated to assure both technical specifications and proper lead time. Petrobras will continue to evaluate its drilling and special vessel demands and intend to adjust its fleet size as needed.

To achieve the company's production goals, it has also secured a number of specialized vessels (such as Pipe Laying Support Vessel - PLSVs) to connect wells to production systems. As of December 31, 2024, Petrobras had 14 PLSVs in use. Similarly to the rigs, the company intends to adjust its fleet size as needed.

The supply of goods and transport of people is also important to achieve its exploration and production goals. By sea, Petrobras transports materials and chemical products. By air, the company transports operating people. Both materials and people are transported daily so that the exploration and production of oil and gas is orchestrated in the most continuous way possible, maintaining the quality and level of services.

In 2024, Petrobras delivered more than three million tons of materials and transported over one million passengers to platforms all over the Brazilian coast. To accomplish these results, the company also has a secure number of supply vessels (such as Platform Supply Vessels or PSVs) and helicopters. As of December 31, 2024, Petrobras had 89 PSVs and 90 helicopters and both fleets were sufficient to meet Petrobras' needs.

**Refining, Transportation and Marketing**

Petrobras owns and operates 10 refineries in Brazil, with a total net crude distillation capacity of 1.813 mbbl/d. This represents 83n% of all refining capacity in Brazil, according to the 2024 statistical yearbook published by the ANP. Most of its refineries are located near its own crude oil pipelines, storage facilities, refined product pipelines, and major petrochemical facilities, easing access to crude oil supplies and end-users.

The company also operates a large and complex infrastructure of pipelines and terminals, and a shipping fleet (see Transpetro chapter) to transport oil products and crude oil to Brazilian and global markets.

Petrobras operates 36 of its own terminals through its wholly owned subsidiary Petrobras Transporte S.A. ("Transpetro"), and the company has contracts for the use of some of the storage capacity of 17 third-party terminals, while Transpetro operates nine other third-party terminals.


**1 LUBNOR**
(Refinaria Lubrificantes e Derivados do Nordeste)
Start Operation: 1960
Crude Distillation Capacity: 8 mbbl/d
API Gravity: 16.0

**2 RNEST**
(Abreu e Lima)
Start Operation: 2014
Crude Distillation Capacity: 81 mbbl/d
API Gravity: 23.2

**3 REGAP**
(Gabriel Passos)
Start Operation: 1968
Crude Distillation Capacity: 151 mbbl/d
API Gravity: 27.7

**4 REDUC**
(Duque de Caxias)
Start Operation: 1961
Crude Distillation Capacity: 239 mbbl/d
API Gravity: 29.2

**5 REPAR**
(Presidente Getúlio Vargas)
Start Operation: 1977
Crude Distillation Capacity: 208 mbbl/d
API Gravity: 27.8

**6 REFAP**
(Alberto Pasqualini)
Start Operation: 1968
Crude Distillation Capacity: 201 mbbl/d
API Gravity: 29.7

**7 RPBC**
(Presidente Bernardes)
Start Operation: 1955
Crude Distillation Capacity: 170 mbbl/d
API Gravity: 27.0

**REVAP**
(Henrique Lage)
Start Operation: 1980
Crude Distillation Capacity: 252 mbbl/d
API Gravity: 26.4

**REPLAN**
(Paulínia)
Start Operation: 1972
Crude Distillation Capacity: 434 mbbl/d
API Gravity: 27.5

**RECAP**
(Capuava)
Start Operation: 1954
Crude Distillation Capacity: 57 mbbl/d
API Gravity: 30.9

1) Operated by Transpetro, a 100% Petrobras subsidiary.
2) The Maceió terminal was leased until February 2025, when the contract ended.
3) The Ilha Redonda and Ilha Comprida terminals make up a single integrated storage and handling system.

Source: Petrobras

## Main Assets

| | 2024 | 2023 | 2022 |
|---|---|---|---|
| **Transport and storage** | | | |
| **Pipelines (km)** | **7,768** | **7,768** | **7,768** |
| Own | 6,928 | 6,928 | 6,928 |
| Third parties[1] | 840 | 840 | 840 |
| **Vessel fleet (owned and chartered)** | **110** | **109** | **110** |
| Own | 25 | 26 | 26 |
| Chartered | 85 | 83 | 84 |
| **Terminals** | **62** | **65** | **65** |
| Own | 36[2] | 37[2] | 38 |
| Third parties[3] | 26 | 28 | 27 |
| **Refining** | | | |
| **Refineries** | **10** | **10** | **11** |
| Brazil | 10 | 10 | 11 |
| Abroad | — | — | — |
| **Nominal installed capacity (mbbl/d)** | **1,813** | **1,813** | **1,851** |
| Brazil | 1,813 | 1,813 | 1,851 |
| Abroad | — | — | — |

(1) Third party pipelines that have existing Transpetro transport contracts.

(2) The number of terminals in 2023 considered the Ilha Redonda and Ilha Comprida terminals as two different terminals. In 2024, we considered them as a single terminal, as they both make up a single integrated storage and handling system.

(3) Third party terminals that have existing contracts for the use of the storage service, including nine terminals operated by Transpetro.

Source: Petrobras

Over the past 15 years, Petrobras has made substantial investments in its existing refineries to increase the company capacity to economically process heavier Brazilian crude oil, improve the quality of its oil products to meet stricter regulatory standards, modernize its refineries, and reduce the environmental impact of the refining operations.

One such investment is the implementation of a new diesel hydrotreatment unit at the Paulínia Refinery

(REPLAN), currently in the process of construction and assembling equipment and installations. With this project, REPLAN is expected to be able to produce 100% ultra-low sulfur diesel (ULSD or S-10) and increase the production of jet fuel, aiming to meet the specifications and quantities demanded by the future market, in an economic way, with operational safety and lower impacts to the environment. The new diesel hydrotreatment unit is expected to have a production capacity of 63 mbbl/d of S-10 and is scheduled to start operation in 2025, in line with the company Strategic Plan.

Other relevant projects for the refining business are:

- **BOAVENTURA**

Following Petrobras current strategy, the Boaventura Cluster, previously known as GASLUB, located in Itaboraí, state of Rio de Janeiro, is being remodeled. New solutions are being evaluated, such as a new refining area, a natural gas process plant and a thermoelectric power plant. This scope considers integration with REDUC refinery and consists of a catalytic hydrocracking, hydrotreating and hydroisodewaxing plant to produce Group II base lube oils which comprise a new generation of lube oils with higher viscosity indexes, improved oxidation stability and better overall performance compared to Group I base oils. The units are expected to be able to produce high-quality fuels as well, and additional investments included in the company's Strategic Plan, along integration with REDUC, are expected to increase S-10 production by 76 mbbl/d. For this scope, construction is expected to be contracted by the end of the first quarter of 2025. Furthermore, a study was initiated to evaluate the implementation of a dedicated plant to process renewable feedstocks (vegetable oils and animal fat) and to produce advanced fuels such as BioQAV (also known as SAF or Biojet fuel) and/or Hydrotreated Vegetable Oil (the "HVO") applying the Hydroprocessed Esters and Fatty Acids technology and also petrochemical products.

For the natural gas processing plant, a new construction, management and commissioning contract was signed in March 2023, whose construction and commissioning milestones were achieved and plant 1 entered commercial operations in November 2024. Plant 2 is expected to begin commercial operations in the second half of 2025.

The gas-fired thermoelectric plant is still under study, and its conceptual design has been completed. The plant obtained the environmental preliminary license in November 2024 and further planning steps are in progress.

- **RNEST**

RNEST (Refinery Abreu e Lima) started its operations in 2014 with the first set of units (Train I), making it the newest and most modern of Petrobras refineries. The refinery is in the Northeast region of Brazil, and this location defines the plant as Petrobras main hub in the North-Northeast of the country.

RNEST is the main project for capacity expansion, with an expected increase in ultra-low sulfur diesel (ULSD or S-10) production capacity of 94 mbbl/d. This increase in oil products' output capacity further strengthens the company's competitive advantage in the optimized use of its refining system. The main projects for expanding capacity and improving the quality of oil products at RNEST include the revamp of Train1, implementation of Train 2, and the SNOX project completion. The SNOX project is expected to enable the processing of

heavier crude oils, leading to a potential reduction in feedstock costs and thereby to an improvement in margin.

The SNOX project was completed in December 2024, and the revamp of Train 1 is under construction, while Train 2 of RNEST is currently in the tender process, and it is scheduled to start operation by 2028.

- Other ULSD Projects

With respect to the expansion of production capacity of ULSD, in addition to the new hydro treatment unit at REPLAN, with an additional production capacity of 63 mbbl/d of ULSD, Petrobras also has another

investment at REVAP, which has focused on modifications to an existing diesel hydrotreating unit (U-272D) to improve S-10 production in 41 mbbl/d, meeting market specifications and environmental requirements. This project is expected to start in 2026.

**Petrochemical**

Petrobras engages in the Petrochemical sector through the following companies:

- Braskem: Basic chemicals, PVC, Ethene, Polyethylene, Polypropylene
- Metanor S.A. and its subsidiary Copenor S.A.: Formaldehyde, Hexamine
- Fábrica Carioca de Catalisadores S.A.: Catalysts, Additives
- Petrocoque S.A.: Calcined petroleum coke

**Fertilizers**

Petrobras has three fertilizer plants in Brazil, one located in the state of Bahia (FAFEN-BA), one in the state of Sergipe (FAFEN-SE), and one through a subsidiary located in Paraná, Araucaria Nitrogenados S.A. (ANSA), that has been suspended since January 2020. Their main products are ammonia and urea. Together these plants have an installed capacity of 1.852 million t/year of urea, 1.406 million t/y of ammonia, 319,000 t/y of ammonium sulfate and 800,000 t/y of Automotive Liquid Reducing Agent (ARLA-32). The company also has an unfinished Nitrogen Fertilizer Unit (UFN-III) in Mato Grosso do Sul. The construction of UFN-III began in September 2011, but was halted in December 2014, with about 81 % of the physical construction completed. In October 2024, Petrobras decided to resume the implementation of UFN-III, with operations expected to commence in 2028.

Following the strategic guidelines of the Strategic Plan 2024-2028+ in force at that time, in which investment in fertilizer production has once again become part of Petrobras' portfolio, reaffirmed in the Business Plan 2025-29, in June 2024, the company approved the resumption of operating activities of ANSA and the starting of all procedures required for the reopening of the plant. The plant is expected to start operating again in the second half of 2025

**Natural Gas**

Petrobras processes gas produced in its oil fields in owned UPGNs that have the capacity to treat 97 million $m^3$/d of natural gas in Brazil. The company markets this natural gas, along with gas imported from Bolivia and LNG acquired in the global market, to several consumers and to the thermoelectric plants. Petrobras also operates in power generation through thermal power plants fired by natural gas and diesel oil and in the commercialization of electric energy.

Natural gas from Petrobras Exploration & Production segment needs to be processed in processing units, to be transformed into marketable products. These products serve as fuel and raw material for different uses, such as transportation, industrial and residential uses, as well as in the fertilizer industry and thermoelectric power generation. The UPGNs are in the states of Amazonas, Ceará, Bahia, Espírito Santo, Rio de Janeiro and São Paulo in Brazil, and in Bolivia as well, where the company has capacity to process natural gas in its gaseous and condensed forms.

**Power**

Petrobras generates and sells electric power from a complex consisting of 13 thermoelectric power plants that the company owns or leases, operating under the authorization regime as an independent power producer. They are powered by natural gas or diesel, with a total installed capacity of 4,910 MW. These plants are designed to be dispatched by the ONS (National System Operator – responsible for the coordination and control of electric energy generation and transmission facilities in the National Interconnected System, and for planning the operation of isolated systems in the country) whenever necessary, in order to supplement power from the hydroelectric power plants and, in more recent years, also from wind and photovoltaic solar power plants.

**How Petrobras Hires**

The Act 13,303/16 introduced significant changes to Petrobras' bidding procedures. Bids are open to any interested party that can meet bidding process requirements and will be processed, preferably, electronically, in accordance with the following procedures set forth in the Petrobras Bid and Contract Regulation (RLCP):

1. open competition mode;
2. closed competition mode;
3. combined competition mode; and
4. open auction rite.

In the cases provided for under Act 13,303/16 there may also be direct contracting.

**Suppliers Register**

The Goods and Services Suppliers Registry brings together Brazilian and foreign companies interested in participating in Petrobras hiring processes. By means of the registry, the company evaluates, in advance, the supplier's economic and legal situation. It minimizes the supplier's risks of being disqualified, thus ensuring more agility in the hiring processes. The supplier registration process is carried out through a computerized system available on the Petronect Portal and is permanently open to interested parties.

The supply lines available for registration are grouped into families, taking into consideration the peculiarities of the goods to be supplied or services to be provided. The choice of families determines the participation in the Corporate Registry or in the Simplified Registry (yellow page families). The Corporate Registry is linked to the supply of goods and services of greater complexity, size or value, available to Brazilian and foreign companies, while the Simplified Registry is for goods and services of local interest and less complexity, size or value and is available only to Brazilian companies. It is important for the supplier to know the families of interest before starting their registration.

