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**LATIN AMERICAN AND CARIBBEAN COMPETITION FORUM - Session II: Market
Definition in the Gas Sector**

– Contribution from Mexico –

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The attached document from Mexico is circulated to the Latin American and Caribbean Competition Forum FOR DISCUSSION under Session II at its forthcoming meeting to be held on 27-28 September 2022 to be held in Rio de Janeiro, Brazil.

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Session II: Market definition in the gas sector

- Contribution from Mexico¹ -

1. Introduction

1. In Mexico, the gas sector² plays a key role in the national economy. In this regard, products derived from the gas sector are the main sources of energy; in 2020 alone, they accounted for 64% of domestic energy consumption³.

2. Mexican regulation has undergone a series of changes in energy matters that have shaped the structure of the markets. As such, the sector went from being operated primarily by a public company to one open to competition in different links of the product value chain. A summary of the main regulatory changes that have shaped the gas sector will therefore be presented (discussed in section 2).

3. On the other hand, competition legislation empowers the Federal Economic Competition Commission (hereinafter the "Commission") to use both preventive and corrective tools to monitor and ensure competition and free market participation in Mexico. As part of some of these procedures, the Federal Economic Competition Law (LFCE, for its acronym in Spanish) provides for a definition and criteria for the definition of a relevant market (discussed in section 3).

4. Based on these established criteria, the Commission has been implementing a number of techniques, both qualitative and quantitative, according to the structure and characteristics of the gas sector markets, to define the product and geographical aspects of the relevant market, which are outlined in this document (discussed in section 4).

5. This document also outlines some of the main methods developed by the Commission to demonstrate the implementation of the above techniques. It is important to point out that although most of these examples focus on the analysis of upstream gas markets, in which the relevant market is determined using an analysis of derived demand, taking into account the dynamics of the downstream market as a starting point (discussed in section 5).

6. However, it is important to note that applying the tools available to the Commission has not been an easy task and various challenges have arisen along the way, mainly related to market structure, sector regulation and the application of quantitative tests (discussed in section 6).

¹ Contribution of the COFECE.

² For the purposes of this document, the gas sector will refer to the products derived from the extraction, refining and processing of gas and oil. In Mexican legislation and in particular, article 4 of the Hydrocarbons Law defines the products that are obtained from the refining of oil or the processing of natural gas and that derive directly from Hydrocarbons to gasoline, diesel, kerosene, fuel oil, and Liquefied Petroleum Gas, among others, distinct to petrochemicals. For purposes of the analysis of this document, the gas sector will be understood as that related to products derived from the extraction, refining and processing of gas and oil.

³ Estimates calculated with information from the Energy Information System (SIE) of the Ministry of Energy.

7. At the end of the document, some of the lessons learned by the Commission from completing a series of procedures in this area will be presented (discussed in section 7).

2. Regulatory framework for the gas sector

8. Prior to the Energy Reform that took place in 2013, markets related to the gas sector were under a regulation that granted the state exclusive management in several links of the value chain. Among the outcomes of this regulation were:

- the legal impossibility for private parties to celebrate hydrocarbon exploitation contracts, as only the Mexican state was authorised to carry out these production activities;
- the exclusive right to exploit the oil and natural gas production chain to the Mexican state.

9. Under this regime, Petróleos Mexicanos was exclusively engaged in the exploration, exploitation, extraction, refining and storage of hydrocarbons. These activities were excluded from the application of the LFCE because they were deemed as exclusive and strategic activities of the state. In this regard, the Commission's actions were practically non-existent in the markets related to the sector.

10. Subsequently, with the Energy Reform of 2013,⁴ Articles 27 and 28 of the Constitution were amended, which allowed the private sector to participate in hydrocarbon exploration and extraction activities. As a result of the reform, Petróleos Mexicanos became a public entity subject to competition regulation, along with all other participants in these markets.

11. In addition, within the framework of the Energy Reform, several secondary laws were enacted regarding hydrocarbons and energy, including the Hydrocarbons Law.⁵

12. The Hydrocarbons Law sets out that hydrocarbon exploration and extraction activities will be carried out by the state, through assignees and contractors. On the other hand, treatment, refining, sale, marketing, transportation, storage, processing, compression, liquefaction, decompression, regasification, distribution and retailing activities may be carried out by Petróleos Mexicanos, any other state-owned production company, or any private entity with the relevant authorisation or permit.

