

# Firjan PETROLEUM

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# BRAZIL: PROTAGONIST IN OIL AND NATURAL GAS

Brazil is in transition. Not different from many economies in the world, but particularly committed to change. The projections are considered to be a slower growth that can be glimpsed, which, in the oil environment, means that price goals must align with those ones of great protagonists producers. According to specialized consultancies, we can expect values about USD 70 per barrel for Brent this coming quarter.

Therefore, more than ever, we need to be competitive in the dispute over funds for our projects to develop Brazilian oil production. Competition for investments and financial funds will become increasingly tight. And the lower our associated costs, the greater our chances of winning.

Our country has one of the largest offshore markets in the world. With the operators diversity we see today in Brazil, it is possible to see the arrival of a wide diversity of suppliers from other countries dedicated to increasing their trade relations with Brazil.

All this investment must also unfold under the gas environment. Moving forward in the negotiations for a regulation of openness, we will put ourselves in the radar of many potential investors and we will conquer the necessary conditions for increasing the production.

According to market information, Brazil is the largest producer of natural gas in South America. Five years from now, we can be the largest in Latin America and the third in the Americas – behind the USA and Canada.

Expectations for gas are of strong and perennial demand growth in the long run. The gas was chosen as the transition fuel for the new energy matrix, in line with the global decarbonization targets.

Caring for the best return for all is in our purpose. The more producers, traders, distributors and consumers, the more mature our market will be; and the more experienced, the closer we will be to having competitive prices.

It is true that we have long been at the forefront of a clean and sustainable energy matrix. We are free from the use addiction of coal. Our generation potential is even greater the further we move towards renewable energies.

Thus, we maintain our commitment to contribute to our companies being even more capable in aggregating value and contributing to the economic recovery of our state, always focusing on national and international participation.

**Eduardo Eugenio Gouvêa Vieira** President of Firjan

# MATURE FIELDS ON THE AGENDA AND DECOMMISSIONING IN THE FUTURE

The Oil & Gas - O&G market in Brazil is undergoing a period of intense resumption of investments, with great movement, mainly in the Northern Rio de Janeiro region. For more than 40 years, the Campos Basin, home to one of the largest offshore oil complexes in the world, has once again emerged as one of the main strategic areas. In the last rounds of the Brazilian National Agency of Petroleum, Natural Gas and Biofuels, Petrobras acquired 11 exploration blocks in the region.

Altogether, the state-owned company has approximately 90 projects in the Campos Basin for drilling, completion and interconnection of new wells, as well as maintenance and increase of the production units efficiency in operation. Among these, according to José Luiz Marcusso, company's Deep Waters executive manager, the revitalization of Marlin mature oil fields is the project at the most advanced stage, with its concession contract extended by the ANP until 2052, along with the Voador oil field. The project provides platforms replacement and use of existing wells and the construction of new ones to improve field drainage.

"We also obtained the extension of the concession contracts for the Marlim Sul and Marlim Leste oil fields, which will allow for new investments, in addition to discussing the extension of the Albacora Leste, Barracuda, Caratinga and Roncador contracts", he emphasizes.

Aiming at increasing the recovery factor of the Basin, Petrobras is also investing in reservoir management actions and the development of new technologies. An established partnership with Equinor, in Roncador oil field, has the prospect of increasing the recovery factor by 5%. "The development of new technologies is fundamental for improving the production of these fields. And when production is increased, the generation of royalties, employment and income increases as well. By the end of the year we will have a very significant growth in this market", Raul Sanson, vice-president of Firjan remarks.

#### **DECOMMISSIONING PLAN**

In addition to these large mature fields, the market is in the expectation of those that will be divested by Petrobras and the Open Acreage of Areas.

The search for the maximization of the areas recovery factor must be a priority, according to Marcelo Mafra, Operational Safety and Environment Superintendent at ANP. Decision-making by decommissioning must only take place after the operator evidences the economic unfeasibility of the area. Therefore, in a draft revision of regulations already finalized, the Agency proposes the anticipation of uninstalling plans for five years before the activities accomplishment.