The Registry plays an important role at the qualification and pre-qualification stages, which precede the approval of a contract. Before participating in a hiring process, a registered supplier can guarantee in advance that it meets the legal, economic and technical qualification requirements. Thus, the registered supplier is exempted from submitting documentation regarding these requirements during the hiring process, minimizing the risk of disqualification. Using registration as a tool for qualification and pre-qualification is provided for in Article 22 of the Petrobras Bid and Contract Regulation (RLCP).

Another benefit for suppliers who have already registered is that they get notifications about new public opportunities. Whenever a new announcement is posted on the Petronect Portal, registered companies whose affiliates are associated with the subject matter of the contract, to provide either goods or services, are informed via e-mail. This decreases the need to manually monitor bid publication in the Official Register (DOU) or on the Petronect Portal, optimizing the process for suppliers.

Registered parties have one more benefit: to participate in waivers due to value hiring processes, known as Automated Selections. Petrobras uses this methodology to hire goods and services up to the limit of the waiver of bidding due to value. For a company to participate in the Automated Selections, it is essential to be registered for the lines of interest.

A summary of Petrobras' main projects is presented in **ANNEX 9** of this report.

## 8. TRANSPETRO

TRANSPETRO is the PETROBRAS (the Brazilian NOC) subsidiary for the transportation tasks, it means, pipelines, ship tankers, truck tankers, importation and exportation terminals, storage terminals, responsible to transport:

- Crude oil (import and export)
- Liquid products such as: gasoline, diesel, aviation fuel, lubricants, ethanol
- Natural gas
- LNG
- Ethanol
- Biodiesel

As a wholly owned subsidiary of PETROBRAS, TRANSPETRO connects the NOC's production and refining areas. TRANSPETRO also provides services to private fuel distributors, to the petrochemical industry and to other companies in the oil and gas sector.

TRANSPETRO in numbers (meaning several businesses opportunities in services supply and spare parts purchases):

- 27 onshore terminals
- 21 waterway terminals
- 7,800 km oil pipelines
- 625 km gas pipelines
- 6,100 km of pipeline strip
- 33 transportation ships (tankers)
- 540 storage tanks
- 46 spheres
- 22 truck loading bases
- 1 railway loading base

TRANSPETRO is present in 17 Brazilian states and at the Federal District, counting with 17,035 employees (5,928 are own employees, 11,107 are outsourced). The ship fleet is on average 8.2 years old, and is spread in the following kinds:

- 10 suezmax
- 5 aframax
- 1 panamax
- 4 ships for transporting light fuels
- 6 gas' ships
- 7 offloading ships with DP system

During 2024, TRANSPETRO demonstrated huge contracting capacity, celebrating 502 long term contracts (goods and services), and issued 71,951 purchase orders (goods and services), that represents more than US$ 1,1 billion

dollars. During 2025, these numbers probably will be bigger, meaning business opportunities for foreign newcomers in the Brazilian supply chain.

It is possible to highlight the more often supplying opportunities:

Maritime Transportation
- Maintenance of naval systems;
- Acquisition of naval spare parts;
- Inspection and certification;
- Technical and administrative support;
- Shipping Agency and port services.

Corporate and Legal Department
- Office facilities;
- Property Security
- Vehicles with drivers;
- Technical and administrative support;
- Training;
- Legal advice;
- Medical Support.

Pipelines and terminals
- Maintenance/acquisition of industrial systems;
- Acquisition of parts and equipment;
- Technical and administrative support;
- Maintenance of tanks and spheres;
- Mechanical, electrical and instrumentation maintenance.

Finance
- Technical and administrative support;
- Accounting support services;
- Insurance;
- Audit and assessment.

To supply goods and services straight to TRANSPETRO, and participate of the bids, it is necessary to register at the PETRONECT website (the same used by PETROBRAS), all the necessary information could be found at www.petronect.com.br. Small businesses (bidding is not necessary for small purchases and small service contracting) the supplier must register previously at the website:

https://transpetro.com.br/transpetroinstitucional/negocios/canal-dofornecedor.htm

It is important to highlight that, during 2024, TRANSPETRO announced the demand of 25 transportation ships, to be constructed and delivered in eight years, it means several opportunities for goods and services suppliers, which could offer their products to the contracted shipyards, and shipyards.

The first contract bidding just happened and signatures are ongoing (updated April/2025) with the consortium composed by the shipyards RIO GRANDE – ERG, owned by the ECOVIX group, and MacLaren. The average price of the

ships contracted is US$ 69,5 million. The construction of the hulls will happen at the ERG facilities at the Rio Grande do Sul state, and the commissioning of the ships will be responsibility of the MacLaren shipyard, in Niterói city (close to Rio de Janeiro).

Detailing the next steps of the mentioned bid, TRANSPETRO's Contracting Area informs that the current scenario for the Construction of Ships is a bid that was launched in July/2024, with first step proposal opening at November/2024, referring to Opportunity Nº. 7004288893, with the object of Acquisition of four ships for the Transport of Light Products (fuels) from 15,000 to 18,000 TPB, for Cabotage Operation on the Brazilian Coast.

This bid was awarded to the Ecovix/MacLaren Consortium, and meanwhile, another ongoing bid, Opportunity Nº. 7004344317, whose object is the Contracting of eight Gas Tankers, scheduled to open in May/19th /2025. TRANSPETRO informed that in the event of an appeal being filed with the higher hierarchical authority, it must be submitted within ten days from the knowledge of this decision, delaying the process schedule.

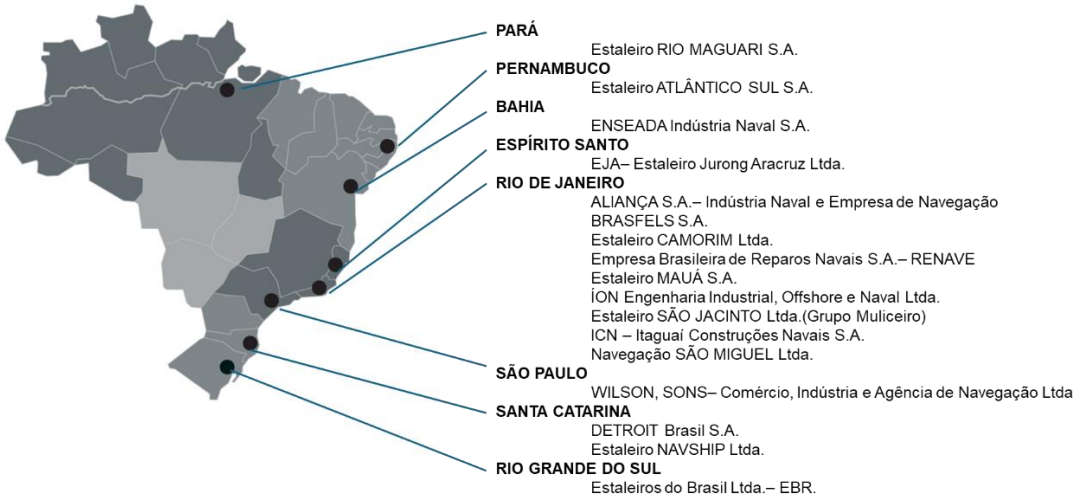
The projects and opportunities will be resumed in **Annex 6** of this report.

## 9. SINAVAL AND THE SHIPYARDS

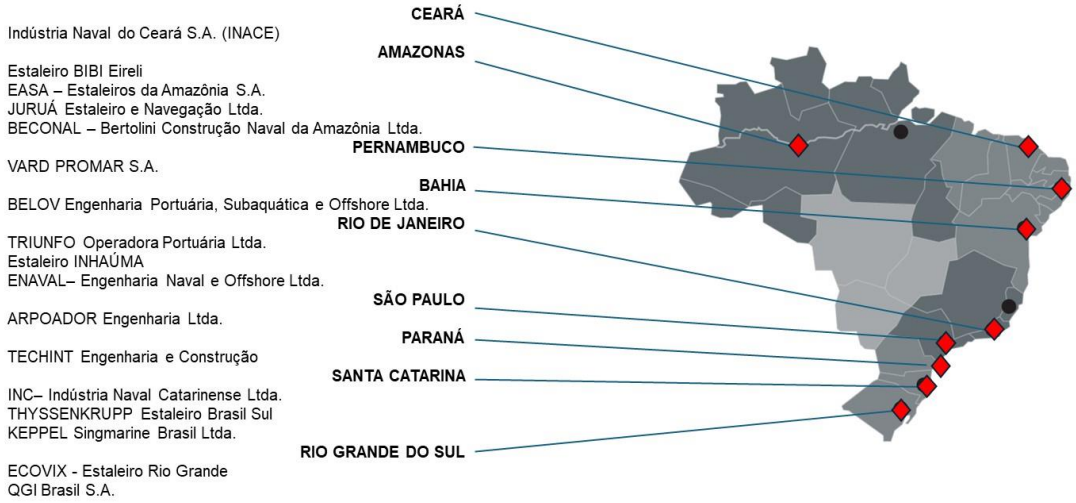
SINAVAL is a private entity that join relevant Brazilian shipyards, where the naval demands of the O&G industry are contracted, for example: supply boats, FPSOs, FSOs, transportation ships, etc. The maintenance of these offshore facilities is also carried out in the shipyards associated with SINAVAL.

It means, SINAVAL could be the first entrance to foreign clients choose a Brazilian shipyard to construct a supply boat, a ship, a production offshore facility or an offshore drilling rig and, if leasing its own ship to a Brazilian company, choose a maintenance competency in Brazil.

The shipyards associated to SINAVAL are shown at the next figure (Source – SINAVAL):




There are other Brazilian shipyards that **are not** associated to SINAVAL, they are shown at the next figure (Source – SINAVAL):



Most of the mentioned shipyards are also able to do, in addition to naval construction, services of naval maintenance, for example in transportation ships, SS platforms, drilling rigs, FPSOs, FSOs, jack-ups, supply boats, etc.

In accordance with SINAVAL (website), Brazil is facing a scenario different from the last 10 years, with the increase of the demands of the naval construction segment in Brazil, the participant companies of this sector are presently targeting in partnerships, a successful business model adopted years ago, when the market was very demanding.

The results of these partnerships have potential to enable to export naval construction products, the idea is to map complementarity between industries, creating competencies together, and leveraging the consortium to the international level of competitiveness.

The viewpoint is that the reheating of the naval construction demands has opened space for the search for partners that complement each other to meet the new projects requirements, after more than a decade of demobilization. A good and recent example is the Mauá shipyard, which entered in a partnership with Seatrium (Jurong/Keppel) to manufacture offshore “pancakes”, ordered for Petrobras' P-83 (FPSO).

Another recent and good example is related to the bid for contracting the new FPSO of the Albacora field, in the Campos Basin, that is already on the street. Petrobras released (early April) the tender notice and the dispute for the platform contract have the following pre-qualified bidders: Modec, Shapoorji, Yinson, MISC, BW Offshore, SBM Offshore, Ocyan and Altera (the last two companies, as is known, work in partnership under the Altera&Ocyan joint venture). The opening of the envelopes with the proposals is scheduled for October. However, as is common in this type of bidding, it is possible that this deadline will be extended.

In this bidding, the modality chosen was the BOT (Build Operate Transfer), by which the winning bidder will operate the FPSO for a certain period and then transfer the responsibility to Petrobras.

It is important to pay attention on the partnership’s negotiations between local and foreign companies, one of the attention points are the local legal peculiarities to foreign investors, this type of different legal approach is common in the negotiation phase of the contracts, but there are no insuperable barriers.

On the other hand, in the supply chain for the shipyards, just as example, is interesting to mention the Mauá shipyard (RJ), it intends to strengthen shipbuilding in the coming years, with the increase in the manufacture of metal structures in its facilities. The ship repair still relevant in the Mauá businesses.

Presently Mauá is targeting projects for new maritime support vessels that will be built in Brazil to meet Petrobras' demands. Other path is the construction of offshore supporting vessels, to attract to Mauá smaller projects in relation to oil tankers, but which have high added value and can be contracted with the

shipowners who won Petrobras' bids, paying attention that the new Petrobras demands for ships includes levels of Local Content.

In accordance with SINAVAL and Mauá representatives, several shipowners have asked for ship construction quotation, as per for PSVs (supply transport), for OSRVs (oil spill fighting) and or RSVs (vessels equipped with remote operated submersible vehicle - ROSV).

These examples, and other businesses in the same segment, are opportunities to be analyzed by newcomers in the Brazilian supply chain, aiming to supply goods and services for the first tiers service suppliers to oil companies and operators. **Annex 10** presents a resume of the opportunities, and the **Annex 11** a table with the capacities of each shipyard and its main manufacturing facilities (Source – SINAVAL).

