apexBrasil

Portfolio of Investment Opportunities in Brazil

Oil & Gas

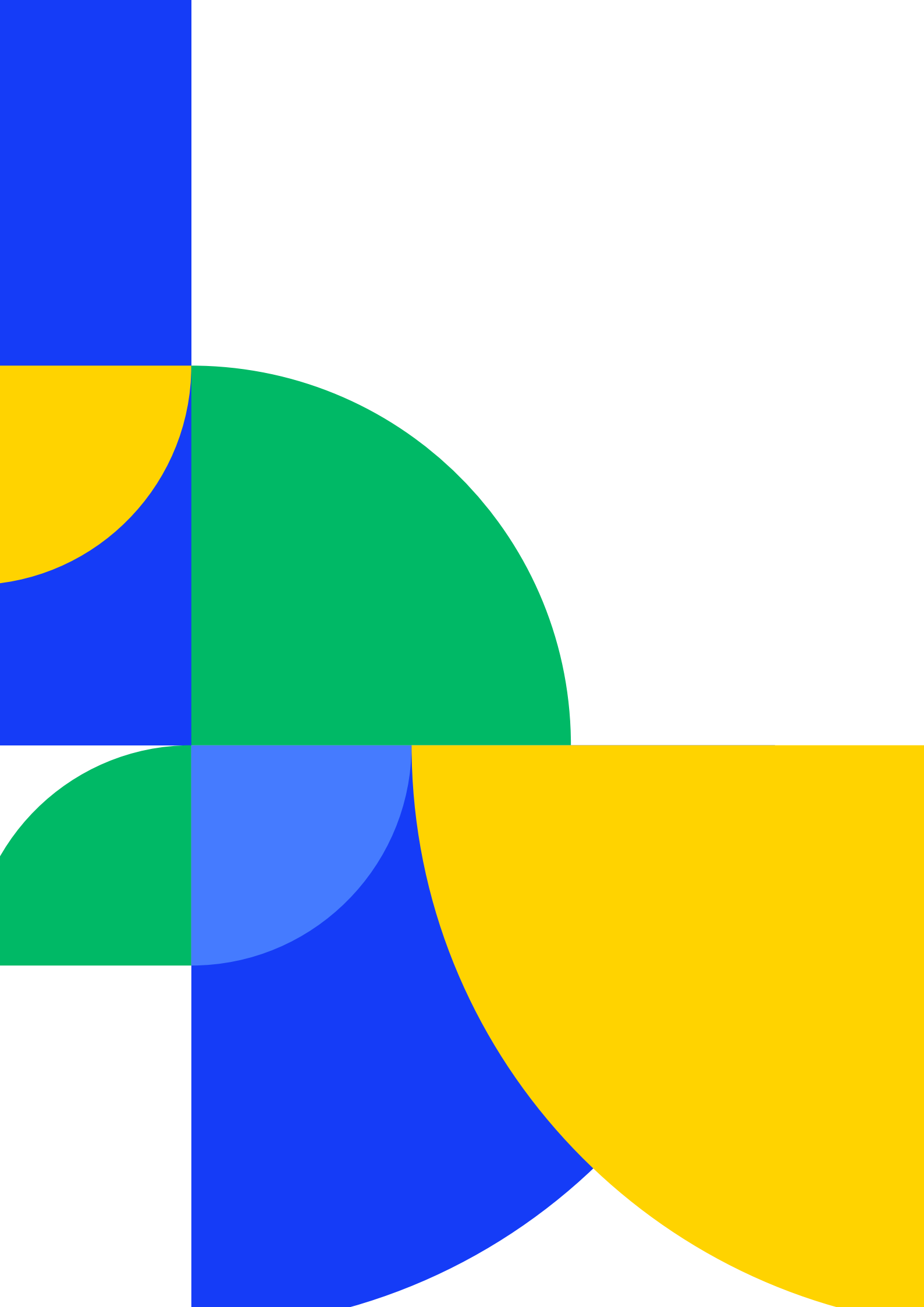
MAY 2022. – 1ST EDITION

Institutional Support:

epe Empresa de Pesquisa Energética

Firjan SENAI SESI IEL CIRJ

ONIP Organização Nacional da Indústria do Petróleo



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Foreword

Brazil is focusing on a new cycle of sustainable growth, based on an extensive adjustment of the economic and business environment, with the adoption of measures to improve the country's competitiveness and productivity. The launch of this first edition of the "Investment Portfolio of Opportunities in Brazil in the Oil & Gas Sector" seeks to support a new cycle of growth by helping to identify relevant investment opportunities across the country.

The portfolio presents trustworthy, systematized, and high-level information to both foreign and domestic investors about specific projects. It provides direct contact information for each project, which fosters transparent relations between public and private institutions. This first version of the Investment Guide Oil & Gas contains 61 infrastructure projects in state and federal levels.

The whole idea of this Portfolio is to provide a fast track to the numerous investment opportunities offered in Brazil that are relevant for the development of the Oil & Gas sector and its supply chain. Besides, ApexBrasil and its institutional partners can provide customized support for the development of these opportunities.

The organization of this Portfolio was coordinated by the Brazilian Trade and Investment Promotion Agency (ApexBrasil), in a knowledge management effort in cooperation with the Energy Research Office (EPE) and the Industry Federation of the State of Rio de Janeiro (FIRJAN). Experienced consultants contracted by ApexBrasil reviewed and consolidated the portfolio of investment opportunities in Brazil to ensure the quality of the Portfolio.

Summary

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Brazilian Trade and Investment Promotion Agency

ApexBrasil is the official trade and investment promotion agency of Brazil. One of its key goals is to attract foreign investment into strategic sectors of Brazilian economy, such as the oil, natural gas, and biofuels. The agency focuses on foreign companies to develop greenfield, brownfield and expansion projects incorporating technological innovations that strengthen the supply chains with a positive impact on job creation, economic, social, and regional development of Brazil.

ApexBrasil's team is prepared to assist in all steps of the investor's decision-making process. The Agency's service portfolio includes identifying and initiating dialogue with qualified contacts; finding fruitful partnerships; preparing market intelligence covering leading industry sectors, markets, economic trends, and guidance on legal and tax matters; and mapping projects for investors, including the identification of suitable locations, potential costs. and other business options. ApexBrasil can also act as a liaison between the investor, strategic partners, suppliers, and local authorities.

The Agency is linked to the Ministry of Foreign Affairs through a Management Agreement: The Ministry presides over the Board of Directors. Therefore, ApexBrasil can reach the commercial sectors of the Brazilian embassies and consulates abroad, interacting and enhancing our outreach all over the world.

ApexBrasil holds Cooperation Agreements with the Ministry of Mines and Energy (MME), the National Agency of Petroleum, Natural Gas and Biofuels (ANP) and Petrobras, helping to identify and develop sector opportunities playing a relevant role to promote and facilitate investments in Brazil, providing customized support to international companies and investors.

More information is available at ApexBrasil's website and Linkedin profile.

www.apexbrasil.com.br

www.investinbrasil.com.br

www.linkedin.com/company/invest-in-brasil

BRAZILIAN PETROLEUM PARTNERSHIPS

Brazilian Petroleum Partnerships program

ApexBrasil's Brazilian Petroleum Partnerships program (BPP) aims to establish partnerships between international and qualified Brazilian companies, seeking to attract investments to Brazil and to promote the integration of the Oil & Gas industry to global supply chains.

The Consultancy ENSOTEC was contracted by ApexBrasil to assist in the technical qualification of the companies that are supported in the Brazilian Petroleum Partnerships program (BPP). Established in 2015, the company is led by Ronaldo Martins, with more than 30 years working in the Oil & Gas industry and Roberto Alfradique, with more than 40 years of experience, both being retired engineers of Petrobras, the Brazilian NOC. Their knowledge over the Oil & Gas industry and the supply chain in Brazil and abroad, helps to provide qualified guidance on the market entry and expansion projects for international companies in the Brazilian market.

Register now and find your Brazilian partner.

Empresa de Pesquisa Energética

Energy Research Office

The Energy Research Office (EPE in its Portuguese acronym) works to support the energy policies of the Brazilian Ministry of Mines and Energy (MME) with studies and research on energy planning covering electricity, oil, natural gas and its by products, and biofuels. EPE's studies cover the areas of engineering, economics, modeling, policies, environment, and where they overlap.

Established by Law 10.847 in 2004, 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, which begin with the definition of policies and guidelines within the scope of CNPE – National Council of Energy Policy and MME. EPE's studies and research support the development of the Brazilian energy industry.

The Office's work requires broad articulation with a wide range of institutions, whose mandates are related to the energy industry. In addition to the MME, institutional relationships include regulatory agencies – ANEEL, ANP, ANP and ANA, the Independent National Operator of the Electric System – ONS, the Market Operator – CCEE, among others.

Located in Brasilia (headquarters) and Rio de Janeiro (main office), EPE is an organization that has about 260 employees, with graduate-level degree as diverse as Engineering, Economics, Mathematics, Biology, Business Administration, among many others, and with about 60% of them holding a post-graduate degree.

More information is available at EPEs website and Linkedin profile.

https://www.epe.gov.br/en

www.linkedin.com/company/empresa-de-pesquisa-energetica/

Industry Federation of the State of Rio de Janeiro

Firjan SENAI SESI works for all the industries in Rio de Janeiro state, alongside the Industry Federation of the State of Rio de Janeiro, which has 100 industrial employers' unions. Their mission is to promote business competitiveness, education and the life quality of workers and society, contributing to the sustainable development of the state of Rio de Janeiro.

Through our organizations – Firjan SENAI (National Industrial Apprenticeship Service), Firjan SESI (Industry Social Service), Firjan IEL (EuvaldoLodi Institute) and Firjan CIRJ (Industrial Center of Rio de Janeiro) – we operate in key areas aiming at the development of Rio de Janeiro State's industrial sector and its economic impact. Furthermore, we study and research 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 focus on understating the projects ahead, translating it in opportunities for the supply chain, as well as regulations needed to foster investments in Rio de Janeiro's territorial waters and lands.

For more information, please visit our website: **https://www.firjan.com.br/english/firjan/** or e-mail: **petroleo.gas@firjan.com.br**.

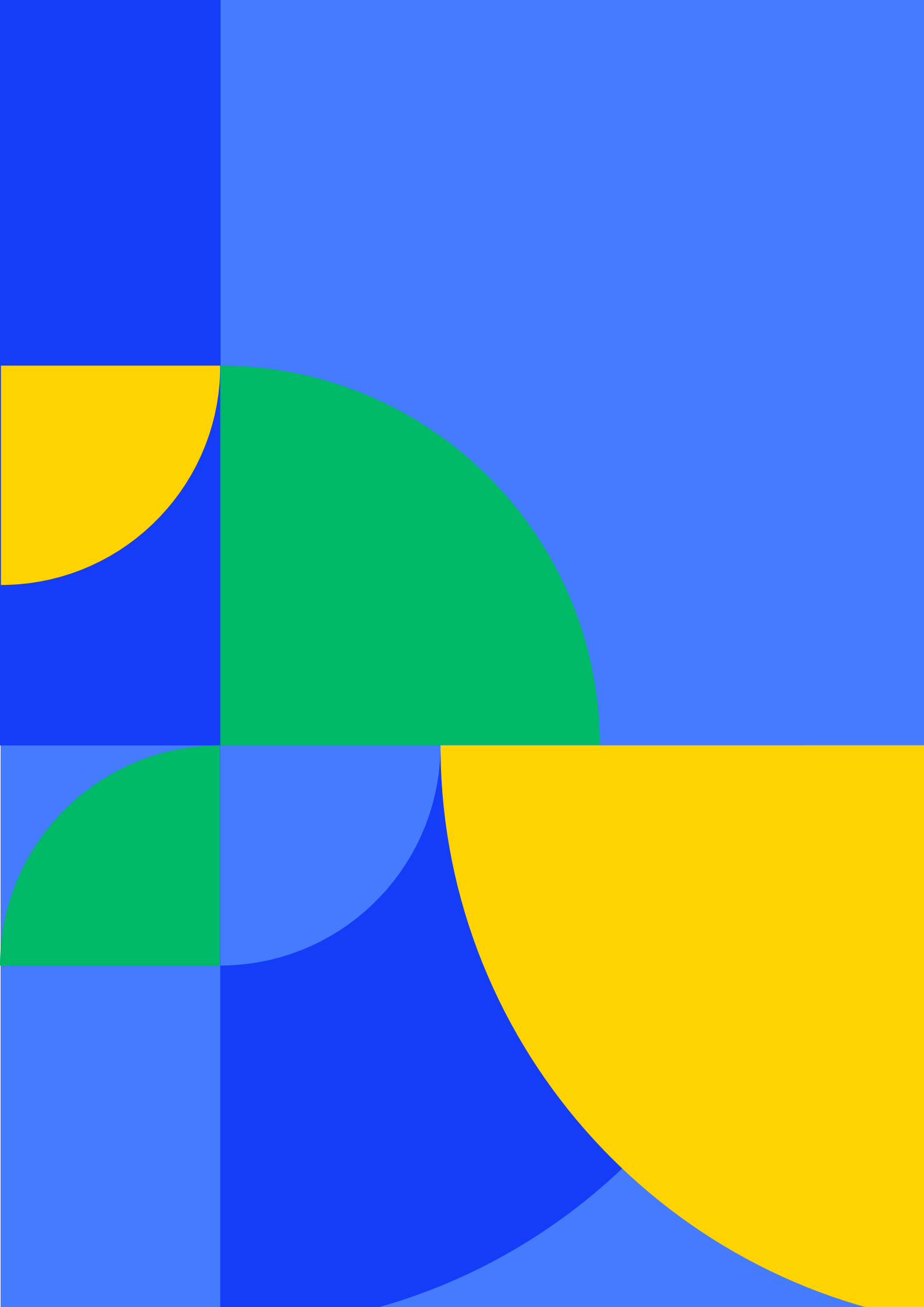
ONIP Organização Nacional da Indústria do Petróleo

National Organization of the Petroleum Industry

The National Organization of the Petroleum Industry – ONIP is a private non-profit organization created in May 1999. Its objective is to bring together, in a single forum, the main agents involved in oil and natural gas.

ONIP´s mission is to contribute to increase the competitiveness and sustainability of the local industry, to maximize Brazilian content and the generation of employment and income in the oil and gas sector.

For more information, contact us: **onip@onip.org.br**



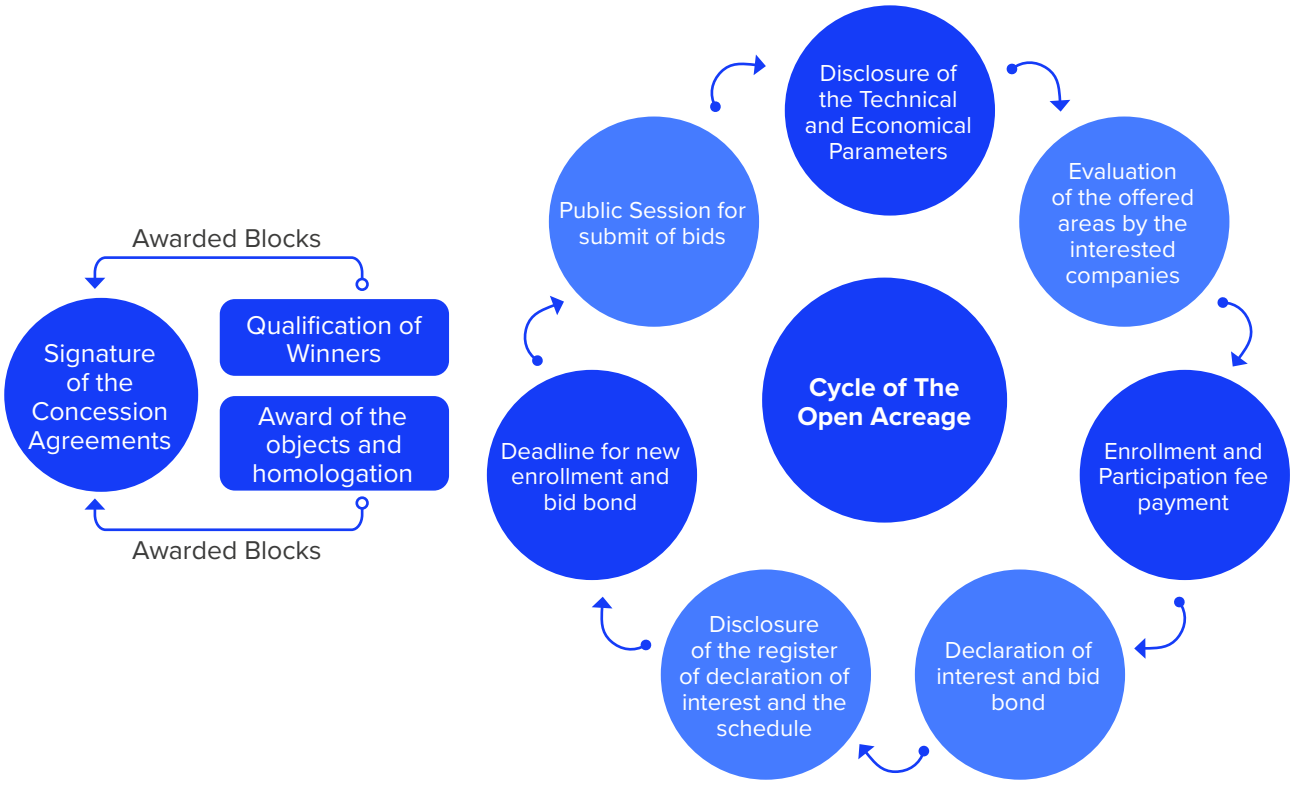
1) Open Acreage Opportunities – National Agency of Petroleum, Natural Gas and Biofuels

Open Acreage Process

ANP (National Agency of Petroleum, Natural Gas and Biofuels) is the Brazilian regulatory agency for petroleum, natural gas (NG), and biofuels. It has created a special way of acquiring exploration blocks and mature fields, the so-called Open Acreage, by means of which a company presents its interests on one or more areas directly to the agency. **ANNEX I** of this report details areas available in the open acreage offer that may be part of the ongoing bidding process.

