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Industrial Policy and Local Content: Brazil's Pre-Salt Area Case

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Abstract

The objective of this paper is to analyze the Local Content, as industrial policy in Brazil, especially in a low geological risk area as the pre-salt. The paper will regard its history, as well as its role, in the oil and gas supply chain, identifying the positive and negative aspects and discuss possible changes in the policy and its importance to the sector's growth recovery.

This paper promotes the discussion of the Brazilian Local Content policy as a form of industrial policy for the development of Oil & Gas sector, which is a very representative sector in terms of investment. This work involves the policy evaluation, identifying the reasons that have led to this choice in Brazil and comparing it to other examples around the world. The paper also analyses the possibility of using different types of industrial policies applied globally in Oil & Gas sector.

As the results of this study, it was identified that the Local Content policy is capable of promoting the sector's development and it can be positive for the players, especially in a low geological risk environment as Brazilian pre-salt. However, the policy must be adjusted so it allows the increase of competitiveness on a global scale, not only by the oil companies but also by the suppliers. A competitive national production is beneficial for the companies that operate in Brazil, which could reduce import of equipment, labor and services, making their production processes agiler. Regarding the suppliers, incentive policies are needed to promote their development and their establishment at a competitive level with other global companies. It was verified, however, that the policy needs adjustments, mainly with respect to focus definition of the sector's industrial policy. It is clear that it is important to define key segments to be prioritized and to consider the Local Content policy as part of a wider industrial policy in Brazil.

The paper's original contribution is therefore to bring a wider theoretical framework to the current discussions taking place in Brazil about Local Content, considering the industrial policy theories. The discussion itself is relevant, in a moment of policy changes regarding the sector's development in Brazil and representativeness of the pre-salt in terms of impacts in the industry's production chain.

Introduction

Some historical consideration

The Law 9.478/1997, known as the "Petroleum Law," modified the monopoly on oil and gas exploration and production activities. These modifications in the current model were in order to implement the concession regime, which allowed new players to join the sector and their rights and obligations were made equal to those of Petrobras.

Since the 1st Bid round, which took place in June of 1999, the National Agency for Petroleum, Natural Gas and Biofuels— ANP began to stipulate the obligatory percentage of Local Content as well as the punishments in case of partial or non compliance with the obligations, for the companies participating in the bidding process. Local Content accounted for 15% of the final grade - 12% in the developing phase and 3% in the exploration phase - and the other 85% were related to the signing bonus. This calculation methodology remained the same until the 4th round, in 2001.

In 2003, the government implemented a resolution determining that ANP would begin to set a minimum fixed percentage of Local Content in oil and natural gas exploration and production activities. The oil sector was becoming more relevant to Brazilian economy, helping to contribute in the creation of jobs and attraction of foreign investments. Due to the referred resolution, the 5th Bid round started to require a minimum percentage.

According to SEVERINI, T. (2016), until the 6th round there was not a clear and regulated measurement criteria to the commitments of Local Content. In that way, the bidders were free to determine the ratio of local goods, systems and services related to the petroleum and natural gas industry at levels equivalent to or greater than the minimum percentage. On July 2004, Prominp (National Petroleum and Natural Gas Industry Mobilization Program) developed a Local Content Guide, which contained a methodology to calculate the ratio of the local goods and services. The Guide started to be applied since the 7th round (2005), when the concessionaires also needed to prove the commitments to ANP, which was responsible for regulating the certifications of Local Content.

With the Guide, in the 7th round there was a significant increase in the minimum percentages of Local Content, as well as a stipulation of a maximum percentage and new classifications according to the location of exploratory blocks, instead of operator's qualification.

Starting with the 7th round, the concessionaires were committed to the percentages of Local Content informed in the contract. If the company did not meet the referred commitment, ANP could apply a fine, at an amount corresponding to the percentage of Local Content stated in the commitment and not attained. However, according to SEVERINI, T. (2016), although only the concessionaire assumes the commitment, a whole supply chain is affected with those percentages, what reflects the importance of the Local Content to the entire oil & gas sector. [Figure 1](#) shows the evolution of these percentages in the rounds of concession regime.