## 10. FIRJAN, FIESP (AND OTHER INDUSTRY FEDERATIONS) PERSPECTIVES IN THE O&G INDUSTRY

FIRJAN (the Industry Federation of the State of Rio de Janeiro) works towards all the industries in Rio de Janeiro state and comprises 100 industrial employers' unions. Its mission is to promote business competitiveness, education and the quality of life of workers and society, contributing to the sustainable development of the state of Rio de Janeiro.

Through its affiliate organizations - FIRJAN SENAI (National Industrial Apprenticeship Service), FIRJAN SESI (Industry Social Service), FIRJAN IEL (Euvaldo Lodi Institute) and FIRJAN CIRJ (Industrial Center of Rio de Janeiro) - FIRJAN operates in key areas aiming at the development of Rio de Janeiro industrial sector and its economic impact. Furthermore, FIRJAN studies and researches fundamental subjects for the development of the industry aiming to anticipate trends, informing and pointing solutions for tax issues and bottlenecks in infrastructure, innovation, logistics, among others.

Understanding that the Oil, Gas and Maritime markets are highly important for the state, FIRJAN has in its structure the Oil, Gas and Maritime Management, which focuses on understating the projects ahead, translating it into opportunities for the supply chain, as well as on the regulations needed to foster investments in Rio de Janeiro's territorial waters and lands.

Another relevant industry federation in Brazil, maybe the most important, FIESP (the Industry Federation of the State of São Paulo) is the biggest class entity of the Brazilian industry. It represents around 130 thousand industries of several sectors, of all sizes, comprising to the most different production chains, comprising 131 employers' unions. Its mission is to represent the productive sector, to defend the private initiative and the market economy, and to be aware of national issues that affect the industrial activity and the development of the country.

Through its departments and partners FIESP offers its affiliated industries a portfolio of products, services, publications, studies, classes, training, etc., aiming at improving the industries management processes, with focus on the continuous search of strengthening of São Paulo industry.

FIESP provides information about technical and regulatory requirements and how to access them, identifies local consumers preferences, makes on site researches, identifies opportunities for the insertion of Brazilian products, and generates networking and introduction to market channels.

The federation has postulated themes related to oil and gas sectors, such as the expansion of gas transportation network and tariff transparency. Recently, FIESP renewed its affiliation to ONIP (National Organization of Petroleum Industry).

Above all state industry federations, CNI (National Confederation of Industry) congregates 27 state industry federations. CNI is the main organization

representing Brazilian industry. Its challenge is to increase the competitiveness of Brazilian industry by influencing the policy environment. To this end, it engages in policy dialogue with Congress, the federal government and the judiciary. It is the highest body of the industry trade union system and, since its foundation in 1938, it has defended the interests of the national industry.

It represents 27 state federations of industry and 1,280 trade unions, to which almost 700 thousand industries are affiliated. It is directly in charge of the Industrial Social Service (SESI), the National Service of Industrial Training (SENAI) and Instituto Euvaldo Lodi (IEL). Together, these three organizations form the Industry System, which yet assembles the state-level industry federations and trade unions.

The map below shows the state federations of industry:


Among the 27 state federations, these are the most relevant for the oil and natural gas industry, after Rio de Janeiro and São Paulo federations:

- Industry Federation of the State of Alagoas
- Industry Federation of the State of Amapá

- Industry Federation of the State of Bahia
- Industry Federation of the State of Ceará
- Industry Federation of the State of Espírito Santo
- Industry Federation of the State of Maranhão
- Industry Federation of the State of Minas Gerais
- Industry Federation of the State of Pará
- Industry Federation of the State of Rio Grande do Norte
- Industry Federation of the State of Rio Grande do Sul
- Industry Federation of the State of Santa Catarina
- Industry Federation of the State of Sergipe

**Annex 12** presents a summary of the opportunities envisaged by the industry federations of Rio de Janeiro and São Paulo.

## 11. PPSA – OPPORTUNITIES RELATED WITH THE PRE-SALT LAYERS

PPSA (Pré-Sal Petróleo) is a federal public company, linked to the Brazilian Ministry of Mines and Energy, responsible for the management of contracts under the sharing regime, for the representation of the Union in the agreements for the unitization of production and for the commercialization of the Union's oil and natural gas parcels.

There are 24 production sharing contracts in force in Brazil, nine of which are commercial contracts (eight in production), ten in exploration and five in the process of being returned.

Production sharing contracts account for about 45% of Brazil's reserves and approximately 30% of national O&G production. Together, the eight contracts are producing about one million barrels/day.

The contracts are explored by 15 companies, five of which are operators (and, in consequence, decision makers): Petrobras, Equinor, British Petroleum, Shell Brasil and ExxonMobil. Petrobras is the company with the largest participation in the contracts.

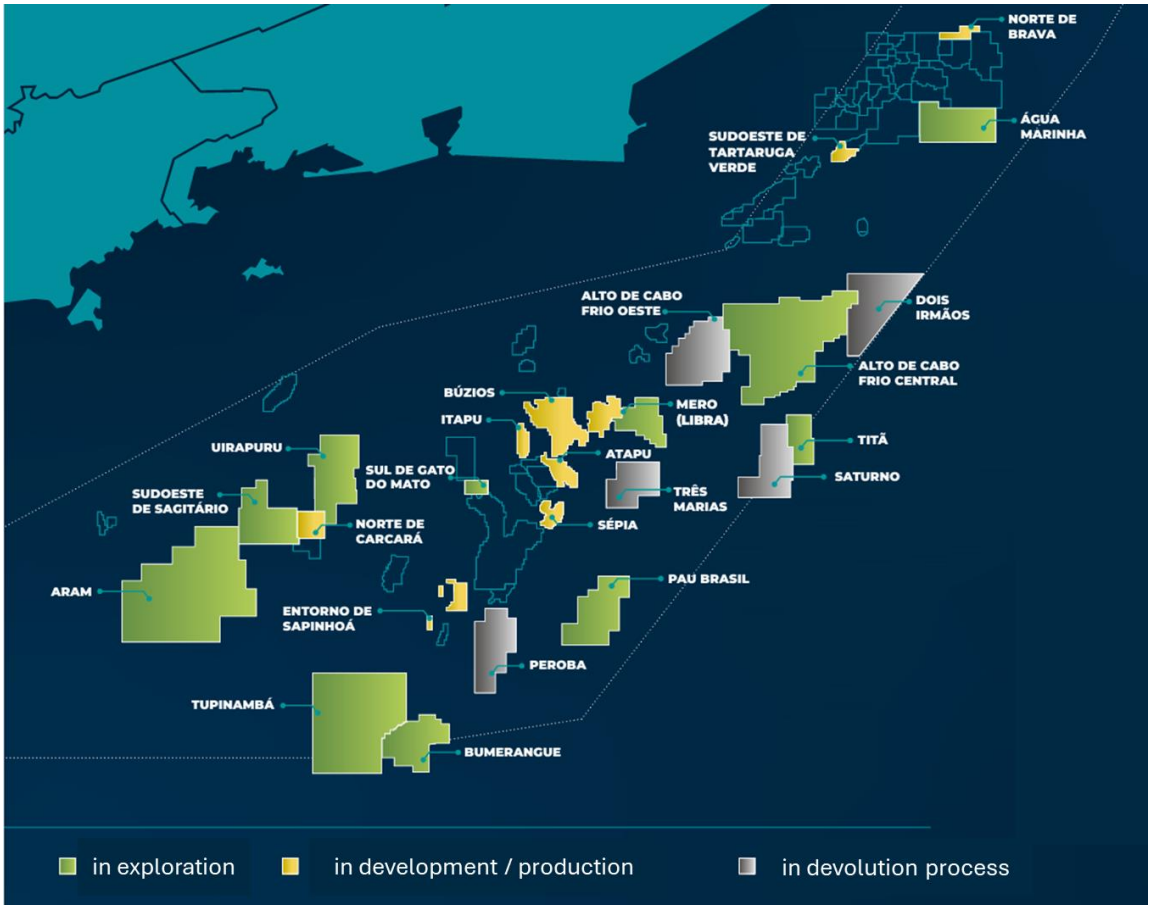



Figure 11.1 – PPSA contracts (Source - PPSA)

Sharing oil production began in 2017 in the then Mero Development Area, with an average of 7,000 barrels/day (bpd). Gradually the other contracts started production, surpassing the barrier of 500 thousand bpd in 2022 and reaching almost one million bpd in 2024.

The oil-sharing production curve will grow continuously until 2030, when it will peak at around 2,2 million bpd. From then on, a period of decline will begin, even considering, between 2029 and 2034, the entry into production of undiscovered resources.

It is important to highlight that approximately 96% of the production under the sharing regime in the next decade will come from projects with reserves already discovered (it means long term business for the oil companies, operators and the supply chain).

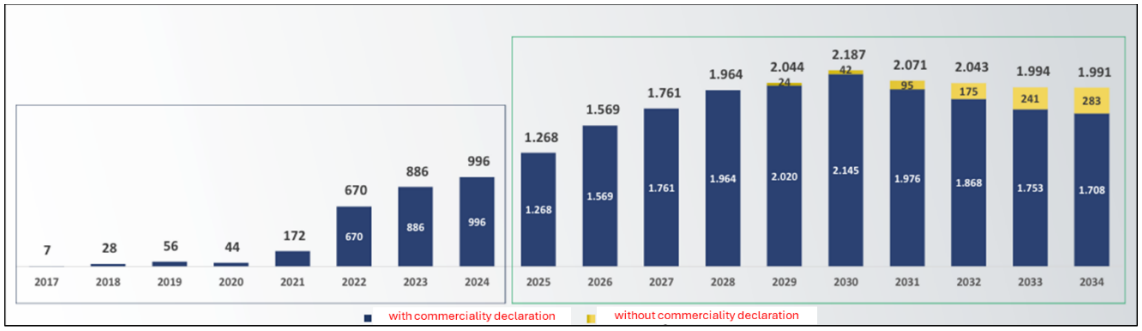



Figure 11.2 – Production-sharing curve, total amounts - bpd (Source - PPSA)

The production of natural gas available for export on a sharing basis began in 2018 with the Sapinhoá and Tartaruga Verde Sudoeste contracts, with about 500 thousand cubic meters per day (m³/day). In 2021, gas production began from Búzios in production sharing and in 2023, the Espadim and Sépia fields also started production. In 2024, the average daily production of natural gas is about 3,4 million m³/day.

The natural gas availability curve under the sharing regime will jump in the coming years. In 2025, production doubles, reaching 7,3 million m³/day and more than doubles again in 2030, when it peaks, with 16,8 million m³/day.

It is important to consider that, as shown in the next graph, approximately 99% of the gas production under the sharing regime in the next decade will come from projects with already discovered reserves.

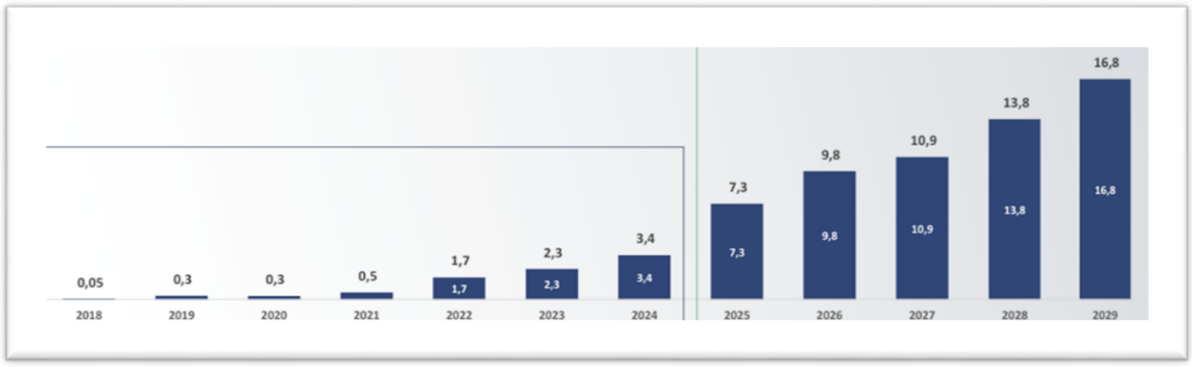



Figure 11.3 - total NG available - production sharing contracts (million m³/day)

The expected investments are huge, as the estimated study is condensate in the next graphs. PPSA estimates that up to 18 exploratory wells will be drilled by 2028.

