
The Liberalization of the European Gas Sector and the Strategic Positioning of Firms: a Dynamic Approach for Corporate Competence Building

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Introduction

The recent liberalization of the European gas and power sectors has introduced significant changes in the way energy markets function, and created some uncertainty about how they may be configured in the future. This uncertainty gives the players affected directly or indirectly by the changes an opportunity to redefine their strategic positioning and influence the future of the industry. In fact, one of the main consequences of the liberalization trend is the weakening of institutional entry barriers, compelling operators traditionally protected by regional or national monopolies to compete with other potential actors. If the gas, power and oil industries had relatively clear frontiers in the past, the frontiers now are becoming increasingly permeable, allowing companies to deploy strategies to take advantage of new growth and rent appropriation opportunities.

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In this new framework, questions about a relevant evolution of businesses and competencies are particularly important. In fact, for the actors involved, there is a need to redefine coherently their value chain system, to master new activities, and to detect diversification strategies out of their core businesses. To this must be added the choice of appropriate modalities that provide access to new competencies and improve and leverage existing ones. There is no doubt that the financial and time constraints firms are facing and the will to benefit from synergies (scale and scope economies, risk and know-how sharing) favor the emergence of new forms of partnerships and the use of specific competence access modes.

These observations have led us to better understand how competencies in the gas sector evolve according to the new market structure and the strategic movements the different players engage in. By combining the two approaches - evolution and strategy - we show that a firm's competencies define both its membership in a specific sector and its distinctiveness from its competitors. In order to further explain the idea of membership we use the concept of *required competencies*, i.e. the competencies necessary for a firm to successfully deploy its activities in a sector at a given moment in time. The gas sector provides an example of how required competencies evolve with the recent liberalization trend (Part 2). In order to define the strategic positioning process of different actors in this sector (oil companies, gas companies, power generators, private collective service companies, etc.) we refer to the concept of *core competencies*, i.e. competencies developed by firms through their specific history and which could continue to give them growth opportunities and a sustainable competitive advantage if maintained and combined in a *specific* manner with new competencies. This leads us to focus on the concept of *dynamic capabilities*, which rely on a set of organizational and strategic processes needed to integrate, reconfigure, develop and create new competencies in order to initiate or adapt to market changes (Part 3).

1. The Sector as the Unit of Analysis

In this section we first propose a framework to explain how competitive changes occurring in one sector level can affect both the dynamics of required competencies and the frontiers with adjacent sectors. Next we apply this approach to the gas sector.

1.1. Required Competencies

Required competencies can be defined as the competencies specific to an industrial sector that a firm must possess in order to belong to that sector. Each industry develops its own set of competencies that characterize its frontiers and technological trajectories as well as its management and organizational modes. In

spite of the differences that may exist between firms belonging to the same sector, they share a common knowledge base because of the similarities of their markets and activities. K. Eisenhardt & J. Martin (2000) explain the emergence of this common knowledge by referring to the notion of *best practice*. The works dedicated to sectoral taxonomies that explain the relationship between technological regimes and organizational forms (K. Pavitt, 1984) also support this reasoning.

Obviously, the evolution of the technological/institutional context and of demand and supply characteristics requires that firms adapt their competencies to the new competitive conditions that structure their environment. The evolution of *required competencies* may be approached using the distinction G. Hamel (1994) made between functionality, coordination and market access competencies.

- Functionality competencies support the attributes of the products/services supplied. The customization practices developing in several sectors are dependent on these competencies. But they also involve some attributes more particularly sought by consumers or favored by technological progress (home automation, performance/fuel consumption ratio for a vehicle, distributed power, etc.).
- Coordination competencies have to do with organizational aspects. They define the properties of the production system (diffusion of matrix organizations for the development of new products, quality circles, alliance and merger acquisition management procedures, outsourcing practices, etc.).
- Market access competencies involve distribution, commercialization and internationalization practices, but also the procedures for ensuring client loyalty and accessing new markets and new clients.

Two remarks are necessary in connection with the idea of *required competencies*. First, while some firms have some competencies in common at a given moment in time, the competencies might have been developed under different initial conditions and while the firms were engaged on specific paths. S. Brusoni & al. (2000) note that “*firms may well...choose different governance structures to manage the same economic activity. In other words, borrowing a concept from systems theory, governance structures are characterized by ‘equifinality’: that is – the final state of a system (in our case, a system of coordination of economic activities) can be achieved starting from different points and following different but converging paths*” (p. 7). Equifinality helps explain why firms may be motivated to diversify their activities and position themselves as potential actors in new sectors. Although competencies are developed while a firm is engaged in a particular path, they have areas in common with those of the coveted sector. In other words, the existence of common traits among competencies means they are more easily substitutable. Their fungible nature across different industries reduces barriers to mobility.

