

European natural gas: market forces will bring about competition in any case

Marian Radetzki

Professor of Economics, University of Luleå, Sweden, President of SNS Energy, PO Box 5629, 114 86 Stockholm, Sweden

Abstract

The purpose is to analyze the emergent commercial forces that promote increasing competition in the European natural gas market. The paper begins by describing the traditional market organization, along with its monopolistic elements and inflexibilities. It goes on to illuminate the destabilizing frustration among producers with fast growing supply potential, caused by the limited growth in demand under prevailing market arrangements. Two emergent commercial forces promoting competition are then dealt with. The *first* is the increasingly widespread effort by large consumers to procure gas on improved terms by circumventing the national transmission companies. The important role played by Wingas in this respect is reviewed in detail. The *second* is the impending impact of the Interconnector, a gas pipe between the UK and the continent, which becomes operational during 1998. The paper argues that these commercial developments are undermining existing monopolies and will bring about increasing competition, even if the formal regulatory regime stays intact. © 1999 Elsevier Science Ltd. All rights reserved.

Introduction

A ministerial decision at the European Union level, reached at the end of 1997, was to adopt a European Gas Directive. The Directive is being hailed as an instrument of critical significance for the introduction of some competition into an industry characterized by substantial elements of monopoly, public ownership and far-reaching state intervention. Its provisions are seen as tools that will assure greater flexibility and a more efficiently functioning gas market.

The Directive has been adopted as a compromise, in the face of opposition from those who have hitherto reaped the benefits of monopoly. Its ultimate content, and implications, remain to be seen, for it has yet to pass through the European Parliament which may propose amendments, and will then only gradually be enacted into national laws. A companion paper (Percebois, 1998) nevertheless makes an attempt to clarify the Directive's likely impact on the European gas market developments.

The present paper adopts a different perspective. It argues that market forces have undermined the staid

nature of the gas market since the early 1990s, that competition is popping up in a number of unexpected places, forcing change on existing agents and institutions, and that these developments will continue and gain force, irrespective of what happens to formal deregulation, abdication of state ownership, and political action to suppress commercial or statutory monopolies. In this perspective, the efforts to deregulate can be seen as a rearguard action by politicians recognizing the inevitability of what is already taking place, and the Directive can at best be seen as a lubricant to the process.

The paper proceeds as follows. Section 2 describes the traditional structure of the (West) European gas market, and discusses the reasons for the extended perseverance of this structure. Section 3 analyzes the increasing restlessness and frustrations felt by many agents whose goals and ambitions had been thwarted by the rigid market. It is argued that these frustrations are destabilizing the prevailing arrangements. Section 4 displays a series of commercial actions, caused by these frustrations, but also by evolving external circumstances, that are gradually undermining the prevailing gas market structure, and bring about an increasing degree of

competition. It is shown how even the most protected monopolies are jumping on the competitive bandwagon once they become aware that existing arrangements are crumbling. Section 5 summarizes the discussion, and briefly points to the likely implications of an increasingly competitive market. It also draws attention to some recent actions by leading gas suppliers to the European market, which, if permitted to come to fruition, might reverse the trend towards competition and help reestablish market power by the few.

The traditional gas market arrangements in Western Europe¹

The gas market in Western Europe is of relatively recent origin. It emerged on a significant scale only in the late 1960s, after the large Dutch Groningen field went into production. For at least 10 years, until the late 1970s, when gas from Algeria, Norway and the USSR started to flow to Western European consumers in substantial quantities, the Dutch exports constituted a major proportion of total supply.²

Several factors explain the structure of the emergent West European gas market in the 1970s and 1980s. This was the OPEC heyday, a period during which the energy sector became heavily politicized, and security of supply was on top of the political agenda. Political involvement was seen to be essential for regulation of supplies believed to be scarce, and for handling the relationships with producers like Algeria and the USSR, deemed to be politically unstable. Oil prices were at historical peaks, and so were, by contagion, the prices of other energy products. The gas projects under development from which Europe was to be supplied, were huge, and each constituted a very significant addition to the small overall market. Long-term contracts between sizable and well-established parties, with secure prices, were seen as essential to assure the investments in gas production and transport, and the demand for gas. The multinational oil companies took a lead in the development of gas production facilities in the Netherlands and the North Sea. These companies, along with state owned energy enterprises in Europe, were also heavily involved in the huge

