

REGULATORY REFORM IN MEXICO'S GAS INDUSTRY

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Abstract

This paper addresses the economic considerations behind the regulatory policies that are being considered after the recent reforms to the gas legal framework in Mexico. These reforms let Pemex maintain its monopoly over production but allow private investment in transportation and distribution. The main challenge for gas regulation in Mexico is to develop a competitive structure when i) the initial condition is an upstream monopoly and ii) there is a dominant competitor in transportation. The paper discusses the solutions that are being designed during the elaboration of the gas regulatory framework. The main purpose is to describe how economic policy is responding to a fast evolving phenomena and to suggest topics for future research.

1. Introduction

This paper addresses the economic considerations behind the regulatory policies that are being considered after the recent reforms to the gas legal framework in Mexico. These reforms let Pemex maintain its monopoly over production but allow private investment in transportation and distribution. The main challenge for gas regulation in Mexico is to develop a competitive market structure when i) the initial condition is an upstream monopoly, and ii) there is a dominant competitor in transportation.

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** This paper presents the own author's insights which do not necessarily represent the Commission's position.

As other utilities, the gas industry combines naturally monopolistic with potentially competitive activities. Regulatory policy towards an industry of this kind involves a decision-making process with respect to variables such as vertical integration, price and rate regulation, horizontal structure, regional structure and regulation of non-price behavior. The purpose of the regulator is to distribute the economic rent of operating a public utility between the investors and the customers of that utility. This paper describes the decision-making process that is taking place after the gas legal reform in Mexico. After analyzing the specific characteristics of Mexico's natural gas market structure and after reviewing international experiences, the paper provides detailed description of the challenges posed and the solutions that are being designed during the elaboration of the Mexican gas regulatory framework. The main purpose of the paper is to describe how economic policy is responding to fast evolving phenomena. Such description suggests topics for future economic research.

II. The Mexican Gas Industry: Current Status

Natural gas is becoming an increasingly important energy source. Gas is a cleaner and more abundant fuel than crude oil. The world consumption of natural gas has increased significantly: during the 1983-1993 period it rose 3% per annum. In Mexico, however, oil is still the most important primary energy resource and the consumption of natural gas has stalled.¹ Additionally, there are very few gas distribution systems, which in part explains why residential consumption is only 3% compared to 25% in the U.S.

The following chart shows Mexico's energy base with respect to World's reserves.

PROVEN RESERVES AND MEXICAN OUTPUT

	Share in worldwide reserves %	Reserves (Position)	Production (Position)
Crude oil	5.1	8°	6°
Natural gas	1.4	14°	8°

Source: *Comisión Reguladora de Energía. Data from Oil and Gas Journal and Pemex.*

Under current output levels, Mexican natural gas reserves will last 61 years compared to 45 years for crude oil reserves. Nevertheless, the country's ratio of gas to hydrocarbon reserves is one of the lowest in the world.²

Natural gas production in Mexico has not increased mainly because of poor investment in exploration and drilling. Gas production is mainly associated with the southeast oil extraction. There exists large reserves in the north of the country (33% of total natural gas reserves) which only contribute in 12.3% to total gas

production. *Petróleos Mexicanos* (Pemex), the national oil company, has had to import natural gas since 1985 in order to meet demand.

Pemex and the gas market

Pemex has played an active role in the development of hydrocarbon fuels. Supply of various products is determined by the company's strategies which, in turn, are conditioned by the crucial role of Pemex as a revenue source for the government. Pemex's main goal has been to maximize export income through sales of crude oil. Even though it has carried out a gross rationalization program cutting almost half of its excess labor force, capital investment has become more scarce. This is particularly true in areas which are not of strategic importance to the company such as natural gas.

Before last April reforms to the gas framework, Pemex enjoyed a monopoly on the production, transmission, and first-hand sales of natural gas. Pemex's gas-transportation network is 12,000 kilometer long. It reaches all main industrial centers with the exception of the Northwest and the North Pacific, where other fuels are used. Under current demand loads, the South to Center system and the North system have a 60% excess capacity. On the other hand, distribution networks are incipient and are carried out with private participation.

