

Gas Release Study for the Brazilian Natural Gas Market

PREPARED BY

Carlos Lapuerta

Dan Harris

Marcella Fantini



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I. Introduction

1. Brazil has been in the process of liberalising its natural gas market for a number of years, most recently launching the “Novo Mercado de Gás” Program. In line with related legislation, the program’s objective is to promote market access, competition and transparency in the gas market. In the context of these reforms, the National Agency for Petroleum, Natural Gas and Biofuels (ANP) has launched a consultation concerning the possibility of a gas release program to address concentration in the Brazilian gas market.
2. The Brazilian Large Industrial Energy Consumers Association (ABRACE) has retained The Brattle Group to consider the potential for a gas release program to improve competition in the Brazilian natural gas market. Specifically, ABRACE asked:
 - a. Considering the Brazilian natural gas market structure, could a gas release program (GRP) achieve the goals of the Novo Mercado de Gas Program?
 - b. How have other countries implemented GRPs? What are the key lessons from international experience?
 - c. Assuming the need for a GRP to achieve the goals of the Novo Mercado de Gás Program, how should the program be designed considering the specifics of the Brazilian gas market? For example
 - i. What level of concentration should a Brazilian GRP hope to achieve?
 - ii. How and where should natural gas under a Brazilian GRP be delivered and priced, in particular considering that Brazil is divided into a number of state-run gas markets and that rules differ between the states?
 - iii. What role does flexibility play when defining a GRP?

II. Executive Summary

A. The Need for a Gas Release Program in Brazil

3. Brazil has recently adopted key legislation for the liberalization of its natural gas market, enabling non-discriminatory, regulated access to essential network infrastructure. The competition authority has also taken an important step by securing commitments from Petrobras to divest its ownership interests in natural gas transportation and distribution. Divestment and unbundling rules together lend credibility to the reforms. However, international experience indicates that Brazil will also need a significant gas release program.
4. In particular, international experience contains many examples of countries that initiated the liberalization process with broad legislation of the nature recently adopted in Brazil, which emphasized non-discriminatory access to natural gas networks, with a particular emphasis on unbundling. Nevertheless, it proved difficult for competition to develop in countries where incumbents controlled access to most of the available natural gas resources, as currently occurs in Brazil.
5. Some countries have imposed legal caps on the maximum market share of a gas supplier. But companies have found ways to delay compliance, or to comply without delivering effective competition as intended. Experience has indicated that effective gas release programs are essential to the successful development of competition.
6. We therefore recommend that Brazil supplement the recent reforms with the implementation of a gas release program (GRP) capable of delivering a competitive market structure.

B. The Design of a Gas Release Program for Brazil

7. We draw on international experience to develop detailed recommendations for a gas release program in Brazil. The design addresses key questions including:
 - a. The size of the program, so the volume of to be released each year;
 - b. The duration of the GRP;
 - c. How to set the price of the gas released;
 - d. The accompanying measures required with respect to pipeline capacity;
 - e. The possible need to release customers from existing long-term contracts;

- f. Administrative issues.
8. International experience shows that some programs have been relatively ineffective because of their small size in relation to the market. To ensure an effective program, the best approach is to adopt a metric for a competitive market structure such as the Herfindal-Hirschman index (HHI). We support the guidelines adopted by the European Commission and the Department of Justice in the United States, which indicate that an HHI of less than 1,500 is a general indicator of a competitive market structure. We suggest a transitional period of about five years to achieve the target HHI. This will avoid market changes that might be disruptive.
 9. When designing a gas release program, it is important to recognize that Brazil does not yet have an integrated pipeline network covering all areas of the country. The release of gas in some locations will not necessarily have an impact on others. We therefore recommend dividing the country conceptually into separate regional markets that face significant constraints from limited pipeline capacity. We recommend designing a gas release program to obtain HHI targets in the separate regional markets.
 10. The appropriate volumes for a program will in part depend on anticipated increases in offshore natural gas production. We recognize that Brazil anticipates a significant increase in natural gas production by 2030, thanks in part to ongoing and prospective investments by companies other than Petrobras. As a first step, we recommend modelling the impact that such investment will have on future market structure, independently of a gas release program. A second step would determine a target volume of gas released each year, calculated as the supplement necessary to meet HHI targets over an extended timeframe. The volumes released would be significantly larger in the initial years of the program, declining over time as the projected completion dates of major new gas fields contribute to the reduction of Petrobras' market share.
 11. International experience confirms the importance of establishing programs that can last between five and ten years. It would be dangerous to hope that a shorter time horizon – for example only two years - might prove an efficient way of attracting entrants who would then supplement the released volumes with long-term import contracts after the expiration of the program.
 12. We endorse the use of auctions as the most effective instrument for a long-term gas release program. However, we do not recommend the use of reserve prices in the auctions. Some countries have set reserve prices that guaranteed incumbents the recovery of their costs of procuring natural gas. However, reserve prices limit the scope for competitors to offer consumers lower prices on the volumes procured in an auction.

13. If an incumbent has concerns over cost recovery, there are ways to address its concerns without introducing a reserve price. For example, Italy has legislation for auctions that lack any meaningful reserve price. The auctions can therefore reveal the true competitive value of a resource like natural gas or storage capacity. At the same time, separate provisions are in place enabling an incumbent to recover losses in the auction, by allowing the regulator to raise the necessary funds on its behalf through a surcharge on the use of the transportation or distribution network.
14. Additional recommendations relate to “capacity release” and “customer release”. Releasing gas will have no impact unless the purchasers also have the ability to transport that gas to prospective customers, and also have access to sufficient flexibility resources such as LNG storage to meet the fluctuating demands of customers over time. To ensure the effectiveness of gas release, we recommend supplementing it with capacity release.
15. Gas release will not offer any benefits for existing customers who find themselves bound by long-term gas contracts with an incumbent supplier. Experience from Germany indicates that competition took a major step forward when the competition authority released customers from the constraints of existing contracts, by declaring that it was inherently anti-competitive for a natural gas supply contract to lock in a customer to its existing supplier for a certain number of years. That decision gave existing customers immediate freedom to procure significant portions of their natural gas needs from alternative sources. We recommend a similar rule that would safeguard the rights of existing customers to effective choice among all competing gas suppliers, including Petrobras and the participants in the gas release program.
16. Finally, we have developed some recommendations on the administrative requirements for a Brazilian GRP:
 - a. It would be desirable to have responsibility for oversight of the GRP allocated clearly to a single body (the GRP Authority). This need not be a new body – for example the GRP Authority could be part of the energy regulator;
 - b. Gas release auctions would take place every year, and the product sold would be a one-year gas supply contract. However, if it could be useful to parties to have longer contracts, then there is no reason why Petrobras could not sell a mix of one-year, two-year or longer dated contracts. Buyers of gas under the GRP, in turn, could be allowed to trade gas under shorter term contracts on a secondary market to create market liquidity. Petrobras could act as a ‘market maker’ in the secondary market, under supervision of a market monitor;

- c. Typically, a volume of gas release will be sold in ‘lots’ of a given volume. To determine the appropriate lot size, we recommend that the GRP Authority carry out a survey of potential GRP participants to establish the volume of gas that the buyers would like;
- d. In other GRPs, we have seen incumbents can try to use onerous credit terms to limit participation. We recommend that the credit requirements for buyers in the GRP should not be more onerous than the credit requirements they have for buying gas from the LDC. If credit terms become an issue for Petrobras, the GRP authority could offer to guarantee buyers’ obligations under the GRP. We have not seen such a ‘guarantee program’ in other jurisdictions, but it could be an innovative feature that Brazil could apply to maximise GRP participation. Payment terms should follow typical practices in the Brazilian market
- e. The GRP Authority would also be responsible for ensuring that participants are well informed as to the GRP process and participation requirements, by for example organizing a website and meetings to address questions on the GRP.

III. Brazil’s Recent Reforms

- 17. In April 2021, Brazil published the new Gas Law, which started the process of creating the new gas market (Novo Mercado de Gás).¹ The Gas Law specifies the activities subject to regulation, and identifies the *Agência Nacional do Petróleo, Gás Natural e Biocombustíveis* (“ANP”) as the sector regulator and supervisor.² The Committee for Monitoring the Opening of the Natural Gas Market, instituted in 2019, will monitor the progress in the opening of the market.³
- 18. The new Gas Law provides for:
 - a. The authorisation regime applicable to gas transmission and storage activities, which replaced the old concession regime;⁴

¹ Lei n. 14,134, dated 8 April 2021.

² Lei n. 14,134, dated 8 April 2021, art. 1. Specifies that the gas activities identified in the new Gas Law include natural gas transportation using pipelines, import and export of natural gas, flowing, treating, processing, underground storage, conditioning, liquefaction, regasification and commercialization of natural gas.

³ Decreto n. 9,934, dated 24 July 2019.

⁴ Lei n. 14,134, dated 8 April 2021, Art. 4 and 20, respectively.

- b. Unbundling of transmission from commercial activities such as the exploration, development, production, import, sale and resale of natural gas;⁵
 - c. Implementation of the entry-exit tariff model for transmission capacity;⁶
 - d. Third-party access to gas transmission, to gas processing facilities and LNG terminals.⁷
19. In June 2021, the Government published a decree with more specific provisions to implement the Gas Law.⁸ The decree provides details regarding the objectives of the Gas Law,⁹ requiring the regulator to design a non-discriminatory, efficient and transparent regulatory framework to access gas transmission capacity.¹⁰ The same principles should apply to the procedures for the TSO's allocation of transmission capacity.¹¹ The decree also allows final consumers to connect directly to the transmission network if permitted by State legislation.¹² The transition to the new market must take into account the guidance of the *Conselho Nacional de Política Energética* ("CNPE"), and the Ministry of Mines and Energy will coordinate with States and the federal institutions to harmonise regulation.¹³
20. Finally, in April 2022 the CNPE issued guidance as contemplated by the previous year's decree, publishing Resolution 3/2022 ("the 2022 Resolution")¹⁴ The 2022 Resolution addresses the implementation of mechanisms to incentivise competition, including

⁵ Lei n. 14,134, dated 8 April 2021, Art. 5.

⁶ Lei n. 14,134, dated 8 April 2021, Art 13, §1.

⁷ Lei n. 14,134, dated 8 April 2021, Art. 28.

⁸ Decreto n. 10,712, dated 2 June 2021.

⁹ Objectives that the Gas Law has to achieve include: (I) The promotion of competition and liquidity of the natural gas market; (II) The promotion of free initiative for competitive activities; (III) The economically sustainable expansion of the transportation system and other infrastructures; (IV) The promotion of efficiency and non-discriminatory access to infrastructures; (V) The harmonization between Federal and State regulations concerning the natural gas industry. See Decreto n. 10,712, dated 2 June 2021, Art. 3, (our translation).

¹⁰ Decreto n. 10,712, dated 2 June 2021, Art. 7.

¹¹ Other provisions in Decreto n. 10,712, dated 2 June 2021, include (i) bio-methane and other gases that can substitute natural gas will be applied the same regulatory framework as natural gas (Art. 4). (ii) The gas transmission system can include more than one market area (capacity area). The regulator, however, has to implement a regulatory framework that will favor merger of the capacity areas with the objective to reduce their number (Art. 10). (iii) Access to storage facilities will be regulated (Art. 13) and access tariffs will be approved by ANP. (iv) Third party access to pipelines connecting gas production fields, processing facilities and LNG terminals will be negotiated (Art. 16). (v) An operator can be authorized to carry out both the distribution and commercial activities but rules have to be in place for the two activities to be carried out independently to avoid distorting competition (art.18 and art. 20). (vi) Existing authorizations to carry out the transmission activity with no expiry date will remain in place (Art. 24).

¹² Decreto n. 10,712, dated 2 June 2021, Art. 9.

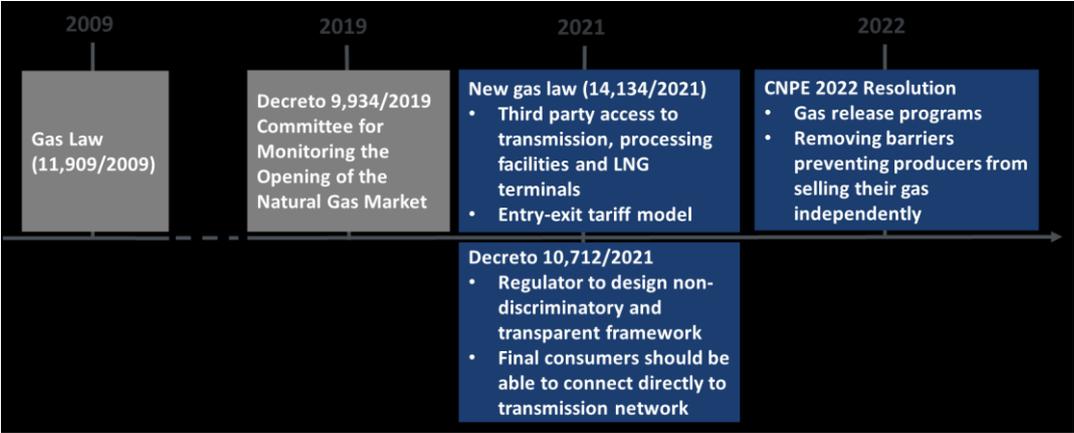
¹³ Decreto n. 10,712, dated 2 June 2021, Art. 26 and Art. 27.

¹⁴ Conselho Nacional de Política Energética - ("CNPE"), Resolução nº 3, de 7 de abril de 2022.

mechanisms to limit concentration on the market and enhance competition in gas supply, and to harmonize State and Federal regulations.¹⁵

- 21. The 2022 Resolution clarifies that a transition to a competitive market could include programs that require dominant operators to release gas progressively, and that provide incentives for third parties to sell gas on the market.¹⁶ Furthermore, the 2022 Resolution clarifies that it is in the interest of the National Energy Policy to promote a dominant operator’s sale of gas through auctions, and to remove barriers that prevent other producers from selling their gas independently.¹⁷
- 22. Figure 1 summarises key developments in legislation discussed above.

FIGURE 1: DEVELOPMENT OF THE GAS MARKET 2009-2021



¹⁵ Conselho Nacional de Política Energética - ("CNPE"), Resolução nº 3, de 7 de abril de 2022, Art. 2, par. III and XVI.

¹⁶ Conselho Nacional de Política Energética - ("CNPE"), Resolução nº 3, de 7 de abril de 2022, Art. 5, par. VIII states that: “São diretrizes para a abertura do Mercado de gás natural, durante o período de transição para um mercado concorrencial de gás natural: [...] VIII – a implantação de programas para a liberação progressiva de gás natural por parte de agente de indústria que detiver participação relevante que possa resultar na dominação de mercado, bem como o incentivo aos demais produtores a comercializarem o gás do mercado [...]”. “Guidelines for the opening of the natural gas market, during the transition period for a competitive natural gas market are: [...] VIII - the implementation of programs for the progressive release of natural gas by the industry agent that holds relevant market share that may result in market domination, as well as the encouragement to other producers to commercialize the market gas [...]” (our translation).