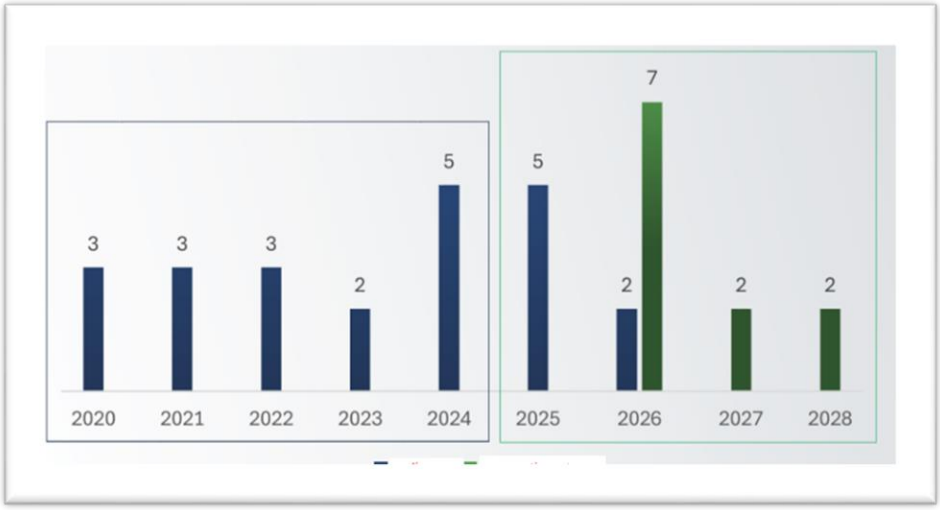



Figure 11.4 – wells drilled during 2020/2024 and predicted to be drilled from 2025 to 2028 – (Source ANP)

On the other hand, PPSA estimates that 134 new development and production wells will be drilled by 2029.

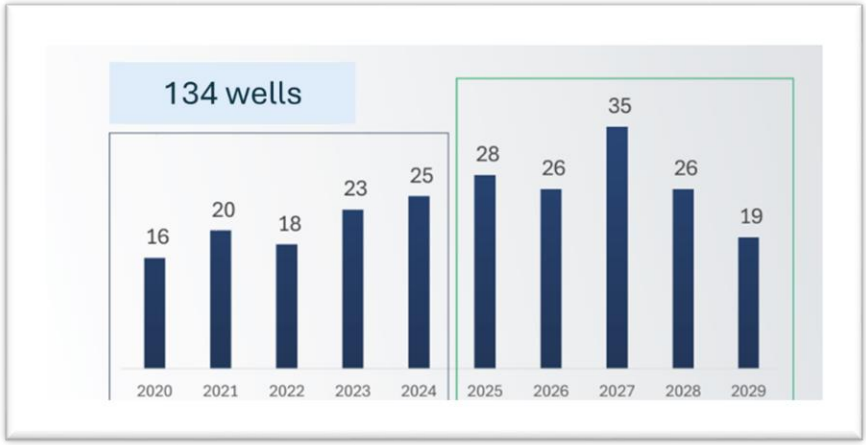


Figure 11.5 – wells drilled during 2020/2024 and predicted to be drilled from 2025 to 2029 – (Source ANP)

For the development of the contracts, US$ 53 billion should be invested by 2029. The next graph shows the past and the predicted investments.

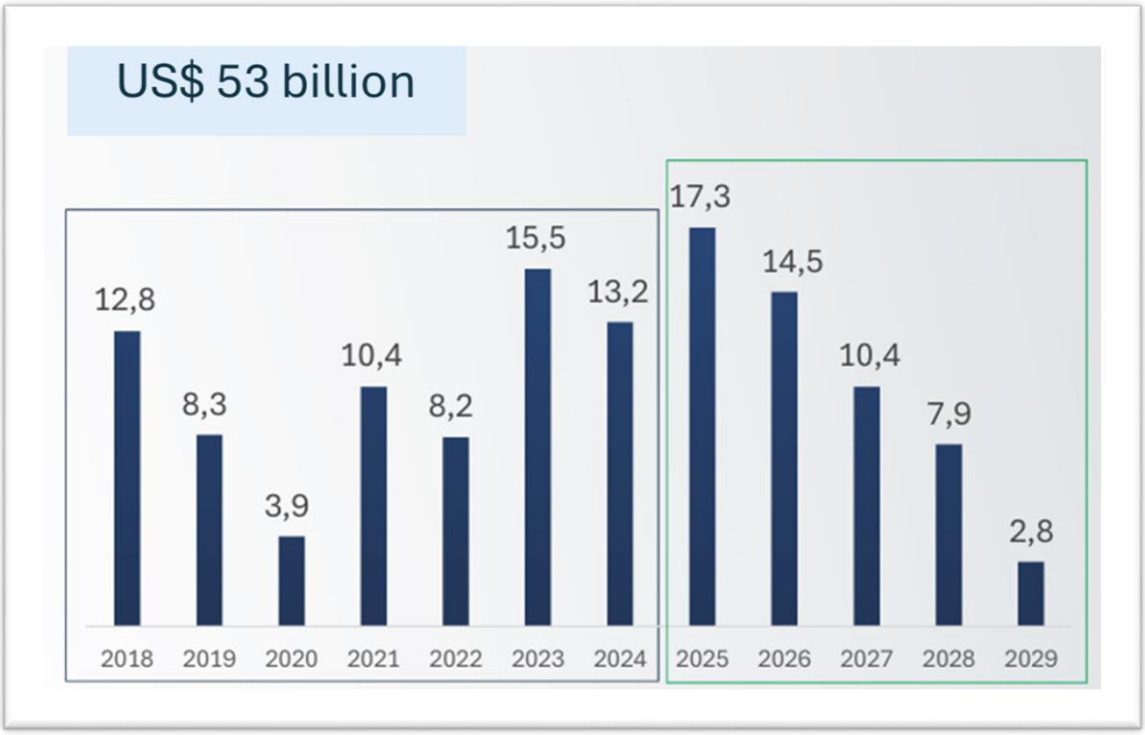



Figure 11.6 – investments during 2018/2024 and predicted to be invested from 2025 to 2029 – (Source ANP)

It is important to highlight, for the development of those fields, the study estimates the contracting of 11 FPSOs.

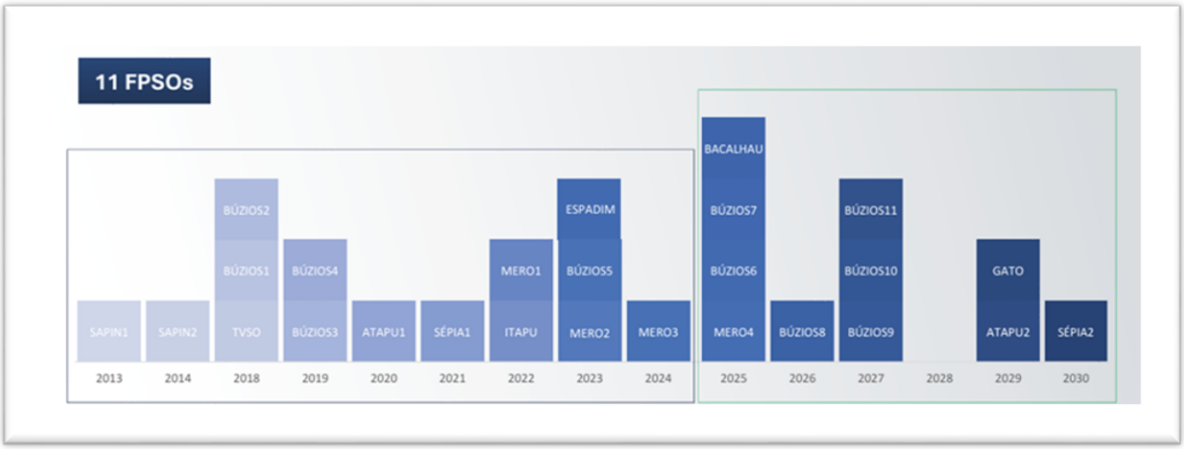


Figure 11.7 – FPSOs per field during 2013/2024 and predicted FPSOs in each field from 2025 to 2030 – (Source ANP)

The business opportunities are resumed at **Annex 8**.

# 12. R&D PROJECTS: OPPORTUNITY FOR PARTNERSHIPS AND FINANCING IN BRAZIL

Foreign companies could benefit from the R&D available resources, based on the obligation of the E&P contracts established between ANP and the oil companies. The available amounts are huge, as could be seen at Table 12.1 ahead, and could finance projects of innovation, basic science, solutions for environmental challenges, goods and services new technology developments, etc.

About the "Clause of R&D&I", in short, it could be highlighted:

- Only Brazilian R&D entities and Brazilian companies (manufacturers or service providers) could apply for the sponsorship of this R&D&I clause's resources;
- Foreign companies could participate of the developing projects in partnership with Brazilian companies or R&D Brazilian entities;
- Oil companies, keep the R&D&I "stamped" resources in its own accounts;
- Oil companies choose the technological demands, create a project selection system for choosing the entity/company to do the developments;
- Supplying companies and R&D entities proposed the projects straight to the oil companies that have available financing capacity (from the obligation of the R&D&I clause);
- ANPs establish and keep the rules and perform assessments in each project;
- There are demands for small, medium and big-sized suppliers;
- Oil companies often offer financial support, as well as technical information, operational experience of the technical team, and field test scenario;
- The scope of the proposed projects could be: technological development, prototype manufacturing, prototype tests (lab and field), laboratory facility assembly, pilot lot manufacturing, technical training facilities, and several others.

Successfully developed engineering solutions and the respective developing companies are incorporated in the oil company roll of solutions and suppliers.

Foreign companies interested in this path, with financing and technical support, must previously establish a partnership with a Brazilian manufacturer (or service provider) that will be the contracted company that must, actively, participate in the development process, qualification tests and prototype manufacturing.

Concerning Petrobras, the oil company with more accumulated resources: the R&D&I main trends are:

- Cross-cutting themes
  - Artificial Intelligence
  - Machine Learning
  - Digital Transformation
- E&P

  - Intelligent Completion
- Energy transition
  - CCUS
  - Hydrogen
  - Biofuels
- Environmental Protection
  - Offshore and aquatic oil spill monitoring systems
  - Gas and liquid leaking monitoring and alert systems for pipelines

Just to exemplify the magnitude of the program, just in Petrobras, during 2023, 614 new R&D&I projects started, forecasting more than US$ 1,0 billion.

Detailed information about R&D&I projects and available resources, classified by company, could be accessed in the ANP's website, at the "R&D BI Dynamic Panel". At the same Panel, the 1091 Brazilian research accredited R&D institutions are listed (updated Nov/2024). Other information about the R&D projects could be downloaded at the address:

www.gov.br/anp/pt-br/centrais-de-conteudo/paineis-dinamicos-da-anp/paineis-dinamicos-sobre-exploracao-e-producao-de-petroleo-e-gas/painel-de-obrigacoes-de-investimento-em-pd-i

During the period of 2018 and 2024, the total amount, per company, accumulated as R&D&I investment obligation could be observed at the next table (most of them still available for new projects):

Table 12.1 - Accumulated investment obligation - R&D&I

| OIL COMPANY | Investment obligation in Brazilian currency (updated Nov/2024) |
|---|---|
| CNODC Brasil | R$ 213,454,621.47 |
| CNOOC Petroleum | R$ 284,477,418.65 |
| Enauta | R$ 9,221,467.72 |
| Eneva | R$ 1,966,685.31 |
| Equinor | R$ 307,848,889.48 |
| GeoPark | R$ 2,049,215.01 |
| Karoon Brasil | R$ 64,937,643.92 |
| Petrobras | R$ 14,807,106,239.95 |
| Petrogal | R$ 832,534,633.63 |
| Petronas | R$ 290,876,388.06 |
| PetroRio | R$ 181,819,814.97 |
| Qatar Energy | R$ 73,992,691.67 |
| Repsol Sinopec | R$ 481,404,767,10 |
| Shell | R$ 2.899.226.059.62 |
| Total Energies | R$ 576,682,339.84 |
| Total | R$ 21,027,598,876.40 |

(average rate during 2024 last quarter – US$ 1.00 = R$ 5.85)

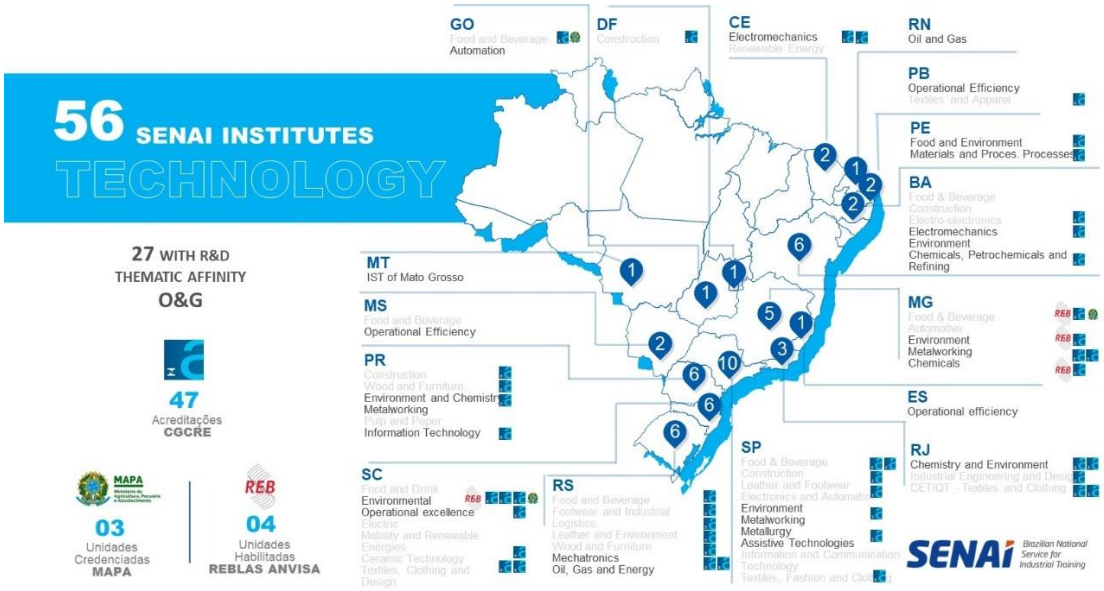
A quick view over the R&D opportunities can be found at **Annex 13**. Other information about R&D projects and ANP's related activities can be found at:

https://www.gov.br/anp/pt-br/centrais-de-conteudo/dados-abertos/dados-abertos-pesquisa-e-desenvolvimento-e-inovacao-pd-i

# 13. SENAI: TECHNOLOGICAL SUPPORT, TRAINING AND LABORATORY FACILITIES

The activities of SENAI (acronym in Portuguese for National Service of the Industry) are shared by its national headquarters and Regional Departments, governed by the organization and administration of the Brazilian National Confederation of Industry (CNI) and industrial federations, which bring together about 1,300 syndicates (unions) and 930 thousand industries (all sized firms) from 27 federative units of the country.