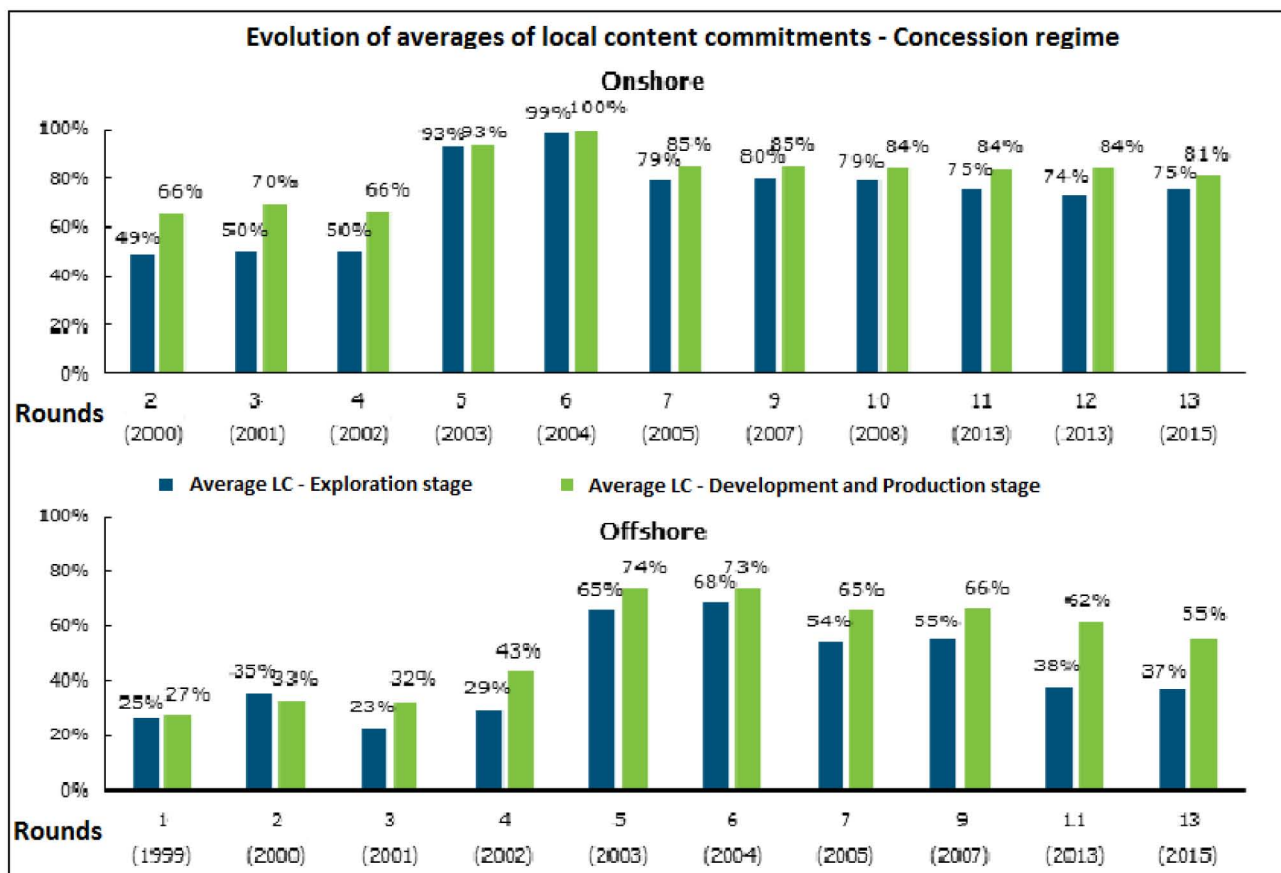


Figure 1—Evolution of Local Content commitments – Concession regime
Source: IBP (2016)

In practice, the entire sector became susceptible to a series of variables. One of them is the waiver mechanism: a dispensation given by ANP when a concessionaire cannot fulfill the Local Content commitments due to justifiable reasons, such as inexistence of the product in the national market. Another problem is the variation of products and services’ prices between the day when the commitment is assumed and the time it needs to be fulfilled, what can cause some distortions in the percentages assumed and those effectively reached.

Moreover, there are some practical difficulties. With more than 60 items (equipments and services), the Local Content Guide has proven to be inefficient. SEVERINI, T. (2016) stresses that it is common for companies to have doubts in the measurement process, which can be exhaustive and bureaucratic. Sometimes, even when reaching all the requirements for the items and subitems listed in the Guide, the Local Content may not be achieved, what can be explained by the costs structure the respective weights that measure the Local Content calculations, which differ from the ones considered by ANP.

The growing number of fines being applied due to the non-compliance of the Local Content requirements shows the imbalance between the companies’ demands and the local industry (See Figure 2 and Figure 3). One reason of this imbalance is the big gap between the day when the round occurs- and the Local Content commitments are assumed by the companies – and the moment when the area will effectively be explored. In other words, since the rounds occur under a series of doubts in relation to the real value of the disputed area, it leads the companies to take more into account the present gain (to win the round) than the future risks (the non compliance of the requirements). As it is one of the criteria to be judged in the round, the companies chose to put higher Local Content values to compensate the signing bonus demands. This happens because in case of non-compliance, the fines of the former can be paid just after the exploration

and/or the developing phase of the production. In addition, the more expensive it gets, the higher will be the project CAPEX.

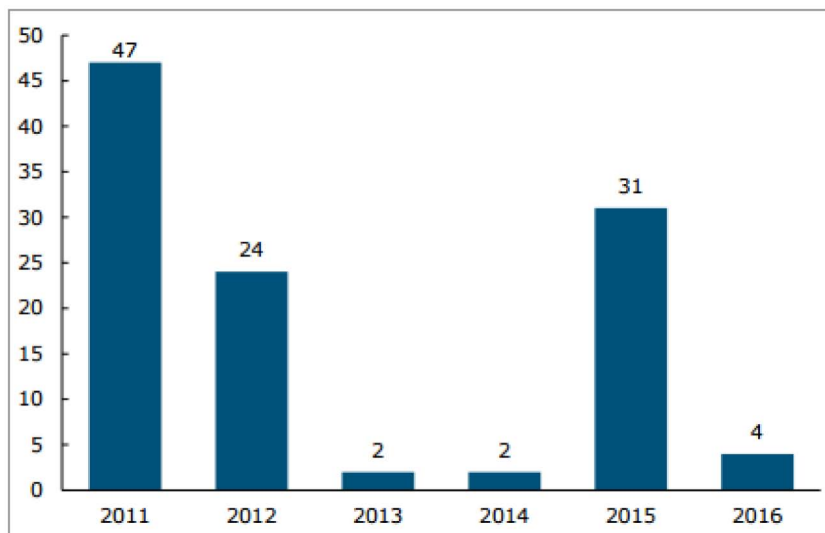


Figure 2—Number of fines applied by ANP for noncompliance with Local Content commitments
Source: IBP and UFRJ (2016)