Pemex is still the only importer of gas, and the main consumer. Pemex uses 53% of the available gas. The remaining consumption is shared by the industry (29%), electricity generation (15%) and residential and commercial customers (3%).³

Apart from Pemex's stronghold on the supply and demand for gas, the price and availability of its main substitute, high-sulfur fuel oil, pose obstacles for the development of the gas market. Presently, this polluting fuel oil has the largest share among fuels used in thermoelectric generation. It is also widely used in the industry since it is cheaper than other energy sources. Since a) Pemex has limited refining capacity to make this fuel less polluting, and b) there is very little international demand for the high-sulfur residual produced, Pemex's only alternative is to allocate this product in the domestic market. There is therefore large availability of fuel oil at very low prices.

Likewise, the other main substitute for natural gas, liquid propane gas (LPG), is either subsidized or regulated.⁴ Additionally, LPG distribution is quite good. All these also pose obstacles for the growth of the natural gas industry.

The inefficient allocation of gas is another problem in the development of the gas market. The largest fields are situated in the South, whereas consumption is located in the Central and Northern parts of the country. A large pipeline transports gas from the Southern fields to the Center and the North, but most of it is consumed in the Center, leaving very little for the fast-growing industry in the North. This industry mainly relies on nearby production and imports.

Another hurdle in the evolution of the gas market is the uncertainty of supply. Supply depends almost entirely on Pemex which usually lacks of flexible contracts to suit the customer's needs.

Regulation

Up to now, there has been a confusion in Mexico regarding the State's role as owner, regulator and operator of the energy resources. The regulatory activity of the energy sector is scattered across several institutions which implies incongruences among regulatory instruments. This has caused a lack of adequate institutions which can regulate commercial relations between Pemex and private investors. Additionally, Pemex has had to develop informal self-regulatory mechanisms due to the absence of a defined regulatory framework.

The main energy regulatory authority is the *Comisión Reguladora de Energía* (CRE). The *Comisión* was created in October 1993 and commenced operations in January 1994. CRE was initially conceived to regulate the electric sector when private investment was permitted in power generation by amendments to the Law on Electric Public Service in 1992. These amendments allowed for private investment in self-supply, cogeneration and independent power projects. However, the *Comisión* was only created as an advisory body to the Energy Ministry with no financial and operational autonomy.

III. International Tendencies of the Gas Industry

Market structure

Market structure varies from country to country. In Europe, most markets are controlled by a large entity, which usually owns the transportation system and buys and sells gas to distribution companies and large end users. In some cases, as in France, Spain and Italy, these companies also have large interests in many local distribution companies (LDCs). The extreme case among European countries is British Gas (BG). BG is the largest producer of gas in the U.K. It owns both the transmission and distribution systems, and supplies gas to most end users whether industrial, commercial or residential.

In the U.S. the picture is quite different. There are hundreds of producers and several transportation companies which participate in a very competitive environment. LDCs have exclusive franchises and freely purchase gas from either producers, pipelines or marketers. Various large end users are directly linked to transportation pipelines and have various supply sources.

Regulatory authorities

Some countries like Argentina, Canada, Colombia, U.S. and U.K. have strong regulatory institutions, empowered to deal with a variety of topics. Such institutions have been conceived as autonomous entities with considerable financial independence in order to insure a credible and transparent decision-making process. Regulatory institutions are mainly concerned with the regulation of prices and rates, permits and contracts, and oversight of safety and environmental matters.

State and provincial governments in the U.S. and Canada have their own regulatory authorities to control distribution and transportation utilities within their jurisdiction. On the other hand, in other countries like Argentina and Colombia the national regulatory commission regulates both at the federal and state levels.

Most European countries perform regulatory policy through a ministry and a number of agencies specialized in matters such as mining, agriculture and environment. Regulation is not essential in these countries because the gas industry is generally dominated by state-owned companies. Local authorities are particularly important in Germany. The *Länder* authorities are responsible for concessions and authorizations regarding local utilities.