Second, common competencies are not sufficient to guarantee a sustainable competitive advantage. This is achieved only when competencies not only are valuable, but are rare, inimitable, and non substitutable. If common competencies fulfill the first condition, they do not fulfill the three others. It is thus important to focus on conditions that favor the durability of competitive advantage and the distinctiveness of competencies. In fact, if the market imposes some selection conditions on the *required competencies* as far as functionality, coordination and market access are concerned for firms to position themselves in a given sector, firms also play a proactive role in influencing their own framework by forging durable and distinctive competencies. Before exploring the possible strategic positioning of different energy actors in the new competitive environment with respect to their core competencies we would like to focus on how required competencies have changed in the recently liberalized European gas sector.

1.2 The Evolution of Required Competencies in the Liberalized European Gas Sector

In the ongoing reorganization of the European gas sector, required competencies are developing around five main strategic functions identified by J-M Chevalier (1997):

1. Exploration and production of hydrocarbons
2. Power generation
3. Long- and short-term wholesale trading
4. Long distance grid transport and distribution
5. Retail market and sale of useful energy to the final client

Some of these required competencies can be considered historical in the gas sector (long-term wholesale trading, transport and distribution), even though market conditions require new ways of managing activities such as transportation (due to the possibility of third party access to the grid), or long-term wholesale trading (new ways of contracting with traditional natural gas producers and suppliers). Other required competencies are newer to the gas sector. This is the case for market trading, which requires the mastering of spot market transactions, appropriate financial and contractual tools (future markets) and trade-off mechanisms among energy sources (gas, power, fuel). Power generation and the exploration and production of hydrocarbons are not required competencies specific to the gas sector. Nevertheless, their strategic importance is becoming more and more critical. When firms take advantage of the liberalization of the electricity market, which mainly affects entry barriers in the power production segment, existing technologies for independent power generation (co-generation, power plants using gas) constitute a high value added diversification and growth opportunity for actors possessing gas resources, allowing them to develop the gas-electricity convergence through

synergies in the supply chain and arbitrage mechanisms (P. Despars, 1998). As for exploration and production activities, there is no doubt that if integrated, they might confer considerable strategic power to the entities concerned with improving their autonomy in terms of supply and possible synergies along the value chain (J-M. Dauger and A. Sanglerat, 1999). Finally, downstream on the gas chain, actors must further refine their client segmentation and understand client needs better (industrial firms, local communities, residential clients) in order to enrich and develop customized products and services. The point is to no longer view gas consumers as subscribers, but as clients, or even better, as users.

We should note that the strategic functions underlined and the required competencies that support them draw on functionality, coordination and market access competencies in varying degrees. In particular, we think that if a monopoly position leads to favoring functionality competencies in a purely technical sense, the liberalization of the market should lead to greater emphasis on coordination competencies, market access competencies and functionality competencies at the product level. We can illustrate our point by focusing more specifically on the downstream segment of the gas chain. The gas sector must meet changes in demand by developing innovative functionalities beyond the mere physical supply of gas. Strategic positioning of this sort implies that market segmentation must be refined, and client behavior more clearly identified. The functionalities marketed must rely on differentiation and customization efforts by integrating quality, expertise and technical assistance. If the price criterion is still critical, it must be combined with criteria related to the application value of the products and services supplied. In this sense, the elaboration of a global (power, gas, heating, cold, facilities management), diversified (cogeneration, heating system, etc.) and integrated (new gas applications, equipment design, sales, after-sales service, etc.) supply strategy becomes the axis around which high value functionalities could be created.

Coordination competencies must also evolve in accordance with the new functionality strategies adopted. The development of after-sales service or the emergence of distributed power generation requires tighter coordination between suppliers and clients. Furthermore, product and service innovations to develop new applications for natural gas will need not only closer co-operation between grid companies and different firms operating along the gas value chain but also increased client participation in the development and design process of new functionalities (co-development).