13. In addition, the reform established structural changes and regulatory instruments designed and implemented by different authorities in order to gradually create space for competition. Some of the most significant changes include the opening of imports in the gas sector, the deregulation of prices for the end customer and the modification of the

⁴ Approved by the Senate of the Republic on 11 October 2013 and by the Chamber of Deputies on 12 October 2013, and enacted by the Federal Executive on 20 December 2013.

⁵ The purpose of this law is to regulate:

- i. the discovery, exploration and extraction of hydrocarbons
- ii. the treatment, refining, sale, marketing, transportation and storage of oil
- iii. the processing, compression, liquefaction, decompression, regasification, transportation, storage, distribution, marketing and retailing of natural gas
- iv. the transportation, storage, distribution, marketing and retailing of oil products
- v. pipeline transportation and storage of petrochemical products.

formula for determining first-hand sales prices. Among the main hydrocarbons regulators are the Energy Regulatory Commission and the Secretariat of Energy.

14. The amendments made to the regulatory framework of hydrocarbon markets gave the Commission a decisive role by means of analysis of the conditions of competition in such markets and the possibility of investigating and sanctioning anti-competitive behaviour.

15. In order to effectively fulfil its constitutional mandate, it is important to create links with sector authorities with the aim of taking advantage of their expertise in the markets, as well as using useful and truthful information.

16. In the case of gas-related markets, sector authorities are in charge of supervising the sector, and therefore have technical and specialist knowledge on how these markets operate. In addition, as part of the regulatory framework, the economic agents that participate in this sector are required to submit to these authorities information about how they operate in the market, such as their shareholding structure, market prices and sales volumes.

17. Consequently, the Commission entered into a collaboration agreement with the Energy Regulatory Commission that establishes, among other things, a mechanism for information exchange.⁶ The added value of this agreement is that the Energy Regulatory Commission has disaggregated information on the prices and sales volumes of participants in this sector. This allows for the efficient use of resources, for example, in investigation procedures, since large volumes of information are involved, making it costly to request to each party individually.

18. The Commission has also entered into collaboration agreements with other government bodies that have valuable information on the sector. Among the most significant of these agreements, for the purposes of analysing the oil and gas sector, are the following:

- The Secretariat of Economy is a federal agency responsible for, among other things, creating a database with the trade register of economic agents at the federal level. Thanks to the collaboration agreement,⁷ this database can be consulted by the Federal Economic Competition Commission.⁸
- On the other hand, the Tax Administration Service (Mexico's tax authority) and the Commission have an agreement through which the former can provide tax and customs information regarding taxpayers in the hydrocarbons, oil and petrochemicals sectors.⁹

⁶ Framework collaboration agreement published in 2018 and available in Spanish at www.cofece.mx/wp-content/uploads/2018/10/Edit_Convenio_COFECE_CRE.pdf.

⁷ Collaboration agreement published in 2015 and available in Spanish at www.cofece.mx/wp-content/uploads/2022/03/COFECE-SE-RPPyC-07-10-2015.pdf.

⁸ Collaboration agreement published in 2015 and available in Spanish at: <https://www.cofece.mx/wp-content/uploads/2022/03/COFECE-SE-RPPyC-07-10-2015.pdf>

⁹ Collaboration agreement published in 2018 and available in Spanish at www.cofece.mx/wp-content/uploads/2022/03/Convenio-COFECE-SAT-13-03-2018.pdf.

19. This is relevant because it makes the process of obtaining information more efficient and useful for the purposes of analysis, both in determining relevant markets, and for the structural analysis of market competition conditions or the possible existence of conducts that breach the LFCE.

20. Below are some of the main points for analysis of the determination of relevant markets in the oil and gas sector.

3. Evidentiary standard for determination of the relevant market under Mexican competition law

21. For several years, the Commission has relied on both corrective and preventive methods and tools to comply with its obligation to monitor and guarantee the process of economic competition in the country. As part of its corrective methods, investigations for anti-competitive practices are carried out to determine the existence of LFCE violations and, if applicable, to sanction those involved, as well as to put an end to any unlawful conduct. Other corrective methods consist of i) determining the existence of barriers to competition or essential inputs; and ii) making official determinations on competition conditions. The former has two purposes. The first is to detect and propose solutions to barriers to competition and free market participation – those structural, regulatory or behavioural characteristics of the market that impede the competition process and/or limit the access of economic agents to it. The second, is to determine the existence of essential inputs, which are indispensable for the production or provision of goods and services. These are irreplaceable and, on occasion, their form of access can generate anti-competitive effects and inefficiencies in the markets. The purpose of the determinations is to evaluate whether competition conditions exist, so that sector regulators can establish some actions, provided for in their regulations, to re-establish effective competition conditions.¹⁰ Merger analysis is a preventive method that seeks to prevent certain transactions between economic agents from generating competition problems.