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

The figure below shows the closed cycle of the open acreage process:

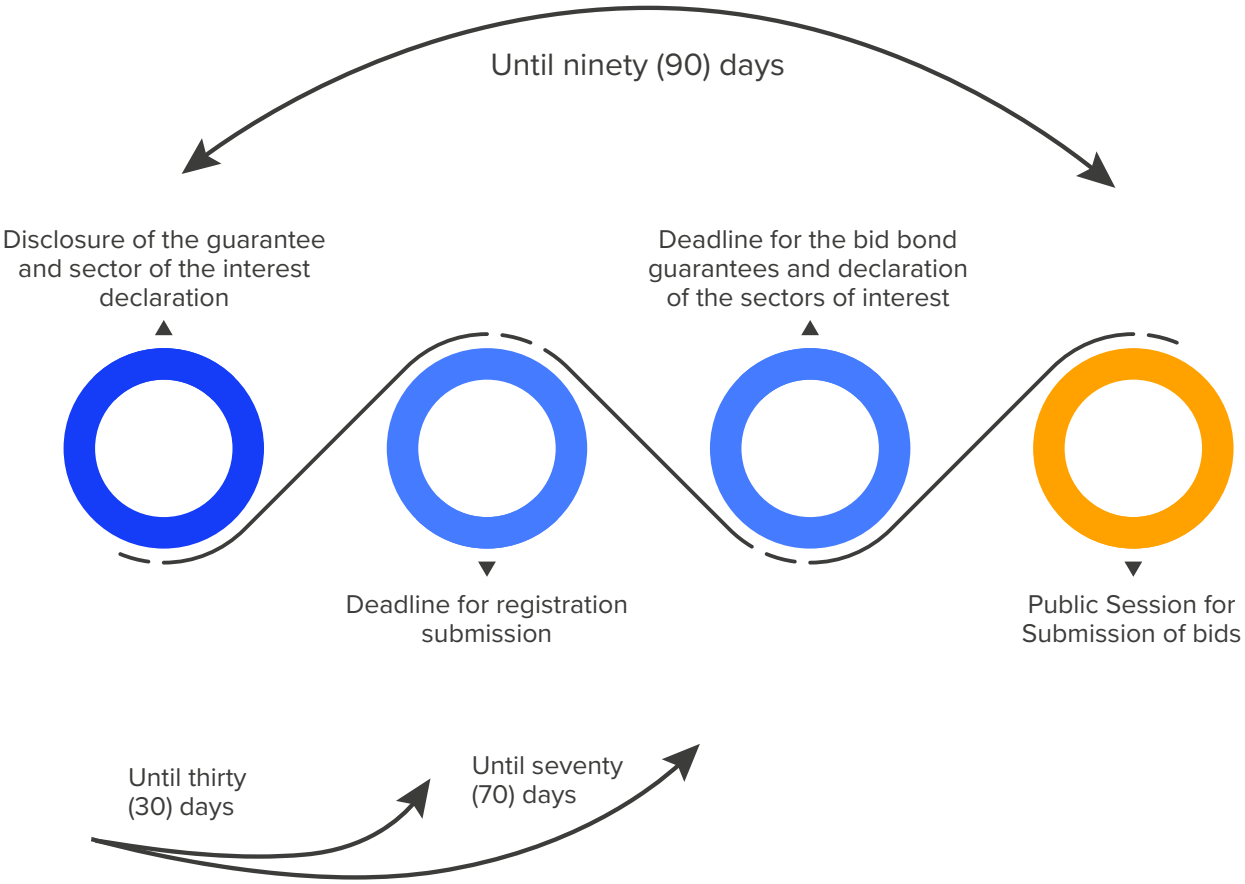


Picture 1 – Open Acreage Process – Source: ANP website

Bidders who meet all the registration requirements established in ANP Tender Protocol section 4 will have their application considered fit to be judged by the Bidding Special Commission. Once approved, registered bidders may show interest in any blocks or areas, provided that they must submit an offer guarantee accompanied by an interest declaration.

The schedules of the 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 Bidding Special Commission will announce a schedule to conduct 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 of 90 days, following the intervals shown below:



Picture 2 – Open Acreage Process Steps – Source: ANP website

The commission will publicize 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 90-day interval will be held between the approval of the offer with the interest declaration and the public session for offers presentation, as mentioned above.

Since December 2021, according to a CNPE (National Council on Energy Policy) Resolution, the Open Acreage system was established as preferential for the offer of areas for exploration and production of oil, natural gas and other fluid hydrocarbons. Thus, ANP is authorized to define and bid in an Open Acreage Process, 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.

The same resolution also established that fields or blocks in the Pre-Salt Area or in Strategic Areas can only be tendered in the Open Acreage system by specific determination of CNPE, with definition of the parameters to be adopted for each field or block.

Exploration Blocks

The selected exploration blocks are in 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.

There are 1,068 blocks with exploratory risk for declaring interest, located in 72 sectors of 17 Brazilian sedimentary basins, totaling 462,548.68 km^2. There are 522 blocks on offer in the Amazonas, Espírito Santo, Paraná, Parecis, Parnaíba, Potiguar, Recôncavo, Sergipe-Alagoas and Tucano onshore basins, in addition to 546 blocks in the Camamu-Almada, Campos, Ceará, Espírito Santo, Foz do Amazonas, Jacuípe, Pelotas, Pernambuco-Paraíba, Potiguar, Santos and Sergipe-Alagoas offshore basins.

These 1,068 blocks comply with CNPE Resolutions that determine the offered areas must be previously analyzed for environmental feasibility by the competent environmental agencies agreed in a Joint Manifestation.

In order to hold the bidding session, ANP must have received at least one statement about the sector of interest, accompanied by an offer guarantee.

There are 350 blocks under study, from 16 sectors and six Brazilian sedimentary basins, totaling 110,997 km2. From those, 78 blocks are located in two onshore basins: Solimões and Sergipe-Alagoas. Also under study are 272 blocks with exploratory risk, located in five offshore basins: Barreirinhas, Pará-Maranhão, Pelotas, Santos, and Sergipe-Alagoas.

The blocks under study will be available for the Open Acreage as soon as the studies and evaluations are concluded, their respective environmental opinions are issued, and after a public hearing is held.

Marginal Accumulations Oil Fields

The Marginal Accumulations Oil Fields selected for the Open Acreage Concession Offer are located on mature sedimentary basins and have the purpose of offering opportunities and expand the participation of small and medium-size companies in the exploration or rehabilitation and production of Oil & Gas into densely explored basins, allowing the continuity of those activities in the regions where they play an important socio-economic role.

Ten areas with marginal accumulations located in five onshore basins are under study: Amazonas, Espírito Santo, Potiguar, Sergipe-Alagoas, and Tucano Sul, totaling 128.166 km^2.

The areas with marginal accumulations under study will be available for the Open Acreage as soon as the studies and evaluations are completed, their respective environmental opinions are issued, and after a public hearing is held.

Bidders Submission

The submission for the Open Acreage Process is individual and mandatory for each interested company, even for those intending to submit through a consortium.

Provided all the Tender Protocol requirements and law dispositions are

fulfilled, domestic and foreign legal entities can participate, individually or in a consortium, as well as private equity funds (FIPs), as non-operator, being allowed only to submit the bid through a consortium.

To participate, the interested company shall:

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

Environmental Guidelines

In compliance with the provisions of CNPE, 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 regarding terrestrial sedimentary basins.

That aims to exclude areas due to environmental restrictions that may overlap with locations where oil and natural gas exploration and production activities are not possible or recommended, providing more security and predictability to the environmental licensing process of petroleum enterprises.

Ongoing Open Acreage Cycle

The third cycle of open acreage is underway. It was opened in December 2021 and the concession agreements are expected to be signed until October 2022.

2) Opportunities in Natural Gas Infrastructure

For decades, the Brazilian O&G market (production and refining), was a state monopoly with the full presence of the NOC Petrobras in the E&P and almost 100% domination in the refining market (just two medium-sized refineries were private). The fuel distribution market was spread between the Petrobras subsidiary (BR Distribuidora) and other foreign (Shell, Texaco, Exxon etc.) and local companies.

Since the 1990s, 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, etc.).

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

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 suppliers, in Brazil and abroad.

More recently Petrobras decided to conduct a divestment plan, offering subsidiaries, refineries, and mature fields (onshore and offshore). This plan is under execution with several onshore fields sold for private companies. Some shallow water fields were also sold, several others are still in the line to be offered by Petrobras to the market. Electrical generation power plants are also in this plan, as well as biofuels production plants. Refineries (at least six) will be sold and the Manaus and Bahia refineries were recently acquired by a private company.

On the other hand, natural gas (NG) is another growing market, with a recent and modern regulation mark in Brazil. Several companies are investing in the NG 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 a first-ever effective opening in the NG market.

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

The uncertain scenarios created with the Russia-Ukraine war, that affected the NG supply to Europe, have accelerated a relevant increase on the prices of the barrel and the NG, which could turn the NG from pre-salt in a new opportunity,

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 for it to 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. Countries affected by this market instability could be interested in investing in Brazilian NG projects, aiming to have an alternative and reliable source of NG supply. It could be implemented by, for example, through gas compression or gas liquefaction, with processing plants installed offshore (close to production areas) or onshore (with gas transported from the offshore platforms).

Brazil produced an average 134 million m3/d of NG in 2021 (partially reinjected in the reservoir), with a proved reserve of 337 billion m3. Consequently, the ratio R/P reaches almost seven years, which is the NG goal for all big oil companies' strategic plans.

NG also has a poor distribution pipe net, as can be observed in Picture 3, meaning 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 probably will accelerate the spread 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 **ANNEX II**.

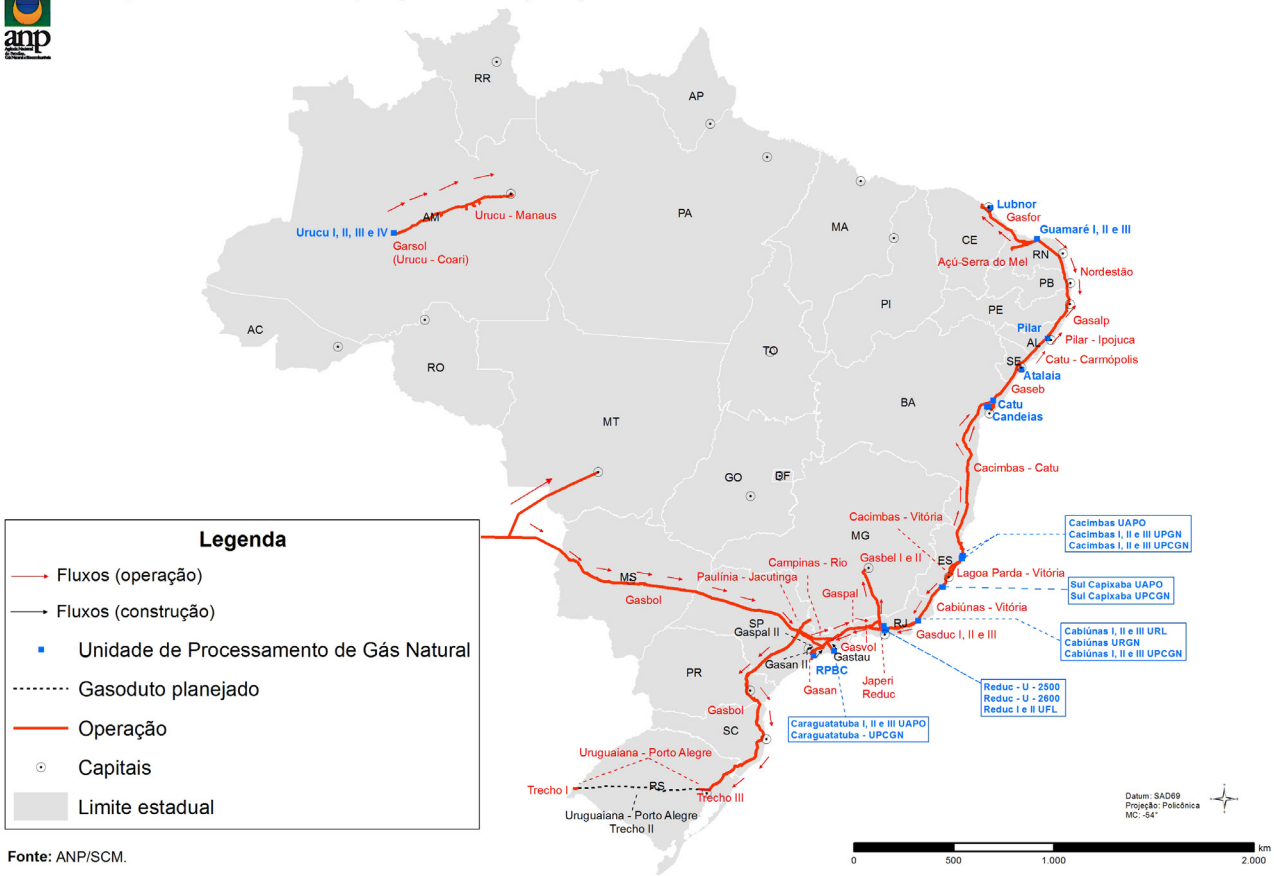
The new legal framework that has just entered into force comprises Law 14,134/2021 and Decree 10,712/2021. Presently, a strong regulatory agenda is underway to create opportunities for distributors, free consumers, and suppliers.

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. The supply of NG reaches 90 million m^3/d, 57% of which comes from the national production. The demand amounts 86 million m^3/d, 47% for industrial use and 42% for electric energy generation.

Brazil has a huge potential for NG in the Pre-Salt offshore reservoirs, the most prolific nowadays. ANP is heading a big effort for 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.

Cartograma 2.3: Infraestrutura de produção e movimentação de gás natural - 2015



Fonte: ANP/SCM.

Picture 3 – Pipe net map – Source ANP

3) Petrobras divestment plan

Petrobras* is the Brazilian NOC and one of the largest oil companies in the world. Few years ago, the company adopted the strategy to focus on the E&P segment, mostly in deep water and pre-salt reservoirs, because of its high productivity and high quality of the crude oil.

*Petrobras in numbers and facts:

- 46,000 employees
- World leader in deep water E&P
- High-end technology developer and owner (including pre-salt)
- About 770,000 shareholders
- Fleet of 130 ships
- Daily O&G production: 2.83 million boe
- Pre-salt daily production: 2.01 million boe
- Proved reserves: 9.59 billion of barrels (boe)
- Oil exports (2021): 620 thousand bpd

Petrobras (as NOC) and ANP (as the O&G regulatory authority) prepared the path for private investments, enabling local and foreign companies to notice the opportunities and find a proper and competitive O&G market, in all segments. The ANP (Picture 4) summarizes these initiatives.

