

Brazilian new gas market: challenges & opportunities¹

Novo mercado de gás: desafios e oportunidades

Nuevo mercado de gas: desafíos y oportunidades

Bruno Eustáquio de Carvalho², Symone Araújo³, Fernando Matsumoto⁴, Aldo Junior⁵ e Cesar Mattos⁶

<https://doi.org/10.36428/revistadacgu.v13i24.453>

Abstract: This article presents the bases of the regulatory reform in the Brazilian natural gas sector. The core of this reform was to move from a governance regime based on the operation of a state monopolist, Petrobras, to one of free competition. The main instruments used have been the unbundling of the transport activities, piped gas distribution and the strengthening of access to essential infrastructures. After more than twenty years from the market opening in 1990s second half and the set of a regulatory framework for the sector in 2009, the Brazilian government found that stronger measures would be needed to achieve this goal. Hence, after summarizing discussions on the new reform of the gas sector in 2016 with Gas to Grow, the Brazilian government was able to take important steps with the New Gas Market Program: (i) the National Energy Policy Council issued relevant guidelines that were key for formation; (ii) the Petrobras signed a Cease-and-Desist Settlement Agreement (TCC, in Portuguese) with the Administrative Council for the Economic Defense (Cade), aiming to reduce the company's market power; (iii) the Petrobras has completed the sale of two important natural gas transportation companies; (iv) the New Gas Law was approved by the House of Representatives; (v) the Government Executive Power regulated this law by a Decree; and (vi) the sectorial regulatory Agency has established a complete regulatory review agenda to implement the new legal framework. The reform of the Brazilian gas sector based on the competition metric is similar to that which occurred in other countries, having incorporated much of their experience. So helping it to overcome the difficulties that were and continue to be observed in its implementation worldwide.

Keywords: Market Unbundling; New Gas Market; Regulatory Governance; Petrobras.

Resumo: Este artigo apresenta as bases da reforma regulatória do setor de gás natural que vem ocorrendo nos últimos anos no Brasil. O núcleo dessa reforma foi transitar de um regime de governança baseado na operação de um monopolista estatal, a Petrobras, para um de livre competição. Os principais instrumentos utilizados têm sido a desverticalização das atividades de transporte e distribuição do gás canalizado e o fortalecimento da regulação de acesso às infraestruturas essenciais. Após mais de vinte anos da abertura do mercado na segunda metade da década de noventa e um marco regulatório para o setor em 2009, o governo brasileiro constatou que seriam necessárias medidas mais contundentes para alcançar este objetivo. Daí que, após retomar as discussões sobre a nova reforma do setor de gás em 2016 com o Gás para Crescer, o governo brasileiro conseguiu dar passos importantes com o Programa Novo Mercado de Gás: i) o Conselho Nacional de Política Energética emitiu Diretrizes relevantes que foram chave para formatá-lo ii) a assinatura de um Termo de Compromisso da Petrobras com a autoridade de defesa da concorrência, o Conselho Administrativo de Defesa Econômica

1 Article received in 17/07/2021 and approved in 12/11/2021.

2 Deputy Executive Secretary of the Ministry of Mines and Energy.

3 Director of the National Agency of Oil, Natural Gas and Biofuels

4 Director of the Department of Natural Gas of the Ministry of Mines and Energy.

5 Under Director of the Department of Natural Gas of the Ministry of Mines and Energy.

6 Legislative Consultant of the House of Representatives.

(Cade), visando reduzir o poder de mercado da companhia; iii) a Petrobras concluiu a venda de duas importantes empresas de transporte de gás natural; iv) a Nova Lei do Gás foi aprovada pelo Congresso Nacional; v) o Poder Executivo regulamentou esta lei em Decreto e vi) a Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP) estabeleceu uma agenda completa de revisão regulatória para implementar o novo arcabouço legal e está atenta às mudanças do mercado. A reforma do setor de gás brasileiro baseada na métrica da concorrência é semelhante à ocorrida em outros países, tendo incorporado boa parte da experiência, o que auxilia a superação das dificuldades que foram e continuam sendo observadas em sua implementação mundo afora.

Palavras-chave: Desverticalização; Nova Lei do Gás; Governança Regulatória; Petrobras.

Resumen: Este artículo presenta las bases de la reforma regulatoria en el sector del gas natural brasileño. El núcleo de esta reforma fue pasar de un régimen de gobernanza basado en el funcionamiento de un monopolista estatal, Petrobras, a uno de libre competencia. Los principales instrumentos utilizados han sido la desagregación de las actividades de transporte, la distribución de gas canalizado y el fortalecimiento del acceso a las infraestructuras esenciales. Después de más de veinte años desde la apertura del mercado en la segunda mitad de la década de 1990 y la elaboración de un marco regulatorio para el sector en 2009, el gobierno brasileño encontró que se necesitarían medidas más fuertes para lograr este objetivo. Así, luego de resumir las discusiones sobre la nueva reforma del sector gasista en 2016 con Gas to Grow, el gobierno brasileño pudo dar pasos importantes con el Programa Nuevo Mercado de Gas: (i) el Consejo Nacional de Política Energética emitió lineamientos relevantes que fueron clave para la formación; (ii) Petrobras firmó un Acuerdo de Cesación y Desistimiento (TCC) con el Consejo Administrativo de Defensa Económica (Cade), con el objetivo de reducir el poder de mercado de la empresa; (iii) Petrobras ha completado la venta de dos importantes empresas de transporte de gas natural; (iv) la Nueva Ley de Gas fue aprobada por la Cámara de Representantes; (v) el Poder Ejecutivo del Gobierno reguló esta ley mediante Decreto; y (vi) el Organismo Regulador Sectorial ha establecido una completa agenda de revisión regulatoria para implementar el nuevo marco legal y está atento a los cambios del mercado. La reforma del sector gasista brasileño basada en la métrica de competencia es similar a la que ocurrió en otros países, habiendo incorporado gran parte de su experiencia. Ayudándole así a superar las dificultades que fueron y se siguen observando en su implementación a nivel mundial.

