THE NEW PETROLEUM REGULATORY FRAMEWORK AND THE PRODUCTION SHARING REGIME: EVOLUTION OF REGULATORY SYSTEM

O NOVO MARCO REGULATÓRIO DO PETRÓLEO E O REGIME DE PARTILHA DA PRODUÇÃO: A EVOLUÇÃO DO MODELO REGULATÓRIO

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ABSTRACT

A few years ago, large hydrocarbon reserves were discovered in a region called pre-salt, which extends over 800 km of the Brazilian coast, at a depth of about seven thousand meters above sea level. The Federal Government owns the mineral resources found in the marine subsoil within the continental shelf, but the exploitation of this material, although considered a monopoly, may be permitted according to regulatory regimes provided for in the legislation. The general objective of this research is to examine the concession and sharing regimes for the pre-salt blocks, in order to promote a discussion on the hypothetically most viable model in terms of government revenues. It is not about to point out a system as ideal, but the hypothesis seeks to demonstrate that the production sharing regime has brought significant advances in prospecting, allowing a new way of costing exploration. The research has a deductive methodology, with eminently bibliographic support.

Keywords: Petroleum; pre-salt; Production sharing; regulatory systems; royalties.

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How to quote this article:/*Como citar esse artigo:*
OLIVEIRA, Emerson Ademir Borges de; RAMOS JÚNIOR, Galdino Luiz; REZENDE, Heverton Lopes. The new oil regulatory framework and the production sharing regime: the evolution of the regulatory model. **Revista Meritum**, Belo Horizonte, vol. 16, n. 1, p. 280, 2021. DOI: https://doi.org/ 10.46560/meritum.v16i1.8259 within the continental shelf, but the exploitation of this material, although considered a monopoly, may be permitted according to regulatory regimes provided for in the legislation. The general objective of this research is to examine the concession and sharing regimes for the pre-salt blocks, in order to promote a discussion on the hypothetically most viable model in terms of government revenues. It is not about to point out a system as ideal, but the hypothesis seeks to demonstrate that the production sharing regime has brought significant advances in prospecting, allowing a new way of costing exploration. The research has a deductive methodology, with eminently bibliographic support.

RESUMO

Há poucos anos foram descobertas grandes reservas de hidrocarbonetos numa região denominada pré-sal, que se estende por 800 km do litoral brasileiro, em profundidade de cerca de sete mil metros do nível do oceano. A União é proprietária dos recursos minerais que se encontram no subsolo marinho dentro da plataforma continental, mas a exploração desse material, embora considerada monopólio, pode ser permitida conforme regimes regulatórios previstos na legislação. O objetivo geral desta pesquisa é examinar os regimes de concessão e partilha dos blocos do pré-sal, a fim de promover uma discussão sobre o modelo hipoteticamente mais viável em termos de receitas governamentais. Não se trata, pura e simplesmente, de apontar um sistema como ideal, mas a hipótese busca demonstrar que o regime de partilha de produção trouxe significativos avanços na prospecção, permitindo uma nova forma de custeio da exploração. A pesquisa possui metodologia dedutiva, com apoio eminentemente bibliográfico.

Palavras-chave: *petróleo; pré -sal; partilha de produção; sistemas regulatórios; royalties.*

1. INTRODUCTION

Oil is an important source of energy today. Like natural gas, it is a hydrocarbon formed from chemical reactions that occurred thousands of years ago, originating in organic materials.

In 2007, the discovery of large hydrocarbon reserves was announced in a region that extends for 800 kilometers, between the coasts of the states of Espírito Santo and Santa Catarina, at a depth of about seven thousand meters from ocean level. This region is called “pre-salt”, since the source rock is under an extensive salt layer of approximately two kilometers.

Considering that the mineral resources found in the Brazilian Continental Shelf belong to the Union, the extraction of these resources can be authorized by the Union to public or private companies, by the regulatory regimes provided in the legislation, which will be presented in this article, with emphasis on the production sharing regime, implemented in 2010 by Law No. 12,351, and which changed the regulatory framework then in force.

Through the deductive method, bibliographical and descriptive research, the following problem is intended to be answered: considering the legislative innovation in the last decade, which constituted the new regulatory framework for petroleum, is it currently possible to establish which regime has the potential to offer greater government revenues?

The general objective is to examine the concession and sharing regimes for the pre-salt blocks, in order to promote a discussion about which model is hypothetically more viable in terms of government revenues.

As specific objectives, we propose: a) to present general concepts about petroleum and the pre-salt region; b) to explain the new petroleum regulatory framework and the regimes in effect; c) to foster a comparison between the regulatory regimes.

It must be emphasized that, hypothetically, the article does not have the power to affirm that one sharing system is better than another, but, in practical terms, to demonstrate that the new regime, with the modification that broke with the need for Petrobras’ participation, allowed an acceleration in the exploration process, as well as a reduction in costs for the mixed economy company, especially when it was going through serious financial difficulties.

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This research is justified because the topic has gained much relevance in recent years, especially after the latest auction rounds of the pre-salt fields held in 2019 under the sharing regime. Many questions have been raised regarding the regimes that can bring more wealth to Brazil. This is what we intend to promote here.