¹⁷ Conselho Nacional de Política Energética - ("CNPE"), Resolução nº 3, de 7 de abril de 2022, Art. 9: “Estabelecer como de interesse da Política Energética Nacional que o agente que ocupe posição dominante no setor de gás natural observe as seguintes medidas estruturais e comportamentais: I- A alienação total das ações que detém, direta ou indiretamente, nas empresas de transporte e distribuição; [...] VIII – A promoção de programa de venda de gás natural por meio de leilões e a remoção de barreiras para que os próprio agentes produtores comercializem o gás que produzem.”. “Establish that it is in the interest of the National Energy Policy that the agent occupying a dominant position in the natural gas sector observes the following structural and behavioral measures: I- The total sale of the shares held directly or indirectly in the transportation and distribution companies; [...] VIII- The promotion of a natural gas sale program by means of auctions and the removal of barriers for the producer agents themselves to commercialize the gas they produce” (our translation).

IV. The Need for a Gas Release Program

23. International experience contains many examples of countries that, like Brazil, initiated the liberalization process with broad legislation aimed at non-discriminatory access to natural gas networks, with a particular emphasis on unbundling network services from commercial activities. Nevertheless, experience has shown that, even with these measures, it can prove difficult for competition to develop in countries where incumbents controlled access to most of the available natural gas resources in all segments of the gas chain, as currently occurs in Brazil. Accordingly, where an incumbent controls most of the gas production and supply, an effective gas release program can be a key element in achieving a competitive gas market.
24. In this chapter, we:
 - a. Briefly set out the context of the European experience with gas release programs. The details of specific programs are in Appendix A.
 - b. Describe how the Brazilian gas market remains highly concentrated, in much the same way as European gas markets prior to successful liberalisation.
 - c. Explain that market share caps have not been effective in other gas markets.

A. European Experience

25. In certain ways, Brazil's plans for gas market liberalisation mirror the program that took place in the United Kingdom from the late 1980s, and the European Union's liberalisation program that started in the late 1990s. Liberalisation in the EU started in earnest with the First Gas Directive in 1998, which had two key aims.¹⁸ First, to facilitate third-party access to gas pipelines on a fair, transparent and non-discriminatory basis. Second, to allow gas consumers to buy gas from suppliers other than the incumbent. In broad terms, the objective was to introduce competition where possible – as in gas supply – and to create a level playing field for access to the gas transmission and distribution networks, which remained a 'natural monopoly'. The two objectives were of course complementary – it would not be possible to introduce competition in supply, if gas suppliers were unable to transport gas to the customers.

¹⁸ Directive 98/30/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas, dated 22 June 1998.

26. To improve network access, the legislation provided for the publication of common terms of access and tariffs. However, in many European gas markets the incumbent gas supplier also owned and controlled the gas pipeline networks. Incumbents proved to be creative in using their control of the pipeline networks to prevent effective access to third parties, which prompted the European Commission to publish a second gas directive in 2003.¹⁹ Among other things, the second directive sought to apply stricter unbundling rules to enable effective third-party access.
27. Despite the second gas directive, by 2005 the European gas market was still far from reaching its objectives. In June 2005, the European Commission launched the in-depth “Sector Inquiry” into EU energy markets, noting that:

“while progress has been made, the objectives of market opening have not yet been achieved. Despite the liberalisation of the internal energy market, barriers to free competition remain. Significant rises in gas and electricity wholesale prices that cannot be fully explained by higher primary fuel costs and environmental obligations, persistent complaints about entry barriers and limited possibilities to exercise customer choice led the Commission to open an inquiry into the functioning of the European gas and electricity markets in June 2005.”²⁰

28. The Commission’s 18-month long inquiry, found that urgent action was required in four areas:
- a. Achieving effective unbundling of network and supply activities,²¹
 - b. Improving regulatory ‘gaps’ relating to cross-border issues between Member States – for example under investment in pipelines that crossed borders,²²
 - c. Market concentration and barriers to entry,²³ and
 - d. Increasing transparency in market operations.²⁴

¹⁹ Directive 2003/55/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC, dated 26 June 2003.

²⁰ Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final Report), dated 8 January 2007, (“sector inquiry”) p.5.

²¹ (sector inquiry), Section II.2.

²² (sector inquiry), Section II.3.

²³ (sector inquiry), Section II.1.

²⁴ (sector inquiry), Section II.4.

29. With respect to market concentration, the inquiry found that “the incumbents remain dominant on their traditional markets, by largely controlling up-stream gas imports and/or domestic gas production” and that the “overall picture for potential new entrants is one of dependency on vertically integrated incumbents for services throughout the supply chain.”²⁵

30. The Commission concluded that gas release programmes:

“are a means to develop market liquidity and increase entry opportunities. They constitute suitable remedies to competition concerns not only in the merger area but also under antitrust rules. In order to be fully effective they must be well-designed and large scale. Substantial experience has been gathered with such programmes by competition and regulatory authorities at national level (e.g. in Spain, France, Austria, Germany) and by the European Commission (in merger cases) allowing the authorities to avoid pitfalls and ensure their effectiveness. For gas, such release programmes have the additional advantage that they are likely to increase hub liquidity which supports the introduction of price signals not biased by the gas-oil-price link.”²⁶

31. Other regulatory bodies and trade organisations echoed the Commission’s sentiments that gas release programmes could improve competition. For example,

- a. The Italian energy regulator and the competition authority undertook a joint inquiry into gas liberalisation, and concluded: *“As of today, gas spot supplies do not grant the volume of gas that is required to develop the market. [...]. From this standpoint, actions to create a liquid market (gas released from the incumbent, gas that can be delivered through 20% of the capacity from new LNG terminals and/or import pipelines) are necessary to start a gas hub”*.²⁷

²⁵ (sector inquiry), p. 8.

²⁶ (sector inquiry), p. 12.

²⁷ Autorità garante della concorrenza e del mercato (“AGCM”) e Autorità per l’energia elettrica e il gas (“ARERA”), “Indagine conoscitiva sullo stato della liberalizzazione del settore del gas naturale”, IC22, dated May 2005, p. 55: *“Ad oggi il ricorso a forniture spot non riesce a garantire un’iniezione di risorse sufficiente per lo sviluppo del mercato [...]. Da questo punto di vista iniziative finalizzate alla creazione di liquidità sul mercato del gas (gas release da parte dell’operatore dominante, utilizzo delle quantità trasportabili attraverso il 20 per cento della capacità delle nuove infrastrutture di rigassificazione e/o di interconnessione via gasdotto) appaiono strumenti necessari all’avvio di un mercato centralizzato”*. “To date, the use of spot supplies fails to guarantee a sufficient injection of resources for the development of the market [...]. From this point of view, initiatives aimed at creating liquidity on the gas market (gas release by the dominant operator, use of transportable quantities through 20 per cent of the capacity of new regasification and/or

b. In the case of the merger between E.ON and MOL, the Commission stated: “[...] *the Commission considers that the combination of the gas release programme and the contract release will ensure that gas end users and wholesalers will have the ability to source their gas needs under competitive and non-discriminatory conditions and, for at least a significant part, independently from the merged entity*”.²⁸

32. Europe’s road to a competitive gas market has been long. A substantial ‘third package’ of energy legislation followed the Sectoral Inquiry, and took several years to implement effectively.²⁹ There have been many investigations and reforms in areas including transparency, regulation, unbundling, network access and network regulation. Hence, gas release programs have been one part of a large package of measures. European experience suggests that gas release alone will not be effective in ensuring competition. However, a well-designed large-scale gas release programme can play an important role in promoting competition, if implemented together with a comprehensive package of measures to enhance network access and the ability of consumers to choose their suppliers freely.

B. Concentration in Brazil

33. Twenty-five years after the end of its legal monopoly in 1997, Petrobras still enjoys a dominant role in the gas market.

pipeline interconnection infrastructures) appear to be necessary instruments for the start-up of a centralised market" (our translation).

²⁸ Commission of the European Communities, Commission Decision of 21/XII/2005 declaring a concentration to be compatible with the common market and the EEA Agreement (Case No COMP/M.3696 – E.ON/MOL), dated 21 December 2005, p. 165.

²⁹ See European Commission, "Third energy package", last accessed on 23 September 2022.

FIGURE 2: PARTICIPATION OF PETROBRAS IN THE NATURAL GAS CHAIN IN 2016

Natural gas chain	 PETROBRAS share
Exploration and production	 Total domestic production
Gathering	 Participates in all gathering pipelines
Processing and treatment	 Controls 99% of UPGN and LNG regasification terminals
Commercialization	 Total commercial supply
Transport	 Ships 97% of pipeline network and operates a 100% of the network
Distribution	 Ownership of LDCs, which distribute 52% of gas
Consumption	 Total available supply

Source: Oxford Institute for Energy Studies ("OIES"), "Liberalization: the Key to Unlocking Natural Gas Potential in Brazil", dated 1 December 2021, Figure 7, p. 11.

34. In its 2021 report on the Brazilian oil and gas markets, the *Empresa de Pesquisa Energética* ("EPE"), a state-owned research office supporting the MME with studies and research programs, states that "*Petrobras remains in control of a leading share of the supply chain for natural gas and oil products*":³⁰
- a. **Domestic production.** In 2021, Petrobras accounted for 72.4% of domestic production.³¹ In the first year of the new legal framework, several private gas producers signed contracts with state distributors that Petrobras had previously supplied. However, the role of Petrobras in domestic production will remain significant in the coming years. The development of new gas fields will require large investments, and current plans show only a few potential projects from alternative producers.³²
 - b. **Imports.** In 2021, Brazil imported 17 bcm of natural gas, of which 56.5% came from LNG terminals and the remainder from Bolivia.³³ Competitors will likely enter the market, as

³⁰ Empresa de Pesquisa Energética ("EPE"), "Brazilian Oil & Gas Report 2020/2021, Trends and recent development", dated September 2021, p. 10.

³¹ Agência Nacional do Petróleo, Gás Natural e Biocombustíveis ("ANP"), "Anuário Estatístico 2022, SEÇÃO 2 – Indústria Nacional do Petróleo e do Gás Natural", p. 6. Data refer to the share of production of Petrobras as concessionaire. Such value increases to 91.7% when accounting for Petrobras' share as operator.

³² BNamericas, "How Brazil's gas market has evolved in the year after the new law", last accessed on 23 September 2022, dated 21 April 2022.

³³ Agência Nacional do Petróleo, Gás Natural e Biocombustíveis ("ANP"), "Anuário Estatístico 2022, SEÇÃO 2 – Indústria Nacional do Petróleo e do Gás Natural", p. 16. Imports from Bolivia previously occurred under a

the *Ministério de Minas e Energia* ("MME") granted 49 import licenses between 2019 and 2020, and large international groups obtained import licences in the first half of 2021.³⁴ The number of licenses granted rose to 67 by June 2022.³⁵ Although an import licence is a necessary condition for entry, it is not sufficient. Other conditions include access to the pipeline network and to potential consumers. The latest published data indicate that Petrobras controls 2/3 of the capacity on the Bolivia-Brazil pipeline,³⁶ which limits the scope for entry.

- c. **Commercialisation.** Petrobras appears to account for over 90% of gas sales,³⁷ and its contracts with distributors previously had durations of around 4 years. Many new companies have acquired commercialisation licenses,³⁸ but Petrobras is apparently offering many distributors a reduction in the gas price if they extend supply contracts by another 5 years.³⁹ Long-term contracts are well-known instruments for foreclosing competitors from the market. We therefore react with concern when a dominant supplier extends the duration of customer contracts on the eve of liberalisation. We appreciate that some aspects of the contracts will allow limited scope for competition. Volumes will scale down over time, allowing the distributors to purchase certain quantities of gas from others. However, the 5-year extension will restrict customer choice as long as some minimum volumes apply. Apparently, additional volume reductions will apply if the distributors' large customers opt to purchase their gas from other suppliers. However, the distributors also sell to smaller customers, whose volumes Petrobras would lock in with the extensions. Finally, we have concerns that large customers face barriers purchasing gas from other suppliers. ABRACE has expressed concerns related to prospective penalties for capacity overruns or imbalances, which fall under the general topic of flexibility addressed further below in Section V.D.

long term contract between Petrobras and Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) while LNG terminals supply the market under shorter-term contracts. See also ArgusMedia, "Petrobras bolts Brazil gas market, leaving the bill", last accessed on 23 September 2022, dated 12 November 2021.

³⁴ Oxford Institute for Energy Studies ("OIES"), "Liberalization: the Key to Unlocking Natural Gas Potential in Brazil", dated 1 December 2021, footnote 29 citing Nogueira, Marta, "Brasil tem autorizações recordes de importação de gás em 2020" Reuters, dated 8 January 2022.

³⁵ Agência Nacional do Petróleo, Gás Natural e Biocombustíveis ("ANP"), "Gas Week: Evolucao do Mercado Nacional, Novo Mercado de Gas", dated 8 August 2022, p. 11.

³⁶ ArgusMedia, "Brazil gas market suffers from slow investments", last accessed on 23 September 2022, dated 1 August 2022.

³⁷ BNamericas, "How Brazil's gas market has evolved in the year after the new law", last accessed on 23 September 2022, dated 21 April 2022.

³⁸ There were 77 new licenses issued in 2019, and 171 in June 2022, Agência Nacional do Petróleo, Gás Natural e Biocombustíveis ("ANP"), "Gas Week: Evolucao do Mercado Nacional, Novo Mercado de Gas", dated 8 August 2022, p. 11.

³⁹ ArgusMedia, "Petrobras expands influence over distributors", last accessed on 23 September 2022, dated 16 May 2022. Apparently, the recipients of the offers account for 42% of total distribution.

C. Problems with market share caps

35. Market share caps offer to reduce concentration, but they have not worked in practice. Both Italy and Turkey imposed caps on the amount of gas that an operator could supply to the gas system. In Italy, the incumbent gas company circumvented the caps with “innovative sales” to certain large customers, transferring title to the gas just outside the Italian border. Technically, the sales did not occur in Italy, so they did not count for the purposes of the market share cap.
36. In Turkey, the Gas Law required the incumbent to reduce its market share by at least 10 percentage points each year over a series of years, until its total share of natural gas imports fell below 20%, originally scheduled for 2009. However, a series of obstacles frustrated the implementation of the law in practice.

1. “Innovative Sales” in Italy

37. To reduce the role of Eni, the incumbent on the gas market, Italy imposed market share caps on the volume of gas that a single company could supply to the Italian market:
 - a. a maximum 75% of national consumption, falling by 2% per year until hitting a maximum share of 61%, and
 - b. a maximum 50% of the gas sold directly to end-users, as opposed to intermediaries like distribution companies.⁴⁰
38. In 2003, the energy regulator and competition authority started a joint inquiry into the liberalisation of electricity and gas markets.⁴¹ They concluded that:
 - a. Eni sold part of its Norwegian gas supplies as “innovative sales” to customers at the border between France and Germany. Although Eni’s customers then imported that gas

⁴⁰ Market share caps were explicitly included in the so-called Letta Decree (the Gas Law) that started the liberalisation process of the gas market in 2000. See Art.19 of Decreto Legislativo 23 maggio 2000 , n. 164, "Attuazione della direttiva n. 98/30/CE recante norme comuni per il mercato interno del gas naturale, a norma dell'articolo 41 della legge 17 maggio 1999, n. 144", p. 10 which states: *“A decorrere dal 1^o gennaio 2002 e fino al 31 dicembre 2010, nessuna impresa del gas può immettere gas importato o prodotto in Italia, nella rete nazionale, al fine della vendita in Italia, direttamente o a mezzo di società controllate, controllanti o controllate da una medesima controllante, per quantitativi superiori al 75% dei consumi nazionali di gas naturale su base annuale”* “Starting from January 2002 and up to 31 December 2010 no gas company can inject gas (imported or produced in Italy) into the national grid, for sale into Italy, directly or through subsidiaries, parent companies or companies controlled by the same parent company, for quantities over 75% of national natural gas consumption on an annual basis” (our translation).

