

Energy company strategies in the dynamic EU energy market (1995-2007)

Clingendael International Energy Programme



Nederlands Instituut voor Internationale Betrekkingen
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ENERGY COMPANY STRATEGIES IN THE DYNAMIC EU ENERGY MARKET (1995-2007)

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Clingendael International Energy Programme

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Preface

Many CIEP studies have focussed on market developments, policy changes and changing energy relations in the world. In particular, many of our research endeavours have been focussed on the EU internal electricity and gas markets, the impact of climate change policy on the energy mix and on security of supply issues. Slowly the organisation of the market, security of supply and climate change policy is morphing into a more integrated perspective of the future energy mix.

But a lot of issues are still unresolved. The changing energy environment in the past 10 years has already greatly impacted the electricity companies, and this process of profound change will continue into the future as a more sustainable power sector must come to the fore. European energy companies have to adapt to the changing policy and supply environment. Since they are the ones who actually supply us with energy, we like to broaden our focus to include their company strategies in the overall picture, in order to understand the process of realising the goals of an effective and realistic European energy policy.

Coby van der Linde

May 2010

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Summary

A strong relation and continuous interaction exists between company strategies and reaching policy goals. Similar policy measures which are implemented in a mature market will lead to completely different outcomes than those implemented in an expanding market. Likewise, national markets require other policy approaches than an integrated regional market and competences of policy makers and regulators should be in line with the geographical scope of the markets to have meaningful steering power. Another important factor that influences the required design of policy measures is the historical context of the energy sector (heritage). Important differences are the installed asset base, the market structure and the distance between government and industry. These differences in heritage make effective policy making much more difficult and complex, because a uniform policy measure will always lead to unintended side-effects in particular countries.

Looking at the European level, three inconsistencies in policy or dilemmas can be observed that relate to the interaction between Europe's key energy policy principles (security of supply, environmental sustainability and competitiveness) and the strategic reaction of energy companies on the changing market environment. The first dilemma is the desire to avoid vertical integration and long-term contracts in order to lower barriers to entry, while in a tight market the latter can be important to secure supplies and ensure stable prizes. The second dilemma is the decision that governments took to withdraw from energy markets, while global competition for resources has risen extremely and the revolutionary changes that are necessary in the energy industry require an active and involved government. The third dilemma has to do with the desire to change the market structure in order to support competition and integration of national markets, while the national and European markets had reached the maturity stage leading to EU wide consolidation and while the policy and regulatory instruments have remained national. These three dilemmas show that the dynamic market environment should be carefully taken into account in order to make energy policy work.

Tight resource markets, stringent climate regulation and liberalisation in mature energy markets forced energy companies to adapt their strategies. In general, companies reacted similarly to the new challenges they were confronted with. Upstream integration, long-term supply contracts, diversification of suppliers, routes and fuels are commonly used to secure the supply side. Europeanization and internationalization, multi-energy offerings and differentiation through other types of contracts and services have often been used to secure the demand side.

The key challenge for policy makers is to align the company strategies with the policy goals. This requires insight into the interaction between company strategies, the market

environment and policy measures. Generally, alignment can be found in three ways: 1. by providing the right incentives; 2. forcing change by laws and regulation; 3. leveraging the company strategy when it is in line with policy targets. Subsidies for low carbon energy, an example of the first way of alignment; specific market rules, controlled and monitored by the regulator fits the second way; and energy diplomacy to secure supplies, fits the third way of alignment. If change is not fast enough, laws and regulation can be used (e.g. fixed amount of renewables in the generation portfolio, or a cap on the dependence on one supplier), but this is often costly. Leverage can be an interesting option to find synergy between the needs of the traditional consuming countries (e.g. affordable gas supply) and the needs of the producing countries (e.g. knowledge of clean energy technologies) while finding synergy between the policy goals and the company strategies.

1

Introduction

European energy policy-making has always been a balancing act between European and national competences; between government involvement and free markets; and between the public interests of security of supply, the environment and relatively low prices (recently translated into competitiveness). The implementation of policy measures that change the market structure is a delicate undertaking because each member state's energy market is structured differently in terms of energy mix, import dependency and organisation. Market saturation, resource nationalism and security of demand (security of investment) often mean that measures that are optimal according to textbook economics play out differently in the dynamic reality of market developments. The actual impact of policy measures on the strategic behaviour of companies is often ignored, and policy outcomes are not as clear cut as theory suggests. The main competence of the EU is in the area of competition in the internal (European) market, leaving sufficient room for national interpretations regarding the structure of domestic markets. This room for interpretation is amplified by the national competence over security of supply issues, showing definite but distinctly different preferences among member states.

Moreover, EU environmental policies provide member states with tools to engineer national strategic environments for their companies that help –or hinder– them in their strategic approaches to the EU market. Companies are thus facing a complexity of national and EU market designs in which they must shape their strategies for certain member state markets and decide on their overall EU approach. Thus both historical and regulatory differences among member states provide energy companies with different strategic toolsets with which to develop their EU strategies. Companies are not mere followers of the national and EU market design but are active participants in shaping this process. The aim of this study is to investigate the impact on company strategies of the political decision-making process of restructuring the market, knowing that the changing market structure is just one of the major changes taking place in the companies' strategic environment.

It is important to understand that major policy decisions and the changes in the energy environment should be analysed against the background of the different stages of

market development (depicted by the s-curve; see Appendix I). Policy measures which are implemented in a mature market will lead to completely different outcomes than those implemented in an expanding market. The difference in outcomes relates to the growth opportunities of companies and to the market structure. Growth opportunities in a mature market are generally limited and will, in an open market, primarily result in further consolidation among the market parties. Such consolidation takes place at the European level, rather than at the national level. Policy makers seemingly did not always take such strategic consolidation of companies into account, even though it influenced the success of their policies. The competences and scope of policy are often national, while companies have started to act at a European level. Steering with national policy measures therefore becomes meaningless and ineffective when it comes to regional questions, such as the desired fuel mix, CO₂ reduction and price regulation.

Generally, companies adapt their strategies to a changing environment, a process that often moves faster than the implementation of new policy measures. These strategic reactions are often taken to mitigate risks and to secure a strong position in an increasingly competitive market. Such responses interact with the main policy priorities. It is therefore interesting to understand the interaction between company strategies and policy priorities and to assess whether synergies can be found and whether strategies and policy objectives can be aligned. This study concentrates on gas and electricity companies in Europe's largest markets.¹

The structure of the paper is as follows. Chapter 2 introduces the major changes that have taken place and that have formed the basis of the EU's new energy policy priorities. Chapter 3 presents the strategic responses that followed these major trends. In Chapter 4, specific strategies that companies developed to deal with the changing environment are highlighted and illustrated with examples. Chapter 5 discusses the alignment of company strategies and policy objectives and presents a number of policy recommendations to make use of the companies for reaching policy targets. The final chapter provides the conclusion. A number of appendices are included to provide background to the analyses.

¹ Germany, France, United Kingdom, Italy and Spain.

2

European energy policy: Looking for a balance between state and market

The thinking about energy industry regulation has changed fundamentally over the past few decades. In the period after World War II, the strategic importance of the energy sector convinced policy makers that the market could not be trusted to ensure security of supply in all circumstances.² This belief justified state intervention and led to the post-war nationalisation of the energy sectors in the UK and France; Italy nationalised its energy sector in the beginning of the 1960s. In many other member states, the gas and electricity companies were historically owned by local government authorities, such as towns and provinces, partly because they were considered an integral part of the utility sectors of the economy. In some countries ownership structure was tied to the government's interest in providing a market for domestically produced fuels, such as coal. Employment and balance-of-payment considerations played an important role in managing the energy sector in a Europe that was recovering from the devastations of the war. In the late 1960s and early 1970s the period of economic expansion came to an end, following in quick succession the collapse of the Bretton Woods system and the two oil price increases of 1973-74 and 1979-80. The economic restructuring in the 1970s and early 1980s placed a heavy toll on the government budget, and ways were sought to reduce the burden of economic restructuring. At the end of the 1980s, the involvement of states in their economies as producers came to be considered a hindrance to economic progress, due to their limited ability to invest. Instead, governments began more and more to switch from a role of producer to that of regulator of privatised interests, including within the utilities sector.

The idea that the public interest could continue to be served by the regulation of markets, and that natural monopolies could also be managed through regulation, freed the way to energy market liberalisation, as promoted by the governments of Thatcher (UK) and Reagan (US). Tax reductions, 'rolling back the state' and market-driven competition were introduced to reform the economy and increase efficiency.³ Despite the fairly rapid acceptance of the general idea of the efficiency of markets, views about

² Helm, D. *Energy, the State and the Market. British Energy Policy since 1979*. Oxford University Press. 2003.

³ CIEP. *The Paradigm change in international natural gas markets and the impact on regulation*. Clingendael Institute, The Hague. 2006.

the management of the European economy varied among the member states, depending to a large extent on their economic tradition and the institutional environment of the countries. Some countries were traditionally more centrist, while in others a strong tradition of corporatism had survived the internationalisation of certain sectors. These traditions also relate to the energy industry. Energy investments, on average, last a complete generation, and this was an additional factor in the strong relationship with the government. Every country has its own type of heritage, or as Dieter Helm put it: "The energy sector is a prisoner of its past."⁴ France decided in the 1970s to invest heavily in nuclear energy, which now seems to fit the future low-carbon energy system better than the investments of countries that are largely coal dependent (for more about heritage in the energy sector see Appendix II). The difference in heritage means that formulating European energy policy is an immense challenge, particularly when a level playing field is a desired political outcome. The policy measures must take into account that each country starts out with different building blocks. One policy measure applied to different circumstances will inevitably lead to different outcomes, depending on the country, and will affect the competitiveness of the countries and companies differently. Another major issue was the general integration agenda and tying the various member states to the deepening of integration in the design of the EU. Despite some misgivings on the European continent about the Anglo-Saxon model of the economy, exacerbated by the UK's head start in liberalising its energy markets (and breaking the power of the strong coal labour unions in order to advance the restructuring of the UK economy) and the continent's desire to commit the UK to the larger integration agenda after 1989, the liberalisation of the European energy sector was largely in line with the Anglo-Saxon economic model. The collapse of the Soviet Union and the Comecon challenged the EU in its effort to combine deepening of integration with expansion. The 1992 Maastricht Treaty ended a period where remaining obstacles to free movement of goods, labour and capital had been removed by the '1992' programme. The 1980s Southern expansion was completed, while the new Maastricht agenda would aim for a monetary and economic union in order to politically and economically accommodate further expansion, to include such countries as Sweden, Finland, Austria, and later the Eastern European countries.

From the early 1990s on, the expectation was that economic liberalism and globalisation would be the guiding principles for the development of international relations. This period is characterised by an almost unbounded belief in the self-disciplining power of markets and, in some countries, also the self-regulatory power of companies. The demise of the planned economy led many policy-makers to believe that from then on the Western political, economic, legal and social mores would characterise the new world order. This new order was based on two key elements: the decentralisation of economic decision-making from the state level to the company level and, second, the new role of the government from that of owner/producer to one of facilitator and

⁴ Ibid.

regulator of markets. In relation to energy, it was expected that the ongoing globalisation would make access to oil and gas resources easier for Western companies.⁵ It is in this atmosphere that the European-wide restructuring of the energy sector began.

Until recently European energy policy was mainly directed at the introduction of competition and market integration.⁶ It became apparent for various reasons that market forces could bring about the desired structure in the market and at the same time safeguard the public interests of security of supply and the environment. In the 1990s oil, gas and coal were not in short supply. Environmental gains were easy to obtain with a switch from coal to natural gas, and the new market emphasis helped break down barriers that protected coal industries in various member states. But when the environmental challenge began to include a strategy to move away from fossil fuels altogether, and oil and gas markets became tighter and import dependency larger, this market with its short-term incentives was increasingly deemed inadequate to secure these long-term public interests. European energy policy thus had to switch focus from the realisation of the internal market and competition to a policy of ensuring security of supply, which also meant the change from a high-carbon to a low-carbon energy system (i.e., transformation from a high- to a low carbon capital stock). The inability of the market to realise these public interests can be regarded as a kind of market failure and requires additional policy efforts.⁷

2. 1 Toward security of supply and low-carbon energy

When energy prices began to increase in the mid 2000s and markets became tighter, the policy agenda was no longer dominated by the drive to make the energy sector more efficient and to reduce government involvement. Energy was elevated on the political agenda due to increased international competition for energy resources, in part caused by the rapid development of large countries such as China and India, a growing

⁵ Van der Linde, J.G. Energy in a Changing World. *Clingendael Energy Papers*. No. 11, 2005.