Petrobras established a Divestment Plan, including assets as refineries (Picture 5), onshore production fields, shallow water production fields and other related assets. Brazilian and foreign companies are acquiring those assets, bidding when Petrobras issues the respective teaser, starting each of the sales processes. Because of the dynamic of the sales processes, the availability of the assets must be updated every month

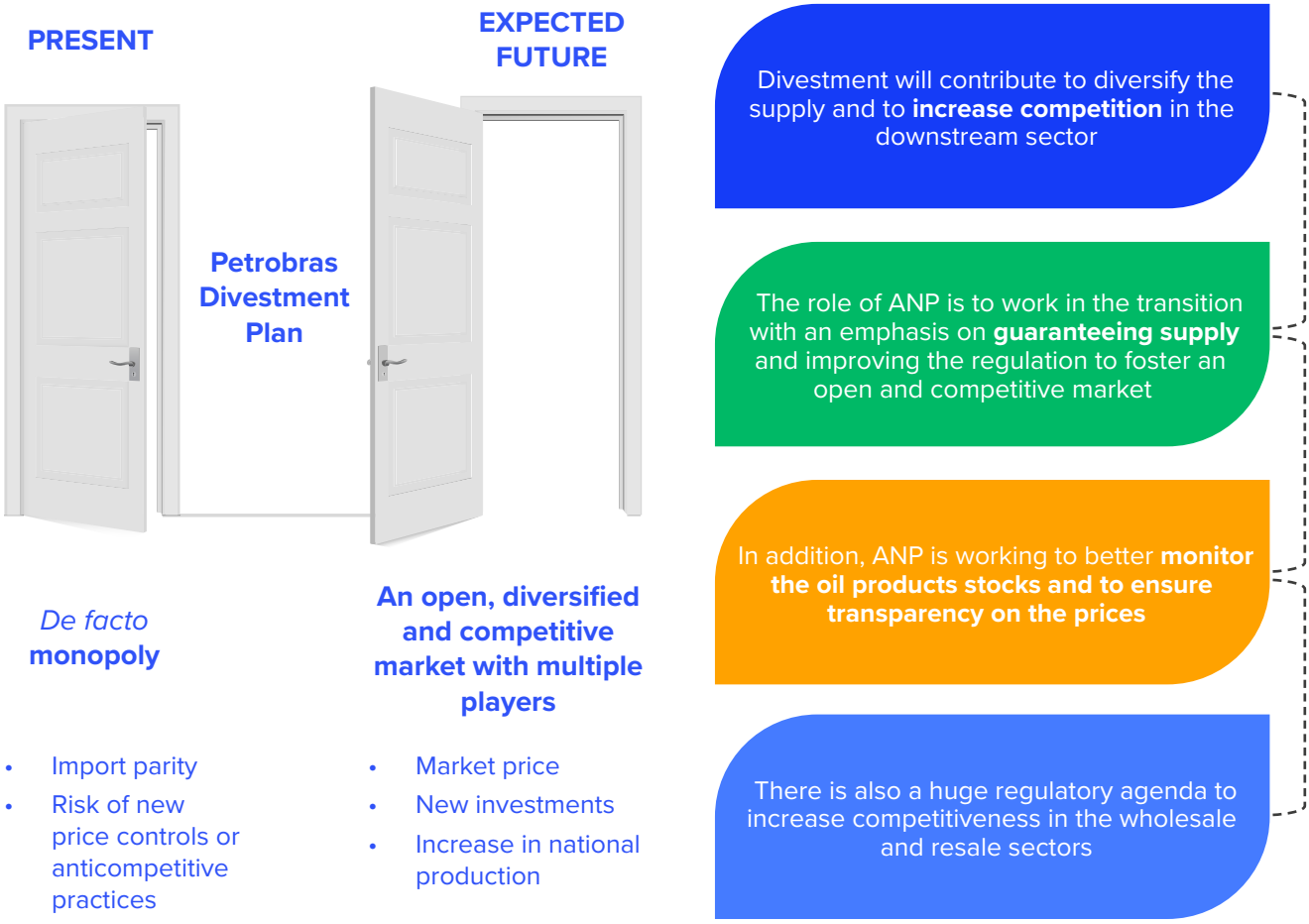
For updates:

https://www.gov.br/anp/pt-br/assuntos/investments-opportunities-in-brazil/

https://www.investidorpetrobras.com.br/en/results-and-announcements/teasers/

https://www.epe.gov.br/en/areas-of-expertise/oil-gas-biofuels

The greatest transformation



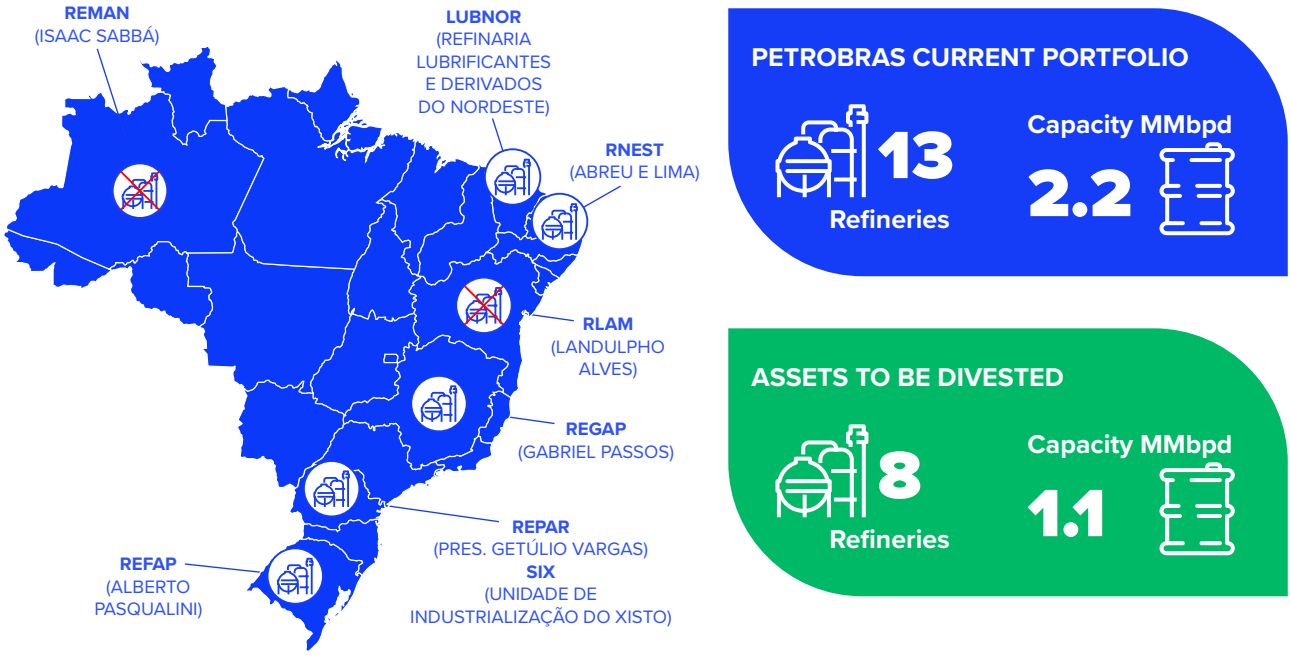
Picture 4 - Source: ANP's public presentation Nov-2021

The Divestment Plan also included Petrobras' shares in companies as BR Distribuidora (the biggest fuel distributor in Brazil), BSBIOS (biofuel producer) and wind farms (electric generation). It also included assets abroad Brazil, as Paraguay, Chile, Uruguay, and Colombia.

Refining opportunities

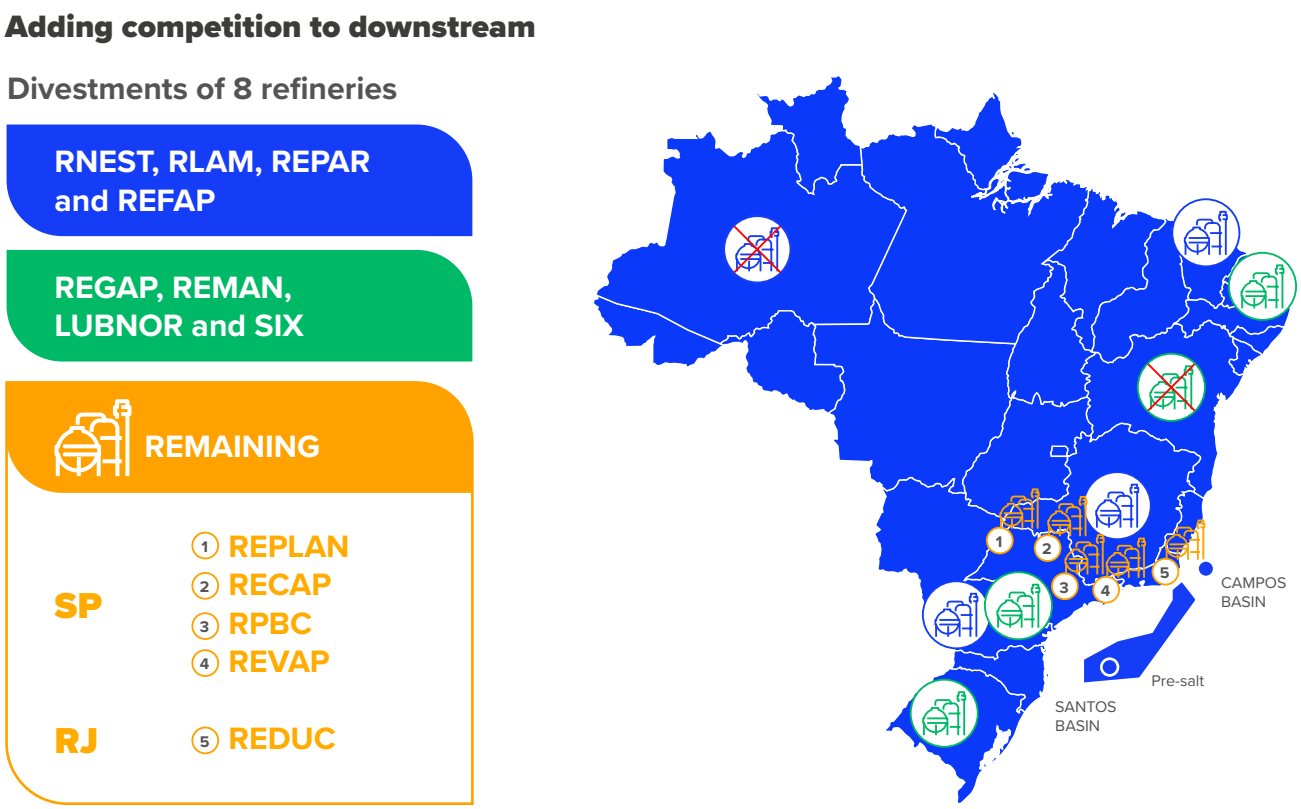
In the next picture the refineries RLAM and REMAN are shown as sold during the divestment plan, other two (LUBNOR and REGAP) are under advanced negotiation process, but other four are available. It is also important to highlight that originally, the oldest Petrobras refineries were designed to process light crude, because the major imports came from the Middle East.

Refining: a major divestment in, bringing a new competitive dynamics to Brazilian market



Picture 5 – Source: Petrobras' public presentation Nov-2021

It is also important to highlight that Petrobras is concentrating its refining capacity in Southeast Brazil, close to the large crude offshore production remaining areas. The other refining assets are spread across the other final consuming markets (Picture 6).



Picture 6 – Source: Petrobras' public presentation Nov-2021

Other important issue about downstream market in Brazil was presented by ANP in the following Picture 7, where the whole downstream market is shown and the Brazilian fuel market appears as the 4th largest in the world, it means a relevant local market for refined products.

The downstream market

19
Refineries

2.4
Million bpd
Refining Capacity

9th
Largest Refinery Capacity
(MME 2021)

634
Importers & Exporters

244
Fuels Distributors
(164 Liquid Fuels
20 LPG 20 Solvents
32 Asphalt
8 Aviation Fuels)

124,240
Retailers and regulated customers

167
Lubricant Producers and Re-refiners

Picture 7 – Source: ANP's public presentation Nov-2021

As mentioned, the Petrobras' downstream divestment plan included 8 assets, with total refining capacity of 1.1 million b/d, it means share of Brazil's refining capacity of 48%

The assets already sold represent 16% of the total capacity, and could be listed as:

- RLAM – Mubadala Fund ($1,65 billion)
- SIX – F&M Resources ($ 33 million)
- REMAN – REAM Participações – ATEM ($ 189,5 millions)

The remaining refining assets for sale (and their respective capacity) could be listed (Northeast to South), pointing out that LUBNOR and REGAP are under advanced sales negotiation phase:

- LUBNOR – 10,000 b/d
- RNEST – 115,000 b/d
- REGAP – 150,000 b/d
- REPAR – 207,000 b/d
- REFAP – 201,000 b/d

The Divestment Plan started in 2016, and presently some assets were sold, others are under negotiation with the bidders, and there are several others that will be sold. The tables included in this report as **ANNEX III (a and b)** present the known assets that will be available for sale in a close future.

For the potential investors, it is important to realize that, to acquire an E&P asset in Brazil the foreign company must be registered as an oil producing company in ANP (the O&G industry regulatory authority in Brazil).

The same rules apply to local companies, the rules and additional important information can be found at ANP's website (**https://www.gov.br/anp/en/**).

E&P opportunities

The first steps in E&P divestment are related with onshore and shallow-water mature fields. During the process, together onshore and shallow-water fields, Petrobras also included some E&P deep-water fields, as could be seen in the Brazilian map (Picture 8).

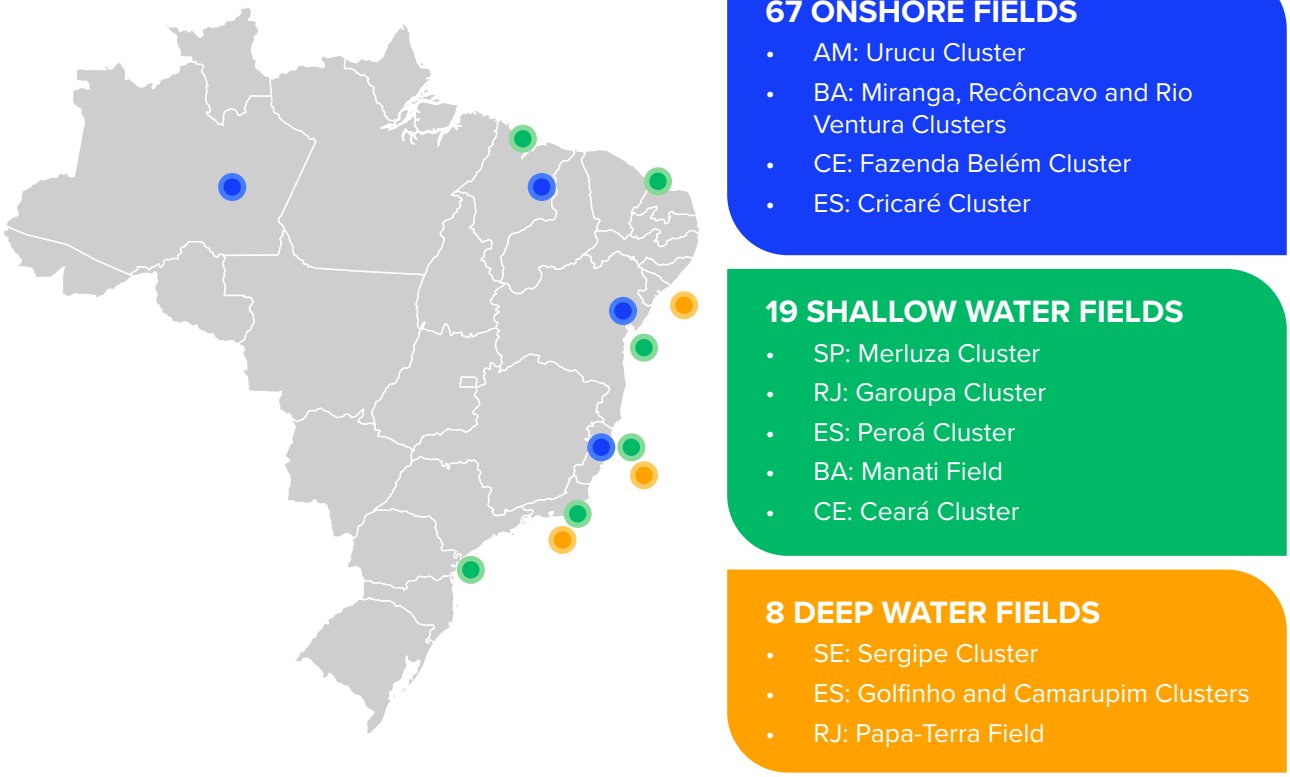
As successful recent sales examples, we can mention:

- Alagoas cluster – investment of US$ 300 million (Jun-2021)
- Potiguar cluster – investment of US$ 1,38 billion (Jan-2022)
- Cricaré cluster (27 concessions onshore) – investment US$ 38 million, acquired by Karavan Seacrest SPE Cricare (SPE). (Dec- 2021)
- Polo Norte Capixaba – investment of US$ 544 million (Feb-2022)

As examples of sales ongoing processes:

- Gulf of Mexico E&P assets – (Oct-2021)
- Catuá field, Southeast offshore, deep-water, (Oct-2021)
- Uruguá-Tambaú fields, Santos Basin, (Sept-2021)
- Potiguar Cluster, Northeast, onshore, offshore shallow-water, refinery (final steps of negotiations started in Jan-2022)
- Urucu Cluster, North, negotiation failed, the asset will be offered again (Jan-2022)
- Albacora and Albacora Leste fields, final steps of negotiation with PetroRio
- Among others

Several opportunities in Brazil's Upstream, attracting investors specialized in onshore, shallow waters and mature fields

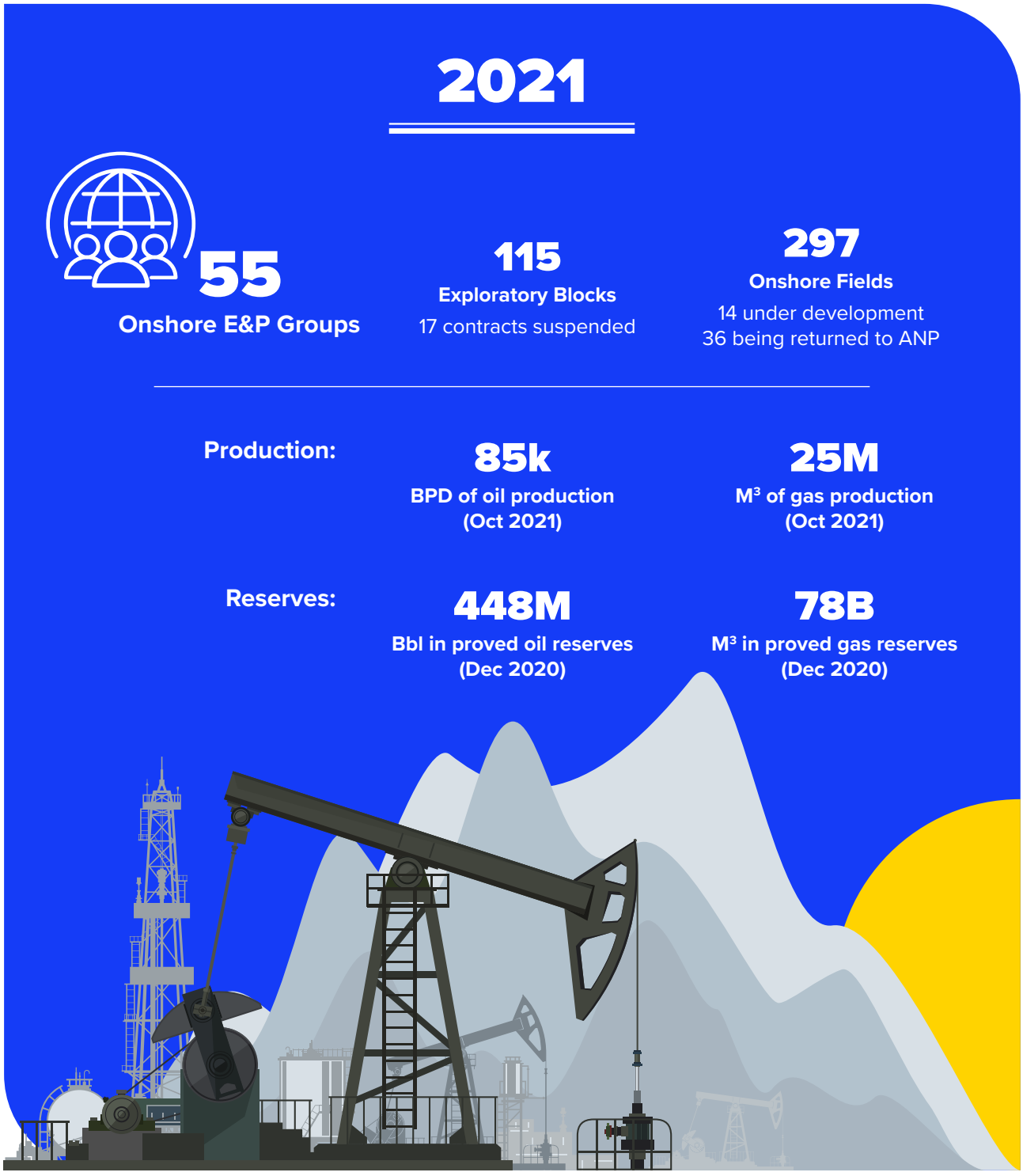


Picture 8 – Source: Petrobras' public presentation Nov-2021

Since the beginning the focus was onshore and mature fields offshore, but it is important to highlight some E&P assets lately included in the divestment plan, out of those criteria (they are deep-water fields) Albacora e Albacora Leste, Golfinho/Canapú, Papa-Terra, Uruguá/ Tambaú, e Camarupim.

The following picture assesses the scenario of the onshore E&P industry in Brazil.

The onshore environment



Picture 9 – Source ANP's public presentation Dec-2021

Representing about 6% of the total O&G Brazilian production, the onshore fields, for years, was a “second business” for Petrobras, the NOC was making massive technological and resources investments in the deep-water and pre-salt fields, which present faster capital return because of the wells’ productivity and oil quality.

That means there is a lack of technological updating in the onshore mature fields, which today presents low recovery factors and anachronic field applied technologies (as intelligent wells, downhole monitoring and control systems, safety systems, reservoir optimization technologies, etc.). A new experienced and focused owner will have the opportunity to apply new technologies, multiply the level of daily production and increase the reservoir lifecycle, improving the recovery factor (an outstanding investment return opportunity).

It is important to highlight: to increase 1% RF in these mature onshore fields can mean an additional 200 thousand boe. Today, new operators are increasing production and RF. A rebound in the onshore oil production is expected for the coming years. The numbers of E&P groups acting in Brazilian onshore activities increased more than 30% since 2016 and, as mentioned herein, all onshore fields are being sold by Petrobras. In Dec-2021, 107 onshore fields had their sales concluded.

E&P opportunities parallel to the Petrobras' Divestment Plan

Other opportunities are related with the pre-salt reservoirs, but they are not related with the Petrobras Divestment Plan, although there is a straight connection with Petrobras, it means the Pre-Salt Production Surplus.

As mentioned, ANP is the regulatory authority, and has some contractual formats for oil companies to explore areas (blocks); one of those formats is the Transfer of Rights. This modality was created specifically for the pre-salt scenario, through Law 12.276/2010.

It is a regime with the Union directly contracting Petrobras in specific areas. The Law granted Petrobras the right to extract up to five billion barrels of oil equivalent from non-granted areas located in the pre-salt layer, pursuant to a specific contract.

The type of contract called Onerous Transfer of Rights resembles the conventional Concession Agreements, practiced by the ANP, and can thus be qualified by including a Compulsory Exploration Program (CEP), providing for the payment of 10% royalties and 34%

Income Tax. However, that excludes signature bonus, special participation, PIS and COFINS payments (Brazilian taxes).

Under the Onerous Transfer of Rights Contracts, in the CEPs of the definitive blocks, there is no risk of block loss due to delay in the implementation of the Program, unlike conventional concession agreements. In case of delay, there will be only the payment of a fine, as established in the contract, whose term is 40 years, renewable for another five years, at the request of Petrobras.

In the Onerous Transfer of Rights Contract, Petrobras took, on an exclusive basis, all investments, costs, and risks related to the operations, being the state-owned company, as a counterpart, the owner of the oil and natural gas that is effectively produced, volumes that will be appropriated by it at the production measurement point, with the respective application of the expected royalties.

In other words, Petrobras pays in advance for a presumed volume of oil and gas that the company will be entitled to produce within the CEP submitted and approved for each block. This volume should compensate Petrobras for its investments and for the associated costs of production and operation of the blocks. Once the contracted volume has been produced, the remaining (or surplus) volume will be tendered by the Union.

Once the production volume established in the Onerous Transfer of Rights Contract is reached (in the sum of the production of the blocks), each block may be returned to the Federal Government. The ANP may require Petrobras not to cap and abandon the wells, as well as not to disable or remove certain facilities and equipment, and shall be responsible for such wells, facilities, and equipment upon Petrobras's departure. This measure can be taken to facilitate the assumption by third parties of the wells already in production that will be returned by Petrobras.

Once the maximum production volume predicted in the contract has been reached, Petrobras may revert to the Federal Government, movable and immovable, main and accessory goods, existing in any portion of the contract area that, at the Union's sole discretion, after hearing the ANP, are considered necessary for the continuity of the operations or for use in public interest.

It is worth mentioning that, given the facts found in the period from 2010 to 2019, such as: high quality of oil in situ, much higher flow than estimated for producing wells and improvement in the perspective of reservoir recovery factor, the production of five billion equivalent barrels can be reached significantly before the 40 contractual years (perhaps in less than 15 years), which would lead Petrobras to be able to continue producing for several years within the contract, or even to establish new contracts.

Because of the difficulty to predict when and if the production limit will be reached, and if Petrobras (and its partners) will execute its precedence over the assets, it is impossible to name and to present potential opportunities but is important

advice to be aware that in this segment, several opportunities will come, very attractive for large oil companies, with experience in E&P in deep waters.

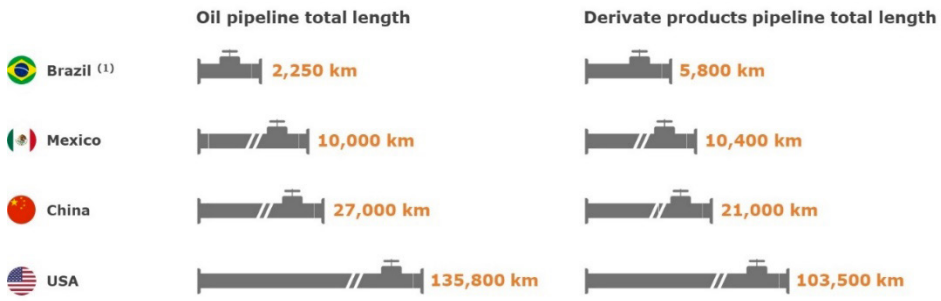
Other opportunities are the regular ANP's bids, pre-announced in the press and at the ANP's website. The rules to participate are always available in the ANPs website (**https://www.gov.br/anp/en/**). It is important for foreign oil companies to visit it previously, realize the requirements to be eligible and recognized by ANP as oil company to participate in any of the opportunities.

4) Infrastructure project proposals – terminals and oil pipelines – Energy Research Office (EPE)

EPE (Energy Research Office) is the Brazilian Federal Government company in charge of the energy sector research and planning. The company carries out studies about the energy sector and prepares project proposals, which may be implemented (or not) in the future by private or state-owned companies (municipal, state, or federal level). It is important to highlight that these project proposals depend on several factors to develop into a real implemented project, such as: scenario analysis by investors, market demand, potential competitiveness of the implemented solution, availability of financial resources, etc. It means, they are in an earlier stage, if compared with the other opportunities mentioned in this report.

The information presented ahead is part of the EPE's Pipeline Indicative Plan (Plano Indicativo de Oleodutos), as EPE stated in the document, the information involves a wide range of risks and uncertainties. Due to that, the data, the analysis and all the information replicated herein are not a warranty of effective deals in the future (please refer to the original document, available just in Portuguese, in the EPE's website).

EPE's compared the pipeline scenario in Brazil (2020) with other markets, as shown in Picture 10.



Picture 10 – Oil pipeline scenario – Source EPE's public presentation

The result of this study, with a scenario targeting 2031, was the proposal for construction of new terminals and new pipelines, considering the increase of the use of the existing ones (and its saturation) because of the increase of the demand of fluid transportation.

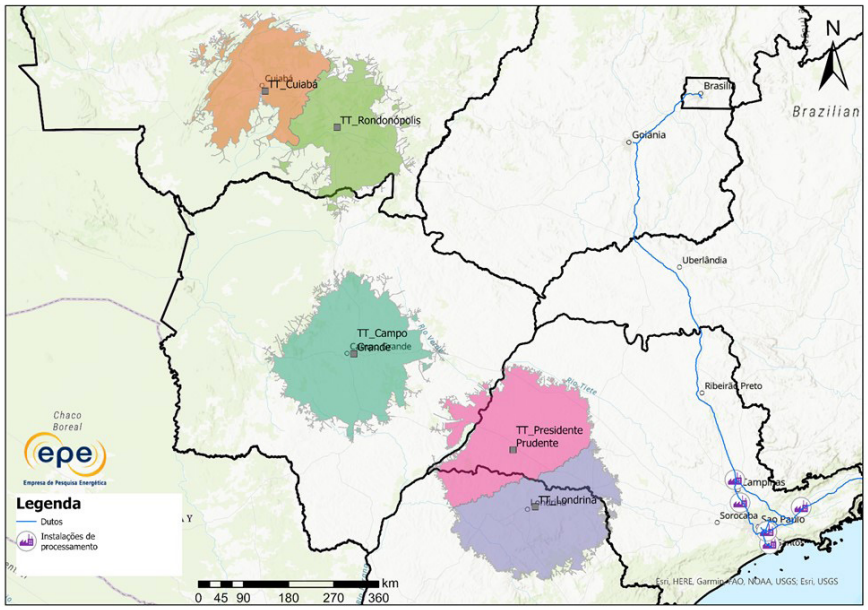
To determine the new terminals to be built (EPE's project proposals), in combination with other transportation facilities, the priority was given to regions close to the main cities (in terms of future projected demand), which were also served by highways.

A relative distance from large urban centers is necessary, due to safety issues. However, the connection to a transportation axis (for example, a road) is necessary for the flow of fuels in a complementary way to the polyduct, to serve a secondary distribution base, retailer-distributor, or even retail gas stations (reaching final clients).

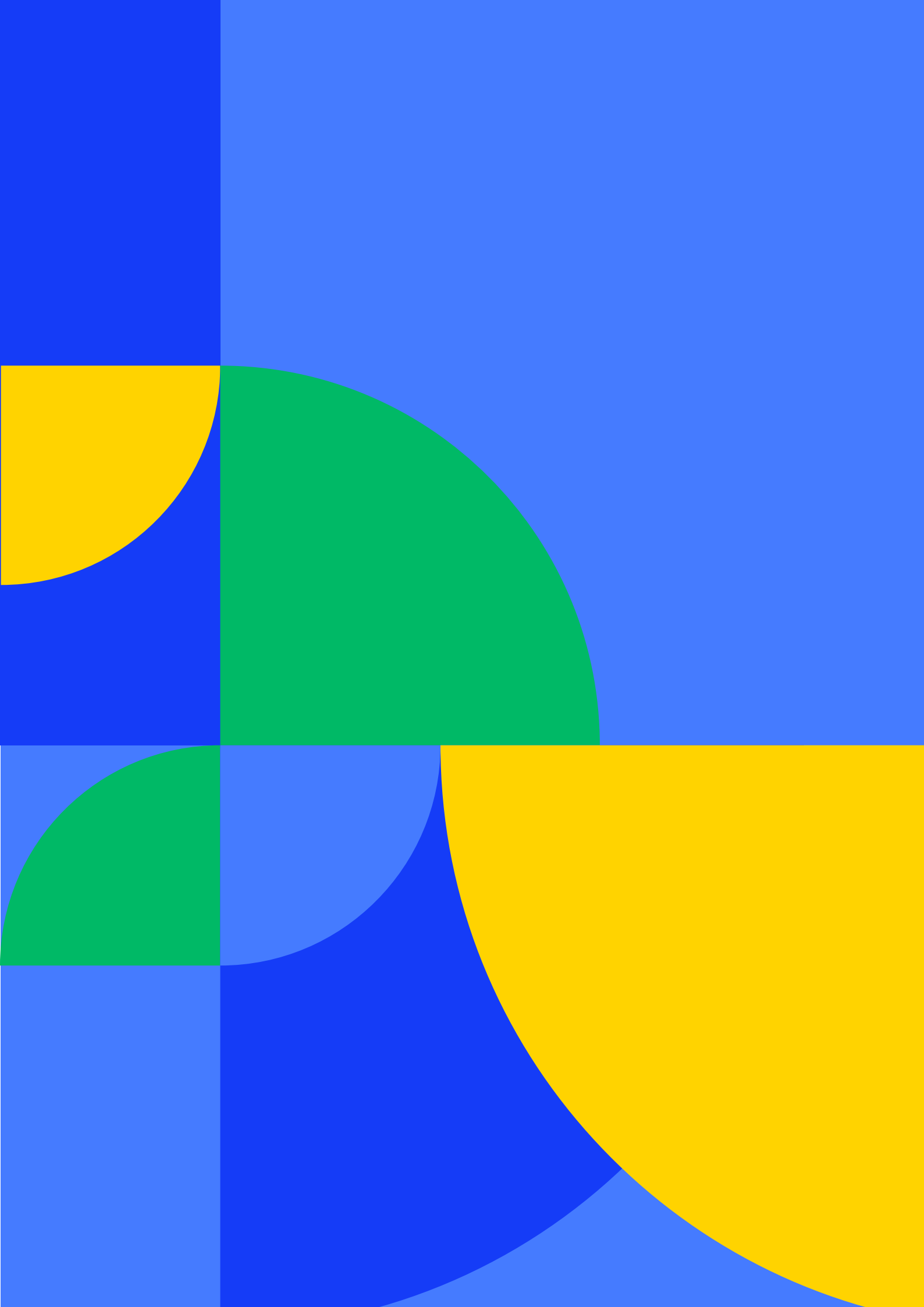
The determination of the priority areas for terminals was based, in the study, in the Immediate Regions of Interest, a procedure that was implemented to delimit the service areas of each fuel terminal, associated with a certain alternative for the polyduct route. EPE's used the tools available in the ArcGIS Pro software, and a service area proposal was generated for each of the evaluated terminals, covering up to 200 kilometers by road.