"When the operator opts for decommissioning, he will be making an early planning. The operator will have to submit a proven study of economic unfeasibility. And during those five years, ANP will place these returned areas to the market bid cycle. If there is no interest, the decommissioning plan will be followed", he explains. According to Mafra, the regulation will induce good practices, encouraging a move towards technologies that focus on remote monitoring and inspection, and bring more robust information at a reduced cost. "Focus is anticipation, planning, management and information", he states.



With prospects of more than BRL 270 billion in investments in the coming years for the Oil & Gas (O&G) production chain, according to the BNDES, Brazil continues to be a world market player. Together with the United States, Canada and Kazakhstan, the country is one of the leading suppliers of O&G outside OPEC. Under this scenario, Philippe Blanchard, CEO of Total E&P Brazil and new president of the Firjan Oil and Gas Business Council, details how the company is increasing its portfolio on the Brazilian coast and dealing with the energy transition. Blanchard also assesses the regulatory environment and attractiveness of the country.

# Does Brazil remain attractive in 2019 and in the coming years compared to other countries?

The investment prospects for the industry in Brazil between 2018 and 2021 are in the order of BRL 540 billion, according to BNDES data, and only the O&G market would represent more than 50% of that total. In other words, it continues to be one of the main markets in capital formation in the country. The Brazilian pre-salt is already as commercially competitive as large fields of the Middle East and places the country in a prominent position, attracting large investments in recent years from the main exploration and production companies. Total, for example, significantly expanded its portfolio on the Brazilian coast between 2013 and 2019, from three to 19 offshore assets, especially considering the potential of pre-salt reserves.

# How does Total see the increase in Brazilian O&G production in the global context?

Global oil supply has been showing progress since last year, while demand has been showing signs of weakening – which indicates that the market is moving towards a balance framework in 2019. According to OPEC's report at the end of 2018, Brazil, together with the United States, Canada and Kazakhstan, were the main drivers of supply growth outside the group. In 2019, the expectation is that the Brazilian protagonism will be kept. The Brazilian pre-salt represents one of the regions with the greatest potential for growth in O&G production in Brazil. The auctions resumption attracted new investments, giving new impetus to the industry and expanding the horizon of production growth in the coming years, which must have a positive effect on the supply chain, job creation and income generation in the country.

# What strategies can be adopted to maximize the attraction of investments to Brazil in O&G?

The prospects for investment and, consequently, financial returns for the country are positive. The companies appetite in the last bidding rounds of the pre-salt showed the attractiveness of such areas and the volume of investments that can be brought to the country. However, investing in Brazil still embraces challenges. To maintain attractiveness and competitiveness in contrast to other countries, it is important to build a stable tax, political and regulatory environment in order to stimulate the industry investments continuation. Because it is a market with long-term projects, predictability is fundamental for companies to stay here.

## How do you evaluate the Brazilian regulatory environment in O&G market? Are there suggestions for improvements?

The potential of Brazilian reserves is attractive for the development of our business, and recent changes in the oil and gas market show that the country has advanced to a new strategic vision of this industry. However, there are still challenges for the development of the market that we expect to be addressed, such as the length of the environmental licensing process, fiscal complexity, the incentive to invest in mature fields, and other key issues for the advancement and consolidation of the industry.

In addition, in an energy transition scenario, natural gas plays a fundamental role, replacing coal more and more in the energy matrix. Brazil has great potential in this area, being essential the implementation of adequate regulations that enable the domestic natural gas market development.