Finally, market access competencies evolve due to the emergence of new marketing and interaction modes based on e-commerce (creation of call centers, BtoB, BtoC, etc.). The great challenge in this area is the development of electronically supplied functionalities to different types of clients and the smooth coordination between physical and information flows. Furthermore, the

internationalization of gas operators owing to market liberalization leads operators to adopt specific implementation strategies that take into account the structural particularities of each country. Gas operators rely on pre-existing competencies and the assets of foreign companies (acquisition of transport and distribution, commercialization of companies, creation of horizontal or vertical joint-ventures). In this context, making more of the value of existing trademarks and reputation assets or creating and diffusing new brands by touting product and service functionalities in simple, vivid terms becomes an important success factor.

2. The Firm as the Unit of Analysis

So far we have concentrated on the changes the European gas market liberalization trend has exerted on the required competencies in this sector. Our analysis shows that the competencies become mainly cross-sectoral. The question is then, how will the different firms affected by this trend develop new strategies, reconfigure their core competencies in a distinctive way, and thereby benefit from the emergence of new market opportunities by relying on their past positioning?

2.1 Core Competencies and Dynamic Capabilities

Core competencies are the competencies considered critical to the competitive advantage of the firm. They belong to the firm's area of excellence, incorporating the technical, organizational and knowledge attributes that are valuable in the long term. The concept of core competence was developed by two complementary research streams, one based on the evolutionary approach and the other on the strategic management approach.

The evolutionary theory (G. Dosi & al., 1992; D. Teece & al., 1997) defines core competencies through the triptych process-position-path dependencies. The position of a firm is determined by the assets and the competencies it holds. The position is characterized by the combination of technological, complementary, financial, structural and reputation assets put forth by the firm in a given institutional and competitive environment. The position itself must be considered using a dynamic approach, and as resulting from organizational and managerial processes which support the development of functionalities, coordination modes and market access strategies. These processes reflect the individual and collective learning mechanisms specific to a firm that allow it to forge its assets and competencies. Finally, the concept of path dependence stresses the idea that the investments made in the past, the accumulated competencies, and the specific position of a firm are not neutral with regard to future options in terms of new activities and markets. In other words, the strategic selection mechanisms may exhibit a strong tendency to be localized, and the opportunities to acquire new

competencies may depend heavily on existing competencies. If the concept of path dependence is critical to a better understanding of the role of core competencies in the growth process of firms, it also sheds much light on the fact that this dependence may give rise to a potential for rigidity with regard to acquiring new competencies (D. Leonard-Barton, 1995). In other words, core competencies may be as difficult to analyze as they are to develop.

Although the concept of path dependency illustrates the difficulties encountered by firms as they manage technological, organizational and institutional discontinuities, it seems more appropriate to use the concept of *path coherence*. This allows us, on the one hand, to have a less deterministic vision of the strategies adopted by firms, and helps us, on the other hand, to better understand the evolution dynamics of competencies by considering simultaneously the internal and external coherence of strategies. In fact, in most of the cases, the relevance of these strategies rests on the will to combine existing and durable competencies with new ones serving to maintain as well as to reconfigure the activities of the firm. This leads us to focus more specifically on the strategic dimension of core competencies.

Initially developed by C.K. Prahalad and G. Hamel (1990), the strategic core competence approach focuses on the generic, non imitable and value creating potential of competencies. It concentrates on the critical role played by competencies as a source of sustainable competitive advantage. In this view, coping with a highly turbulent environment characterized by significant market changes, the firm will focus its strategy on developing and using core competencies that characterize its identity and businesses in the long term (M. Boisot & al. 1997). An important feature of core competencies is that they confer a distinctive position on the firm in contrast with its competitors. This distinctive position can be built through the firm's potential to coordinate and broaden its value chain system (horizontal differentiation of competencies) in a specific manner on the one hand, and excel in a generically superior competence (vertical domination) on the other hand (D.J. Collis, 1994). The construction of distinctive competencies hinges on the perception managers have of the strategic gaps (R. Sanchez and A. Heene, 1997) between existing competencies and the competencies judged necessary to acquire in order to position the firm in its competitive environment. This perception in turn is shaped by the representation managers have of their firms' capabilities. In this respect the dynamic capabilities of a firm are not objectively given; their apprehension hinges on the 'world view', the vision, the experience, the skills of managers and the way the individual and collective learning processes are managed and integrated into the firm's strategic path.

