

RIO DE JANEIRO OIL INDUSTRY YEARBOOK

OVERVIEW 2018

EXECUTIVE
SUMMARY



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EDITORIAL

When the environment appears to us a certain degree of predictability, reality draws our attention to the urgency of change in favor of our society. Our will is no different, committed to bring once again information about the oil market, so unique to the economy, as we deliver the **Rio de Janeiro Oil Industry Yearbook**.

It is clear that we need to continue the debate about what meaning we want to give to our wealth. We have the opportunity to define in what position we want to see our country in global geopolitics 30 years from now.

We need only to turn our attention to the appetite of companies in the last bidding rounds for us to see the strength of the reserves and the potential of Brazil in the oil industry. The new cycle of opportunities in the country has already begun. The transition that the world is experiencing to a low-carbon economy has no return. We must hurry and work in the short term to enjoy the opportunities that oil brings now.

We continue not only with the pre-salt on the coast of the state of Rio de Janeiro, but also opportunities to revitalize the post-salt and develop partnerships to increase our onshore production capacity in the North and Northeast of Brazil.

Only together, with synergy, will we advance. A permanent discussion environment among the main players in this market is fundamental. And we will only achieve if we continue working together. We therefore revitalized ONIP (National Oil Industry Organization), which will undertake actions to develop the competitiveness of the national industry.

The discussion on the best business models must be furthered in order to achieve even more promising results. We cannot leave aside the industrial policy guidelines, in order to make our national industry an exporter, achieve greater energy independence in the derivatives market, increase investment in Research, Development and Innovation (R,D&I) in suppliers, speed up the environmental licensing processes and unlock mature fields, among others.

Oil transcends generations and its multiplier effects must be harnessed not to correct past mistakes, but rather to build a true legacy that meets the sustainability of our planet. We will continue to strengthen partnerships and add new visions that will contribute to the joint implementation of a prosperity strategy.

Enjoy your reading!

Eduardo Eugenio Gouvêa Vieira

President of FIRJAN and President of the ONIP Deliberative Council

DOCUMENT OVERVIEW

Our contribution is anchored in the belief that the oil market in Rio de Janeiro is largely responsible for generating high-paying jobs, which allows us to increase demand in other markets not directly associated with it, in addition to fundamentally contributing to the collection of taxes and allowing realising investments in infrastructure and the most varied social actions.

This complex market, full of new challenges, makes us leave our comfort zone and seek solutions to keep mitigating its risks, while taking advantage of its benefits.

Thus, the **Rio de Janeiro Oil Industry Yearbook**, now in its third edition, presents analyses of the most relevant oil opportunities, challenges and data, up to the year 2017, and prospects for 2018. Resulting from the effort of **Sistema FIRJAN**, this year, with the support of JLT to concretize the project, to show the representativeness of this Rio de Janeiro market in the Brazilian economy, the document offers the reader access to qualified information that allows companies to guide their investment decisions and base the composition of their business plans.

The Yearbook thus allows us to observe the trends of this market, the most relevant being the opportunities to expand the activities of companies, whether focused on exploration and production of oil, or on the segment of refining and distribution of derivatives.

As in the previous year, the **Rio de Janeiro Oil Industry Yearbook – Overview 2018** was constructed based mainly on data widely disseminated by **Brazilian National Agency of Petroleum, Natural Gas and Biofuels – ANP**. While international data was obtained from the **U.S Energy Information Administration – EIA**, and from the oil company **BP**, which operates internationally and also provides market data.

For the analyses of this market's situation and prospects, the Yearbook had the collaboration of renowned organizations, adding even more value and legitimacy to its content. Considering the globalization of this business, initially, the document offers a reading of the world and national context of the oil market, built by the **Brazilian Petroleum, Gas and Biofuels Institute – IBP**, as well as an article about **Petrobras'** new contracting model written by the company itself.

The rest of the document is structured following the logic of this industry's value chain. For the first chapter, which deals with activities related to the Exploration and Production segment, the Yearbook includes the participation of **Total** and **BP**, as well as an article on decommissioning written by **JLT**.