⁶ Traditionally, the European electricity and gas supply industries were organised as regional or national monopolies in a closed national context. Restructuring of the internal gas and electricity market has long been one of the major European energy policy goals. In 1992 the European Commission proposed reforms in the gas and electricity markets that imposed mandatory third party access to networks (TPA). The EU countries rejected this first proposal. The diverse and strong national interests of member states led to a delay in adopting an energy directive. In 1996 the European Union issued its first Electricity Directive and in 1998 the first Gas Directive (98/30/EC) concerning common rules for the internal markets in electricity and natural gas. The gas directive was still a compromise in which core issues of harmonisation, such as access to pipelines, market opening and regulation were still left to the judgement of individual member states. (Arentsen, M.J., Künneke, R.W. *National Reforms in European Gas*. Elsevier, Oxford, UK. 2003.)

⁷ Helm, D. European energy policy: Meeting the security of supply and climate change challenges. *EIB papers*. Vol. 12, No.1 p.30 – 49, 2007; CIEP. *The Paradigm change in international natural gas markets and the impact on regulation*, Clingendael Institute, The Hague, 2006.

awareness of the dependency on a small number of suppliers and the changing security of supply outlook due to the 2004 EU enlargement. This coincided with a renewed emphasis on national interests by the governments of energy-producing countries (resource nationalism) and further limited access to resources for Western companies.

In the 1990s, market liberalisation and the environment received a major boost from the large volumes of gas that became available to the EU markets as a result of the economic contraction in Eastern Europe and the former Soviet Union and the expansion of North Sea gas production. Under these beneficial market circumstances, companies began to replace coal-fired electricity plants with gas-fired plants, in the process reducing the grip of the coal sector on their portfolio choices. In the 1990s, the hope of accessing the vast resources of Russia with direct foreign investments had not yet been dashed, and the Caspian resources were included in the assessment that the EU was in the fortunate position of having economic access to vast oil and gas resources. The market model confirmed the view that suppliers would have to compete for consumers, such as the EU.

Certain developments prevented this view from being realised in international markets. First, the cost reductions in LNG gave the new suppliers in the Middle East an alternative option to develop their resources. The successes of Qatar in developing LNG trains for international markets inspired other producers, such as Russia, to contemplate alternative markets for their gas. Second, the rapid urbanisation in China increased the Chinese appetite for gas to reduce smog. China's interest in oil imports from the Caspian Sea region was broadened to include gas, and pipeline infrastructures were developed that freed the region from becoming a captive producer for Russia and the EU. Third, the expected privatisation and liberalisation of the Russian energy sector did not materialise. Rather, President Putin intervened and partially renationalised oil and gas resources to develop a predominantly Russian-based industry. In gas, Gazprom was awarded an export monopoly, thwarting a deal with independent producers. Russia became more active in managing the gas flows from the Caspian region to close its output gap between the maturation of the fields in Siberia and the opening up of new fields in Yamal and the Barentz Sea. Fourth, the initial optimism about LNG being able to provide the EU with ample diversification opportunities was tempered by the competition for new LNG flows with other consuming countries, including the US, and the rapid demand for energy in general in the period of 2004-2008.

The EU view of gas changed from a vehicle that introduced more competition and a cleaner environment to a fuel with its own security of supply difficulties. Before 2004, the import dependency on Norway, Algeria and Russia was not a major issue. Relationships between these three traditional EU market suppliers were longstanding and mainly organised through long-term contracts. The EU emphasis on reducing the length of the supply contracts and the abolishment of the destination clause had soured relations to some extent. Perhaps it had inspired a somewhat stronger hold by

producers on their gas sectors, but this problem was deemed manageable due to interdependency. In 2004, the Eastern European countries joined the EU and introduced their own view on a structural import dependency on gas supplies that primarily originated in Russia. In 2006, when the dispute erupted between Russia and Ukraine over gas price contracts and transition fees, the energy relationships became politicised. In the aftermath of the conflict there was little sympathy for the Russian struggle to normalise economic relations with the former Soviet Union states. EU policy-makers responded to the conflict by re-emphasising the importance of security of supply policies. Only in 2009, with the outbreak of yet another conflict, did the EU begin to acknowledge the complexity of the Russia-Ukraine relationship and the role of Ukraine itself. Earlier attempts of individual member states to reduce the Ukrainian near-monopoly over gas transit from Russia to the EU market were seen in a slightly different light, but have yet to lead to less politicised relationships regarding gas.

Concerns about global climate change had already been on the radar screen of European policy makers for several years. European member states had already adopted the Kyoto targets, had implemented a directive that included (non-binding) targets of 12% of gross inland energy production from renewable energy in 2010⁸ and had introduced the emission trading scheme (ETS). It took, however, until 2007 for more ambitious and longer term targets to be proposed, which would require a much more fundamental change in Europe's energy system. In the past couple of years, the drivers behind the tighter environmental requirements on the energy sector and energy efficiency goals have no longer been inspired by climate change concerns alone. More and more, energy security goals are being integrated into the low-carbon economic strategy. The reduction of import dependency through the promotion of alternative energy resources such as sun and wind, and diversification to, for instance, biofuels, are part and parcel of the new energy strategy. Yet in the short run, a shift towards more renewable energy could deteriorate energy security, because it can cause instability in the electricity grid, requiring major adaptations to the energy infrastructure which will take a long time to realise. Such a shift towards a low-carbon economy could also hold back investments in new fossil fuel production capacity, needed to satisfy short- and medium-term demand, due to concerns about the long-term security of demand.

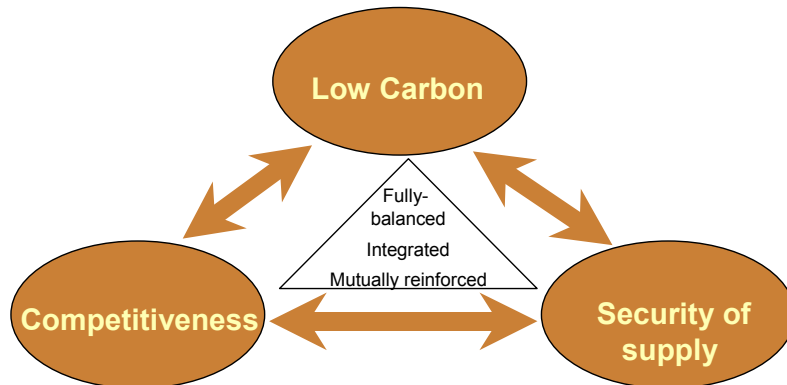
2.2 Europe's new energy policy packages

In January 2007 the European Commission proposed an integrated energy policy for Europe re-emphasising the three major energy policy priorities of clean, competitive and secure energy. In the course of 2007 and 2008, this proposal was translated into several directives and policy briefs, i.e., the "Third Package", covering the market structure and

⁸ European Commission. *Directive 2001/77/EC on the promotion of electricity produced from renewable sources in the internal energy market*. September 2001.

competitiveness, the “Climate and Energy” package, dealing with CO₂ reduction and renewables, and the second Strategic Energy Review, containing various concrete actions and the announcement of a security of supply directive to be presented in 2010. Three policy priorities will be briefly discussed below.

Figure 1. Europe’s integrated energy policy



Source: CIEP Analysis

Competitiveness

Some of the main goals of the European internal energy market policy are to create a complete internal energy market, with real choices for EU energy users, households and businesses; and to provide incentives for the sector to realise the projected huge investment needs. This implies further reducing inefficiencies produced by remaining national barriers, the grids and production capacity. It is argued that the realisation of the internal market is not only beneficial to competitiveness, but also to sustainability and supply security. According to the Commission’s analysis, the realisation of the policy goals requires a clearer separation of energy production and supply from energy transmission.⁹

The policy proposals in the Third Package intend to strengthen the regulatory instruments and devices, and also to promote the far-reaching step of ownership unbundling, requiring a full divestment of the transmission networks from the vertically integrated gas and electricity companies.¹⁰ After a period of lengthy discussions, the

⁹ See for instance the Commission’s Impact Assessment on the 3rd package, http://ec.europa.eu/energy/electricity/package_2007/doc/2007_09_19_impact_assessment_en.pdf.

¹⁰ De Jong, J.J. *The Third EU Energy Market Package. Are we Singing the Right Song*. CIEP Briefing Paper. The Hague, Clingendael Institute, February 2008.

energy Council accepted most of the proposals in the Third Package. With regard to the unbundling discussion, member states can choose between ownership unbundling and the ITO (independent transmission operator) model.

Climate and energy

The climate and energy package has been approved by the member states of the European Union. They agreed to legally binding targets to cut greenhouse gas emissions by 20%, to achieve a 20% share in the energy mix for renewable energy and to improve energy efficiency by 20%, all by 2020. Agreement was reached to revise the emissions trading system, on the distribution of the reduction effort outside of the emissions trading system and on a legal framework for carbon capture and storage (CCS). Furthermore, the level of emissions from small sources should be 10% lower in 2020 than in 2005. Europe is the first region in the world to commit to such far-reaching and legally binding emission reductions. It therefore regards itself as the leader in the fight against climate change. If an international climate agreement is reached in Copenhagen in 2009, Europe will commit itself to a further reduction of CO₂ emissions, to 30% by 2020, provided that other developed countries take on similar commitments.

Security of supply

The European Union does not have a common security of supply policy, but is increasingly aware of the issues at stake. Due to decreasing domestic production and growing energy demand, import dependence is bound to increase. Moreover, the 2004 enlargement increased the asymmetric exposure to security of supply risks. The internal market increasingly necessitates cross-border solutions and coordinated crisis mechanisms. Speaking with one voice, coordinating infrastructure improvements and deepening relationships with key supplying countries, transit countries and other consumers are the key elements of Europe's approach. Very often however, the differences of opinion in foreign policy stand in the way of making progress in formulating an external energy policy. In its second Strategic Energy Review, the Commission proposed a five-point action plan, called the "EU Energy Security and Solidarity Action Plan".¹¹ The plan focuses on: infrastructure needs and the diversification of energy suppliers; external energy relations; oil and gas strategic reserves and crisis response mechanisms; energy efficiency; and making the best use of the EU's indigenous energy resources. This plan will amongst others lead to a new EU regulation on security of supply that obliges all member states to make their own preventive action plan and emergency plan.

¹¹ European Commission. *Second Strategic Energy Review. An EU energy security and solidarity action plan.* SEC(2008) 2794/5. Brussels, 2008.

2.3 The changing context for Europe's energy companies

Developments in the international energy markets and the changing policy environment in the 1990s dramatically changed Europe's market structure. It changed at both the member state and European levels, including the ownership structure in some cases. The combined change in the market structure and the policy environment forced companies to adapt their strategies on how to source their power stations, the level of vertical and horizontal integration across national borders that would optimise their positions, and how to distribute and market their power. Although the liberalisation drive was similar in the member states, the process to achieve liberalised energy markets was varied and was based on the historical organisation of the national markets. In the UK, privatisation took place prior to the process of liberalisation, while in most member states the process was done in the reverse order. In the Netherlands, gas and electricity networks, including distribution, were to remain in the public domain. The level of unbundling that was chosen went beyond the EU requirements. In France and Germany, both of which have strong domestic companies, the organisational structure of the market changed only under pressure from the European legislation, which in turn was heavily influenced by the pressure from these two member states to align EU regulation to fit their markets. Because the liberalisation of the EU energy market was very much a step-by-step approach, it is interesting to further analyse the interaction between policymaking and company strategy development.

3

Energy policy and trends that affect the strategies of the energy industry

From the previous chapter, it is clear that the three main energy policy priorities have alternately defined the structure of energy markets over the last decades: initially, competition at the level of European energy markets through liberalisation and coordination; concern about the impact of energy consumption on the environment and particularly the contribution to climate change; and later, the security of energy supply. These policy changes also greatly impact the strategic behaviour of energy companies. This chapter starts with a brief discussion about the impact of the policy priorities on the growth prospects of energy companies. Next, the three often overlooked inconsistencies in energy policy are dealt with, in that they do not take the strategic responses of energy companies into account. The first inconsistency is combating vertical integration and long-term contracts while striving for stable (and low) prices; second is withdrawing the government from the energy markets while global competition for energy, resource nationalism and the need to come to a more sustainable energy system require an active government involvement; and third, promoting competition through liberalisation in a completely mature market.