Prices

Two basic price-regulation approaches are used internationally: cost-of-service and incentive regulation. The first one has been used in Canada, U.S. and Colombia, although modified versions have been applied throughout the world. Nevertheless, there is a trend to use more incentive regulation as a means of promoting cost reduction and efficiency in regulated activities. Two countries currently using incentive regulation are the U.K. and Argentina.

The British formula is used to calculate charges for final consumers under 25,000 therms per annum. Adjustments are made through a consumer price index, a gas price index, and an energy efficiency factor. The latter is intended to stimulate demand-side management policies. The adjustment formula is as follows:

$$(RPI-5) + (GPI-1) + E$$

where RPI and GPI are respectively consumer and gas price indexes. E is an energy efficiency factor, comprising BG's expenditures in order to promote a better use of gas.

British large users which annually consume over 25,000 therms are able to contract at a usually better price than the regulated one. Recently, the inefficiencies originated by the difference between regulated and contract prices were smoothed out by the introduction of intermediate prices which correspond to different consumer bands.

The Argentinean model is another version of the price-cap system. Transportation and distribution rates are adjusted every semester with the U.S. producer price index and a factor intended to stimulate efficiency and investments in the construction, operation and maintenance of facilities.

Contracts

The main purpose of long-term contracts is assurance of supply. Various types of contracts provide customers with the standard of service that best suits their needs, such as firm or interruptible services, fixed or indexed prices, volume discounts, future prices, and so forth.

The preference for long-term contracts and their duration may vary from country to country. In the Netherlands the distributors' association still negotiates 15 years renewable contracts with the State monopoly to guarantee gas supply. In Canada, a study on the evolution of contracts³ shows that:

- the amount of gas sold in the country through long-term contracts has diminished since 1985;
- the average amount of gas purchases per long-term contract has fallen;
- there are fewer contracts with take-or-pay clauses.

However, common features regarding long-term contracts in some countries are: i) gas prices are indexed to the prices of substitutes; and ii) regulators over-view and/or approve contracts in order to avoid monopolistic behavior. An example of approval of contracts by the authority occurred in Great Britain. In order to promote competition, a report by the Monopolies and Mergers Commission recommended that BG did not acquire more than 90% of the gas produced in new fields or imported into Britain.

Unbundling

This term originated in Canada and the U.S. where pipelines were important gas buyers and marketers which offered customers a single bundled price for gas and all rendered services. The evolution of regulatory policy forced pipeline owners to "unbundle" the price of gas and services, and to quote them separately. Thereafter, the consumer could choose from whom he wanted to buy gas (producers, marketers or pipeline owners) and where to contract transportation and storage.

Unbundling is not important in Europe, except for U.K. Competition is very limited in most European countries and markets are usually dominated by a single integrated merchant pipeline. For instance, dominant utilities in France and Spain not only offer a bundled price but apply a single price for all similar consumers regardless of location (postage stamp rates).

Argentina and Colombia have applied limitations to the pipeline companies' market power. The legal framework prohibits pipelines to trade gas or to have any kind of cross ownership with companies related with production, marketing or distribution. Therefore, unbundling is a direct implication of such limitations.

Vertical integration

The main trend on policies regarding vertical integration is the existence of no restrictions on it. However, the underlying reasons for such policies may vary:

- The highly competitive markets of Canada and the U.S. have dealt with the historic market power of pipelines by other means. Legislation on unbundling, secondary markets for capacity, open access and state-of-the-art communications have provided the necessary framework for the development of competition.
- In the U.K., regulatory authorities have managed BG/Es vertical integration by imposing separate accountings (*Chinese walls*) for BG's commercial and

service activities. There are also limits on the exchange of information between these two areas but, as of today, no divestiture of assets has been ordered.

- The rest of Western European markets are characterized by a dominant, state-owned utility,⁴ with statutory monopolies on transport and wholesale trading. In some cases they even hold interests on distribution companies. Even in Germany, where the gas industry is mostly privately owned, large traders also own and operate pipelines and control regional transmission networks.