2. THE ORIGIN OF OIL AND PRE-SALT

A liquid or gaseous hydrocarbon is the result of chemical reactions that took place thousands of years ago. These reactions occurred in compacted organic materials that were deposited in a liquid environment with little oxygen, which were overlaid by layers of earth over the years. Liquid hydrocarbons in their natural state, such as crude oil and condensate, are called petroleum, as stated in Law 9478/1997. Oil is an important source of energy and its derivatives - such as gasoline, diesel oil, and kerosene - are used as fuel for automobiles and thermoelectric plants, besides the industrial application in several segments of the economy. The role of oil is intimately connected to the stages of the so-called Industrial Revolutions which, as dynamic and cyclical movements, developed the legal-social relations, broadening perspectives and establishing new economic and cultural paradigms. We speak of revolutions in a plural perspective, because, in a historical analysis, there were several moments that were characteristic of the social particularities that mark a period of time in the evolution of humanity:

> Sparked by the mechanization of spinning and weaving, the First Industrial Revolution began with Britain's textile industry in the mid-18th century. Over the next 100 years, it transformed all existing industries and gave birth to many others, from machine tools (the mechanical lathe, for example) to steel manufacturing, the steam engine, and railroads (SCHWAB, 2019, p. 42).

In the same way, the Second Industrial Revolution brought the rise of fuels and with them a new system of interpersonal closeness, changing the rhythm of "human coexistence" and exacerbating the needs arising from these relationships.

> In the period between 1870 and 1930, a new wave of interrelated technologies began to compound the growth and opportunities that came with the First Industrial Revolution... The internal combustion engine made possible the automobile, the airplane, and eventually their ecosystems - including manufacturing jobs and highway infrastructure. Breakthroughs occurred in chemistry: the world gained new materials, such as thermoset plastics, and new processes - Haber-Bosch's ammonia synthesis paved the way for cheap hydrogen fertilizers, the "green revolution" of the 1950s, and the subsequent dizzying increase in human population (SCHWAB, 2019, p. 43)

Without exclusionary bias, the Third and Fourth Industrial Revolutions have placed society in the world of technology, transforming it into an "information collective", denoting a new social format. Despite this "new moment", oil is still the basis for sustaining several economies, and is treated as an indispensable element for the development of countries inserted in this technological context. In other words, the Industrial Revolutions complement each other, and are not about overcoming phases, but about the emergence of new perspectives without losing the old discoveries.

Brazil is an important oil producer and became self-sufficient in 2006, but this does not mean that it is not still an importer of this hydrocarbon.

This is because this self- sufficiency is only numerical, i.e., the country produces a larger quantity than it consumes; on the other hand, the demand for derivatives is still high, which implies imports, in addition to other problems such as the demand for refining in the national territory.

This self-sufficiency was announced in 2006 by the Union, shortly before the announcement of one of the largest oil discoveries in recent years; in the Santos Basin region [4], in the field called "Tupi", evidence was identified of large oil reserves located beneath the salt layer, in a region approximately seven thousand meters below the surface of the Atlantic Ocean. After this discovery, it was announced, in 2007, the existence of the pre- salt province, mapped in a region that extends from southern Espírito Santo to northern Santa Catarina, with approximately 800 kilometers long (SCHUTTE, 2012, p. 14).

Regarding the origins of this layer, the state company explains:

> The pre-salt is a sequence of sedimentary rocks formed more than 100 million years ago in the geographical space created by the separation of the ancient continent Gondwana. More specifically, by the separation of the current American and African continents, which started about 150 million years ago. Between the two continents, large depressions were initially formed, which gave rise to large lakes. There, over millions of years, the oil-bearing rocks of the pre-salt layer were deposited. As all the rivers from the separating continents flowed into the lower regions, large volumes of organic matter were deposited there. As the continents drifted apart, the organic material accumulated in this new space was covered by the waters of the forming Atlantic Ocean. Here began the formation of a salt layer that today is up to 2,000 meters thick. This layer of salt was deposited on the accumulated organic matter, retaining it for millions of years, until thermochemical processes transformed the organic layer into hydrocarbons (oil and natural gas) (PETROBRAS, 2020))

In this same vein, Ferro and Teixeira (2009, p.1) point out that the pre-salt reservoirs were formed 122 million years ago when there was a lake environment in a small strip of sea that opened between Africa and America. Thus, with the separation of the plates of these continents that were formed, there was the entry of sea water, which would have vaporized in this hot environment, so that salt started to be deposited on the organic sediments.

The term pre-salt, on the other hand, refers to the geological time scale, i.e. the time of oil formation, and not to its position (FOGAÇA, 2020). In this sense, Abreu (2013, p. 8) points out: "Conceptually, the term 'Pre-salt' that is present in the media in general and in technical texts is close to a definition of geological time character, which means the interval of rocks that was deposited before salt layers.

Therefore, the area accumulates light oil of excellent quality, which projects Brazil to face the great demand for energy in the world. This is because oil extraction has been increasing gradually every year. In 2014, it was possible to extract 500,000 barrels per day, and in 2018, a few years after the start of exploration, this number already exceeded 1.5 million (PETROBRAS, 2020).

4 The Santos Basin is one of the three Sedimentary Basins where the pre-salt layer oil is found. The other two are the Campos and Espírito Santo Basins.

To have an idea of the impact of oil production in the region mentioned above, for comparison purposes, note that it took 45 years for Petrobras[5] - since its creation - to reach, in 1998, the production of the first million barrels of oil. The mark of 1.5 million barrels was reached only four years later, in 2002 (PETROBRAS, 2020). Furthermore, in the month of September 2019, with 110 wells producing, average production was 1.82 million barrels of oil per day and 73.3 million cubic meters of gas per day, adding up to a hydrocarbon production of 2.2 million barrels of oil equivalent per day.

Furthermore, in the last 60 months leading up to September 2019, average pre-salt oil production grew 243% (PRE-SAL OIL, 2019, p. 9).