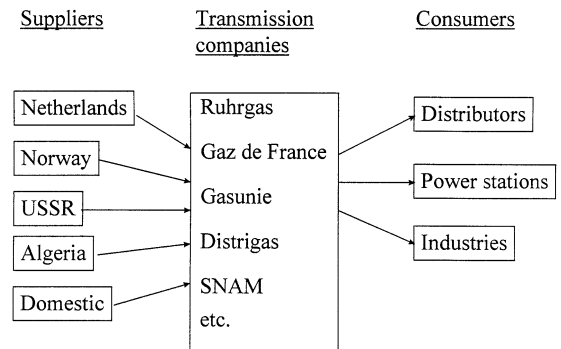


Fig. 1. Main features of the traditional West European gas market

investments of a pipeline network to supply the European market.

With these preconditions in view, the structure of the emergent market (Radetzki, 1990) depicted in Figure 1, comes as no great surprise. At the center were the national transmission companies. Most of these, eg Gaz de France, Distrigas in Belgium and SNAM in Italy, were state-owned statutory monopolies insofar as imports and onward sales were concerned.³ Others, like Ruhrgas in Germany, were privately owned, predominantly by energy companies like the oil multinationals, or Ruhrkohle, and held very dominant positions in their national gas markets.

The upstream supply too, was heavily concentrated and had a dominant government ownership. In Algeria and the USSR, of course, gas exports were an integral part of the government. In Norway, exports were tightly coordinated by a triumvirate, comprising Statoil, the state-owned petroleum company, and junior partners, Norsk Hydro and Saga, in which the government held strategic ownership positions too. And Gasunie, the supplier of gas produced in the Netherlands, half-owned by the government, held statutory monopolies in all directions: as exporter, importer and wholesale trader.

The public involvement in most national transmission companies permitted a variety of government interventions with different purposes in view. For instance, there was an implicit political understanding that dependence on imports from the USSR must be constrained. Obversely, the governments of France and Italy encouraged their transmission companies to pay excessive prices for Algerian gas as a kind of implicit foreign aid (Mossavar-Rahmani *et al*, 1987). Large-scale purchases of gas formed part of national trade policies, with regular requirements for counter-trade, as in the case of the French agreement in 1987 to import Norwegian gas from the Troll field (Estrada *et al*, 1988).

¹ Until about 1990, East European gas supply was dominated by barter contracts with the USSR. These arrangements are of little relevance for the present account. In more recent years, the East European gas markets have become increasingly integrated with those in Western Europe, to form the European gas market under investigation in this paper. With the exception of some erratic exports from Norway, the UK market remained, until the present, secluded from the rest of Europe. For this reason, the UK too, is not dealt with in the present section.

² For a fuller account of the antecedents of the West European gas market, see Heren (1998).

³ In some cases, the statutory monopoly rights did not apply to imports for own use.

The powerful position of the national transmission companies was widely regarded by the exporters as a guarantee that the purchase obligations under long-term contracts would be fulfilled. Exporters at the time were hesitant about launching large-scale production investments, until such guarantees had been obtained. The strength of the national transmission companies was also regarded as essential to ensure sufficient bargaining stamina for obtaining favorable import prices.

The ownership and sole access to pipes by the national transmission companies (and local distributors), provided these agents with considerable market power vis-a-vis their customers. Monopolistic price discrimination became the convention, with each customer category charged a price close to the price of available substitutes. In this way, each user category was charged the maximum that it was prepared to pay. In practice, the consumer prices came to fluctuate in parallel with the price of petroleum products.