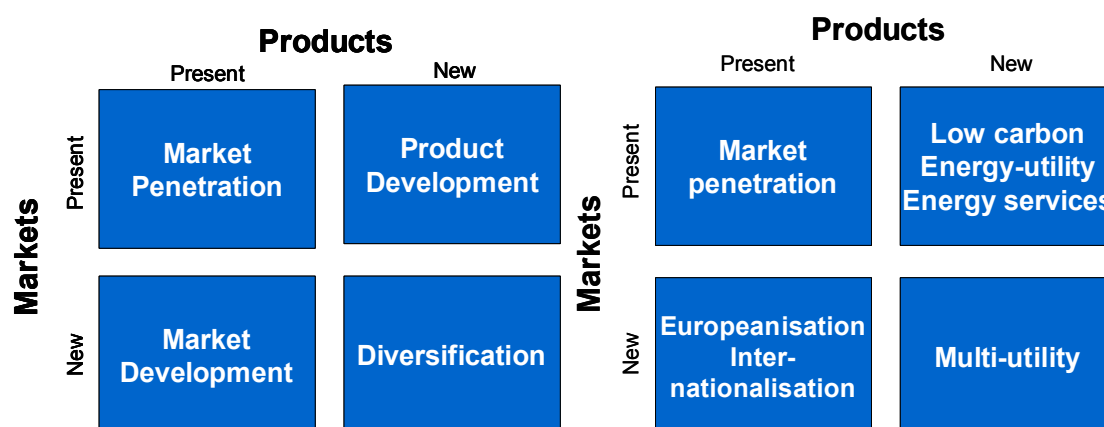
3.1 Impact of energy policy on growth opportunities of energy companies

The start of the liberalisation process in continental Europe coincided with a period of lower growth rates. This meant that traditional growth opportunities for the national energy markets had become limited. At the same time, there was a growing awareness that a shift towards a lower-carbon energy system and efficient use of energy resources was vital for an economically, environmentally and socially sustainable future. Growth in the home markets was often impossible without consolidation. This was due to the fact that many companies were already dominant and protected market players. With the prospect of opening up the domestic markets and increasing competition, market share of these companies was bound to decrease. Some players were dominant because they

were the traditional (regional) monopolists (like Electricité de France, Gaz de France, Eni and Enel). Others became dominant as a result of a wave of consolidation at the national market level, where many municipal energy companies were merged into larger players. As long as international oil and gas markets were buyers' markets, security of supply was not really an issue. As a matter of fact, many believed that the internal market, once complete, would automatically serve this priority of energy policy-making. Only when the buyer's market changed to a seller's market, after 2003, did security of supply consideration enter into the strategic planning of both governments and companies. Throughout the 1990s security of supply was not really an issue, and the strategic agenda of companies was mainly driven by market restructuring (liberalisation) and climate policy.

The lack of growth prospects in the home markets resulted in two main growth strategies: Europeanization (market development) and product development (see Figure 2).¹² Both can be achieved through mergers and acquisitions.

Figure 2. Product/market matrices: generic and applied to the EU energy industry



Source: CIEP Analysis, Ansoff, H.I. *Strategies for Diversification. Harvard Business Review. Vol. 35. 113-124. 1957.*

Mergers and acquisitions are an attractive strategy in mature market circumstances. Endogenous growth –acquiring new customers– is very time-consuming. It can also be costly when it leads to price wars with competitors or when other costly methods must be pursued to add new clients. Mergers and acquisitions are an attractive growth

¹² The matrix at the left is known as the product/market matrix, developed by Ansoff. The right picture is the matrix applied at the energy industry. Ansoff, H.I. *Strategies for Diversification. Harvard Business Review. Vol. 35. 113-124. 1957.*

strategy in a mature market, as a way to spread out large amounts of cash. Companies often prefer growth over paying large dividends. One of the arguments for the latter is related to prestige, but growing to a large enough size also makes acquisition by a competitor less likely. Hannan and Freeman (1989) emphasise in their work on organisational ecology that efficiency is not the absolute decisive factor in being able to survive in an industry; it is only one of the dimensions. In many cases political ties are more important. They also state that the most efficient producers are presumably the most attractive targets for take-overs. The take-overs are done by larger firms that are less efficient but better capable of staying in business.¹³ Mergers and acquisitions generally do not seem a good strategy for improvements in efficiency and cost reduction, because the expected synergistic benefits often do not materialise and economies of scale are not unlimited.¹⁴

The most recent examples of market development (internationalisation) through mergers and acquisitions can be found on the Dutch energy market, where RWE (Germany) has bought Essent (€9.3 billion), and Vattenfall (Sweden) took Nuon for €8.5 billion. Other examples of large mergers and acquisitions intended to enter or develop new markets are the take-over of Endesa (Spain) by Enel (Italy) and the acquisition of Scottish Power by Iberdrola. Mergers and acquisitions are also used as a strategy to broaden the product portfolio (product development). The merger of GDF and Suez is a clear example of such a shift toward a multi-energy strategy. Until 2004, GDF could only be active in the gas business because EDF was the traditional actor on the electricity market. Suez was particularly strong in power, which led to a strong combination of power and gas activities. Another (in)famous example is the takeover of Ruhrgas by E.ON in 2002. The German competition authority had blocked the deal, but the German Counsellor Gerhard Schröder overruled the “Bundeskartellamt” for industrial and political strategic reasons.¹⁵

Over time, the European power and gas companies made several attempts to find new growth opportunities, such as offering related products like water, waste management, telecommunications, and even chemicals and financial services. This so-called multi-utility strategy should have resulted in cost advantages, because different types of utility services use similar assets (wires, pipelines) and similar skills (management and network

¹³ Hannan, M.T., Freeman, J. *Organisational Ecology*. Harvard University Press, Cambridge Massachusetts. 1989.

¹⁴ Marginal costs use to fall until an optimal volume, the ‘most efficient scale’, and then start to rise again. Mergers or acquisitions, for example, only lead to a more economical production scale when the utilisation rate of plants in the new combination goes up and the requires overhead goes down. The benefit goes down again when the firm continues to grow. So the average cost curve is U-shaped, with the most efficient scale point at the lowest part of the U-curve. (Tirole, J. *The Theory of Industrial Organization*. Fourteenth printing. p. 16-18. The MIT Press, Cambridge, Massachusetts, 2003; Schenk, H. Mergers and concentration policy. In: Bianchi, P. and Labory, S. *International Handbook on Industrial Policy*. Edward Elgar, Cheltenham, UK. 2006)

¹⁵ Falck, O., Heblich, S. Do We Need National Champions? If So, Do We Need a Champions-Related Industrial Policy? An Evolutionary Perspective. *Jena Economic Research Papers*. 2007 - 088.

maintenance), which would avoid duplication.¹⁶ The expected cost advantages were not realised in many cases, and as a result, almost all market players ended the multi-utility strategy. Non-synergetic (non-energy) parts of the company were sold-off and invested in strengthening the energy parts of the company (Table 1), so the combination of energy services remained primary. Table 1 shows the strategy shift in some of the major European companies from multi-utility towards multi-energy.

In the 1990s, RWE was active in chemicals, construction, telecommunications, water and waste management in addition to energy. Since the end of the 1990s, increased competition in the power and gas business required RWE to refocus, and it started to sell off non-energy activities.¹⁷ Nevertheless, RWE acquired the UK company Thames Water in 2003, only to sell it again in 2006, as “a milestone in RWE’s strategy to focus on its core strengths and focus on the converging European electricity and gas markets”.¹⁸ Enel, too, presented a new, purely energy-focused strategy in September 2002, after entering the water business in 1998. The French companies EDF and GDF were in a different position than their German counterparts. They could not diversify their portfolio and engage in a multi-utility strategy because they were constrained by regulation.¹⁹ This situation changed when European policy no longer accepted such monopolies, the French market had to be opened for competition and they were partly privatised.

¹⁶ Fraquelli, G., Piacenza, M., Vannoni, D. “Scope and Scale Economies in Multi-Utilities: Evidence from Gas, Water and Electricity Combinations” *Applied Economics*. Vol. 36. p. 2045 – 2057. 2004.

¹⁷ Company website information used: www.RWE.com.

¹⁸ Former CEO of RWE Harry Roels in: The Guardian, 17 October 2006. *Thames Water sold for £8bn to Australian bank Macquarie*.

¹⁹ Finon, D., Middtun, A., Omland, T. *Strategic Configuration: A Casuistic Approach*. In: Finon, D. and Middtun, A. (eds.) *Reshaping European Gas and Electricity Industries. Regulation, Markets and Business Strategies*. Amsterdam: Elsevier. pp. 297 – 353. 2004.

Table 1. Multi-energy and multi-utility strategy of Europe's major power and gas companies

Company	Multi-utility	Multi-energy
E.ON	Divesting non-energy assets since 2000.	In 1999 desired to become a one-stop energy shop. After acquisition of Ruhrgas in 2002, it became a multi-energy player.
RWE	Divesting non-energy assets. Also gradually withdrawing from water business.	Primary focus on energy since 2004, but some water activities remain.
Enel	Started multi-utility in 1998. Divesting non-energy assets since 2002.	Started with gas in 2000. Primary focus on energy since 2002.
Eni	Divestment of non-energy assets since early 2000s.	Since 2000 focus has been on power and gas; expanding power generation capacity.
EDF	n.a.	Until 2004 no multi-energy possible; since 2004 active in both gas and electricity.
GDF	n.a.	Until 2004 no multi-energy possible; since 2004 active in both gas and electricity.
Suez	Multi-utility focus. After merger with GDF, Suez will spin off environment business, which will end multi-utility strategy.	Multi-energy strategy after the merger with GDF and spin off of environmental business.
Centrica	When monopoly was terminated (1998), Centrica diversified its activities, e.g. Automobile Association in 1999 (sold in 2004) and telecommunication in 2000 (sold in 2005).	Has included electricity supply in its activities since the opening of the market to competition in 1998. Since 2005 focus has been purely on energy.

Source: CIEP analysis of annual reports and corporate websites

New opportunities for growth

Public policy has also created new growth opportunities for energy companies in three main fields. First, the total size of the European energy market (and thus the scope for market development) grew with the increase of the European Union from fifteen to twenty-seven countries. Several major companies directed their growth strategy toward "the east." E.ON, RWE and Enel engaged in several takeovers in Central and Eastern Europe to benefit from privatisation opportunities and investment needs in those markets. Second, the "green agenda" offers new opportunities for growth. Renewables,

energy efficiency services, nuclear power, grids, and carbon capture and storage are the major fields where investments are needed. Third, concerns about security of supply and market integration offer opportunities for companies to invest in gas storage, LNG terminals, interconnections and long distance gas corridors.

3.2 Energy policy dilemmas

The goals of public policy and the market circumstances or business environment are sometimes at odds, and could ultimately prevent the policy goals from being achieved. In the assessment of the external environment and the strategic triggers for energy companies, we found three important dilemmas in energy policy in relation to developments in the external environment of the companies.

1. EU competition policy appeared very dogmatic in its signalling about long term contracts, which created uncertainty in the gas market and risked a reduction in security of supply. In a tightly supplied market companies may prefer to conclude long term contracts to secure supplies. In addition, EU competition policy was focussed on reducing the grip of incumbents on the energy value chain in the midstream and downstream segment of the market (limit horizontal integration), companies tried to manage their supply risks through both backward and forward vertical integration.
2. Tight resource markets (although they have temporarily loosened) and the necessary shift to cleaner energy sources made the importance of a strong and actively involved government much greater. This importance comes at a time that governments have minimized their direct involvement in the energy industry. The latter makes steering the market in the desired direction a tough job.
3. Promoting competition through liberalisation in a fully mature market will lead to more consolidation, in part to capture economies of scale and scope. The larger size of the companies is consistent with the larger investments risks that come with a more competitive market and the push for a transition to a more sustainable energy mix. At the same time consolidation reduces the number of players in the market, particularly at a European regional level, shifting the scope of competition.

These three dilemmas are not emphasised here to debate that competition or market restructuring is wrong; avoiding the abuse of market power is crucial. The dilemmas are however an indication of the complexities involved in changing the market structure and, at the same time, create sufficient regulatory stability for companies to adjust their

risk management and market strategy, particularly when the supply conditions are also changing rapidly.

3.3 Risk management in liberalised markets and the role of the government

In an uncertain and unstable business environment, companies tend to seek vertical integration in an effort to manage risks. Vertical integration can decrease the exposure of a company to price volatility, and it can also secure against shifting rents along the value chain. Moreover, it provides a company with important knowledge about the adjacent stages of the value chain, which improves its negotiation position. In the past couple of years, many companies have pursued a strategy of vertical integration, for example by increasing or building up their share of equity gas. E.ON, GDF and Vattenfall, for instance, have articulated their ambition to get 15-20% of their gas from their own sources.²⁰

Studies on vertical integration show that when the market conditions are uncertain and when a company in one stage of the value chain is dependent on or less powerful than companies in another stage, vertical integration is an attractive option (see Appendix III). One can say that vertical integration (along with long-term supply contracts) could be beneficial to security of supply and could also lead to lower prices, because it avoids transaction costs and double marginalisation (see Appendix IV).