Oil Companies	Number of fines	Total amount collected (R\$)
Aurizônia Petróleo Ltda	4	2.293.950,19
BG E&P Brasil Ltda	1	192.873.746,34
Central Resources do Brasil Produção de Petróleo Ltda	1	8.334.379,62
Maersk Oil Brasil Ltda	2	97.601,85
Nova Petróleo Recôncavo AS	3	177.930,14
Partex Brasil	5	992.749,08
Petrogal Brasil	13	1.433.470,87
Petrobras	62	352.322.819,65
Petrosynergy Ltda	6	381.332,88
Quantra Petróleo SA	5	345.082,28
Repsol Sinopec Brasil SA	1	8.025.308,39
Shell Brasil Ltda	1	1.156.636,52
Sonangol Starfish Oil & Gas SA	5	2.652.989,71
Statoil do Brasil Ltda	1	37.606,37
Total	110	571.125.603,89

Figure 3—Fines paid by oil companies for noncompliance with the percentage of Local Content between 2011 and 2016
Source: IBP and UFRJ (2016)

Industrial Policy in Brazil

The industrial policy in Brazil had its best moment between the 1950's and the 1970's. This was also the period when Brazil has grown the most in its history. During the 1950's, the country experienced a great moment in its development due to the numerous development projects of the Brazilian industry, such as the Industrial Development Commission (CDI), the analysis projects of the industrial development necessities, and import subsidies for machinery and equipments for the modernization of the industry. This phase began with Getulio Vargas' attempt to implement the foundations of a heavy industry in the country, such as the creation of important state-owned companies such as Petrobras, CSN, Vale do Rio Doce and BNDE. These

companies were instrumental in supporting the growth of the national industry, especially because they were heavy industries or intermediate goods producers, fundamental to the country's progress.

After Vargas government, Brazil had its great period of growth with Juscelino Kubitschek's government, which produced a major development project for the country, the "Targets Plan" (Plano de Metas, in Portuguese), which consisted of coordinating a public and private investment program, both national and international. In the plan's program, there were innumerable goals to overcome the bottlenecks of the Brazilian economy, with energy transportation, steel, shipbuilding and aeronautics and petroleum refining sectors the ones receiving the biggest amount of the government's investments. In addition, the government encouraged the expansion and diversification of the secondary sector (which produces equipments and inputs with high capital intensity) with subsidies. The "Targets Plan" allowed a great diversification of the industry in Brazil, allowed a great advance in the policy of imports substitution and generated a great economic growth.

This economic and industrial growth occurred between 1956 and 1962, because from 1962 until 1967 the country experienced a period of political and economic crisis. So, during this five years, there weren't industrial policies in Brazil but economic stabilization ones. After this stationary moment of the industrial and economic development of Brazil, there was the period called the "Brazilian Economic Miracle," which lasted from 1968 to 1973, a moment of intense GDP growth. During this time, the country was concerned with the development of the entire economy, with numerous industrial policies that favored the growth and maturation of the industrial park. To deal with these policies, the management of economic planning, better known as National Development Plans (PND), was in charge of the National Monetary Council (CMN).

Thus, in the 1970s, the government aimed to transform Brazil in a world power, and in order to achieve this result, the government has elaborated numerous plans covering all industry sectors. Through the 2nd PND, sectoral goals were established to develop the national industry. Therefore, this plan expanded the range of sectors to cover more industries of basic consumer goods, capital goods and technology products. In addition, the government has given incentives and also made heavy investments in infrastructure, basic industries, processing, equipment, durable goods and food agribusiness. Some examples of policies to encourage the development of industry in Brazil are: subsidies to the importation of machinery and equipment; export subsidies for domestic products; protection of strategic industries; encouragement of small and medium-sized enterprises; regulatory intervention; and protection of the nascent industry.

The deceleration of the expansion of the Brazilian industry started in the middle of the 1970s due to the oil crisis and the international interest rate hike, since it became difficult to obtain external financing due to the increase in loans. From the mid-1970s onwards and throughout the 1980s, the country experienced a reversal in its economic development and entered a period of recession that made industrial policies no longer a government priority. Even so, it was in this period, through the creation of the Interdepartmental Commission for Waterdeep (CIAP) in 1985, that Brazil started to join efforts to develop capacities to the deepwater exploration, aiming to reduce the dependency on imported oil.

Thus, in the 1990s, some policies adopted consisted on economy deregulation, complete commercial opening, minimum state, privatization, inflation control and prioritization of the debt services payment. It was the starting point for the construction of policies, laws and actions that would make Brazil a country that could hostage private capital and be at mercy of international speculation. That led the nation to experience another decade of derisory growth and a long recession.

The 2000s were much different from the previous decade, especially because of a more stable international scenario, experiencing fast growth, fueled by the dynamics between the United States and China. In Brazil, Lula's presidency has led to the emergence of new industrial development plans, since the government was under pressure to make such plans and the international market was conducive to the growth of economies around the world.

In 2007 a new plan was announced: the Growth Acceleration Program (PAC), which was not necessarily industrial but was important for the sector. The infrastructure sector received a good share of money but, by the end of 2008, the plan did not result in gains for the industries.