The import price of gas, too, was strongly related to the prices of crude oil and oil products. Since both their purchase and sales price was related to oil, the national transmission companies were shielded from the vagaries of the price fluctuations. But contrary to a widespread view at the time, the strength of the transmission companies was not a guarantee that they would strike hard price bargains with the gas exporters. Two factors reduced their incentives to bargain down the price. *First*, several of them were publicly owned utilities, required to provide a 'normal' return on capital, not to maximize profits. For instance, Gasunie in the Netherlands was required to attain an annual net profit and dividend equal to Dfl 80 million and no more (Gasunie, 1988). Similarly, a study of the annual reports of Gaz de France from the time (Gaz de France, 1988) suggests an obligation to earn an adequate, but not necessarily a maximum return on investments. *Second*, the major oil companies responsible for the exploitation of gas in the Netherlands and the North Sea held very important ownership positions in several of the national transmission companies. The relative indifference of these owners between 'upstream' or 'downstream' profit generation must have reduced the pressure on the transmission companies to strike hard price bargains.

In any event, the very high oil prices during the 'OPEC decade' of 1975–1985 made it possible to charge the gas consumers at levels far above the cost of production and transport. Most of the gas rent accrued to the producers upstream, but a share was allocated to the transmission companies, thereby assuring them of a very comfortable life. Importing country governments were complacent, for the arrangements assured secure and adequate supplies, and thus resolved the overriding concern of the time. None of the major agents wanted to rock the boat, and the structure became increasingly cemented.

Emerging frustrations

The decision by Saudi Arabia and other Middle East oil producers in early 1986 to allow oil prices to fall by about half led to a dramatic and uncomfortable decline in the gas rent, and, even more important, to a fundamental change in the perspective on the European energy market.

Import prices of gas to Western Europe (CIF importing country's border) declined from an average of \$3.7/mmBTU in 1984–1986 to \$2.3 in 1987–1989, or by almost 40% (*BP Review of World Gas*, 1991), and have remained at the lower level for most of the time during the 1990s. The price fall sharply reduced the size of the gas rent reaped by producers, but circumstantial evidence suggests that significant rents must have remained even at the new price level (Radetzki, 1992).

The producers' attitudes to the prevailing pricing conventions were sharply changed by the price decline. These conventions, established in the mid-1970s, involved charging final consumers the maximum they would pay, given the price of substitutes. The impact was, unsurprisingly, a restraint on the expansion of the gas market. In contrast to brisk growth until the mid-1970s when the price convention was established, that share fluctuated in a narrow range between 14.5 and 16% from 1980 and until the early 1990s (BP, annual). So long as prices and rents remained exceedingly high, ie until 1986, producers willingly accepted the stagnant market, even though they had a clear potential to expand. After the price fall, however, their attitude changed. With gas prices tied to those of oil products, the competitiveness of gas did not improve, despite the gas price decline, and the market share did not rise by much. The benefit of the monopolistic arrangement was therefore increasingly questioned.

Adding to the producers' restlessness was an extraordinary productivity improvement in the extraction of both oil and gas, in the North Sea and elsewhere. This was partly a pent-up reaction to the cost slack that emerged in consequence of the high prices of the preceding years, but more fundamental technical progress was also at work. Thus, even in the mid-1990s, there appears to be 'a huge untapped potential for lowering production costs' (IEA, 1995). As costs were lowered, the potential for growing production and profitable sales was increased, but the realization of this potential was thwarted by the slowness of market growth. Despite increasing producer frustration, the prevailing market arrangements remained intact. Triggers were clearly needed to institute change. As will be argued in the following section, these triggers started to emerge in full force in the middle of the 1990s decade.

The oil price fall also contributed to a changed government attitude towards energy. This began already in the early 1980s, in consequence of Ronald Reagan's and

Margaret Thatcher's general crusades in favor of politically unhampered market solutions and competition. As the decade evolved, there was increasing disillusion with the far-reaching energy policies implemented in the preceding years. The oil price collapse was seen as a confirmation that energy supplies were ample and that public interventions to assure supply security, eg in the form of national monopolies, were costly and unnecessary. The public support for the rigid gas market structure was heavily diluted in consequence.