Palabras-clave: Desagregación del Mercado; Nuevo Mercado de Gas; Governança Regulatoria; Petrobras.

1. INTRODUCTION

In Brazil, as in much of the world, the natural gas industry was developed by the action of a large state-owned company, called *Petróleo Brasileiro S.A.* (Petrobras).

Until 1995, Petrobras had the monopoly of the hydrocarbons exploration and production (E&P), maritime transport of crude oil and oil and natural gas pipelines. These were established in the Federal Constitution. The monopoly was relaxed to allow private agents to act in these activities, through a constitutional amendment No. 9 that year. The Law No. 9,478/1997, also known as the Petroleum Law (BRAZIL, 1997), has regulated this amendment.

Despite the improvement promoted, especially in the E&P of oil and natural gas since the approval of the Petroleum Law, a wide diversification of agents was not observed in the natural gas sector.

Thus, in 2009, the Law No. 11,909/2009, then called the Gas Law (BRAZIL, 2009) was approved to

address the specificities of the natural gas sector and attract new agents to it. Among the changes, the concession regime for the natural gas transportation activity and regulated access to the pipeline transport system were established. These topics aim to reduce Petrobras' market power and attract new agents to the sector. In consequence, other initiatives to improve the regulatory environment were designed, as the "gas to grow" (GTG) initiative and the "new gas market" (NGM) Program, the most recent milestone (BRAZIL, 2021).

The authors seek to bring experiences together and highlight the legal and regulatory advances, considering method and process that come from the implementation of the new gas market in an unprecedented way. The work also aims to collaborate with society to the extent that it presents the methodological rationale in the structuring of policies and, the coherence between public policy and regulation in practice for policymakers, planners and regulators.

The article has this introduction. The second section addresses the initiative gas to grow. Next, the strategy approach that delimits the design of the new gas market (NGM), using tools and the existing governance model, i.e., National Energy Policy Council (CNPE). Consolidating what was called the "regulatory backbone" of the gas market. Section four presents the evolution of the NGM. At the end, conclusions and recommendations in terms of public policy and or regulation are presented.

2. INITIATIVE "GAS TO GROW" (GTG)

In 2015, Petrobras began the process of assets divestment, within its financial strategic restructuring. The divestment of assets in the natural gas sector became an opportunity for new players in this sector, as well as for the unbundling of monopolistic activities. It is considered that the Law No. 11,909/2009 (the old Gas Law) had not achieved the objective of promoting competitiveness and dynamism in the sector.

Thus, in June 2016, the GTG launched. It aimed a wide and deep assessment of the sector and an improvement proposal to the legal framework. As a result of the gas law effectiveness, an industry diagnosis was made. Then a strategic guidelines were proposed for subsequent discussions according to the CNPE Resolution No. 10/2016 (BRAZIL, 2016).

The discussions that followed were focused on nine thematic axes, including access to essential facilities, transportation, marketing, distribution and taxation. Moreover, a thorough sector analysis was made, guided by the CNPE's strategic guidelines and based on foreign countries experience, especially from the European Union. It happened with an extensive participation of agents from the natural gas industry, government agencies and industry experts.

Along the process, the participation of society happened with contributions from representatives of the public and private sectors. They analyzed and had an open debate about the alternatives of solution to many barriers that were faced in the previous phases. This working method can be considered one of the main success factors to the acceptance of the proposed policy. The reports as outcome of the process, presented the diagnoses and revision propositions for the legal framework, and are available to the public.

The unbundling of the transport activity, the entry-exit model for contracting the transport service; the return to the authorization regime for the transport activity; the opening of the natural gas market; and the negotiated access to essential facilities were

among the proposals presented. These were consolidated in a bill in 2017. It happened in the form of a replacement for the Bill No. 6,407/2013. Then, it was processed in the House of Representatives and renumbered as Bill No. 4,476/2020 later.

Despite the efforts, the Bill was not approved in that legislature. In 2018, we sought to move forward with part of the proposals that could be implemented infra legally, due to the need for the sector opening, and the political scenario experienced at the time. The changes proposed in the model were introduced in the Decree No. 9,616/2018, which allowed the National Agency for Petroleum, Natural Gas and Bio-fuels (ANP) to begin the review of stock regulation.

3. NEW GAS MARKET

3.1. From the regulatory theory

It is usual in the infrastructure segments, at the limit of a natural monopoly, links in the production chain which have a highly competitive potential and others having low competitive characteristics. In this case, vertical integration of a more competitive link with a less one may create problems.

There is a debate about whether or not there is this incentive of the upstream monopolist in favor of its downstream associates. It was through the anti-trust analysis that this issue of 'vertical closure' was most debated, especially with the so-called essential facility doctrine. This debate started in the case of a railroad access to a bridge in Mississippi in 1912 (REY AND TIROLE, 2007).

The organization for economic cooperation and development (OECD) highlights what would be the four necessary conditions that were developed in American antitrust doctrine to identify an essential facility: (i) control of the essential facility by a monopolist; (ii) competitor's inability practically or reasonably to duplicate the essential facility; (iii) the denial of the use of essential facility to a competitor; and (iv) the feasibility of facilities' providing (OECD, 1996).

Bring the theory and best practices in mind; one of the ways to deal with the effect of a vertical integration is determining the vertical separation of the non-competitive and competitive chain links in order to reduce the space of discrimination.