Worthless to mention that there were a few examples of successful industrial policies in Brazil. The first one is the case of Embraer (Brazilian Company of Aeronautics). Brazil succeeded to have a competitive company in the field of aviation, a sector that requires a great effort of research and innovation. However, this success was the result of a public policy effort that is difficult to replicate: the government created an elite University (ITA), recruited teachers from the best universities in the world, set up a public research center and then set up a state company, Embraer, which for decades had the support of the public sector. In spite of its success, it resulted from more than 50 years of strong public sector support at high costs.

The automotive sector in Brazil has a similar trajectory. It can be also considered a case of success but its industrial policy is being implemented since the 1950's. The industry should be able to develop without this policy to prove the efficiency of the government protection, but it still ruling in the Brazilian automotive sector.

Industrial Policies

There are two main targets of industrial policies: i) horizontal (or functional) policies focus on global aspects, and seek to improve the performance of the economy as a whole, without privileging specific industries; ii) vertical (or selective) policies deliberately privileges a specific industry, a set of companies or a productive chain, aiming to modify the allocation rules between sectors. The instruments that best fit the horizontal type of policy are: competition, to suppress anticompetitive behavior and control concentration acts; infrastructure, which will come from privatization and price control related to tariff readjustment; foreign trade, through tariff and non-tariff policy and prevention of competition; and intellectual property (patents, trademarks and technology transfer)(see [Figure 4](#)).

Horizontal policies/ Vertical policies	Microelectronic	Oil & Gas	Agriculture
Competition (to suppress anticompetitive behavior)			
Infrastructure (privatization and price control)			
Foreign trade (tariff and non-tariff policy)			
Intellectual property (patents, trademarks and technology transfer)			
Innovation (Encourage R&D spending)			
Capital (credit and long-term financing)			
Fiscal incentives (tax deduction for promotion of industrial activities)			
Government purchases (preference to local producers)		Local Content Policy	

Figure 4—Horizontal and Vertical Policies
Source: Authors' elaboration

There are four targets and arguments that justify the use of vertical policies. The first one relates to the industries with higher added value: a higher volume of workers allocated to industries with higher added value results in a higher income per capita. The second target concerns the industries with a high "chaining"

capacity: industries with great multiplicative power along the production chain, with effects towards or backwards. Another target of the vertical policies refers to the industries with great potential dynamism: considering the growth of aggregate income, the increase per capita would be higher. Finally, the national nascent industries usually have a higher cost of production than the ones that are already established, what justifies the use of a vertical industrial policy.

Countries adopt horizontal and vertical policies at the same time, although their importance changes over time. Many high-tech industries, as well as very mature industries with a large contingent of workers, are prioritized by industrial policies, with different instruments. Also, the deepness and the quantity of policies necessary in an economy depends on their development stage. Countries that are more developed and industrialized tend to adopt less industrial policies than the ones in lower stages of development.

Local Content as an industrial policy measure

The main reasons that take governors to establish a policy to develop a specific sector - oil & gas, for example - are the expectations to increase the positive externalities to the economy, society or local environment, and also to reduce the negative impacts, like the ones known as "natural resources curse". However, it is important to develop mechanisms that will lead to the sustainability of the sector, after having corrected the market failures. In other words, the policies should be able to predict the moment when the protectionist actions will not be necessary anymore, which means, the moment when the supply chain will achieve a stage of industrialization and development that no longer needs an incentive mechanism.

One of the oldest arguments to justify the need for an industrial policy is the one related to infant industries. In this way, one of the prerequisites to validate this argument is the presence of externalities during the dynamic learning process. For instance, the reduction of each firms' marginal costs is related to the overall production in the long term (learning by doing). For the pioneering industries, the initial cost of production can be impeditive for it to start, so it requires some kind of government intervention.

A sustainable industry depends on its capacity to achieve import and export parities. The former is achieved when the domestic goods and services have better prices and quality than the imported ones. In the long term, this industry should also guarantee that its goods and services would be competitive in other markets, which results in economies of scale and reduction of nonmanageable risks. When this happens, the industry would have achieved the export parity. Furthermore, a Local Content Policy should not lead to costs that override the benefits provided by its application. [Figure 5](#) shows a yellow curve which is called learning curve and represents the reduction of costs as the time passes. When an industry achieves its export parity (spot number 2 in [Figure 5](#)), it is time to let the market act by itself and stop intervention. Otherwise, the implementation costs of the policy could be higher than its benefits.