Consumers too, came to question the monopolistic price discrimination exercised by the national transmission companies, but few had the means to challenge the system so long as the pipelines remained the exclusive preserve of national transmission companies and local distributors. As will appear below, however, already by 1990, the few started to make a dent.

In sum, then, a number of emergent circumstances in the late 1980s and early 1990s, pointed to the demise of the gas market arrangements, but the traditional structures have exhibited a considerable perseverance. In the late 1990s most of these structures are still in place, but are ripe for profound change, given the increasingly frequent attacks to which they are exposed by commercial forces. These attacks are described in the next section. Clearly, the thrust towards a competitive market for gas will be speeded up by the shift in the regulatory regime decided upon in late 1997, and especially by the provisions for some third party access to pipelines. There should be no doubt, however, that the actions of the market agents themselves are leading the process of change.

Commercial change in favor of competition

In the preceding section I discussed a number of frustrations with the status quo, increasingly voiced in the 1990s by various agents in the European gas market. I also pointed to the ensuing pressures for change. Some of these pressures have led to commercial actions that are altering the gas market structure at increasing speed. These actions, to be described below, have been greatly facilitated by two coincident developments outside the domain of the gas market regulation proper, that have widened many market actors' scope for maneuver.

The *first* was the opening up of the huge power market for gas. In 1990, as the perception of an abundance of energy supplies in general and gas in particular had become widespread, the old EU Directive against the use of gas in power generation, was repealed. The effectiveness of the Directive, while it lasted, has been questioned. Technological breakthroughs in the use of gas for power, in particular the commercial vindication of the combined cycle gas turbines with very high rates of energy efficiency about this time, were probably even more important for the promotion of gas in power pro-

duction than the Directive's repeal. The *second* development was the liberalization of the East European gas market about 1990, thus making it accessible to agents from Western Europe. These developments in combination opened up large-scale new opportunities for the established gas market actors, as well as for new entrants, in turn providing opportunities for implementing structural change.

The Wingas story and its repercussions

The Wingas actions are without comparison the most far-reaching, though clearly not the only ones, among those prompted by gas consumer dissatisfaction with the monopolistic arrangements to which they were subjected. In 1989, Wintershall, the oil subsidiary of BASF, one of Germany's chemical giants, was mobilized by its parent to build a 560 km pipeline (Midal) from Emden on the North Sea to BASF's chemical plants at Ludwigshafen in mid-Germany. The decision was prompted by failure to gain access to the existing pipeline network, and was seen as a measure to assure the chemical company's gas needs without reliance on Ruhrgas (Estrada *et al*, 1995).

What began as an isolated action to bypass Ruhrgas, has subsequently developed into a general challenge to the dominance and inflexibility of the leading German transmission company, with likely repercussions far beyond the German borders. The developments have shown that the natural monopoly of a dominant pipeline owner can be surmounted, provided that the challenger is determined, and has sufficiently deep pockets. They have also shown that producers with large potential capacity to supply gas in the 1990s are willing to break the established supply chains if they see an opportunity to increase sales.

A critical follow-up element in Wintershall's challenge of Ruhrgas comprised a joint venture with Gazprom, the sole Russian gas exporter, to build a new pipeline (Stegal) through Slovakia and the Czech Republic, to connect with Midal in Germany, for the purpose of selling Russian gas in eastern as well as western Germany and beyond (Estrada *et al*, 1995). Another has involved both price and legal wars with Ruhrgas, over the gas market in eastern Germany. Wingas, 65% owned by Wintershall and 35% by Gazprom, has been in the forefront of all these actions. More recently, the fighting for markets has also spread into the western part of the country, with the challenger gaining significant footholds with some of the regional transmission companies (Bayerngas and Westfälisches Ferngas agreed to take 10–15% of their long term needs from Wingas according to reports in *European Gas Markets*, 23 May 1997) as well as in the industrial and the emerging power market.