22. The LFCE also sets out the general criteria to be followed in each of the aforementioned processes; however, it should be noted that not all of them require the determination of a relevant market. Such is the case of investigations of collusive agreements.¹¹ The reason behind this is that this type of conduct is not investigated under the rule of reason and is sanctioned per se; consequently, it does not require an analysis of the possible effects that the practice may have on a particular relevant market. The only requirement is that the competitors involved are competing economic agents.

¹⁰ Article 96 of the LFCE establishes that this type of process may be carried out in cases where there are rules or legal provisions that regulate the intervention of the Commission to resolve or give an opinion on issues of effective competition and other related matters, or when the Federal Executive Branch issues a request for it to do so.

¹¹ Classified as absolute monopolistic practices in Article 53 of the LFCE.

23. For those processes in which defining a relevant market is required by law, there are several reasons for such analysis to be carried out. In the case of investigations related to abuse of dominance,¹² it is necessary to define the market where the alleged conduct took place in order to subsequently determine whether an economic agent¹³ has sufficient market power to be abusing it,¹⁴ damaging the process of competition and free market participation.¹⁵

24. In addition, in procedures of unlawful mergers, the purpose is to determine whether, in failing to report a merger or acquisition of assets or company shares, the substantial power of the resulting company in a given market was increased and whether this had adverse effects on competition conditions in the market where it took place.

25. Additionally, in corrective processes that do not relate to an infringement of the LFCE but have the objective of determining barriers to competition or essential inputs¹⁶ or the absence of competitive conditions,¹⁷ it is necessary to know the specific market in which there is a possible competition problem.

26. On the other hand, the preventive control of mergers follows a similar logic, since it seeks to determine whether the merging of assets or any other type of operation may generate an anti-competitive effects in a defined relevant market.

27. As mentioned above, there are different types of processes – both preventive and corrective – in competition matters in which the determination of a relevant market is necessary. As a consequence, competition legislation establishes the rules that the Commission must follow to determine a relevant market, in terms of both product and geography, through a substitution analysis looking at both supply and demand.¹⁸

28. In this regard, a case-by-case analysis must be carried out to effectively identify the goods or services subject of the procedure and analyze whether they can be replaced or substituted in optimal conditions. In addition, the geographic area where these goods or services are offered must be delimited in order to evaluate whether there are suppliers or clients within the same region that can replace those subject to the investigation without incurring significant costs.¹⁹

29. To achieve this, the product substitution analysis must take into account aspects such as the technological possibilities, the characteristics of each good or service, and any regulatory restrictions. For the geographic assessment, the criteria seek to determine the possibility of substituting a good or service in one locality (or geographic area) for the same good or service in another locality in order to identify the regions where substitution is feasible. Some of the elements that will be considered are the costs associated with distribution, substitution times and regulatory restrictions.

¹² This procedure is classified as a relative monopolistic practice under Article 54 of the LFCE.

¹³ Economic agent is understood as any market participant, whether a company, an economic interest group, a corporation, or any other form.

¹⁴ Through any of the 13 behaviours related to abuse of market power defined in Article 56 of the LFCE.

¹⁵ Article 56 of the LFCE provides for 13 behaviours related to abuse of market power.

¹⁶ Article 94 of the LFCE.

¹⁷ Article 96 of the LFCE.

¹⁸ Article 58 of the LFCE.

¹⁹ Article 5 of the Regulatory Provisions of the LFCE.

30. However, these criteria are generic in the determination of a relevant market, regardless of the sector or branch of the economy; that is why, in the following sections, reference will be made to the mechanisms implemented to determine the relevant market, specifically in the gas sector, as well as some of the challenges that the Commission and its Investigative Authority have faced.

4. Mechanisms used by the Commission to define relevant markets

31. Based on the criteria established in the LFCE, the Commission has carried out several processes in the gas sector in which it has had to define relevant markets. Below are some of the main techniques that have been used throughout the procedures or investigations, taking into account both the technical and structural characteristics of the gas sector in Mexico.