# How does Total see the emerging global energy transition scenario?

In recent years, Total has been adapting its business strategy – in view of the predicted scenario of an increase in global temperature by 2°C according to the International Energy Agency (IEA) – in order to diversify its energy mix. Oil and natural gas are essential for development and will continue to play an important role in the coming decades, accounting for more than 40% of the primary energy matrix by

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PHILIPPE BLANCHARD

2035, according to the IEA. Therefore, it is unrealistic to think of an abrupt transition. Instead, before global discussions around a low carbon economy, we are looking at our industry from a new perspective and integrating climate challenges into our business. In this transition scenario, which brings many opportunities for growth, partnerships and innovation, Total is investing globally in the generation of energy from natural gas and renewable, such as solar and wind, moreover in Brazil. In 2018, we inaugurated our first solar plant in the country and we see great potential for the new projects in the pre-salt, renewables and natural gas development in the next years.

# How do you evaluate Firjan's role in Rio de Janeiro goods and services industry development?

The Brazilian business environment favors the exchange of experiences and cooperation between partner companies in research and technology – factors that contribute to boosting and generating business opportunities. Investments brought into the oil market must move the entire productive chain, and Firjan is an important player in this scenario, working mainly in the approach between operators and companies that supply goods and services. Encouraging competitiveness is beneficial for all, and the federation has much to contribute in this direction, promoting the encouragement of small and medium-sized companies.

# PRE-SALT GIANT

With production accumulated in 2017 of 736 million barrels of oil, the Lula field is the second largest offshore oil producer in the world. Added to this, 32.1 billion cubic meters of natural gas were produced. The expectation for the coming years is increasing, strengthening Brazil's role in the O&G market. According to Petrobras, the P-67 platform start-up in early February shall provide, still in 2019, the mark of 1.3 million barrels of equivalent oil produced per day in the oil field, considering oil and gas. The expressive numbers were conquered in less than a decade since the beginning of its commercial production in October 2010.

"The Lula field is synonym of attracting investments for our state. With the heated oil market and with positive prospects for this year, the industry can retake the leading role. The whole country is bound to benefit from that", Eduardo Eugenio Gouvêa Vieira, president of FIRJAN.

#### FOCUS ON CUTTING-EDGE TECHNOLOGY

Located in the BM-S-11 concession, the Lula oil field is operated by Petrobras (65%), in partnership with Shell Brasil (25%) and Petrogal Brasil (10%). Petrobras' press office reported that the current stage of development of this exploratory area is focused on the ramp up of the platforms that started operations recently, namely the P-69 and P-67, both of which can process up to 150,000 barrels of oil per day and compress up to 6 million cubic meters of

natural gas each. Furthermore, the operator's teams are constantly working on reservoir management and equipment integrity management, in order to optimize the asset income and increase the recovery factor.

## NEW TECHNOLOGIES APPLIED BY PETROBRAS IN LULA'S FIELD

- Riser Support Buoy
- Catenary rigid risers comprised by pipes with liner, installed by reel lay method
- Ultra-deep water layer flexible risers (more than 2,000 meters)
- Flexible riser application with embedded traction wire monitoring system
- Water layer depth record (2,103 m) in offshore well drilling with Pressurized Mud Cap Drilling (PMCD) technique
- First smart completing intensive use in ultra-deep waters in satellite wells
- Carbon dioxide (CO<sub>2</sub>) separation associated to natural gas in ultra-deep waters (2,220 m), with CO<sub>2</sub> injection in production reservoirs
- Deepest CO<sub>2</sub> gas injection offshore well (in water layer of 2,220 m)
- Water and gas injection alternate method use in ultra-deep water

# OIL 800 thousand barrels/day 300 thousand barrels/day 15 million m³/day 15 million m³/day

The technology is an important partner in the operation of the platforms. According to the company, Lula Field has several instrumentation, software and data management solutions, constantly developed to optimize exploration and production activities through digital transformation. Another highlight is the Integrated Operation Center (COI), which at a distance is able to monitor operational parameters of the units in real time and support the staff shipped 24 hours a day.

**LULA FIELD PRODUCTION HISTORY** 

Source: Lula Field Development Plan approved by ANP on 01/10/2018

Petrobras continues the work, already recognized by the market, in search of the best results for the area. This recognition materialized in 2015 with OTC's Distinguished Achievement Award for 10 technologies applied at the Santos Basin Pre-Salt Pole under unique conditions in the offshore oil industry. Among the ten aforementioned technologies, nine were applied in Lula Field.