Wingas' so far unsuccessful attempts to ally with Norwegian producer Saga is another demonstration of upstream frustrations caused by the rigid market

arrangements. In 1993, Saga agreed to deliver 2–3 BCM of gas per year, against a 14% stake in Wingas' pipeline assets, but the deal was rejected by Norway's Statoil-led export monopoly, GFU. In 1995, a new deal was formulated in which Saga, with a steadily increasing resource potential for which there were limited market outlets, would export some 1.5 BCM of gas annually to its own German subsidiary, thereby obviating GFU, with the gas subsequently to be sold to Wingas. This deal too, was thwarted by political and commercial pressures from the defenders of status quo (*World Gas Intelligence*, May 12 and Aug 25, 1995). No doubt, a third deal will soon be formulated, and in the meantime Saga's Norwegian counterparts may well have changed their mind, after realizing the Norwegian disadvantage, in terms of lost market shares, from persevering monopoly.

Wingas has been involved in an extraordinary pipeline construction program to import gas to Germany. The program is reported to have cost a total of close to \$3 billion (Stoppard, 1996). The results, at the end of 1996, are summarized in Table 1. The operating lines, from North and East, have a capacity of 54 BCM, but capacity utilization for 1997 was assessed at less than 20% (*European Gas Markets*, Nov 1996). A rod of comparison when reviewing these figures is the total gas consumption in 1996 in the EU, of 335 BCM, and in the whole of Europe excluding FSU, of 418 BCM.

Wingas capacity will rise to 90 BCM when the pipelines under construction and planning become operational. This is marginally more than overall German gas consumption in 1996 (84 BCM), and represents 135% of German imports (67 BCM) in that year (BP, annual).

Conditions in the German gas market will be fundamentally altered in consequence of this construction. Prices will have to decline, as Wingas competes with Ruhrgas for market share, and will remain low for a long time to induce a rise in consumption sufficient to assure reasonable levels of capacity utilization. Wingas and its owners, BASF and Gazprom, must apparently believe that the pipeline investments will prove profitable in the long run, despite a lowered price level. Change in

Germany is clearly driven by market dynamics, and not by shifts in the regulatory regime.

The investments by Wingas are bound to have spill-over repercussions also outside Germany. A gas price fall cannot be isolated to Germany in an increasingly integrated European market for energy. Spillovers will be accentuated by Wingas' own international ambitions, which are likely to undermine the market power of national transmission companies in other countries. Wingas' recent interest in the Interconnector (see below) is an indicator of these ambitions.

Other arrangements undermining the traditional gas market structure

In 1990, the Dutch Association of Electricity Producers, SEP, signed a contract with Norwegian gas supplies, to provide gas to its power stations on the coast, so bypassing the Gasunie pipeline grid (Estrada *et al*, 1995). Gas prices in this contract were to evolve in parallel with the price of coal, thus reducing the traditional tie to oil and oil products. Though the details of the contract have not been published, the terms must be more advantageous to the buyer than what could have been obtained from Gasunie, or else, the deal would never have been struck. Electrabel of Belgium has signed a similar contract for the import of Norwegian gas, bypassing Distrigas, the national transmission monopoly (Estrada *et al*, 1995).

In Italy, Edison, a private electricity producer, ventured into gas in 1992, by acquiring ownership of some of the domestic gas fields (Stoppard, 1996). In 1995, it went much further, through a joint venture with Gazprom to establish the 12 BCM Volta pipeline that would transport Russian gas, mainly for combined cycle power plants to be constructed. Not only will the Volta gas bypass SNAM, the virtual monopolist for gas transmission and wholesale trade. Given the uncertainty about the volumes of gas that will be required, the Volta project even looks at SNAM as a potential customer (*European Gas Markets*, January 1996).