⁴¹ Autorità garante della concorrenza e del mercato (“AGCM”) e Autorità per l’energia elettrica e il gas (“ARERA”), “Indagine conoscitiva sullo stato della liberalizzazione del settore del gas naturale”, IC22, dated May 2005.

independently, and had the freedom to resell it to others in Italy, the gas ultimately came from Eni itself, at a price that included a mark-up imposed by Eni.

- b. Competing suppliers had little access to import capacity on Italy's major pipelines. Eni claimed a need for the majority of such capacity, to meet the obligations arising from take-or-pay import contracts that Eni had signed before the liberalisation of the Italian natural gas market.
39. The competition authority mandated Eni to release gas to competitors for sale on the Italian market.⁴² The authority required the release of 2.3 bcm per year, which was around 3% of total gas demand in 2003. The program would last for 4 years, requiring Eni to release 9.2 bcm in total. The competition authority set the size of the programme to offset Eni's use of innovative sales to evade the legislative market share caps.

2. Delayed implementation of Turkey's market share cap

40. In 2001, Turkey started the liberalization of its natural gas market by abolishing the legal monopoly then held by BOTAŞ, the vertically-integrated state-owned gas company.⁴³ The 2001 Gas Law required BOTAŞ to release 10% of its import contracts each year until 2009, when its import share would fall below 20%. However, BOTAŞ cited a series of difficulties in transferring import contracts, such as the difficulty in getting the appropriate consent for transfers from its existing counter-parties. Moreover, BOTAŞ alleged that confidentiality obligations prevented the disclosure of contract terms to third parties, so potential transferees did not have the ability to complete a reasonable due diligence process.
41. A period of inaction prompted the threat of fines in 2004, which finally motivated the proposal for a gas release programme, which then suffered various delays.⁴⁴ The programme did not shift focus away from the transfer of import contracts, so it did not resolve successfully the issues of counter-party consent and confidentiality provisions. Moreover, the government did not ensure the release of sufficient customers to accommodate the release of import contracts.⁴⁵ The programme ultimately released far fewer volumes than originally

⁴² See Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004.

⁴³ The relevant legislation was the Natural Gas Market Law ("Gas Law") of 2001. Oxford Institute for Energy Studies ("OIES"), "Major Challenges to the Liberalisation of the Turkish Natural Gas Market", dated 16 November 2006, p. 34.

⁴⁴ Oxford Institute for Energy Studies ("OIES"), "Major Challenges to the Liberalisation of the Turkish Natural Gas Market", dated 16 November 2006, p. 38.

⁴⁵ Available estimates indicate that total expected demand in 2009 was around 37 bcm, similar to the minimum take or pay obligations of BOTAŞ in that year. Assuming an import volume of 37 bcm, for BOTAŞ to have a share of import equal to 20% it needed to release at least 29.6 bcm. In the same year, demand of

contemplated.⁴⁶ By the end of 2009 only a little over 10% of Turkey's gas imports had actually transferred to alternative suppliers.⁴⁷

D. Conclusions on the need for Gas Release in Brazil

42. Based on the analysis in the preceding sections, we conclude that:
- a. In Europe, gas release programmes were an important supplement to other liberalisation measures. Gas release programs facilitated entry into markets where incumbents controlled a large share of the gas supply;
 - b. The Brazilian gas market remains highly concentrated. While the reforms contemplated by the new Gas Law are necessary, they will not suffice to achieve a competitive gas market unless new entrants can have access to gas supplies;
 - c. Incumbents in other countries have circumvented alternatives to gas release programs, such as market caps;
 - d. A well-designed, large-scale gas release program is likely to prove an important and necessary element of gas market liberalisation in Brazil.

consumers free to negotiate with alternative suppliers was estimated to be around 9.3 bcm (26% of estimated 2009 demand). Hence, about 20 bcm of released gas was expected to have no market. See Oxford Institute for Energy Studies ("OIES"), "Major Challenges to the Liberalisation of the Turkish Natural Gas Market", dated 16 November 2006, p. 46.

⁴⁶ Oxford Institute for Energy Studies ("OIES"), "Problems and Prospects for the "Fourth Corridor": The Positions And Role of Turkey in Gas Transit to Europe", dated 30 June 2009, p. 12.

⁴⁷ Oxford Institute for Energy Studies ("OIES"), "Problems and Prospects for the "Fourth Corridor": The Positions And Role of Turkey in Gas Transit to Europe", dated 30 June 2009, p. 12.

V. The Design of a Gas Release Program for Brazil

43. Below we set out the key design elements of a GRP for Brazil, including:
- a. The size of the program – how much gas should be released each year?
 - b. Its duration – should the GRP last for a set number of years – and if so how many? Or should the GRP stop when it has achieved certain objectives?
 - c. How to set the price of the gas released?
 - d. The accompanying measures required with respect to pipeline capacity;
 - e. The possible need to release customers from existing long-term contracts.

A. The Appropriate Size of a Gas Release Program

44. International experience shows that some GRPs have been relatively ineffective because of their small size in relation to the market. An example is the GRP that accompanied the merger of E.ON and Ruhrgas in Germany in 2002. At the time, E.ON and Ruhrgas were two of the largest German energy companies. In an attempt to address the competition concerns raised by the merger, the authorities required E.ON, among other things, to undertake a gas release program in the German market. However, the merger conditions ultimately required E.ON to release only about 3.5% of German gas demand.⁴⁸ Appendix A contains more details of the E.ON GRP.
45. Ultimately, market commentators concluded that the gas release program was too small to have a noticeable impact on competition in the German market.⁴⁹ Similarly, in the previous section we documented the Italian authority's requirement for Eni to release about 3% of gas demand.⁵⁰ Arguably, this GRP did not make a significant difference to competition in the Italian gas market.

⁴⁸ International Energy Agency and OECD, "Energy Policies of IEA Countries-Germany", 2007, p. 93 reports that domestic natural gas consumption totaled 90 bcm in 2003. The yearly auctions of 3.2 bcm = 19.1 bcm over six years represent thus 3.6% = 3.2/90 of German gas demand. For further references see footnote 97.

⁴⁹ For instance, Lohmann, Heiko, "The German Gas Market post 2005: Development of Real Competition", Oxford Institute for Energy Studies, dated 1 September 2009, p. 1.

⁵⁰ Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004, paragraph 14.

46. Legal context helps explain why the German and Italian GRPs were so small. In each case, the authorities did not have the power to design programs that would ensure the development of effective competition. Rather, the authorities could only impose remedies that offset the specific conduct under investigation: the proposed merger in Germany, and Eni's use of 'innovative sales' to evade legal market share caps in Italy. In both cases, the authorities confronted markets that were highly concentrated prior to the emergence of the disputed conduct. However, they could not take the initiative to do more than redress the specific conduct in dispute.
47. Accordingly, we do not believe that GRPs associated with mergers or specific investigations can provide useful precedent for the optimal size of a GRP in Brazil. We note the logic of the Committee for Protecting Competition ("CPC"), which expresses optimism with respect to CADE's investigation of Petrobras.⁵¹ The CPC lists certain economic incentives by Petrobras to accept significant commitments to release gas.⁵² We do not doubt those incentives, and we do not offer any opinion on the specific legal authority of the competition authority CADE in Brazil. We simply express a note of caution that, in practice, the legal constraints on investigations have often produced modest programs. We adopt a purely economic perspective, considering what program scope would be optimal for Brazil.
48. If 3.5% of the market is too small, what then is a sufficient volume of gas release? Since the objective of a Brazilian GRP is to increase competition, the most logical approach is to determine the size of the GRP by reference to metrics that assess the degree of competition in a market. Specifically, we propose to adopt the Herfindal-Hirschman index (HHI), which is a common a metric for determining the degree of competitiveness in a given market structure.
49. The HHI is the sum of the squares of the market shares of the participants in a market.⁵³ For example, a purely monopolistic market has one incumbent with a market share of 100%, so the HHI would be $100^2 = 10,000$. If there are two firms with equal shares, then the HHI is $50^2 + 50^2 = 5,000$. As the market gets increasingly competitive, and the market share of each participant becomes increasingly small, the HHI falls toward zero.

⁵¹ Novo Mercado de Gás, "Nota Técnica, Propostas para o Mercado Brasileiro de Gás Natural", Comitê de Promoção da Concorrência no Mercado de Gás Natural do Brasil, dated 10 June 2019, p. 16.

⁵² Novo Mercado de Gás, "Nota Técnica, Propostas para o Mercado Brasileiro de Gás Natural", Comitê de Promoção da Concorrência no Mercado de Gás Natural do Brasil, dated 10 June 2019, p. 14.

⁵³ Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), dated 5 February 2004, (hereafter EC merger guidelines), paragraph 16.

50. To get a sense of the HHI for a competitive market, we draw on merger guidance from both the European Commission (“EC”) and the US Department of Justice (“DoJ”). The EC is unlikely to express concerns in a market with a post-merger HHI below 1,000.⁵⁴ The implication is that an HHI below 1,000 represents a competitive market. The EC is also unlikely to express concerns if the post-merger HHI lies between 1,000 and 2,000, if the merger raises the HHI by less than 250 points. Finally, concerns are unlikely over a merger that raises the HHI by less than 150 points, if the post-merger HHI exceeds 2,000.⁵⁵ The DoJ describes markets as ‘moderately concentrated’ if the HHI is between 1,500 and 2,500, which implies that an HHI below 1,500 is competitive.⁵⁶
51. Given the guidance above, we consider that an HHI of around 1,500 would be a reasonable target for a Brazilian GRP to achieve at the end of the process. Accordingly, a Brazilian GRP should involve sufficient volumes that the relevant markets – which we discuss in section V.A.2 below – would have an HHI of 1,500. To give a sense of what an HHI could mean in terms of market shares, a market with an HHI of 1,500 could consist of:
- a. One market participant with a 25% share, and six participants with an equal market share of just over 12%;
 - b. One market participant with a 25% share, and three participants with an equal market share of just over 17%;
52. As a metric to define the size of the GRP, the HHI has a number of advantages. First, a competitive HHI target will likely achieve a high level of competition. Second, the volumes released can adapt over time, for example higher in the early years and lower in the following years, depending on the levels of new gas production. Third, the HHI metric can also help decide when to terminate the GRP. We discuss these issues below.

1. Anticipating Increased Gas Production

53. The appropriate volumes for a program will depend partly on anticipated increases in offshore natural gas production. Brazil anticipates a significant increase in natural gas

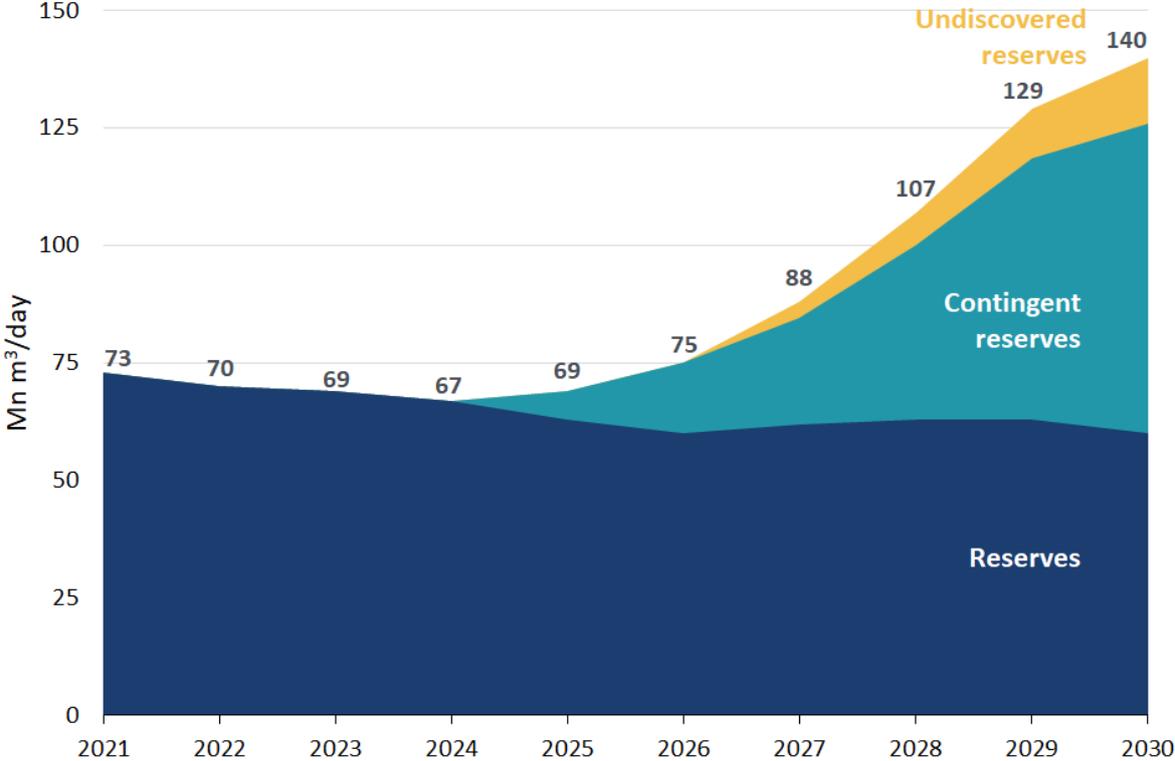
⁵⁴ Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), dated 5 February 2004, (hereafter EC merger guidelines), paragraph 19. Here our reference to “concerns” relates to what economists call “horizontal” market power: the concentration of competitors. Other guidelines apply to the assessment of “vertical” issues, involving the control of access to inputs or services in an upstream or downstream market.

⁵⁵ Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), dated 5 February 2004, paragraph 20. The EC could still find concerns if one of the merging parties is a new entrant or innovative company that has the potential to increase competition significantly absent the merger.

⁵⁶ The United States' Department of Justice (“DoJ”), “Herfindahl-Hirschman Index”, dated 31 July 2018.

production by 2030,⁵⁷ when the supply of natural gas is forecast to increase by up to 140 mn m³/day. Figure 4 below illustrates.

FIGURE 3: FORECASTED SUPPLY OF NATURAL GAS (MN M³/DAY)⁵⁸



Source: Reproduced from Empresa de Pesquisa Energética ("EPE"), "2030 Plano decenal de expansão de energia", Ministério de Minas e Energia, dated 2021, Gráfico 5-4, p. 193.