#### SAFETY

SBM Offshore runs platforms in Lula field. The company follows strict quality and safety standards, in which the main focus is on the operators' quality of life and units productivity. By being located in the pre-salt, Lula also has as competitive differential the maintenance of the production plateau for longer than the fields in the post-salt, enabling gains of scale and production.



emphasizes that one of the main challenges nowadays lies in the essential infrastructures such as outflow and treatment, the so-called midstream.

construction in Itaboraí, scheduled for 2020. The unit will

process 21 million cubic meters/day of gas from Santos

Basin, to be gathered by Rota 3 gas pipeline.

"It is closely linked to the opening of the market. The higher the number of agents, the greater the competition", he evaluates. He also mentions the adoption of the



"The greatest opportunities are with the exploitation of the large scale through the standardization of production units", Eduardo Chamusca, director of the company in Brazil explains.

On the other hand, he indicates that the main challenge of operating in that place is to respect the complexities of the field and safety requirements and, at the same time, make it cost-effectived. "That's where engineering and production companies experiences come in, bringing innovative solutions such as Fast4Ward<sup>™</sup> of SBM, using prebuilt new built-in hulls and standardized topside modules", he says. According to him, it enables significant cost savings and shorter deadlines of hiring and first oil: "Consequently, it improves the economics of the fields and reduces the breakevens, that is to say, the minimum price of the barrel from which the production is viable".

## **DEMAND FOR GOODS AND SERVICES**

The last revision of the Lula Field Development Plan was approved by the ANP on 01/10/2018, contemplating the use of nine Stationery Production Units (SPUs) FPSO (Floating Production Storage and Offloading) type, all already installed and in production. The new policy for exploration and production has led to the diversification of operators, increasing the demand for goods and services. Thus, suppliers tend to benefit from

a more open, competitive and efficient market. This is the opinion of Décio Oddone, general director of the Brazilian National Agency of Petroleum, Natural Gas and Biofuels, and Márcio Felix, secretary of Oil, Natural Gas and Biofuels of the Ministry of Mines and Energy (MME).

"The greater number of players in the area, made up of large international companies, added to Petrobras, will certainly contribute to the significant hiring of goods and services for the development of the fields in the country", Felix considers. "We are keen to make it possible to tender the surplus volumes of the Onerous Assignment Agreement later this year. This is a major challenge, given the figures involved and the need to complete the review of the Assignment Agreement", he adds.

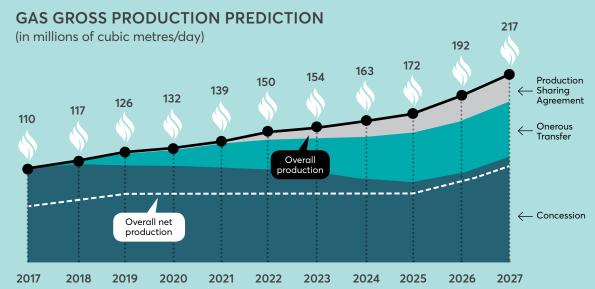
Oddone, in turn, says that the transformation currently experienced is the largest that the Brazilian industry has suffered since the 1950s, when Petrobras was created. "The monopoly destruction and the creation of ANP in the 1990s were not able to change the industry as much as the actions that are under way will now be capable", he emphasizes, noting also that there is a search of the operators by cost reduction; therefore logistical support to the industry should be conducted in a more integrated and efficient way.

# **BOOSTING ALSO WITH NATURAL GAS**

Natural gas also has great potential for growth. According to the Ten-Year Energy Expansion Plan 2027, prepared by the Brazilian Energy Research Office (EPE), 67 million cubic meters/day of gas production is expected in the pre-salt only in 2019. By 2027, this amount must reach 143 million cubic meters/day. Furthermore, for the next decade, constructions of more than 19 FPSOs are planned only in that area.