In contrast, Argentina and Colombia, which have recently undergone a deep reform of their gas industry, established stringent limitations on vertical integration. In particular, transporters are not allowed to buy or sell gas with commercial purposes. Additionally, transporters cannot own or have an interest in companies that produce, distribute or market gas.

Distribution

The recent Argentinean gas reform established eight distribution zones. These zones do not have exclusivity in the transmission of gas due to the existence of "sub-distributors"⁷ and commercial and physical bypass.

Exclusive areas in Colombia are determined based on public interest. Exclusivity contracts establish the distributor's obligation to keep low rates for poor customers as a condition to obtain exclusive rights to serve economically attractive consumers. The duration of exclusivity is at most 20 years.

At the U.S. Federal level, the regulator cannot grant exclusivity. It only provides certificates of convenience and public necessity which have no definite time limit. State regulators (California, Texas) award exclusivity to: i) gas transportation within the state's limits and up to the city gate; and ii) LDCs, which are considered virtual monopolies.

In the Canadian province of Alberta, the municipal authority grants exclusive franchises to provide distribution services in a well-defined area. These franchises hold for 20 years and can be renewed for 10 or more years. Franchises and eventual renewals require a public hearing to determine their public convenience and have to be approved by the province's regulator.

BG's exclusive rights are gradually disappearing. It owns and operates the transportation and distribution network, but it will lose its last legal monopoly by 1998. By that year, BG will not have the exclusive right of serving customers whose consumption is below 25,000 therms per year.

As in most European countries, the right to operate the Spanish transportation system is granted to a single state owned company, Enagas. Such company also has the exclusive right to serve large industrial customers, either directly or through the distribution network. In distribution, authorities award concessions that last up to 75 years. These concessions allow for exclusive distribution to medium and small industrial users, and commercial and residential customers.

Federal versus local regulation

Several federal regimes face the overlapping of regulatory functions performed by federal and local authorities. In certain countries, like in Canada and the U.S., federal regulators govern interstate commerce and interstate pipelines. On the other hand, local authorities are in charge of all the gas industry activities that take place within their jurisdiction. Due to this coexistence, there are rulings applied at the federal level which have consequences in more than one member state, frequently causing conflicts of interest.

In Argentina, federal regulators are granted considerably more powers than local authorities. For example, arbitration by Enargas (Argentina) can only be appealed at the federal level. Similarly, the Ministry for Energy and Industry keeps special regulatory attributions on gas (such as regulation of LPG centers) that would normally correspond to local authorities.

Bidding processes

In Canada, construction projects require a public hearing that, for practical purposes, can be considered a public bidding process. Investors wanting to build a pipeline or other facilities must provide the project's relevant information in order to obtain authorization. If several parties wish to compete for a similar project they can submit their information to the regulatory authority, which will call for a joint public hearing.

The reform of the gas industry in Argentina involved the privatization of several distribution and transportation companies. These entities were sold through a public bidding process that required technical and financial qualifications for all interested parties. The Argentinean Government kept a minimum stake of 30% in each company and, similarly, 10% was reserved for the labor force.

Colombia designed another form of public bidding. Ensuring accessible service to the poorest segments of the population is a necessary condition for a distribution project to win a bidding process.

IV. Regulatory Policy-Making Process After the Gas Reforms

Gas demand will significantly increase in Mexico during the next few years. Environmental regulations which will be in effect by 1998 will imply an increase of demand for cleaner fuels. This means electricity generators and industry will have to substitute the use of highly polluting fuel oil mainly with gas.⁸ Recent changes to the Mexican gas law will allow private participation in transmission, distribution and storage of natural gas. This will help to efficiently allocate gas within the country in order to meet the growing demand.