The process of liberalisation is often misunderstood. In the EU this process was a combination of both national and EU processes to restructure the markets. In some member states this was combined with (partial) privatisation. Moreover, member state markets were all organised in a different manner prior to liberalisation and/or privatisation. EU policy was geared towards removing the barriers between member states, and promoting EU competition policy, while national policies could vary from creating national champions fit to survive the EU arena to strictly national competition goals. In debating the government policies, liberalisation and privatisation was often mixed up, particularly because the market design varied per member state and regulatory powers were divided at different levels of government. Another complication was the fact that in gas, supplies came from outside the EU and were governed differently. Particularly the move on the part of producing countries to seek security of demand through vertical integration, perhaps partly in reaction to the impact of market

²⁰ It appeared that reaching this target has been rather ambitious. GDF, for example, stated in their 2000 Annual Report that they wanted to obtain 15% of their gas from own sources by 2005. When it turned out that it was harder than expected to obtain the equity gas (in 2005 only 3% of GDF's gas came from own reserves) the timelines were dropped. (Based on the analysis of annual reports of GDF and E.ON from 2000 – 2006).

liberalisation on their exposure to risk and their ability to gain benefits in their part of the value chain, added a new layer to the discussion. Larger energy companies with ambitions to integrate backward in the value chain and upstream companies wishing to integrate forward in the value chain across regulatory boundaries found themselves in the middle of the strategic manoeuvring by member states to secure their preferred market design at the EU level. Often this was linked to the member states' idea about how best to reach their security of supply goals. This part of energy policy-making was to a large extent a national affair and also strongly linked to other economic and foreign policy-making. The imbalance in competencies between the EU and the national governments greatly complicated policy-making because in a tighter energy market it became less straightforward that 'the market' could also satisfy the longer term security of supply needs of member states. At the same time, we have seen the emergence of regional markets within the EU, each with their own supply relations and attempts at linking the national regulators at this level and security of supply concerns. The asymmetries in policy priorities among these regional markets also began to play a role in the wider EU debate about market design, regulatory coordination and in particular in the discussion about ownership unbundling.²¹

At the same time, indigenous European production continues to decline, resulting in increased import dependence. In this supply-constrained world, national (i.e., government owned) companies of emerging consumer countries like China and India have searched worldwide for access to and control over energy resources. Different from the traditional international oil companies (IOCs), these national oil companies invest primarily to supply their home markets, not per se the global market. In producing countries, too, a shift towards more control over their own energy resources has taken place, leading to fewer investment opportunities for OECD-based energy companies. As a result, European energy companies increasingly have to deal with state-owned companies when reaching new contracts. In this environment it is helpful when the European companies also have a certain amount of government backing (government-to-government to facilitate business-to-business). In fact, many large gas contracts have been closed in the context of bilateral meetings between government leaders. Again there has been confusion about the bilateral governments initiatives to stimulate trade and investment, and the attempt to coordinate external energy policy at the EU level. Often these were perceived to be at logger-heads with each other.

The four years before the widespread financial crisis in October 2008 were characterised by ever-increasing global competition for energy resources. Prices have become very volatile. Energy prices reached unprecedented levels in July 2008, dropped dramatically in the Fall of that year and recovered somewhat in the Spring of 2009. The financial crisis and the subsequent economic downturn has reduced demand for energy and created a

²¹ De Jong, J.J. *The Third EU Energy Market Package. Are we Singing the Right Song*. CIEP Briefing Paper. The Hague, Clingendael Institute, February 2008.

temporary buyers market. It is yet unclear how long the market will stay relaxed. Some upstream projects are coming on stream in this period and with weak demand could result in a longer period of relaxed markets. This very much depends on the depth of the crisis and the pace of economic recovery. It is clear however that the crisis has exposed new risks in the energy value chains and that certain business models that were recently emerging in the LNG business but also in pipeline gas might be under strain.²²

In addition to securing supplies, government involvement is also needed in the transition to a more sustainable energy system. Governments negotiate climate change targets across the world and ensure an equitable distribution of the transition cost. Due to liberalisation and privatisation, governments can only influence the fuel mix choices through permits and strict regulations. Yet when looking at the investment plans, it is clear that market conditions do not yet support the level of investments that are needed to reach the targets set for 2020. It therefore seems appropriate, if the EU targets are to be reached, for governments to assume a more active role in the decarbonisation of the energy sector by lowering the investment risks and market exposure of companies investing in decarbonisation.

3.4 The effect of liberalisation on a mature market

Just like products, industries also have a certain life cycle. After the introduction phase, a period of growth and expansion follows, eventually leading to a mature market (see Appendix I). When no new growth phases take place, the industry will enter into decline. The stage in the market growth cycle of an industry determines the available growth strategies and, importantly, also the available responses to policy measures such as liberalisation. When a market is in the innovation and expansion phase, endogenous growth can be an attractive strategy, while mergers and acquisitions better fit a mature market. The market growth cycle also has consequences for the market structure of the industry. Typically, an expanding market (with high growth rates) is characterised by a large degree of diversity, many companies and a low degree of concentration because many companies can survive in such a growing market.²³ Looking at the European energy market, liberalisation was introduced in a mature market (see boxes about gas and electricity below), which, as expected, led to more market concentration at the European level. As a result, several scholars have pointed out that the European power and gas markets will be characterised by ongoing consolidation, leading to a handful of very large, internationally operating companies and a larger number of regional niche

²² De Jong, D, van der Linde, C and Smeenk, T., The Evolving Role of LNG in the gas market, in: Global Energy Governance, The New Rules of the Game, Golthau, A. and Witte, J.M. (eds.) Global Public Policy Institute Berlin/ Brookings Institution Press Washington, 2010, pp. 221-245.

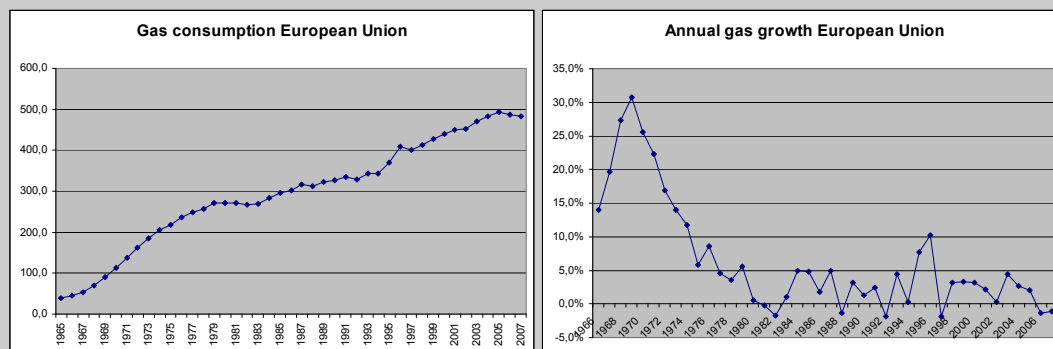
²³ De Jong, H.W. *Dynamische Markttheorie*. Stenfert Kroese, Leiden. 1996.

players.²⁴ Despite this concentration, there is more choice available to customers than before liberalisation because national barriers were breached. The following text boxes illustrate the industry growth cycle of the European electricity and natural gas industry and confirm the expected market maturity.²⁵

Natural gas

The consumption of natural gas almost perfectly represents a complete industry growth cycle: from the early beginning of an industry through periods of maturity and decline followed by new growth cycles and possibly again towards decline.²⁶ The new periods of growth are based on different explanations. In the mid 1980s economic recovery resulted in a new growth period. The second growth period was provoked by the decision of the European Commission in 1989 to lift a ban on the use of natural gas in the power sector. Together with the ‘dash for gas’ in the UK and low gas prices during the 1990s as a result of low demand in the Former Soviet Union, this resulted in an expansion of gas demand, especially in the power sector. The liberalisation process started at the end of this period of new growth. So, while liberalisation was expected to bring competition between a large number of companies, the stage in the market growth cycle (maturity) dictated that the companies would grow largely through mergers and acquisitions.

Figure 4. Natural gas consumption and growth in Europe



Source: BP. *Statistical Review of World Energy*, 2008.

²⁴ Thomas, S. The Seven Brothers. *Energy Policy*. Vol. 31 p. 393 – 403. 2003; Dutch Energy Council *Markten op de weegschaal*. 2003.

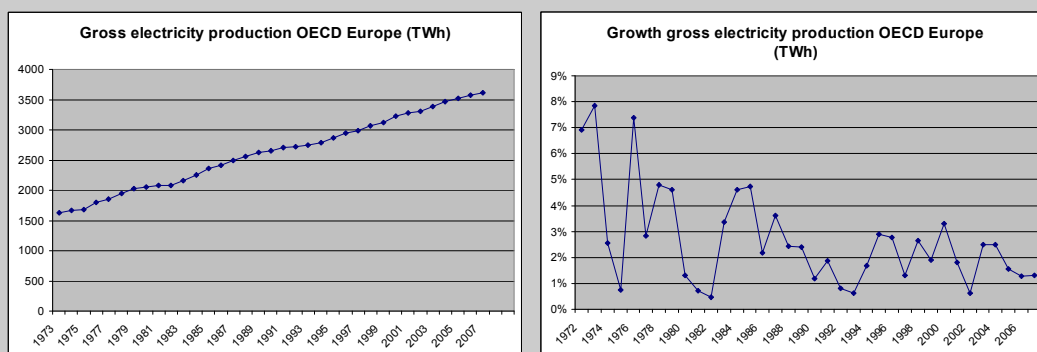
²⁵ Similar boxes for coal and wind can be found in Appendix V. It is interesting to see the differences. Coal in Europe already went through several phases of decline. Wind is still at the beginning of the industry cycle and shows very high growth rates.

²⁶ One of the scenarios of the European Commission in its second “Strategic Energy Review” shows a decrease in the consumption of natural gas due to efficiency measures and renewables. European Commission. *Second Strategic Energy Review. An EU energy security and solidarity action plan*. SEC(2008) 2794/5. Brussels, 2008.

Electricity

Gross electricity consumption²⁷ in OECD Europe has increased steadily since the early seventies. There were a number of periods of accelerated demand, such as the period from 1983 to 1986 and in the late 1990s/early 2000s. The early 1980s and 1990s show flat demand growth due to economic recessions. Although the curve of annual gross production in Figure 3 seems to point to linear growth over time, the curve that shows the annual *growth* rates (Figure 3) gives a different picture, namely one of stagnating market growth. This implies that growth opportunities in terms of capacity expansion are limited and that new investments will mainly have to come from capacity replacements. Currently, there is ample room for new investments in Europe due to the large need for capacity replacements for reasons of replacing retired and environmentally insupportable plants and –slow but steady– demand growth.²⁸ Moreover, the power sector will have to make a switch from the current carbon-intensive generating technologies towards cleaner technologies that should lead towards a carbon-neutral energy sector by 2050. Investment strategies of the major utility companies show that the awareness of this trend is increasing. Several large players (e.g. E.ON, Enel, RWE, Vattenfall) are dedicating several billions of euros toward investments in renewable energy (mostly wind). In 2008 wind capacity additions outpaced capacity additions of other fuels like wind or coal for the first time.²⁹ On the drawing board, nuclear energy is also experiencing a revival in many countries; and carbon capture and storage (CCS), a technology that should enable the climate-friendly use of coal and other fossils in the energy mix, is a priority for many large companies, like RWE and E.ON, and governments (both national and European).³⁰

Figure 3. Gross electricity production and growth in OECD Europe³¹



Source: IEA, *Electricity information, 2008*, IEA, *OECD Statistics, 2008*

²⁸ World Energy Council. *Europe's Vulnerability to Energy Crises*. World Energy Council, London UK. 2008.

²⁹ Platts. Wind pips gas in 2008. *Power in Europe*. 26 January, 2009.

³⁰ Financial Times, 16 January 2009. *Electricity: Carbon capture at core of plans for fossil fuels*. See also: CIEP. *Carbon Capture and Storage: A reality check for the Netherlands*. September 2008. Clingendael Institute. The Hague.

³¹ Source of data: International Energy Agency. *Electricity information 2008*. IEA *Statistics*. OECD, Paris, 2008.

4

Recent Company Strategies

Until now this paper has focused on the relationship between policymaking and company strategies, without digging much deeper into the strategies that are actually employed as a result of the changing market environment. This chapter will therefore start with a short overview of some of the key dimensions in the changing external environment which have required a strategic response. Next will be a section with the actual strategies of companies, which they adopted to secure enough (stably priced) *supply* for their customers and which were aimed at dealing with changes on the *demand* side.