According to Cristina Pinho, undersecretary of State for Oil and Gas and Renewable Sources of Rio, the expected increase in pre-salt production may bring investments in the processing industry, such as glass and steel, in the Export Processing Zone (ZPE) of Açu, in São João da Barra, which also plans to deploy a thermal. "There is also the construction and operation of the Marlim Azul gas thermoelectric plant in Macaé; and the Macaé Port Terminal, Tepor, in the installation phase", she recalls. Petrochemicals, she says, shall benefit from the evolution of Comperj, which may house other processes beyond the current Natural Gas Processing Unit (in Portuguese, UPGN), under

transportation system envisaged in Decree No. 9.616/2018, which will enable a greater number of users. The inbound and outbound concept, used in Europe, devises a unique transport system, enabling buyers and sellers to negotiate gas volumes regardless of their physical location on the network. Regarding distribution, the IBP secretary says more free consumers are needed, already expected in the legislation. "As we promote this opening we will have competition", he analyzes.



Source: Ten-year Expansion Plan for Energy 2027 - EPE

# OF ONIP

Aiming at the greater participation of the productive chain of the Oil and Gas (O&G) market and the improvement of the business environment, the Brazilian National Organization of the Petroleum Industry (ONIP) has entered a new phase. With Karine Fragoso, Firjan's Oil, Gas and Maritime Manager, who is the head of the organization since August 2018, the focus has been on increasing the competitiveness of the Brazilian industry.

"Our goal is to increase the participation of companies that have been active in the Brazilian market and the new companies that have arrived in recent years, working more and more in partnership with several institutional and business players, as well as continuing to act in the consensus guidelines of this industry, for elaboration of proposals to the decision-makers in the public sphere", Karine highlights.

The Integrators Committees, set up to stimulate the development of the O&G market, have already begun their work routines. According to Karine, the Market Access Committee stands out, in this new phase, in conducting the business rounds that bring together the consumers and the suppliers. In

addition to monitoring the market through a macro view of investments, the Committee will devote special attention to the funds for operation and maintenance of the available infrastructures. "The Committee will also pay attention to the calendar of events to foster business and to meet the standards, quality, compliance and integrity requirements of such markets", she said.

The Regulatory Environment and the Competitiveness and Productivity Committees are also already running. In the view of José Ricardo Roriz Coelho, vice-president of the Federation of Industries of the State of São Paulo (Fiesp), such forums represent a powerful foundation for ONIP's performance. "I believe that the Integrators Committees will have an increasingly important role in debates and in preparation and proposal of actions for the market and for the productive chains. This structure will enable ONIP to act more effectively on the relevant issues", he said.

#### **NEW BRAND AND NEW PORTAL**

Reflecting the repositioning phase, ONIP launches its new, lighter and more modern brand, and a new portal with strategic information in May. In line with the scenario of current digital and energy transformation,
ONIP will invest in modern resources to transform
natural wealth into business for Brazilian industry.
The organization's new portal will run as a tool for
all its work, offering a more dynamic agenda for the
members, as well as market data collected from sources
and partner institutions.

Another focus of the portal includes providing information about the Brazilian capacity to meet the demands of Capex or Opex. The virtual space will act as a tool to follow the regulatory guidelines and analyze the requirements and the potential increase of productivity of this national productive chain, to meet the levels of competitiveness demanded by the global market. According to Karine, they are also planning to create a virtual business environment, already in the development stage. The idea is to bring the large buyers closer to potential suppliers.

Alfredo Renault, superintendent of Brazilian National Agency of Petroleum, Natural Gas and Biofuels (ANP), highlights ONIP's historic role as a promoter of a business round. "The business rounds have always been structured with the goal of approaching small suppliers and main consumers. Everything that contributes to

66 WE ARE LIVING IN A TIME THAT DEMANDS MORE INNOVATION, PRODUCTIVITY AND ADVANCES TOWARDS THE 4.0 INDUSTRY. ONIP HAS FULL CAPACITY TO LEAD SUCH ADVANCES 99

DURVAL VIEIRA DE FREITAS, FINDES

creating mechanisms of dialogue and bringing more possibilities to the national supplier is extremely positive", he says.