The Downstream data is presented in the second chapter, comprising the activities of refining and distribution of oil and its derivatives. **Plural**, evaluated the main challenges of this segment in Brazil and Rio de Janeiro.

For this edition, the third chapter that presents the information on the investments coming from the resources research, development and innovation clause, the **Brazilian Development Bank – BNDES**, presented its vision of how this tool can be enhanced to maximize results.

Lastly, the fourth chapter presents the detailed analysis of the **Sistema FIRJAN** on the oil job market with a focus on Rio de Janeiro.

The **Rio de Janeiro Oil Industry Yearbook – Overview 2018** presents a qualified evaluation of the market, evidencing the participation of the state in the national scenario, with analysis presented in the Final Considerations. The full document can be accessed on Sistema FIRJAN webpage, in the Oil, Gas and Naval environment: www.firjan.com.br/oilandgas

Download the full report.

<http://www.firjan.com.br/publicacoes/publicacoes-de-economia/ambiente-onshore-de-petroleo-e-gas-no-brasil.htm>

CONTEXT

THE WINDOW OF OPPORTUNITIES FOR THE BRAZILIAN OIL INDUSTRY

Excerpt from IBP article

The energy sector is undergoing a deep transformation towards a low carbon economy, with the increase of renewable fuels in the global energy matrix and the commitment of countries at COP 21 to reduce CO₂ emissions. In this context, the Brazilian nation cannot lose this window of opportunity to convert and maximize our oil and gas reserves in tax collection, jobs and wealth for the country. In light of this scenario, we must rethink our sector and adapt to the changes that are inexorable. It is up

to Brazil to keep up with the accelerated pace of changes. The bottlenecks have already begun to be faced. In the last two years, ANP and MME (among other government agents) made a significant endeavor to, with great effort, dialogue and coordination with the industry, solve important issues, and which have allowed more competition in the industry. We need only to find the best way to make this viable. The window is open.

PETROBRAS' NEW CONTRACTING MODEL

Excerpt from PETROBRAS article

Sanctioned in June 2016, the Law of State-Owned Companies represents a regulatory framework for public companies, mixed-capital companies and their subsidiaries in all spheres. One of the main themes presented by the law is the regulation of contracting, with changes and innovations in relation to the standards previously adopted by the company – Decree n° 2745/98 and Petrobras Contracting Manual (PCM). Since the turning point, all of Petrobras' public bids are published in the Petronect procurement and contracting portal (www.petronect.com.br) and the Federal Official Gazette (DOU). And, among the main changes brought about by the Law of State-Owned Companies, note that there is no longer the modalities of Invitation, Pricing, Competition, Tender and Auction. Now, the bids are processed preferably electronically, with the following procedures: open, closed or combined dispute modes, and the trading floor ritual. With the implementation of Law n° 13303/16, the registration becomes more important. The qualification requirements in the RFP may be totally or partially replaced by the Cadastral Registration Certificate (CRC). For Petrobras, the participation of suppliers in this deep process of change is fundamental. Therefore, several meetings were held with the presence of companies, associations and class entities.

EXPLORATION AND PRODUCTION

BRAZIL AND RIO DE JANEIRO IN THE WORLD CONTEXT OF OIL

Excerpt from BP article

This is an exciting moment for the Exploration and Production (E&P) segment in Brazil, which has advanced a lot in the last two years, and having a long-term partnership with Petrobras, known for its ability to operate in deep and ultra-deep waters, is a positive differential. However, note that the industry prefers simplification. Companies and the government need to improve regulatory models

by promoting the adoption of new technologies, making Pre-Salt and other exploration opportunities even more competitive in the international context. Therefore, to keep it in the spotlight, we must capitalize on it right now by building, with zeal and responsibility, the foundations for the benefit of future generations.

LOCAL GROWTH FROM A GLOBAL STRATEGIC VISION

Excerpt from Total article

Oil and natural gas are key to development and will continue to play an important role in the coming decades. To unlock this investment potential, the Brazilian oil industry needs to consolidate and maintain international interest, securing growth prospects and job creation in the sector, necessary for economic recovery, especially in

Rio de Janeiro, as the sector's capital in Brazil. As part of this expansion, we plan to invest R\$ 3 billion per year in the country in the coming years. Finally, it is important to highlight that the energy transition should be perceived as an opportunity for growth by companies in the sector.