4.1. Techniques for defining the product aspect in gas sector markets

32. The energy supply in Mexico is varied, so it is important to carry out a comprehensive analysis to determine which products could be substitutes, and therefore belong to the same market. During the process of determining the product dimension of a market, both qualitative and quantitative techniques can be used, either separately or together, to build a definition that suits the conditions of the market under analysis.

33. The qualitative techniques typically used consist mainly of assessing: i) product differentiation based on product characteristics, attributes and uses; ii) interchangeability and functional equivalence to determine whether different goods generally meet the same need; iii) the market access capacity of new companies that can provide a substitute; and iv) product repositioning capacity, which seeks to determine whether other suppliers can change the attributes of their products to transform them into close substitutes.

34. Quantitative techniques can be divided into two methods: direct and indirect. Direct methods include statistical estimation of price elasticity (own and cross-price elasticity) of the relevant market's prospective products. With this information, an exercise consisting of simulating a small but significant non-transitory increase in price (also known as a SSNIP test) can be performed and a conclusion can be drawn, within the conceptual framework of the SSNIP test, on the product dimension of the relevant market. On the other hand, the aim of indirect methods is to use different statistical analyses to find a pattern of correlation or convergence, in a given period, between the prices of the goods that may be eligible to form part of the same relevant market, through the conceptual framework of cross elasticities.

4.2. Techniques for defining the geographic dimension in gas sector markets

35. A common characteristic of retail markets in general is that end consumers tend to take into account the distance to each retail centre or outlet when deciding where to shop. In the Mexican case of downstream markets,²⁰ as far as the gas sector is concerned, the country's infrastructure is very heterogeneous – since natural gas is distributed through pipelines, for example, it only covers some areas of the country, while other regions are supplied with products such as liquefied petroleum gas (LPG) through distribution tankers, cylinders and service stations. In the case of petrol, users must go to service stations to

²⁰ The markets below refer to activities aimed at offering oil and gas products to end consumers. These activities include distribution and retailing under the terms of the Hydrocarbons Law.

consume it. It is for this reason that for the definition of the geographic market for gas sector products in their downstream activities, quantitative methods are usually used to determine the areas of influence of the points of sale.

36. For the geographic dimension, the techniques mentioned at the beginning of this section can be used with a territorial approach. In addition, there are various models with a space-based approach that allow the delimitation of areas where there is competitive pressure.

37. The first type of model is focused on estimating the radius or area of influence of a supplier in a specific geographical area. This radius can be calculated based on maximum consumer travel time, distance, consumption flows, price dynamics or other metrics deemed relevant to a specific investigation.

38. A second model that is often used for the geographical dimension is the Elzinga-Hogarty test, which draws on trade relations between geographical regions. This is based on two measures that are compared with a certain threshold to determine, in a specific area, how much of the product consumed locally is imported and/or how much of what is produced locally is exported (Little in From Outside and Little Out From Inside, respectively)²¹. By assessing trade relations in this way, this test can identify a market that is relevant in terms of geography.

39. It is also important to point out that quantitative techniques are data-intensive and, in order to produce a result, it is necessary to have databases that contain the variables required to evaluate the relevance or robustness of the models proposed. However, the collection of information does not always make it possible to obtain all the variables needed for the base models. As a result, it is common for the Commission to build ad hoc systems based on theoretical models and other statistical tools, such as time series analysis (relative price stationarity analysis and the identification of cointegration relationships), while remaining consistent with economic theory.

40. The following section presents some of the most representative cases evaluated by the Commission in corrective and preventive actions in which determination of a relevant market in the gas sector was required.

5. Representative cases

41. Some of the most representative investigations and analyses of mergers in the gas sector have focused on assessing the upstream market, as discussed below. However, depending on the nature of the case in question, in several of these analyses, downstream market demand has been taken into account to determine the complete structure of the value chain. In other words, the analysis is based on a derived demand approach. In view of the above, some of the most relevant cases in the gas sector are presented below.

²¹ Little Inside Outside In (LIFO, acronym in English) and Little Outside In (LOFI, acronym in English).

5.1. Corrective processes carried out by the Commission

5.1.1. Statement of competitive conditions²²²³

42. In 2021, the investigating authority carried out a process to determine the existence of effective competition conditions in the non-pipeline distribution of LPG at the national level. For the analysis of the relevant market in terms of product, LPG was taken as the focal product.