The Volta project is one of the early instances of a substantial gas endeavor undertaken without confirmed long-term market outlets. In the maturing and soon competitive European gas market, such contracts are no longer regarded as a precondition for large-scale investments. The venture also provides an example of an exporter (Gazprom) so eager to expand his markets that he is prepared to forgo the exclusive relationship with SNAM, until recently the sole importer.⁴

The frustrations among Europe's main gas suppliers with sales and market shares under traditional arrangements are also expressed through an increasing frequency of spot sales. A spot sale by, say, Gazprom or the Norwegian GFU can be seen as a means to preserve the market by preempting spot sales from further away,

Table 1
Wingas import pipelines into Germany

Entry point	Name	Capacity BCM/y	Status
North Sea	Midal	10	Operating
Czech Rep	Stegal	12	Operating
Austria	Bavaria	6	Operating
Poland	Jagal 1	26	Operating
Belgium	Wedal	10	Building
Poland	Jagal 2	26	Planned

Source: European Gas Markets, Nov 1996.

eg LNG from Australia or the Middle East. But as spot sales proliferate, they undermine the long-term contract and price structure, which has hitherto been an important institutional feature of the gas market.

The Interconnector

The Yamal pipeline from western Siberia through Poland and further west is potentially providing a very large scale additional capacity of some 50 BCM to the European gas supplies. As appears from the preceding discussions, Wingas is playing a major role in this endeavor. Only a minor share of these supplies has been sold under long-term contracts, and large volumes remain to find a market. However, the expansion of Russian deliveries comes as no sudden surprise, for the development of the Russian gas bubble has been going on for some time (Dienes, Dobozi and Radetzki, 1994). Not so for the Interconnector, whose implications are causing considerable confusion to the traditional arrangements, and a great stir among the agents.

Writing in 1995, Estrada *et al* (1995) recorded the plan to construct the Interconnector, a pipe from Bacton in the UK to Zeebrugge in Belgium, to permit the exports of excessive UK supplies to the Continent late in the 1990s. They also noted that the UK was likely to become a net importer just after the turn of the century, at which time the flow of gas through the Interconnector would be reversed. This, at the time, was the prevalent view in the gas industry, even though some, but not many, had much more optimistic, and, as it turned out, realistic, perceptions of the UK's production and export potential (Odell, 1996).

In the event, construction of the Interconnector, with a capacity of 20 BCM per year, was started up in 1996, with anticipated completion by late 1998. The first right to use the capacity was vested with the shareholders in relation to their participation. The shareholder group comprised: British Gas, 45%; British Petroleum, 10%; Conoco, 10%; and Amerada Hess, Distrigas, Elf, Gazprom, National Power (UK), and Ruhrgas, with 5% each (European Gas Markets, Sept 1996).

Table 2 shows that by the end of 1997, a total of almost 11 BCM of this capacity had been contracted for under long-term agreements to deliver UK gas. Further contracts are anticipated before operations begin, but some 5 BCM of annual capacity is expected to be left available for short-term or spot sales (World Gas Intelligence, Nov 28, 1997). At the time of writing (early 1998), before the Interconnector has started operating, plans have been

Table 2
Interconnector sales of UK gas, status Dec 1998

Parties	Volume, BCM/year	Duration, years	Delivery point
Conoco-Wingas	1.0	10	Aachen
BG-Wingas	2.0	10	Aachen/Zeebrugge
BG-Thyssengas	0.5	7	Zeebrugge
Mobil-Hydro Agri	0.8	10	Zeebrugge
BP-Ruhrgas	1.0	15	Bacton/Zeebrugge
BG-Elsta	1.0	8	Zeebrugge
BG-Entrada	0.7	8	Zeebrugge
Conoco-Gasunie	1.0	8	Belg/Dutch border
Elf/Texaco-GDF	2.8	na	na

Source: European Gas Markets, Oct 1997; World Gas Intelligence, Nov 28, 1997.

advanced to make Zeebrugge into a European hub, comprising both physical and paper trade. Enron, the global and prolific gas trading company from the US, is waiting for the right opportunity to jump into this market from its subsidiary base in the UK.