DECOMMISSIONING: AN URGENT DISCUSSION

Excerpt from JLT article

Decommissioning is the end of the life cycle of an oil well, when it is returned in its original condition, free of environmental damages. The reduced number of offshore projects discontinued by the middle of this decade and the low cost of demobilizing onshore infrastructures may explain the industry's lack of interest in planning the decommissioning activity. Several countries, such as the United Kingdom, United States, Canada and Norway already have advanced rules and regulations governing the demobilization operation. Financial responsibilities and continued liability of operators are already foreseen in all these countries. Brazil has technical capacity and counts on experiences of countries already evolved in the regulation of the process of decommissioning. We need to continue the discussions here in the country, so that we are ready, with clear regulations, when the first disassembles begin. Regulatory agencies need to be mobilized for this purpose.

DOWNSTREAM

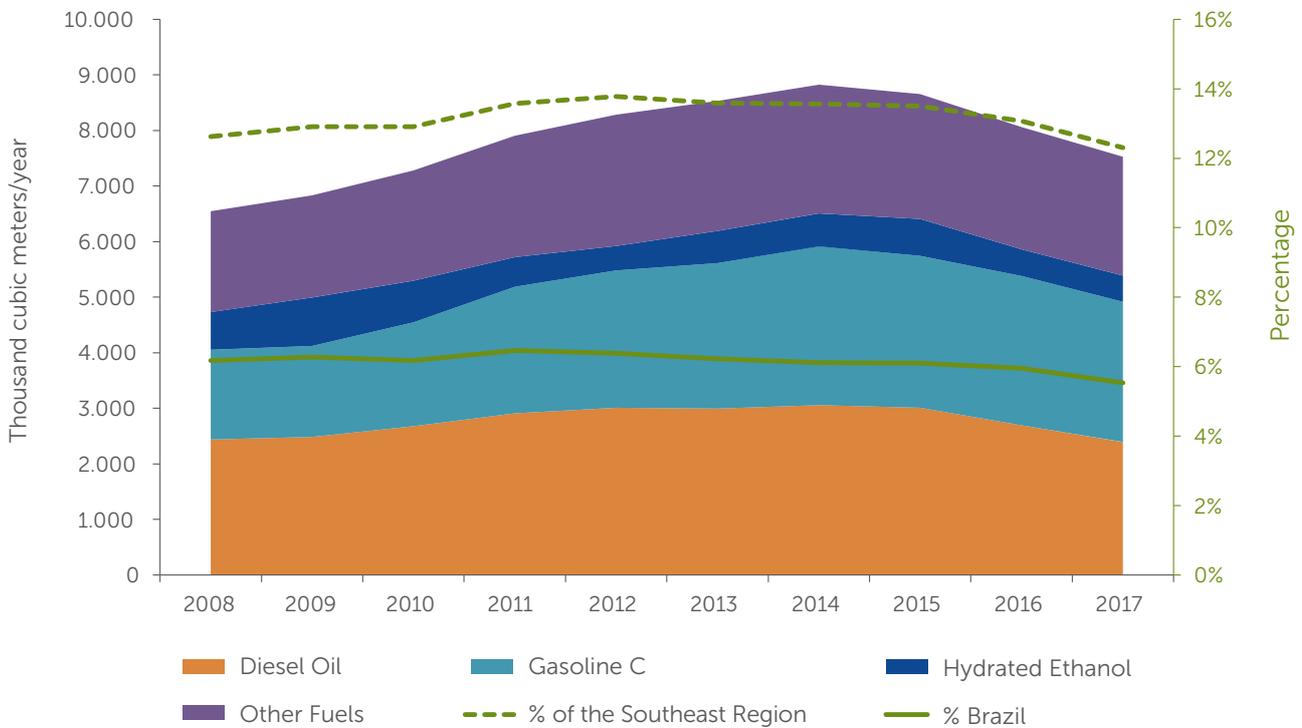
CHALLENGES OF THE OIL PRODUCTS DISTRIBUTION SECTOR

Excerpt from Plural article

The oil products distribution sector, known globally as downstream, plays a strategic role for the country. The sector is responsible for a significant portion of the country's tax collection: R\$ 127 billion in 2017. Regarding today's complex taxation for the sector, it could be solved by Confaz's legal establishment of a Single-Phase, Tax on circulation of goods and services – ICMS, as provided for in Constitutional Amendment n° 33/2001, which presupposes a single value for each product throughout the national territory, in addition to concentrating the collection on a specific link of the producer/importer chain. In addition, it is found that a representative part of the regulatory framework in force in Brazil is ineffective, either because it is outdated or because