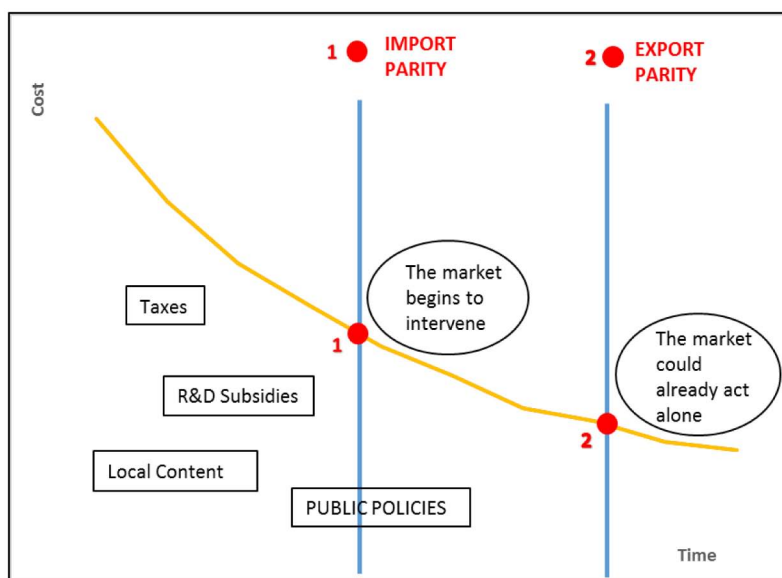


Figure 5—Learning curve
Source: Authors' elaboration

The provision of subsidies to a dynamic learning sector is considered optimal if learning process is fast enough – so it reduces the cost of the policy – and if the degree of substitution between domestic and imported good is small enough. However, it should be stated that even when the subsidy is the optimal choice, it must be chosen in a way to be reduced over time as the costs of the firms are also reduced and must be eliminated when the learning possibilities exhausts.

According to CANÊDO M. (2010), in a context of general equilibrium with open economies, it should also be optimal to subsidize sectors characterized by externalities in the learning process, but, in practice, the selection of the sectors that should receive the subsidy is difficult, especially because of the huge amount of information needed. This argument becomes even more relevant when is taken into account that the government does not have access to the learning curves of all sectors. Under an information mismatch related to the learning curves, the public intervention does not appear to be as optimal as it would be if the information was symmetric. In other words, the asymmetry of information diminish the government's atuation scope to improve the well-being occurred in the presence of a learning-by-doing process.

In relation to the practical side of a government intervention, it is also important to mention that it would only be justified if the learning process implies in externalities between the firms. If the learning is limited to each firm, there is no justification in the use of public policies. The development of institutions capable of defining and pursuing long-term objectives and analysing the public policies considering its causes and effects, is indispensable.

The World Bank (2013) lists some arguments for the use of Local Content policies. The first argument is related to the improvement of the added value, which can happen through diversification or discoveries. In economies where the commodities' prices volatilities can lead to an inefficient specialization in non-commercial products, a diversification policy could definitely help. Regarding the discovery process of new products, it entails externalities since it is susceptible of being copied.

The second argument says that a Local Content policy is necessary to correct market failures. When a country is relatively new to a sector, as the oil & gas, for example, it is common that there are not enough qualified workers. Therefore, government intervention should support the development of specific habilities and capacities to the local workforce. Otherwise, the companies would bring foreign workers to compensate this deficiency, what could lead to a situation when locals cannot compete for the jobs due to the lack of experience. Government intervention is also helpful in the correction of market failures caused

by multinational supply chain companies. These companies can have a high "market power" that could easily displace local firms from the supply chain. Besides that, multinational firms tend to have good and long-term relations with oil companies. Some laws and regulations, as safety and environmental standards, imposed on oil and gas companies could create a barrier for the development of a national supply sector and favour the ones that are internationally established and have a high market power. In such situation, a regulatory review would help the local industry.

When the protection to infant industries is well succeeded, the emergent sector will eventually generate significant exports. This happened in Australia, USA and Scandinavian countries. These countries diversified the sectors in which they had comparative advantages.

Local Content around the world

Local Content policies designed for the oil and gas sector have to take into account the geology and geography of the country, the population and its education and employment rates, the level of economic diversification, infrastructure and structure of the oil and gas sector, investor participation, trade agreements and much more. In other words, a country's social, political and economic objects affect the Local Content, which is complex and different in every country. The Figure 6 below illustrates some Local Content facts from different countries around the world.