For Durval Vieira de Freitas, president of Espirito Santo Oil and Gas Forum of the Federation of Industries of the State of Espírito Santo (Findes), expectations could not be better. "We are living in a time that demands more innovation, productivity and advances towards the 4.0 industry. ONIP, as an important institution of action and cooperation between the companies and entities of O&G market in Brazil, has full capacity to lead such advances, contributing to the development of companies and the Brazilian market", he said.



Beyond technical knowledge, the world in constant transformation requires from the workers' social-emotional skills. This vision is making a difference in the social project called At Full Steam , sponsored by Naturgy Foundation and developed by Firjan SENAI SESI. Since last year, students have been taught interdisciplinary subjects, associated with human skills, in order to prepare participants for the job market.

"The social responsibility view, with the monitoring of a psychologist, almost made the evasion, great gap in the professional training, go to zero. Only two students who were already employed in the area during the course had to stop the course. The result is extremely positive; the employee comes out fully qualified", says Débora Targino, Business Analyst in Social Responsibility at Firjan.

The project is about qualification in customer service, training a qualified workforce in several activities of the natural gas market. Since 2015, more than 270 people have benefited, most of them socially vulnerable. In 2018, the courses chosen for this audience were the Commercial Agent for Piped Gas and Building Installer and the Maintenance of Fuel Gas Piping. In a smaller number, engineers, architects and other employees were qualified, trained in Techniques of Gas Inspection for Building Self-Inspection.

#### QUALIFICATION OF THE MARKET

"The initiative is very important for Naturgy Foundation, as one of our pillars of Corporate Social Responsibility (CSR) is to support education; and at the same time, we are training skilled manpower for the market in which we work, in partnership with a renowned educational institution," said Bianca Carillo, who is the head of CSR at Naturgy in Brazil.

In order to execute the project, Firjan SENAI takes care of all aspects of the technical training, including the program content, instructors, training and physical facilities which are required. Firjan SESI entered with the human development part, corresponding to an additional 20% in the workload – or one day a week –, intended to the content of citizenship, ethics and entrepreneurship. The institution is also responsible for selecting the students.

Carlos Magno, the Business General Manager of Firjan, notes that through the CSR projects, companies have been contributing significantly to the society improvement. He points out that Firjan has the expertise to develop projects, find lines of development or indicate the feasibility of applying resources via incentive laws. "We have highly qualified specialists to support the incentivized resources fundraising, build and run the projects, and carry out all the impact reports of the initiatives. We act in maximum compliance and in the best possible outcome on social investment."

Challenges require new attitudes.
A new era requires a new leader.



The new era requires prepared leaders, with transformative mindset and, according to the World Economic Forum, in line with the 10 leadership skills for 2020.

the program that presents assertive and customized actions, with renowned market experts and partnership with

national and international knowledge and excellence centers.

The international module Executive innovation – an immersive approach to leaders will be held at University of Porto, in partnership with UPTEC.

Learn more at **firjan.com.br/lidera** 

Firjan IEL, the industry business school.



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# OIL, GAS AND MARITIME IN RIO

70% OF THE OFFSHORE OIL AND GAS

**PRODUCTION IN** 

**BRAZIL** 



130 THOUSAND CNG CAR KIT

**INSTALLATIONS** 

**IN 2018** 



ORATORY

EXPLORATORY WELLS COMMITTED IN THE 2018 ROUNDS



**INCREASE OF** 

75%

IN GOVERNMENT TAKE IN THE STATE AND MUNICIPALITIES OF RIO IN 2018



18

OF THE 29 OFFSHORE BLOCKS SOLD IN 2018



PRODUCTION PLATFORMS TO START OPERATION

**IN 2019** 

**STAFE** 

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