it fails to achieve its purposes. Environmental licenses are a good example. The cumulative requirement of similar documents in various spheres of public administration multiplies the need for investment in human and financial capital to obtain such licenses, raising the cost of ventures and driving away investors. Currently, there are initiatives that encourage direct interference by the state, for example, as the agent that defines market prices (freight, margins or the own fuel marketed to the final consumer), that is, in clear conflict with what is established in the Constitution. And Plural has the responsibility to engage, inform and be a protagonist in this scenario of changes in the downstream sector.

GRAPHIC 1. HISTORY OF THE SALE OF FUELS IN RIO DE JANEIRO



* Other fuels includes: aviation fuel, LPG, fuel oil, aviation kerosene and kerosene for lighting.

Source: ANP, 2018.

RESEARCH, DEVELOPMENT AND INNOVATION

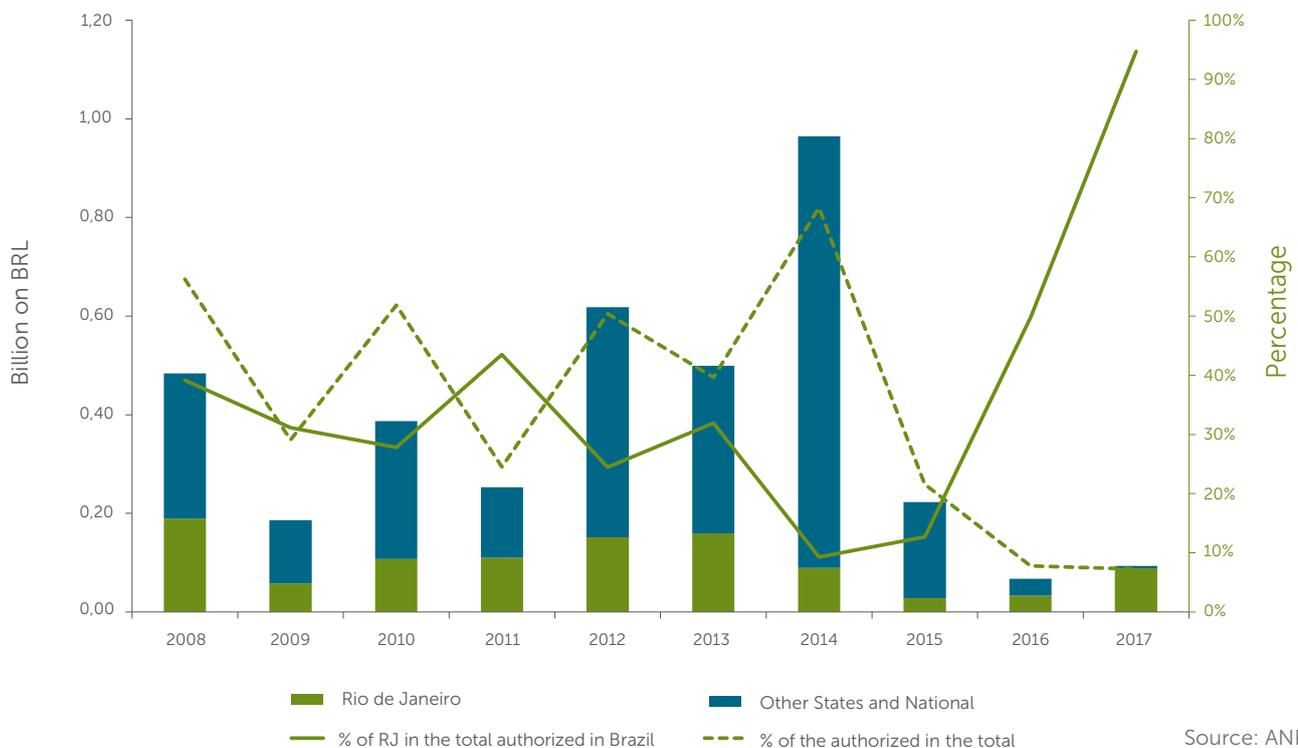
INNOVATION AS AGENDA FOR DEVELOPMENT

Excerpt from BNDES article

The Oil and Gas market has, for years, been responsible for most of the investments in the Brazilian economy, with over 10% of the country's Fixed Gross Capital Formation. Despite taking into account the increase in environmental restrictions and growing use of renewable energies, oil and gas, which are the main sources of primary energy worldwide, will still be in high demand for decades. Through innovation, it is possible to increase productivity, the constant reduction of costs, the insertion in the global supply chain, and increase the environmental sustainability of the market over time. It is important for the country to guarantee instruments capable of maintaining a strong agenda of innovation in the market on a regular and permanent basis. It would

be important to have a model, or a new complementary instrument, in which the research and innovation project is, per se, the key point of the decision on the distribution of the resources of ANP's RD&I Clause. That is, the allocation of resources would depend on the merit inherent to innovation projects and their development phase, regardless of whether they are located in universities, in operators, or in companies of the supply chain. Lastly, BNDES Finame's new methodology, in principle, qualifies the local content considering the technological content of the product and the company's efforts in innovation, export, productivity and the generation of qualified employment, essential factors for competitiveness and sustainability in the long term.

GRAPHIC 2. R,D&I CLAUSE INVESTMENTS AUTHORIZED BY ANP



Source: ANP, 2018.