In this way, there are softer vertical separation forms than determining that the owners of each link be different in the structural separation. The modalities of accounting, functional and business/legal se-

paration would be "behavioral regulations". In such manner, improving the implementation conditions of the guarantee access, but not changing the incentives of the incumbent's shareholders to discriminate. The same group remains the owner of the two segments and, of course, wants to maximize the sum of its profits in the two links of the chain. If an incumbent's discriminatory increases its profit in the competitive segment at the expense of a profit reduction in the non-competitive segment, it will continue to incentive this behavior even with these divisions.

As the OECD points out, such softer separation strategies only control the incumbent's ability to restrict competition against the regulator, but do not eliminate their incentives to do so (OECD, 2001). In fact, an elimination of the ability and incentives to discriminate is the strongest structural separation, where non-competitive and competitive links have to have different shareholders. The main disadvantage of structural separation would be the loss of unbundling transaction cost savings.

The international energy agency (IEA), criticized the first European Union (EU) directive on the unbundling-based gas sector reform. It only indicated the accounting separation of activities. As an example, separate internal accounts for each activity as required by the European Commission does not constitute sufficient segmentation (EU, 2009),

In fact, according to the structural separation would generate a greater incentive to the investment, precisely by encouraging the vertically integrated transport monopolist to discriminate it with competitive links (OECD, 2001). Based on this diagnosis, the European commission (EC) ended up opting for structural separation in transport from 2009. In fact, in the Third Directive 2009/73/EC⁷, the EU states that it is appropriated to remove:

"[...] the incentive for vertically integrated undertakings to discriminate against competitors as regards network access and investment can ensure effective unbundling" and that "ownership unbundling at transmission level as the most effective tool by which to promote investments in infrastructure in a nondiscriminatory way, fair access to the network for new entrants and transparency in the market[...]"

⁷ Directive 2009/73/EC of the European Parliament and the Council of 13 July 2009 establishing common rules for the internal market for natural gas and repealing the directive 2003/55/EC (europa.eu). See Article 9 of the Directive on the structural vertical separation rule.

In the case of distribution, the European Commission continued to opt for functional, business/legal, and non-structural separation. Article 26 of Directive 2009/73/EC states that:

[...] Where the distribution system operator is part of a vertically integrated undertaking, it shall be independent at least in terms of its legal form, organization and decision making from other activities not relating to distribution. Those rules shall not create an obligation to separate the ownership of assets of the distribution system from the vertically integrated undertaking [...]

Brazil also opted for structural separation in transportation and structural and functional in distribution, as we will see in the next subsections.

3.2. Designing and premises

In 2019, there was a new evaluation of the strategy regarding the NMG in Brazil. The CNPE approved the Resolution No. 16/2019 (BRAZIL, 2019), which establishes guidelines to promote free competition in the natural gas market and defining how the transition to a competitive market should be. In addition, it also presents a structural framework to be observed by Petrobras.

In the light of CNPE Resolution No. 16/2019 (BRAZIL, 2019), Petrobras signed a Cease-and-Desist Settlement Agreement (TCC) with the Administrative Council for the Economic Defense (Cade), a Brazilian antitrust office.

Moreover, it is also noteworthy the strengthening of the Government to support the approval of the New Gas Law in the House of Representatives and its secondary level legislation.

The main policies of the NGM aimed promote competition, harmonization of state and federal regulations, integrate the gas sector with the electrical and industrial sectors, and remove tax barriers. The legal advances by the current Law are available in the Appendix I.

The main objectives of these policies are to improve the use of pre-salt gas, in the Sergipe/Alagoas basin and other discoveries, expand investments in flow infrastructure, processing, transportation and distribution of natural gas. As expected results an increase competition in thermoelectric gas generation and so on.

3.3. Governance

The opening process followed by the Monitoring Committee for the Natural Gas Market (CMGN), created through Decree No. 9,934/2019 is composed by the federal government agencies related to the sector and they implement the following necessary measures, e.g., coordination of the program by Ministry of Mines and Energy (MME); integration of government actions through the Civil House of the Presidency; economic evaluation from the Ministry of Economy. In fact, this is an unprecedented approach used in support to the CNPE board which reflects a good practice in terms of design and evaluate public policies. This rational has been applied in other issues since 2019.

3.4. The outcomes (legal principles)

In April 2021, the new gas law was approved. It established a new sectoral legal framework and consolidate the guidance of the CNPE's decisions and the Petrobras TCC with Cade. In June 2021, less than two months after the sanction of the New Gas Law, the Decree No. 10,712/2021 was published. It regulates part of New Gas Market provisions, with the aim of clarifying some points and guiding the regulation.

The regulation contains relevant definitions, such as the "virtual trading point⁸" and the "contractual congestion⁹". Additionally, it addresses issues that raise controversy for expand the limits of competence between the Union and the states. As an example, the case of the transport's classification pipelines by technical criteria and the functional

8 Definition: a point without a physical location in a capacity market area, that allows carriers to transfer gas ownership at the compensation of the unbalance in the terms of ANP.

9 Definition: a situation of contractual impediment to the fulfilment of the demand on transport capacity, when this one is not to fully used.

unbundling between competitive activities and local services of piped gas, regulated at the state level.

The regulation of the sector has been updated by the ANP, since the publication of Decree No. 9,616/2018 and CNPE Resolution N. 16/2019. In this agenda, ANP address, e.g., (i) the independence criteria for the transmission operator; (ii) the revision of ANP Resolutions No. 51/2013 (shipping) and No. 52/2011 (marketing); (iii) tariffs and maximum revenue which define the criteria to calculate the maximum allowed revenue and the calculation of transport fares by RANP (Resolution ANP) Review No. 15/2014; (iv) third-party access in essential facilities which brings non-discriminatory and negotiated access under discussion in work group created by Ordinance 271/2020; and so on. All of them are already on the regulatory agenda for 2021 (ANP, 2021).

