

Firjan

PETROLEUM



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A NEW MOMENT FOR THE STATE OF RIO DE JANEIRO

Although the oil market is always a riskful activity, it seems to have stabilized at good levels for the business. Within this scenario, Brazil offers everything an oil company may wish: huge reserve potential, proven resources with the many recent discoveries, and the country's consumption demand.

We should also mention the ongoing regulatory advances, which lay a new foundation with more attractive rules for a better business environment, expanding the potential of activities.

The state of Rio de Janeiro is certainly the one that has the best horizon ahead. And gas has a huge potential to become our competitive edge. We need to move forward in this market, building demand by means of the work of industrial sectors with development capacity in our state.

Considering only the oil market, as well as exploration and production, investments are also expected in the supply and consumption phases.

It is worth pointing out the appearance and development of new production hubs, such as Ponta Negra and Açú, not to mention the rebound of Macaé and other cities in the state of Rio de Janeiro. Naturally, investments will be made in the infrastructure and naval construction sectors, which will also support the new moment of growth that the oil and natural gas market is capable of boosting.

To solidify Rio de Janeiro's leading role and ensure a robust industry, we will keep taking advantage of and strengthening our state's production and intellectual competences.

In order to materialize the mapped out ventures and the potential ones, we stress the relevance of bringing society and the industry together. At the end of last July, we launched our new brand that reflects the changes we have been experiencing within our organization over the last years, targeting goals such as taking the lead in the development of the industry and the state of Rio de Janeiro, as well as the improvement of the business environment.

We are taking a closer, agile and modern attitude to expand our communication with society and ensure that the actions to develop our industries and the state of Rio de Janeiro are even more noticed and valued.

As of August, we started to offer the first concrete action for this new moment of our history. We inaugurated Casa Firjan branch unit, in Botafogo district; a space dedicated to host reflection, creation and delivery of solutions for the challenges of the new economy in benefit of the industry and the entire society.

The new brand and Casa Firjan reinforce our institution transforming role. And this Firjan Petroleum issue brings real transformation cases in which we, within Firjan, together with our industry and society made the difference.

We are entering a new moment for the state of Rio de Janeiro, which is attracting investments again, even with the challenges to be overcome. We need to make the right choices.

Rio has its turn again.

Eduardo Eugenio Gouvêa Vieira
President of Firjan



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BUSINESS

RIO OIL & GAS SHOULD GENERATE MORE THAN R\$ 235 MILLION IN BUSINESS

The recovery of the Brazilian Oil and Gas (O&G) market with the entry of new players makes a business round even more important – both for those seeking to buy and for those seeking to sell their products and solutions. More than 300 companies should attend this business round in Rio Oil & Gas 2018. In total, 250 suppliers have been selected and at least 30 major buying companies showed interest in attending. In this round, the Brazil's National Organization of the Petroleum Industry (ONIP) has started a new phase for updating its registry base, refining its operating system. According to Sebrae-RJ, which assesses the figures of each round, in the last edition of the event, in 2016, 256 negotiation meetings were held between 24 anchor companies and 168 suppliers, which generated the expectation of R\$ 181 million worth of contracts in the following 12 months. The amount expected for this year is 30% greater, exceeding R\$ 235 million.

The timing could not be better, after all, the atmosphere is positive, oppositely to that of the last fairs. "Companies are believing in Brazil again. We are attracting the major industry players once more, and Petrobras itself is very active. Today, we have a real investment plan for the next four years; and because the industry is very professional and works with predictability, now is the time," Sebrae-RJ Oil and Gas coordinator Antonio Batista explains.

The expectation is that the companies will identify their future partners in the event, which would be much more difficult to happen by just visiting the booths. According to the president of Nova Friburgo Metallurgy, Mechanical and Electrical Materials Industry Union (Sindmetal) Claudio Tangari, even if these meetings fail to result in immediate business they are critical for identifying opportunities. "This is a smart way of bringing the both ends together. The market is changing. With the pick up, we notice the presence of more companies in the buying field, in addition to Petrobras and other traditional companies," he observes.

TECHNOLOGY PROSPECTING

According to Batista, the business rounds increase the chance of closing a deal and they create an environment of exchange of knowledge about the demand for new technologies applied to the sector.