J.D. Teece & al. (1997) define dynamic capabilities as the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments. Dynamic capabilities thus reflect an organization's

ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions (p. 516). The distinctive competencies a firm seeks to acquire can be pictured by analyzing a certain number of mechanisms that underlie these dynamic capabilities. These mechanisms rely first on the organization and the evolution of the firm's value chain (M. Porter, 1990). This level of analysis clarifies the strategic movements the firms engage in to redefine their value chain system. These commitments take shape through movements such as vertical and horizontal integration, diversification, outsourcing, total or partial exit and redefinition of the main and supporting activities. All these movements account for how the firm conceives its value system and looks at the sources of its competitive advantage.

In order to complete this picture and link the activities of the firm to its competencies, we must also take into account possible evolution configurations of competencies on the one hand, and the modalities for acquiring them on the other hand. The purpose of the former is to better understand the distance between new and existing competencies. By combining the competencies and the activities of the firm we can distinguish four possible evolution configurations: strengthening competencies in existing activities; redefining competencies in existing activities; redeploying existing competencies to new activities; and developing new competencies for mastering emergent activities. These configurations must not be considered distinct cases given that each strategic decision in a dynamic context combines an evolution of competencies and activities. The point is rather to emphasize the relative importance of each type of evolution. The modalities for developing competencies may involve internal development, different partnership modes (joint ventures, discontinuous co-operation etc.), and mergers and acquisitions. The advantage of such an approach consists in specifying the processes underlying the management of competencies according to their evolution configurations as well as their development modalities.

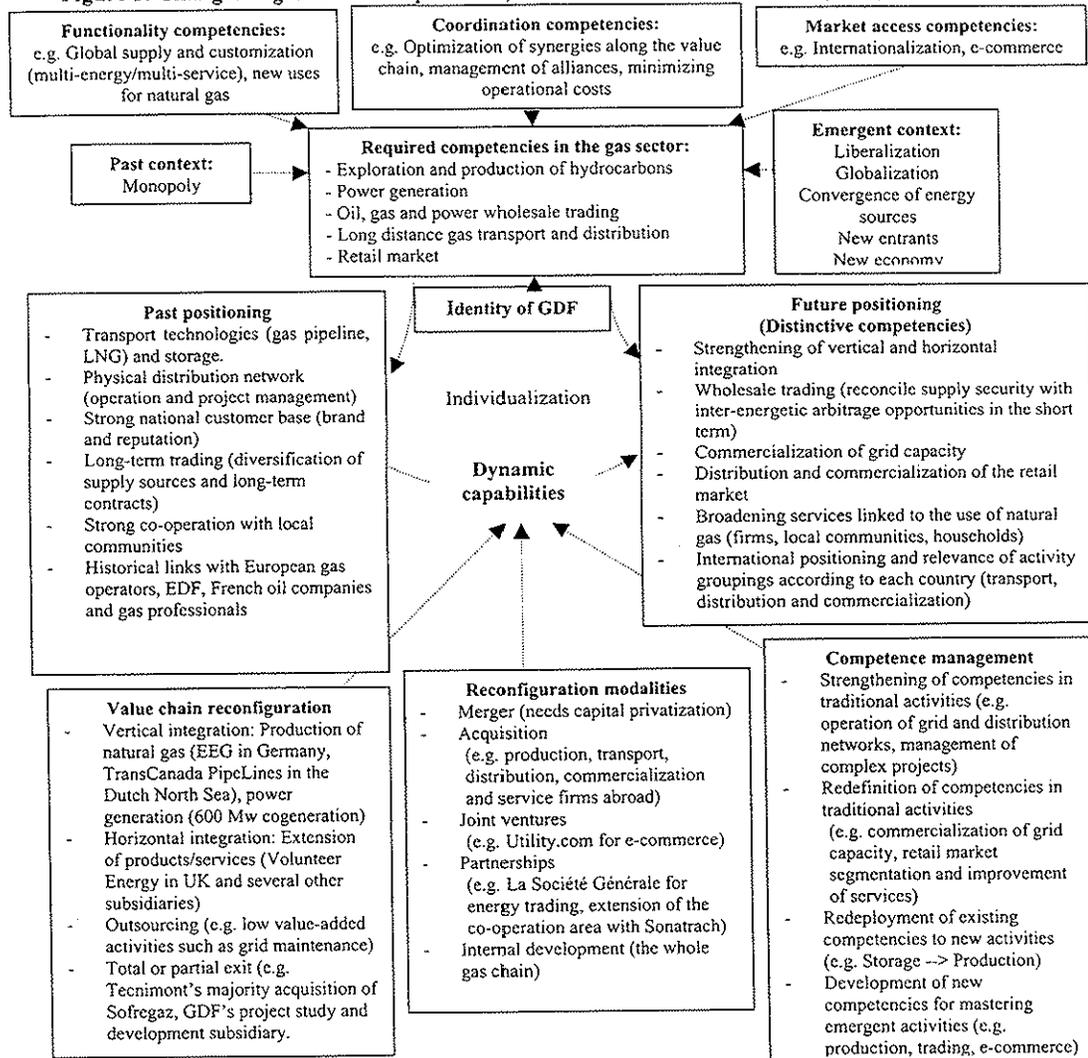
In the following section we try to give a brief description of the repositioning process of the main actors in the European gas market liberalization trend. We apply our framework more specifically to the case of the French natural gas company Gaz de France (see Figure 1).