However, the ANP's regulatory agenda will require a set of new regulations to address the new powers for the ANP. As expressed in the new attributions and provisions of the new gas law, as well as some provisions of Decree No. 10,712/2021.

New competencies were given to ANP, such as the regulation of market area manager regulate the establishment; the conclusion of technical cooperation agreement with the managing body of the natural gas market; the approval of common network codes; the advertisement of information on essential facilities; the regulation of the NG storage activity (the concession regime is extinguished); the implementation of the gas release, listening to the Brazilian competition defense system (SBDC) previously; and finally, the implementation of capacity release (ANP, 2021).

In general, the ANP Regulatory Agenda, in the period 2021 to 2022, took the following actions presented in the Table 1.

TABLE 1 – REGULATORY AGENDA

YEAR	REGULATORY ACTION
2021	Resolution on interconnection between transport pipelines
	Review of the resolution on transport fare
	Resolution on transporters' independence criteria and commercialization
	Resolution Review on construction and expansion authorization
2022	Guidelines for the development of common access codes
	Resolution on revenue transfer mechanisms between carriers
	Revision of the resolution on access to transport
	Review of loading, marketing and expansion resolutions of transport capacity

(ANP, 2021).

Nevertheless, it is worth mentioning that Decree No. 10,712/2021 provided for the possibility of the ANP acting in specific cases, even if the regulation has not been published yet, in order to speed up the processes during the transition phase.

Moreover, it should be noted that, from a regulatory point of view, the conditions are given that the transition to the competitive market occurs. Notably, regarding the reduction of the incumbent monopolist role (Petrobras). Figure 1 below shows the elements for the Transition of the Model in the Natural Gas Market.

FIGURE 1: TRANSITION OF THE MODEL IN THE NATURAL GAS MARKET

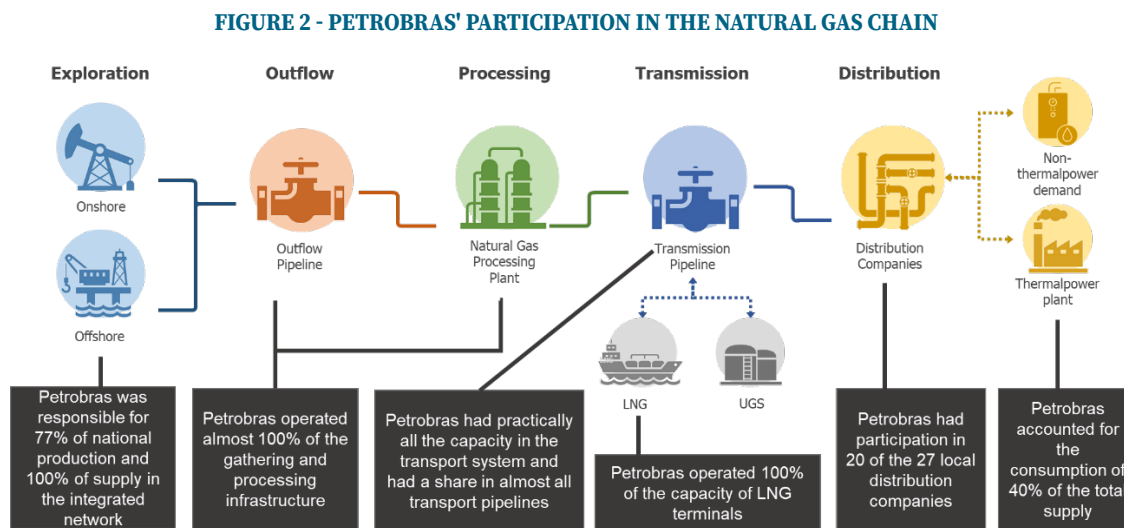


4. MARKET DEVELOPMENTS

The natural gas industry has been changing with the New Gas Market since 2019. Thus, the following scenario of 2018 and the current scenario is presented for a comparison of market developments.

4.1. Petrobras' participation in 2018

Figure 2 illustrates Petrobras' participation in the various segments of the natural gas chain in 2018.



(COSTA, 2021)

According to 2018 data, Petrobras was responsible for 77% of natural gas production in Brazil, but represented 100% of the natural gas supply in the integrated network. This happened because the other producers, usually Petrobras partners in oil and natural gas production concessions, preferred to sell the gas to it. So, they do not have the cost of gathering and processing. There were no incentives for other producers to offer the gas to the market.

In this context, Petrobras owned all natural gas processing plants (NGPPs) in the country, as well as participation in all gathering pipelines. The exception was Eneva, which had an isolated natural gas

production field for thermoelectric generation at the same area (reservoir-to-wire model).

Petrobras owned the country's 3 LNG terminals and 100% responsible for the Bolivian natural gas importation through the Bolivia-Brazil Gas Pipeline (Gasbol).

In the transportation system, Petrobras had already sold 90% of its shareholding in Nova Transportadora do Sudeste (NTS) in 2018. NTS is responsible for the network that extends through the states of São Paulo, Rio de Janeiro and Minas Gerais. However, it held an ownership interest, direct or indirect, in the four main transport companies in the country, as observed in Table 2.

TABLE 2 - PETROBRAS' PARTICIPATION IN TRANSPORTATION SYSTEMS.

TRANSPORT COMPANY	EQUITY OWNERSHIP
TAG	Petrobras (100%)
TBG	Petrobras Logistics (51%) BBPP Holding (29%) YPFB Transport of Brazil Holding (12%) GTB-TBG Holdings (8%)
NTS	New Infrastructure Equity Investment Fund (82.35%) Petrobras (10%) Itaúsa (7.65%)
TSB	Gaspetro (25%) Ipiranga (25%) Tucunaré Empreendimentos e Participações (25%) Total Gas and Power Brazil (25%)
GasOcidente (GOM)	Zetta Lighting S.A. (99%) J&S (1%)

Committee to Promote Competition in the Natural Gas Market in Brazil: Proposals for the Brazilian Natural Gas Market (2019, p.52)

Practically, Petrobras contracted the entire capacity of the transportation system. It happened through in contracts with great flexibility, which prevented the entry of other agents.