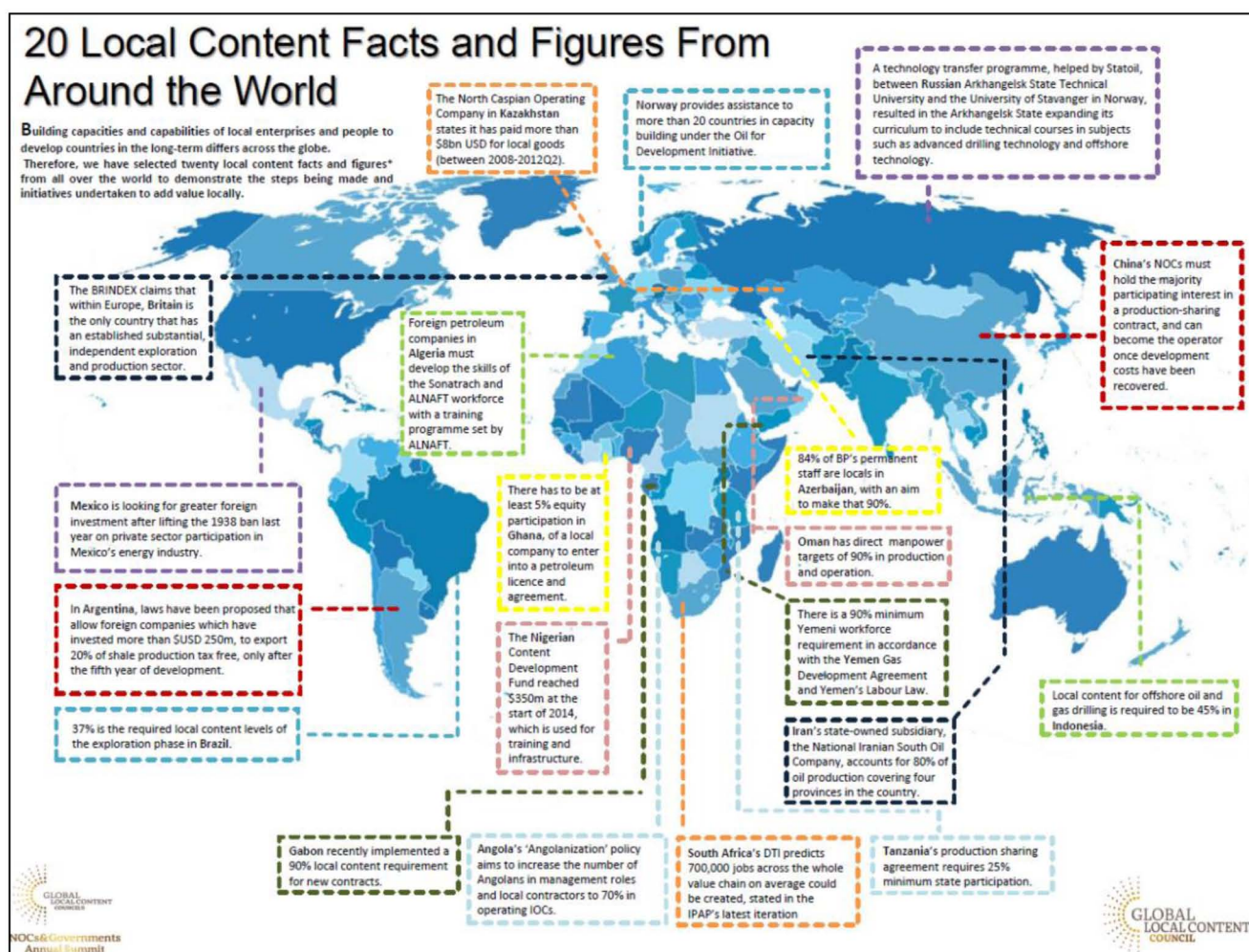


Figure 6—Local Content facts from different countries
Source: Global Local Content Council

We took some examples in consideration:

Angola's Local Content Policy exists for almost 30 years. Besides the policies involving margins of preference, like the ones existing in Brazil, Angol also has policies to increase the number of national workers – it aims to increase to 70% the number of Angolans in management roles and local contractors in operating International Oil Companies (IOCs) – and to restrict foreign workers. The Angolan policy also includes efforts to promote national skills' development, with training programs supported by contributions of companies operating in the petroleum sector. The major instrument of this country is the national oil company, Sonangol, which provide national companies with preferential treatment in the award of contracts, reduction of taxes and concession of nonrefundable subsidies.

Indonesian Local Content Policy, in use since the early 1970s, is similar to the Angolan one in several ways. It also consists in policies to increase the number or national workers and to restrict the foreign ones. The Policy is also designed to promote national skills' development through targets for the recruitment of Indonesian workers and through required training programs delivered by companies in order to achieve the Local Content target levels. Policies involving a margin of preference for domestic suppliers are also present in the Indonesian regulation. However, in the latter there are mandated targets for procurement of local goods and services, especially procedures applying for engineering and construction services. Unfortunately, the complex regulatory environment is one of the factors that explain the poor effective of the Indonesian policy. Most of the local companies are still small and considered to have a basic technological level, what makes it difficult for them to compete with the international ones. Additionally, there has been little spillover effects of the policy throughout the countries' productive sectors.

Trinidad and Tobago's policy is much softer. There are no measurement guidelines or penalties applied in case of lack of compliance with the Local Content policy. Otherwise, much effort is being implemented to increase the number of national workers, to restrictic the participation of foreign ones and to promote national skills' development. The country's policy also involves margins of preference and the use of Local Content during tendering process, which shall discriminate in favour of local value-added. One of the tools used to achieve the policy's objective are work permit procedures to ensure that foreign employment will not replace local ones.

According to OIL & GAS IQ (2010), the Norwegian case is considered one of the most successful example. Since the beginning of offshore oil and gas exploration in the country, in the mid 1960s, the government started implementing policies to protect the interests of the community and the economy. The strategy adopted by the country was to promote the establishment of local industry through cooperation with international oil companies. The foreign operators entering in the Norwegian industry in the late 1970s were strongly encouraged to form R&D partnerships and joint development programs with Norwegian companies and institutions, thus engaging in Local Content growth. Nowadays, despite the high level of Local Content, "Norway does not have any Local Content legislation or regulations, apart from the government's preference for local companies when they are competitive in price, quality and delivery" (ACHEAMPONG T. et al, 2016). This fact supports the idea that after achieving the exports parity level, industrial policies are no longer necessary and the sector is capable of sustaining itself.

Nigeria Content Development Fund reached \$350m in the beggining of 2014, which is used for training and infrastructure. Algeria also emphasized the workfoce traininig in its Local Content Policy, and so did Malaysia and Kazakhstan. Brazil appears as an exception because there are no Local Content requirements with respect to employment.

Critics to the Brazilian model

Local Content in the oil and gas sector in Brazil is one of the most controversial in the industry. It is just said that, by establishing a focus on national suppliers, acting as an effective industrial policy, local content rules over time have included inefficient and costly methods (such as local content integrating bids into auctions),

created enormous complexity for those involved (including the ANP), and absorbed a culture that favors more punishment (fines) than incentives, as we mentioned above.