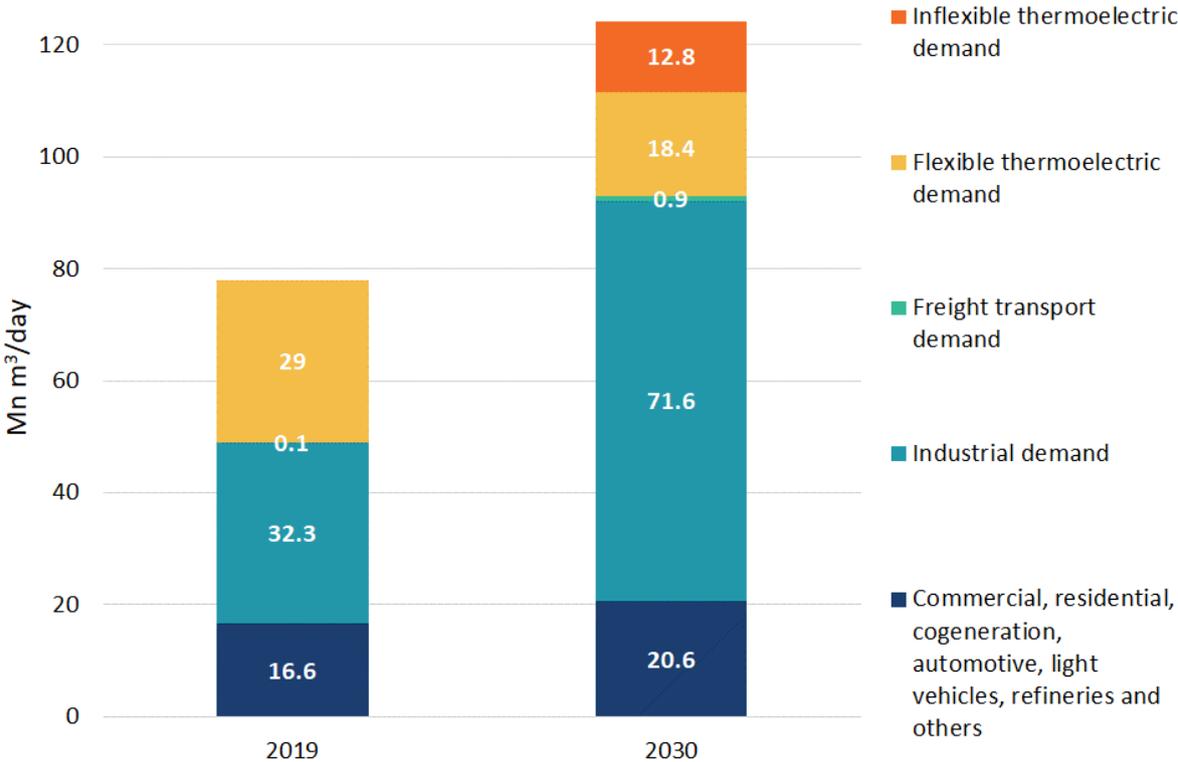
54. Gas demand is also projected to increase 60% relative to 2019, up to 124 mn m³/day by 2030.⁵⁹ Industrial demand drives the forecasted increase.

⁵⁷ Oxford Institute for Energy Studies ("OIES"), "Liberalization: the Key to Unlocking Natural Gas Potential in Brazil", dated 1 December 2021, p. 16.

⁵⁸ Empresa de Pesquisa Energética ("EPE"), "2030 Plano decenal de expansão de energia", Ministério de Minas e Energia, dated 2021 Gráfico 5-4, p. 193. Liquid production of natural gas reports total volumes of gas possibly available for outflow gas processing units (UPGNs). This is obtained from brute volumes subtracting injection in reservoirs and own consumption (for E&P). Oxford Institute for Energy Studies ("OIES"), "Liberalization: the Key to Unlocking Natural Gas Potential in Brazil", dated 1 December 2021, p. 16 notes that "EPE's production forecast for 2021 appears high compared to actual production figures in 2019 and 2020. The reasons for the discrepancy are unknown and could be the result of EPE's expectation regarding lower levels of reinjection in 2021".

⁵⁹ Banco Nacional de Desenvolvimento Econômico e Social ("BNDES"), "Gás para o desenvolvimento: Perspectivas de oferta e demanda no mercado de gás natural do Brasil", dated February 2021, Gráfico 12, p. 90.

FIGURE 4: FORECASTED DEMAND OF NATURAL GAS (MN M³/DAY)



Source: Reproduced from Banco Nacional de Desenvolvimento Econômico e Social ("BNDES"), "Gás para o desenvolvimento: Perspectivas de oferta e demanda no mercado de gás natural do Brasil", dated February 2021, Gráfico 12, p. 90.

- 55. Importantly, parties other than Petrobras should control a significant share of the new gas volumes. Given that non-Petrobras gas volumes could increase rapidly in the period to 2030, we recommend updating the gas-release volumes every year. As a first step, we recommend modelling the impact that such investment will have on future gas volumes and market structure, independently of a gas release program.
- 56. A second step would determine a target volume for Petrobras to release each year, given the expected volumes of independent production. The optimal gas release volumes would be the supplement needed to meet HHI targets over an extended timeframe. The volumes released would be significantly larger in the initial years of the program, declining over time as the projected completion of major new gas fields reduces Petrobras’ market share. The calculations should update annually, at least six months before the first delivery of the gas release volumes, to give participants sufficient notice and to facilitate planning both the gas release and associated capacity release.

2. Regional and Product Markets

57. Section V.A recommended the use of the HHI to set the size of the GRP. The next logical question is: which geographic markets, and which product markets, should form the basis for the HHI calculation?
58. In terms of geographic markets, we understand that Brazil has three connected pipeline networks, and that it is technically possible to send gas from any single point on the network to any single other point. At times, an integrated network can justify the definition of a single geographic market. However, experience indicates that even interconnected networks can have natural barriers to trading natural gas between regions. The barriers can include capacity constraints on transportation links, and administrative impediments to arrangements for crossing networks. Finally, the transportation tariffs themselves can constitute barriers that lead to the effective separation of markets. A detailed analysis of the issue is beyond the scope of the report, so our recommendations are:
- a. Before deciding how to calculate the HHI, there should be an assessment of barriers to moving gas along different points of the network, covering three main issues: the availability of capacity, possible administrative burdens, and the costs of that capacity compared to the likely costs of gas;
 - b. If the analysis concludes that there are no serious obstacles to moving gas along the network, then the HHI calculation should proceed on the basis of a single national market;
 - c. If the analysis supports regional markets, then the design of the GRP should consider separate HHI calculations for specific regions. The volumes of gas released could therefore differ by region;
 - d. As investments proceed to expand the network, to refine the transportation tariff system, and to reduce the administrative burdens of moving gas across different regions, the HHI calculation should evolve to consider the possible consolidation of regional markets over the duration of the GRP.
59. We also recommend a specific approach for distinguishing between national and regional markets. We generally endorse the “SSNIP” test that competition authorities apply to define the geographic scope of a market. SSNIP stands for “Small yet Significant Non-Transitory Increase in Price”. The logic is that a regional market exists if a hypothetical company that controls 100% of the supplies in a region could raise prices by a small yet significant amount, generally considered to be 5% or more, and could sustain the increment without inviting competition from outside the region. When applied to the concept of regional markets in natural gas, the SSNIP test involves modelling transportation tariffs, and testing how far gas can travel before the tariffs begin to represent 5% or more of the total cost of supplies.

60. We now turn to the relevant product market. We recommend defining it as the supply of gas to either LDCs or individual customers. Hence, the relevant authority would calculate market shares of gas supplied to LDCs and customers. Note that if a supplier – supplier X – bought gas from Petrobras under the GRP, and if supplier X then sold gas to an LDC, then the HHI calculation would impute the gas to supplier X's market share. It is reasonable to impute the sale to supplier X in the HHI calculation, even though the gas came from Petrobras, as long as Petrobras has no control over the volume supplied or the price. We discuss price setting in section V.C.

B. Duration

61. International examples of GRPs exhibit a wide range of durations. The Hungarian GRP lasted eight years,⁶⁰ the German GRP six years,⁶¹ the Italian GRP four years⁶² and the Spanish GRP only two years.⁶³

62. The case of Spain is instructive. The intention was for GRP participants to sign long-term import contracts, which would commence deliveries promptly upon the completion of the GRP. That is, the government viewed the GRP as a relatively short-term bridge or 'stepping stone', to facilitate entry for the roughly two-year period that it could take to arrange for long-term gas supplies.

63. There were two issues with this approach. Arguably, the GRP only accelerated developments that could have occurred anyway after two years. That is, if a new entrant could secure gas with a supplier with deliveries to start in two years' time, then the GRP simply allowed the entrant to start selling gas during the negotiating period. Simple 'acceleration' did not represent a significant improvement to competition in the Spanish market.

64. Second, and perhaps more importantly, the strategy gave rise to a significant level of oversupply in Spain. The program prompted entrants to sign long-term contracts. But after the GRP ended, the released gas returned to the incumbent. The market found itself with all the incumbent's gas, and with the entrants' new long-term import contracts. The result was a short-term excess, which took some time to absorb. A better strategy would have been to

⁶⁰ European Commission, Case No COMP/M.2696 E.ON/MOL, dated 21 December 2005, p. 156, (741).

⁶¹ State Superior Court of Düsseldorf, "Beschluss vom 11.07.2002 - VI-Kart 25/02 (V)", dated July 2002, par. 260

⁶² Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004, paragraph 14.

⁶³ The program started in October 2001 and was to be concluded by January 2004. See Ministerio de Economía, "Orden de 29 de junio de 2001 sobre aplicación del gas natural procedente del contrato de Argelia", dated 6 July 2001, p. 1.

have a longer GRP, timed so that any new import contracts would replace the incumbent's gas supply contracts as they expired, or would only kick in as total demand expanded. That would have avoided the over supply issue.

65. More generally, it can take some time for new entrants to become established in the market. Accordingly, a GRP duration of at least six years, and more likely eight to ten years, would be desirable. International experience confirms the importance of establishing programs that can last a significant length of time. It would be unrealistic to hope that a time horizon of only two years might prove an efficient way of attracting entrants who would then supplement the released volumes with long-term import contracts after the expiration of the program.
66. However, rather than set a defined term limit for the Brazilian GRP, we recommend making the termination of the GRP conditional on the HHI metric we discussed in section V.A.2. Authorities could announce an end date for the GRP, once:
 - a. The GRP has achieved the target HHI metrics for a number of consecutive years. Achieving the target HHI in one year might be unattainable, for example because of existing contracts of independent suppliers to procure gas that are to expire yet or because the customer base of potential participants to the GRP is not large enough to accommodate the gas released. We suggest allowing a transitional period of around five years to achieve the target HHI in order to avoid market changes that could be too rapid while at the same time allowing visible changes in the market to occur and to allow for a sufficient number of additional years, for example up to five consecutive years, for the GRP to meet the target HHI;
 - b. There was a realistic prospect that, once the GRP ends, participants could replace the GRP volumes with gas from non-incumbent suppliers on reasonable terms. The announcement should give a lead-time of at least two years for participants to arrange new supplies;
 - c. The GRP could also have a 'back-stop' end date to provide some certainty to Petrobras that the GRP is not a wholly open-ended commitment. But this date should be at least 10 years after the start of the GRP.
67. Accordingly, the duration of the GRP, as well as the volumes, will depend on the speed and extent of non-Petrobras production, as discussed above in section V.A.2.

C. Auctions and the Price of Released Gas

68. Typically, auctions determine the price of the gas released. We believe that auctions are the most efficient instrument for determining the price of gas in long-term GRPs.

69. Some countries have set reserve prices that guaranteed incumbents the recovery of their costs of procuring natural gas. However, we do not recommend the use of reserve prices, for two main reasons. First, there is a risk that the reserve price is set above the actual market price of the gas. In this case, an excessive reserve price could dissuade market actors from participating in the GRP. For example, in the German gas release program, the reserve prices were 95% of the average import price.⁶⁴ Despite the 5% 'discount', entrants were not willing to buy more than 50% of the gas offered in the first round. In subsequent rounds, the reserve price relied on a price formula linked to the prices of Rotterdam traded gas oil and fuel oil products. This change, as well as others, enabled the sale of all the gas offered in the next rounds.⁶⁵
70. Second, and relatedly, a reserve price would limit the scope for the buyers to compete with the incumbent. For example, if the GRP participants can only buy gas at the incumbent's average gas price, then it will be difficult for them to gain customers by offering consumers lower prices on the volumes procured in the auction. Hence, we do not recommend applying any reserve price in Brazil.
71. Petrobras may argue that, without a reserve price, it cannot recover the cost of the gas it must supply in the GRP. International experience shows that there are ways to address concerns related to cost recovery without introducing a reserve price. For example, Italy has legislation for auctions that do not have meaningful reserve prices. The auctions can therefore reveal the true competitive value of a resource like natural gas or storage capacity. At the same time, separate provisions are in place enabling an incumbent to recover losses in the auction. Specifically, the regulator can recover the difference between the incumbent's cost of gas and the auction price, by imposing a 'cost recovery surcharge' on the use of the transportation or distribution network. We recommend such an approach in Brazil. In effect, the pipeline operators would collect the cost recovery surcharge, and pass the amounts on to Petrobras.⁶⁶ The rationale for imposing a surcharge is that the benefits from reduction in the cost of gas resulting from the GRP and development of competition should offset the increase in transmission costs paid by consumers.
72. Allowing Petrobras to recover its costs through a cost recovery surcharge raises the question of how the regulator should calculate Petrobras's cost of gas. There are a number of ways to set the price of gas for Petrobras, against which it can recover costs. We recommend that the cost recovery surcharge should be based on the weighted average of the gas price paid

⁶⁴ Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, footnote 26, p. 136.

⁶⁵ Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, p. 124.

⁶⁶ Like several other recommendations in this report, this may require secondary legislation or regulation.

by Petrobras to purchase gas from other gas producers and of the gas prices under gas import contracts (together “the weighted average purchase price”). This is a simple and transparent approach based on contractual data and predetermined rules to calculate the gas price in each year. The cost recovery surcharge would be calculated based on the difference between the price of each gas release auction and the weighted average purchase price, adjusted for any differences in gas transportation costs.⁶⁷

73. Petrobras could invoke another basis for a reserve price: protection against an uncompetitive, low price. However, the best way to avoid that issue is to structure the gas release program in a manner that would attract a large number of participants. The auction should induce participants to compete for the gas offered, and should determine a competitive market price. Hence, maximizing participation should eliminate the need for a reserve price. In section V.G below, we offer recommendations on optimal participation requirements.
74. A final issue is whether the auction should invite bids for fixed prices, or bids indexed to a commodity such as oil, which we understand is common practice in Brazil. A fixed price could be appropriate for blocks of gas auctioned for up to one year at a time. However, a multi-year GRP should consider auctioning slots of gas for longer periods, such as three to five years. For longer-term products, a fixed-price bid could pose an excessive risk of becoming ‘out of market’ over the duration of deliveries. Hence, for longer-term products we recommend accepting oil-indexed bids in the auction to limit the risks facing participants. The proposed indexation structure should reflect a typical gas sale contract in the Brazilian gas market.