The supply of gas to all local distribution companies (LDC) was made by Petrobras, which still had a direct or indirect corporate interest in 20 of the 27 of them.

In addition, it was the largest consumer of natural gas in the country, with its refineries, two fertilizer plants (Fafens, in Portuguese) and natural gas thermal power plants.

4.2. Petrobras' current participation

In July 2019, as previously reported, Petrobras signed the TCC with Cade, making commitments to collaborate with the opening of the natural gas market. These commitments are in line with the interests of the CNPE guideline.

In relation to the supply of natural gas, Petrobras has conducted divestment processes in some fields, especially onshore. It has already sold some. In addition, in the TCC, Petrobras has committed not to acquire new volumes of gas production from partner companies and third parties, restricting itself to the contracts then in force. Such restriction, however, may be accepted in certain cases provided that wi-

thin certain limits and with prior approval of Cade. There are signs that from 2022, partners and third parties will start offering their own gas to the market. This can happen under negotiation or having already negotiated contracts for access to gathering pipelines and NGPPs. In 2020, Petrobras remained with its dominance in natural gas production (75%) and as the only natural gas supplier in the integrated network.

Due to the TCC, Petrobras is conducting the process of leasing one of its three LNG terminals, with the expectation that the new tenant will start operating later this year.

Regarding the import of Bolivian gas, the TCC have set limits in order to give other agents the opportunity to negotiate gas with Bolivia. However, the country's electoral process in 2019 and the pandemic in 2020 caused difficulties to the negotiation. Nowadays, the negotiations are now being retaken.

In the case of the transport companies, Petrobras has already divested 100% of TAG and NTS. The corporate interest in TBG and TSB are in the process of being divests. The following Table 3 is the updated corporate composition of the transport companies.

Additionally, in compliance with the terms of the TCC, Petrobras has defined maximum injection and withdrawal limits at each entry point and exit zone of the transportation system. It allows transport com-

panies to assess the available transportation capacity to be offered to the market.

This is an important measure, as Petrobras has all the transportation capacity in the long-term contracts with TAG and NTS. TBG, considering the available capacity, has already carried out a public call process offering transportation services, in the entry and exit model. TAG and NTS are completing available capacity analyses to offer new transportation services to the market.

All three started the process to verify demand for incremental transportation capacity and should carry out the open season processes soon. TAG has already signed an interruptible service contract with the company that leased two Petrobras' Fafens. This company, by the way, became the first shipper not linked to Petrobras to use the transport system in the entry and exit model in the TAG network.

TABLE 3 - PETROBRAS' CORPORATE INTEREST IN THE CURRENT TRANSPORTATION SYSTEM

TRANSPORT COMPANY	EQUITY OWNERSHIP	
TAG	65,0%	Engie Brazil Energy
	35,0%	Caisse de Dépôt et Placement du Québec (CDPQ)
NTS	82,35%	New Infrastructure Multistrategy Equity Investment Fund
	10,00%	New Infrastructure Pipelines Participações S.A.
	7,65%	Itaúsa S.A.
TBG	51%	Petrobras
	29%	BBPP Holdings Ltd.
	19,88%	YPFB Transporte do Brasil Holding Ltda.
	0,12%	Corumbá Holding S.À.R.L
TSB	25%	Petrobras
	25%	Ipiranga Petroleum Products S/A
	25%	Repsol Exploration Brazil Ltda
	25%	Total Gas and Power Brazil
GOM	99%	Zetta Lighting S.A.
	1%	J&F Investments

Committee to Promote Competition in the Natural Gas Market in Brazil (2019, p.52).

In relation to the LDCs, Petrobras still maintains participation in 19 of the 27 state distributors (Figure 3) through Gaspetro. Petrobras owns 51% of shareholding, with the remaining 49% of Mitsui Gás e Energia do Brasil Ltda. Considering the TCC, Petrobras is conducting process for the sale of this 51% of the equity interest. The shareholding composition in detail are available in the Appendix II.

FIGURE 3 - CONCESSIONAIRES OF PIPED GAS DISTRIBUTION SERVICES



(ABEGÁS, 2021).

It is worth mentioning that the local distribution of gas in the State of Espírito Santo, in 2018, was carried out by BR Distribuidora, controlled by Petrobras. In July 2020, the State signed a concession agreement with Companhia de Gás do Espírito Santo (ES Gás), a mixed capital company with state participation (51%) and BR Distribuidora (49%). It is also worth mentioning that Petrobras, at that time, no longer controlled BR Distribuidora. Petrobras sold part of its shareholding in July 2019. Then, in June 2021, Petrobras completed the sale of its remaining shareholding in BR Distribuidora, so ensuring its full structural unbundling.

Petrobras remains practically the only natural gas supply to LDCs. However, some LDCs are conducting public hearing processes for natural gas acquisition. Petrobras is not participating in some of these processes, so it will no longer be the only supplier. The first new contracts are expected to take effect by January 2022.

In relation to consumption, as briefly commented above, Petrobras leased two Fafens, and the tenant has already started their operation. Although, Petrobras continues to be the supplier of natural gas for them.

Due to another TCC signed with Cade, Petrobras is also conducting sale processes of some refineries. One of them is already in the final phase of sale, having already received approval from Cade.

Thermal power plants are also being divested, which should contribute to the reduction of Petrobras' share in the natural gas consumption.

In fact, the currently process has been showed that the theory and practice results in diversified agents along the system in line with the previously proposed goals.