2.2 Positioning of Energy Actors According to Required Competencies and Core Competencies

The weakening of institutional entry barriers in the gas sector has created a new competitive environment for gas operators, but also gives other players, traditionally located in specific parts of the energy value chain, the opportunity to broaden their activities and participate in the new redistribution dynamics of the gas rent. Several actors (gas and power utilities, fuel companies, private public service companies,

industrial gas firms, traders, etc.) are thereby led to reconsider their strategic positioning (J.M. Chevalier, 1992, 1995). As firms consider the competencies required in the emerging competitive environment and the core competencies they rely on, it becomes imperative to construct an entry strategy combining several modalities: mergers, acquisitions, and alliances for accessing new competencies, better managing risks, and developing a critical size for the purpose of gaining

Figure 1: Changes in gas sector competencies, and the case of Gaz de France (GDF)



financial power and benefitting from scale and scope economies.¹ The possibilities of extending activities are numerous. Electric utilities may become gas operators, gas operators may become electric utilities, oil companies may consider becoming power generators and search for new ways to upgrade their gas resources, public service companies may engage in power generation. The choices may focus on specializing in a specific activity (e.g. commercialization by super markets relying on the *virtual utility* principle), total integration, diversifying (*multi-utility*), etc. Most of these movements have already started. The growth potential as contrasted with the traditional positioning of each actor, its resources and the core competencies it controls, is found both upstream and downstream on the gas and energy value chains.

It is obvious that the gas, oil, electricity, public service and industrial gas sectors possess their own markets and their own specific technological assets and operating logic. Each sector may consequently be characterized by its own set of required competencies. Nevertheless, in order to fully explain the strategic movements of firms, we must consider their sector's competencies in a broader sense and analyze them with respect to the energy sector as a whole. Until recently, the partitioning of sectors and the many energy sources rested mainly on the monopolistic features of the energy industry, but was not really motivated by competency considerations (required and core competencies). Our argument is therefore based on the assumption that from a competence-based approach, the frontiers between historically separate sectors are becoming increasingly permeable and blurred.

As noted by J-M Chevalier (1999), the choice of an appropriate strategy is “[translation] particularly complex as the value chains are nowadays split among numerous businesses dealing not only in commodities, services, and physical and financial markets, but also in material and immaterial expertise and assets” (p. 548). There is consequently a need to accurately assess the synergies along the value chain system; the interactions, the gaps and the complementarities among the competencies found in different sectors; and the benefits that may be obtained from the convergence of energy sources (gas-oil-electricity).

Looking back, a good example of the difficulties encountered by **oil companies** (notably Mobil, Exxon and Total) in managing their competencies dynamically was when they sought to overcome growth restraints and to search for new rent sources by resorting to competency diversification and conglomerate strategies during the

¹ As D. Baudru & E. Rigamonti (1998) show, the partnerships established in the energy sector to benefit from the deregulation movement are mainly motivated by competence acquisition, market entry, and security. The authors emphasize this last point and stress the existence of oligopoly coalitions (in particular through the establishment of cartels) to secure the position of the players and endow them with sufficient power to influence sectoral changes. More specifically they identify two sets of coalitions: the gas-oil oligopoly in the North Sea and the power generator oligopoly in Germany.