D. Delivery Points, Flexibility and Capacity Release

1. Delivery Points

75. For a Brazilian GRP to be effective, the buyers of gas must have the right to transport gas away from the GRP’s delivery point to their customers – or to their own site of consumption. As set out in section III, we understand that Brazil is planning a series of reforms to improve access to the gas pipeline networks. It is beyond the scope of this report to comment on those reforms. We simply note that an essential companion to an effective Brazilian GRP is to ensure non-discriminatory access to pipelines networks on cost reflective terms.

⁶⁷ For example, it would be reasonable to compensate Petrobras for the difference in transportation costs between the delivery points of the import contracts – which would be the basis for measuring Petrobras’s costs – and the cost of transporting gas to the delivery point or points under the GRP.

76. In section V.A.2, we recommended setting gas-release volumes to achieve a particular HHI target, either one for a national market or separate targets if the analysis indicates regional markets. If markets are regional, then the GRP should identify a separate delivery point for releasing gas into each regional market, for example at the main physical gas delivery point to the region. Petrobras would pay for transmission costs up to the delivery point and buyers would pay for transmission costs from the delivery point. Each market would also have separate auctions. In essence, there would end being a series of regional GRPs, each designed to achieve the HHI target in its market. A set regional delivery point for each GRP would prevent participants from having to find transportation capacity far away from their own markets. Moreover, regional GRPs offer an opportunity for learning. We would recommend running separate GRPs in an organized sequence, perhaps with a few months separating each one, so that lessons from earlier GRPs can inform subsequent ones.

2. Flexibility

77. We understand that flexibility is important to industrial gas customers in Brazil. Given the lack of gas storage facilities or trading platforms in Brazil, particularly at a regional level, it would not be desirable for a GRP to deliver ‘base load’ gas, with the same volume of gas delivered each day. Hence, a Brazilian GRP should allow buyers to vary their offtake.
78. We explore two options. First, the GRP could allow bidders to use the gas storage at LNG regasification terminals. That does not mean that the auction itself has to involve LNG arriving in vessels. The auction could be for pipeline gas, but accompanied by some rights to vary offtake based on the LNG stored at regasification terminals. For example, a bidder for pipeline gas at an auction could have the right to “inject” LNG virtually into storage. An injection would imply a slowdown of the rate of delivery of pipeline gas, which in practice would allow an LNG terminal to reduce either its withdrawals from LNG storage or its regasification of volumes from an arriving vessel. Similarly, a bidder in a GRP could automatically receive a credit for some of the LNG volumes already in tank. In effect, the GRP would allow bidders to swap pipeline gas for LNG.
79. However, we do not recommend the option to use LNG storage. First, the swaps needed to make the arrangement work can impose logistical challenges, and could end up relying too much on co-ordination with Petrobras. Second, participants would then have to contract for regasification and transportation capacity from the LNG terminal to their regional market or customers. This could be difficult and expensive.
80. We now turn to the second, preferred option for providing flexibility. The GRP could simply allow participants to nominate varying volumes of gas each day. For example, if a participant bought a volume of gas V in the GRP for delivery over the course of a year, then the Daily Contract Quantity (“DCQ”) would be $V/365$. Participants could have the right to nominate up

to 110% of the DCQ or down to 50% of the DCQ on a given day. This level of flexibility is typical in European pipeline contracts, and has also been offered in other GRPs. To determine the appropriate amount of flexibility would require an assessment of the network's ability to accommodate variations in the production and importation of pipeline gas and LNG.

81. We understand that Petrobras has access to flexibility in the form of the LNG import terminals, and that the gas import contract from Bolivia also offers flexibility. However, Petrobras could reasonably argue that much of its gas is associated with oil production that lacks any flexibility. Hence, to arrive at a reasonable specification for flexibility in the GRP, the authorities would need to understand:
 - a. The flexibility that Petrobras can provide from LNG and the Bolivian contract; and
 - b. The volumes involved in the GRP;
82. Later in the GRP program, when the volumes offered are lower, the GRP could reasonably offer greater flexibility per unit of gas purchased.
83. Note that we do not recommend a separate charge for flexibility. If flexibility has value, then the auction process will reveal it. If the GRP offers a material level of flexibility, then it would not be surprising to see price in the auction exceed the level of baseload gas supplies.
84. Apart from the daily flexibility, there is also the issue of annual volume flexibility. If participants have the ability to vary gas offtake day-by-day, it would also make sense for them to have some flexibility in the annual volume of gas that they take. Otherwise, the daily flexibility would be of limited practical use. For example, if the buyer had frequently bought less than the DCQ in the first part of the year, the buyer might find it impossible to buy the entire volume of gas over the remainder of the year.
85. Given this, it would be reasonable to expect the participant to offtake between 80% and 100% of the gas bought in the auction. Barring force majeure or similar events, the participant would still pay for gas volumes below the 80% level even if it did not manage to take the volumes.

E. Customer Release and Capacity Release

86. Further recommendations relate to the idea of "customer release" and capacity release. Brazilian authorities appear to be well aware of capacity release. The CPC has specifically mentioned capacity release, which will require Petrobras to waive enforcement rights in some existing contracts. The CPC refers to a goal of releasing half of the total contracted volume or idle capacity.

87. However, we are concerned that the CPC cites the size of the capacity release as a possible constraint on the volume of gas released. The CPC warns of “inefficiencies” that could otherwise occur.⁶⁸ The CPC is not clear as to the nature of inefficiencies, except to say that they could involve the emergence of intermediaries. However, we see no need to assess or debate inefficiencies. We support the general idea of co-ordinating the amount of capacity release and gas release. Our key concern is with the notion that a pre-determined volume of capacity release could cap the volume of gas released. In our view, the best approach is to set the gas release target first, pursuant to the recommendations set above, and then tailor the volume of capacity release to support the gas release program.
88. The capacity release target may have to expand to accommodate a reasonable gas release program. Ideally, the total volume of capacity release should accommodate: a) the buyers in the gas release program, and b) independent producers, who develop offshore fields or arrange for independent imports of LNG.
89. Releasing gas will have no impact on existing customers who find themselves bound by long-term gas contracts with an incumbent supplier. German experience indicates that competition took a major step forward when the competition authority released customers from the constraints of existing contracts, by declaring that it was inherently anti-competitive for a natural gas supply contract to lock in a customer to its existing supplier for more than two years.⁶⁹ That decision gave existing customers immediate freedom to procure significant portions of their natural gas needs from alternative sources.
90. We previously discussed the proposal by Petrobras to extend the contracts with distributors by another five years, in exchange for discounts.⁷⁰ Apparently, the extensions have a clause that would release certain volumes, if the distributors lose large, eligible customers to competing suppliers. That is a form of customer release. However, we would support a more ambitious type of customer release. As indicated above, the release clause in the Petrobras

⁶⁸ Novo Mercado de Gás, “Nota Técnica, Propostas para o Mercado Brasileiro de Gás Natural”, Comitê de Promoção da Concorrência no Mercado de Gás Natural do Brasil, dated 10 June 2019, p. 16: “*Note-se que até se alcançar a meta de metade do volume contratado, o cálculo do volume a ser descontratado deve ser proporcional à oferta (produção e importação) disponível dos concorrentes da Petrobras no upstream. Essa proporcionalidade deve ser observada para que o gas release não implique aumento de ineficiências, por exemplo, com a introdução de agentes de intermediação que podem elevar os custos de transação na indústria.*” “Note that until the target of half of the contracted volume is reached, the calculation of the volume to be outsourced must be proportional to the supply (production and import) available from Petrobras’ competitors in the upstream. This proportionality must be observed so that the gas release does not imply an increase in inefficiencies, for example, with the introduction of intermediation agents that can increase transaction costs in the industry” (our translation).

⁶⁹ See Appendix A.B.b).

⁷⁰ See ¶134.c above, citing Argus Media, “Petrobras expands influence over distributors”, last accessed on 23 September 2022, dated 16 May 2022. Apparently, the recipients of the offers account for 42% of total distribution.

contracts would not apply to a distributor's sales to smaller customers who are *not* eligible to choose supplier. For substantial volumes, the distributors therefore will not be able to purchase from other companies than Petrobras. The 5-year extension ends up linking the distributor to Petrobras for a longer duration. We support the German approach of imposing an absolute limit on the duration of contracts. Each market is different, so we cannot say whether 2 years is appropriate for Brazil, but we can say that the 2-year limit has worked in Germany.

91. Moreover, we see advantages to releasing distributors from long-term obligations to Petrobras. Experience in Europe has shown that some distributors take advantage of effective market liberalisation to expand their businesses, and they end up becoming competitors to the large incumbents. Continuing with the experience of Germany, several large distributors known as "stadtwerke" now sell gas to large industrial customers nationwide. Distributors have some inherent advantages for becoming sellers even to large industrial customers: they have pre-existing IT systems, marketing staff and contract management departments.
92. Finally, releasing a distributor from its pre-existing contracts can also help other eligible customers like industrial companies and power stations. If new entrants know that their full potential market includes the volumes currently purchased by distributors, they will be more likely to enter the market, and at a larger scale. The other eligible customers can only benefit.

F. Sale of Gas to Large Consumers

93. We understand that there are significant issues in Brazil regarding consumers access to the wholesale market. States have the legal competence to legislate and define which type of consumers are eligible to acquire gas directly from traders and suppliers. However, regulations in some states make it difficult for large consumers to change from being supplied by the LDC to being able to choose their own supplier. Capacity distribution contracts impose many of the barriers to switching to the free market. This is because the contracts contain penalties and inflexible terms for free market customers that are not applied to consumers that take gas from LDCs.
94. The barriers to accessing the free market could inhibit participation of large industrial customers in a Brazilian GRP. If GRP participation was mainly limited to LDCs, which are relatively few in number, then it would be difficult to achieve the HHI target discussed above.
95. Accordingly, for a successful GRP it is important that a comprehensive regulatory framework allows large consumers to access the free market and gas bought under a GRP. The GRP is a component of such comprehensive framework. But a GRP is not likely to achieve a

competitive gas market in Brazil if consumers are not allowed to freely choose their supplier and do not have access to gas infrastructures on a non-discriminatory basis and at cost-reflective tariffs.

96. Moreover, to avoid that all gas sold under the GRP is purchased by LDCs, we recommend that a given volume of gas released is reserved for non-LDC buyers, and that the lot size is such as to allow large gas consumers to participate in the auctions (see below on lot size).

G. Administrative Requirements

97. Finally, international experience confirms that details of the GRP process are important. In other countries, incumbents have sometimes exploited details of the GRP process to try and limit the quantity of gas sold. We discuss some of the issues below.

1. Administrative authority

98. It would be desirable to have responsibility for oversight of the GRP allocated clearly to a single body (the GRP Authority). The energy regulatory is the most obvious candidate for this role. While Petrobras could administer the practical details of the GRP, this should be done under the close supervision of the GRP Authority.

2. Frequency and Length of Contracts

99. Typically, gas release auctions would take place every year, and the product sold would be a one-year gas supply contract. However, if it could be useful to parties to have longer contracts, then there is no reason why Petrobras could not sell a mix of one-year, two-year or longer dated contracts. Gas buyers, in turn, should be allowed to trade gas on a secondary market under shorter term contracts in order to create liquidity. In contrast, trying to achieve this kind of liquidity by selling released gas under a series of very short-term products would likely impose an excessive administrative burden on the GRP.
100. An important question arising from trading released gas on a secondary market is the role of Petrobras. On the one hand, there could be a concern that Petrobras could buy back volumes of released gas for resale to consumers. This could undermine the objectives of the GRP.
101. On the other hand, in other markets incumbents have played an important role in developing liquidity in the secondary market. Petrobras could play an important role as a

‘market maker’ to increase market liquidity allowing larger volume of gas to be traded.⁷¹ On balance, our inclination would be to allow Petrobras to trade in the secondary market, but to monitor the market to detect whether anticompetitive and manipulative behaviours emerge. The mechanism and indicators to monitor the market will depend on market structure, institutions and existing legislation, following a detailed analysis of the rules governing the market, of what abusive or manipulative behaviour might emerge and of the most appropriate procedures to detect them.

102. One additional important consideration on the length of the contracts is that, as described above, we expect the volume of gas released to decline over time, as the volume of non-Petrobras gas production increases. Hence, the program should avoid selling a volume of longer-term contracts that would result in an ‘excess’ of gas release in future years. It should be relatively straightforward to avoid this issue if the gas contract durations and volumes are defined in the context of the forecasting and modelling program designed above.

3. Lot size

103. Typically, a volume of gas release will be sold in ‘lots’ of a given volume. If the lot size is too large, it could be difficult for individual industrial customers to participate in the auction. The buyers would need to buy more gas than they need, and risk being left with unsold gas. To determine the appropriate lot size, we recommend that the relevant authorities carry out a survey of potential GRP participants. Among other things, the survey would ask for the optimal volume of gas that the buyers would like. Lot sizes could be determined on the basis of the survey.

4. Credit Requirements and Payment Terms

104. Another concern is that Petrobras could try and reduce the number of participants in a Brazilian GRP, by asking for unreasonably high credit standards for buyers. Petrobras could also try and impose requirements such as a large amount of up-front payment for gas volumes bought, or that buyers have to post letters of credit or other guarantees. Petrobras could attempt to justify these conditions when selling directly to industrial customers, by claiming that the industrial buyers are riskier than the LDCs to whom Petrobras usually sells. For example, onerous credit requirements contributed to the failure of the first round of the German GRP. The credit requirements were reduced for the second round, where most of the volumes were sold (see paragraph B of Appendix A for more details). In Spain, potential

⁷¹ A ‘market maker’ is obliged to always be in the market to buy and sell gas. The regulator could impose a maximum difference or spread between the price that the market maker offers to buy and the price at which they offer to sell. In the UK, the incumbent British Gas played a market maker role in the nascent UK gas market, and was credited with helping build liquidity.

GRP participants also complained that the qualifying requirements for the GRP were too onerous for new entrants.

105. We recommend that the credit requirements for buyers in the GRP should not be more onerous than the credit requirements they have for buying gas from the LDC.
106. If credit terms become an issue for Petrobras, the GRP authority could offer to guarantee buyers' obligations under the GRP. That is, if a buyer failed to make payments for gas volumes it had bought under the GRP, the gas volumes would not longer be delivered to the buyer, and the GRP authority would:
 - a. Take over payment obligations to Petrobras; and
 - b. Take responsible for trying to sell the remaining gas volumes. Petrobras should commit to assist in selling these volumes on a 'best efforts' basis.
107. The GRP authority could fund any 'bad debt' associated with the GRP through the same mechanisms used to recover any difference between Petrobras's cost of gas and the GRP auction price. The presence of a guarantee would not give industrial buyers an incentive to default, as Petrobras could still pursue them for amounts owed for gas volumes delivered, and Petrobras could stop deliveries.
108. We have not seen such a 'guarantee program' in other jurisdictions, but it could be an innovative feature that Brazil could apply to maximise GRP participation.
109. Payment terms should follow typical practices in the Brazilian market – for example monthly invoices for gas delivered in the previous month, settled within 30 days.