5. NEW VENTURES AND EXPECTED EVOLUTION

5.1 Transport System

A new NGPP of a private player began operations in the state of Bahia in 2020, but its production is offered directly to the LDC, without going through the transport network (SECRETARIA DE INFRAESTRUTURA DE TRANSPORTE, ENERGIA E COMUNICAÇÃO DO ESTADO DA BAHIA, 2021).

Other new LNG terminals of private players which also started their operation in the State of Sergipe and Rio de Janeiro, but they are isolated from the transport network. They supply associated thermal power plants. Other LNG terminals in implementation will start their operation in many states in the coming years (SECRETARIA DO DESENVOLVIMENTO ECONÔMICO E DA CIÊNCIA E TECNOLOGIA DO ESTADO DE SERGIPE, 2021) (EPBR, 2021).

The processes of transport system expansion, conducted by the companies, will allow the connection of these new LNG terminals to the integrated networks contributing to the diversification of the natural gas supply resulting in a competition.

New ventures are being announced. One example is the production of natural gas from Equinor's BM-C-33 field, whose concept of field development was recently approved by the concession partners with an average production of 14 million m³/day (EQUINOR, 2021).

There is a greater movement of the agents in the sector, reflected in a significant increase of authorization requests for the import, commercialization and shipper of natural gas activities from 2019. However, signing new contracts demands many efforts, which would highlight changes in the sector. As the model is new and the agents are still structuring themselves for it, the first contracts require many negotiations between the parties, possibly in need of mechanisms for risk mitigation. There are contracts about commercialization; access to transportation; access to essential infrastructure; import; and so on. Possible adaptations in infrastructure are also taking time. A natural learning curve to operate in a market that did not exist.

Nevertheless, there has been an increase in the number of LDCs looking for other natural gas suppliers, besides Petrobras. Several potential free consumers are preparing themselves for the open market.

In this context, the harmonization between federal and state regulations, one of the pillars of the NGM Program, becomes essential. It is great to be aware of the relevance of distribution segment to reach the final consumers. As this segment is the competence of the states, a separate contextualization is made below.

5.2. Local Distribution Companies network

The Federal Constitution gave the states the competence to provide local piped gas services (art. 25, § 2), while the other activities of the natural gas industry were regulated by the federal sphere (art. 177). In the states, the stage of natural gas market development is variable. There are states that do not have a supply of natural gas. Others have an LNG supply by road. A state in which the distributor has only one pipeline to connect the production of natural gas of a company to its own thermal power plant.

In general, the activity of distribution of piped gas is carried out by concession. It is usually only one concession area in monopoly per state. The São Paulo and Rio de Janeiro state are an exception. São Paulo has three concession areas, and the Rio de Janeiro has two concession areas.

There are distributors which are private companies or that have a corporate interest in the state. In some cases, the state's participation is indirect, via another state-owned company.

Among the states that have regular supply of natural gas, there is also a diversity of regulation and framework stages. In some, there is no regulatory agency for regulation of the sector. So it is under the responsibility of the granting authority itself. In others, there are established regulatory agencies with a greater or lesser degree of independence and maturity, as well as in the level of transparency.

The regulation of the free consumer is also at the state level, under the New Gas Law (and the previous Law), thus varying from state to state. Taking São Paulo State as an example for an analysis, recently the regulatory agency of public services of the state of São Paulo (Arseps), responsible for the regulation of local services of piped gas in the state, removed the minimum consumption limit for the free consumer framework. However, in compliance with the terms of the concession agreement, signed, for example, in the case of Comgás in 1999, the supply of gas to users in the residential and commercial segments is exclusive to concessionaires (the Comgás Concession Agreement). The same is observed in the concession contracts of the two other concessionaires in the state. In most other states, the minimum limit to be a free consumer is 10,000 m³/day or 300,000 m³/month.

In order to have a harmonization between federal and state regulations, the New Gas Law established that the federal government, through the MME and the ANP, articulates with the states for the integration and improvement of the standards related to the natural gas industry. It also includes the regulation of free consumer. In other countries, the gradual expansion of the free consumer space is a fundamental step to the consolidation of a competitive gas market.

Decree No. 10,712/2021 regulates the mechanisms for this articulation. Through these mechanisms and respecting the competence of states to regulate local piped gas services, it is intended to guide the adoption of good regulatory practices and improve the standards related to the sector.

There is also a need for a balance of regulations between the states themselves. One of the main taxes on natural gas is the one on Operations relative to the Circulation of Goods and Services; Interstate and Localities Transportation; and Communication (ICMS). These are state competence. In this way, the harmonization of the ICMS taxation on natural gas also needs to be addressed, to have a uniformity between the states and enable a national market with liquidity and facilitate the movement of gas between them.

The implementation of the mechanisms proposed by Decree No. 10,712/2021 is what is being done by the CMGN now. It started the articulation with the states and the Federal District.

6. CONCLUDING REMARKS

International experience shows that it is not easy to implement a competitive gas market. In this sector, the regulator must be active in taking action with a broad definition of rules. Therefore, the market can start operating. In other words, the speed of changes will greatly depend on the ANP responsiveness.

The evolution of the European experience, for example, has been very long and the implementation of the 2009 Directives. Specially, when a structural vertical separation was chosen. It has paved the way for the competition more slowly than desirable.

Incumbents, in general state-owned companies, resist to the unbundling process. The privatization of the British Gas in England occurred, after a long debate on structural separation, in which it ended

up not taking place. The unsatisfactory results of the reform and privatization in this country have led to a structural ex-post separation.