In a recent resolution, the CNPE (National Council for Energy Policy) approved the local content indexes to be required of the winners of the 4 auctions held in 2017. The indices will no longer be considered for the selection of bids in the rounds nor can there be waivers if they are not reached. The choice of indices, reconciled between MME (Ministry of Mines and Energy) and MDIC (Ministry of Industry, Foreign Trade and Services), represents an improvement over the previous situation and was considered as an intermediary between the positions of the operators and the national suppliers.

Although controversial, it is important to mention the benefits that the implementation of the Local Content policy brought to Brazil' oil and gas sector. According to [FIESP \(2017\)](#), when analyzing a group of sectors identified as suppliers of goods to the oil and gas industry, it was verified that from 1999 to 2016:

- i. The number of employees rose from 42.3 thousand to 108.6 thousand (growth of 156.6%);
- ii. The gross value of industrial production rose from R\$ 22.6 billion in 1999 (at 2015 prices) to R\$ 63.3 billion, with a real growth of 180.8%;
- iii. There was a development of several national suppliers for module manufacturing and integration;
- iv. There was an implantation of manufacturing and R&D capacity of large global subsea equipment companies.

But the discussion should continue, with a view to the 2018 and 2019 rounds. There is a clear need to discuss in a broader and more substantiated way the creation of a State industrial policy for the oil and gas sector, which does not simply place local content responsibilities on the shoulders of Petrobras to develop several national industrial segments as from their purchases.

Also, given the stage of development and diversification of Brazilian industry, an industrial policy could not be restricted to sectors that are intensive in knowledge and innovation. This argument is usually applicable to economies in the early stages of development that have a level of diversification lower than the desirable because of informational externalities.

Another problem of the Brazilian Local Content policy is the fact that the results are not being correctly evaluated and analyzed. Consequently, the agents cannot see its efficiency and gains - for example, an increase in jobs, income or technological development. Additionally, the policy is considered too abrangent and without a prioritization of sectors and activities in which there are comparative advantages in the country.

The operational side of the current policy also presents practical difficulties. The measuring process of Local Content has proved to be rather bureaucratic and costly with the need to fill in numerous worksheets that break, for example, production units into thousands of equipments and their respective inputs and components in an exhaustive way, with the need to present numerous supporting documents and an extensive process of certification of Local Content.

Another inconsistency of the Local Content policy is the possibility of reaching the Local Content required for all items and sub-items of the contractual table without reaching the "global" Local Content. This happens because the cost structure and the respective weights that calculate the global Local Content of the operators often differ from the parameters considered by ANP, which characterizes a mathematical inconsistency.

The huge volume of fines recently imposed for noncompliance with Local Content signalizes the inability of the local industry to meet the demand of operators and making clear the need for improvements in the Local Content policy. This increase in the volume of fines also reflects the non-functioning of the punitive model adopted. The companies are committing themselves with high Local Content compromises in order to win the auctions because a high level of Local Content can act as a compensation tool for a small "Signature

Bonus". The company prefers a present gain rather than a future risk. The origin of the problem is on the rules drawn for the auction turns, favouring high bids of Local Content.

Given that the punitive model is not being effective, are the penalties the best way to get companies to comply with the agreements in terms of Local Content? The companies are infusing these fines into their OPEX and continuing with their projects. Instead of the imposition of fines, a possible solution could be the development of a new rule that makes it impossible for companies to participate in the next round of auctions in case of non-compliance of the Local Content requirements.

Local Content in the pre-salt area

In the first round of the production sharing regime, the Local Content was not a criteria to the judgement of the offers. Otherwise, in the contracts, there were Local Content requirements to the exploration and development phases, as determined by the CNPE Resolution nº 5, of June of 2013. This was decided in order to simplify the bidding process. Throughout the rounds, the values can be revised, as the industry is expanding its supply capacity. In result, the Local Content percentage in the pre-salt areas are lower than in the concession regime ones, as we saw before, with Local Contents up to 80%.

For this first pre-salt round, the minimum Local Content required was 37% in the exploration phase and 15% in the long duration test, realized in this phase; also 55% to the modules of the development phase that will start its production until 2021, and 59% to the modules of this same phase which will start until 2022. There weren't defined maximum percentages.

As in the contracts of the concession regime, besides the minimum global Local Content to each module of the development phase, there was also defined a minimum Local Content to specific items, related to the year of the extraction of the first oil.

According to the rules, the second bid round under the Production Sharing regime in the pre-salt area should demand levels of Local Content equal to those of the contracted areas adjacent to those that will be offered to investors. In the areas adjacent to Carcará and Sapinhoá, the minimum mandatory global Local Content will be 35% in the exploration phase and 30% in the development of production. In the areas near Gato do Mato, the minimum rate will be 38% on the exploration and 60% in production. In the area adjacent to Green Turtle, the rates will be 55% and 65%, respectively.

The third round of Bids of the pre-salt under the sharing regime will have a mandatory minimum overall content of 18% in the exploration phase. In production, the minimum will be 25% for well construction, 40% for the collection and disposal system, and 25% for the stationary production unit.

The fiscalization of the Local Content in the sharing regime is realized by the PPSA (Brazilian Management Company of Petroleum and Natural Gas), as well as the monitoration of the contracts execution, the latter is based on trimestrial informations provided by Petrobras.