"To move forward, having a product is not enough; you have to embed technology. Not necessarily this should be industry 4.0, but it must offer a value to create a competitive edge," Batista explains. He has been watching the internationalization of Rio de Janeiro companies, for which attending fairs has been critical to close contracts. Rio Oil & Gas 2018 business round is promoted by Firjan and Sebrae-RJ and supported by the Brazilian Petroleum, Gas and Biofuels Institute (IBP) and ONIP. The event will take place in September 25 and 26.



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INTERVIEW

EXPECTATIONS ARE RISING

4 The advances over the last 18 months will probably exceed those of the last 10 years, bringing Brazil into the spotlight of the global Oil and Gas (O&G) industry again. This is the opinion of **Eduardo Chamusca**, Country Director - SBM Brasil at SBM Offshore. According to him, a country with pre-salt containing economically feasible reserves should not think small. Production should grow, as well as the investments from other international players. On the other hand, the conclusions regarding Repetro and the local content policy should come soon in order to ensure the long-awaited promising future.

What is your view on the increase of oil and gas production in Brazil?

I see this scenario in a very positive way, inasmuch as Brazil gradually reaches its natural production potential. A country that has a pre-salt, with economically feasible reserves that were proven on the last decade cannot be limited to producing 2 million barrels per day (B/D) like a few years ago. Another piece of good news is that most of the growth expected will come from investments made by other major international players, thus supplementing the efforts already made by Petrobras.

How do you see Brazil's attractiveness versus other countries?

I am returning from a two-year mission in Angola. With regards to deep-sea exploration, Brazil is truly blessed. West Africa and other traditional producing regions are striving to render wells that yield 3,000, sometimes 4,000 B/D, economically feasible, whereas we have

been gifted with wells in fields such as Lula that yield more than 20,000 B/D, or even Mero, which exceeded 50,000 B/D during long-term tests. This greatly reduces the development break-even and turns Brazil into an extremely attractive place in comparison with other countries.

What is SBM Offshore short- to long-term expectation regarding the demand for production systems?

In the short-term, we are very happy of having closed this legacy from the past and being able to participate in Petrobras tenders for new projects. SBM is a renewed company that heavily relies on its internal processes to prevent the mistakes from the past. In the mid-term, the company is planning to be selective in terms of participating in tenders worldwide. Not only internal investments are relevant in each tender (reaching US\$ 10 million sometimes), but there is also internal competition for interesting tenders in other regions. In the long-term, I am fully confident that Brazil will

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“ WE NEED TO CONCLUDE THE DISCUSSIONS ON REPETRO AT A NATIONAL LEVEL ”

EDUARDO CHAMUSCA

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remain an attractive, competitive market, including by maintaining the average of 50% of the global demand for FPSOs (floating production, storage and offloading).

What is your opinion on Firjan initiatives to improve the business environment?

Firjan has been a place with critical relevance for the important battles fought by the industry and the state. The advances over the last 18 months are tangible and they are probably not comparable to the advances over the last 10 years. This does not mean that the Oil and Gas industry was granted incentives. This means that a highly pragmatic and republican discussion

was held, which laid the foundations that allowed the O&G industry to have fundamentals for significant investments in Brazil for the next decades. Firjan was an important stage for discussions and agreements in this period.

What topics should be given priority to ensure the oil industry regulation keeps moving forward?

We need to conclude the discussions on Repetro at a national level and in a decisive manner. We also need to reach a consensus about local content rules for rounds of the past. However, the most important thing is that we, Brazilians, need to reach a consensus: do we want to keep being the country of the future ‘that never comes’, or do we want to reach the level of development that we all long for? For that, it is critical not to leave this wealth in the ground, but to produce the oil that makes sense before the transition energy comes and sets its pace. Pre-salt oil has a relevant value today. It will be much less in a few years. It depends only on us and on government pragmatism.



We live to transform

CHALLENGES FUTURE





COVER

PROMISING INVESTMENTS IN THE OIL AND GAS INDUSTRY

The Oil and Gas (O&G) market crisis scenario is becoming part of the past. Investments are back, foretelling again a promising future with Rio de Janeiro taking the leading role. The state is still seen by the players as the country's most important hub for the market. A data survey carried out by Firjan has identified major onshore and offshore projects already planned for Rio de Janeiro, with amounts greater than R\$ 143 billion over the next five years.

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Shell Natural Gas Market Development manager Alexandre Cerqueira is one of the officers who highlight Rio's natural potential, where more than 80% of proven oil reserves and 55% of proven natural gas reserves are located. "This is a moment of celebration for the recovery of the industry."