The reform in Brazil got shape only from 2016, culminating in the approval of Law No. 14,134/2021 and Decree No. 10,712/2021, which consolidated the gains already obtained with the CNPE Guidelines and the Cade TCC. This is an unprecedented transformation. It is the first effective opening of the natural gas market. It is an ongoing reform, different from previous attempts

It is believed that the adoption of measures to open and create a gas market in the country, as provided by it, contains all the ingredients to increase competition and make it possible to reduce the input price. It is a real "cheap energy shock". International experience also shows that this is not an instant process. The continuous monitoring of the regulator and the public policymakers may indicate the need or not for possible adjustments to the model. Here, there is room for academics and decision-maker's contribution by transplant best practices worldwide in the Brazilian model take into account the market-dynamic.

In this regard, the role played by the Monitoring Committee for the Opening of the Natural Gas Market is fundamental. It periodically meets to evaluate the implementation of the policy results and the possibility of proposing adjustments when necessary. However, the important thing is that several steps have already been taken in the direction of an open, dynamic, competitive and coordinated NGM.

REFERENCES

ANP, Apresentação: *Novas atribuições e desafios da agência com a nova lei do gás*, 2021.

Disponível em: <https://www.gov.br/anp/pt-br/centrais-de-conteudo/apresentacoes-e-palestras/2021/arquivos/arquivo-forum-nova-lei-do-gas-regras-investimentos-e-expansao/forum-nova-lei-do-gas-regras-negocios-e-expansao_symone-araujo.pdf>. Acesso em: 7 de julho 2021.

ABEGÁS. *Concessionárias*. 2021. Disponível em: <<https://www.abegas.org.br/concessionarias>>. Acesso em: 2 de julho 2021.

BRAZIL, Lei N. 9,478, de 06 de agosto de 1997. *Dispõe sobre a política energética nacional, as atividades relativas ao monopólio do petróleo, institui o Conselho Nacional de Política Energética e a Agência Nacional do Petróleo e dá outras providências*, 1997. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/19478.htm>. Acesso em: 7 de junho 2021.

BRAZIL, Lei N. 14,131, de 08 de abril de 2021. *Dispõe sobre a política energética nacional, as atividades relativas ao monopólio do petróleo, institui o Conselho Nacional de Política Energética e a Agência Nacional do Petróleo e dá outras providências*, 1997. Disponível em: <http://www.planalto.gov.br/ccivil_03/leis/19478.htm>. Acesso em: 7 de junho 2021.

BRAZIL, Lei N. 11.909, de 04 de março de 2009. *Dispõe sobre as atividades relativas ao transporte de gás natural, de que trata o art. 177 da Constituição Federal, e sobre as atividades de escoamento, tratamento, processamento, estocagem subterrânea, acondicionamento, liquefação, regaseificação e comercialização de gás natural; altera as Leis n°s 9.478, de 6 de agosto de 1997, e 9.847, de 26 de*

outubro de 1999; e revoga a Lei nº 11.909, de 4 de março de 2009, e dispositivo da Lei nº 10.438, de 26 de abril de 2002. Disponível em: <<https://www.in.gov.br/en/web/dou/-/lei-n-14.134-de-8-de-abril-de-2021-312904769>>. Acesso em: 7 de junho 2021.

BRAZIL, Resolução N. 10, de 14 de dezembro de 2016. *Estabelece as diretrizes estratégicas para o desenho de novo mercado de gás natural, cria o Comitê Técnico para o Desenvolvimento da Indústria do Gás Natural no Brasil, com o objetivo de propor medidas que garantam a transição gradual e segura para a manutenção do adequado funcionamento do setor de gás natural e de avaliar a possibilidade de aceleração da transição, e dá outras providências*, 2016. Disponível em: <https://www.gov.br/mme/pt-br/assuntos/conselhos-e-comites/cnpe/resolucoes-do-cnpe/arquivos/2016/resolucao_cnpe_10_diretrizes_gas_para_crescer.pdf>. Acesso em: 7 de junho 2021.

BRAZIL, Resolução N. 16, de 24 de junho de 2019. *Estabelece diretrizes e aperfeiçoamentos de políticas energéticas voltadas à promoção da livre concorrência no mercado de gás natural, e dá outras providências*. Disponível em: <<https://www.in.gov.br/en/web/dou/-/despacho-do-presidente-da-republica-172805973>>. Acesso em 7 junho 2021.

COSTA, GABRIEL. *Comercialização de Gás Natural*. In: Webinar EPE, 23 junho 2021. Rio de Janeiro, RJ, 2021. Disponível em: <<https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-611/Comercializacao%CC%A7a%CC%83o%20de%20Ga%CC%81s%20Natural%2023jun21.pdf>>. Acesso em: 2 junho 2021.

EU, DIRECTIVE N. 2009/73/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 13 JULY 2009, *Establishing common rules for the internal market for natural gas and repealing the directive 2003/55/EC (europa.eu)*. Article 9 of the Directive on the structural vertical separation rule. Disponível em: <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0073&from=EN>>. Acesso em: 10 de junho 2021.

EPBR. *GNA dá a partida em sua primeira termelétrica no Porto do Açú*. Newsletter – Comece seu Dia, Rio de Janeiro, 16 setembro 2021. Disponível em <<https://epbr.com.br/41965-2/>>. Acesso em: 12 junho 2021.

EQUINOR. *Parceiros escolhem conceito para o projeto BM-C-33, no Brasil*. Notícias e imprensa, Rio de Janeiro, 18 março 2021. Disponível em: <<https://www.equinor.com.br/pt/noticias/parceiros-escolhem-conceito-para-o-projeto-bm-c-33-no-brasil.html>>. Acesso em: 22 junho 2021.

OECD: *The Essential Facilities Concept 1996*. Policy Roundtables, 1996. Disponível em: <https://www.oecd.org/daf/competition/abuse/1920021.pdf> . Acesso em: 7 de junho 2021.