As already discussed, the external environment has become increasingly uncertain. It is not the aim of this paper to present a comprehensive overview of all changes that have taken place, but to relate major developments of the companies' strategic responses. Table 2 shows some major trends in the types of strategic responses.

Table 2. Strategic reactions to the trends in the external environment

Dimension	Situation	Strategic response
Supply/demand outlook	Mid- to long-term: tight supply and demand due to decreasing domestic production and continuing growth of global demand	<ul style="list-style-type: none">• Upstream integration• Long-term contracts• Fuel diversification
Access to resources	Access has decreased because of increasing resource nationalism. The lower oil price in 2009 could change this. Few easy oil and gas reserves are accessible.	<ul style="list-style-type: none">• Diversification of suppliers• Joint ventures and asset swaps• Upstream integration where possible
Need for investments	Very high need due to: <ul style="list-style-type: none">- Required capacity replacements (in power and upstream gas & oil)- Grid improvements- Renewable capacity	<ul style="list-style-type: none">• Diverse investments• Depends on oil price, CO₂ price, demand forecast and credit availability

Demand forecast northwest Europe	Mature northwest European gas and electricity markets. Growth depends on role of gas in fuel mix and whether or not Europe will move towards an all-electric society.	<ul style="list-style-type: none"> • New products (multi energy) • Europeanization/ Internationalisation • Made investments with energy intensive industries
Demand for renewables	High demand because of policy targets	<ul style="list-style-type: none"> • Acquisition of complete projects and licenses from developers • Investment in lowest cost renewables, e.g. biomass and hydro
Price volatility	Continues to be high. Forecasting future prices is extremely difficult.	<ul style="list-style-type: none"> • Gas storage • Vertical integration • Diversification in fuel mix
CO₂ price	Uncertain	<ul style="list-style-type: none"> • Investments in expensive projects that require high CO₂ prices are delayed.
Liberalisation	Increased competition	<ul style="list-style-type: none"> • Customer retention programs, e.g. fixed prices • Multi-energy offerings
Market integration	Opening up of new markets Focus on realising new interconnections between markets Market coupling initiatives	<ul style="list-style-type: none"> • Entering new markets with acquisition or organic growth
Market structure	Consolidation	<ul style="list-style-type: none"> • Acquisitions to avoid being taken over • Operational excellence

Source: CIEP Analysis

The next sections will discuss the different strategic responses in more detail. In Tables 3 and 4 examples of the strategic responses illustrate some of the routes companies have followed.

4.1 Strategies for securing supplies

Long-term supply contacts

The supply side risk can be managed by closing long-term supply contracts with producing countries. Several major energy companies prolonged their long-term supply contracts with the NOCs of producing countries (see Table 3). Long-term contracts can be seen as a type of vertical integration. The difference with becoming active in the

upstream stages of the value chain is that the additional income related to upstream operations is not realised, but the additional risks of exploration and development of new fields are also not shared. A survey by Pricewaterhouse Coopers shows that boardroom members regard long-term contracts as the most important means for handling fuel supply challenges.³² For ENI and GDF, long-term supply contracts account for approximately 85% of total gas deliveries.³³

Upstream integration

Companies aiming to minimise their exposure to the supply side risks can choose upstream integration. This can be a difficult strategy to pursue and risky to fully rely on, because producing countries are increasingly reluctant to grant foreign companies access to their resources. An example of a gas company that is actively integrating in the upstream is GDF. GDF currently operates gas fields in nine countries and has the ambition to own reserves of 1,000 Mboe (160 bcm) in the medium-term, two-thirds of which is natural gas. Production from their own reserves is still limited, however, accounting in 2005 for 3% of total gas sold and far below the target of 15% set in 2000. Other examples can be found in Table 6. In general, gas companies with limited reserves of their own aim to integrate vertically in a sellers' market in order to control and benefit from the margins on production and to be less vulnerable for further price increases.

Gas storage

Investing in gas storage is one way a company can reduce its vulnerability to supply side risks. Storage can be useful to deal with short-term disruptions, price hikes and volatility of prices. The demand for gas storage has grown over the last decades and is expected to continue to do so after 2010, because gross production flexibility (indigenous production and imports) is declining.³⁴ Several companies are investing in new storage capacity. Storage of power is more complicated than the storage of gas. Nevertheless, power storage in the long run requires the attention of both industry and policy makers, because it might be essential to balance the intermittency of renewable energy capacity, especially wind.

Joint ventures / asset swaps

Another approach for managing supply side risks is to engage in joint ventures and asset swaps with producers, or other forms of collaboration. Joint ventures can be very

³² Pricewaterhouse Coopers, *Energy and efficiency. The changing power climate*, Utilities global survey 2007.

³³ Annual reports ENI and GDF.

³⁴ CIEP, *The European Market for Seasonal Storage*, The Clingendael Institute, The Hague, February 2006.

effective, as they create common interests for the companies of both the producing and consuming countries. Joint ventures can consist of upstream cooperation. For example, utilities might get stakes in E&P projects and in return grant producers access to the downstream market, share the investment risks or guarantee long-term demand.

Diversification of suppliers

Supply can also be assured by diversifying the number of suppliers. GDF is the most obvious exponent of this strategy. It had already adopted a strategy of diversifying gas supply in the late 1970s. The new supply from Egypt and Libya, in addition to Russia, Algeria and the Netherlands, shows that GDF is still focusing on diversification of its supply. Gas from Egypt and Libya, as well as the potential production from Mauritania, will be shipped as LNG. GDF is not only expanding its LNG supplies but also its piped gas. At the end of 2006, GDF signed a 20-year agreement with Algeria for the delivery of an additional 1 bcm/a, shipped through the Medgaz pipeline between Algeria and Spain, which is scheduled to be operational in 2009. Supply contracts with Gazprom (12 bcm) have been extended until 2032. Moreover, an additional 2.5 bcm/a of Russian gas will be shipped through the Nord Stream pipeline expected to start in late 2010.

Diversification of supply routes

Diversification can also be achieved by developing new transport routes for gas. This can be done by building LNG terminals or by constructing new gas pipelines. New supply routes can secure supplies by avoiding sensitive or dominant transit countries, such as Ukraine, or by diversifying the suppliers. The latter is not always possible with pipelines, because the resource base for piped gas should be relatively near the consuming market. Throughout Europe a large number of LNG terminals are planned, under construction or recently constructed. Having an LNG terminal, however, does not in itself secure supplies to that terminal. It seems to be increasingly difficult to contract LNG supplies.³⁵ This leads to delayed investment decisions in regasification terminals. A new pipeline, especially one that is being built in cooperation with a producer (which is obviously not the case with the Nabucco pipeline), is a more certain option for securing supplies. Such a pipeline has two advantages. First, with a producer having a financial interest in the project, the chance that the pipeline will run dry seems very low. Second, connecting a newly built pipeline to a (new) gas field enables the pipeline to run on full capacity and increases security of demand for the producer.

³⁵ Petroleum Intelligence Weekly, 14 January 2008. *LNG Terminal Playing to Empty Houses*, p.1. Energy Intelligence.

Fuel choice

Finally, changing the fuel mix (both for existing plants and for newly built and proposed plants), is a kind of strategic response that can help to lower the dependence on gas imports and hence the vulnerability of supply. A generation portfolio that consists of several sources seems to be attractive because it spreads the risks and enables a switch to other sources when needed. In addition, when gas is the marginal fuel and gas prices are high, it is beneficial to have coal and nuclear power because the marginal costs of these fuels is lower than for gas. Therefore, using renewables, coal or nuclear instead of gas for power generation can be an effective response to supply insecurity.

Small players versus large players

Small players generally have fewer instruments to secure supplies than large players. From the possible strategic responses summarised in Table 3, the first three seem to be much more difficult for small players than for large players. Closing a long-term supply contract with a producer necessarily means the purchase of a significant volume of gas, which is obviously harder for a small company than for a large company. Upstream integration requires the ability to make multi-billion investments in uncertain projects, which requires a large balance sheet. In addition, upstream activities demand specific knowledge and skills that are not always available to smaller players, especially those that were previously active only in the power sector. Joint ventures in gas fields or large-scale pipeline projects that are built in conjunction with national companies from producing countries require specific capabilities (capital, skills and the ability to take large risks) that are more likely to be found with large players than with smaller ones. Table 3 summarises the different types of strategic responses and mentions various examples of this.

Table 3. Different strategic responses to supply side risks and perspectives

Type of response	Examples ³⁶
Long-term contracts	<ul style="list-style-type: none">• GDF extended its contract with Gazprom until 2030, and in exchange Gazprom received the right to sell 1.5 bcm/a directly to the end customers.³⁷• GDF closed a 20-year contract with Sonatrach (delivery starting at the end of 2009) that will supply gas through Spain via the Medgaz pipeline.• ENEL signed an agreement with Sonatrach to supply 8bcm/a by the end of 2012 through the GALSI pipeline.

³⁶ The examples given are not exhaustive, but are meant to give an idea of the current trends in the industry.

³⁷ International Herald Tribune, December 19, 2006. *Russian company to sell natural gas directly to French consumers.*

	<ul style="list-style-type: none"> • In 2006 Eni extended its supply contracts with Gazprom through to 2035. Gazprom supplies around one third of Italy's gas consumption. In exchange, Gazprom received the right to use Eni's pipeline network to sell directly to Italian customers.³⁸ • E.ON has extended all its long-term supply contracts with Gazprom through to 2035.
Upstream integration (gas)	<ul style="list-style-type: none"> • E.ON wants to supply 15-20% of its gas from its own equity. It recently bought a stake in the Norwegian gas sector. In addition, E.ON has been negotiating for a long time to secure a stake in the Russian Yushno Russkoye gas field. • GDF has stakes in upstream projects in Norway, Germany, the Netherlands, the UK and increasingly in North Africa (Mauretania). • ENI is traditionally an important upstream player and owns hydrocarbon reserves throughout the world.
Gas storage	<ul style="list-style-type: none"> • GDF has increased gas storage and expects to have a storage capacity of 10 bcm by 2010. • OMV and Gazprom signed a co-operation agreement to jointly carry out storage projects in Austria and neighbouring countries.³⁹ • Expanding gas storage is one of the key elements for E.ON, and it has been expanding gas storage in Hungary and the UK.
Joint ventures/asset swaps	<ul style="list-style-type: none"> • Nord Stream pipeline plans to deliver 55 bcm of Russian gas to Europe and is a joint venture between Gazprom (51%), E.ON-Ruhrgas (20%), Wintershall (20%) and Gasunie (9%). • E.ON plans to build power plants with Gazprom in the UK, Germany and Hungary. This most likely has to do with negotiations about E.ON's possible stake in Yushno Russkoye.⁴⁰ • ENI and Gazprom jointly developed the South Stream and Blue Stream pipelines.
Diversification of suppliers and supply routes	<ul style="list-style-type: none"> • GDF historically has had a strategy of having a diverse portfolio of suppliers. • Blue Stream and Yamal diversify transit countries. • Nabucco is meant to diversify both transit countries and suppliers. • Nord Stream and South Stream are meant to diversify transit countries.
Fuel mix	<ul style="list-style-type: none"> • Dutch power generators (E.ON, RWE, Electrabel, Essent) are planning new coal-fired power stations.⁴¹ • E.ON has been increasing its share of gas in power generation; in 1999 it was just over 2% and in 2006 it was 8%, which is still below the German average.

Source: CIEP Analysis

³⁸ idem.

³⁹ Energy Business Review Online, 29 January 2008. OMV and Gazprom to develop gas trading hub in Austria.

⁴⁰ Financial Times, 13 November 2007. *Eon eyes Gazprom as power plant partner*

⁴¹ For further information on coal fired power generation in the Netherlands see: Van den Heuvel, S.T.A. and De Jong, J.J. *Putting Coal to the Test: Is Coal Fired Generation Clean, Competitive and Secure?* December 2007. CIEP Briefing Paper.

4.2 Strategies for securing demand

Mergers and acquisitions

Mergers and acquisitions are observed closely in the European energy sector. A number of recent examples will be given in Table 4. It is often stated that economies of scale are the main reason behind this type of growth, but expected synergies often do not seem to materialise. Another rationale behind all the M&As is strategic, i.e. companies want to secure their position within the consolidating and integrating European energy market and avoid becoming the subject of an acquisition by another company. M&As are often chosen as a way to grow internationally, because growing organically in the retail segment requires a large portfolio of customers, which is obviously difficult to obtain without taking over an existing firm. The threshold of profitability for supplying the residential market segment is two million customers.⁴²

Internationalisation; shifts to less saturated markets

Enel and E.ON seem to have a similar international growth strategy. Both companies have focused on growing in Central and Eastern Europe and Russia. These regions are attractive growth areas, because the market is large with strong demand potential, there is need for new capacity (the market is tight) and the market is in most cases privatised and/or liberalised.⁴³ Another example of strategic resemblance is the surprising battle for the take-over of the Spanish company Endesa by E.ON. Just when E.ON thought that the deal was secure, Enel started to build up an interest in the company and finally won the battle, thanks to the cooperation of the Spanish building company Acciona.