The amendment to the gas legal framework established general principles for developing the country's natural gas industry. These new principles require the development of a regulatory framework which specifies the organization, opera-

GAS SECTOR: INTERNATIONAL COMPARABLE PROFILES

Structure	Argentina	Colombia	United Kingdom	United States
<i>Companies</i> Transportation (number of) Distribution (number of)	Multiple suppliers, two transportation and multiple distribution 2 8	Single supply, multiple transportation and distribution companies 1 (ISA) 10	Multiple suppliers, transportation and distribution company 1 (<i>British Gas</i>) 41	Multiple vertical integrated regional companies 15 40 plus
Regulatory Authority (status)	Independent	Govt. Dept.	Independent	Govt. Agency
Framework Established	1992	1995*	Evolving	Evolving
Price Regulation	RPI-Xy	Rate of return	RPI-Xy	Rate of return
Load Growth	8%	6%	2%	3%
Demand Industrial Residential Commercial Electricity Generation	25% 30% 10% 35%	24% 7% 24% 45%	50% 35% - -	40% 25% - -
Ownership	Private	Public/Private	Private	Private

*: Ongoing.

y: Price capping with periodic regulatory review.

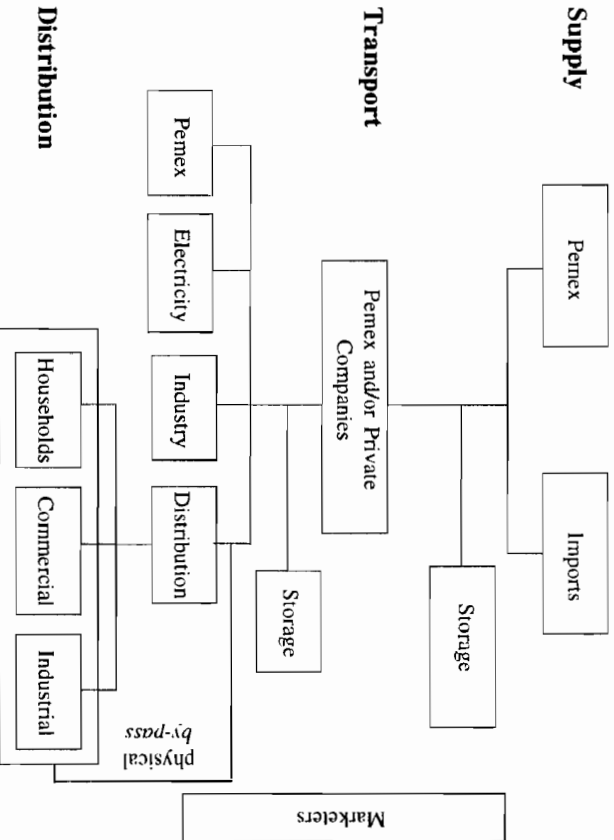
Source: Lehman Brothers.

tion and regulations of the industry. The design of such framework is currently being developed based on a long-run vision of the industry. In this section we describe the main challenges and some of the measures proposed and difficulties faced by the regulatory policy. Measures are preliminary since several opinions will be considered before making final decisions.⁹

The objective of the new regulatory framework is to regulate transportation, storage distribution and first-hand sales of natural gas. This framework comprises the whole industry since transportation, storage and distribution activities are highly interconnected services. A regulation that only promoted one of these activities could hinder the development of another activity and, therefore, the development of the entire industry. The new framework also considers the non-competitive conditions in production.

Industrial organization

The new regulatory framework is being designed having in mind a long-run perspective of the industrial organization of the natural gas industry. The main market players are: first-hand seller (Pemex), transporters, operators of storage facilities, distributors, marketers, users and consumers. A broad perspective of the relations among these players is presented in the following picture:



Regulator's problem

The most fundamental purpose of economic regulation is to allocate economic rents among investors and consumers. Generally speaking, the regulator has to make policy decisions under asymmetric information with respect to prices, vertical integration, exclusivity, open access, commercial and physical bypass, international trade, marketing, bidding processes and secondary markets which maximize:

of

$$\begin{aligned} & \text{subject to:} \\ & EC < K_1 \\ & P \geq K_2 \end{aligned}$$

where:

of = intertemporal social welfare function,¹⁰

EC = intertemporal regulatory authority expenses,

Π = net present value of investors,

K_1, K_2 = positive constants.