43. For the analysis of demand-side substitution, qualitative techniques were used, such as assessing the consumption of various products and the switching restrictions that end users might have, given the technical and functional characteristics of each product.

44. Through an analysis of derived demand, the final use of LPG was taken into account. On the one hand, it is mainly used for cooking food, heating water and for heating in the residential, commercial and service sectors and, on the other hand, it is used in various industrial processes as fuel or raw material. Consequently, in the case it was compared with heat-producing products used for similar purposes such as firewood, coal, electricity, solar energy and other hydrocarbons such as coke, fuel oil and natural gas.

45. In this sense, an analysis was conducted based on the possibilities of substitution between natural gas and LPG for end users, and found that consumers would face high substitution costs to be able to switch between one product and the other. In other words, it was determined that users would have to make significant investments to modify and adapt their systems to switch between fuels at home. In this regard, it was considered that it would be difficult for end users to make the investment required to change fuel type more than once in response to a price increase or decrease at a given time. The Commission also found other barriers to the consumption of natural gas, such as limited infrastructure for access to this type of fuel throughout the country and the costs required to connect to the distribution networks. Finally, due to its physical characteristics, it was determined that natural gas reached most end users through pipelines.

46. In addition, the distribution of LP Gas to end users is carried out by the permit holders specifically for distribution through a distribution plant and tank trucks. However, the distribution can also be carried out through portable containers and/or transportable containers, or a stationary tank. In this context, an analysis was carried out to determine whether there is supply-side substitution between these activities. The following were the main findings:

- Through the analysis of technical and regulatory elements (powers of the permit applicable to each activity), it was determined that the permit holders or economic agents in charge of distribution via LPG tankers exert competitive pressure on the agents in charge of distribution via distribution facilities, given that they also serve end users. As such, they are part of the same relevant market.
- In addition, the analysis also examined whether retail permit holders and marketers could exert competitive pressure in the distribution of LPG to end users. For these agents, the substitution analysis was very similar to that indicated for natural gas distributors, where due to the costs and time involved in obtaining permits,

²² Case DC-001-2021. Published in 2021 by the Federal Economic Competition Commission and available in Spanish at www.cofece.mx/wp-content/uploads/2021/12/DOF-01diciembre2021-01.pdf.

²³ This document presents some of the main conclusions produced by the investigation stage of the proceedings, as set forth in the Preliminary Ruling. To date, there is no final resolution for the proceedings.

complying with current regulations, installing and starting up a distribution facility, acquiring the necessary infrastructure and developing a logistics distribution network, from a supply perspective, it is unlikely that in the short term these types of permit holders will be able to offer LPG to end users through distribution facilities and tankers.

47. On the other hand, for the analysis of the geographic dimension, it was analysed, among other factors, the distribution costs of LPG, as well as the costs and likelihood of end users switching to other markets. The relevant markets were determined in light of the deregulation of LPG prices in 2017, wherein distributors' sales margins had greater flexibility, so the incentives to move between the different regiones de precios máximos [maximum price regions]²⁴ and, consequently, the conditions of competition between them could have been modified. In light of this, in order to define the geographic dimension, the Commission took into account accumulated sales volumes at the municipal level, the dynamics of the agents around the markets and the evolution of LPG prices for end users.

48. The methodology consisted, in first instance, of considering the geographical area of the municipalities as the focal zone. For each municipality, the sales dynamics of the distributors established in the municipality and those coming from other municipalities are identified. This methodology makes it possible to identify the real and effective competitive pressure exerted by economic agents in a given geographical area. Finally, the evolution of prices between various adjacent candidate relevant markets was considered in order to determine whether they belong to the same relevant market.

49. The analysis of relevant markets initially determined that there are 220 geographic markets defined for the distribution of LPG to end users through distribution facilities and tankers.

5.1.2. New tool for the determination of relevant geographic markets for the distribution of LPG by means other than pipelines

50. Due to the challenges of defining a relevant market in the gas sector, the Commission has undertaken a series of efforts to facilitate the process. As a result of the analysis of the competitive conditions in the LPG market mentioned above, a tool was developed for the geographic determination of distribution markets for this product.

51. Although this tool was created for a specific procedure, it will also be used to delineate the geographic aspect for other investigations or procedures related to markets with similar structures or characteristics.