Multi-energy offerings

Offering multi-energy services is an attractive strategy for continued growth in a saturated market. Virtually all major European utilities offer both gas and power to their customers.

Differentiation

Differentiation with energy products is generally a difficult strategy, because the actual product leaves no room to differentiate. This, however, depends on how a company sees its role: as a supplier of a certain goods or services, or as a means to satisfy the

⁴² Finon, D. and Glachant, J.M., *Competition and Market Integration in Europe: Towards a Multienergy and Multidomestic Oligopoly*. In: Finon, D. and Middtun, A. (eds.): *Reshaping European Gas and Electricity Industries. Regulation, Markets and Business Strategies*. Amsterdam: Elsevier. pp. 259 – 272. 2004

⁴³ In Russia thermal power generation is privatised and liberalised

needs that customers have. It is obvious that the latter relates to a much wider array of strategic options than the former. Companies can differentiate their offerings to a certain extent with flexible payment schemes, excellent service levels, an additional energy advisory or by building a green image.

Binding the customer

Another important strategic response is that companies try to bind the customer, e.g. by offering a fixed price for gas or power, which varies from one to ten years. The changes in the industry make the relationship with the customer more important. Companies can invest in solar panels to put on the roofs of their customers or provide other energy efficient measures to improve their customer's place. The company thus diminishes the barrier that customers face when making high initial investments for this type of product. The customer can repay the company's investment by paying a monthly fee or by using the savings to repay the energy company.

Table 4. Different strategic responses to demand side risks and perspectives.

Type of response	Examples ⁴⁴
Mergers and acquisitions	<ul style="list-style-type: none"> • Enel took over Endesa. • Suez and Gaz de France merged into one company. • Iberdrola acquired Scottish Power. • E.ON acquired Ruhrgas.
Internationalisation; shifts to less saturated markets	<ul style="list-style-type: none"> • E.ON, ENEL, RWE are growing in Central and Eastern Europe, as well as in Russia. • EDF hopes to benefit from the renewed interest in nuclear energy and has developed plans to build nuclear power plants in the US, the UK, China and South Africa.⁴⁵ • GDF is also expanding internationally. In 2001 only 15% of total sales came from international activities, compared to almost 40% in 2006.⁴⁶
Multi-energy offerings	<ul style="list-style-type: none"> • All major European energy utility companies (ENEL, ENI, EDF, Suez-GDF, E.ON, RWE, etc.) offer both gas and power. • A number of M&As fit the multi-energy strategy very well, for example, the take-over of Ruhrgas by E.ON and the merger of Suez and GDF.
Differentiation	<ul style="list-style-type: none"> • In 2007 almost all companies decided to position themselves as “green” companies. For a long time RWE did not report any planned investments in renewables, but at the end of 2007 it announced a plan to invest €1 billion per year in renewables in Europe.⁴⁷ • Under a new low-budget label, e-wie-einfach, E.ON offers energy with a two year price cap. • New E.ON customers in the Netherlands receive energy saving products worth €130.
Binding the customer	<ul style="list-style-type: none"> • Companies offer their clients one- to ten-year fixed tariffs for gas and power. • In the Netherlands the Dutch power company Nuon gives their clients energy saving products, which they can pay with the savings they make.

Source: CIEP Analysis

4.3 Interaction with companies from producing countries

National oil companies from producing countries, just like the European utilities, are very interested in vertical integration as a way to reduce exposure to shifting rents along

⁴⁴ The examples given are not exhaustive, but are meant to give an idea of the current trends in the industry.

⁴⁵ Financial Times, *EDF to expand outside Europe*, 14 November 2007.

⁴⁶ Gaz de France, *Annual reports 2001 – 2006*. Paris.

⁴⁷ Die Welt, *RWE investiert Milliarden in Ökostrom*, 21 November 2007.

the value chain. The difference is that NOCs look for forward integration by entering the downstream segments of the European market to capture more rents, rather than for backward (upstream) integration.

Gazprom, for example, aims to become *“a leading world energy company which will participate in all parts of the value chain and with a diversified portfolio of products and diversified geographical activity”*.⁴⁸ In the extension of a long-term supply contract between Gaz de France and Gazprom, it is agreed that Gazprom, in return, will be able to sell gas directly to the French customers with a total of 1.5 bcm in 2008. Gazprom made the same kind of agreement with the Italian Eni and will be supplying around 3.5 bcm directly to Italian end-customers.⁴⁹ Sonatrach has also been trying to reach the energy consumer in Spain. This met with strong opposition from Spanish politicians who, in response, started to develop a law that prevented the take-over of their national companies.

The European Commission also reacted to the trend that (semi-) state-companies are becoming active on the European market. A number of ways to protect the European market have been considered, ranging from special attention from competition authorities to defining the European energy sector as a strategic sector.

⁴⁸ Financial Times, 22 May 2007, *Gazprom to press on with EU investment*.

⁴⁹ Financial Times, 20 December 2006, *Gazprom poses challenges to EU nations*.

5

Aligning current company strategies and policy targets

The big challenge for energy policy makers is stimulate alignment of the strategies of energy companies with the major policy objectives. This chapter will use the strategic responses as defined in Chapter 4 and link them to the energy policy objectives. In addition, three ways to influence the strategies of energy companies will be discussed and linked to the strategic responses.

5.1 Match or mis-match between strategies and policy objectives

Obviously, not all strategic responses of energy companies contribute to the policy objectives set by governments or *vice versa*. An exact quantitative assessment of the impact of these strategies on policy is difficult, if not impossible, to make. One way to better understand the broader impact of strategies on policy targets is to rank the strategies of the three separate parts of energy policymaking: security of supply, competitiveness and lower carbon emissions. The following table ranks the various observed strategies for the three policy goals. A plus sign marks a positive effect, a zero means no impact and a minus sign means a negative impact.⁵⁰

⁵⁰ The estimate of the impact of a strategic response on a policy objective is not a fact, but rather an interpretation that is based on CIEP estimates.

Table 5. Ranking of strategic responses on three major policy priorities

Type of strategic response	SoS	Competitiveness	Low-carbon
Upstream integration	++	0	0
Long-term contracts	++	0	0
Diversification of suppliers	+	++	0
Diversification of fuels	+	+	0
Investing in new infrastructure (pipelines and LNG terminals)	++	0	0
Joint ventures and asset swaps	+	-	0
Gas storage	+	+	+
Multi-energy	+	+	0
Internationalisation and Europeanization	+	++	0
Mergers and acquisitions	+	0	+
Renewables	++	-	++
Nuclear	++	+	++
Coal with carbon capture and storage	++	0	+
Biomass	+	-	+
Customer retention programmes	+	-	+

Source: CIEP Analysis

The ranking shows that the company strategies perform relatively well on the security of supply objective of energy policy, while fewer strategies are being developed that support competitiveness and low-carbon energy. This has to do with the lack of incentives that companies have for their investment, for instance in low-carbon energy. If the CO₂ price were very high and more predictable, it would be very likely that more strategic responses that support low-carbon energy would be developed. In addition, the table shows that some strategic responses may be beneficial for one policy objective, but not for another. Vertical integration (forward and backward integration) is beneficial to secure supplies and decrease market exposure, but does not fit in the view of perfect competition. In addition, not all strategies have a clear relationship to policy objectives.

5.2 Aligning company strategies and policy goals: incentives, regulation, leverage

One of the major challenges policy makers face in search of an effective European energy policy is to find alignment between the strategic drivers of energy companies and the policy targets. Company strategies that support the policy targets of clean, competitive and secure energy could help to achieve the policy goals at the lowest costs. This study distinguishes three ways of influencing the strategy of energy companies:

1. Providing incentives,
2. Forcing change by laws and regulation, and
3. Leveraging existing strategies.

Incentives

Providing incentives helps the industry to overcome (financial) barriers to investing in projects that are commercially not (yet) attractive, but desirable from a societal point of view. Many different types of incentives exist, such as subsidies, price guarantees or tax incentives. Incentives are particularly important for low-carbon energy sources. Non-fossil electricity generation will become increasingly important on the road toward a low-carbon energy system. These technologies often require financial support to compete with traditional sources or other benefits. Many companies realise that these technologies will be important into the future, but struggle to find economically viable projects. Governments can help these new technologies to develop further by providing certainty around future income through granting subsidies, tax benefits or by defining a floor price level for the CO₂ price. Carbon capture and storage would also benefit strongly from such a floor price, since the costs of this technology should be completely paid from the CO₂ price.

Forcing change by laws and regulation

Forcing change in laws and regulations can enforce certain socially desirable goals. It can be a stimulus for investment in low-carbon energy sources when governments define a certain portfolio standard that subscribes to a fixed share of low-carbon sources or create benefits for low carbon energies. Avoiding regulation that challenges all long-term supply contracts and vertical integration contributes to security of supply and is, therefore, a way to make use of company strategies for policy objectives. Regulation of transport tariffs has been put in place to avoid exploitation of market power by the companies that own the grid. The emissions trading scheme is another example of laws and regulations that are put in place to achieve a certain policy goal. Laws and

regulations can be very effective since they offer clarity and certainty for a longer period of time. In addition, they lead toward a level playing field, so that all companies have to comply with the same rules, and the fear of deteriorating competitiveness vis-à-vis direct competitors is lower.

Leverage

Leveraging company strategies and their business relationships is a third way to align strategies with policy targets. This can be done through diplomatic efforts, public private partnerships or by setting a clear and specific long-term vision. Diplomatic efforts can be very helpful when contracts are being negotiated with state companies of producing countries. Upstream integration is a strategy that has become increasingly difficult because of resource nationalism. Diplomatic contacts and broader economic cooperation between importing and exporting countries can provide important leverage for energy companies to gain access to resources. Major long-term supply contracts are often closed with the attendance of the political leaders of a country. Public-private partnerships can be useful in sharing the risks of investments in new technologies or commercially unattractive projects. Finally, a clear long-term vision enables market parties to commit to long-term investments without the fear of ending up with obsolete investments because of policy changes.

The following table shows a number of the strategic responses for the kind of policy reaction that would best help to align the strategies with policy goals.

Table 6. Policy reactions on strategies to find alignment with policy objectives

Type of strategic response	Aligning policy
Upstream integration	Leverage
Long-term contracts	Leverage
Diversification of suppliers	Laws and regulation (if needed)
Diversification of fuels	Laws and regulation (if needed)
Investing in new infrastructure (pipelines and LNG terminals)	Incentives
Joint ventures and asset swaps	Leverage
Mergers and acquisitions	Laws and regulation (if needed)
Renewables	Incentives
Nuclear	Leverage

Coal with carbon capture and storage	Incentives
Biomass	Incentives
Customer retention programmes	Laws and regulation (if needed)

Source: CIEP Analysis

6

Conclusions

The thinking about the balance between the government and the market in the energy industry has shown a fluctuating preference between an actively participating government and a government whose role is purely focused on setting boundary conditions. Generally, the energy sector is a very attractive sector with which to pursue political goals, because of the large amount of employment and capital involved and because of the importance of this sector in facilitating economic activity. Energy policy has increasingly come into play among economic, environmental and security interests that all need to be addressed and integrated. This is an extremely complex challenge, and the role of energy companies is vital in being able to bring about some changes.

Energy companies have to operate in an increasingly complex and uncertain environment. This changing environment makes it necessary for energy companies to reassess the existing growth opportunities. The European market has reached the maturity stage (growth rates have declined), which leaves energy companies with two basic growth opportunities. The first one is growing in new markets, in other words, becoming European instead of national companies. This trend is widely practiced in the European energy industry and has led to consolidation (through mergers and acquisitions) and an increased average scale of the European energy players. The other growth opportunity is growing with new products. Most major European energy companies have chosen to be active in both the gas and power businesses.