According to him, important advances in the last years allowed expanding the horizon, such as more flexible local content rules, Repetro extension, the end of the single operator and the establishment of an auction schedule, yielding good businesses for the company.

"We have registered for all auctions since Round Zero and we intend to keep doing that," Cerqueira completes, who has yet not updated the business plan after the result of the last auctions. In September 2017, the estimate was to invest US\$ 2 billion per year in Brazil by 2020, a figure that will grow with the blocks awarded in the last auctions.

Even though he is in favor of local content levels "according to the reality" of the Brazilian market, 65% of Shell expenses are incurred with local suppliers,

ON THE RADAR

The announcement of new investments in the O&G industry has been constant this year. Equinor is planning to invest US\$ 15 billion in Brazil by 2030. The company works in partnership with Petrobras in Roncador Field located in the northern area of Campos Basin, in Northern Rio de Janeiro.

In addition, the state of Rio de Janeiro should count on two additional airports. The first stage of the works of Maricá airport is already complete, with taxiway passenger terminal, apron and central hangar prepared to receive offshore operations. For this month of September, two additional hangars are expected, as well as the yard expansion, runway markings and Prevention, Rescue and Firefighting Services in Civil Aerodromes (SESCINC), among other equipment. An expansion to accommodate aircrafts and cargo terminals is also planned. The renovation of Macaé Airport is also expected, which should begin in 2018.



considering the company’s 20 main contracts in the country, which accounts for almost R\$ 700 million/year according to Cerqueira.

Domestic suppliers are competitive in several markets: the fact that Brazilian technology is being exported to Shell projects is evidence of that, such as the supply of Christmas tree valves to Bonga project phase 2, in Nigeria,” he remarks.

PRE-SALT IN AÇU

A company that places a bet on the state is Prumo Logística Global, which develops Açú Port Complex and is a shareholder of Dome – joint-venture with GranEnergia – and Gás Natural Açú (GNA), and some other projects.

The investments planned by GNA amount to R\$ 16.5 billion, including five thermal power stations (TPS) with capacity of 6.4 GW (equivalent to the consumption of 15 million people or 5.5% of the country’s demand) in partnership with BP and Siemens, and a liquefied natural gas (LNG) regasification terminal – all located in Açú. The location is privileged, and it is the shortest distance between the port and exploration fields.

“The two stations, which make GNA the largest thermal power park in Latin America, are the flagships of this dream of drawing gas from the pre-salt, which would be connected to the gas pipeline network from Açú,” conceives company CEO Bernardo Perseke.

The idea is to sell the gas to local distributors and industries that wish to set up in Açú, which will take advantage of the “cheap, available energy without transmission charges.” The construction of the first TPS, which should begin its operations in 2021, started this year. The works of the second station, planned for 2023, are scheduled to be completed in 2019, including one transmission line for connection with the National Interconnected System (SIN). Together with the terminal, they amount to R\$ 8 billion and will create 10,000 jobs until 2023, of which 3,000 are direct jobs. The other two TPSs are licensed to participate of future auctions.

DEMAND FOR THE MARITIME INDUSTRY

On its turn, Dome intends to be the services division for the O&G industry in Açú, allowing to leverage the advantages of the geographic proximity with Campos Basin and Espírito Santo through the performance of naval repair services, equipment manufacturing and assembly, decommissioning and facilities.

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RIO IS STILL SEEN BY
THE PLAYERS AS **THE MOST**
IMPORTANT HUB FOR THE
COUNTRY’S INDUSTRY
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Investments planned till 2023

UPSTREAM

Production Units (FPSOs)
Subsea
Well Drilling

R\$ 117 Bn

DOWNSTREAM

Port Terminal
Liquefied Natural Gas Terminal
Natural Gas Processing Unit
Power Generation Units

R\$ 26 Bn

Source: Firjan Oil and Gas Management (the values originally provided in US\$ were converted at R\$ 3.80).

“Our investments make the production chain even more efficient, growing and generating wealth and income for the state of Rio de Janeiro,” Dome CEO Vinicius Patel remarks, who is placing a bet on each of these activities. “The demand for maritime repair services, which has been striving over the last years, tends to grow as the industry picks up,” he estimates.

Modec also believes that the recovery will benefit the entire oil production chain. The company portfolio currently has 11 production units in Brazil, and it was recently awarded a contract for charter and operation services regarding two additional large-scale FPSOs. A data survey conducted by Firjan points out that the investments exceed R\$ 10 billion, considering the FPSO Libra Pilot and FPSO Sépia, both to start production over in 2021.