SENAI is a private institution, which congregates innumerous activities in education, training, R&D, technological services, and several others, supporting the Brazilian industry in its needs.

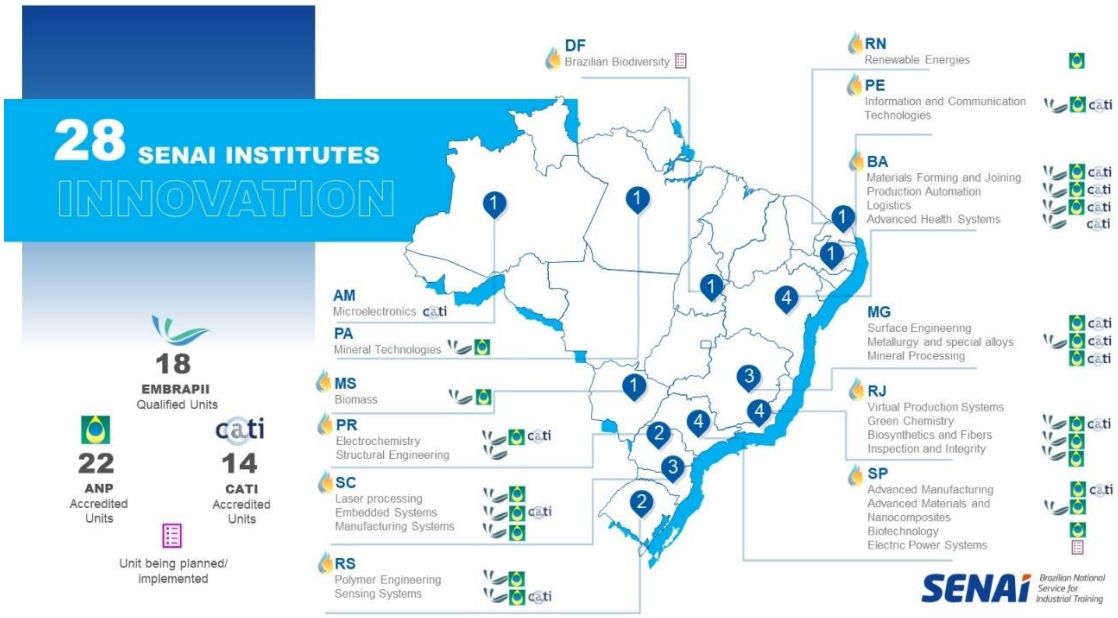



SENAI is focused on the modernization of the industry with an emphasis on innovation, qualification of the workforce connected to productive and competitive efficiency, integration with the international market and environmental commitment guided by the premises of the green economy.

Since 1942, SENAI have been working to promote the professional training of workers and cooperate with the development of technological research that keeps the Brazilian industry competitive in relation to the two other nations.

On the path towards neo-industrialization, SENAI recognizes Brazil's potential as a protagonist of the green economy and its role in the industrial sustainability ecosystem, which encompasses professionals and companies throughout the national production chain.

Concerning the O&G core businesses, SENAI has 22 Innovation Institutes with a thematic affinity for R&D in the O&G segments. The more active and with better opportunities for foreign companies, newcomers in the Brazilian market, is CIMATEC, at the Bahia state.




CIMATEC is an education and research institution, linked to SENAI, located in Bahia state, the foundation of the oil industry in Brazil.

CIMATEC's campus is a cutting-edge innovation ecosystem, which integrates more than 40 technological areas with a diverse performance in education, service provision and applied research/development.

With its integrated model, CIMATEC has great capacity to develop technological solutions for different industrial sectors at all Levels of the Technology Readiness (TRL) scale.

CIMATEC has a set of testing and calibration laboratories, performing tests and calibration in more than 600 parameters. Most of the laboratories are accredited by INMETRO.

This transversal and multidisciplinary character is completed with its physical infrastructure and a highly qualified team, which allows it to act at the frontier of knowledge and create solutions to the Brazilian technological challenges.

To expand its support and service to the Brazilian industry, CIMATEC recently created its OCP – Product Certification Body. The OCP, in its first phase, seeks to meet the certification of PCE - Products Controlled by the Brazilian Army and has a master plan to expand its operations in other industrial sectors, carriers of future and competitiveness, which require the certification of products, such as O&G.

Certification is a process in which an independent body evaluates whether a particular product or service meets a technical standard, based on certification models or schemes, which include audits of management system, production process, handling of complaints, sample collection and testing of the products in qualified laboratories.

When in conformity, the right is granted to the company to use the SENAI-CIMATEC-OCP mark on the certified product, assuring consumers that production is controlled, and that the product complies with a certain technical standard. Depending on the product and its application, the certification process can happen either voluntarily or compulsorily.

More information can be obtained by e-mails: senaicimatec.ocp@fieb.org.br or falecomsenaicimatec@fieb.org.br .

As an important complementary action to teaching, research, development and innovation activities, SENAI CIMATEC Park was inaugurated in 2019, which represents the beginning of a new era for industrial innovation in Bahia state and Brazil, located in the heart of the Camaçari's Industrial Complex.

The CIMATEC Park provides physical space for technology-based companies, national and foreign, that may establish themselves in Brazil, to find a suitable place for their expansion processes, offering the convenience of all the support of technological services that CIMATEC can offer close to the company new location. It means, CIMATEC is a feasible alternative to foreign companies, landing in Brazil, made its first local establishment.

Engineering services, specialized technical services, applied research and technological innovation projects are available providing the continuous increase in the standard of quality and productivity of companies, supported by a modern infrastructure, with state-of-the-art equipment and laboratories and highly qualified professionals, trained to identify and meet the needs of companies of all sizes and segments.

The diversity of services and physical proximity favors the reduction of initial investments, optimizing the implementation processes of companies, which can count on a wide range of services, which here are highlighted at **Annex 14**.

## 14. FINAL REMARKS

There are several opportunities in the Brazilian O&G market, passing through all tiers of the segment, it means, oil companies, transportation companies, offshore operators, distribution companies, logistic companies, EPC companies, large goods and services suppliers (for onshore and offshore), small and medium sized goods and services suppliers (for onshore and offshore), shipyards, transportation ship's companies, biofuel producers, refineries, electric generation companies, and several others, covering all the steps of the O&G industry.

It is possible to contract/purchase almost all the demands of the O&G industry locally. On the other hand, most of the engineering competency developed during several decades was dissolved during recent years, when the engineering companies and their project teams were impacted by the local market reality (market breakdown), concerning new project demands. It has slowly been reconstructed presently.

Competencies need to be further developed in the refining segment, most specifically in the thermal projects. Presently all the former design thermal teams are disassembled, creating a lack of capacity to design new projects, including the herein mentioned small refineries, a tendency for the recent and next years in Brazil.

The present owners of the natural gas projects and the necessary revamps in the former Petrobras' assets are potentially relevant and demanding clients. It is important to know that, to work in EPC projects foreign companies must be established formally in Brazil (legal requirement**).

** In accordance with the Brazilian law, foreign companies legally established in Brazil are considered Brazilian companies, without differences if compared with the companies originally created in Brazil.

It is also important to highlight that to supply equipment, spare parts and systems, a foreign company must comply just with the oil company's requirements and international technical regulations. Having a local partner to perform after-sales quickly and efficiently is very valuated by the customers.

Opportunities for oil companies spread from onshore mature fields to offshore ultra-deep water, and it is important to maintain up-dated information about the O&G industry tendencies through the websites of ANP and oil companies operating in Brazil. Other segment with growing demands is the naval construction, with demands that will reach straight foreign shipyards and potentialize partnerships between Brazilian and foreign shipyards.

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# ANNEX 1 – 5TH OPEN ACREAGE ROUND – OPC (ONGOING)

## Opportunities for oil companies

| **PROJECT TITLE** | **Exploratory Blocks – Offshore and Onshore** |
|---|---|
| Project overview | Presently ANP is announcing the **5th cycle of the Open Acreage of Concession** (OPC, in the Portuguese acronym), it was published on 12th/Feb 2025, starting the cycle, where 332 exploration blocks are available, located in various sectors listed in the ANP's current version of the Tender Protocol of OPC. |
| Project location | Several locations around Brazilian territory. |
| Project website | https://www.gov.br/anp/pt-br/rodadas-anp/oferta-permanente/opc/blocos-exploratorios |
| Sectors of interest | Offer of 332 exploratory blocks (oil and natural gas), 44 onshore, 133 offshore in shallow waters and 155 offshore in deep or ultra-deep waters. |
| Total project cost | Not defined, but with potential investments of around one billion US dollars. |
| Procurement / contract model | Concession agreement |
| Nature of investment | Rights of exploration, with a clause of extension in case of commercial discovery |
| Timeframe | Recent steps in April and May/2025. Proposal expected to be presented to ANP during June/2025 |
| Institution responsible | ANP (National Agency for Petroleum, Natural Gas and Biofuels) |

# ANNEX 2 – 3RD OPEN ACREAGE ROUND – OPPP

## Opportunities for oil companies

| **PROJECT TITLE** | **Exploratory Blocks – Offshore** |
|---|---|
| Project overview | In 2025, another bigging is programmed, it means the 3rd Open Acreage – Production Sharing (OPPP). Forecast (in this 3rd Round) of offering of 14 offshore blocks, 8 in the Santos Basin and 6 in the Campos Basin. |
| Project location | Several locations around Brazilian territory. |
| Project website | https://www.gov.br/anp/pt-br/rodadas-anp/oferta-permanente/opc/blocos-exploratorios |
| Sectors of interest | Exploration of up to 14 offshore blocks of oil and natural gas onshore and offshore reservoirs |
| Total project cost | Not defined |
| Procurement / contract model | Production sharing (PS) contracts |
| Nature of investment | Rights of exploration (PS), with a clause of extension in case of commercial discovery |
| Timeframe | The new version of the notice is in the process of validation by other governmental institutions and its publication is scheduled for May 2025. |
| Institution responsible | ANP (National Agency for Petroleum, Natural Gas and Biofuels) |

# ANNEX 3 – SUPPLYING GOODS AND SERVICES FOR BLOCK WINNERS (OIL COMPANIES)

**Opportunities for the O&G supply chain**

| **PROJECT TITLE** | **Supply G&S to oil companies, winners of exploratory blocks – offshore and onshore** |
|---|---|
| Project overview | Foreign companies, looking for new clients in the Brazilian O&G market, and interested to identify the winners of last bidding rounds, must realize that the winners are potential clients.<br><br>At the 3rd chapter of this report the names of the winners of the last 4 bidding rounds are listed. |
| Project location | Several locations around Brazilian territory. |
| Project website | https://www.gov.br/anp/pt-br/rodadas-anp/oferta-permanente/opc/blocos-exploratorios |
| Sectors of interest | Supply chain, opportunities for suppliers of goods and services. |
| Total project cost | Not defined |
| Procurement / contract model | Not defined |
| Nature of investment | Not applicable |
| Timeframe | Ongoing demands, in several steps of the blocks' developments. |
| Institution responsible | Oil companies, winners of the bidding rounds. |