5. Information and transparency

110. The GRP Authority would also be responsible for ensuring that participants are well informed as to the GRP process and participation requirements. For example, the GRP could:
 - a. Conduct the survey mentioned above to determine lot sizes;
 - b. Draw up documents that explain the GRP process, timing and participation requirements;
 - c. Supervise the creation of a website to disseminate information on the GRP and to allow participants to register;
 - d. Organise virtual and physical meetings to address questions that potential participants may have; and
 - e. Act as a 'helpdesk' to resolve any ad hoc questions or issues that arise between potential participants, Petrobras and any other interested parties.

111. These steps would be important to maximising participation and ensuring the success of the GRP.

Appendix A: International experience

A. Italy

112. Starting from 2004 and until 2010, Italy implemented three gas releases. The first gas release was implemented in 2004 as a remedy to the failure of imposing a cap on market shares of the incumbent and spur the development of competition at the beginning of the liberalisation process. The cap on market shares had failed to develop competition on the market because the incumbent circumvented the obligation by implementing the so-called “innovative sales”, namely the sale of gas to competitors – selected by the incumbent itself – just outside the Italian border. Furthermore, the incumbent limited access to the international import pipelines to Italy under its control claiming that its capacity on such pipelines, which amounted to almost all available capacity, was needed to comply with obligations arising from its long-term take-or-pay contracts. The Italian competition authority started an investigation on the incumbent’s behaviour and mandated Eni to release a quantity of gas from its take-or-pay contracts and to make available the transmission capacity on the Italian transmission system that was needed to deliver gas to the market.⁷²
113. The second gas release was implemented in 2007, agreed upon the closing of an investigation by the competition authority for alleged abuse of dominant position concerning the use of the gas infrastructure. The third gas release was carried out in 2009 to lower gas prices of industrial and thermoelectric consumers during a severe economic downturn. Low gas demand, however, caused little interest in the program and only slightly over 20% of the planned volume was actually released.
114. Lessons from Italian gas releases are useful to Brazil as Brazil is in the early stages of market liberalisation and needs to decide what are the best options to open the gas market to competition. A cap on the incumbent’s market share seems to be a simple mechanism to develop competition in the early stages of market opening. Nonetheless, the Italian example shows that such measure only delayed the opening of the market to competition. Furthermore, the example highlights the importance of implementing gas release programs over a period of time that allows to take into account expected developments of the market.

⁷² Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004.

a) The Cap on Market Shares and the Incumbent's "Innovative Sales"

115. In 2000, when the Italian Government issued the Gas Law that initiated the liberalisation of the gas market,⁷³ Eni, the former Italian vertically integrated monopolist, controlled around 95% of imported gas and almost 90% of national production as well as all import pipelines, the gas transmission network, the LNG regasification capacity and most storage capacity.⁷⁴
116. In order to increase competition on the market, the Gas Law included the following provisions:
- a. The unbundling of gas infrastructures from sale and other commercial services to ensure no discrimination between potential users of such infrastructures.⁷⁵
 - b. A regulated third party access to transmission and distribution networks and to regasification and storage facilities in order to ensure that access is granted to all users on equal terms and conditions and is not refused if capacity is available.⁷⁶ Importantly, access to the gas system can be denied if access of new operators negatively affects the obligations arising from take or pay contracts that were signed before the enactment of the Gas Directive. Leveraging on such provision, Eni created a barrier to limit imports from independent operators and was sanctioned by the competition authority for alleged abuse of dominant position.⁷⁷
 - c. Market share caps (expressed as a percentage of consumption) on the volume of gas that a single company could supply to the Italian market (75% of national consumption to be decreased by 2% per year until a share of 61% is achieved) and to final users (50% of annual consumption).⁷⁸

⁷³ Decreto Legislativo 23 maggio 2000 , n. 164, "Attuazione della direttiva n. 98/30/CE recante norme comuni per il mercato interno del gas naturale, a norma dell'articolo 41 della legge 17 maggio 1999, n. 144".

⁷⁴ See Banca d'Italia, "Relazione del Governatore sull'esercizio 2000", dated 31 May 2001, p. 116.

⁷⁵ Companies operating regulated gas infrastructures (LNG regasification, storage, transmission, distribution) were not allowed to operate in market activities (production, import, wholesale and retail).

⁷⁶ The regulated third party access regime implemented by the Gas Law requires that all operators meeting specified technical and economic requirements are granted the right to participate in the process to allocate access capacity and that access is granted if capacity is available. Access can be denied if capacity is not available or if access request does not allow the network or the facility to meet its public service obligation.

⁷⁷ Autorità per l'energia elettrica e il gas ("ARERA"), "Relazione annuale sullo stato dei servizi svolti e sull'attività svolta", Section 2., dated 23 June 2005, p. 221.

⁷⁸ Market share caps were explicitly included in the so-called Letta Decree (the Gas Law) that started the liberalisation process of the gas market in 2000. See Art.19 of Decreto Legislativo 23 maggio 2000 , n. 164, "Attuazione della direttiva n. 98/30/CE recante norme comuni per il mercato interno del gas naturale, a norma dell'articolo 41 della legge 17 maggio 1999, n. 144", p. 10, Art. 19, paragraph 2. and 3. which states: "Starting from January 2002 and up to 31 December 2010 no gas company can inject gas (imported or

117. In 2003, the Energy Regulator and the Competition Authority launched an inquiry into the liberalisation of the electricity and gas markets. Conclusions of the inquiry showed that:⁷⁹
- a. The incumbent sold Norwegian gas from its take-or-pay contract to competitors – selected by Eni itself – at the border between France and Germany (the so-called “innovative sales”) and a commitment to sell gas imported from Libya.⁸⁰ Although such sales resulted in more importers to operate on the market, the gas available to alternative suppliers was ultimately sold by Eni itself to selected suppliers. Hence, as a matter of fact, new suppliers were Eni’s customers paying gas at a price that included a mark-up imposed by the incumbent (hence at a higher price than the price paid by the incumbent).
 - b. Almost all capacity of import infrastructures was available to Eni to meet obligations arising from take-or-pay contracts signed before the entry into force of the first European Gas Directive. Capacity available to other operators was marginal.
 - c. Eni controlled the import infrastructures, either directly or through subsidiaries. As such, it had the power to increase capacity to accommodate requests from other operators.⁸¹

b) The First Gas Release Program

118. Following a claim by an importer in 2002, the Italian Competition Authority concluded that the incumbent abused its dominant position as: (i) The quantity of gas sold to alternative suppliers through the “innovative sales” covered the entire market share that was reserved to alternative suppliers. (ii) The incumbent was able to limit access of independent operators to import infrastructures.⁸²

produced in Italy) into the national grid, for sale into Italy, directly or through subsidiaries, parent companies or companies controlled by the same parent company, for quantities over 75% of national natural gas consumption on an annual basis” (our translation).

⁷⁹ Autorità garante della concorrenza e del mercato (“AGCM”) e Autorità per l’energia elettrica e il gas (“ARERA”), “Indagine conoscitiva sullo stato della liberalizzazione del settore del gas naturale”, IC22, dated May 2005.

⁸⁰ See Autorità garante della concorrenza e del mercato (“AGCM”) e Autorità per l’energia elettrica e il gas (“ARERA”), “Indagine conoscitiva sullo stato della liberalizzazione del settore del gas naturale”, IC22, dated May 2005, p. 164: “there is also a contract signed with Eni in 2001 for about 1.5 billion of cubic metres/year of Norwegian gas that represents one of the four ‘innovative sales’. There is also a purchase contract from Eni as an advance on imports of gas from Libya, which in 2003 resulted in supplies of just under 2 billion of cubic metres per year at the Mazara del Vallo entry point” (our translation).

⁸¹ Autorità per l’energia elettrica e il gas (“ARERA”), “Relazione annuale sullo stato dei servizi svolti e sull’attività svolta”, Section 2,, dated 23 June 2005, p. 200.

⁸² Autorità per l’energia elettrica e il gas (“ARERA”), “Relazione annuale sullo stato dei servizi svolti e sull’attività svolta”, Section 2, dated 2004, pp. 185-6: “ Although the number of new entrants in the sector has progressively grown since 2000, their presence can only be partly explained with the signing of independent procurement contracts. With the mechanism of ‘innovative sales’, Eni contributed to creating

119. To remove such barriers, the Competition Authority mandated the incumbent to release gas to competitors for sale on the Italian market:⁸³
- a. The volume of gas to be released amounted to 2.3 bcm per year, for a period of 4 years,⁸⁴ for a total amount of 9.2 bcm. The yearly quantity of gas released represents around 3% of total gas demand in 2003.⁸⁵ The total size of the programme represents the extent to which Eni was estimated to cumulatively exceed the ceiling set in the Legislative Decree 164/2000, considering “innovative sales” as gas injected for consumption directly by Eni.⁸⁶
 - b. The gas had to be released at entry of the Italian gas system. Eni had to transport the gas until the entry point. The supplier to whom the gas was allocated was to import the gas in Italy. Eni had to commit to make available to the importer an amount of entry capacity equal to the entry capacity needed to manage the contractual average daily quantity for each contractual year. The supplier had to request to the gas TSO the capacity needed to manage the difference between maximum and average daily quantity.
 - c. The price of released gas was set by Eni based on the formula that covered the cost of the commodity, transport costs up to Tarvisio and costs of strategic storage incurred by the incumbent as an importer of gas from non-European countries.⁸⁷ Costs related to the entry at Tarvisio were borne by the buyer.
 - d. Conditions to select operators that were eligible for the gas release were suggested by the Competition Authority.
120. The Competition Authority claimed that meeting the above conditions would have been equivalent to an increase in capacity in international pipelines offered by the incumbent in order to terminate the effects of the abuse of dominant position.⁸⁸

barriers to entry into gas supply, since the sale of part of its contracts took place at the same time as that of the valuable right of access to the international gas pipeline network, which is now congested [...] On this issue, the Competition and Market Authority ascertained in November 2002, a violation of competition mechanisms by Eni, which was called upon to take appropriate action" (our translation).

⁸³ See Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004.

⁸⁴ The contractual year was the gas year (1 October-30 September).

⁸⁵ Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004, paragraph 14.

⁸⁶ Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004, p. 3.

⁸⁷ At that time, the QE component was the unit charge set by the energy regulator to remunerate the costs to procure gas to be sold to consumers in the protected market.

⁸⁸ See Autorità Garante della Concorrenza e del Mercato ("AGCM"), "Provvedimento n. 13299 A329B - BLUGAS-SNAM", dated 24 June 2004, paragraph 17: "In light of the above considerations, the Authority therefore considers that the commitment [...] to release, on a pro rata basis, 9,2 billion cubic metres of gas

c) Additional Gas Release Programs

121. In 2007, the competition authority closed a 4-month investigation into Eni's alleged abuse of dominant position in using the LNG regasification terminal of Panigaglia, at that time the only regasification terminal in Italy, in exchange for Eni's commitment to release of 4 bcm/year of gas at a price below the market price.⁸⁹
122. In 2009, in an attempt to enhance competition further in order to lower gas prices to consumers, Eni was mandated to auction 5 bcm of gas at the virtual trading point for the thermal year 2009-2010 at a regulated price set by the Ministry.⁹⁰ The price paid to Eni was calculated taking into account average prices on the most relevant European markets and supply costs incurred by Eni.⁹¹ Despite such price being below the market price, only 1.1 bcm out of 5 were allocated.⁹²
123. Although imposing a cap on the market share of the incumbent apparently offers a simple way to develop competition, Italian experience shows that competition started to develop after the implementation of gas releases.
124. Back in early 2000, at the beginning of the liberalisation process, the first gas release was implemented to address the failure to develop competition by imposing caps on market shares without ensuring that alternative suppliers could access gas sources that are independent from the incumbent and are able to deliver gas to the market. The subsequent gas releases were implemented as a remedy to alleged abuse of market power and to speed up the liberalisation of the market.
125. Looking back at the whole liberalisation process, three gas releases occurred over a period of about six years and the last one released only a share of the intended volume as the market showed little interest in additional gas volumes as the economic downturn and increased renewable electricity generation reduced gas demand from the industrial and thermal sectors. Such evidence suggests that for a gas release program to be successful, the design

for four years [...] at the price indicated in §8 above, using the participant selection method identified in §16 above, is an equivalent measure, if actually implemented, to the measure consisting in the upgrading of international pipelines initially proposed [...] in order to end the effects of the contested abuse [...]" (our translation).

⁸⁹ Oxford Institute for Energy Studies ("OIES"), "The Italian Gas Market: Challenges and Opportunities", dated June 2013, p. 54.

⁹⁰ Decreto Legge 1 luglio 2009, n. 78, Provvedimenti anticrisi, nonché proroga di termini, Decreto-Legge convertito con modificazioni dalla L. 3 agosto 2009, n. 102, art. 3. The decree imposed a cap on the market share of wholesalers supplying the Italian gas market and mandated each operator with a market share above 40% in the thermal year 2007/2008 (i.e. Eni) to auction 5 bcm at the virtual trading point for the thermal year 2009-2010 at a regulated price set by the Ministry as proposed by the regulator.

⁹¹ Eni, "Annual Report", dated 2009, p. 43.

⁹² Eni, "Annual Report", dated 2009, p. 39.

has to ensure that the gas release is carried out over a proper period and that the expected development of gas demand and supply are properly considered.

B. Germany

126. Two events occurred in the German gas market that are potentially relevant to a GRP in Brazil. First, following a merger between two of the large gas suppliers in the German market, a GRP was implemented as a 'remedy'. Second, the German competition authority issued a decision that tying up demand with long-term contracts was not permissible, and customers should be allowed to contract for shorter terms with multiple suppliers. The latter was a 'customer release', and not a gas release, program. But it is important because it had the effect of releasing gas demand, rather than gas supply, and increased competition in the German market. We discuss both events below.

a) Gas Release Resulting from the E.ON-Ruhrgas Merger

127. In September 2002, the German Ministry of Economics and Technology approved the merger of E.ON, the national incumbent in gas production, and Ruhrgas, a German gas importer and distributor.⁹³ At the time, E.ON and Ruhrgas were two of the largest German energy companies, and Ruhrgas's share of gas supply was about 60%.⁹⁴ In an attempt to address the competition concerns that the merger raised, the Ministry imposed certain conditions and obligations on E.ON and Ruhrgas.⁹⁵ These included the first gas release program in the German market.⁹⁶
128. Specifically, E.ON was ultimately required to auction 200 TWh, that equals to 19 bcm of gas distributed in six yearly tranches between 2003 and 2008, so about 3.2 bcm/year on

⁹³ Note that the German Federal Cartel Office ("FCO") tried to block the merger. However the Minister of Economics claimed that the restrictions on competition that were identified by the FCO were to be put in perspective after the new developments that occurred after the decision of the FCO.

⁹⁴ See Supplementary special report of the Monopolies Commission, "Merger project of E.ON AG with Gelsenberg AG and of E.ON AG with Bergemann GmbH", dated September 2002, p. 10.

⁹⁵ See E.ON's form 20-F filed with the Securities and Exchange Commission, dated 10 March 2005, pp. 14-18. See also State Superior Court of Düsseldorf, "Beschluss vom 11.07.2002 - VI-Kart 25/02 (V)", dated July 2002, par. 260.