Without mentioning the local content, Modec Business Development Manager Rodrigo Rocha says that he is relying on Rio de Janeiro suppliers for on-time delivery. “The state of Rio de Janeiro will be critical to allow companies to develop their projects as a result of the high-quality infrastructure existing in the region, which allows the provision



Firjan Petroleum Agenda

RIO DE JANEIRO MARITIME
INDUSTRY OUTLOOK

November

RIO DE JANEIRO NATURAL GAS
PERSPECTIVES

November

of goods and services that understand the specific features of the oil and gas industry," he says.

Ivens Consult director Ivan Leão sees the recovery of Rio de Janeiro maritime industry, but in a new phase, because the crisis left marks in local and international companies. According to him, it resulted in cost cutting and productivity increase. "There are several suppliers in Rio capable of meeting the increasing demand," Leão believes about the participation of Rio de Janeiro and nation-wide suppliers.

He believes in the state because it is the "headquarters of the oil and gas industry in Brazil." "Oil will remain as the main source of energy in the planet over the next 40 years, and Petrobras reports investments of US\$ 74.5 billion by 2022, mostly in offshore oil production," he justifies.

MARKET CONSOLIDATION

For Total E&P Brazil, which has been expanding its portfolio of deep-sea assets in the country, there are yet obstacles to market consolidation, such as the environmental licensing process, tax complexity and the incentive for investments in mature fields. In relation

to the state of Rio de Janeiro, Maxime Rabilloud, company CEO, also mentions the alignment of Repetro, the mitigation of risks and the search for increased legal certainty in the O&G industry, not to mention the critical role that research, development and innovation projects may play in Rio de Janeiro economy.

"If issues like these are addressed, investments should return in an even more steady and long-lasting manner, because the sector is one of the few that can quickly boost the economy, as it is no longer dependent on the domestic market", Rabilloud clarifies, who is also president of Firjan O&G Business Council.

Total is planning investments of R\$ 3 billion per year in Oil and Gas in Brazil. The company is a member of the Libra consortium and this year it has taken over the operation of the Lapa field, both in Santos Basin. According to Rabilloud, the business environment promotes to the exchange of experiences, high added-value discussions and cooperation in research and technology between partner companies. The CEO supports the implementation of a positive agenda by the government to develop the domestic supplier chain.



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INNOVATION

AGENDA FOR DEVELOPMENT

In a time when cutting costs and gaining efficiency is critical for the oil and gas industry, innovation plays an increasingly relevant role across the supply chain of this market. The Brazilian National Agency of Petroleum, Natural Gas and Biofuels (ANP) is responsible for overseeing the use of resources of operators awarded exploration and production contracts, which are required to invest in Research, Development and Innovation (RD&I) by means of specific provision.

10 Paulo Buarque, advisor to the presidency of the Carlos Chagas Filho Foundation for Research Support of the State of Rio de Janeiro (FAPERJ) and leader of the Research, Development and Innovation from the Oil and Gas Business Council points out that both the regulation for application of funds as for the accreditation of the institutions are complex. "The most immediate action ANP should be working on is the adjustment of Technical Regulation 3/2015 to the new innovation legal framework, which would greatly simplify the use of these funds," he suggests.

Petrobras Research and Development Center executive manager Orlando Ribeiro agrees that the processes have become more paralyzed over the years, even though the RD&I regulation issued by ANP in 2015 included significant advances, such as more flexibility to develop partnerships with companies.

"To enhance the model, our suggestion is to streamline the procedures for project development and accountability to the regulatory agency.

Additionally, we propose expanding the participation of startups in this system to allow using resources in

order to accelerate technological companies, and even to create investment funds and private equity funds to allow the entry of these new players in the value chain of our industry," Ribeiro says.

Hence, ANP Technology Research and Development superintendent Alfredo Renault remarks that the agency is already focusing on contributing to speed up the realization of mandatory investments in RD&I: "We are working on streamlining processes and trying to expedite the operationalization of disbursements."

RESEARCH LINES

In addition to the funds provided in the RD&I clause, developing innovation by means of research lines is also possible. According to Buarque and Renault, in addition to the subsea segment, the hot topics today are focused on the digitalization of the activities of the O&G industry, such as the application of Big Data, Internet of Things, Artificial Intelligence and Blockchain.