The content of Table 2, presented chronologically, raises several observations of importance for the theme pursued in the present paper.

First, it appears that very substantial exportable surpluses of UK gas will be available for the foreseeable future. Competition among producers in the UK has clearly released a profitable production potential that few observers perceived, until the Interconnector outlet became a reality. Now that the gas market in the UK is being tied to the rest of Europe, the example of what has been accomplished by competition in the UK is bound to have a stronger influence than before on continental developments. It could well be that the Norwegian capacity to supply will experience a similarly impressive upward jump, once the Norwegian producers start to compete with each other.

Second, part of the deliveries are destined for Wingas, in Germany or elsewhere, thus diversifying this company's sources, and improving the supply security image of its deliveries. This should add to Wingas' competitive edge when it seeks to take additional market shares, from Ruhrgas and others.

A third observation is that several of the contracts have been signed with final users or associations of users, eg Hydro Agri (fertilizer), or Elsta and Entrada (electricity), all in the Netherlands. Given the onerous conditions for transmission of gas from Zeebrugge, offered by the national transmission companies, all three are constructing their own pipelines for onward transport. An excess capacity is built into these pipelines, in case the buyers' own future demand increases, or to be offered to other final gas users. The transmission companies' market control is compromised in consequence.

Fourth, the recent involvement of Ruhrgas, Gasunie and Gaz de France as buyers of Interconnector gas, can

⁴Changes occur at a fast pace. In May 1998, at the time this manuscript went through its final revision, Edison announced that it was shelving the Volta project (Heren, 1998). However, this decision is unlikely to be the final word on the endeavor.

be perceived as defensive steps by the national transmission companies aimed at maintaining market control. It is by no means clear that these measures will achieve the desired ends.

The volumes to be made available through the Interconnector, may be marginal, compared to overall demand (6% of EU's consumption). But then, it should be recalled that competition and price setting are typically determined by marginal supplies.

A summary of conclusions and a caveat

The thesis of this paper is that competitive conditions are gaining an important foothold in the European gas market, hitherto characterized by monopolistic conditions and pervasive state involvement, even before the impact of formal deregulation, in the form of the European Gas Directive, has taken hold. The reasons for the ongoing change comprise a lesser concern of both governments and private agents about supply security, the lesser need in an increasingly mature market to rely on stiff long-term contract arrangements, an increasing frustration among producers whose growing supply potential does not find a sales outlet under prevailing market arrangements, dissatisfied large consumers who are prepared to challenge the transmission monopolies, and the competitive injection, both on the supply and the demand side, caused by the impending deliveries from the UK.

Already, some of the national transmission companies are accepting to transport gas owned by final users, at discounted rates, in an effort to thwart the thrust towards independent pipeline construction. It is only a question of time until these companies will be tempted to pinch customers, situated in the proximity of national borders, from each other. Even the most protected monopolies will jump on the bandwagon of change, and position themselves for the competitive order, once they realize that the traditional arrangements are crumbling.

The ongoing process in which commercial forces lead to an increasingly competitive gas market, will have several important implications. Briefly, the number of independently acting gas suppliers, including both producers and traders, will proliferate. Some agents currently operating in the European gas market will experience difficulties in adapting to the emerging competitive conditions, and will not survive. Average prices of gas, both at the import point and the consumer gate will decline relative to the prices of other fuels, and the growth of consumption will accelerate, as the pent-up supply potential finds competitive market outlets. The contractual arrangements will become shorter and increasingly flexible, with gas prices fluctuating, according to season, to the time of the day, and to conditions of supply. National borders in Europe will lose their significance. And gov-

ernments will withdraw in some measure from their ownership positions in the gas industry, as they realize that the gas market can be privatized with impunity. Gas users will benefit, provided that they take an active attitude to the menu of flexible offers, of gas and of ancillary services, physical, financial and others, provided by the market.