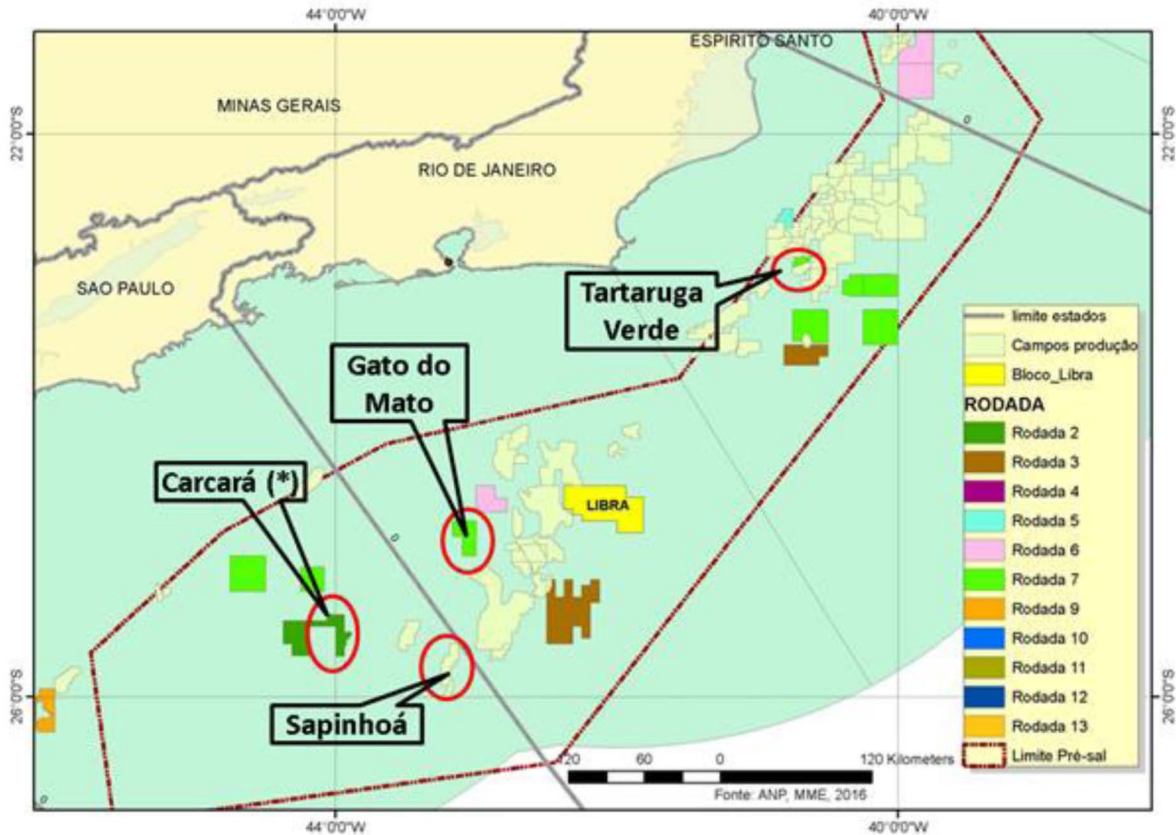


Figure 7—3o Bid round areas in Brasil for September 2017
 Source: MME, 2017

Final Considerations

The analysis drove us to conclude that Local Content policy is capable of promoting the sector's development and it can be positive for the players. However, the policy must be adjusted so it allows the increase of competitiveness on a global scale, not only by the oil companies but also by the suppliers and affected industries. Also, the discussions concerning this issue indicatyes that this is one of the most controversial subjects in the oil and gas industry. By stablishing a focus on national suppliers, as an industrial policy that does not really exists, Local Content has included, over time, inefficent and costly methods (such as Local Content integrating bids at auctions), created enormous complexities for those involved (including ANP), and absorbed a culture that favours more punishment (fines) than incentives. It was verified that the policy needs adjustments, mainly with respect to focus definition of the sector's industrial policy. It is understood that it is important to define key segments to be prioritized and to consider the Local Content policy as part of a wider industrial policy in Brazil.

As mentioned before, the implementation of industrial policies in Brazil brought some benefits to the country. Even though, we can make some relevant critics to the Brazilian model: the Brazilian national content policy was not used as an industrial policy, but rather a tool that should be part of a broader concept of public policy focused on industry. A broad industrial policy should guide sectoral policies, considering interactions across the economy. Therefore, the promotion of the oil sector, for example, both in production and in the affected industry, may be combined with the promotion of other economic sectors. In addition, as any development policy tool it should have time to finish, in other words, at some time, the oil sector should be able to sustain itself without an industrial policy.

In a recent resolution, the CNPE approved the new Local Content indexes to be required from the winners of the four auctions hold in 2017. The indexes will no longer be considered for the selection of bids in

the rounds nor there will be waivers if they are not reached. The changes in the regulation represents an improvement over the previous situation and it was considered as an intermediate solution between operators and the national suppliers claims.

This work brought a wider theoretical framework to the current discussions taking place in Brazil about Local Content, considering the industrial policy theories. The discussion itself is relevant, and will continue with a view to the 2018 and 2019 rounds, in a moment of policy changes regarding the sector's development in Brazil and representativeness of the pre-salt in terms of impacts in the industry's production chain.

Recently, WTO (World Trade Organization) has made a severe evaluation of the results of the industrial policy practiced by Brazil. For the multilateral body, industry has become increasingly dependent on incentives and has not improved its competitiveness. In addition, several industries pay more for the imported products they need. There is a clear need for discussion in a broader and more substantiated way and for the creation of a state industrial policy for all industrial sectors. Especially in the oil and gas sector, a local content policy can not simply put on Petrobras' shoulders the responsibility of develop several national industrial segments from the company's purchases.

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