# ANNEX 4 – SUPPLYING GOODS AND SERVICES FOR NG PRODUCERS, IMPORTERS, TRANSPORTERS, AND DISTRIBUTORS

**Opportunities for the O&G supply chain**

| **PROJECT TITLE** | **Supply G&S to NG producers, importers, transporters, and distributors.** |
|---|---|
| Project overview | Foreign companies, looking for new clients in the Brazilian O&G market, and interested to identify the potential clients, must realize that they could found than in the following areas:<br>• gauges, valves, connectors, tubing, coating, corrosion protection, leak detection, automation and control, compressing systems, storage equipment, city-gates, pigs, instrumented pigs, gasification and degasification systems, aerial image-based monitoring systems, home and commercial metering devices, etc.<br>• pipe assets maintenance, pipeline installation, pipeline inspection, calibration, metering, pigging services, NG transportation services, pipeline strip monitoring services (instrumentation and aerial survey), spectral photography, image and geological data analyzing, urban pipelines installation and maintenance, etc.<br>At the 4th chapter of this report are mentioned the names of the oil companies (NG producers), importers, transporters and distributors. |
| Project location | Several locations around Brazilian territory. |
| Project website | www.abegas.org.br |
| Sectors of interest | Supply chain, opportunities for suppliers of G&S.<br>For distributors, the number of items (parts for new projects and repairs) are huge (gauges, connectors, pipes, etc.), but the items' complexity is smaller.<br>The distribution companies manage their supply chain independently, it means, new suppliers must choose the ones to start businesses in Brazil. |
| Total project cost | Not defined |
| Procurement / contract model | Not defined |
| Nature of investment | Not applicable |
| Timeframe | Ongoing demands, in several segments of the NG industry, spread over the companies. |
| Institution responsible | NG producers, importers, transporters and distributors |

ANNEX 5 – NG BUSINESSES

**Opportunities for oil companies and NG transporters**

| | |
|---|---|
| **PROJECT TITLE** | **NG production, transportation, importing, storage.** |
| Project overview | The nick named "Gas Law" (Lei do Gás), recently implemented, is moving the NG marketing, turning the NG segment more agile and transparent, resulting in several businesses opportunities for producers (oil companies) and importers and transporters.<br>It could be highlighted:<br>• to establish partnership with block winners.<br>• acquire new blocks in ANP's bidding rounds.<br>• acquire assets presently owned by other oil companies.<br>• establish an LNG importation route to Brazil.<br>• install a regasification terminal or a partnership of an existing one.<br>• identify local partners (or own facility) for NG storage. |
| Project location | Several locations around Brazilian territory. |
| Project website | www.abegas.org.br<br>www.atgas.org.br<br>www.abep.org.br<br>https://abrace.org.br<br>https://abraceel.com.br<br>https://abraget.com.br<br>www.gov.br/anp<br>www.atgas.org.br |
| Sectors of interest | NG production, transportation, importing, storage. |
| Total project cost | Not defined |
| Procurement / contract model | Not defined |
| Nature of investment | Not defined |
| Timeframe | Ongoing |
| Institution responsible | Oil companies, transporters, terminal operators, pipeline operators, etc. |

# ANNEX 6 – MARITIME TRANSPORTATION AND PIPELINE TRANSPORTATION

**Opportunities for shipyards and the supply chain (goods and services)**

| PROJECT TITLE | **TRANSPETRO fleet renovation and maintenance and other transporters demands.** |
|---|---|
| Project overview | TRANSPETRO is the biggest transportation company in the O&G segment. As described in the report, recently (bid started late 2024) contracted the construction of new oil transportation ships and other will come, opening opportunities for shipyards (construction) and the supply chain (supplying G&S).<br>Another important business opportunity with TRANSPETRO is the maintenance of the fleet (including huge services, as ship overall and docking) and maintenance of the pipeline net. The more often (and relevant for foreign suppliers) are:<br>Maritime Transportation<br>• Maintenance of naval systems;<br>• Acquisition of naval spare parts;<br>• Inspection and certification;<br>• Shipping Agency and port services.<br>Corporate and Legal Department<br>• Property Security<br>• Technical and administrative support;<br>• Training;<br>• Legal advice.<br>Pipelines and terminals<br>• Maintenance/acquisition of industrial systems;<br>• Acquisition of parts and equipment;<br>• Technical and administrative support;<br>• Maintenance of tanks and spheres;<br>• Mechanical, electrical and instrumentation maintenance.<br>Finance<br>• Technical and administrative support;<br>• Accounting support services;<br>• Insurance;<br>• Audit and assessment. |
| Project location | Several locations around Brazilian territory. |
| Project website | www.transpetro.com.br<br>Other 5 pipeline transporters mentioned herein (chapter 4). |
| Sectors of interest | Ship and pipeline transportation. |
| Total project cost | Not defined |
| Procurement / contract model | https://transpetro.com.br/transpetroinstitucional/negocios/canal-dofornecedor.htm |
| Nature of investment | Not defined |
| Timeframe | Ongoing |
| Institutions responsible | TRANSPETRO (ship and pipeline).<br>The other 5 pipeline transportation companies are mentioned in this report (chapter 4). |

# ANNEX 7 – REFINING SEGMENT

**Opportunities for the supply chain (goods and services)**

| **PROJECT TITLE** | **Supply goods and services for the refining segment.** |
|---|---|
| Project overview | PETROBRAS still the largest refining company in Brazil, in number of facilities and processing capacity.<br>Former PETROBRAS's refining assets are, presently, owned by private companies, as described in this report.<br>The contracting processes of each one differ, it means, the new suppliers may register and negotiate with each one, but there are opportunities in all the refineries (the facilities are old, but very well maintained). |
| Project location | Several locations around Brazilian territory, mentioned at Chapter 5. |
| Project website | www.petrobras.com.br<br>Other oil companies mentioned herein (chapter xx). |
| Sectors of interest | Ship and pipeline transportation. |
| Total project cost | Not defined |
| Procurement / contract model | www.petrobras.com.br<br>www.petronect.com.br (registering as a Petrobras' supplier) |
| Nature of investment | Not defined |
| Timeframe | Ongoing |
| Institutions responsible | www.petrobras.com.br<br>Other oil companies mentioned herein (Chapter 5). |

# ANNEX 8 – PRE-SALT LAYER PRODUCTION

**Opportunities for the oil companies, supply chain and crude and gas traders**

| **PROJECT TITLE** | **Pre-salt layer production, businesses in several areas** |
|---|---|
| Project overview | PPSA is responsible for part of the pre-salt layer production, conducting auctions of crude oil and natural gas (for oil companies and traders), pre-salt block biddings (for oil companies), generating opportunities for the supply chain to do business with the oil companies and offshore operators. |
| Project location | Offshore in the pre-salt polygon. |
| Project website | www.presalpetroleo.gov.br |
| Sectors of interest | • Offshore production in ultradeep water E&P<br>• Oil and gas trading.<br>• EPC for shipyards, contracted by oil companies and operators.<br>• Supply chain to shipyards (construction), oil companies and operators (operation). |
| Total project cost | Not defined |
| Procurement / contract model | Depending on the business |
| Nature of investment | Not defined |
| Timeframe | Ongoing |
| Institutions responsible | www.presalpetroleo.gov.br |

# ANNEX 9 – PETROBRAS' MAIN PROJECTS

| PROJECT TITLE | **Lubricant Unit** |
|---|---|
| Project overview | Construction of a lubricant factory, based on the connections of Petrobras' Gaslub Cluster, close to the city of Itaboraí, in the center of Rio de Janeiro State, to Petrobras' Reduc (Duque de Caxias Refinery), allowing the production of high-quality lubricant and fuels from intermediate products of the refinery. Petrobras' Gaslub is under construction and is going to be fed with natural gas produced at Pre-Salt fields. |
| Project location | Rio de Janeiro State. |
| Project website | https://petrobras.com.br/nossas-atividades/principais-operacoes/refinarias/polo-gaslub-itaborai.htm |
| Sectors of interest | Lubricants; Refinery; Oil |
| Total project cost | US$ 1.5 billion |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Public |
| Timeframe | Research phase |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Natural Gas Power Plant** |
|---|---|
| Project overview | Construction of a natural gas power plant at Petrobras' Boaventura Complex, close to the city of Itaboraí in the center of Rio de Janeiro State. Petrobras' Boaventura Complex is under construction and is going to be fed with natural gas produced in Pre-Salt fields. Presently, there is a natural gas processing unit operating in its initial stage. |
| Project location | Onshore Rio de Janeiro State. |
| Project website | https://petrobras.com.br/nossas-atividades/ |
| Sectors of interest | Generation of electricity |
| Total project cost | Not defined |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Contracting phase |
| Institution responsible | Petrobras |

| PROJECT TITLE | **Gaslub Thermal Power Plant** |
|---|---|
| Project overview | Natural gas power plant at GasLub Hub |
| Project location | Rio de Janeiro State |
| Project website | https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/polo-gaslub-itaborai.htm |
| Sectors of interest | Power Generation |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Public |
| Timeframe | Under evaluation |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Exploratory Wells** |
|---|---|
| Project overview | Drilling of 51 exploratory wells in the period between 2025 and 2029. |
| Project location | Offshore and onshore Brazil, onshore Argentina and Bolivia, and offshore Colombia, São Tomé and Principe, and South Africa |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil and natural gas |
| Total project cost | US$ 7,9 Billion |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Refineries Turnarounds** |
|---|---|
| Project overview | Several turnarounds in Petrobras refineries. |
| Project location | Several states |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil and natural gas |
| Total project cost | US$ 3,8 billion |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 - 2029 |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Sururu Central Pilot Project** |
|---|---|
| Project overview | Initial phase of the production of Sururu Central oil field, to start operations in 2027. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | US$ 5 Billion |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Tupi 1 Revitalization** |
|---|---|
| Project overview | Additional development of Tupi field, phase 1. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |
| **PROJECT TITLE** | **Búzios 12** |
| Project overview | 12th phase of Búzios field development, to start operations in 2027. |

| | |
|---|---|
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| **PROJECT TITLE** | **Búzios 10** |
|---|---|
| Project overview | 10th phase of Búzios field development, to start operations in 2027. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| **PROJECT TITLE** | **Búzios 11** |
|---|---|
| Project overview | 11th phase of Búzios field development, to start operations in 2027. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| **PROJECT TITLE** | **Búzios 8** |
|---|---|

| | |
|---|---|
| Project overview | 8th phase of Búzios field development, to start operations in 2026. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Búzios 9** |
|---|---|
| Project overview | 9th phase of Búzios field development, to start operations in 2026. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Atapu 2** |
|---|---|
| Project overview | Second phase of the development of Atapu field, to start operations in 2029. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Contracting phase |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Sépia 2** |
|---|---|
| Project overview | Second phase of the development of Sépia field, to start operations in 2027. |

| | |
|---|---|
| Project location | Offshore Rio de Janeiro State |
| Project website | https://petrobras.com.br/en/ |
| Sectors of interest | Oil |
| Total project cost | NA |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Already licensed |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Demobilization Plan for Campos Basin** |
|---|---|
| Project overview | Decommissioning of 327 wells in 2026 and 2027. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://www.firjan.com.br |
| Sectors of interest | Oil |
| Total project cost | US$ 2,87 Bi |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2026 / 2027 |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Demobilization Plan for Santos Basin** |
|---|---|
| Project overview | Decommissioning of 11 wells in 2026 and 2027. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://www.firjan.com.br |
| Sectors of interest | Oil |
| Total project cost | US$ 247 Mi |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2026 / 2027 |
| Responsible institution | Petrobras |

| PROJECT TITLE | **Demobilization Plan for Campos Basin** |
|---|---|
| Project overview | Decommissioning of 327 wells in 2025. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://www.firjan.com.br |
| Sectors of interest | Oil |
| Total project cost | US$ 1,512 Bi |

| | |
|---|---|
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 |
| Responsible institution | Petrobras / Shell |

| PROJECT TITLE | **Demobilization Plan For Santos Basin** |
|---|---|
| Project overview | Decommissioning of 11 wells in 2025. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://www.firjan.com.br |
| Sectors of interest | Oil |
| Total project cost | US$ 204 Mi |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 |
| Responsible institution | Petrobras / Shell |

| PROJECT TITLE | **Albacora Production System Revitalization** |
|---|---|
| Project overview | Construction of an FPSO to operate at Albacora field and to produce Forno field as well, with a capacity to produce 120,000 bbl/day of oil and 6 million $m^3$/day of natural gas, scheduled to begin operations after 2030. |
| Project location | Offshore Rio de Janeiro State |
| Project website | https://www.firjan.com.br |
| Sectors of interest | Oil |
| Total project cost | US$ 3,2 Billion |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | Tender ongoing |
| Responsible institution | Petrobras |

| PROPOSED PROJECT | **Reduc Coprocessing Expansion** |
|---|---|
| Project overview | Expansion of fuel production capacity of Reduc Refinery to produce diesel from the coprocessing of petroleum and vegetable oils. |
| Proposed project location | Duque de Caxias, Rio de Janeiro State |

| | |
|---|---|
| Proposed project website | https://www.firjan.com.br/firjan |
| Sectors of interest | Oil and Biofuels |
| Total estimated project cost | US$ 146,2 million |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 |
| Responsible institution | Petrobras |

| **PROPOSED PROJECT** | **Modernization of Henrique Lages Refinery (Revap)** |
|---|---|
| Project overview | Revamp of Hydrotreatment Unit to increase S-10 Diesel production |
| Proposed project location | São Jose dos Campos, São Paulo State |
| Proposed project website | petrobras.com.br |
| Sectors of interest | Refining |
| Total estimated project cost | US$ 49,3 million |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2026 |
| Responsible institution | Petrobras |

| PROPOSED PROJECT | **New HDT Unit at Paulínia Refinery (Replan)** |
|---|---|
| Project overview | Construction of a new diesel hydrotreatment unit (HDT) at the Paulínia Refinery (Replan) |
| Proposed project location | Paulínea, São Paulo State |
| Proposed project website | petrobras.com.br |
| Sectors of interest | Refining |
| Total estimated project cost | US$ 458 million |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 |
| Responsible institution | Petrobras |