52. To develop it, information on reported sales volumes, reported prices, distribution facility locations and population concentration and distribution was used. Since LPG is considered a homogeneous product, economic rationality suggests that prices will converge and differ only in transportation costs when arbitrage opportunities can be exploited.

53. The methodology therefore consists of i) identifying evidence of the existence of possibilities for arbitrage or trade flows between geographic areas; ii) analysing whether the prices in the different regions identified behaved similarly; and iii) assessing whether prices behave similarly in adjacent regions.

²⁴ Prior to two thousand and seventeen, the prices of LP Gas to end users were subject to a regulation of maximum prices determined by 145 (one hundred and forty-five) Mexican Pesos throughout the national territory.

54. Based on the methodology implemented for the development of this tool, 220 relevant geographic markets were identified, covering all 2 470 municipalities in Mexico.

55. In general, the relevant market in the gas sector was identified using both public and private information.

5.2. Preventive procedures carried out by the Commission: Concentration analysis

5.2.1. Analysis of the formation of a purchasing consortium of petrol and diesel service stations²⁵

56. The Commission analysed and approved, with commitments, a merger involving the market for the acquisition and wholesale supply of petrol and diesel, as well as automotive products. This operation consisted of the formation of a purchasing consortium through the integration of 54 service station operators into a company called G500. This was the result of a desire to incorporate other entrepreneurs and groups of service stations in 20 other states, with the aim of reaching around 1 400 shareholder members.

57. The company was comprised of economic agents engaged in selling petrol and diesel fuel, oils and lubricants, spare parts, parts and other vehicle accessories to the general public at service stations. It was created with the objective of achieving better negotiating capacity and economies of scale in the purchase of fuels and other products.

58. In this case, in order to define the relevant market, a qualitative analysis of the product aspect was conducted, defining the target service of the company and the products affected by it. An analysis for the geographic dimension was carried out subsequently.

59. In terms of product, it was determined that the target activity of the company was based on grouping different fuel marketing permit holders to jointly supply these products and thus achieve better trade conditions when obtaining them. To this end, the technical characteristics of the products sold at service stations were analysed. First, an analysis of the proportion of sales of each type of product (fuels, accessories and other automotive products) was carried out. Based on this information, it was determined that, on average, sales of products other than fuels only represented proportions below 1 percentage point, so the concentration analysis focused on fuels.

60. From the information in the case, it was found that the initial partners' service stations purchased at least two of the following fuels: regular petrol,²⁶ premium petrol²⁷ and diesel.

61. Regarding the analysis of the product aspect, it was concluded that the relevant market consisted of the wholesale purchase of the aforementioned fuels. Based on the technical specifications of these fuels, and taking them as a pivotal point of analysis, it was determined that there is no substitution between these types of fuels and other types of energy. In addition, it was identified that in the medium term, vehicles are not expected to use other types of energy sources such as LPG, natural gas or biofuels, and that hybrid vehicles do not represent a significant proportion of the vehicles in operation. Secondly, all

²⁵ Merger for the creation of the company named G500, Case CNT-058-2016. Published in 2017 by the Federal Economic Competition Commission and available in Spanish at www.cofece.mx/CFCResoluciones/docs/Concentraciones/V5587/0/3806550.pdf.

²⁶ Regular petrol is also known as low-octane petrol.

²⁷ Premium petrol is also known as high-octane petrol.

vehicles are designed to use exclusively one type of fuel, meaning that petrol and diesel cannot be substituted for one another.

62. Finally, substitution between regular and premium petrol is possible in some vehicles, but there are also price differences between the two, such that the Commission did not conclude whether to consider them as part of the same relevant market, given that their market power results did not vary. Finally, it was considered unnecessary to further analyse the effects of the operation on automotive and other products, as their sales represented a low proportion of the total sold in the market.

63. For the analysis of the relevant market in terms of geography, the Commission considered that the service stations belonging to the company coincide with the purchase of different types of fuels in the regions delimited by storage and distribution terminals. In this sense, the geographical dimension was determined by the area of influence through which these terminals supply the market.

64. As a result of the analysis, it was determined that there are 11 relevant markets defined by the 11 terminals present in the country in which the merger would have an impact.