70s, when OPEC countries nationalized oil resources and the first oil crises occurred, and also during the 80s (second oil crises). The situation nowadays has changed: it is market changes that motivate firms to seek diversification in obtaining scale and scope economies and adding value (through distribution and commercialization of natural gas and multi-energy trading) (J-M. Chevalier, 1999).²

In fact, the links established by oil companies with the gas industry, in particular in exploration-production, have always been strong, especially when well-located fields were involved (Lacq, Groningen). Most of these companies have stakes in gas firms (Exxon and Shell in Gasunie, BP and Shell in Ruhrgas, TotalFinaElf in GSO, CFM and GDS). Some are also present in the LNG chain, as a crucial way to respond to the international growth of gas demand and for making the most of the increasing number of fields far away from gas consumption areas. Due to their knowledge of the gas sector and their considerable resources, oil companies are highly interested in the new applications of natural gas, its environmental advantages³ and the opportunities that exist downstream on the gas chain (power generation).

Oil companies already possess core competencies in exploration and production, and have a strong transnational presence. Furthermore, the emergence of a gas spot market gives them a comparative advantage. Over the last 30 years or so, they have progressively assimilated the mechanisms of the oil spot market, and now use sophisticated financial tools (future markets, derivatives). Although market mechanisms are not the same for gas, oil and power commodities, the trading competencies just described are some of the required competencies that help oil companies access the gas sector. For many years several oil companies (among them TotalFinaElf, Exxon, Amoco, Shell, etc.) have been engaged progressively in power generation and co-generation activities in the US and in the UK, either on their own or in partnership with others. A majority of them use the Interconnector as a direct way to maximize the gas fields they operate in the North Sea. We also observe this downstream development strategy in several other European countries.⁴ Thus, by

² In France, EDF and GDF have been pursuing a less dynamic diversification strategy, owing to the government's control of the extensions of their main activities, particularly since 1994. This strategy is (or was) more diffuse for EDF (waste treatment, night lights, technology transfer and consultancy projects, cartography, distance monitoring, cable, aquaculture, etc.) than for GDF (thermal and air-conditioning activities, technology transfer and consultancy projects).

³ Oil companies have been working for several years on the chemical conversion of natural gas (Fischer-Tropsch procedure) to produce liquid fuels.

⁴ Total and Texaco are collaborating with EDF on a power generation project in Normandy, based on gasification of oil residuals.

relying on their core competencies and using specific modes of partnerships (joint ventures) or resorting to merger/acquisition strategies⁵ that allow them to access complementary competencies, oil companies possess the financial power for becoming multi-energy companies (even investing in nuclear power⁶), although some business areas are relatively distant from their traditional activities (mainly proximity distribution and service activities).

As for **companies specialized in services to local communities**, they have been building a multi-service strategy for a long time (water, waste, telecommunications) and have recently begun to evolve towards a multi-energy configuration. They are already offering industrial firms and local communities decentralized energy systems combining co-generation, heating systems, waste and water management, *facilities management*, etc. They have been heavily investing in distributed power generation for several years and now they are actively pursuing geographical diversification. While Vivendi recently opted for a partial retreat from the energy sector in order to strengthen its position in the multimedia sector, Suez-Lyonnaise des Eaux continues to consolidate its European and international positions by making the most of the synergies between its subsidiary Elyo and the Belgian energy operator Tractabel (combining respectively the power and gas companies Electrabel and DISTRIGAZ) in which it has a 98% stake, and which has been developing critical competencies in energy trading since the early 90s. Moreover, these companies have significant experience with regard to bargaining mechanisms at the regional level and have built important reputation assets by interacting with local communities. They also possess strong competencies in internationalization processes, in the management of conglomerate structures and in diversification mechanisms.

Similarly, **industrial gas providers** such as Air Liquide can leverage their distribution and service competencies by evolving towards power generation and natural gas distribution, and by providing multi-energy services. Air Liquide is already a partner in several independent natural gas power generation projects, both in France and internationally.

As for **power companies**, their projects focus mainly on the development of new power generation plants using natural gas. Their gas needs urge them to find more favorable supply conditions, and lead them to propose partnerships with gas

⁵ In the event GDF is privatized, TotalFinaElf might be a candidate for taking control of the French natural gas company.