FAPERJ advisor also notes that the global trend is to switch to a low-carbon economy, another hot topic. As a result, Ribeiro remarks that in 2018 Petrobras business and management plan included a new specific strategy to prepare the company for a future based on a low-carbon economy. According to him, the oil company has been developing actions to reduce the emission of greenhouse gases in the production processes, investing and promoting new technologies to mitigate the impact of climate change and develop high value-added businesses in renewable energy based on technological competences and new business models.



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SUCCESS CASE I

TRANSPETRO INVESTS IN PERSONNEL SAFETY

Compliance with Regulatory Standards (NRs) is critical to ensure work safety. For this reason, Transpetro set up a partnership with Firjan in 2010 for training and recycling services regarding the NRs. In the next five years, approximately 6,000 associates will be qualified. "Our pillar is operational safety," Transpetro's Corporate Education Sectorial manager Mária de Oliveira says.

The classes are delivered in-company at the onshore and offshore terminals of the company or at SENAI schools in 20 states, including Rio de Janeiro. Firjan SENAI is responsible for the technical and operational management of the contract.

"Because we have units across different states, we were in need of a supplier that could both understand our reality and have the technical competence and national coverage to meet our demand," Mária explains. According to her, Transpetro found this solution in the federation. "By delivering the classes in our company or in the closest SENAI unit our associates are not required to travel far from their bases to attend the classes," she remarks.

According to Firjan Rio II Regional Business manager Pedro Domingues, the partnership reflects the purpose of the federation, which is to take the

lead in terms of transforming the industry and its production chain: "Understanding company's reality and its modus operandi is critical to allow us to take action and add value."

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MODALITIES

- NR 5 – Internal Commission for Accident Prevention (CIPA)
- NR 6 – Personal Protective Equipment (PPE)
- NR 10 – Electrical Installations Basics
- NR 10 – Refresher Course
- NR 10 – Electric Power System (EPS)
- NR 13 – Boilers and Pressure Vessels
- NR 13 – Safety in the Operation of Process Units.
- NR 33 – Confined Space – Supervisor
- NR 33 – Watchman
- NR 35 – Height

20 STATES COVERED

RJ, SP, MG, ES, BA, PE, AL, SE, PB, RN, CE, MA, DF, GO, AM, PA, AP, PR, SC, RS



SUCCESS CASE II

FIRJAN SENAI AND ABESPETRO PARTNERSHIP TRAINS PWDs

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Seeking solutions for increasing the percentage of people with disabilities (PwD) in the Oil and Gas (O&G) industry, the Brazilian Association of E&P Services Companies (ABESPetro) established a partnership with Firjan SENAI in 2016. This resulted in the People with Disability Integrated Education Project, which has already qualified 285 people living in the cities of Macaé, Quissamã, Rio das Ostras, Carapebus and Conceição de Macabu, in Northern Rio de Janeiro.

“There is no point in waiting for qualified PwDs to integrate our staff as a result of the Quota Law. We have to perform our social role and qualify these associates,” ABESPetro executive secretary Gilson Coelho says.

According to the federation Business general manager Carlos Magno, the project is a good example exactly because it focuses on professional training within an environment of human insertion and development: “The initiative is not only concerned with manpower, but also with human development, thus stressing our role in the transformation of the industry.”

With the purpose of ensuring the attendance of students, the project has offered a grant in the amount of R\$ 300.00/month. The students attend logistics operations assistant, storeroom clerk I and II and administrative assistant qualification courses. The total course load was 180 hours, from which 160 hours

covered specific professional content and 20 hours of guidance regarding the job market or social workshop. The entire process was followed up by Firjan SENAI education technicians and teachers.

RESULTS

There are still no statistics regarding the percentage of employability of the students. But the priority of ABESPetro members is to hire these former students. “We already managed to hire some professionals in the O&G market. We are optimistic with respect to new hiring,” Fugro Human Resources director Vanessa Faissal says; the company is located in Rio das Ostras.

With investments picking up in Northern Rio de Janeiro, Transocean Human Resources manager Ricardo Marinho is planning to hire former students of the project: “When we open new jobs, we already know where to look for these workers. However, note that the project has not only qualified them to work with us, but also to allow their insertion in the job market. It was a tremendous benefit for the participants,” he highlights.

The promising outlook caused ABESPetro and Firjan SENAI to plan a new project phase. This time, computer operator, buyer, electric panel assembler and computer repairer courses will be offered. The start is planned for this year, with a goal of training more than 300 professionals.