Indeed, for Lima (2008), the discovery of oil in the pre-salt layer of the Santos basin was only possible thanks to the accumulation of Petrobras' experience in 68 years of prospecting. For the author, this experience begins with the first successful well, located in Lobato, Bahia, in 1939. Although oil extraction is a high-risk activity, with about 25% success rate in wells drilled, the pre-salt represents low risk (LIMA, 2008), because the exploratory success rate is 86%, much higher than the world average (IBP, 2016).

Furthermore, for Petrobras (2020), the volume of oil produced "per well" in the Santos Basin pre-salt is above what is expected in the oil and gas industry. On average, 25 thousand barrels of oil are extracted per day; and of the ten Brazilian wells with the highest production, nine of them are located in this area, the most productive being the Tupi field, with 36 thousand barrels of average flow per day.

The pre-salt is located 300 kilometers off the Brazilian continental and insular coast, partially within the Exclusive Economic Zone (EEZ, from here on). This region is described in article 6 of Law 8.617/1993, which states that the EEZ is a strip extending up to two hundred nautical miles, which is about 370 kilometers, overlapping the territorial sea. In other words, 184 nautical miles beyond the territorial sea, which has 12 miles, but encompassing it (BORGES, 2020, p. 202).

In the EEZ, Brazil has sovereign rights for the purposes of exploration and exploitation, in addition to the conservation and management of natural resources of the waters overlying the seabed, the seabed and its subsoil, and even to all that refers to other activities with a view to exploration and exploitation of that zone for economic purposes. Furthermore, according to article 20, item V of the Constitution of the Republic of 1988, those natural resources of the continental shelf and the exclusive economic zone are considered Union property (BORGES, 2020, p. 201-203).

From an international perspective, one can establish a concern of the global community with issues related to oil, its exploration and extraction, mainly due to the fact that its reserves are external, going beyond the territorial limits of one state, reaching the others.

Thus, there is talk of "international unitization:

5 According to art. 61 of Law No. 9.478/1997, Petróleo Brasileiro S.A. - PETROBRAS is a mixed economy company linked to the Ministry of Mines and Energy, whose purpose is the research, mining, refining, processing, trade and transportation of oil from wells, shale or other rocks, its derivatives, natural gas and other fluid hydrocarbons, as well as any other related or similar activities, as defined by law. Art. 62 of the same law, on the other hand, establishes that the Union will keep the shareholding control of PETROBRAS with the ownership and possession of, at least, fifty percent of the shares, plus one share, of the voting capital.

> International unitization is understood as a contract that aims to consolidate legal business between international subjects from multiple areas or blocks, in order to allow the field to be efficiently explored within the unitary perspective, using the division of costs and revenues, through the establishment of joint ventures that will perform the activities. (OLIVEIRA; XAVIER, 2007, p. 681-682).

International law, especially public law, presents relevant sources for the coordination and cooperation of the various international subjects, also in matters involving oil. In this scenario, not only international treaties can be acclaimed, but also the election of international customs as a source of public international law constitutes a historical and paradigmatic milestone for structuring the subject.

In this sense, it is worth noting that Brazil ratified the Montego Bay Convention, held in 1982 in Geneva. This Convention on the Law of the Sea establishes in its article 76 and following provisions on the continental shelf, which comprises the bed and the subsoil of submarine areas, establishing that the coastal state exercises sovereignty over the shelf for the purposes of exploration and exploitation of its natural resources (including mineral resources).

Under the Convention, the coastal country must apply to the Secretary-General of the United Nations for the establishment of the platform, submitting maps and information, including geodetic data, permanently describing the outer limits of its continental shelf, however, the area claimed must not exceed 350 nautical miles from the coast. This is the extended continental shelf (BORGES, 2020, p. 202).

In this sense, Schutte points out about the continental shelf:

> Brazil began in 1989 its Continental Shelf Lifting Plan (LEPLAC), to establish its continental shelf beyond 200 nautical miles from the EEZ, in accordance with the criteria established by the convention. In April 2007, the United Nations Commission on the Limits of the Continental Shelf approved most of the Brazilian plea (about 85%), extending Brazilian maritime jurisdiction to an area of 4,451,766 km2, known as the Blue Amazon, half the continental area of 8,511,996 km2. With this there was legal protection for the pre-salt, although the largest power with great external dependence on oil has not yet ratified the convention. (SCHUTTE, 2012, p. 15)

This concern with legitimizing the pre-salt reserves and those that will be discovered makes the claim of establishing the platform under the Convention more legitimate. This wealth will certainly position Brazil as an important player on the world stage and in the oil trade in the coming years, not least because the estimated production for the year 2031 is an impressive 3.89 million barrels of oil per day, considering the exploration contracts in progress until 2019 (PRE-SAL PETROLEUM, 2019, p.26). Obviously, to reach this mark a lot of investment in the sector will be necessary, such as acquisition of platforms, installation of more effective systems, drilling of wells, etc.

Despite the stimuli to reduce the dependence on oil in the world, there is still a growing demand in countries like China, a market to be explored by Brazil, without moving away from trade with the United States.

Leão and Trabali Neto note:

> Therefore, the Arab crisis shows that the regulatory changes and the acceleration of pre-salt auctions are, above all, a central element of the geopolitical strategy of the United States and China. If, in the Middle East, the two powers

> oppose each other, in the Southern Cone they converge. And with this convergence there is a migration, still slow, of the geopolitical axis of oil and its tensions to the Southern Cone. (LION; TRABALI NETO, 2019)

As pointed out, the said country can use strategies to diversify oil purchases, seeking other markets, such as the Brazilian one, distancing itself from conflicts in the Middle East (LEÃO; TRABALI NETO, 2019).