The vast changes that have shaped the EU energy sector are a combination of a changing focus and roles of government within their policy possibilities and profound changes in the international energy markets. Liberalisation and privatisation change the organisation of the industry, but also impacts on the distribution of risks and benefits through the value chain. The emergence of tight energy markets refocused policy-making and company strategies to varying degrees from competition to security of supply. In the EU, the various levels of regulation, EU and national, competence in policy-making, asymmetric exposure to import-dependency and divergence in the pre-existing organisation structure of the national energy sectors had to morph into a more alike energy sector across the EU. The possibilities for companies to respond and change in a dynamic environment is different from the outset. This is partly due to the qualities

of the company, but also due to the time and room to manoeuvre in the home market. National government played an important role in this complex process of change, in the first place as decision-makers at the EU level and secondly in the way they translated the changes into the domestic situation. Because of the complexity of changing the EU energy market regulation as whole and the slowness of this process on the one hand, and the rapidly changing international energy business environment on the other hand, companies perceived the regulatory environment as uncertain and not always conducive for them to be able to strategically respond to change.

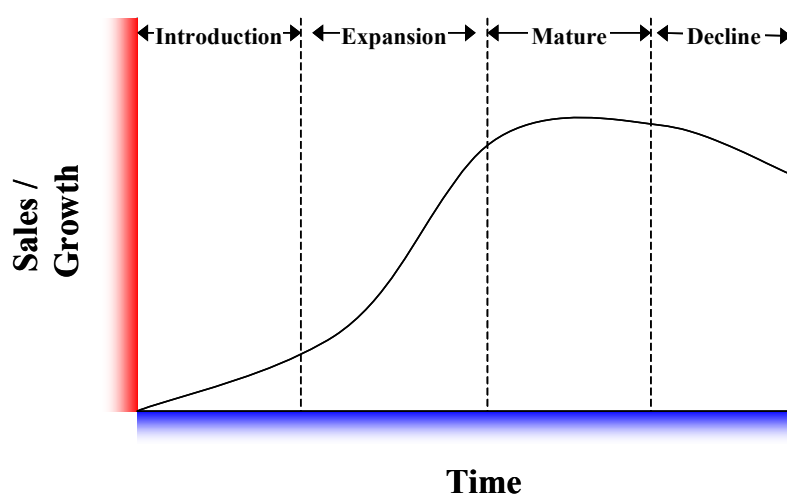
Assessing the relationship between company strategies and policy objectives, it seems that there are more similarities than expected. Companies react positively to economic incentives and will be prepared to change their operations if the risks can be anticipated and mitigated. Generally, there are three ways to find alignment between the public and private goals: providing incentives, forcing change with laws and regulations and leveraging company strategies with non-economic public support. Especially the third method could be of increasing importance in the current energy industry. It enables an active government within a free market. Diplomatic efforts, public-private partnerships (risk-sharing) and focusing on a long-term vision are key elements of leveraging company strategies.

APPENDIX I

Market growth cycle

The stage in the growth cycle at which an industry is determines its potential for further market growth and consequently affects the market structure. In a saturated market, growth potential is evidently much lower than in a stage of market expansion, where demand is growing rapidly. De Jong's dynamic market theory explains the relationship between sectoral structure and the development of a product by means of a growth model.⁵¹ De Jong distinguishes four phases of market growth and characterises the dynamics of each phase or stage in terms of market structure, company behaviour and the outcome at a macro level, e.g. level of profits, capital intensity and employment. The growth cycle consists of (1) an introduction or innovation phase; (2) an expansion or growth phase; (3) a maturity phase and (4) a stagnation or decline phase.

Figure 4. Market growth cycle



Source: De Jong, H.W. *Dynamische Markttheorie.*, Leiden 1996

In the introduction phase, the market still has to be created, entrepreneurs must be willing to take risks and failures may occur. During the expansion phase, a large number of new players enter the market, demand grows strongly and there are increasing profits. In the beginning of this phase, competition increases and the market diffuses. The strong growth in demand enables a large variety of companies to survive. At the end

⁵¹ De Jong, H.W. *Dynamische Markttheorie.* Stenfert Kroese, Leiden. 1996.; Van der Linde, J.H. *Dynamic International Oil Markets. Oil Market Developments and Structure 1860 – 1988.* Amsterdam. 1991.

of the expansion phase the market tends to concentrate again, because demand stagnates. Profits decline, and therefore economies of scope and scale become important conditions for survival. This period is also characterised by further vertical integration, because companies tend to avoid transaction costs by climbing up or down the value chain.

The maturity phase, similar to the end of the expansion phase, is characterised by companies striving for more efficiency and lower costs; vertical and horizontal integration continues and profits go down. Unless new innovations in terms of cost decrease or new applications are found, it is likely that at the end of the growth cycle new technologies and substitutes will take over the market. Companies often react to this by diversifying to other products and markets by buying young and innovative companies, hence ensuring continuity. The latter shows that the growth model cannot be viewed as fixed or deterministic, but continuously changing as new product varieties, applications, (production) processes and ways of organisation emerge.

APPENDIX II

Heritage

Heritage refers to the history of a company, its experience gained in the past and the environment in which it operates. In order to understand the impact of heritage we divide heritage into the institutional environment, the industry and the company. This heritage of a company precludes some strategies and makes others more viable. *“The energy sector is a prisoner of its past,”* as Dieter Helm has put it.⁵² The institutional environment consists of the style of a country or region, e.g. the Anglo-Saxon versus the Rhineland model. The industry level refers to the process of the creation of the industry. Heritage at the company level has to do with the (previous) ownership structure, coverage of the value chain, customer segments served, market share, and products and services offered. The history of a firm determines its strengths and weaknesses and consequently what strategy has to be put in place in order to survive and be successful into the future.

Institutional environment level

In Europe a number of different capitalistic models co-exist. The models differ in the way the state interacts with other parts of the capitalist system: capital and labour. Policy objectives, policy instruments and the existing bureaucratic model, among other aspects, characterise the role of the state. The way governments and energy companies interact clearly shows the type of capitalistic model in place.

A common distinction that is made among capitalistic models is the one between the Anglo-Saxon and the Rhineland models. In some cases the Latin model is also distinguished. The Anglo-Saxon model is strongly related to neoclassical economics and political liberalism and is characterised by a small state, strong trust in competition, weak unions and little cooperation (if not confrontation) between social partners.⁵³ In this model, companies are often oriented toward short-term profit and focused on maximising shareholder value. In the Rhineland model there is extensive collaboration between political parties, industry associations and unions. Banks play a much more prominent role in the strategy and planning of companies than in the Anglo-Saxon model. In Germany, for example, bank representatives are often found on the boards of directors of companies to which they have offered large loans. The Latin model is

⁵² Helm, D. *Energy, the State and the Market. British Energy Policy since 1979.* Oxford University Press. 2003.

⁵³ Cernat, L. *Europeanization, Varieties of Capitalism and Economic Performance in Central and Eastern Europe.* London: Palgrave MacMillan Publishers LTD. 2006.

characterised by more centralised and dirigiste politics with a proactive role of the government. Competition is often not the top priority of policymakers, and the links between the government and industry are extensive. In the Latin model it is not uncommon for the industry to be used for political purposes, e.g. to create employment or economic growth.

France, for example, has a tradition of control over industrial concentration, and the government has promoted the merger between national firms in order to create national champions capable of facing the 'American challenge'.⁵⁴ In the 1970s the French government believed that the French economy could only be revitalised by the large firms being supported until they became dominant. Then they would be comparable to American multinationals, which were already present in Europe.⁵⁵ Remnants of this kind of policy can still be observed today, for instance, with the political involvement in the merger of the French energy companies Suez and Gaz de France. The negotiations around the merger stalled for a long period of time due to the then upcoming elections and a growing difference in the value of both companies that would put the French state in a weaker position than initially planned. After some high-level discussions between representatives of both companies and the French government, in which President Sarkozy was also finally involved, an agreement followed. The companies agreed that Suez would sell two-thirds of its Environment division (in which it would maintain a blocking stake), enabling more of an equal share swap. This leaves the French State as the largest shareholder in the new combination.⁵⁶

The integration and liberalisation of the European energy markets placed much emphasis on the functioning of markets. This process seems to fit best with the Anglo-Saxon model of capitalism.⁵⁷ It leaves little space for government intervention, other than regulation of markets. Direct collaboration with the industry is limited, as this is viewed as a distortion of the market and as hampering fair competition. For a number of countries this model implies a break with history, as agreements to not compete have traditionally been part of the European (continental) business mentality.⁵⁸ From this point of view, it is not very surprising that the attempts of the European Commission to change the historically grown structures toward more market based structures meets opposition in a number of Rhineland and Latin countries. It is also not surprising that the pace of implementation of reforms in these countries is relatively low.

⁵⁴ Bianchi, P. Labory, S. *From 'old' industrial policy to 'new' industrial development policies*. In: Bianchi, P. Labory, S. *International Handbook on Industrial Policy*. Edward Elgar, Cheltenham, UK. 2006.

⁵⁵ *Ibid.*

⁵⁶ *Financial Times*, 4 September 2007. *Suez and GdF agree €70bn deal to merge*.

⁵⁷ Menz, G. 1998. *Assessing the Effects of the European Union and the Economic Integration Process on the Rhineland Model of Capitalism: a Case Study of the Structural Change in the German Telecommunication Services Sector*. EUSA – NZ Conference (www.eusanz.org).

⁵⁸ Young, D., Metcalfe, S. *Competition Policy*. In: Artis, M.J., Lee, N. *The Economics of the European Union. Policy and Analysis*. New York: Oxford University Press. 1997.

Industry level

The current state of the European gas sector can be largely understood when taking into account the historical evolution of this sector. Before the 1960s the major share of gas usage came from local gas factories using coal as an input.⁵⁹ The city gas led to the erection of national gas infrastructures, pipelines and the institutional organisation. Local distribution networks were normally under the control of municipal gas producers. The emergence of natural gas as an energy source after 1960 built upon the existing infrastructure. Each country implemented its own institutional model, according to national interests. This led to a large variety of national institutional models across Europe. These models had to deal with the high economic risks related to exploration of gas fields, investments in pipelines and with the natural monopoly characteristics of the gas markets.⁶⁰

Van der Linde (2007) explains that when the Treaty of Rome was being drafted, negotiators found it flawed in that it did not contain arrangements regarding the growing dependence on oil imports. No special treaty regarding oil and gas appeared, perhaps because many believed that nuclear energy would take over the role of coal as the most important primary energy source.⁶¹ When the importance of international collaboration regarding oil imports became clearer, negotiations were too advanced to include a part about energy sources in the Treaty. Therefore, immediately after the ratification of the Treaty of Rome, negotiations regarding cooperation on energy matters started. Due to the differences in interests and organisation of the energy sectors, the countries could not reach an agreement. Reasons for this lack of agreement are based in the differences in the industrial heritage, as brought forward very clearly by Van der Linde (2007):

“The importance of the coal sector for the economy in Germany and the choice of France, Italy and the Netherlands, with smaller and less efficient coal sectors, to switch rapidly to oil-based economies in the late 1950s, could not be translated into a coherent European energy policy. The discovery of gas in the Netherlands and the development of the gas market in the 1960s based on these resources further separated the member states on energy policy issues. These issues have persisted ever since.”⁶²

In the decades after the Treaty of Rome each countries' energy industry developed independently. This led to the emergence of a wide variety of models that, with the current market integration, must be brought together again. At the end of the 1980s a

⁵⁹ Arentsen, M.J., Künneke, R.W. *National Reforms in European Gas*. Elsevier, Oxford, UK. 2003.

⁶⁰ The natural monopoly characteristics have to do with the decreasing costs of gas pipelines in relation to their size. When a network increases in scale, it becomes more costly to build competing infrastructure, as a result the power of the company owning the network increases.

⁶¹ Van der Linde, J.H., *External energy policy: old fears and new dilemmas in a larger Union*. In: Sapir, A. *Fragmented Power: Europe and the Global Economy*. Brueghel, Brussels. 2007.

⁶² *Ibid.* p. 283-284.

kind of market-driven integration gradually began to develop, when small amounts of gas were traded outside the established system. In parts of Europe, the gas system had become mature and the risks of not being able to cover the fixed costs from investments became lower.⁶³ At the same time more pipelines were built on a (partly) speculative basis, which made non-contracted supply capacity available. In order to recover the costs of these investments, gas companies had increasing interests in an open and competitive market. On the demand side, power generators and energy intensive industries were interested in a more competitive gas market, because they expected that gas could be brought to the market at lower prices by foreign companies (in the case of the Netherlands). The lower prices could increase their competitiveness and therefore improve their business position.⁶⁴

Another example of how relatively unplanned processes can be of great influence on the industry can be found in the Netherlands. The discovery of large amounts of gas in Groningen (estimated at about 2,700 bcm) had a strong impact on the Dutch society. Five years after production started, all mainland municipalities were connected to the gas grid and hence used natural gas instead of city gas. This example shows the importance of resource endowments on the development of the energy industry in a country. Similar stories can be told about Norway and Austria, with their large hydro potential and the consequent cheap provision of electricity.