MARKET

ONIP'S NEW LINE OF WORK IS FOCUSED ON COMPETITIVENESS

Firjan's Oil, Gas and Maritime manager Karine Fragoso has been elected as the general superintendent of the Brazil's National Organization of the Petroleum Industry (ONIP). The executive takes office after engineer Marcos Assayag has left, who decided not to remain in the institution. The focus of the action plan will be on the development of the competitiveness of the domestic industry, taking ONIP to assume its leading role in the Oil and Gas (O&G) market.

In its mission, ONIP will work as a neutral forum of articulation and cooperation between companies focused on exploration, production, refining, processing, transportation and distribution of oil and its products, suppliers of goods and services, government agencies and funding bodies to enhance the global competitiveness of this market.

The main challenges of ONIP new management include the return of its organized environments starting this last quarter. "We want to build ONIP a new voice together with our members and their representatives based on the direct participation of major industry players," Karine highlights. Another challenge is to make ONIP a reference in different business environments.

INTEGRATION COMMITTEES

The next step of the Organization is the implementation of three Integration Committees: Regulatory

Environment, Access to Market, and Competitiveness and Productivity. Concerning the Regulatory Environment Committee, the main purpose will be to stimulate the development of O&G market. "We monitor the actions of forums for addressing government policy tools dedicated to these markets, and we are going to keep up contributing to high-quality technical works," she remarks.

The proposal is to strengthen the technical competences of the oil industry based on the convergence of members' visions, also expanding the participation in other industry environments. Regarding the Access to Market Committee, the focus will be placed on developing local content. Bringing the operators and major buyers together, and these operators to their potential suppliers, working to enhance the productive enchainment of these markets. "We cannot move forward in the development of a stronger, more competitive industry unless we bring buyers closer to their suppliers. Suppliers need to understand the problems of buyers so that they are able to deliver better solutions," she says.

In the Competitiveness and Productivity Committee, using innovation as a tool for productivity gains should be another work front. "The use of instruments and resources that allow expanding the digitalization of processes, for example, should be a goal to be sought by our industry. Innovation may originate real productivity gains associated to material competitive edge," Karine highlights.

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DATA

OIL, GAS AND MARITIME IN RIO

45%
PRE-SALT
PRODUCTION
LAST YEAR



41%
OF THE EMPLOYEES
WITH HIGHER
EDUCATION



91%
OF THE OFFSHORE
WELLS
COMPLETED



70%
OF REFINERY
OCCUPANCY
RATE IN RIO



85%
OF THE
INSTALLATION OF
CARS CNG KITS IN
THE COUNTRY



OIL MARKET IN RIO - 2017

INCREASE IN
25%
IN EXPORTS



DECREASE OF
3%
IN IMPORTS



13 Bn
DOLLARS
IN POSITIVE
IMPACTS FOR
THE STATE'S
TRADE
SURPLUS



Products include crude oil, petroleum coke and derivatives, petrochemical products and Repetro goods

STAFF

Firjan: President: Eduardo Eugenio Gouvêa Vieira • 1st Vice-president: Carlos Mariani Bittencourt • Firjan CIRJ 1st Vice-president: Sérgio de Oliveira Duarte • Firjan 2nd Vice-president: Carlos Eduardo Gross • Firjan CIRJ 2nd Vice-president: Raul Eduardo David de Sanson. **Communication General Management:** Daniela Teixeira • Sergio Costa • Gisele Domingues • Head Journalist: Fernanda Portugal. **Oil, Gas and Maritime Management:** Karine Fragoso • Thiago Valejo • Renata van der Haagen • Fernando Montera • Heber Bispo • Iva Xavier • Adriano de Oliveira • Verônica França. **Edited by Insight Comunicação.** General Editor: Coriolano Gatto • Executive Editor: Kelly Nascimento • Copywriting: Lais Napoli • Silvia Noronha • Proofreading: Geraldo Pereira • Photos: Thinkstock • iStock • Vinicius Magalhães • Graphic Design: Paulo Felipe de Menezes Quintão (Firjan) • Design and Layout: Paula Barrenne • Graphic Producer: Ruy Saraiva • Printing: Gráfica Printmill • **Firjan:** Avenida Graça Aranha, 1 - ZIP CODE 20030-002 - Rio de Janeiro. Phone: (21) 2563-4455 • oil.gas@firjan.com.br