⁶ For instance, TotalFinaElf (*via* Total) has a stake in Cogema. Since the reconfiguration project of the French nuclear industry this participation passes through the Topco consortium controlled by the CEA.

producers (several British power generators signed contracts with producers in the North Sea). But they also aspire to more active participation along the gas value chain (production, transport, distribution, commercialization) by establishing partnerships with appropriate actors like gas operators. For example, the German group E.ON (the product of the merger between Veba and Viag) strives to be a European *multi-utility* company, distributing power, gas and water as well as environmental services. E.ON already provides 35% of German households with gas through its local companies and its participation in Contigas and Thüga. E.ON is also the main shareholder of Ruhrgas through its subsidiary Ruhrkohle. Stronger control of the largest German distributor may allow E.ON to access the wholesale gas market.⁷

Lastly, the leading **natural gas firms** in Europe (Gasunie, Centrica, Ruhrgas and Gaz de France) have different strategic options because of their institutional environment and geographic location. In fact, institutional and locational features have been critical in shaping the competencies of natural gas firms and will continue to be determinant in the future. So far, Gasunie's large number of gas reserves has led the Dutch company to focus on international trade without however significantly developing its presence abroad through strategic alliances, acquisitions or foreign direct investments. Gasunie mainly provides natural gas services through its subsidiaries (e.g. Gasunie Engineering BV) and has stakes in the heat generation sector. The British Centrica, which operates in one of the most competitive wholesale segments in Europe, has adopted a more diversified business strategy and is engaged in four different segments (in decreasing order, they are energy supply, energy services, retail outlets supplying natural gas and electric household products, and financial services like home insurance). Centrica's priority is a strong position both in the natural gas and electricity markets. In fact, separating transport/distribution and wholesale/supply activities has resulted in the removal of the firm's infrastructure capabilities, making it difficult for the company to engage in infrastructure operations abroad. Further, the liberalization of the natural gas market and the resulting price competition has led to large market share losses for Centrica in the wholesale market. As a result, the company adapted its strategy to provide total energy instead of natural gas only. However, the fierce competition in the domestic market has limited the strategic positioning of Centrica in foreign markets until now. As for Gasunie, Centrica has limited the number of strategic alliances it can make with other energy firms (H. Feijtel, 1999).

The German private natural gas company Ruhrgas AG mainly operates in the wholesale and transport segments. Ruhrgas's goal is to develop a strategic position

⁷ E.ON has already acquired a 3.5% stake in Ruhrgas from RWE. The company may also acquire another 3.5% of Ruhrgas through RWE-Dea, the oil subsidiary of RWE.

in the pan-European natural gas trade segment by diversifying its supply sources (long-term contracts, self-production), strengthening its infrastructure investments in Central, Eastern and Northern Europe, and reinforcing its special relationships with Gazprom. Furthermore, Ruhrgas is comparatively more active in its cooperative engagements (e.g. strategic alliance with GDF in gas metering, industrial natural gas utilization and natural gas transmission) than the aforementioned natural gas firms. The fact that Ruhrgas has been operating in a competitive domestic wholesale market gives the firm a comparative advantage with regard to other monopoly companies, which have had to face or must face significant changes now that the natural gas market is liberalized.

The French public gas company GDF, which has benefited from a national monopoly position since the mid-40s, was recently led to restructure its businesses and adopt a new strategic position, the dominant features of which are the strengthening of its integrated structure and the internationalization of its activities mainly in Eastern Europe and South America (*cf.* Figure 1). Although it has a strong bargaining position, a strategically located grid system and well-known technological competencies (transport, distribution, storage), the company was known for its fragile production/exploration position (in comparison with its competitors) and a lack of competencies in market mechanisms (e.g. spot market trading, where oil companies or energy companies such as the Belgian Tractabel have developed strong competencies). Since the early 90s, GDF has been trying to adapt to the new energy environment through several means such as vertical integration (investment in gas production activities), partnerships, joint ventures, and affiliated firms (transport, distribution, commercialization firms). Furthermore, GDF's relations with Electricité de France (EDF) may be altered by the emerging market conditions that lead GDF to take advantage of the opportunities created by the ever-increasing use of gas in electricity production. Both companies have so far relied on a common organization for developing their services (EDF-GDF Services) in order to make the most of the synergies between the two energy sources. However, the strategies they adopted to do so might confirm the observation that competition between GDF and EDF is increasing. Although both companies have some competencies in common, competition between them could be sharpened as they emphasize the development of their distinctive competencies. In fact, EDF and GDF have already been in two separate rivalry situations in the supply of energy services to industrial firms.⁸

⁸ One situation involved GDF's acquisition of a 45% stake in the co-generation power unit (600-megawatt capacity) in association with Usinor and Air Liquide in Dunkerque. This project allowed GDF to integrate the electricity production segment.