There are, on the other hand, those who have reservations in relation to the expectation of financial return from the pre-salt. In this sense, Sauer and Rodrigues:

> The pre-salt acquired the dimension of a myth: it came to mean the promise of fabulous resources that will allow Brazil to finally reach a standard of public services that is compatible with the basic needs of the population. The pre-salt oil exists, and in great quantity, but its real dimension is still unknown. It is a real, concrete promise. But the path to transform it into wealth for the population is still uncertain. Countless countries have seen their expectations surrounding the promises of oil wealth dashed. The real debate is in the political arena: there are conflicts of interest among the various players involved: the population, the shareholders or controlling shareholders of Petrobras and other interested companies, and the consumers of oil derivatives in the country itself. This debate is transferred to the petroleum industry organization sphere, the regulatory model, the production regimes that present variations linked to each perspective of defended interests. (SAUER AND RODRIGUES, 2016, p. 186)

This road to financial return to the country through investments in health, education, etc., may actually take a considerable amount of time, not least because there are imbroglios in the political field that will be highlighted later in this paper. Truly there is a great opportunity for Brazil, but many economic and technological challenges lie ahead in order to guarantee these opportunities. We will mention a few.

According to Fogaça (2020), the challenges to be faced in pre-salt exploration begin with its depth, which extends for about seven kilometers, crossing an extensive salt layer measuring about two kilometers.

Besides this, salt forces Brazil to use new technologies for drilling, since at this depth it becomes a viscous and unstable material, and it is also necessary to keep the extracted crude oil warm in order to avoid clots that can clog the pipelines; this, added to the difficulties related to depth and transport logistics, obviously raise the costs of the operation (FOGAÇA, 2020).

Therefore, regulatory and institutional issues are very important because, when dealing with high-cost and high-risk investments, a scenario of uncertainties and threats of political interventions can hinder investments. The institutional environment surrounding an exploration project is a fundamental parameter for the decision to invest (EPE, 2018).

One should not forget, also, the scenario of uncertainty generated by cyclical fluctuations in the price of oil, with abrupt price drops (PEDROSA; CORRÊA, 2016, p. 13). Still:

> When the Brazilian pre-salt was discovered, the world was in the midst of an economic boom, accompanied by a significant increase in global demand for oil and rising prices. After the 2008 financial crisis, which was short-lived in terms of its impact on the oil industry, oil prices reached levels well above $100 per barrel, making the pre-salt projects increasingly attractive. The reversal of expectations came to happen with the collapse of prices from the end of 2014. (PEDROSA; CORRÊA, 2016, p. 13).

The international crisis also impacted the oil industry, in addition to the corruption scandals involving Petrobras, an opportunity in which a picture of indebtedness took hold, affecting ventures such as the pre-salt (PEDROSA; CORRÊA, 2016, p. 13).

Moreover, the environmental impact is also another problem, since Brazil can become a villain in global warming by increasing the supply of fossil fuels in the market, to the detriment of other energy sources (FOGAÇA, 2020).

For Schutte (2012, p. 9) the energy issue is intrinsically linked to the environmental issue, because in the coming decades the world will have the challenge of reducing greenhouse gas emissions, seeking a transition to a low carbon intensity economy. To this end, it would be a trend to decrease, albeit gradually, the use of oil, but this will hardly occur in a scenario in which the pre-salt production becomes unviable because of the growing demand in some countries.

Naturally, challenges such as these exist in risky activities and must be faced, always seeking the best for Brazilian society.

3. THE NEW REGULATORY FRAMEWORK

As is well known, Article 20 of the Constitution of the Republic of 1988 establishes what the Union's assets are; and, among these assets, items V and IX list the natural resources 3 THE NEW REGULATORY FRAMEWORK of the continental shelf and the EEZ and the mineral resources, including those in the subsoil, which obviously includes hydrocarbons [6].

But it was in 1997 that Law No. 9.478 was enacted, specifically regulating the national energy policy, the activities related to the oil monopoly, establishing the National Energy Policy Council (CNPE) and the National Petroleum Agency (ANP)[7], also providing, in its Article 5, that the economic activities described in Article 4 of the same law would be regulated and supervised by the Union and could be exercised through concession or authorization, by companies incorporated under Brazilian law, with headquarters and administration in the country.

These activities, originally described as a federal monopoly, were: the research and extraction of oil and natural gas reserves and other fluid hydrocarbons; the refining of national or foreign oil; the import and export of products and basic derivatives resulting from the activities described above, as well as the maritime transportation of national crude oil or basic oil derivatives produced in the country.

Since 1995, after the enactment of Constitutional Amendment no. 9, the Federal Government's monopoly over the activities described in art. 177 of the Constitution, which includes the activities listed in the previous paragraph, has been somewhat mitigated, allowing the contracting of state or private companies to perform these activities.

6 Article 3 of Law 9478/1997 provides in a similar way, namely: "The deposits of oil, natural gas and other fluid hydrocarbons existing in the national territory belong to the Union, including the terrestrial part, the territorial sea, the continental shelf and the exclusive economic zone.

7 According to art. 21 of Law 9478/1997, all the rights of exploration and production of oil, natural gas and other fluid hydrocarbons in the national territory, including the terrestrial part, the territorial sea, the continental shelf and the exclusive economic zone, belong to the Union, and its administration is the responsibility of the ANP.

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Furthermore, what reinforces this mitigation is the content of art. 23 of Law 9478/1997, which states that exploration, development and production of oil and natural gas will be carried out through concession contracts or under the production sharing regime in the pre-salt and strategic areas.