SOCIOECONOMIC IMPACTS

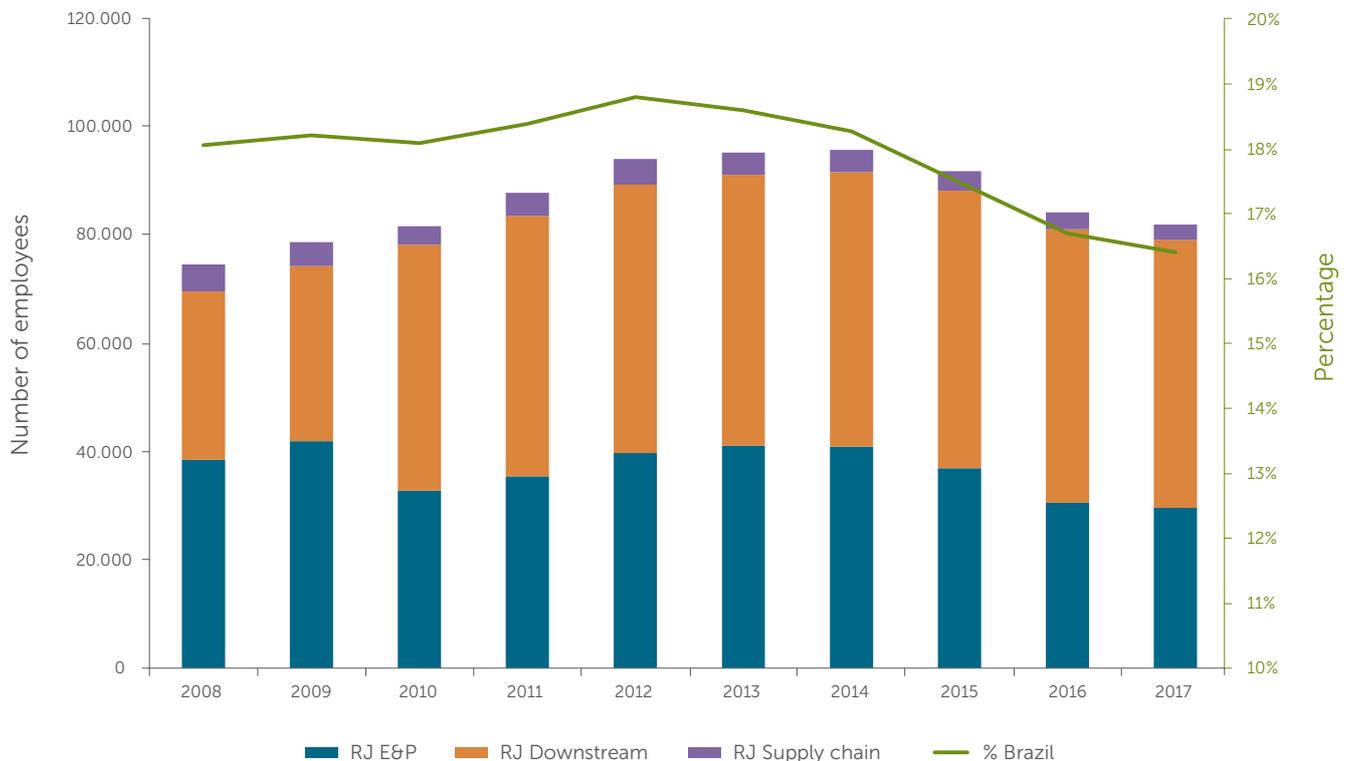
RIO DE JANEIRO OIL CHAIN JOB MARKET

Excerpt from Sistema FIRJAN article

In recent years, the main employment data had shown a trajectory of significant retractions in the Rio de Janeiro States's Oil and Gas Productive Chain, and although there is still no recovery in the market, more recent information already shows signs of weakening of the oil crisis. In spite of the movements, the importance of the state in the national oil chain is indisputable: 16.4% of all employees in the Brazilian oil market are located in Rio de Janeiro, and although this figure has been slightly reduced in recent years (17.5% in 2016 and 18.3% in 2015), the state remains Brazil's

second biggest oil employer. In São Paulo, the state that employs the most in this market, almost all workers work in the downstream sector (97.1%). Regarding the occupations themselves, there is a great concentration in certain positions and almost half of the workers in the sector are distributed in only 10 occupations. Another influencing factor is the gap in remuneration observed mainly in the downstream sector: in these activities, the average monthly income in Rio de Janeiro is R\$ 9,183 – almost three times higher than in Brazil (R\$ 3,379).

GRAPHIC 3. HISTORY OF THE TOTAL NUMBER OF EMPLOYEES IN THE OIL VALUE CHAIN



Source: ANP, 2018.

FINAL CONSIDERATIONS

OIL MARKET: CATALYST OF A PRO-DEVELOPMENT CYCLE

Excerpt from Sistema FIRJAN article

The wheel has turned again and the oil and gas market in Brazil already has a more positive outlook of the future. And, in this new scenario, Rio de Janeiro once again plays a leading role. In the short term, the opportunities of the 15th Bidding Round results in investment mainly in the increase of geological knowledge