5.2.2. New consolidation of diesel and petrol service stations²⁸

65. This second transaction was reported to the Commission as part of the obligations arising from the aforementioned consolidation. Following the notification to consolidate the G500 purchasing consortium, a new transaction was presented, which consisted of franchise agreements between G500, as franchisor, and various service stations, as franchisees.

66. As part of the procedure to evaluate mergers, in this transaction, the retail sale of regular petrol, premium petrol and regular and ultra-low-sulphur diesel was taken into account for analysis of the product aspect of the relevant market where the consolidation would take place.

67. Firstly, due to vehicle technical requirements, diesel and petrol cannot be considered as substitutes. Since vehicle engines are designed to use just one of these types of fuel, it is not feasible to use them both indistinctly. Consequently, it was concluded that diesel and petrol are not substitutes for each other for the purposes of the consolidation.

68. As for the different types of petrol, due to their technical specifications, they were determined to be part of different relevant markets. Specifically, premium petrol is associated with better vehicle performance, since a higher petrol octane rating means more effective combustion and lower engine fuel consumption. Some vehicles have engines that are designed to perform better on premium petrol and if changed, engine performance would be affected. On the other hand, in terms of price analysis, premium petrol tends to have a higher price than regular petrol. It was therefore concluded that for the purposes of this consolidation, each type of petrol constituted a different relevant market in terms of product.

69. The two types of diesel were considered part of the same relevant market. Diesel types differ in terms of the amount of sulphur they contain and, as a result, in the amount of emissions they produce. As such, their main differentiating factor lies in the effects they have on the environment, not in their combustion capacity or characteristics. Regular diesel is also usually priced very close to ultra-low-sulphur diesel. In addition, no technical differences were found to exist separating the engines of vehicles that use or could use

²⁸ Resolution published in 2021 by the Federal Economic Competition Commission and available in Spanish at www.cofece.mx/CFCResoluciones/docs/Concentraciones/V6074/3/5417961.pdf.

regular diesel and those for ultra-low-sulphur diesel – had such differences been found, this would prevent the use of one type of fuel. As a result, they were considered as a single relevant product.

70. For the definition of the geographic dimension, we took the results of a study that concluded that distance was a crucial factor for consumers when choosing a service station. The geographic dimension was determined based on areas or zones of influence or reach, for which a certain travel time, or distance within which users are willing to travel to refuel.

71. Once the relevant markets were defined, the Commission continued with the other criteria for evaluating the merger and concluded that G500 was facing sufficient competitive pressure from the other economic agents in the identified and analyzed relevant markets. Consequently, the merger was authorised subject to commitments for the service stations listed in the case.

6. Main challenges for the determination of the relevant market in the gas sector

72. It is important to note that, although the techniques in the relevant market analysis have been implemented in an exhaustive manner, this exercise has not been an easy task. It has presented significant difficulties, not only in terms of execution and design, but also due to the particularities of these markets, which has been a constant challenge.

73. In the particular case of downstream markets in the gas sectors, there are challenges related to market structure, sector regulation and the application of quantitative testing.

6.1. Challenges related to market structure

74. Firstly, as a result of the existence of market structures in which the state exclusively managed the activities related to the gas sector until it was opened up with the Energy Reform of 2013, the infrastructure in place was developed for the operation of various links in the value chain of a single state-owned company. More recently, the market structure has been changing with the entry of private economic agents, but there are still frictions resulting from the fact that the market was configured based on the capacities of a state-owned company, instead of being the result of a competitive dynamic.

75. Another challenge is related to the heterogeneous conditions that exist throughout Mexico, which makes it necessary to carry out a case-by-case analysis to determine the basket of products offered in each area of the country and to understand how the participants in each market interact between the different regions of the country. For example, the natural gas distribution pipeline infrastructure network is not homogeneous throughout the country and there are some areas that do not even have access to this product.

76. Additional challenges also arise when analysing a counterfactual in other jurisdictions. That is to say, in some investigations it is common practice to consult international cases as a reference, but in the case of products such as gas, which operates differently in Mexico, it is not possible to compare the experience in those jurisdictions when conducting the first stage of the proceedings carried out by the Commission.

77. Related to the previous point, these markets tend to be highly technical and operationally specialised throughout the value chain. This poses a challenge when determining supply-side substitution as the possibilities for transportation, storage and/or related services for each product must be understood in detail.