Picture 11, elaborated by EPE, shows a map of the five new proposed terminal areas of influence (states of São Paulo, Paraná, Mato Grosso do Sul e Mato Grosso). The proposed terminals are: Londrina, Presidente Prudente, Campo Grande, Rondonópolis and Cuiabá. The pipelines to connect those terminals are: Araucária-Itajaí, OSBRA-Cuiabá and Araucária-Cuiabá.

Each of the proposed projects will be resumed in **ANNEX IV** of this report.



Picture 11 – Map of the covered areas for the proposed new terminal – Source EPE



5) Final Remarks

More information about available assets (Petrobras and ANP) and proposed projects (EPE) can be found in the Annexes of this report. Complete information is available at the respective websites of each project's responsible entity.

Because of the well-known characteristics of the oil industry, this report, and each of the scenarios mentioned herein, must be revisited periodically, to guarantee updated information about the local and international Oil &Gas market.

The Oil &Gas market instability is part of its history, and eventually could attract newcomers to invest on it, mostly when final consumers could be potentially affected by this geo-political characteristic, that is intrinsic to this business environment. To invest in this market requires deep knowledge, proper information, time and movement accuracy, risk analysis, environmental concern, long-term planning and strategies, huge amounts of money, clear vision over the potential impacts of lacks in supply and the possible paths the market could take ahead.

6 ANNEX I – Open Acreage Assets

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Camamu-Almada Basin
Project overview	Camamu-Almada Basin is a basin with few discoveries. The basin is well covered with bi and tridimensional seismic survey, besides gravimetric and magneto-metric data from the entire basin.
Project location	Offshore Bahia State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 12 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Campos Basin
Project overview	Campos Basin is the main sedimentary area already explored offshore Brazil. The first field to be discovered was Garoupa in 1974, at a water depth of 120 meters. In most fields, there is a clear preponderance for oil over gas. Most of the known fields are concentrated within 10 % of the total basin area. The remaining area is geologically complex but could also contain oil accumulations.
Project location	Offshore Rio de Janeiro and Espírito Santo States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 31 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Ceará Basin
Project overview	Ceará Basin is located on the Brazilian Equatorial Margin. The basin has approximately 34,000 km2, in water depths up to 3,000 meters. Although it is a producer of oil and gas in its shallow-water portion, in deep waters it is still considered a new frontier basin. Light oil discoveries are expected in deep waters.
Project location	Offshore Ceará State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 13 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Espírito Santo Basin
Project overview	Espírito Santo Basin is located along the north-central coast of the state of Espírito Santo and the far southern coast of the state of Bahia. Its maritime part has an explorable area of approximately 38,000 km2, considering a water depth of up to 3,000 meters. It presents areas with great potential, which, according to wells already drilled, is likely to contain carbonates similar to those found in the Campos and Santos basins. The expected fluid is predominantly light oil.
Project location	Offshore Espírito Santo and Bahia States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 20 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Foz do Amazonas Basin
Project overview	Foz do Amazonas Basin is located in the extreme northwest of the Brazilian Equatorial Margin. The basin extends along the continental platform of the states of Pará and Amapá, extending beyond Brazil's international boundary with French Guiana. On the Brazilian side, the basin covers an area of approximately 268,000 km2, reaching a bathymetric height of 3,000 meters. It is characterized by ANP as a potential region for gas and light oil discoveries, with evidence of hydrocarbons in shallow and deep-water wells already drilled.
Project location	Offshore Pará and Amapá States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 47 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Jacuípe Basin
Project overview	Jacuípe Basin is located at the northeastern Brazilian margin. It has great hydrocarbon potential but is considered a new frontier basin due to the lack of integrated studies.
Project location	Offshore Bahia State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to five blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Pelotas Basin
Project overview	Pelotas Basin is a mostly offshore basin of approximately 346,000 km2 in the South Atlantic, administratively part of the southern states Santa Catarina and Rio Grande do Sul of Brazil and Uruguay. Within the Brazilian Atlantic Margin, Pelotas Basin is relatively unexplored. Few wells have been drilled in the Brazilian portion of the basin with one ultra-deep-water exploration well drilled on the Uruguayan side. No hydrocarbon accumulation has been proven in the basin.
Project location	Offshore Santa Catarina and Rio Grande do Sul States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 114 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Pernambuco-Paraíba Basin
Project overview	Pernambuco-Paraíba Basin is one of the less well known Atlantic marginal basins of Brazil. It has an area of approximately 213,000 km2 and a sedimentary thickness of more than 4,000 meters. The basin is one of the Brazilian sedimentary basins with the smaller amount of acquired data and, consequently, the smaller geologic knowledge. It is the only Brazilian sedimentary basin without wells drilled at its offshore portion.
Project location	Offshore Pernambuco, Paraíba and Rio Grande do Norte States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to nine blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Potiguar Basin
Project overview	Potiguar Basin is part of the Brazilian Equatorial Margin basins and presents a petroleum exploration history since 1956, with the main oil and gas fields discoveries occurring in the 70s and 80s, both onshore and offshore shallow waters. Potiguar basin has a history of oil potential in both onshore and offshore, where the onshore region is the most exploited. However, little is still known about the offshore deep and ultra-deep waters regions, which are characterizes as an exploratory frontier.
Project location	Offshore Rio Grande do Norte and Ceará States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 23 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Santos Basin
Project overview	Santos Basin is the biggest offshore sedimentary basin in Brazil, with a total area of more than 350,000 km2, extending from Rio de Janeiro State to Santa Catarina State. In Santos Basin Pre-Salt Cluster are located the biggest producing fields in the country, such as Tupi and Búzios. Pre-Salt fields are considered world-class assets and they combine huge reserves, high productivity, and a remarkable potential for value creation. These formations, with high quality oil, are located at approximately 300 km from the shore, at a total depth of approximately 5,000 meters, 2,000 meters water depth, 1,000 meters of sediments and 2,000 meters of salt. At present, Santos Basin is the biggest oil and natural gas producer in Brazil – with a promising potential for growth in the following years.
Project location	Offshore Rio de Janeiro, São Paulo, Paraná, and Santa Catarina States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 261 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Offshore Basins – Sergipe-Alagoas Basin
Project overview	Sergipe-Alagoas Basin is located on the coast of Sergipe, Alagoas, and Pernambuco States. It has been explored since the 1930s and its onshore portion is considered a mature basin. The first commercial oil discovery occurred in 1957, onshore Alagoas State. Offshore exploration began by the end of 1960s, when Guaricema field, the first commercial oil field offshore Brazil, was discovered. Its total area is of about 44,000 km2, approximately 32,000 km2 offshore up to a water depth of 3,000 meters. Since 2007, new frontiers have been explored, starting the production of light oil at deep waters. The basin has gained importance due to the high index of geologic success, with discoveries at ultra-deep waters. Sergipe-Alagoas Basin presents a high potential of recoverable volume, existing logistic infrastructure, and prospects from medium to low risk. It is expected to produce light oil, from 30 to 40° API.
Project location	Offshore Sergipe and Alagoas States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 11 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Amazonas Basin
Project overview	Amazonas Basin, with an area of approximately 616,000 km2, is situated in the north region of Brazil and occupies part of the States Amazonas, Pará and Amapá. The basen presents a proven petroliferous system. In 1953, Nova Olinda oil reservoir was discovered, considered sub commercial due to its limited extension. Significant sub commercial oil and gas discoveries occurred in the 80s. In 1999, the first commercial discovery took place at Rio Uatumã gas reservoir. The best reservoirs stay at Monte Alegre Formation. The basin presents a low density of exploratory wells and seismic survey. Most of the wells were drilled without any seismic study. The basin, a new frontier, is very promising, since all the requirements to form hydrocarbons fields are present.
Project location	Onshore Amazonas and Pará States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 20 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Espírito Santo Basin
Project overview	Espírito Santo Basin is located along the north-central coast of the state of Espírito Santo and the far southern coast of the state of Bahia. The basin has a total sedimentary area of approximately 123,000 km2, of which almost 18,000 km2 onshore, and is covered by a recent 2D spec survey. 483 exploratory wells were drilled in the basin, resulting in the discovery of 51 hydrocarbon accumulations, 46 of them onshore. Recently, an onshore oil discovery took place in the basin.
Project location	Onshore Espírito Santo and Bahia States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 27 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Paraná Basin
Project overview	Paraná Basin is a huge sedimentary basin situated in the center-east portion of South America. Its area, of about 1.5 million km2, includes the center-south of Brazil (75 % of its area), from Mato Grosso State up to Rio Grande do Sul State. Beyond Brazil, it covers the northeast of Argentina, the east of Paraguay and the north of Uruguay. Paraná Basin has been explored for more than a century. The first petroleum exploratory well drilled in Brazil was drilled in the basin between 1892 e 1897, in the state of São Paulo. Nonetheless, sulfur water and two barrels of petroleum were recovered. The petroliferous potential of the basin has not yet been totally explored mainly due to the great thickness of a basalt layer that not only makes drilling costs too expensive but jeopardizes the quality of seismic surveys as well. Up to now, only sub commercial oil findings have occurred in the basin. In 1996, Petrobras made the one and only natural gas commercial discovery in the basin: Barra Bonita field in Paraná State.
Project location	Onshore Mato Grosso do Sul, Santa Catarina and Goiás States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 21 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Parnaíba Basin
Project overview	Parnaíba Basin is located in the western northeast region of Brazil, with an area of approximately 666,000 km2. It is spread over the states of Piauí, Maranhão, Pará, Tocantins, Bahia and Ceará. ANP has invested in acquiring data from Parnaíba Basin, including magnetometry and gravimetry aerial survey, surface geochemical survey and reflexional seismic associated to terrestrial gravimetry and magnetometry. Parnaíba Basin is the second biggest onshore natural gas producer in Brazil.
Project location	Onshore Maranhão and Piauí States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 21 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Parecis Basin
Project overview	Parecis Basin is one of the largest Brazilian onshore basin and it extends over an of approximately 356,000 km2. It occupies practically the entire central-north portion of the Mato Grosso State and partially, the Rondônia State. The hydrocarbon exploration in the Parecis Basin has challenged geoscientists. One of the principal reasons is the scarcity of data; until now, there are only five exploratory wells drilled for hydrocarbon studies, few regional surveys of potential methods and seismic data are limited to less than a hundred two-dimensional lines. As result, there are no commercial discoveries reported. Because of that and due to the high investment risk it represents, Parecis Basin is classified as an exploratory frontier. There are traces of gas, and preliminary estimates suggest in situ volume of 7 TCF.
Project location	Onshore Mato Grosso State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 20 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Potiguar Basin
Project overview	Potiguar Basin is one of the most prolific sedimentary basins. Located in the Equatorial Margin of Brazil, it comprises approximately 94,000 km2 along the offshore and the onshore areas. The exploratory history of the basin started in the 70s, and today the onshore part, is considered to be a mature basin. According to ANP, Potiguar Basin is a traditional oil producer both onshore and offshore. The future of Potiguar Basin, which extends through the northeastern states of Rio Grande do Norte and Ceará, has been unknown over the past few years. Potiguar Basin is considered a star among Brazilian onshore sedimentary basins.
Project location	Onshore Rio Grande do Norte and Ceará States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 200 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Recôncavo Basin
Project overview	Recôncavo Basin, in the Northeastern Region of Brazil, presents a very efficient petroleum system, which makes it one of the most prolific areas in Brazil. The first commercial oil field discovered in Brazil, in 1939, at Lobato, is in Recôncavo Basin. Since then, more than 5,000 wells were drilled in the basin, resulting in the discovery of about 80 oil and gas fields. The basin has an area of about 10,000 km2. Recôncavo Basin is classified as a mature basin regarding the level of knowledge and exploration, encompassing a big onshore portion and a small offshore portion inside Todos os Santos Bay, in Bahia State. Exploratory efforts have resulted in regional gravimetric and magnetometric data surveys, 2D and 3D seismic acquisition, and almost 7,000 wells.
Project location	Onshore Bahia State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 74 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Sergipe-Alagoas Basin
Project overview	Sergipe-Alagoas Basin is located in the east coast of Brazil, spreading over the states of Sergipe, Alagoas and Pernambuco. It has been explored since the 30s, and its onshore portion is classified as a mature basin. Initial surveys started at the north region of Alagoas State, and the first petroleum commercial discovery occurred in 1957, at Tabuleiro dos Martins. Carmópolis field was discovered in 1963, in Sergipe State. Most of the discoveries has taken place in the 60s, in the state of Sergipe. The basin is covered by 2D and 3D reflection seismic surveys, beyond data acquired by potential methods. The area of onshore portion of Sergipe-Alagoas Basin is approximately 12,000 km2. As of 2020, onshore Sergipe-Alagoas Basin had proven reserves of oil of about 152 million barrels and 1,623 million m3 of gas. Alagoas sub-basin has a tendency for gas while Sergipe for oil.
Project location	Onshore Alagoas State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 92 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Onshore Basins – Tucano Basin
Project overview	Tucano Basin contains a main portion, Tucano Sul sub-basin, that is the only interesting area of the basin. The sub-basin extends over an area of approximately 7,000 km2, situated in the northeast region of Bahia State. There are 103 wells, which led to the discovery of 25 million m3 of oil equivalent original oil in place, distributed over ten small accumulations, with more relevance to the following fields: Conceição, Quererá, Lagoa Branca, Estação de Iraí and Sempre Viva. It is important to highlight that the basin is next to the prolific Recôncavo Basin, presenting similarities regarding the origin and structural style, but Tucano Sul is favorable to the generation of gas.
Project location	Onshore Bahia State
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oac/exploration-blocks
Sectors of interest	Exploration of up to 45 blocks of oil and natural gas onshore reservoirs
Total project cost	Not defined
Procurement / contract model	Concession agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

PROJECT TITLE	Exploratory Blocks – Pre-Salt Province
Project overview	The Pre-Salt Province is located in an area of approximately 800 km in length and 200 km in width in the territorial sea between the states of Santa Catarina and Espírito Santo. The Pre-Salt discoveries are among the most important made in the world over the last decade. This province comprises large accumulations of excellent quality, high commercial value light oil. The output per well in the Santos Basin Pre-Salt cluster is well above the oil and gas industry's average. It adds up to about 25,000 barrels of oil per day, on average. Of the ten highest producing well in Brazil, nine are in this area. The most productive one is in Tupi field, with an average daily flow of 36,000 barrels of oil per day. Meanwhile, Libra, one of the largest and most promising oil and gas production projects ever developed by the offshore industry, has reservoirs that are among the most productive in the world, with oil columns measuring up to 400 meters thick. The total depth can reach up to 7,000 meters. Due to its magnitude and major potential, this huge deposit opens a new business horizon and expands investment opportunities in the Brazilian offshore industry. The current findings of Petrobras and other companies in the province of the Pre-Salt can mean reserves of over 50 billion barrels of oil, a volume four times greater than the current national reserves. Pre-Salt oil is of good quality, although it is found in reserves that are in deep-sea areas and under thick layers of salt, requiring large-scale investment to extract it.
Project location	Offshore Espírito Santo, Rio de Janeiro, and São Paulo States
Project website	https://www.gov.br/anp/en/rounds-anp/open-acreage/oaps/offered-blocks
Sectors of interest	Exploration of up to 11 blocks of oil and natural gas offshore reservoirs
Total project cost	Not defined
Procurement / contract model	Production Sharing agreement
Nature of investment	Rights of exploration, with a clause of extension in case of commercial discovery
Timeframe	Not defined
Institution responsible	ANP (National Agency for Petroleum, Natural Gas and Biofuels)

7) ANNEX II – Natural Gas opportunities

PROJECT TITLE	Fertilizer Factory
Project overview	Construction of a fertilizer plant at Porto do Açu (Port of Açu) in the northeast of Rio de Janeiro State.
Project location	Onshore Rio de Janeiro State
Project website	https://portodoacu.com.br/negocio/fertilizantes/
Sectors of interest	Fertilizers industry and agribusiness
Total project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Research phase
Institution responsible	Port of Açu