In other words, the regulatory policy decisions should be such that social welfare is maximized (limiting monopolistic rents) subject to minimizing the cost of regulation and providing incentives to private investment.

In the context of the gas industry, of depends on two opposing elements: i) development of infrastructure and ii) prices. of increases as transmission and distribution networks are better designed and as prices and rates decrease.

Additionally, regulation of Mexico's gas industry must recognize its specific characteristics. Three of these characteristics are:

- i) Market power will remain present in production, transportation and distribution. The two latter are naturally monopolistic activities. Production will remain a monopoly of Pemex by constitutional mandate.
- ii) There is no existing infrastructure in distribution and, therefore, the potentiality of competition in this activity is scarce.
- iii) The transportation network is more developed. Then there is possibility of competition in this activity.

Consequently, due to the presence of market power, regulation must play an active role in the development of the Mexican gas industry. Likewise, it is a priority to develop distribution systems through regional monopolies. Once such systems are developed (in say 15 years) competition may be promoted.

The proposed policy decisions have been done based on the above methodology framework. In the following pages we give more details regarding regulatory policy issues and proposals that are currently being discussed. In particular, we provide some examples of policy measures which seek to i) develop infrastructure (such as policy measures regarding exclusivity and vertical integration), ii) regulate market power (prices and rates, and international trade), and iii) promote competition (marketers and access to services).

Proposals

Permit Regime

Permit granting is a fundamental regulation instrument. Its objective is to provide certainty to investors and to introduce flexibility so as to modify the long-run industrial structure. The proposal is that transporters, distributors and operators of storage facilities must obtain a permit from the regulatory authority in order to carry out their activities. Also, those users that wish to construct their own pipeline for self consumption must obtain a permit. Some of the proposed characteristics for the permit regime are as follows:

- Transportation: permits will be issued under market risk (no rate of return is previously assured) for specific defined routes and capacities. Market will decide which licensed project is finally built. Permits would be assigned to those parties that present sound technical projects. In case of projects promoted by the government, a transportation permit will be issued through a public bidding process.
- Storage: one permit for each specific location. Its regulation is expected to be as light-handed as possible.
- Distribution: permits for geographic zones defined by the regulatory authority. The definition of these zones will consider feasibility of the projects and the specific characteristics of the area (population density, consumption patterns, etc.). The first distribution permit will be issued through a public bidding and will grant exclusivity in gas transmission but not in gas marketing.
- Physical bypass: permits for users in a defined geographic zone. Users will perform a physical connection to the transportation network (physical bypass) and may use their pipeline exclusively for their own consumption. Physical bypass for self consumption will be allowed only after the exclusivity period.
- Permits will be granted to those projects which assure conditions of safety, feasibility and financing. Permits will be issued for 30 years and will be renewable.
- The procedures for granting permits will be:
 - i) Public bidding, for distribution projects with exclusivity and for transportation projects promoted by the government.
 - ii) Application, for performance of services without exclusivity or after an exclusivity period.

Exclusivity

The granting of exclusivity in the provision of services is an incentive for investment. However, a decision on the length of an exclusivity period should also consider its implications over social welfare.

The optimal length of an exclusivity period should be decided depending on implied rates for consumers, and risks and amount of investments for investors. Too short periods of exclusivity might imply shorter periods of recuperation of investments but higher rates. Large lengths of exclusivity might not be necessary due to natural-market barriers arisen after the construction of a distribution network. The length of the exclusivity period for an LDC project might be affected by the policy adopted with respect to bypass. If in such a period commercial and physical bypass is not allowed, exclusivity will give the distributor the monopoly over transmission and marketing. This will be an investment incentive but will also generate market power. Therefore, the exclusivity period cannot be too long so as to prevent the distributor from charging higher than socially optimal prices for a long time.

On the other hand, if commercial bypass is allowed, the distributor's exclu-

sivity would be restricted to the transmission of gas. This implies less market power for the distributor and more uncertainty for investors. Therefore, the exclusivity period should not be too short since the distributor might only recover his investment through transmission rates.