6.2. Challenges related to regulation of the sector

78. Firstly, with regard to the challenges relating to regulation of the sector, it is important to note that the Energy Reform has led to the implementation of new primary and secondary laws, which has strengthened the regulatory role of authorities such as the Energy Regulatory Commission and the Secretariat of Energy. These amendments empower such authorities to grant the corresponding operating permits to the economic agents involved in each link of the value chain, which are required to operate under competitive conditions.

79. However, the regulatory framework can make it difficult to analyse the scope or limits of some of the activities permitted in the value chain, creating difficulties and possible confusion when looking at the existing competitive pressure. The current regulation has allowed the alternative use of infrastructures and/or processes that generate the coexistence of different permitted activities that may appear to be the same thing. This, together with constant regulatory changes, has led to the existence of various differentiated business models in the same relevant market, which, in turn, has posed a significant challenge in determining supply-side substitution.

6.3. Challenges related to the implementation of quantitative tests

80. Regarding the challenges of quantitative testing, in Mexico, markets related to oil and its derivatives are usually characterised by the involvement of many different participants. As a result, collecting relevant information from these economic agents for research purposes is a highly costly and difficult task. Similarly, once the necessary information has been obtained, the existence of any errors in the recording of information or external events (such as fuel theft and strategies to prevent it) may have implications for correctly determining trade flows, resulting in the presence of atypical or erroneous data that empirically hinder the definition of a relevant market.

81. Regarding product dimension of the relevant market for fuels in demand by the general public, there are some substitutes that do not necessarily have a well-defined or documented market, so obtaining economic information through public sources (such as sales information from Mexico's National Institute of Statistics and Geography²⁹) is key for the substitution analysis.

82. Once it has been possible to obtain and clean a database with which a quantitative analysis can be carried out, challenges arise in determining which model will best fit the market dynamics within which some thresholds and parameters must be defined.

83. Regardless of the model chosen, due to the characteristics of the Mexican oil and gas product markets, care must be taken when defining the markets, given the existence of possible conflicts with the regulatory schemes that were in place prior to their subsequent liberalisation. With certain analysis techniques, this could lead to the incorrect definition of the relevant market as a result of the “Cellophane Fallacy”.³⁰

²⁹ Instituto Nacional de Estadística, Geografía e Informática (INEGI).

³⁰ The Cellophane Fallacy occurs when a SSNIP test takes the market price and this price is that of a monopolist, so that when applying the test by marginally increasing the price, it is not profitable, as consumers substitute their consumption. This leads to the incorrect conclusion that the product dimension should include other goods.

84. Although this section has pointed out a series of challenges in determining the relevant market, there are additional mechanisms or efforts undertaken by the Commission to overcome them. These lessons learned are presented in the following section.

7. Lessons learned

85. The Commission has worked in the markets discussed here for a long time, not only with investigations that require definition of the relevant market, but also through other types of procedures and/or actions such as the detection of cartels. As such, knowledge has been acquired about the functioning and competitive dynamics within the markets of the gas sector. Some of the main lessons learned in relation to the analysis for the definition of the relevant market are presented below.

86. Firstly, even when products are being examined that at first sight might appear to be substitutes or different links in the same value chain, their structural, regulatory and technical characteristics may be very different, so the analysis must be carried out taking these particularities into account, with the establishment of a focal service or product for the substitution analysis. As a result, even if there are synergies between procedures where knowledge related to regulations, market participants and the technical characteristics of the products can be taken advantage of, in order to define the relevant market it is necessary to go deeper and conduct an analysis from the perspective of the activity in question and the dynamics between consumers and suppliers.

87. Secondly, there are synergies that occur when analysing different procedures, in terms of proposed models, analysis methodologies, techniques and tools that can be applied to other cases, taking into account the corresponding modifications that allow conclusions to be drawn on the product and the geographic dimension. In addition, insofar as models that are suitable for this sector are used, criteria are being created by the Commission. An example of this is the tool developed by the Commission, which, although developed to analyse LPG distribution, can also be implemented in other investigations (presented in subsection 5.2.1).

88. Third, the existence of authorities with regulatory and/or monitoring powers in the gas sector has made it possible to obtain timely information in order to define relevant markets in a more agile and precise manner. There are therefore synergies deriving from existing collaboration processes.

89. Finally, as these markets are subject to constant regulatory modifications and have highly specific characteristics, the Commission has made great efforts in this field to generate technical knowledge among its investigators that can be applied to other proceedings, present or future.