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	Onshore Rio de Janeiro State
Project website	https://petrobras.com.br/nossas-atividades/principais-operacoes/refinarias/polo-gaslub-itaborai.htm
Sectors of interest	Production of lubricants and some fuels
Total project cost	US$ 590 million
Procurement / contract model	According to the rules that may be found at https://canalfornecedor.petrobras.com.br/pt/
Nature of investment	Not defined
Timeframe	Research phase, with prevision to start operations in 2025
Institution responsible	Petrobras

PROJECT TITLE	Natural Gas Power Plant
Project overview	Construction of a natural gas power plant at Petrobras' Gaslub Cluster, close to the city of Itaboraí in the center of Rio de Janeiro State. Petrobras' Gaslub is under construction and is going to be fed with natural gas produced at Pre-Salt fields.
Project location	Onshore Rio de Janeiro State
Project website	https://petrobras.com.br/nossas-atividades/principais-operacoes/refinarias/polo-gaslub-itaborai.htm
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	Not defined
Timeframe	Research phase
Institution responsible	Petrobras

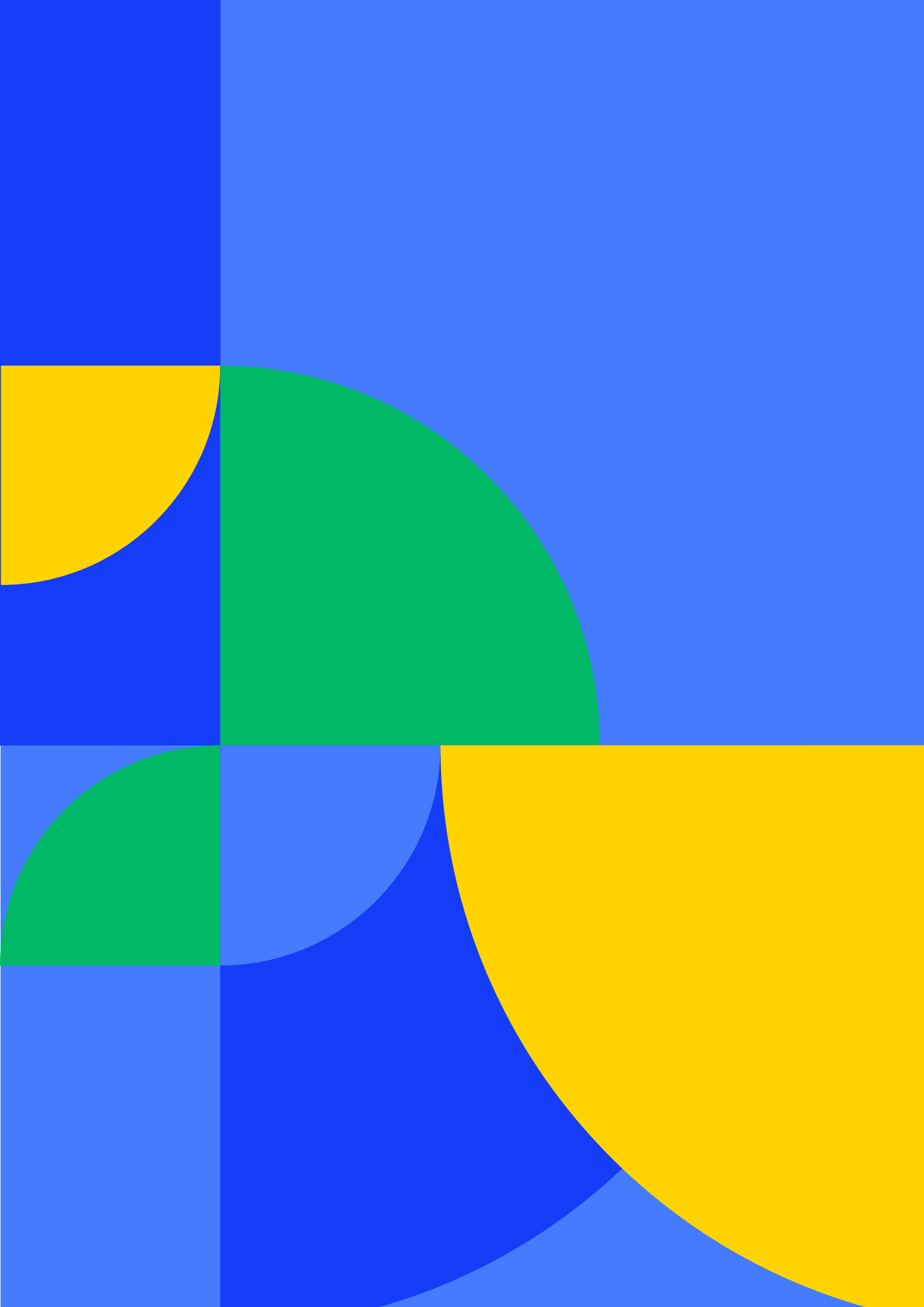
PROJECT TITLE	Route 4b Gas Pipeline
Project overview	Construction of a gas pipeline from Bacalhau field (Pre-Salt Area) to the Port of Itaguaí close to Rio de Janeiro City, with the possibility of building a natural gas processing plant.
Project location	Offshore São Paulo and Rio de Janeiro States
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Project licensed by environmental authority
Institution responsible	Equinor

PROJECT TITLE	Route 5b Gas Pipeline
Project overview	Construction of a gas pipeline from block BM-C-33 (ultra-deep waters at Campos Basin) to Cabiúnas Natural Gas Terminal, that will allow the delivery of natural gas directly to the gas transportation network.
Project location	Offshore Rio de Janeiro State
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Project licensed by environmental authority
Institution responsible	Equinor

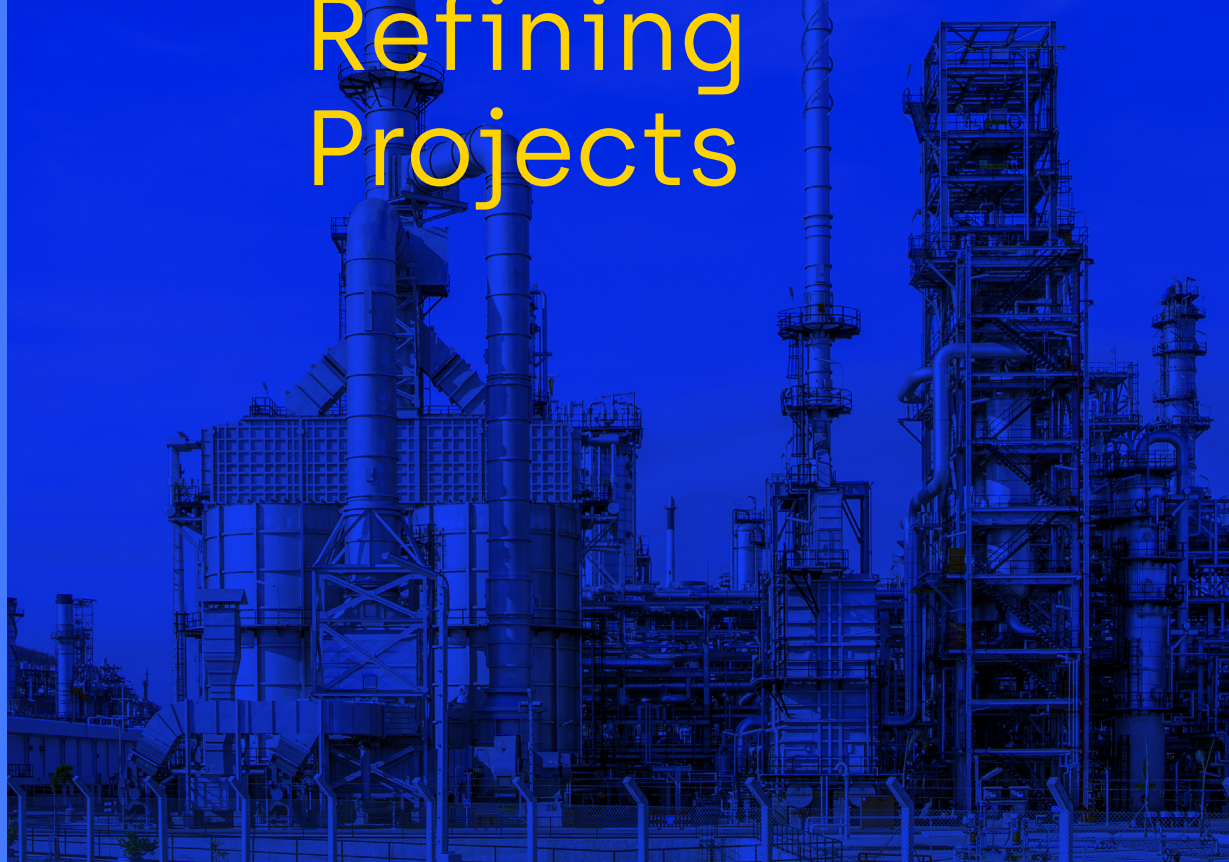
PROJECT TITLE	Route 6b Gas Pipeline
Project overview	Construction of a gas pipeline from block CM-101 (ultra-deep waters at Campos Basin) to the Port of Açu, with the possibility of building a Natural Gas Processing Plant and a Gas Transportation Pipeline.
Project location	Offshore Rio de Janeiro State
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Research phase
Institution responsible	Not defined

PROJECT TITLE	Hub Sergipe
Project overview	Construction of a gas pipeline offshore, connecting multi-producer offshore facilities, to an onshore multi-client NG processing unity, a fertilizer cluster, a Blue Hydrogen plant a refinery (RefineSE). An intention protocol between the EnP (the company responsible for the project) and the government of the Sergipe State was signed Feb. 2021.
Project location	Offshore and onshore Sergipe State (Northeast)
Project website	https://enpbr.com/en/projects/
Sectors of interest	Transportation and use of natural gas produced offshore
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Establishment of Partnership phase, project detailing
Institution responsible	EnP (www.enpbr.com)

PROJECT TITLE	Hub GASINES
Project overview	GasinES is a gas pipeline with 190 km of 24” and 50 km of 18”, and capacity to flow up to 20 million m^3/day.GasinES Operation and Distribution Center (COD) allows offshore gas to be processed in up to four NG processing units:• NGPU Cacimbas• NGPU Lagoa Parda• NGPU Sul Capixaba• NGPU Cabiúnas
Project location	Offshore Rio de Janeiro and Espírito Santo States (Southeast)
Project website	https://enpbr.com/en/projects/
Sectors of interest	Transportation and treatment of natural gas produced offshore
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Not defined
Timeframe	Planning phase
Institution responsible	EnP (www.enpbr.com)



8) ANNEX III-a – Petrobras Divestment Refining Projects



PROJECT TITLE	RNEST
Project overview	Established in 2014, the refinery RENEST incorporates the modernest automation, monitoring and control technics, as well as, the more efficient processing trends, that could reach up to 230,000 barrels a day (today it is 115,000 bpd).
Project location	Northeast Brazil, Pernambuco State, neighborhood of Recife, the state capital
Project website	https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/refinaria-abreu-e-lima.htm
Sectors of interest	RNEST was designed with two independent refining trends, aiming the flexibility of processing several oil kinds, with very high operational reliability.Production is focused in diesel production (70%), with low sulfur concentration (less than 10 ppm), complying the highest international levels. The main products are: Diesel S-10, naphtha, fuel oil, cock, LPG (liquefied petroleum gas).
Total project cost	Not defined
Procurement / contract model	Teaser announcing the sale, proposals analyzed, market information and sales conclusion
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

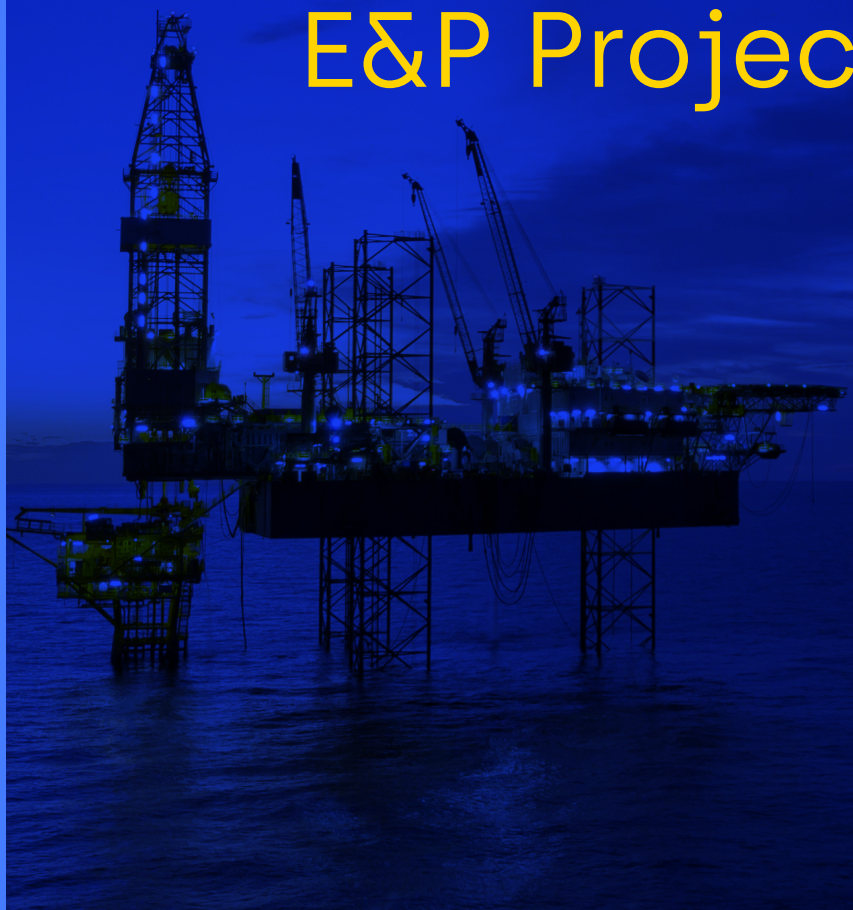
PROJECT TITLE	REPAR
Project overview	The refinery REPAR started operation in 1977 and presently can handle with 33,000 m3 of crude (about 207,000 bpd). REPAR is responsible for approximately 12% of the petroleum derived products.
Project location	The refinery is located in the city of Araucária, in Paraná State.
Project website	https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/refinaria-presidente-getulio-vargas-repar.htm
Sectors of interest	The main products are diesel, gasoline, LPG, coke, asphalt, fuel oils, aviation kerosene, propene, maritime oils. The products are destinated to the markets in the states of Paraná, Santa Catarina, South of São Paulo and Mato Grosso do Sul.The refinery is connected to two maritime terminals and three oil pipelines, as per:- Maritime Terminal of São Francisco do Sul (SC);- Maritime Terminal of Paranaguá (PR);- Ospar (Oil pipeline Santa Catarina-Paraná);- Olapa (Oil pipeline Araucária-Paranaguá);- Opasc (Oil pipeline Paraná-Santa Catarina).REPAR is also connected to 7 distribution bases in Araucária city:- Bases of distribution of LPG (Utingas, NGB, SHV);- Bases of distribution of diesel and gasoline (Sadipe, Unibraspe, Pontuax e Idaza);- Base of distribution of diesel, gasoline, aviation kerosene and fuel oils (Sindicom).
Total project cost	Not defined
Procurement / contract model	Teaser announcing the sale, proposals analyzed, market information and sales conclusion.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	REFAP
Project overview	The refinery complies landing of 580 hectares and can handle about 201,000 barrels/day, targeting the market of the South of Brazil, mostly dedicated to the diesel production.
Project location	City of Canoas, Rio Grande do Sul State
Project website	https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/refinaria-alberto-pasqualini-refap.htm
Sectors of interest	Main products of REFAP are: diesel, gasoline, LPG, fuel oil, aviation kerosene, solvents (as hexane and turpentine), asphalt, coke, Sulphur and propene.Originally designed to process light crudes, an updating project in 2006 enable the facility to handle also with heavy oils.Existing operational facilities:- Unities of atmospheric distillation and vacuum distillation - Unity of fluid catalytic cracking - Unity of Solvents- Unity of delayed coking- Unity of recovering Sulphur- Tail Gas unity- Unity of propene- Unity generator of hydrogen- Unity of hydro-treatment of diesel- Unity of hydrodesulphurization of naphtha- Vapor generation boilers- Vapor and electric co-generation- Generators – Steam Topping Let-Down and Steam Extraction- etc.
Total project cost	Not defined
Procurement / contract model	Teaser announcing the sale, proposals analyzed, market information and sales conclusion.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	REGAP advanced sale negotiation phase Oct 2021
Project overview	The refinery REGAP was inaugurated in 1968, targeting the Central and West region, presently pipelines and important natural gas pipes are serving the facility. The processing capacity is 150,000 bpd
Project location	Southeast, Minas Gerais state, Betim –near Belo Horizonte, the state capital
Project website	https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/refinaria-gabriel-passos-regap.htm
Sectors of interest	The refinery has total area of 12.800.000 m^2 and the industrial facilities are installed in 2.305.515 m^2. The asset has also a 50.000 m^2 ecological reserve.The main products are Gasoline A, diesel, bunker, aviation kerosene, liquefied petroleum gas (LPG), asphalts, green coke of petroleum, fuel oil, sulfur and turpentine. REGAP's main facilities are:- two unities of atmospheric and vacuum distillation - two unities of catalytic cracking- unity of hydro-desulfurization of kerosene- two unities of hydro-desulfurization of diesel- unity of delayed coking- unity of hydro-treating of diesel- unity of hydro-desulfurization of cracked naphtha- unity of hydro-treatment of naphtha of coke- 3 unities of hydrogen generation- unity of co-generation
Total project cost	Not defined
Procurement / contract model	Teaser announcing the sale, proposals analyzed, market information and sales conclusion.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	LUBNOR advanced sale negotiation phase Oct 2021
Project overview	Established in 1966, the refinery has:- Total area: 0.4 km^2- Equivalent processing capacity - 10,000 b/d- 100% of the processed oil is ultra-heavy crude
Project location	Northeast Brazil, State of Ceará, City of Fortaleza
Project website	https://petrobras.com.br/pt/nossas-atividades/principais-operacoes/refinarias/refinaria-lubrificantes-e-derivados-do-nordeste-lubnor.htm
Sectors of interest	LUBNOR is a refinery dedicated of the production of lubricants and special oils. It is responsible for 10% of the asphalt production in Brazil. LUBNOR produces naphthenic lubricants (high requirement application as thermal insulation for electrical transformers, automotive dumpers, and pneumatic equipment. The main processing facilities are:- Lubricant unit - ULUB- Natural Gas Processing Unity - UPGN- Vacuum unity – UVAC
Total project cost	Not defined
Procurement / contract model	Teaser announcing the sale, proposals analyzed, market information and sales conclusion.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