The proposal regarding exclusivity is as follows:

- No exclusive period would be granted for transportation.
- The length of LDC's exclusivity in transmission or marketing has to be defined for a specific geographic area and according to a specific methodology. This methodology states how to establish exclusivity as a function of variables such as amount of investment, demand structure and consumer coverage. However, the length of an exclusivity period cannot be greater than 15 years. Physical bypass cannot be done during exclusivity. Commercial bypass is acceptable from the first day of the exclusive period.

Vertical Integration

Due to the presence of a dominant player (Pemex), it has been proposed that vertical integration is generally allowed. The only restriction is that transporters and distributors cannot be vertically integrated.

However, vertical integration between transportation and distribution is authorized when a transportation (distribution) permit is necessary for a distribution (transportation) project. Then, if a company wants to build a distribution network in an area where there is no previous transportation pipelines, such company can construct and own the transportation system.

Producers, transporters, operators of storage facilities and distributors can also buy and sell gas. However, they have to unbundle their services and have separate accounting systems for their commercial and service activities. These measures are intended to avoid cross subsidies and predatory competition.

Prices and Rates

Price regulation is an essential instrument for offsetting economic market power. In spite of the changes to the Mexican gas framework, market power will remain present at the stages of production, transportation and distribution. The two latter are naturally monopolistic activities and production will remain a monopoly of Pemex by constitutional mandate.

In this scenario, it has been proposed an active participation of the regulatory authority regarding price regulation. The proposal is that rates are regulated through the methodology "adjusted price cap" (or RPI-X methodology). Price-cap regulation would be in effect until competition conditions are shown to exist.

Price regulation of first-hand sales is considered essential for the introduction of competitive conditions in a single-producer market. Free imports are not considered to be enough competition in the supply of gas. This is especially true during the first years after the implementation of reforms, when the marketing activity will be just starting its development.

According to the proposal, the regulator will determine a price cap for Pemex's first-hand sales. This price cap will be equal to the international price of gas adjusted by transportation costs. For example, if the place of sale of gas is different to the production place, the price cannot be greater than the price cap at the production place plus the transportation rate cap. The price cap will not affect the buyers' capacity to negotiate better conditions for the purchase of national or imported gas.¹¹ In regard to services, rate caps are supposed to be such that investment and operation costs are recovered and reasonable profits are obtained by the service providers. Rate caps will be periodically adjusted so as to incorporate inflation of operation costs. Adjustments will also be done based on factors of efficiency, quality of service, and investment on systems. In addition, subsidies, if any, will have to be explicit, direct and transparent.

Permit holders will calculate their own rates according to the defined methodology. The regulatory authority will approve or not such calculations. Rate caps will just define an upper bound. That is, parties might agree on lower rates for a particular service.

The proposal also states that the price paid by final consumers to a distributor is not directly regulated. This price cannot be greater than the sum of:

- the price of gas,
- the transportation rate,
- the storage rate,
- the distribution rate.

Distributors will be able to transfer to consumers the price at which they purchased their natural gas (passthrough principle). However, the price passed through to consumers cannot be excessively high with respect to alternative sources of gas or with respect to the price of gas passed through by other distributors to other consumers.

This final-consumer price cap would not adversely affect the capacity of each of the industrial users to negotiate better prices in their purchases of gas. Therefore, markups of marketers would be indirectly controlled and their activities would contribute to diminish final-consumer prices.

International Trade

Pemex will be the single producer. Therefore, additionally to first-hand sales regulation, other measures must be taken in order to promote competitiveness in availability of gas. One of these measures is to allow any person to import natural gas without an import license and without import duties. The possibility of free importation will represent a real threat for the domestic producer in prices and possibilities of contracts.

Marketers

Marketers are important in promoting competitiveness since they can arbitrate to ensure the best market conditions for consumers. Marketers' activity is

highly competitive. Sunk costs for carrying out this activity are small since the main assets are working capital and contracts with producers and consumers. Since gas is an homogeneous good, price competition in the final consumers market may be intense.