Thus, in 2010, Law No. 12,351 was enacted, which provides for the exploration and production of oil, natural gas and other fluid hydrocarbons, under the production sharing system, in pre-salt areas and strategic areas. In addition to its peculiarities, which will be presented later, it altered article 5 of Law 9478/1997 to allow the contracting of companies to explore the activities described in article 4 under a new regime, called production sharing.

For Pedrosa and Corrêa (2016, p. 12) in that scenario where the pre-salt was becoming a reality there was an intense debate about the most appropriate regulatory regime to share the wealth in the country. And in 2010 there was a change in the Regulatory Framework then in force, including the sharing system to be applicable to areas not granted in the pre-salt region on the southeast coast of the country. On that occasion, the onerous assignment regime was implemented by Law No. 12,276/2010, which provided for the capitalization of Petrobras with the granting of up to five billion barrels of oil in areas of the polygon.

In this way, the Federal Government could onerously assign to Petrobras, even without a bidding process, the exercise of exploration and exploitation activities for oil, natural gas, and other fluid hydrocarbons, in areas not granted in the pre-salt, starting production in the region.

Another interesting fact is that until 2016, when Law No. 13,365 was enacted, Petrobras was considered the operator responsible for conducting and executing, directly or indirectly, all exploration, evaluation, development, production and decommissioning activities of exploration and production facilities, as provided in the original wording of art. 2, item VI of Law No. 12,351/2010; while art. 4 of the same law established that Petrobras would be the operator of all blocks contracted under the production sharing regime.

With the entry into force of Law 13.365/2016, both devices cited were modified, even so the company has preference to be the operator of the blocks to be contracted under the production sharing regime, as will be explained better in a specific topic.

On the other hand, to represent the Union in the sharing contracts, production individualization agreements involving areas, until then not contracted in the pre-salt, as well as to manage the Union's oil and natural gas commercialization contracts (PEDROSA; CORRÊA, 2016, p. 12); among other functions described in Article 4 of Law No. 12,304/2010, the Public Company Pre-Salt Petroleum (PPSA) was created in 2013, regulated by Decree No. 8,063/2013, which approved its Bylaws, determining provisions.

It is, therefore, a company connected to matters related to the management of production sharing contracts signed by the Ministry of Mines and Energy, as well as contracts for the commercialization of oil, natural gas and other fluid hydrocarbons of the Federal Government, but it is not responsible for the execution of exploration, development and production activities.

It is interesting to note that Provisional Measure No. 811/2017 allowed PPSA to act directly in the commercialization of oil, natural gas and other hydrocarbons, preferably in the auction mode; this activity was later disciplined in Law No. 13,679/2018.

After this presentation of the regulatory framework, we will now analyze the Concession and Sharing regulatory models, as well as general aspects about the Transfer of Rights to Petrobras in the pre-salt area.

In this sense, it should be noted that two criteria are used to choose the regime: the revenue capacity and the state's ability to exercise control over the exploration and management of reserves (SCHUTTE, 2012, p. 25). In other words, the expectations of the Union in relation to the exploration of a particular area and the conditions should guide the choice of the regime that is the most interesting.

3.1 PREVIOUS REGULATORY MODELS: FROM ONEROUS TRANSFER TO THE CONCESSION REGIME

Law no. 12,276/2010 authorized the Federal Government to assign, in a burdensome manner, to Petrobras (even without a bidding process), the exercise of exploration and exploitation activities for oil, natural gas, and other fluid hydrocarbons, in areas located in the pre-salt layer, not yet granted.

To this end, in this type of contract called "onerous transfer", Petrobras could extract the number of barrels of oil determined in the contract, except for the maximum limit of five billion oil equivalents, for a pre-established remuneration. The surplus to this amount must be the object of an auction.

In 2010, six blocks were assigned to Petrobras in the Santos Basin pre-salt area, which currently correspond to the Búzios, Sépia, Atapu, North Berbigão, South Berbigão, North Sururu, South Sururu, Itapu, South Tupi and South Sapinhoá fields. Throughout Exploration, volumes greater than the five billion barrels initially forecast were discovered.

These surpluses were to be auctioned under the regime called "sharing", with the consent of the operator of the assignment fields, at which time Petrobras exercised its preemptive right and acquired the areas of Itaipu, as the sole operator (100%); and Búzios, in consortium with the Chinese CNODC Brasil Petróleo e Gás Ltda (5%) and CNOOC Petroleum Brasil (5%) (PETROBRAS, 2019).

Law 13,885/2019 establishes criteria for distributing part of the amounts collected from the auctions of surplus volumes to the states and municipalities, less the expenses resulting from the revision of the onerous assignment contract.

Furthermore, an interesting question concerns the possible unconstitutionality of the Law regarding the assignment made exclusively to Petrobras. Would there be a possible violation of the Principle of Economic Freedom, since a company with private capital is favored to the detriment of the others? With all due respect, we believe not.

This is because, as said, hydrocarbons belong to the Federal Government (art. 20 c/c 177 of the CF); and considering that Petrobras is a Mixed Economy Company, in which a good part of the capital is concentrated in the controlling group composed of the Federal Government, FPS and BNDES and its subsidiary BNDESPAR, the assignment made directly to this company ended up constituting a public interest operation, with a legitimate claim to explore the pre-salt discoveries at a previously defined level of barrels of oil.

Subsequently, with the advent of the concession regime, provided in Law 9.478/1997, the oil produced is owned by the company that acquires the right to explore the block offered at auction. After payment of taxes and contributions due, the concessionaire company, winner of the bidding, can freely dispose of the oil it will produce (SAUER; RODRIGUES, 2016, p. 199).