⁹⁶ The gas release was not the only condition of the merger E.ON had to unbundle its transmission system from its other operations. This led to the establishment of the new entity E.ON Ruhrgas Transport AG & Co. KG. E.ON/Ruhrgas had to undertake several shareholding divestments, which were mainly aimed at reducing the degree of vertical integration of E.ON/Ruhrgas in Germany and foster competition downstream in the distribution sector. Some of these divestments were made towards municipal utilities.

average.⁹⁷ For context, the average annual German gas demand over the period of the auctions was about 90 bcm, meaning that the GRP represented about 3.6% of German gas demand.⁹⁸

129. The minimum, or base price set for the auction was 95% of the average cross-border price, and participants would bid a premium over the base price.⁹⁹ The volumes were to be offered as base load volumes with an 80 percent take-or-pay obligation, divided into up to 39 'lots' or packages of gas in each auction. Hence, the average lot size was about 850 GWh. The delivery points were at two points on the German border: Emden–Bunde, on the border with the Netherlands, and Waidhaus on the border with the Czech Republic.
130. E.ON released a Summary Information Memorandum in February of each year, and also organised a physical bidders' conference. The auctions took place in May, with delivery starting in the following October. Around 60 companies registered for the auction, received the complete information memorandum and took part in the bidders' conference. Nonetheless, the number of actual bidders ranged from two in the first auction to 13 in the fifth auction, with seven bidders participating in all other auctions.
131. At the first auction, less than 50% of the volume was sold.¹⁰⁰ This illustrates the problem with having a reserve price that is linked to historical average contract prices, rather than to the market price at the time of the auction. In an attempt to resolve this issue, for the next auction buyers were able to choose between a price linked to Rotterdam traded gas oil and fuel oil products and the cross-border price used in the first auction. The minimum daily quantity was reduced from 60% to 50% of the average daily quantity and the auction guarantee was reduced to €0.5 million Euros for each lot.
132. Presumably as a result of these changes, the second auction resulted in the sale of most of the gas offered, though the base price was not exceeded. The auction bid price was exceeded in the remaining four auctions, and largely reflected market prices available at the nearest liquid trading hub at the time in Belgium or the Netherlands.

⁹⁷ State Superior Court of Düsseldorf, "Beschluss vom 11.07.2002 - VI-Kart 25/02 (V)", dated July 2002, par. 260 reports the requirement to auction 200 TWh. According to the IEA a bcm is equal to 38.2 petajoules (1.06×10^{10} kWh) at 15°C atmospheric pressure.

⁹⁸ International Energy Agency and OECD, "Energy Policies of IEA Countries-Germany", 2007, p. 93 reports that domestic natural gas consumption totaled 90 bcm in 2003. The yearly auctions of 3.2 bcm represent thus $3.6\% = 3.2/90$ of German gas demand.

⁹⁹ The statistical average border price published by the Bundesamt für Wirtschaft und Ausfuhrkontrolle ("BAFA"). Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, footnote 26, p. 136.

¹⁰⁰ Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, p. 124.

133. Apart from the problems of setting a base price that is excessive, the German GRP illustrates two points relevant for Brazil. First, the importance of gas transport capacity, so that successful bidders could transport gas away from the delivery point to a customer. In the first three auctions, E.ON Ruhrgas only offered firm transportation capacity where the buyer was a former customer of E.ON Ruhrgas. Buyers risked being left with 'stranded' gas, since the gas transport capacity away from the sale point was limited. This meant that the buyers had to sell the gas in a relatively limited geographic area. Other customers sometimes had to do with interruptible capacity, and were actually interrupted. One of these customers complained to the German energy regulator, with the result that ultimately E.ON Ruhrgas had to offer firm exit capacity to all successful bidders at all possible exit points.
134. The second issue is flexibility. As noted above, the gas auctioned was somewhat flexible, as buyers could reduce their daily take to 50% of the average daily quantity. During the last auctions in 2007 and 2008, this flexibility had become more valuable to the German distribution companies. The result was that the price of gas in the auctions exceeded the equivalent baseload prices. This highlights that flexible gas can sell at a significant premium, depending on market conditions.
135. In terms of the overall success of the German GRP in stimulating competition in the German gas market, one authoritative paper concludes that the results were limited. This was because the volumes were too small to make much of a difference. While some limited trading developed in southern Germany as a result of the GRP, much of the gas was exported and sold in the more liquid markets of Belgium, the Netherlands and the UK. The paper concludes that what really stimulated competition in the German gas market – apart from the 'customer release' programs discussed in the next section – was the creation of gas trading hubs by moving to an 'entry-exit' system of gas capacity, and the role of the incumbents in supporting trading in these nascent markets. The paper concludes that:

*"the final lesson of this episode is that proper framework conditions [for gas transport capacity] and the market behaviour of the major players is much more important for the development of the market than gas release programmes. The assumption of the ministry of economics that a gas release programme of 200 TWh would have "a noticeable impact on competition" ...was false."*¹⁰¹

136. In sum, some of the key lessons for Brazil from the German GRP are that:

¹⁰¹ Lohmann, Heiko, "The German Gas Market post 2005: Development of Real Competition", Oxford Institute for Energy Studies, dated 1 September 2009, p. 100.

- a. A GRP may not stimulate competition in a market denominated by a few incumbents, unless the GRP is accompanied by other measures such as reforms to accessing the gas transport network;
- b. If the minimum sales prices is linked to the price incumbents pay for gas, rather than the market prices, then significant gas volumes may remain unsold and the GRP will likely not achieve its objectives. Imposing no minimum sales prices will likely increase the gas volumes sold in the GRP;
- c. GRP volumes need to be significant as a share of the market if they are to make a lasting improvement to competition;
- d. It is critical that participants are able to obtain gas transport capacity away from the GRP delivery point, so that they can sell the volumes bought in the GRP;
- e. GRP products can include flexibility, which can be valuable.

b) Prohibition on long-term Contracts and Customer Release

137. In the late 1990s and early 2000s, the German gas market consisted of international gas importers that supplied gas to regional gas companies – equivalent to state-level gas supply companies in Brazil. The regional gas companies in turn supplied gas to hundreds of small gas distribution companies – so called *Stadtwerke* – that supplied gas to towns and cities. Typically, companies in this gas supply chain had signed long-term gas supply contracts – so with durations of 20 or more years – that covered all of the demand of the downstream company.
138. The companies had signed the supply contracts prior to liberalisation of the German gas market. But even by the late 1990s – so before liberalisation of the German gas market had got underway – market participants and legal experts recognised that the long-term contracts were problematic for competition. Specifically, they prevented customers switching supplier, in effect ‘foreclosing’ demand. The long-term contracts meant that it would be very difficult for competition to develop in the German gas market. Even if a new entrant could find a source of gas to sell in the German market, it would be very difficult to find anyone to sell to, because incumbent gas suppliers had contracted most of the demand.
139. Specifically, in 2004 the German competition authority – the *Bundeskartellamt* – found that more than 75 percent of a sample of 750 contracts were anti-competitive and “amounted to an abuse of market power because they prevented newcomers from entering the

market.”¹⁰² The competition authority also found that, given the lack of nation-wide competition, the ‘relevant market’ is the regional market as defined by the network area of each regional gas company, and that the regional supplier is always dominant because it has a market share of around 100 percent in the relevant market.

140. Importantly, the competition authority found that supply contracts are anti-competitive if they have either a duration of more than:
 - a. Two years and a volume that satisfies more than 80 percent of the total demand of the customer; or
 - b. Four years and a volume that satisfies more than 50 percent of the total demand of the customer.
141. A series of legal challenges from incumbent suppliers followed this finding, with the suppliers arguing that a ‘prohibition’ on long-term contracts would harm security of supply, and that a ban would inappropriately constrain parties’ freedom to contract of gas as they wished. Moreover, in around 2003, Ruhrgas ‘volunteered’ to release 20% of its customer’s long-term contract volumes so that the customer could buy this volume from another supply – a so-called ‘customer release program’. However, this initiative was a failure in terms of introducing competition into the German gas market, because in practice the 20% was a variable residual volume, which could be significantly smaller than 20% in a warmer winter. This made it very difficult for a competing supplier to contract network capacity to supply the remaining ‘20%’ of demand. As a result, Ruhrgas lost only 1.5% of its volumes in the gas year 2003.¹⁰³
142. Ultimately, the competition authority largely rejected these arguments, and in January 2006 formally issued a ban on the long-term sales contracts of E.ON Ruhrgas, the main German incumbent and gas importer at the time. The authority required E.ON Ruhrgas to change all of its 51 contracts with distribution companies from 1 October 2006, and not to conclude any new contracts that breached the restrictions on duration and volumes. Ultimately, the ruling applied to all gas supply companies in Germany, and was in effect the end of the pre-liberalisation exclusive long-term contract model.
143. We usually think of a gas release program as addressing issues with obtaining a supply of gas for new entrants. But the case of the German long-term contracts is interesting for Brazil because it highlights that it is equally important to be able to compete to sell gas to potential customers. In effect, the constraints on supply contract volumes and duration forced the

¹⁰² Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, p. 96.

¹⁰³ Lohmann, Heiko, "The German Path to Natural Gas Liberalisation: Is it a special case?", Oxford Institute for Energy Studies, 2006, p. 124.

German incumbents to give up customers, enabling new entrants to win supply contracts and establish a foothold in the market. The German competition authority's decision amounted to a release of gas demand – 'customer release' – rather than gas supply or gas release. The prohibition on long-term, high volume contracts was one of the key steps in the successful liberalisation of the German gas market. One authoritative paper, describing the development of gas-to-gas competition in the German gas market, notes that:

New market entrants became much more successful [in the German gas market]. Besides improved network access, one of the main reasons is the ban on long-term contracts in the wholesale sector by the Bundeskartellamt in 2006.¹⁰⁴

C. Hungary

144. In Hungary a GRP was implemented as a 'remedy' to a merger between the German E.ON Ruhrgas ("E.ON") and two subsidiaries of the Hungarian MOL, namely MOL WMT, active in wholesale, trading and marketing of gas, and MOL Storage, active in natural gas storage.¹⁰⁵ To address concerns of the European Commission on the impact on competition on gas and electricity markets of the merger, E.ON offered a package of commitments including a gas release program and the release to a third party of half of the contract between MOL WMT and the national producer MOL E&P for supply of domestic gas. The two measures were intended to release about 16 bcm of gas, up to 2 bcm per year.¹⁰⁶
145. This GRP and the accompanying contract release are relevant to Brazil as they show that lack of access to supply sources from independent suppliers would not allow the actual development of competition on the market.

a) The Proposed Gas Release Program

146. On 21 December 2005, the European Commission approved the acquisition of MOL WMT and MOL Storage by E.ON Ruhrgas ("E.ON") subject to a package of commitments that E.ON

¹⁰⁴ Lohmann, Heiko, "The German Gas Market post 2005: Development of Real Competition", Oxford Institute for Energy Studies, dated 1 September 2009, p.2.

¹⁰⁵ Bartok, Csilla, Moonen, Sophie, Lahbab, Pierre, Paolicchi, Alessandro and De La Mano, Miguel, "A combination of gas release programmes and ownership unbundling as remedy to a problematic energy merger: E.ON/MOL", Competition Policy Newsletter, Number 1, Spring 2006, p. 73.

¹⁰⁶ Polemis, Michael, "How effective are remedies in merges cases? A European and national assessment", dated 2 January 2018, p. 20.

submitted by E.ON to remove the competitive concerns that the Commission identified in the analysis of the impacts on competition of the proposed merger.¹⁰⁷

147. MOL had almost an exclusive control over the gas resources and infrastructures in Hungary and was the incumbent on gas wholesale markets while E.ON had a strong market position in gas and electricity retail as it controlled two out of six regional gas distributors and three out of six regional electricity distributors. The merger would have allowed E.ON to take over the role of MOL over available gas resources and the Commission was concerned that the merger would lead to foreclosure of suppliers in downstream gas and electricity markets.¹⁰⁸
148. E.ON undertook to implement a gas release program and a commitment to release a share of the domestic production supplied to MOL WMT by the national producer MOL E&P under a long-term contract.
149. The gas release program provided that gas was to be released through yearly business-to-business internet auctions to be held each year starting from 2006 and until 2013. At the end of 2010, parties could request to re-assess whether the program had to last until 2013.¹⁰⁹
150. Key features of the gas release program can be summarised as follows:¹¹⁰
 - a. The gas volume released in each annual auction amounted to 1 bcm, divided into several lots of different size.¹¹¹ Quantities that were not sold in a given auction were offered again in the following 3 auctions (one third of the unsold quantity for each auction). No auction for unsold quantities was expected after 2014. Operators interested in participating to the gas release placed bids to enter into 2-year supply contracts with E.On.¹¹²
 - b. The starting bidding price was set to be equal to 95% of the WACOG (Weighted Average Cost of Gas) of MOL WMT. The Hungarian Energy Office (HEO) was to verify calculation.

¹⁰⁷ MOL WMT and MOL Storage are two subsidiaries of Hungarian incumbent in oil and gas production MOL. MOL WMT is active in wholesale, retail and trading of gas, whereas MOL Storage is active in gas storage.

¹⁰⁸ E.ON had in fact strong market positions in the retail supply of gas and electricity in Hungary, where it controlled two out of six gas regional distributors and three out of six electricity regional distributors. See Bartok, Csilla, Moonen, Sophie, Lahbab, Pierre, Paolicchi, Alessandro and De La Mano, Miguel, "A combination of gas release programmes and ownership unbundling as remedy to a problematic energy merger: E.ON/MOL", Competition Policy Newsletter, Number 1, Spring 2006, p.73.

¹⁰⁹ European Commission, Case No COMP/M.2696 E.ON/MOL, dated 21 December 2005, p. 156.

¹¹⁰ European Commission, Case No COMP/M.2696 E.ON/MOL, dated 21 December 2005, pp.156-157.

¹¹¹ The annual volume to be released was divided into 5 lots of 100 million cubic meters ("cm") each, 5 lots of 50 million cm each and 10 lots of 25 million cm each.

¹¹² European Commission, Memo/05/492, Mergers: Commission's conditional approval of E.ON's acquisition of MOL's gas business - frequently asked questions, Brussels, 21st December 2005.

- c. E.ON granted the same flexibility as MOL WMT upstream gas contracts, i.e. an annual flexibility of 85% (the take-or-pay obligation) and a daily flexibility of at least 50% of the contracted quantity.
 - d. In addition, E.ON granted customers of MOL WMT and E.ON that participated in the auctions or purchased gas from wholesalers/traders participating in the auction the right to reduce their obligation to purchase gas from MOL WMT or E.ON by the amount of gas that they purchased from the gas release program. It also granted access to storage capacity at regulated terms and conditions.
151. The first auction was held in 2006 and was not successful as apparently only half the amount of offered gas was sold because the auction price was not competitive and not all consumers were free to choose their supplier.¹¹³ Results improved in the second auction, where all auctioned gas was sold.

b) The Proposed Contract Release

152. E.ON committed to assign to a third party half of the contract between MOL WMT and MOL E&P for the supply of domestic gas. The release of such gas was to become effective in 2007 and last for the whole duration of the contract (i.e. until 2016).¹¹⁴ The assignment of the supply contract was subject to HEO and the Commission's approval.
153. The share of the contract to be assigned was estimated to amount to a total of 7.6-10 bcm. The volume to be released in the first year amounted to 1.2 bcm. If E.ON were not able to find a third party to transfer the contract, the gas volume to be transferred in each year was to be added to the volumes of the gas release program of that year.

c) Conclusions on the Proposed Gas and Contract Release programs

154. The package of commitments offered at the time of the merger between E.ON and MOL and accepted by the European Commission to authorize the merger included a gas release program and the release of a share of the supply contract in order to provide the market with sufficient liquidity to create competition.
155. In a statement on the merger, the European Commission notes that:

¹¹³ Polemis, Michael, "How effective are remedies in merges cases? A European and national assessment", dated 2 January 2018, p. 24.