Under the proposed market structure, marketers will need no permit to operate. They will be able to buy gas (arbitrating between the domestic and foreign production markets), transport it through the transportation network and sell it to distributors or consumers connected to the transportation system. Since commercial bypass is allowed in an exclusive distribution zone, marketers will be able to sell gas to consumers within the distribution area. Likewise, marketers will also be able to buy and sell pipelines' capacity.

Access to Services

The definition of the access of users and consumers to the services provided may limit the use of market power and create competitive conditions in the provision of services. At this time, some of the access-to-services mechanisms are as follows:

- When there is enough capacity, the access of other parties to the transportation and storage systems must be open.
- Distributors must give open access to their distribution network (commercial bypass) starting the first day of operations. The distributor will have to calculate the necessary back-up costs of the project.
- Whenever there is available capacity and the system operation is not adversely affected, other parties must be allowed to connect to the system.

Regulatory Authority

Currently, the existing regulatory energy authority in Mexico, the *Comisión Reguladora de Energía*, does not have the necessary powers to regulate the natural gas industry. However, the *Comisión's* attributions regarding natural gas will be defined in a forthcoming law. These attributions will include:

- Permit granting.
- Auctions.
- Determination of geographical zones for distribution.
- Regulation of open access to services.
- Regulation of prices and rates.
- Contract regulation.
- Verification of compliance with legal, technical, environmental and safety provisions.
- Dispute settlement based on public hearings.
- Advisor on exportations of natural gas.
- Application of sanctions.

The *Comisión* is playing an increasingly significant role in the sector. In previous years, the functions of operator, owner and regulator were not clearly

differentiated in the Mexican energy sector. For instance, some entities acted simultaneously as owners and regulators, or as operators and regulators. Due to the different policy objectives that each of these institutions pursued, this situation had caused inadequate regulation. The *Comisión*'s evolution is part of a process aiming at clearly differentiating the functions assigned to operators, owners and regulators.

Mechanisms to Promote Competition

A summary of measures proposed to promote competition and counterbalance market power are:

- Free imports of natural gas.
- Obligation to perform a service without making it contingent on the acquisition of another service.
- Open access of other parties to the transportation and storage systems when there is enough capacity.
- Unbundling of services.
- Marketers' arbitration
- Commercial bypass.
- Prohibition of unreasonably discriminatory practices by service providers.
- Regulation of contracts to avoid unilateral clauses and preferential conditions.
- Price-cap methodology with efficiency adjustments.
- Competitive biddings for permits with exclusivity rights.
- Secondary market of capacity rights in pipelines.
- Construction of pipelines for transportation and distribution is considered a matter of public interest so as to ensure continuous supply to final users.

Pemex

Pemex will stay in the industry as the only producer. However, it will also remain as a transporter and marketer and will have to comply with the permit regime.

Notes

- ¹ In 1992, crude oil made up for 72.8% of primary energy sources in Mexico. This figure is well above any other country in the world, including the Middle East.
- ² Oil accounts for more than two thirds of hydrocarbon reserves. The share of gas is 21.3%.
- ³ Pemex and the *Comisión Federal de Electricidad* (CFE) concentrate 68% of total gas consumption.
- ⁴ Lags in LPG regulation usually originate low quality of service.
- ⁵ *Natural Gas Transportation, Organization and Regulation*, OCDE, 1994.
- ⁶ Germany is an exception to this rule. *Ruhrigas*, the largest gas company in the country, is privately owned.
- ⁷ Sub-distributors are former distributors that were settled in the relevant zone before privatization.

- ⁸ It is expected that national demand for natural gas will increase in around 50% during the next six years.
- ⁹ By the time this draft is written, potential participants in the Mexico's gas industry are being consulted with respect to diverse regulatory policy issues.
- ¹⁰ In the context of a gas industry, welfare increases as transmission and distribution networks are better designed and as prices and rates decrease.
- ¹¹ Imports of gas will not be restricted and will not be considered as first-hand sales. Therefore, the imports' price will not be regulated.