The contract has a fixed term and the risk of the venture is entirely of the concessionaire, even if it fails to find the oil or gas, but, as said before, it has the benefit of being considered the owner of the hydrocarbons (bid) that are produced. In this model, the concessionaire pays government participation, such as signature bonus, royalties and, in case of high-production fields, special participation (ANP, 2018)

By the way:

In these bids, interested companies offer, individually or in consortia, an amount in signature bonus and propose a Minimum Exploratory Program (MEP), i.e., they commit to perform certain activities, such as seismic surveys, exploratory well drilling, among others, in that area. The company or consortium that submits the most advantageous proposal, according to the criteria set forth in the tender, receives the right to explore that area to verify the existence of commercial deposits of oil and/or natural gas (ANP, 2018).

In other words, the winner of the bid is the one who offers the highest signature bonus, and also meets the Minimum Exploratory Program. And the contract must provide for the governmental participations described above, which are also foreseen in the bid notice.

Royalties are paid monthly from the start of production in the amount of ten (10) percent of production, but taking into account any geological risks, production expectations and other relevant factors, the ANP may stipulate in the public notice a reduction to five (5) percent of the production value.

The distribution of these Royalties is regulated in articles 47 to 49 of Law No. 12,351/2010, which provides percentages for the states and municipalities facing the explored area, as well as municipalities affected by fluid hydrocarbon operations, and percentages for special social funds described in the law.

3.2 THE NEW PRODUCTION SHARING REGIME

This regime was implemented in 2010 by Law No. 12,351, and now coexists with the concession regime. See its definition, according to art. 2, I, of that law:

> Production sharing: regime of exploration and production of oil, natural gas and other fluid hydrocarbons in which the contractor performs, at its own expense and risk, the activities of exploration, evaluation, development and production and, in the event of a commercial discovery, acquires the right to appropriate the cost in oil, the volume of production corresponding to the royalties due, as well as part of the surplus in oil, in the proportion, conditions and deadlines established in contract.

Note that in the production sharing contract, the State, being formally the owner of the material, authorizes part of the production to be used as payment to the contractor for the costs of exploration and production. The portion of the oil used for this purpose is called “cost oil”. After deducting the costs, the remaining oil is the surplus, or the “profit” generated in the operation,

called “profit oil”. The latter will be shared between the contractor and the Union, as provided in a contract, whose percentage is previously defined (SAUER; RODRIGUES, 2016, p. 199)

Prior to the contracting, the Ministry of Mines and Energy (directly, or through the ANP), may carry out a potential evaluation of the pre-salt areas and other strategic areas, through a contract with Petrobras for exploratory studies necessary for the evaluation.

The sharing contracts in the pre-salt polygon can be signed through a prior auction bidding procedure, or directly with Petrobras, to preserve the national interest and meet the other goals of the energy policy, in this case the bidding is waived, pursuant to art. 8, I and 12 of Law No. 12.351/2010, and the management of the contracts, as stated above, will be the responsibility of the public company Pré-Sal.

By the way, the ANP notes on the bidding procedure:

> The blocks and the technical and economic parameters of the production sharing contracts are defined in a resolution of the CNPE and the bidding is promoted by the ANP. The Ministry of Mines and Energy (MME) is responsible for establishing the guidelines to be observed by the ANP to promote the bidding and for preparing the drafts of the notices and contracts, subsequently approved by that body. In the sharing bids promoted by the ANP, the winning company will be the one that offers the Brazilian State the largest portion of oil and natural gas (i.e. the largest portion of the surplus in oil) (ANP, 2018)

The bidding in the sharing system will follow the provisions of Law No. 12.351/2010, but also the rules of the ANP and the Bidding Notice, so that Petrobras may participate in the auction, including to increase its minimum participation, pursuant to art. 14 of that law. And, as mentioned above, to judge the bid, the proposal that presents the most advantage to the Union will be chosen, according to the criterion of offering the highest surplus in oil, respecting the minimum percentage described in art. 10, III, “b”, of the Law.

It is true that in this regime some risks are more accentuated, such as the volatility of the price of a barrel of oil in the market, in addition to the risks inherent to the development of the project; in this case, if the cost of production is higher than expected, the portion of oil to be shared with the Federal Government will be lower. However, as is known, investments in the oil sector are projected for several years, and are marked by considerable oscillations in value, which makes a projection that considers only this factor complex.

Furthermore, according to art. 4 of Law 12.351/2010, considering the national interest, the CNPE may offer Petrobras the right of preference as operator of the blocks under the production sharing regime.

In this case, from the communication of the CNPE, the company must manifest itself about this right in each block offered within thirty days, justifying the interest, at which time the CNPE should propose to the Presidency of the Republic which blocks will be operated by Petrobras, except for the 30% participation, to be explained in a specific topic (CARDOSO; OLIVEIRA, 2018, p. 342)

Designated as the operator, the consortium contract must establish that it will be responsible for the contract’s execution, without prejudice to the joint liability of the other consortium members before the contracting party or third parties, except for Petro-Sal, under the terms of § 2nd paragraph of art. 8 of the Law.

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It is interesting to note that the Bill No. 3,178/2019 is currently in Congress, authored by Senator José Serra (PSDB-SP), which intends to change the legislation "to allow bidding with concession in the blocks where this regime is more advantageous for Brazil and to institute the dispute under equal conditions in production sharing bids" (BRASIL, 2019).

In summary, the project, which is not yet included in the Plenary's voting agenda, provides for the revocation of the right of preference for Petrobras in bidding under the production sharing regime, in addition to ensuring that the CNPE, advised by the ANP, chooses the best legal regime to be adopted in the pre-salt auctions.

The issue is complex and foresees significant changes in the regulatory framework, but so far there is no way to measure the directions that will be adopted by the Legislative Branch.