Though this, in my view, is the most likely outcome of events in the European gas market in the first decade of the coming century, a caveat needs to be inserted. Russia and the other FSU republics hold an exceedingly strong gas resource position vis-a-vis Europe, comparable to that of the Middle East in world oil. Gazprom, the giant Russian gas monopoly, has made forays, both upstream and downstream, to establish itself, usually through joint ventures with local agents, throughout the European gas supply system. The Gazprom presence comprises not only the former communist countries of Bulgaria, Hungary, Poland, Romania, Slovakia and Slovenia, but also Greece and Turkey, as well as Austria, France and Finland. Gazprom's involvements with Edison in Italy and with Wingas in Germany have been discussed above. Gazprom has also made overtures about joint ventures with producers in Algeria and in the UK.

The Gazprom proliferation can of course be seen as an energetic effort to expand market shares, to make a fuller use of the rich resource base, and to fill the two new pipes from the east, Jagal 1 and 2, reported in Table 1 above. This is the most likely interpretation, especially in the short- to medium-run. But it cannot be precluded that an implicit Gazprom goal for the longer perspective is to out-manoeuvre competitors, to establish itself as a dominant market player throughout the gas supply chain, and to derive benefit from advantageous prices and margins, made possible by its dominant position.

The recently announced collaboration between Gazprom and Shell, is a pointer to the plausibility of such a development. Shell is another gas giant, globally and in the European market. In what 'may turn out to be the most significant component of the 21st century European gas industry', the two 'have agreed to form a strategic alliance to operate on a wide range of projects for the development of oil, gas and gas liquids, and other energy initiatives, both in Russia and internationally.' (*European Gas Markets*, Nov 1997). As a first step, Shell will purchase \$ 1 billion worth of Gazprom convertible bonds. If they set their minds to it, the two together could wield a formidable influence over the European gas market.

Will they be able to manipulate the market to their own monopolistic advantage? And will they want to do so? There is no doubt about the ability of the pair first to increase their joint market position through fierce competition, and then to control supply and to maintain monopolistic prices in the short-to medium term. In the longer run, such a policy might backfire, both by waking

gas competitors to life and by prompting interfuel substitution. My hunch is that the Gazprom–Shell alliance will take a long-term view, and avoid monopolistic excesses, even if its market share would permit it to do so.

References

- BP (annual) BP Statistical Review of World Energy.
BP Review of World Gas (1991)
- Dienes, L., Dobozi, I., Radetzki, M., 1994. Energy and Economic Reform in the Former Soviet Union. St Martin's Press, New York.
- Estrada, J., et al., 1988. Natural Gas in Europe: Markets, Organization and Politics. Pinter Publishers, London.
- Estrada, J., et al., 1995. The Development of European Gas Markets. Wiley, New York.
- European Gas Markets (monthly) Jan, Sept, Nov, 1996; May, Oct, Nov, 1997.
- Gasunie (1988) Annual Report 1987.
- Gaz de France, 1988. Annual Report 1987.
- Heren, P., 1998. Removing the government from European gas. in this issue of Energy Policy.
- IEA, 1991. Natural Gas Prospects and Policies. OECD, Paris.
- IEA, 1995. Oil, Gas and Coal Supply Outlook. OECD, Paris.
- Mossavar-Rahmani, B, et al (1987) Natural Gas in Western Europe: Structure, Strategies and Politics. Harvard International Energy Studies, No 3, Harvard University, Cambridge Mass.
- Odell, P., 1996. The Cost of Longer Run Gas Supply to Europe. Energy Studies Review, 7(2).
- Percebois, J., 1998. The gas deregulation process in Europe: economic and political approach. In this issue of Energy Policy.
- Radetzki, M., 1990. Major Actors in the west European gas market. OPEC Review, Summer.
- Radetzki, M., 1992. Pricing of Natural Gas in the West European Market. Energy Studies Review, 4(2).
- Stoppard, M., 1996. A New Order for Gas in Europe?. Oxford Institute for Energy Studies.
- World Gas Intelligence (bimonthly) May 12, Aug 25, 1995; Nov 28, 1997.