9] ANNEX III-b - Petrobras Divestment E&P Projects



PROJECT TITLE	E&P ONSHORE
Project overview	67 projects were offered, in different stages of development, production capacity and location. Here, they will be presented superficially and separated by location. Cluster is a set of oil fields.Urucú, because the teaser issued in 2020 and failed negotiation, is presented herein in a separated table.
Project location	Brazilian State (region): opportunityAmazonas (N): Urucú ClusterBahia (NE): Miranga, Recôncavo and Rio Ventura ClustersCeará (NE): Fazenda Belém Cluster
Project website	https://www.investidorpetrobras.com.br/en/
Sectors of interest	Mature fields, located onshore, with established production and facilities for products transportation.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE SHALLOW WATER
Project overview	19 projects are offered, in different stages of development, production capacity and location. Here, they will be presented superficially and separated by location. Cluster is a set of oil fields.
Project location	Brazilian State (region): opportunitySão Paulo (SE): Merluza ClusterRio de Janeiro (SE): Garoupa ClusterEspírito Santo (SE): Peroá ClusterBahia (NE): Manati FieldCeará (NE): Ceará Cluster
Project website	https://www.investidorpetrobras.com.br/en/
Sectors of interest	Mature fields, located offshore, in shallow waters, with established production and facilities for products transportation.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE DEEPWATER
Project overview	8 projects are offered, in different stages of development, production capacity and location. Here, they will be presented superficially and separated by location. Cluster is a set of oil fields.
Project location	Brazilian State (region): opportunitySergipe (NE): Sergipe ClusterEspírito Santo (SE): Golfinho and Camarupim ClustersRio de Janeiro (SE): Papa-Terra Field
Project website	https://www.investidorpetrobras.com.br/en/
Sectors of interest	Oil fields, located offshore, in deep waters, in different stages of development of the production.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P URUCU Cluster
Project overview	The E&P Urucu Cluster was offered by Petrobras in Jun-2020 and negotiation failed recently, which means, it will be offered again. The cluster joins seven production concessions (Araracanga, Arara Azul, Carapanaúba, Cupiúba, Leste do Urucu, Rio Urucu, Sudoeste Urucu), occupying an area of around 350 km2.Beyond the production facilities, the cluster includes processing and storage facilities for crude and natural gas, highlighting the four Natural gas Processing plants at the Polo Arara, with equipment for treating and compressing, oil storage tanks and LPG storage spheres. Because the remote location, the asset also includes an airport, medical center, logistical support facilities, as a port (Porto Encontro das Águas located in Manaus city) and the Supporting Bases Evandro I and II, located at the Coari municipality.
Project location	All the facilities of the Urucu Cluster are in the Amazon State (inside the Amazonian Rain Forest), in the lands of the municipalities of Tefé and Coari.
Project website	Petrobras' sale teaser (issued Jun 2020), that could be used as reference:https://api.mziq.com/mzfilemanager/v2/d/25fdf098-34f5-4608-b7fa-17d60b2de47d/221137c5-f8e2-5bce-c245-7881fff82861?origin=2
Sectors of interest	The Urucú cluster produces oil, condensate, and natural gas. The plant has also capacity to produce and store LPG.In the first quarter of 2020, the average production of the Urucú cluster was 106,353 boe/d, with 16,525 bpd of crude and condensate, and 14,281 Mm^3/d of natural gas, with a parallel production of 1.14 kton/d of LPG.
Total project cost	Not defined
Procurement / contract model	A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P ONSHORE – BAHIA
Project overview	Bahia Clusters, located onshore of the Bahia State, includes the clusters of Miranga, Recôncavo and Rio Ventura, Recôncavo produces 34,5 thousand of boe per day, mainly crude oil – 20,9 thousand barrels a day (and associated gas - 2,2 thousand of cubic meters a day, average Jan-2020). Miranga produces 2,751 bbl and 312.5 thousand m3 a day (average Jan-2020), and Rio Ventura production data is not available.The asset is currently producing.
Project location	Onshore of the State of Bahia
Project website	N.A.
Sectors of interest	It is a set of clusters and is producing crude and gas. There is a transportation infrastructure in the productive locations.
Total project cost	Not defined
Procurement / contract model	A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P ONSHORE – CEARÁ
Project overview	Fazenda Belém Cluster, located onshore of the Ceará State, includes the code 105 (ANP) 229 bbl per day (crude oil) and 1.3 thousand of cubic meters a day, average Jan-2020). Field code 131 (ANP) produces 534 bbl a day (crude oil) and 671 m3 a day (average Jan-2020).The asset is presently producing.
Project location	Onshore of the State of Ceará
Project website	N.A.
Sectors of interest	It is a cluster and is producing crude and natural gas. There is a transportation infrastructure in the productive locations.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE SHALLOW WATER - MERLUZA
Project overview	Merluza Cluster, located in Santos Basin, has the fields of Merluza and Lagosta, with production capacity concentrated in a fixed platform (PMLZ-1, at 124 meters water dept). The production is natural gas and condensate (about 3,6 thousand of cubic meters per day in equivalent oil). The asset includes the pipeline connection with the Presidente Bernardes Refinery, in Cubatão city (SP).In March 2020, the asset was hibernated, because of the lower demand for natural gas in the local market.
Project location	Offshore of the State of São Paulo
Project website	N.A.
Sectors of interest	Mostly dedicated to the natural gas market. More than 80% of the average production is natural gas, followed by condensate.It is a mature field, located offshore, in shallow waters, with established production and facilities for products transportation. The natural production gas can flow through the Mexilhão platform, connected by pipelines, that works as a hub in Campos Basin, that exports the whole basin production through Route (Rota) 1 and 2, reaching the Cabiúnas Natural Gas Treating Unity in Macaé (Rio de Janeiro State).
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE SHALLOW WATER - GAROUPA
Project overview	Garoupa Cluster, located in Campos Basin (RJ), has the fields of Anequim, Bagre, Cherne, Congro, Corvina, Malhado, Namorado, Parati, Garoupa, Garoupinha and Viola, located about 80 km from the cost, in shallow waters (from 70m to 740m), 43 wells, with production average capacity (Jan-2020) 2,780 barrels of oil and 58.9 thousand m3 a day.The asset is connected to the shore through pipelines.
Project location	Offshore of the State of Rio de Janeiro
Project website	N.A.
Sectors of interest	It is a mature field, located offshore, in shallow waters (from 70m to 740m), with established production and facilities for products transportation. Currently, Garoupa is hybernated.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE SHALLOW WATER - PEROÁ
Project overview	Peroá Cluster, located in Espírito Santos State, Campos Basin has 11 wells, producing mostly natural gas. Daily average production (Jan-2022) was about 4,000 boe, with 110 barrels of oil.The asset is connected to the shore through pipelines.
Project location	Offshore of the State of Rio de Janeiro
Project website	N.A.
Sectors of interest	It is a mature field, located offshore, in shallow waters (67 meters), with established production and facilities for products' transportation.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

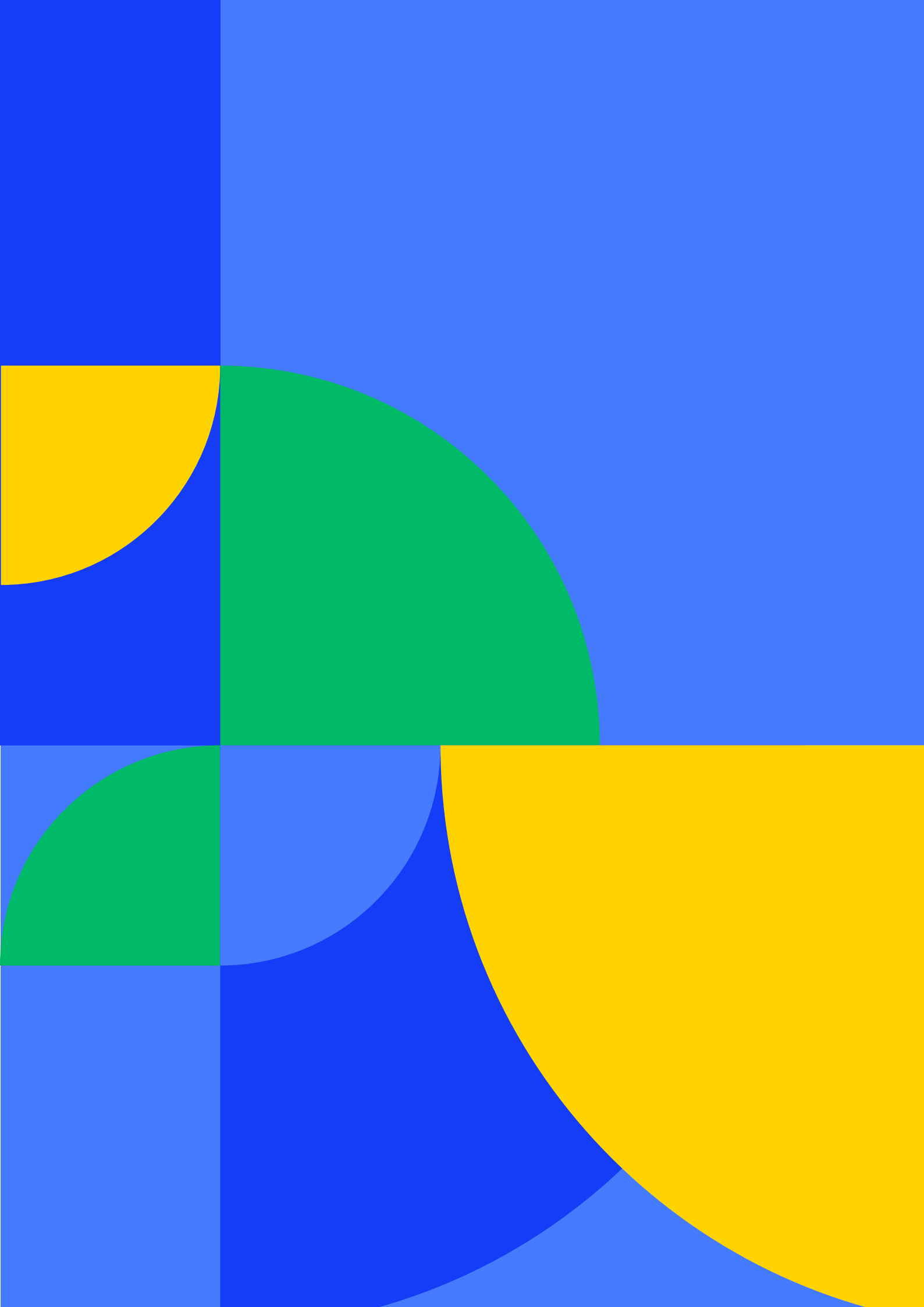
PROJECT TITLE	E&P OFFSHORE SHALLOW WATER - MANATI
Project overview	Manati Field, in the Camamu basin, located offshore of the Bahia State, produces 289 bbl and 3,217 thousand m3 a day (average Jan-2022). The asset is connected to the shore through pipelines.
Project location	Offshore of the State of Bahia
Project website	N.A.
Sectors of interest	It is a reservoir that started production in 2007, with 11 wells, located offshore, in shallow waters (25 meters), about 10 km from the coast, with established production and facilities for products' transportation.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE SHALLOW WATER - CEARÁ
Project overview	Ceará Cluster, located offshore of the Ceará State, produces mainly crude oil (and few associated gas) in three mail fields: Atum 1,093 bbl and 12.5 thousand m3 a day (average Jan-2020), Curimã 1,070 bbl and 53,3 thousand m3 a day (average Jan-2020) and Espada 1,026 bbl and 7.3 thousand m3 a day (average Jan-2020),The asset is connected to the shore through pipelines.
Project location	Offshore of the State of Ceará,
Project website	N.A.
Sectors of interest	It is a cluster reservoir that started production late 70ties, with 33 wells in Atum, 35 in Curimã and 13 in Espada, located offshore, in shallow waters, with established production and facilities for products' transportation. The full cluster is hibernated presently.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE DEEP-WATER – ESPIRITO SANTO
Project overview	The opportunity, located in deep-water offshore in the Espírito Santo State, is composed by two clusters and is producing crude and natural gas.The Golfinho Cluster produces mainly crude oil (and a small amount of associated gas), 9.67 thousand bbl and 0.07 thousand m3 a day (average Jan-2022), the Camarupim Cluster is not producing oil or gas.
Project location	Offshore of the State of Espírito Santo.
Project website	N.A.
Sectors of interest	It is a region comprising two clusters and just the Golfinho Cluster is producing crude and associated gas.
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE DEEP-WATER – SERGIPE
Project overview	The opportunity, located in deep-water offshore in Sergipe State (NE of Brazil), comprises two clusters and is producing crude and natural gas.The cluster offshore in Sergipe is presently producing a fraction of the past production (up to 267.5 thousand barrels a day in March 2020), which means 5,6 thousand bbl and 46.2 thousand m3 a day (average Jan-2022).
Project location	Offshore of the State of Sergipe.
Project website	N.A.
Sectors of interest	Sergipes's reservoirs has more than 9.8 billion barrels (boe) of proved reserves, complying the SEC criteria (US Securities and Exchange Commission, data issued Dec-2021).
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.

PROJECT TITLE	E&P OFFSHORE DEEP-WATER – RIO DE JANEIRO
Project overview	The opportunity, located in deep-water offshore in the Rio de Janeiro State (SE), is composed by Papa-Terra Field and is producing crude and natural gas.Papa-Terra produces mainly crude oil (and a small amount of associated gas), representing 167.7 thousand bbl and 557.4 thousand m3 a day (average Jan-2022).
Project location	Offshore of the State of Rio de Janeiro.
Project website	N.A.
Sectors of interest	It is a field in front of the first offshore production region in Brazil (Campos Basin), which offers full infrastructure in land to support the offshore production. Papa-Terra's reservoir has more than 85 million barrels of proven reserves (ANP's registered information).
Total project cost	Not defined
Procurement / contract model	Teasers are issued for each of these opportunities, announcing the cluster/field that Petrobras intends to sale. A new teaser will be issued with updates on the progress of the sales, including: the cluster sales opportunity, the proposals in analysis, spread of market information and when the sales is closed.
Nature of investment	Full asset sale
Timeframe	Not defined
Institution responsible	Petrobras, as owner, and a supporting financial institution to be defined.