To illustrate GDF's pattern of managing competencies we will briefly focus on production/exploration activities,⁹ contrasting the French operator's position with that of other European gas companies. In Italy, the oil-gas company ENI integrates production and transport/importation activities through its sub-companies AGIP and SNAM activities. In Spain, the oil group Repsol controls the production and importation markets as well as transport and distribution (*via* Gas Natural and Enagas). In Germany, Shell and Exxon (which own 50% of the Dutch company Gasunie) are shareholders of BEB (production and transport) and Thyssengas (transport). Ruhrgas, the largest gas distributor in Europe, has held a minority stake in Gazprom since 1998 (which controls one third of the world's gas reserves). Lastly, in the UK, Centrica also owns some major domestic gas fields.

In the case of GDF, their integration strategy in production activities and their decisions to acquire gas fields have so far been based on the company's technical competencies in gas storage (geology, seismic, etc.). The recent restructuring of GDF resulted in the transfer of a large part of its staff from storage activities to the new production/exploration department. The integration of production activities therefore relies critically on the redeployment and leveraging of internal competencies already possessed by the company. Until recently, however, the lack of core competencies in this area was, for example, used as a primary argument by the Norwegian government for refusing GDF's services in the Norwegian sea.¹⁰

In fact, the development of GDF as a natural gas producer must be viewed over the long term and can hardly be imagined without partnerships with oil and gas producers. This will improve the firm's competencies and endow it with the critical financial power it needs to overcome significant entry barriers. The access to external competencies may be facilitated through acquisitions and joint ventures. GDF's recent acquisition in the Dutch North Sea of two subsidiaries belonging to TransCanada PipeLines allowed the French gas operator to integrate the offshore production competencies of the Dutch team. GDF made a similar move in 1994 when it acquired EEG (Erdöl-Erdgas Gommern) in Germany.

In this respect, partnering with oil companies is a major issue. In the British North Sea, stronger production and transport infrastructures have been contingent on the development of cooperative links with the French oil companies Total and Elf since 1998. Before the Total-Elf merger, GDF entered into several agreements

⁹ An in-depth analysis of the GDF case with respect to the management and evolution of its competencies may be obtained upon request at the following address: avady@cournot.u-strasbg.fr

¹⁰ Since October 2000, GDF has nevertheless acquired two oil fields belonging to the State company Statoil.

with both companies, resulting in the creation of a joint venture (Efog) between GDF Britain (the production/exploration subsidiary of GDF in the UK) and Elf Exploration UK. The alliance with Total aims at better integrating both actors in the gas chain (upstream for GDF and downstream for Total) through common development projects and asset transfers. The question is, however, how far can this pattern of partnership go, given that liberalizing the gas market gives oil companies the opportunity to position themselves as possible competitors in the gas sector?

It is our opinion that GDF's entry in production/exploration activities rests essentially on the acquisition of new resources and the development of new competencies. Although GDF's core competencies (notably in storage) may be used as supporting competencies, the success of this integration strategy depends heavily on its capacity to initiate and manage alliances and acquisitions coherently. From this perspective, the privatization of GDF remains a central issue. In fact the public situation of the gas operator and the French government's postponement of opening up GDF's capital have so far limited the company's flexibility in maneuvering its strategy. The partial privatization of GDF seems nevertheless an important step that would allow the company to raise the funds it needs to reach a critical size. At this time, the consequences of privatization are hard to predict. Different configurations are possible according to the candidates and partners interested in strengthening their ties with GDF. TotalFinaElf's participation in capitalizing GDF could allow a quick upstream integration of the French gas operator but create the risk of losing some control over its activities. Another alternative is to develop stronger ties with Statoil (also in the process of privatization), whose ambition is to strengthen its presence in the gas sector. This would in turn allow GDF to secure its development in the Norwegian Sea. Lastly, EDF inevitably should be one of the candidates so both firms can continue operating in an integrated way. The final configuration should depend on the capacity of the different companies to achieve a balanced consensus, which, given their differentiated interests and positions, will be a complex bargaining process.

Conclusion

The aim of our paper was to construct a dynamic framework to help analyze the evolution of competencies within the sector and inside individual firms. It seemed necessary to combine both areas in order to achieve a better understanding of the opportunities and risks firms are facing in the newly liberalized European gas market, and in energy markets in general.

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