ANNEX 10 – SINAVAL – Naval Construction

**Opportunities for the shipyards, and its supply chain**

| **PROJECT TITLE** | **New demands of FPSOs and offshore supply boats** |
|---|---|
| Project overview | Brazil is facing a scenario different from the last 10 years, with the increase of the demands of the naval construction segment, the companies' participants of this sector are presently targeting in partnerships.<br><br>The results of these partnerships have potential to reach the local demands and enable them to export naval construction products. The strategy is to map complementarity between industries, creating competencies together, and leveraging the consortium to the international level of competitiveness.<br><br>The current viewpoint is that the reheating of the naval construction in Brazil has opened space for the search for partners that complement each other to meet the new projects requirements, after more than a decade of demobilization. |
| Project location | At the shipyards locations (see maps on Chapter 9) |
| Project website | www.sinaval.org.br |
| Sectors of interest | • FPSOs construction.<br>• Offshore supply-boats construction (PSV, RSV, OSRV, etc.).<br>• Equipment for FPSO topside.<br>• Equipment for supply boat specific operations (as cranes, DP systems, ROSVs, etc.).<br>• Goods and services supplying to shipyards, constructing FPSOs and ships. |
| Total project cost | Not defined |
| Procurement / contract model | Depending on the business |
| Nature of investment | Not defined |
| Timeframe | Ongoing |
| Institutions responsible | www.sinaval.org.br |

# ANNEX 11 – MAIN SHIPYARDS INFORMATION (SOURCE – SINAVAL)

| Shipyard name | Shipyard size | Capacity of FPSO hull construction ? | Capacity of ship construction ? | Capacity for supporting vessel construction? | Capacity for module construction ? | Decommissioning floating unities capacity? | Decommissioning fixed unities capacity? | Repair capacity? | Lauching line (ramp) | Number of dry docks? Kind? | Steel processing capacity (tons/year) | Quay size (m) | Quay depth (m) | Lifting devices and capacity (tons) | Dry Dock size (m/m) | Shipyard total area ($m^2$) | State |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATLÂNTICO SUL | Huge | yes | yes | yes | yes | no | no | yes | no info. | 1, dry dock | 72.000 | 730 | 10,5 | Goliath 2700 t | 73 x 400 | 1.620.000 | PE |
| ALIANÇA | Medium | no | no | yes | no | no | no | yes | yes | no info. | 10.000 | 0 | 0 | no info. | no info. | - | RJ |
| ARSENAL DE MARINHA | Medium | no info. | no info. | no info. | no info. | no info. | no info. | no info. | yes | 3 dry docks, 1 elevating dock | - | 570 | 0 | no info. | 32,58 x 250 | - | RJ |
| BRASA | Huge | no | no | no | yes | no | no | no | no info. | yes | - | 0 | 0 | no info. | not available | - | RJ |
| BRASFELS | Huge | no | yes | yes | yes | no | no | yes | yes | 1, dry dock | 34.000 | 364 | 0 | gantry crane 2000 t | 70 x 80 | 1.000.000 | RJ |
| CAMORIM | Medium | no | no | no info. | no info. | no info. | no info. | yes | no info. | no info. | - | 150 | 0 | no info. | no info. | 25.839 | RJ |
| DETROIT | Medium | no | no | yes | no | no | no | yes | yes | 1, dry dock | 12.000 | 180 | 0 | 2 cranes 250 t , 1 crane 450t | 23 x 110 | 120.000 | SC |
| DOCK BRASIL ENG E SERVIÇOS | Medium | no | no | no | yes | no | yes | yes | no info. | 0 | 360 | 400 | 0 | 5 cranes 250 t , 3 cranes 75 t | not appl. | - | RJ |
| EBR | Huge | no | no | no | yes | no | yes | no | no info. | yes | 30.000 | 530 | 12 | no info. | not available | 1.650.000 | RS |
| EISA | Huge | no | yes | yes | no | yes | yes | yes | yes | no info. | 16.000 | 200 | 0 | no info. | no info. | - | RJ |
| ENAVAL | Small | no | no | no | yes | no | yes | no | no info. | no info. | 2.400 | 0 | 0 | no info. | no info. | 12.764 | RJ |
| ENSEADA | Huge | no | yes | yes | yes | yes | yes | yes | no info. | 1, dry dock | 36.000 | 97 | 0 | istir | 85 x 261 | 1.177.000 | BA |
| INACE | Medium | no info. | no info. | yes | no info. | no info. | no info. | no info. | no info. | no info. | - | 0 | 0 | no info. | no info. | - | CE |
| INHAÚMA | Huge | no | no | no | yes | yes | yes | yes | no info. | 1, dry dock | - | 308 | 8 | 2 cranes 100 t | 25 x 160 | 328.000 | RJ |
| ITAGUAÍ CONSTRUÇÕES NAVAIS | Medium | no info. | no info. | no info. | no info. | no info. | no info. | no info. | no info. | 1, syncrolift | - | 0 | 0 | no info. | no info. | - | RJ |
| JURONG Aracruz | Huge | no | no | no | yes | no | yes | yes | no info. | 1, Elevating dock (Syncrolift) | 48.000 | 922 | 10 | gantry crane 320 t / sheerleg 3600 t | 70 x 320 | 825.000 | ES |
| MAC LAREN – ILHA DA CONCEIÇÃO | Medium | no | no | yes | yes | yes | yes | yes | yes | no info. | 15.000 | 494 | 9 | no info. | no info. | 75.500 | RJ |
| MAC LAREN – PONTA D´AREIA | Small | no info. | no info. | no info. | no info. | no info. | no info. | no info. | no info. | no info. | 10.000 | 386 | 8 | no info. | no info. | 25.650 | RJ |
| MAUÁ | Huge | no | yes | yes | yes | yes | yes | yes | yes | 1, dry dock | 20.000 | 386 | 0 | sheerleg Pelicano 2050 t | 23 x 165 | 180.000 | RJ |
| MAUÁ (Ilha do Caju) | Small | no | no | no | yes | no | yes | no | no info. | 0 | - | 0 | 0 | no info. | not appl. | 65.000 | RJ |
| METASA | Medium | no | no | no | yes | no | no | no | no info. | no info. | 12.000 | 0 | 0 | no info. | no info. | 100.000 | RS |
| MULICEIRO / SÃO JACINTO | Small | no | no | no info. | no info. | no info. | no info. | no info. | no info. | no info. | - | 0 | 0 | no info. | no info. | - | RJ |
| NAVSHIP | Medium | no | no | yes | no | no | no | yes | no info. | no info. | 15.000 | 250 | 0 | no info. | no info. | - | SC |
| NUCLEP | Medium | no | no | no | yes | no | no | no | no info. | no info. | - | 0 | 0 | no info. | no info. | - | RJ |
| PORTO DO AÇU | Huge | no | no | no | yes | yes | yes | no | no info. | no info. | - | 460 | 13 | no info. | no info. | - | RJ |
| QGI | Huge | no | no | no | yes | no | no | no | no info. | yes | - | 0 | 0 | no info. | not available | - | RS |
| RENAVE | Huge | no | no | yes | no | no | no | yes | no info. | 2, dry docks | 24.000 | 0 | 0 | no info. | 27 x 184 and 17,7 x 136 | - | RJ |
| RG (ECOVIX) | Huge | yes | yes | yes | yes | yes | yes | yes | no info. | 1, dry dock | 45.000 | 350 | 12 | gantry cranes 600 t and 2000 t | 133 x 350 | 800.000 | RS |
| RIO MAGUARI | Medium | no | no | yes | no | no | yes | yes | no info. | no info. | - | 0 | 0 | no info. | no info. | - | PA |
| SÃO MIGUEL | Medium | no | no | yes | no | no | no | yes | no info. | 1, dry dock | 200 | 150 | 6 | 200 | 26 x 106 | 25.000 | RJ |
| SEATRIUM SINGMARINE | Small | no | no | yes | yes | no | no | yes | no info. | no info. | 6.400 | 300 | 6 | gantry crane 120 t | no info. | 76.000 | SC |
| TECHINT | Medium | no | no | no | yes | no | yes | no | no info. | no info. | 19.000 | 0 | 0 | no info. | no info. | - | PR |
| UTC | Medium | no | no | no | yes | no | yes | no | no info. | no info. | - | 40 | 5,5 | not applicable | no info. | 48.000 | RJ |
| VARD PROMAR PERNAMBUCO | Huge | no | no | yes | no | no | no | yes | no info. | 1, Elevating dock (Syncrolift) | 18.000 | 150 | 0 | 2 x 270 t, gantry crane 300 t | 35 x 151 | 250.000 | PE |
| WILSON SONS | Small | no | no | yes | no | no | no | yes | no info. | 1, dry dock | 10.000 | 100 | 0 | gantry crane 80 t / crane 40 t | 26 x 140 | 39.000 | SP |

# ANNEX 12 – OPPORTUNITIES ENVISAGED BY THE INDUSTRY FEDERATIONS

| PROJECT TITLE | **Açu Natural Gas Processing Plant for Route 6b** |
|---|---|
| Project overview | Construction of a natural gas processing plant to attend Route 6b. |
| Project location | Rio de Janeiro State. |
| Project website | NA |
| Sectors of interest | Natural gas |
| Total project cost | US$ 0.52 billion |
| Procurement / contract model | NA |
| Nature of investment | Private |
| Timeframe | Research phase |
| Responsible institution | Açu Port |

| PROJECT TITLE | **Itaguaí Port Natural Gas Processing Plant for Route 4b** |
|---|---|
| Project overview | Construction of a natural gas processing plant to attend Route 4b. |
| Project location | Rio de Janeiro State. |
| Project website | https://www.equinor.com.br/petroleo-e-gas-natural |
| Sectors of interest | Natural gas |
| Total project cost | US$ 0.7 billion |
| Procurement / contract model | NA |
| Nature of investment | Private |
| Timeframe | Under evaluation |
| Responsible institution | Equinor |

| PROJECT TITLE | **Route 4b Gas Pipeline** |
|---|---|
| Project overview | Construction of a gas pipeline from Bacalhau and North of Bacalhau fields (Pre-Salt Area) to the Port of Itaguaí close to Rio de Janeiro City |
| Project location | Rio de Janeiro State. |
| Project website | https://www.equinor.com.br/petroleo-e-gas-natural |
| Sectors of interest | Natural gas |
| Total project cost | US$ 186,5 million |
| Procurement / contract model | Not defined |

| | |
|---|---|
| Nature of investment | Private |
| Timeframe | 2028 |
| Responsible institution | Equinor |

| **PROJECT TITLE** | **Route 6b Gas Pipeline** |
|---|---|
| Project overview | Construction of a gas pipeline from block BM-C-30 (ultra-deep waters at Campos Basin) to the Port of Açu (Rio de Janeiro State). |
| Project location | Offshore Rio de Janeiro State. |
| Project website | Not available |
| Sectors of interest | Natural gas |
| Total project cost | US$ 94,6 billion |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Under evaluation |
| Responsible institution | Not defined |

| **PROJECT TITLE** | **São João da Barra/RJ – Macaé/RJ Gas Pipeline** |
|---|---|
| Project overview | Construction of a gas pipeline that connects Porto do Açu LNG terminal, in São João da Barra, in Rio de Janeiro state, to the existent natural gas network in Macaé, also in Rio de Janeiro state |
| Project location | Rio de Janeiro state |
| Project website | https://www.epe.gov.br |
| Sectors of interest | Transportation of natural gas |
| Total project cost | R$ 2,0 bi |
| Procurement / contract model | Not defined |
| Nature of investment | Future investment, probably private |
| Timeframe | Research phase |
| Institution responsible | GNA – Gás Natural Açu |

| PROJECT TITLE | **Offshore Projects in the Pre-Salt area Gas Pipelines (Campos and Santos Basin)** |
|---|---|
| Project overview | Construction of natural gas production pipelines and outflow gas pipelines to connect new exploration projects of associate gas production in Campos and Santos Basin, in Rio de Janeiro state |
| Project location | Rio de Janeiro state |
| Project website | https://www.epe.gov.br |
| Sectors of interest | Gatthering and processing of natural gas production |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Public and private |
| Timeframe | Research phase |
| Institution responsible | Not defined |