of our areas, totaling an expectation of about US\$ 500 million. On the other hand, it is only with the continuous supply of new areas that we will be able to give the sustainability of the necessary investment and return to society. Still on operation and production, supporting in the short term, until 2021, 12 offshore production systems are scheduled to enter into operation in the states of Rio de Janeiro. In this case, if we disregard projects that have already begun contracting or building of assets, there will be another US\$ 40 billion in investment. On the one hand, we advance in the downstream issues, but we still need to work hard to build our capacity to add value to our oil extraction activities. It is important to stress that this

expansion of our refining capacity must be accompanied by an increase in the number of agents acting in this segment of the market. So the key question is how can we make the implementation of E&P projects faster and also maximize returns to the country. And this is where investment in Research, Development and Innovation stands out. For the supply chain, we must use the strength of E&P to work all the gaps that prevent the continuous improvement of our competitiveness. In addition, the proactive performance of government entities should be aimed at providing investors with the proper business environment in order to make the wheels turn not only faster but also with lower levels of intercurrency. The Sistema FIRJAN thus believes in a vision of a Country Pro-Development Cycle, with the oil market as a catalyst. Therefore, we work to identify, together with the main agents of this market, which wheels are the ones that hold and which push the development of Rio de Janeiro and Brazil.

FIGURE 1. PRO-DEVELOPMENT CYCLE OF THE COUNTRY – THE OIL MARKET