10J ANNEX IV – Infrastructure proposed projects

PROPOSED PROJECT	LONDRINA TERMINAL
Project overview	Reception of 7.1 thousand m^3 of oil products by pipelines, to comply with the demand of the Londrina terminal influence area and other smaller terminals downstream.Dispatch superior to 4.3 thousand m^3 through pipelines and the rest by road transportation.Storage capacity comprising nine tanks and four LPG spheres, with total volume of 183,000 m^3 and4.3 22,000 m^3, respectively.
Proposed project location	South Brazil, Paraná State, neighborhood of Londrina city
Proposed project website	https://www.epe.gov.br
Sectors of interest	Estimated demands of oil products for the region, in the 2031 scenario:LPG: 390,140 m^3Gasoline A: 431,380 m^3Diesel A (S10*): 1,273,240 m^3Diesel A (S500**): 685,500 m^3Aviation fuel: 30,440 m^3Total: 2,810,700 m^3*Diesel S10 means maximum of 10 ppm of Sulphur **Diesel S500 means maximum of 500 ppm of Sulphur
Total estimated project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	PRESIDENTE PRUDENTE TERMINAL
Project overview	Reception of 4.3 thousand m^3 of oil products by pipelines, to comply with the demand of the Londrina terminal influence area and other smaller terminals downstream.Dispatch superior to 3.1 thousand m^3 through pipelines and the rest by road transportation.Storage capacity comprising 11 tanks and 2 LPG spheres, with a total volume of 113,000 m^3 and 11,000 m^3, respectively.
Proposed project location	Southeast Brazil, São Paulo State, neighborhood of Presidente Prudente city
Proposed project website	https://www.epe.gov.br
Sectors of interest	Estimated demands of oil products for the region, in the 2031 scenario:LPG: 157,460 m^3Gasoline A: 192,010 m^3Diesel A (S10*): 506,600 m^3Diesel A (S500**): 392,910 m^3Aviation fuel: 2,890 m^3Total: 1,249,880 m^3*Diesel S10 means maximum of 10 ppm of Sulphur **Diesel S500 means maximum of 500 ppm of Sulphur
Total estimated project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	CAMPO GRANDE TERMINAL
Project overview	Reception of 3.1 thousand m^3 of oil products by pipelines, to comply with the demand of the Londrina terminal influence área and other smaller terminals downstream.Dispatch superior to 1.9thousand m^3 through pipelines and the rest by road transportation.Storage capacity composed by 13 tanks e two LPG spheres, with total volume of 87,000 m^3 and 8,000 m^3, respectively.
Proposed project location	Central-West Brazil, Mato Grosso do Sul State, neighborhood of Campo Grande city
Proposed project website	https://www.epe.gov.br
Sectors of interest	Estimated demands of oil products for the region, in the 2031 scenario:LPG: 91,540 m^3Gasoline A: 233,500 m^3Diesel A (S10*): 486,750 m^3Diesel A (S500**): 301,070 m^3Aviation fuel: 31,120 m^3Total: 1,143,970 m^3*Diesel S10 means maximum of 10 ppm of Sulphur **Diesel S500 means maximum of 500 ppm of Sulphur
Total estimated project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	RONDONÓPOLIS TERMINAL
Project overview	Reception of 1.9 thousand m^3 of oil products by pipelines, to comply with the demand of the Londrina terminal influence area and other smaller terminals downstream.Dispatch superior to 1.1 thousand m^3 through pipelines and the rest by road transportation.Storage capacity composed by nine tanks e three LPG spheres, with total volume of 58,000 m^3 e 4,000 m^3, respectively.
Proposed project location	Central-West Brazil, Mato Grosso State, neighborhood of Rondonóplis city
Proposed project website	https://www.epe.gov.br
Sectors of interest	Estimated demands of oil products for the region, in the 2031 scenario:LPG: 44,270 m^3Gasoline A: 41,860 m^3Diesel A (S10*): 557,750 m^3Diesel A (S500**): 222,730 m^3Aviation fuel: 8,930 m^3Total: 875,550 m^3*Diesel S10 means maximum of 10 ppm of Sulphur **Diesel S500 means maximum of 500 ppm of Sulphur
Total estimated project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	CUIABÁ TERMINAL
Project overview	Reception of 1.1 thousand m^3 of oil products by pipelines, to comply with the demand of the Londrina terminal influence area and other smaller terminals downstream.All dispatched by road transportation.Storage capacity comprising 12 tanks and two LPG spheres, with a total volume of 22,000 m^3 and 3,000 m^3, respectively.
Proposed project location	Central-West Brazil, Mato Grosso State, neighborhood of Cuiabá city
Proposed project website	https://www.epe.gov.br
Sectors of interest	Estimated demands of oil products for the region, in the 2031 scenario:LPG: 99,910 m^3Gasoline: 79,540 m^3Diesel (S10*): 586,180 m^3Diesel (S500**): 255,440 m^3Jet fuel: 40,400 m^3Total: 1,055,460 m^3*Diesel S10 means maximum of 10 ppm of Sulphur **Diesel S500 means maximum of 500 ppm of Sulphur
Total estimated project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	ARAUCÁRIA-ITAJAÍ PIPELINE
Project overview	Duplication of an existing pipeline, which presently is operating close to its maximum capacityAbout 200 km total lengthConnecting Araucária (Paraná) and Itajaí (Santa Catarina)OPEX: R$ 25,000 thousand* per year*Estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Proposed project location	South Brazil, Paraná and Santa Catarina States
Proposed project website	https://www.epe.gov.br
Sectors of interest	There are two terminals in this pipeline route.It could transport fluids from the REPAR refinery and other arrived in the region by the Paranaguá port (through OLAPA pipeline).
Total estimated project cost	CAPEX: R$ 845,000 thousand**Estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	CONSTRUCTION OF THE OSBRA-CUIABÁ PIPELINE
Project overview	Construction of a new pipeline, connecting the OSBRA pipeline to the Cuiabá regionThe OSBRA pipeline connects the REPLAN refinery (Paulínea city, São Paulo state) to the Brasília (Federal District) terminalAbout 1,390 km total length, starting in Uberaba, or 1,340 km starting in Uberlândia, both cities are in Minas Gerais stateConnecting Uberaba (Minas Gerais) and Cuiabá (Mato Grosso state)OPEX: R$ 163,000 thousand* per year*Estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Proposed project location	Southeast and Central-West Brazil, Minas Gerais and Mato Grosso States
Proposed project website	https://www.epe.gov.br
Sectors of interest	There are three terminals in this pipeline route.It will transport fluids from the REPLAN refinery and other fluids arriving in the region through the port of Santos (SP) and its net of pipelines.There is a risk in this project, because OSBRA is operating close to its maximum capacity, it means, eventually it will not have enough capacity to supply this new pipeline reaching Cuiabá region.
Total estimated project cost	CAPEX: R$ 5.4 billion* *Estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

PROPOSED PROJECT	CONSTRUCTION OF THE ARAUCÁRIA-CUIABÁ PIPELINE
Project overview	Construction of a new pipeline, connecting the Araucária (Paraná state) to the Cuiabá region (Mato Grosso State) The pipeline will connect the REPAR refinery (Araucária) to the Cuiabá region About 1,550 km total lengthOPEX: R$ 210,000 thousand* per year*Estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Proposed project location	South and Central-West Brazil, Paraná, and Mato Grosso States
Proposed project website	https://www.epe.gov.br
Sectors of interest	There are five terminals in this pipeline route.It will transport fluids from the REPAR refinery and other fluids arriving in the region through the port of Paranaguá.
Total estimated project cost	CAPEX: R$ 7.1 billion* *estimated in June 2021, average exchange rate US$ 1.00 = R$ 5.05
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Scenario by 2031
Institution responsible	Not defined

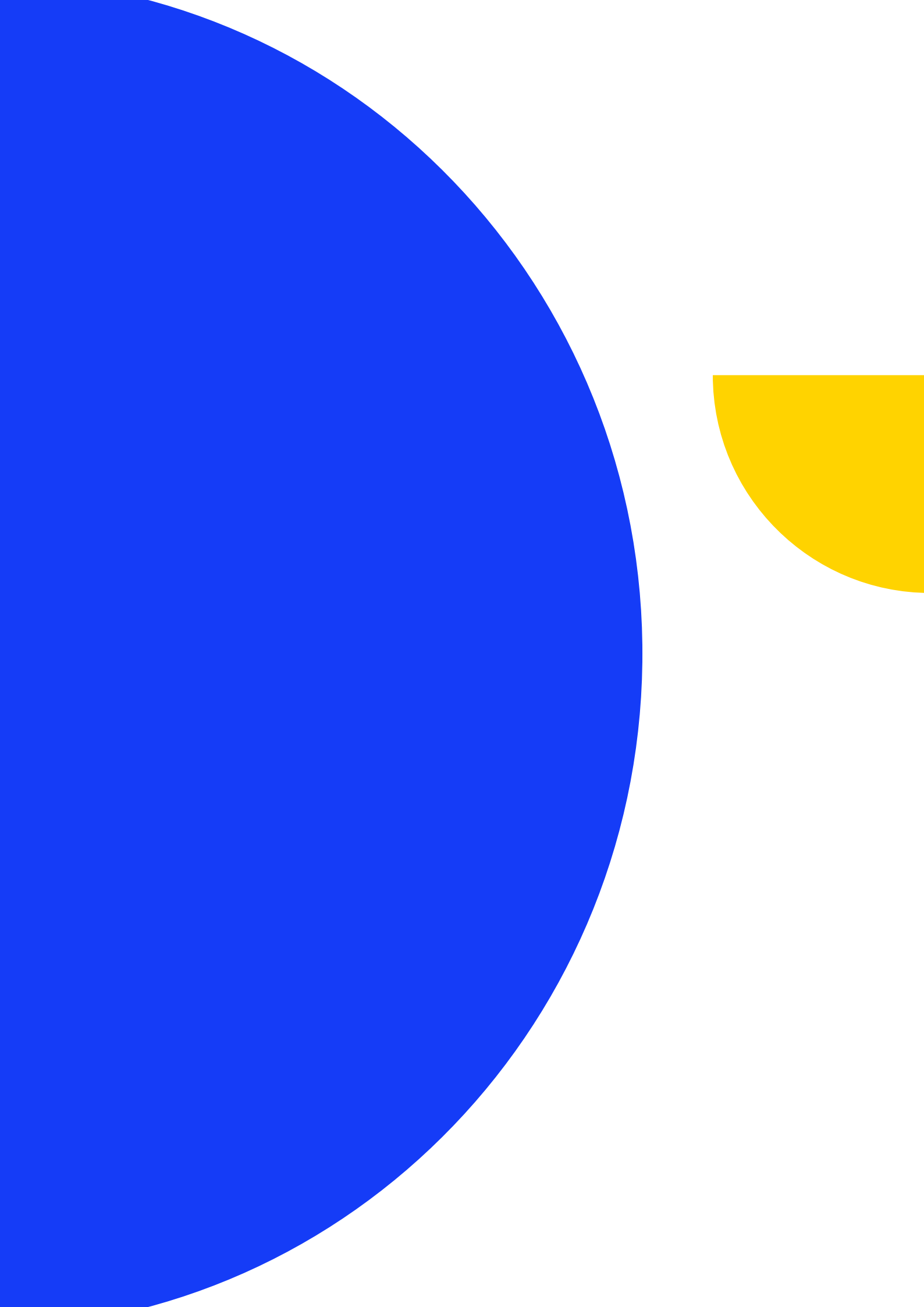
PROJECT TITLE	Brasil Central Pipeline
Project overview	Construction of a gas pipeline from São Carlos/SP to Brasília/DF The gas pipeline has a total length of 893 km and a capacity of 7.4 million m^3/day
Project location	São Paulo State to Brasília
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Research phase
Institution responsible	Not defined

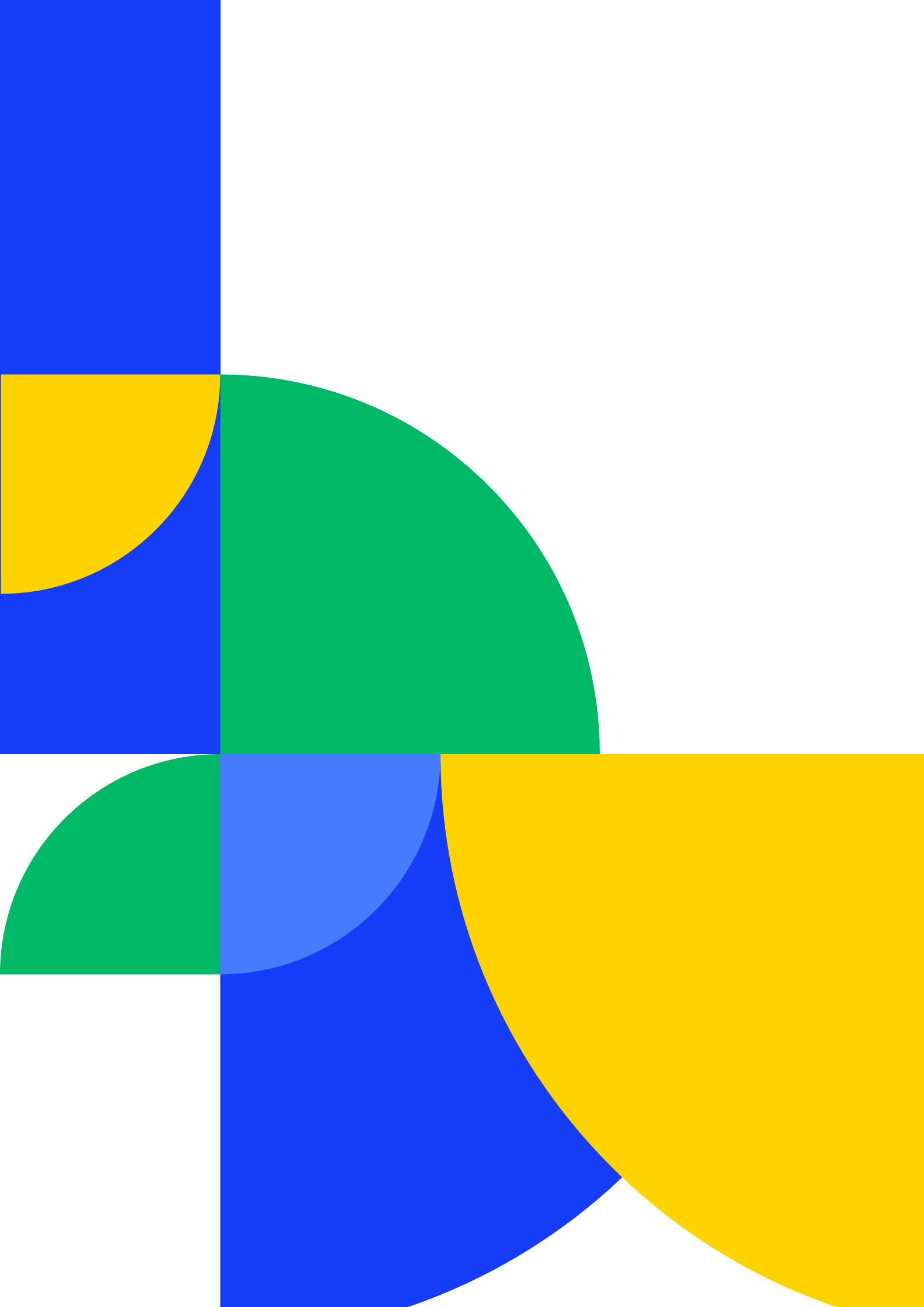
PROJECT TITLE	São Luís Regasification Terminal
Project overview	Construction of a regasification terminal in Itaqui Port/MA. It is probable to have an interconnection between São Luís Regasification Terminal and the future gas pipeline from Santo Antônio dos Lopes/MA to São Luís/MA.
Project location	Maranhão State
Project website	https://www.epe.gov.br
Sectors of interest	LNG Regasefication Terminal
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Research phase
Institution responsible	Not defined

PROJECT TITLE	Santo Antônio dos Lopes/MA-Caucaia/CE Gas Pipeline
Project overview	Construction of a gas pipeline that connects the Parnaíba Thermoelectric Complex in Santo Antônio dos Lopes, in Maranhão state, to Pecém LNG terminal and the existing GASFOR I gas pipeline in Ceará state.
Project location	Maranhão and Ceará States
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	Not defined
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Research phase
Institution responsible	Not defined

PROJECT TITLE	Santo Antônio dos Lopes/MA – São Luís/MA Gas Pipeline
Project overview	Construction of a gas pipeline that connects the Parnaíba Thermoelectric Complex in Santo Antônio dos Lopes, in Maranhão state, to the vicinity of the Itaqui Port, in São Luís, capital of Maranhão state.
Project location	Maranhão state
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Research phase
Institution responsible	Not defined

PROJECT TITLE	Santo Antônio dos Lopes/MA – Barcarena/PA Gas Pipeline
Project overview	Construction of a gas pipeline that connects Vila do Conde Organized Port in Barcarena, in Pará state, to Parnaíba Thermoelectric Complex in Santo Antônio dos Lopes, in Maranhão state
Project location	Para and Maranhão states
Project website	https://www.epe.gov.br
Sectors of interest	Transportation of natural gas
Total project cost	NA
Procurement / contract model	Not defined
Nature of investment	Future investment, probably private
Timeframe	Research phase
Institution responsible	Not defined





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