OECD: *Recommendation concerning Structural Separation in Regulated Industries, 2001*. Disponível em: <https://www.oecd.org/daf/competition/recommendationconcerningstructuralseparationinregulatedindustries.htm_2001>. Acesso em: 7 de maio 2021.

REY,P. AND TROLLEY,J. *A Primer on Foreclosure*. In *fashion* Armstrong,M. and Porter,R.: *Handbook of Industrial Organization*. Vol III. The MIT Press. 2007 for this discussion based on the challenge of the theory of market power leverage between distinct links posed by Posner (Posner, Richard (1976), *Antitrust Law*, Chicago: University of Chicago Press) and Bork (Bork, Robert (1978), *Antitrust Paradox*, New York: Basic Books).

COMMITTEE TO PROMOTE COMPETITION IN THE NATURAL GAS MARKET IN. *Propostas para o Mercado Brasileiro de Gás Natural*. Brasília, DF, 2019. Disponível em: <<https://www.gov.br/mme/pt-br/assuntos/secretarias/petroleo-gas-natural-e-bio-combustiveis/novo-mercado-de-gas/documentos-relacionados-1/2.RelatorioComitdePromoodaConcorrnciavfinal10jun19.pdf>>. Acesso em: 15 junho 2021.

SECRETARIA DO DESENVOLVIMENTO ECONÔMICO E DA CIÊNCIA E TECNOLOGIA DO ESTADO DE SERGIPE. *Termelétrica de Sergipe já tem autorização da ANEEL para operação comercial na geração de energia*. Notícias, Sergipe, 30 março 2020. Disponível em: <<https://sedetec.se.gov.br/termelétrica-de-sergipe-ja-tem-autorizacao-da-aneel-para-operacao-comercial-na-geracao-de-energia/>>. Acesso em: 2 maio 2021.

SECRETARIA DE INFRAESTRUTURA DE TRANSPORTE, ENERGIA E COMUNICAÇÃO DO ESTADO DA BAHIA. BAHIAGÁS E ALVOPETRO CELEBRAM UM ANO DE PARCERIA. Notícias. Bahia, 5 julho 2021. Disponível em: <<http://www.infraestrutura.ba.gov.br/2021/07/11732/Bahiagas-e-Alvopetro-celebram-um-ano-de-parceria.html>>. Acesso em: 2 agosto 2021.

**Bruno Eustáquio Ferreira Castro de Carvalho**

<https://orcid.org/0000-0002-8034-6356>

Ministry of Mines and Energy.

PhD in Civil Engineering in systems and infrastructure management from the Instituto Superior Técnico of the University of Lisbon (IST/UL). PhD in Civil Engineering from the University of Brasília (UnB) (Co-Guardianship). Master's Degree in Environmental Engineering and Natural Resources from the Faculty of Engineering of the University of Porto-Portugal (FEUP/UP). Master's in civil engineering from UnB. Specialist in Infrastructure Policies by the National School of Public Administration (ENAP). Future Intelligence Specialist at UnB's Center for Advanced Studies. Specialist in Socioeconomic Evaluation of major infrastructure projects by the National School of Public Administration (ENAP). Professor in other institutions of training of public agents in the themes of PPPs and infrastructure regulation. Member of doctoral advisories in regulation, economics and infrastructure. Books, articles, and international journals published in a total of 25 research papers. International reviewer of international journals such as Utilities Policy, Expert Systems among others.

**Symone Araujo**

<https://orcid.org/0000-0003-0971-917X>

National Oil, Natural gas and biofuels Agency

Ampla and diversified professional experience, having started his career in 1988 at Construtora Mendes Júnior S/A, as a technical assistant. Between 1988 and 1989, she held the position of project engineer in the UFS/NITROFÉRFIL/ITPS Agreement. Between 1989 and 1994, she was technical director of Ambientec Consultoria Ltda. From 1994 to 1999, he held the position of senior level coach at the Police Station of the Ministry of Education in Sergipe. From 1999 to 2004, he worked as a technician of higher education at the Federal University of Sergipe Foundation - UFS.

**Fernando Massaharu Matsumoto**

<https://orcid.org/0000-0002-0636-4257>

Ministry of Mines and Energy

Graduated in Electrical Engineering from the University of Campinas. Post-graduate in Politics

For the Energy and Mineral Sectors by the Pontiff Catholic University of Rio de Janeiro (PUC-RJ). Public servant of the control entity, since 2010 working in the Department of Natural Gas, which currently directs.

**Aldo Barroso Cores Junior**

<https://orcid.org/my-orcid?orcid=0000-0003-1135-0877>

Ministry of Mines and Energy

Graduated in Electrical Engineering from the University of Brasília. Post-graduate in Politics

For the Energy and Mineral Sectors by the Pontiff Catholic University of Rio de Janeiro (PUC-RJ). Postgraduate in Information Technology Governance from ICESP; with specialization in Strategic Administration of Information Systems by the Getúlio Vargas Foundation (FGV). Public servant of the career of Infrastructure Analyst, since 2008 working in the Department of Natural Gas, which currently directs.



César Costa Alves de Mattos

<https://orcid.org/my-orcid?orcid=0000-0001-8491-4456>

House of Representatives

PhD (UNB), Master (PUC/RJ) and Bachelor (UNB) in Economics. Legislative Consultant in the Area of Economics in the House of Representatives. Former Secretary of Competition and Competitiveness Advocacy of the Ministry of Economy, Former Cade Adviser, Former Assistant Secretary of International Affairs and Former Coordinator of Structural Issues of the Secretariat of Economic Policy of the Ministry of Finance. Professor of Economics of Regulation at the Master's Degree in Economics, Department of Economics, Professor and Former Coordinator of the MBA in Regulation at FGV/DF. Three organized books on competition advocacy. Two books on tariff and infrastructure regulation. Several articles in periodicals and books.