3.3 OF THE CONSORTIUM IN THE SHARING REGIME8 , OF THE GOVERNMENTAL PARTICIPATIONS AND DISTRIBUTION OF ROYALTIES

Whenever Petrobras is contracted directly or when it wins the bid alone, it will form a consortium with Petro-Sal. On the other hand, the winning bidder will also form a consortium with Petro-Sal, as well as with Petrobras, in accordance with art. 4 of Law 12,351/2010, if it has exercised its right of first refusal to be the operator, except for a participation of no less than thirty (30) percent. This participation will imply its adherence to the rules of the Tender Protocol and the winning proposal.

In this sense, see also what Sauer and Rodrigues say about the role of Petrobras in the sharing:

> It is in the interest of the State, or Society, the owner of the oil, to appropriate the largest possible portion of the surplus. But there are details that deserve attention. According to the legislation, currently being amended in Congress, Petrobras must hold a minimum 30% stake in the consortium that wins the bidding, and thus the contract, assuming the role of operator. However, as suspected and confirmed in the Libra Auction - the only one held under the sharing system until 2016 (October) - the consortia without Petrobras were not viable. Partly because, if they win the bid, in dispute with Petrobras, the latter should be incorporated into the consortium; on the other hand, because Petrobras, holder of knowledge and technological capacity in pre-salt operations, is in an asymmetric position in relation to the other competitors that do not reach an agreement with it to join the consortium. (SAUER; RODRIGUES, 2016, p. 199)

This thirty (30) percent stake may, in a way, hinder the capture of interest from investors, especially foreign ones.

However, this right of preference is constitutional, since, as said in the topic that refers to the onerous transfer, since hydrocarbons are Union assets, the intentions to preserve the public interest with a certain control and participation in production, giving Petrobras the option to participate in the consortia in the informed percentage, are legitimate.

8 The Consortium described in Law 12.351/2010 is formed in accordance with art. 279 of the Corporations Law.

Moreover, in the sharing regime, the government revenues are the Signature Bonus and the Royalties, according to art. 42 of Law No. 12.351/2010, in addition to the surplus oil that will be sold and other taxes levied on the product.

Here are some important definitions:

The signing bonus does not integrate the cost in oil; it corresponds to a fixed amount owed by the contractor to the Union, which is paid upon signing the contract, and is not refundable.

See what Sauer and Rodrigues say about the signing bonus:

> [...] is an advance payment made by the winner. In the case of Libra it was 15 billion reais. The bidder's calculation will duly discount this bonus from its offer in the Union's share of the oil profit. The demand for a high immediate payment reveals an option of the government: to have a lot of money at hand right away, to the detriment of what it could receive in the future. (SAUER; RODRIGUES, 2016, p. 201)

In other words, as the author explains, the government chooses to receive this amount and, right from the start, use the resources to subsidize its actions.

By the way, we have already said Borges de Oliveira:

> In the concession process, the signature bonus, first, corresponds to "the amount offered by the winning bidder in the proposal to obtain the oil or natural gas concession, and cannot be less than the minimum amount set by the ANP in the bid notice" (art. 9 of Decree 2705/98). It is "a benefit due by the winner of the bidding that would have the main purpose of 'recovering the government costs arising from the process'" (OLIVEIRA, 2005, p.497).Also, according to article 10 of the Decree, the resources from the signature bonus will be allocated to the ANP. (OLIVEIRA, 2017, p. 34)

Royalties, on the other hand, are a monthly financial compensation, due by the contractor from the beginning of commercial production, at a rate of fifteen (15) percent for the exploration of oil, natural gas and other liquid hydrocarbons, and are also not computed in the calculation of cost in oil, being prohibited its reimbursement. The royalties are substantial values, closer to the idea of compensation for the extraction and use of deposits (BORGES DE OLIVEIRA, 2017, p. 34).

The distribution of these Royalties is made in the percentages established in Article 42-B of Law No. 12.351/2010. For a better understanding of the distribution system, as well as considering the priority approach to the sharing regime in this article, we will mention below only the percentages pertinent to the operations developed in the continental shelf, territorial sea or exclusive economic zone, namely:

> a) 22% (twenty-two percent) for the confronting States;
>
> b) 5% (five percent) for the confronting Municipalities;
>
> c) 2% (two percent) for the Municipalities affected by the loading and unloading operations of oil, natural gas, and other fluid hydrocarbons, in the form and criteria established by the ANP;
>
> d) twenty-four point five percent (24.5%) to constitute a special fund, to be distributed among the States and the Federal District, if applicable, according to the following criteria:

> e) 24.5% (twenty-four point five percent) for the constitution of a special fund, to be distributed among the Municipalities according to the following criteria(...)
>
> f) twenty-two percent (22%) to the Federal Government, to be allocated to the Social Fund, established by this Law, less the portions allocated to specific agencies of the Direct Administration of the Federal Government, pursuant to the Executive Branch's regulation.

These percentages show that the legislator's intention was to prioritize a fair distribution of the wealth from hydrocarbon exploration among the various federal entities, as well as special and social funds.

Furthermore, with respect to oil, natural gas and other fluid hydrocarbons that were allocated to the Federal Government as a result of the portion of the partition agreement, they must be marketed in accordance with the rules of private law, including by exempting the bidding process. PPSA may contract directly with Petrobras, representing the Federal Government, as the marketing agent for this portion of production, prioritizing the domestic market.

The revenue from the commercialization mentioned in the previous paragraph must be destined to the Social Fund linked to the Presidency of the Republic, with the purpose of constituting a source of resources for social and regional development, through programs and projects in the areas of poverty alleviation and development of education, culture, sports, public health, science and technology, environment, and mitigation and adaptation to climate change, all according to art. 47 and following of Law 12.351/2010.