¹¹⁴ European Commission, Case No COMP/M.2696 E.ON/MOL, dated 21 December 2005, p. 157.

Together, the gas release programme and contract release will free up gas quantities equivalent to 15% of total Hungarian gas consumption [...]. These remedies are in particular appropriate as most of the competition concerns in this case stemmed from MOL WMT's almost exclusive control over domestic and imported gas resources in Hungary.

The combination of gas release and full ownership unbundling will ensure that E.ON's competitors have access to both infrastructure and gas supply at competitive and non-discriminatory conditions, thereby establishing the level-playing field required for the development of a fair and undistorted competition.¹¹⁵

156. Available evidence from the realisation of the program, however, shows that competition developed slowly and that in 2011 E.ON still was the dominant supplier in the gas market.¹¹⁶

D. Poland

157. In Poland, a GRP Program was implemented to liberalise the market. The GRP provided for a release of an increasing share of the volume of gas supplied by the incumbent to the market and it is relevant as it shows that if alternative suppliers are not able to contract the total amount of released gas, competition is not likely to develop.
158. In the early 2010s, Poland started the liberalisation of the natural gas market via the deployment of a gas release programme, following the experience of other European Union Member States.¹¹⁷
159. In February 2012, PGNiG, Poland's incumbent in the production and import of natural gas with a market share of around 95%, laid out a draft proposal for the implementation of a gas release programme, which foresaw:¹¹⁸

¹¹⁵ European Commission, Memo/05/492, Mergers: Commission's conditional approval of E.ON's acquisition of MOL's gas business - frequently asked questions, Brussels, 21st December 2005.

¹¹⁶ Andzsans-Balogh, Kornel, "The Road to Hungarian Energy Security", Journal of Energy Security, dated 15 March 2011.

¹¹⁷ See Polskie Górnictwo Naftowe I Gazownictwo ("PGNiG"), "Gas Release Programme, Draft for public consultation", dated February 2012, p.3.

¹¹⁸ Polskie Górnictwo Naftowe I Gazownictwo ("PGNiG"), "Gas Release Programme, Draft for public consultation", dated February 2012, p.6.

- a. The release of 9.4 bcm of natural gas per year in quarterly tranches. Gas would be offered in 5 auction, up to 1.9 bcm for each auction for delivery in 2013, 2014 and 2015. PGNiG's subsidiaries were allowed to participate in the bid.
 - b. Following the auction, the commodity exchange was to launch a secondary market where gas from the gas release program could be traded as released gas could only be traded in the organised market.
 - c. The price of released gas in the first auction to be equal to the wholesale purchase price, reflecting the costs gas imported by PGNiG, cost of domestic production, storage costs and transmission fees.¹¹⁹ In each following auction, the gas price was to be updated based on an indexation agreed upon by PGNiG and the President of the Office of Competition and Consumer Protection.¹²⁰ Small importers (i.e. importers with less than 10% of transmission capacity at entry) were exempted from such obligations.¹²¹
160. The proposal was modified via an amendment of the Energy Law in July 2013, which increased the amount of released gas to 30% of gas supplied to the market in 2013, to 40% in 2014 and to 55% in 2015. It also mandated gas trading companies to sell on the Polish gas organised market at least 55% of gas they injected into the gas transmission network from 2015 onwards.¹²²
161. The implementation of the gas release program increased the liquidity on the gas market but failed to deliver all the expected benefits as most suppliers were still supplied by PGNiG and its affiliates under long-term contracts and obligations imposed on suppliers (for example volumes of gas in storage and geographical diversification of supply) resulted in barriers for new entrants.¹²³ Such barriers resulted in PGNiG providing still 73% of the gas requested by the market in 2019.¹²⁴

¹¹⁹ The cost components identified in the consultation document included also PGNiG's wholesale margin. However, in order to develop competition PGNiG proposed to apply a discount equal to its wholesale margin. This is equivalent to say that PGNiG's wholesale margin is not included in the calculation of the gas price.

¹²⁰ See European Commission, Poland Country Report (Energy), 2014, p.165 and Polskie Górnictwo Naftowe i Gazownictwo ("PGNiG"), "Gas Release Programme, Draft for public consultation", dated February 2012, pp. 6, 15-17.

¹²¹ United States Agency for International Development ("USAID"), "Development of Ukraine's Wholesale & Retail Gas Market: Gas Release Program", Energy Security Project, dated 15 March 2021, p. 36.

¹²² Clifford Chance, "The "Little Energy Three-Pack" is coming into force", Clifford Chance Briefing Note, dated September 2013.

¹²³ United States Agency for International Development ("USAID"), "Development of Ukraine's Wholesale & Retail Gas Market: Gas Release Program", Energy Security Project, dated 15 March 2021, p. 40-41.

¹²⁴ United States Agency for International Development ("USAID"), "Development of Ukraine's Wholesale & Retail Gas Market: Gas Release Program", Energy Security Project, dated 15 March 2021, p. 39.

E. Portugal

162. In order to promote competition on the gas market, Portugal envisaged releasing a share of gas imported under take-or-pay contracts through auctions.¹²⁵ The program envisaged three auctions (2009, 2010, 2011), each auction was to release 300 million cm of gas.¹²⁶ The program was unsuccessful and the regulator cancelled two out of three auctions as the market showed no interest in purchasing gas at the proposed conditions following reductions in gas consumption. Hence, a successful gas release program has to take into account the expected growth of the market.
163. In 2008, the Entidade Reguladora Dos Serviços Energéticos ("ERSE"), approved the terms and conditions for the first auction following the proposal of the supplier of the National Natural Gas System ("SNGN"), which was carried out in 2009 for delivery over the period 1 July 2009-30 June 2010. At that time, ERSE confirmed that identical auctions would have occurred in the following two years (2010 and 2011) to allow market operators improving planning of their operations.
164. The program provided for a release of 300 million cm per year.¹²⁷ The 2009 auction allocated all gas, while ERSE had some doubts that the same volume could be allocated in the second auction in 2010 due to a significant reduction in consumption observed on the market. Hence, while running the process to set the terms and conditions for the second auction, it decided to assess interest of market operators to participate in the auction by asking operators to submit non-binding offers. Results showed that there was no interest from the market to participate in the auction and ERSE decided to cancel it.¹²⁸ The same process (submission of non-binding offers to test the market interest) was implemented for the third auction. Results from non-binding offers showed a purchase price lower than the gas price in the take-or-pay contract and ERSE decided to not carry out the auction.¹²⁹
165. In 2017, following an inquiry on supply of natural gas to industrial consumers, the Portuguese competition authority proposed to implement the release of natural gas at the LNG terminal

¹²⁵ Entidade Reguladora Dos Serviços Energéticos ("ERSE"), "Relatório Anual para a Comissão Europeia, dated July 2009, p. 63.

¹²⁶ Entidade Reguladora Dos Serviços Energéticos ("ERSE"), "Despacho n.º 3454/2011, Diário da República, 2.ª série N.º 36, dated 21 February 2012, p. 67.

¹²⁷ Entidade Reguladora Dos Serviços Energéticos ("ERSE"), "Despacho n.º 3454/2011, Diário da República, 2.ª série N.º 36, dated 21 February 2012.

¹²⁸ Entidade Reguladora Dos Serviços Energéticos ("ERSE"), "Despacho n.º 3454/2011, Diário da República, 2.ª série N.º 36, dated 21 February 2012.

¹²⁹ Entidade Reguladora Dos Serviços Energéticos ("ERSE"), "Comunicado: Decisão da ERSE sobre realização do leilão de gás natural 2011-2012", dated 1 March 2011.

of Sines in annual auctions in order to increase the number of users of the terminal and the number of operators on the wholesale market.¹³⁰ The competition authority clarified that the auction design had to be such as to ensure a price equal to the gas purchase price under the take-or-pay contract and that any positive difference between the auction price and the gas price in take-or-pay contracts had to be returned to the system by reducing the tariff for the use of the terminal.¹³¹

166. The competition authority proposed auctions as a mechanism to allocate gas despite the failure of previous auctions to release gas as it claimed that design of new auctions would be different as it would specify a delivery point (the Sines LNG terminal) and that market conditions were different from the ones prevailing in 2010 and 2011 (when gas release auctions were cancelled) as gas consumption was higher and the number of suppliers on the market had increased.¹³²

F. Spain

167. Spain implemented a gas release program over the period 2001-2003. The program was intended to release 25% of natural gas imported from Algeria under long-term contracts in order to foster competition to supply gas to large industrial customers.¹³³
168. The volume of gas to be released by the incumbent Gas Natural amounted to 1.4 bcm/year, equivalent to around 9% of total supplies to the Spanish market. The programme lasted for three years and gas was released through auctions where bidders paid an average price equal to Gas Natural's purchasing cost, the oil-indexed price of gas, plus a fixed management fee.¹³⁴

¹³⁰ Autoridade da Concorrência, "Inquérito setorial ao fornecimento de gás natural a consumidores industriais", Relatório - Versão Não Condidencial, dated October 2017, pag. 66.

¹³¹ Autoridade da Concorrência, "Inquérito setorial ao fornecimento de gás natural a consumidores industriais", Relatório - Versão Não Condidencial, dated October 2017, pag. 67: "*O desenho do leilão deve assegurar um preço base equivalente ao preço de compra do contrato take-or-pay e os eventuais lucros que se venham a registar nesses leilões (diferença entre o preço do leilão e o preço base) devem reverter para o sistema e ser refletidos na redução das tarifas de Uso do Terminal de Receção, Armazenamento e Regaseificação de Gás Natural Liquefeito*". "The auction design must ensure a base price equivalent to the purchase price of the take-or-pay contract and any profits made at these auctions (difference between the auction price and the base price) must revert to the system and be reflected in the reduction of the tariffs for Use of the Terminal for Reception, Storage and Regasification of Liquefied Natural Gas" (our translation).

¹³² Autoridade da Concorrência, "Relatório sobre o fornecimento de Gás Natural à Indústria em Portugal – Q&A", dated 2017, pag. 4.

¹³³ Ministerio de Economía, "Orden de 29 de junio de 2001 sobre aplicación del gas natural procedente del contrato de Argelia", dated 6 July 2001, Primero.

¹³⁴ See European Federation of Energy Traders ("EFET"), "Implementation of Gas Release Programmes for European Gas Market Development", dated June 2003, p. 5.

169. In order to participate to the bidding process, companies had to meet specific eligibility requirements, including belonging to groups with a market share below 50%,¹³⁵ and submitting sales forecasts and plans to secure diversified gas supplies after the end of the program such as to contribute to liberalize the Spanish gas market and stimulate competition over time.¹³⁶ Such requirements resulted in a barrier to the participation of small and non-Spanish companies to the program.¹³⁷ After verifying the eligibility criteria, fourteen licensed gas traders submitted bids, of which only nine were shortlisted and six were finally allocated the released gas.¹³⁸
170. The Spanish gas release resulted in the program having a modest impact on the development of competition as at the end of the gas release period the released gas returned to the incumbent.¹³⁹
171. In addition, the need to submit plans to prove that the potential supplier was committed to contribute to develop competition on the Spanish market prompted operators wishing to participate to the gas release to sign long-term import contracts in addition to contracts with the incumbent for the released gas, creating over-supply on the market.

G. United Kingdom

172. Between 1992 and 1995, Ofgas administered a gas release programme imposed to British Gas, as a measure to enhance competition and lower prices in the natural gas market. The aim of the program was to allow alternative suppliers to access gas supplies available to the country by releasing gas from the incumbent's long-term contracts and reduce the 60% market share of British Gas.¹⁴⁰

¹³⁵ Ministerio de Economía, "Orden de 29 de junio de 2001 sobre aplicación del gas natural procedente del contrato de Argelia", dated 6 July 2001, Quinto.

¹³⁶ Chanton, Corinne, Gasmi, Farid, Guillerminet, Marie-Laure and Oviedo, Juan-Daniel, "Gas Release and Transport Capacity Investment as Instruments to Foster Competition in Gas Markets", dated November 2010, pag. 5.

¹³⁷ United States Agency for International Development ("USAID"), "Development of Ukraine's Wholesale & Retail Gas Market: Gas Release Program", Energy Security Project, dated 15 March 2021, p. 44.

¹³⁸ European Federation of Energy Traders ("EFET"), "Implementation of Gas Release Programmes for European Gas Market Development", dated June 2003, p. 6. Companies were BP, Iberdrola, Union Fenosa, Endesa, Hidrocarburo and Shell.

¹³⁹ Chanton, Corinne, Gasmi, Farid, Guillerminet, Marie-Laure and Oviedo, Juan-Daniel, "Gas Release and Transport Capacity Investment as Instruments to Foster Competition in Gas Markets", dated November 2010, p. 5.

¹⁴⁰ Chanton, Corinne, Gasmi, Farid, Guillerminet, Marie-Laure and Oviedo, Juan-Daniel, "Gas Release and Transport Capacity Investment as Instruments to Foster Competition in Gas Markets", dated November 2010.

173. British Gas committed to release annual tranches of gas organized as follows: 500 million therms¹⁴¹ (approximately 1.4 bcm) in 1992/1993, 500 million therms (plus 100 million therms, or around 0.3 bcm, agreed in 1993) in 1993/1994, 500 million therms in 1994/1995, 250 million therms (0.7 bcm) in 1995/1996.¹⁴² Tranches of released gas were priced at WACOG plus 0.25 pence/therm, reflecting the weighted average cost of gas plus a wholesaling fee.
174. The 1993 program was oversubscribed. The 32 bidders that participated to the 1992 program were allowed a further 500 million therms and a separate tranche of 100 million therms was set aside for new entrants. 70 new entrants submitted a request to participated in the allocation of the reserved share, resulting in an allocation of about 1.43 million therms, a volume that was considered insufficient to actually develop sustainable supplies from new entrants.¹⁴³ At the end of December 1993 Ofgas and British Gas agreed that a total of 500 million therms will be offered in 1994/1995.
175. Together with the reorganisation of British Gas into British Gas (supply and storage) and Transco (national transmission system) in 1994, the gas release allowed independent supply of gas to emerge.¹⁴⁴

¹⁴¹ Therm stands for unit of heat, equivalent to 100,000 British thermal units or 1.055×10^8 joules (<https://www.lexico.com/definition/therm>).

¹⁴² See European Federation of Energy Traders ("EFET"), "Implementation of Gas Release Programmes for European Gas Market Development", dated June 2003, p. 5.

¹⁴³ Office of Gas Supply ("OFGAS"), "1993 Annual Report", dated 23 February 1994, p. 6.

¹⁴⁴ Webber, Calliope, "The Evoution of the Gas Industry in the UK", pag. 201.