| PROJECT TITLE | **Açu Connection Project to a Gas Transport Pipeline** |
|---|---|
| Project overview | Construction of Norte Fluminense Integration Pipeline (GASINF), a transport pipeline connecting NTS pipeline and Cabiúnas Terminal with a capacity of 40 MM $m^3$ /day and 101 km long, or construction of Goytacazes Gas Pipeline (GASOG), a transport pipeline connecting TAG pipeline and GASCAV and a capacity of 20 MM $m^3$ /day and 45 km long |
| Project location | Rio de Janeiro state |
| Project website | https://www.gna.com.br/ GNA vai contratar estudos com a TAG e NTS para a construção de gasoduto – Petróleo Hoje (editorabrasilenergia.com.br) |
| Sectors of interest | Natural gas |
| Total project cost | US$ 400,000 for the study phase<br>GASINF: US$ 0.393 billion for the construction |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Study phase |
| Responsible institution | GNA – Gás Natural Açu |

| PROJECT TITLE | **Norte Fluminense II Thermal Power Plant** |
|---|---|
| Project overview | The project comprises three gas turbines and a combined cycle steam turbine; a dedicated 17.7 km long pipeline; a 6.7 km long adductor and effluents emissary; and a 500 kV transmission line, which will connect two substations in Campos dos Goytacazes to the future Lagos Substation, in Rio das Ostras. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | https://www.edfnortefluminense.com.br/nf2/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Project licensed |
| Responsible institution | Electricité de France - EDF |

| PROJECT TITLE | **Nossa Senhora de Fátima 1, 2 and 3 Thermal Power Plant** |
|---|---|
| Project overview | The project comprises three natural gas power plants, able to generate 1.48 GW. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | https://eneva.com.br/en/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Project licensed |
| Responsible institution | Eneva |

| PROJECT TITLE | **Jaci Thermal Power Plant** |
|---|---|
| Project overview | Able to produce 0.61 GW. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | https://globalparticipacoesenergia.com.br/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Under license |
| Responsible institution | Global Participações em Energia S.A. – GPE |

| PROJECT TITLE | **Tupã Thermal Power Plant** |
|---|---|
| Project overview | Able to produce 1.85 GW. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | https://globalparticipacoesenergia.com.br/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Under license |
| Responsible institution | Global Participações em Energia S.A. – GPE |

| PROJECT TITLE | **Litos 1, 2, 3 and 4 Thermal Power Plant Project** |
|---|---|
| Project overview | Four thermoelectric power plants able to generate 5.27 GW. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | NA |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Under license |
| Responsible institution | Litos Energia Ltda. |

| PROJECT TITLE | **GNA II, III and IV Thermal Power Plant** |
|---|---|
| Project overview | GNA II: able to generate 1.7 GW<br>GNA III and IV: able to generate 3.4 GW, in total. |
| Project location | São João da Barra, Rio de Janeiro state |
| Project website | https://www.gna.com.br/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | US$ 5 billion*<br>*Exchange rate R$ 5,09 /US$ January, 25th 2023 |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | GNA II: in construction<br>GNA III and IV: Project licensed |
| Responsible institution | Gás Natural Açu – GNA |

| PROJECT TITLE | **Marlim Azul, Vale Azul II and III Thermal Power Plant** |
|---|---|
| Project overview | Marlim Azul: able to produce 0.56 GW.<br>Vale Azul II and III: able to produce 1.2 GW, in total. |
| Project location | Macaé, Rio de Janeiro state |
| Project website | https://grupovaleazul.com.br/projetos/ |
| Sectors of interest | Power Generation; Natural gas |
| Total project cost | NA |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Marlim Azul: in construction<br>Vale Azul II and III: Project licensed |
| Responsible institution | Marlim Azul: Marlim Azul Energia<br>Vale Azul II and III: Vale Azul Group |

| PROJECT TITLE | **CEG Gas Distribution Network** |
|---|---|
| Project overview | Expand the distribution network in Rio de Janeiro metropolitan area. |
| Project location | Rio de Janeiro State |
| Project website | https://www.naturgy.com.br |
| Sectors of interest | Infrastructure |
| Total project cost | US$ 96,1 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Running |
| Responsible institution | Naturgy |

| PROJECT TITLE | **CEG Rio Gas Distribution Network** |
|---|---|
| Project overview | Expand the distribution network in Rio de Janeiro non-metropolitan area. |
| Project location | Rio de Janeiro State |
| Project website | https://www.naturgy.com.br |
| Sectors of interest | Infrastructure |
| Total project cost | US$ 20,2 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Running |
| Responsible institution | Naturgy |

| PROJECT TITLE | **Expansion of Ecomp Campos Elíseos** |
|---|---|
| Project overview | Expand the compression unit at Campos Elíseos, Rio de Janeiro State. |
| Project location | Rio de Janeiro State |
| Project website | https://api.mziq.com/mzfilemanager/v2/d/ea6d235f-ebee-4bf5-82bc-6bc5698718c1/d1b2c750-c548-d17f-0f40-d9b21cc42ee2?origin=1 |
| Sectors of interest | Infrastructure |
| Total project cost | US$ 118,5 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2026 |

| | |
|---|---|
| responsible institution | NTS |

| **PROJECT TITLE** | **Expansion of Ecomp Japeri** |
|---|---|
| Project overview | Expand the compression unit at Japeri, Rio de Janeiro State. |
| Project location | Rio de Janeiro State |
| Project website | https://br.linkedin.com/posts/nts-nova-transportadora-do-sudeste_nts-investe-r-75-bi-em-novos-projetos-activity-7065319040272994304-vkDX |
| Sectors of interest | Infrastructure |
| Total project cost | US$ 118,5 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2026 |
| Responsible institution | NTS |

| **PROPOSED PROJECT** | **Spot Project at Port of Açu** |
|---|---|
| Project overview | Construction of 12 oil tanks, with a total capacity of 5.7 thousand bbl, and two pipelines |
| Proposed project location | São João da Barra, Rio de Janeiro State |
| Proposed project website | https://www.prumologistica.com.br/pt/como-atuamos/petroleo/ |
| Sectors of interest | Oil |
| Total estimated project cost | US$ 0.48 billion |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | Under construction |
| Responsible institution | Prumo Logística |

| PROPOSED PROJECT | **Reduc Coprocessing Expansion** |
|---|---|
| Project overview | Expansion of fuel production capacity of Reduc Refinery to produce diesel from the coprocessing of petroleum and vegetable oils. |
| Proposed project location | Duque de Caxias, Rio de Janeiro State |
| Proposed project websit | https://www.firjan.com.br/firjan |
| Sectors of interest | Oil and Biofuels |
| Total estimated project cost | US$ 146,2 million |
| Procurement / contract model | According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/ |
| Nature of investment | Private |
| Timeframe | 2025 |
| Responsible institution | Petrobras |

| PROPOSED PROJECT | **Expansion of Used or Contaminated Lubricating Oil Re-Refining Unit for the Production of Base Oil** |
|---|---|
| Project overview | Expansion of current capacity of re-refining in more 50 % at Lençóis Paulista, São Paulo state, to achieve a total production of 360 million litres of base oil. |
| Proposed project location | Lençóis Paulista, São Paulo State |
| Proposed project website | https://www.lwart.com.br/projeto-h/ |
| Sectors of interest | Lubricants |
| Total estimated project cost | US$ 197,5 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2026 |
| Responsible institution | Lwart Soluções Ambientais |

| PROJECT TITLE | **Ágata Block** |
|---|---|
| Project overview | Exploration and production at Ágata Block, under production sharing regime. |
| Project location | Santos Basin, Rio de Janeiro State |
| Project website | https://www.gov.br/anp/en/rounds-anp/open-acreage/open-acreage |
| Sectors of interest | Oil and Gas |
| Total project cost | US$ 11,89 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2030 |
| Responsible institution | NA |

| PROJECT TITLE | **Cruzeiro do Sul Block** |
|---|---|
| Project overview | Exploration and production at a Block, under production sharing regime. |
| Project location | Santos Basin, Rio de Janeiro State |
| Project website | https://www.gov.br/anp/en/rounds-anp/open-acreage/open-acreage |
| Sectors of interest | Oil and Gas |
| Total project cost | US$ 25,8 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2030 |
| Responsible institution | NA |

| PROJECT TITLE | **Itaimbezinho Block** |
|---|---|
| Project overview | Exploration and production at Itaimbezinho Block, under production sharing regime. |
| Project location | Campos Basin, Rio de Janeiro State |
| Project website | https://www.gov.br/anp/en/rounds-anp/open-acreage/open-acreage |
| Sectors of interest | Oil and Gas |
| Total project cost | US$ 3,01 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2030 |

| | |
|---|---|
| Responsible institution | NA |

| **PROJECT TITLE** | **Jade Block** |
|---|---|
| Project overview | Exploration and production at Jade Block, under production sharing regime. |
| Project location | Santos Basin, Rio de Janeiro State |
| Project website | https://www.gov.br/anp/en/rounds-anp/open-acreage/open-acreage |
| Sectors of interest | Oil and Gas |
| Total project cost | US$ 20,1 million |
| Procurement / contract model | Not defined |
| Nature of investment | Private |
| Timeframe | 2030 |
| Responsible institution | NA |

# ANNEX 13 – R&D PROJECTS

**Opportunities for the oil companies and the supply chain**

| **PROJECT TITLE** | **R&D and Innovation projects** |
|---|---|
| Project overview | ANP's contractual obligations targets R&D investments are linked to E&P contracts, in large producing fields, and represent huge amounts of money (1% of the incoming resources related to the O&G production).<br>Oil companies manage these amounts and invest than in R&D projects (development engineering solutions, innovation, R&D infrastructure, manufacturing of product pilot lots, laboratory tests, field tests, etc.).<br>ANP's team approve and/or assess each proposed project, following is development and resources application.<br>The ANP's policy is to increase the industrial competencies in Brazil, it means, the application of the resources is geared to R&D Brazilian institutions and Brazilian G&S suppliers.<br>Foreign companies could participate of the developing projects in partnership with Brazilian companies or R&D Brazilian entities. |
| Project location | Oil companies mentioned in Chapter 12 - Table 12.1 |
| Project website | www.anp.gov.br |
| Sectors of interest | • Innovation applicable straight at the O&G industry,<br>i. E&P, Refine, Transportation, Environmental protection, Operational safety, R&D infrastructure, Training, Etc.<br>• Innovation applicable in the energy transition process. |
| Total project cost | Information about the available resources could be found at ANP's website: www.gov.br/anp/pt-br/centrais-de-conteudo/paineis-dinamicos-da-anp/paineis-dinamicos-sobre-exploracao-e-producao-de-petroleo-e-gas/painel-de-obrigacoes-de-investimento-em-pd-i |
| Procurement / contract model | R&D contracts in accordance with ANP's guidelines and oil companies' requirements. |
| Nature of investment | ANP's R&D clause resources, managed by oil companies, mentioned at Chapter 12 - Table 12.1. |
| Timeframe | Ongoing |
| Institutions responsible | Oil companies and ANP. |

# ANNEX 14 – SENAI TECHNICAL SERVICES, TRAINING, AND INFRASTRUCTURE

Opportunities for the suppliers of goods and services landing in Brazilian O&G market

| **PROJECT TITLE** | **Supporting services and infrastructure for establishment** |
|---|---|
| Project overview | SENAI is a private institution, which congregates innumerous activities in education, training, R&D, technological services, and several others, supporting the Brazilian industry in its needs.<br>The closer to O&G institution inside SENAI organization chart is CIMATEC, in Bahia state.<br>CIMATEC is an education and research institution, linked to SENAI (the national services of the industry), located in Bahia state, the cradle of the oil industry in Brazil.<br>CIMATEC campus is a cutting-edge innovation ecosystem, which integrates more than 40 technological areas with a diverse performance in education, service provision and applied research/development.<br>The CIMATEC Park provides physical space for technology-based companies, national and foreign, that may establish themselves in Brazil, to find a suitable place for their expansion processes, offering the convenience of all the support of technological services that CIMATEC can offer close to the company new location. It means, CIMATEC is a feasible alternative to foreign companies, landing in Brazil, made its first local establishment. |
| Project location | Bahia state – Camaçari's Industrial Hub |
| Project website | www.senai.portaldaindustria.com.br<br>www.senaicimatec.com.br |
| Sectors of interest | • Physical space for foreign companies establishes itself in the landing in Brazil<br>• R&D supporting and development facilities<br>• Certificated testing laboratories<br>• Educational and training facilities |
| Total project cost | Not defined |
| Procurement / contract model | Depending on the business |
| Nature of investment | Not defined |
| Timeframe | Available immediately |
| Institutions responsible | SENAI<br>CIMATEC |

At the table above, the services available (and closer) to O&G industry:

| | | |
|---|---|---|
| Metrology | Oil & Gas | Materials |
| Energy Efficiency and Renewable Energy | Chemical and Petrochemical | High Performance Processing |
| Environment | Management | Networks and Telecom |
| Embedded Electronics | Union of Materials | Software Development |
| Conformation | Automotive | Shipbuilding |
| Machining | Microelectronics | Certification |

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