Furthermore, in the year 2031, the seventeen production sharing contracts that are currently in progress will reach peak production, with 3.89 million barrels of oil extracted per day, which represents an impressive number, if we consider that all oil production in the country in 2019 reached 2.9 million barrels/day (PRE-SAL PETROLEUM, 2019, p. 26).

See also the following projection:

> Taking into account an exchange rate of US$ 4 and the barrel price at US$ 60, the estimated revenue for the Union with the sale of oil is R$ 110 billion in 2032, when the Union's production will reach its peak. Between 2020 and 2032, the total projected revenue is R$ 424 billion [...] Considering the estimated revenue from the commercialization of the Union's oil, the royalties to be paid for all contracts (R$349 billion) and the taxes paid to the federal government (R$227 billion), government participations will reach R$1 trillion in the period 2020-2032 (PRE-SAL OIL, 2019, p. 28).

In this sense, despite the virtual profitability that lies ahead in the sharing model, this does not mean that it is the most advantageous regime. In this respect, Sauer and Rodrigues address this issue:

> After the service regimes, the concessions and production sharing regimes alternate in the position of the one that generates more government revenue. The concession regime, in most cases, generates more revenue, since it brings in a larger government share, except in the case of fields contracted under a mixed onerous assignment and production sharing regime and the Libra and Lula and Cernambi fields, for which in some scenarios of oil barrel prices the production sharing regime brings in more revenue to the government, since they are those with the largest reserves among those analyzed. (SAUER; RODRIGUES, 2016, p. 205)

For the authors, the sharing regime is not necessarily the one that guarantees greater government revenue. According to the economic and financial simulations performed in their research, in most of the fields analyzed, the concessions regime is the one that offers higher revenue, because in this regime the sum of royalties and special participation is higher than the sum of royalties and the Union's share in surplus oil in the case of the production sharing regime (SAUER; RODRIGUES, 2016, p. 205).

However, Sauer and Rodrigues point out that the difference in the revenues of the two regimes diminishes when the price of oil rises:

> When oil prices rise, the difference in government revenues between the two regimes decreases, since the portion of the oil surplus in the production sharing regime becomes larger and larger, considering the rules applied in the case of the Libra field, adopted as reference. According to these rules, a base rate of the federal government's participation in the surplus oil was adopted, which increases as the price of a barrel of oil rises, and is linked to the average daily production of the wells. (SAUER; RODRIGUES, 2016, p. 219)

It is a logical conclusion, because if prices rise, government revenues will be higher, but we understand that it is not prudent to expect a more favorable exchange rate or even a greater appreciation of oil and its derivatives, for the reasons already explained at the beginning of this article.

From this data, it is not difficult to see that the option for a regime must be very well planned, based on the legislation, besides serving the public interest and always seeking the best financial returns to the Government.

4. FINAL CONSIDERATIONS

Throughout this paper, a brief history of the formation of oil in the pre-salt layer was presented, as well as the importance of the hydrocarbon reserves contained therein. Among many logistical and economic challenges, prospecting and extraction in the fields of this region have been very successful, not only because the product extracted is of good quality, but also because the success in drilling is higher than the world average.

It is true that oil is a non-renewable energy source, but it will still be used for a long time due to the great demand and the current technological scenario; this is why the discovery of the pre-salt fields came at an appropriate time, even because, until some time ago, there was not enough technology for drilling in this layer that is about seven kilometers from the surface of the Atlantic Ocean.

Thus, it was shown that hydrocarbons are property of the Union, and their extraction was foreseen in the constitutional text as a monopoly. However, after 1995, this monopoly was mitigated when the contracting of private or state companies to carry out the production was foreseen, and these companies only have the right to explore the activity in the contracted terms.

In this sense, although the pre-salt region is located 300 kilometers off the continental coast, it is positioned on the continental shelf, which is part of the territorial sea and the exclusive economic zone, where Brazil has sovereign rights for the purposes of exploration and exploitation of the sea and its subsoil, under the terms of the Montego Bay Convention, of which we are

signatories. The wealth under our seas, with encouraging extraction projections, can project the country on the international scene as one of the world's largest oil producers.

It was also shown the oil regulatory framework, consisting of several laws governing the exploration regimes, with special emphasis on Law No. 12,351 of 2010, which changed part of the regulatory framework then in force, providing the onerous assignment regime, which enabled the capitalization of Petrobras with the granting of production of up to five billion barrels of oil, starting the exploration in areas of the polygon, even without bidding. In addition, this law also implemented the Sharing regime in the pre-salt fields, which then coexisted with the Concession regime foreseen in Law 9.478/1997.

To this end, it was found that one of the main changes concerning the change in the regulatory framework implemented by Law No. 12.351/2010 was that the sharing system allowed for greater control of the state through the preemptive right of Petrobras, and the participation in 30% of any consortia, in addition to receiving part of the oil produced, royalties and other shares. This control, in a way, may even foster the country's technological growth in oil matters, as well as maintain greater interference in production control.

Finally, in a comparison between the regimes of Concession and Sharing, one can see the existence of theoretical simulations in the sense that the Concession contract can bring more return in financial resources to the Government than the Sharing regime; this occurs provided that the oil price fluctuations do not go out of normality, significantly raising the price of a barrel of oil. That is, under normal conditions, there will be higher government revenues. However, as can be seen, this is not a valid logic for all occasions, which leads us to conclude that the choice for one or another regime will always depend on a broad contextual analysis, from the geopolitical, economic and technical point of view.

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Received: 01.10.2020.

Approved: 24.04.2021.