Company level

Boschma et al. show that the economic behaviour of a company is for a large part dependent on its specific history, because it works with the technical and economic experience gained in the past.⁶⁵ The development of the ownership structure of the energy companies largely determines what strategic opportunities are viable. In several European countries ownership has been public or combined private and public. This meant that sometimes the companies were also used for political purposes and that the state could limit the freedom of choice of the energy companies. French companies, for example, were prohibited for a long time from engaging in more than one sector, making a multi-energy or multi-utility strategy impossible.

Gas and power companies in France and Italy were state companies for many decades. The Italian companies were partly privatised during the mid-1990s, while the French companies were (partly) placed in public hands in 2004. In Germany the situation is

⁶³ Stern points at these forces as important drivers of the process of liberalisation; Stern, J.P. (1998). *Competition and Liberalisation in European Gas markets: A diversity of Models*. The Royal Institute of International Affairs, Energy and Environment Programme, London.

⁶⁴ Correljé, A., van der Linde, C., Westerwoudt, T. *Natural Gas in the Netherlands. From Cooperation to Competition?* Oranje-Nassau groep, Amsterdam, The Netherlands. 2003.

⁶⁵ Boschma, R.A., Frenken, K., Lambooy, J.G. *Evolutionaire economie, een inleiding*. Coutinho, Bussum. The Netherlands. 2002.

more complicated. Power generation has been done by private companies for a long time. The local, regional and supra-regional distribution and supply companies were owned in many cases by municipalities and sometimes together with private utilities. In the UK the gas industry was privatised in 1986 and the power companies in the early 1990s.⁶⁶ The gas privatisation allowed British Gas to maintain a monopoly that lasted until the mid-1990s. The early privatisation and unbundling of the UK companies made the UK industry an attractive growth market for continental companies that had ample cash but no place to invest it. Shortly after privatisation, US utilities became interested in the UK market, but when they saw that the UK market did not yet have access to the continent, most of them pulled out. At this stage EDF –and shortly after, E.ON and RWE– took over the UK companies.

Elements like public or private ownership or the type of market structure determine the kind of growth opportunities companies have. German power generation companies often delivered power to distribution companies in a relatively small area and thus had limited numbers of customers. When such a company wanted to grow in the liberalised market environment it needed to increase its scale and extend its portfolio of customers, because with liberalisation the risk of losing existing customers to new competitors comes into play. For such a company it seems illogical to start with a multi-energy strategy, as it lacks the link to the final customers. Former municipal distribution companies with a large number of customers, on the other hand, might choose to have a multi-energy strategy, because it reinforces the client relationships. Another characteristic that affects the strategy is the market share in the home country. When former monopolistic markets are privatised, the old monopolists generally retain a very high market share in their home market. This means that opportunities to grow through market penetration are limited and hence other growth strategies must be found. Cross-border expansion of these firms (together with broadening the scope of products) is often the answer for these players. The major European utilities (E.ON, RWE, Eni, Enel, GDF-SUEZ, EDF, Centrica) are all heavily expanding outside their home markets. The sell-off of non-energy activities (such as real estate, telecommunications, water, chemicals, etc.), together with a semi-protected dominant position in their home markets (i.e. guaranteed demand), provided them with very strong cash positions and thus the ability to expand through mergers and acquisitions.⁶⁷

Finally, with heritage at the company level, one can also think of the degree of political ties a company has in relation to the ability to acquire equity gas in producing countries. A utility company that is historically very connected at the political level might be better equipped to obtain shares in gas or oil fields than a company that does not have such political ties. Especially with the surging resource nationalism, political relations might

⁶⁶ Helm, D. *Energy, the State and the Market. British Energy Policy since 1979.* Oxford University Press. 2003.

⁶⁷ Finon, D., Middtun, A., Omland, T. *Strategic Configuration: A Casuistic Approach.* In: Finon, D. and Middtun, A. (eds.) *Reshaping European Gas and Electricity Industries. Regulation, Markets and Business Strategies.* Amsterdam: Elsevier. p. 297- 353. 2004.

be needed in addition to rational economic proposals in settling the matter. Experience of a company at the upstream side of the value chain (also part of its heritage) obviously also remains an important requirement to be able to obtain its own resources.

APPENDIX III

Vertical integration in the energy industry

Stuckey and White (1993) argue that companies should not vertically integrate unless it is absolutely necessary to create or protect value.⁶⁸ Their reasoning behind this is that integration often entails high internal organisational costs and is a risky (hard to reverse) strategy. They present four situations in which vertical integration can be a good strategy:

1. The market is risky and unreliable;
2. Companies in adjacent stages of the industry chain have more market power than companies in your stage;
3. Integration would create or exploit market power by raising barriers to entry or allowing price discrimination across customer segments;
4. The market is young and the company must integrate forward to develop a market, or the market is declining.

These four reasons to vertically integrate can easily be applied to the energy sector and be used as a framework to compare the rationale of vertical integration on the pre-liberalised energy market compared to the current market. Table 7 shows the results.

Table 7. Comparison between reasons to vertically integrate in the pre-liberalised market and in the current market

	Pre-liberalisation (1990s)	Current market (2007)
1.	<ul style="list-style-type: none"> • Trust in functioning of the market and economic rationality. Idea emerges that market forces will deliver better outcomes than state companies. • Supply seems to be no issue (over-supplied market/buyer's market). • Growing demand 	<ul style="list-style-type: none"> • Increasing concerns in consuming countries about security of supply due to geopolitical uncertainties • The market is tight (sellers market) and there is uncertainty if level of investments is sufficient to meet future demand. • Increasing concern in producing countries about security of demand due to desired energy transition and climate and efficiency policy in consuming countries • Technological change towards cleaner energy is underway, but timing and degree of change remains uncertain.
2.	<ul style="list-style-type: none"> • Foreign direct investment was believed to gain importance and seen as an 	<ul style="list-style-type: none"> • Seller's market, meaning that the power is with the suppliers and the buyers are

⁶⁸ Stuckey, J., White, D. When and when not to vertically integrate. *The McKinsey Quarterly*. No. 3. 1993.

	<p>effective means to secure supply.</p> <ul style="list-style-type: none"> • Buyer's market, meaning that the power is with the buyers • Mid- and downstream companies were often state-owned (and/or monopolies), thus differences in power between segments of the value chain was not an issue. 	<p>forced to accept the price</p> <ul style="list-style-type: none"> • Increased resource nationalism. • Liberalisation and privatisation leads to potential benefits to exert market power in certain stages of the value chain (e.g. in transport).
3.	<ul style="list-style-type: none"> • In many cases companies were integrated (state) monopolies that only operated in their home markets. Barriers to entry were high and so market power could not increase. • Price discrimination and exploiting market power was hard in countries where regulated tariffs were in place. 	<ul style="list-style-type: none"> • In an open and competitive market, market power and raising barriers to entry can be very beneficial. • In a liberalised free market, companies try to maximise profits.
4.	<ul style="list-style-type: none"> • Mature market, but still high growth rates, e.g. due to increasing use of gas as a power generation fuel. 	<ul style="list-style-type: none"> • European gas and power market is mature, hence cutting costs, through vertical integration can be an efficient means to remain profitable.

Following the application of the later framework to the energy sector, it can be concluded from Table 7 that in the current market environment there are more strategic reasons for companies to vertically integrate than in the pre-liberalised market environment. In fact, all exemptions perfectly fit the current situation in the energy industry. The market has, in fact, become more uncertain, and upstream players have more market power than downstream players due to tight supply-demand balance. Exploiting market power has become more attractive for profit optimisation, and the market is saturated, so capturing more rents from the value chain by integration can be necessary.⁶⁹ The increased incentive to vertically integrate does not seem to be perfectly in line with the view of European Commission on market reform, e.g. in relation to ownership unbundling proposals.

⁶⁹ H.W. De Jong (1996) explains that in a mature market, the market tends to integrate again to avoid transaction costs as profits go down.

APPENDIX IV

The impact of vertical integration on competition

In general, the impact of vertical integration on competition is less clear-cut than the impact of horizontal integration. Horizontal integration in the same market generally leads to higher market shares and hence to a less competitive market structure.⁷⁰ Vertical integration can have both a negative and a positive impact on competition.⁷¹ A negative effect of vertical integration is the reduction of liquidity in the wholesale market, because the merged company would buy and sell more gas and/or power internally. This would make wholesale prices a less reliable indicator of supply and demand fundamentals, since the prices would be based on fewer transactions. The reduction of liquidity can make prices more volatile and hence provoke more vertical integration. This can eventually lead to a barrier to entering the market as a non-integrated company. Finally, vertical integration reduces the number of potential entrants into the market. The positive effect of vertical integration is that it can reduce the costs of supplying gas and electricity to customers, because it lowers the risks.

Tirole shows that when considering a market in which both downstream and upstream companies can exercise market power, the consumer is worse off in the situation of a separated chain than in the situation of one integrated company.⁷² This has to do with 'double marginalisation'.⁷³ In short this means that in the situation of separate downstream and upstream players with market power, both companies can ask a price above marginal production costs (MC) (see Figure 6), i.e., exercise market power. Each player in the chain sets its price, without taking into account the price that the next company in the chain sets. This leads to a situation where companies offer an amount that is not equal to the amount where marginal costs are the same as marginal revenues, hence their profits are not maximised. So, when the companies would be integrated into one company, they would be able to increase the profit margin and at the same time offer a lower price to the customer. The lower price again leads to increasing demand and consequently to even higher profits. Double marginalisation does not occur when the downstream market is perfectly competitive, because in that case the downstream companies do not have the ability to ask a premium price.

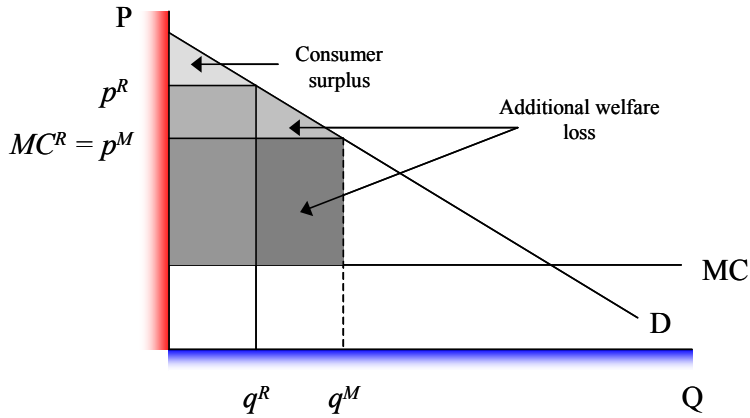
⁷⁰ In the case that a market has one very big player and several small ones, it can be beneficial for the level of competition in the market when some of the small companies merge and can pose a more credible threat to the dominant player.

⁷¹ Moselle, B. Newbery, D. Harris, D. *Factors affecting geographic market definition and merger control for the Dutch electricity sector*. NMa, The Hague. 2006.

⁷² Tirole, J. *The Theory of Industrial Organization*. Cambridge (Massachusetts). The MIT Press. Fourteenth printing. 2003.

⁷³ Also characterised by the following: "What is worse than a monopoly? A chain of monopolies." Or "What is worse than an oligopoly? A chain of oligopolies." Double marginalisation refers to the case that two companies in the chain can exert market power. When e.g. three companies can do this, there is triple marginalisation.

Figure 5. Double marginalisation



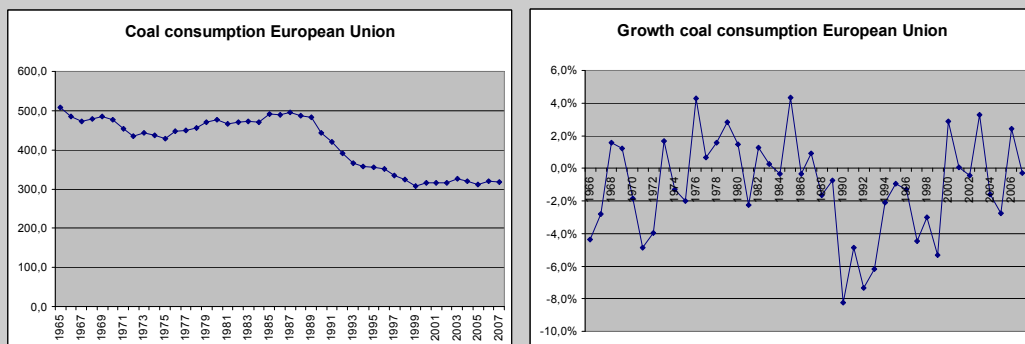
In relation to European energy and competition policy, the concept of double marginalisation shows that avoiding vertically integrated companies will only have a positive welfare effect when the policy leads to a perfectly competitive market. Such a market structure is obviously the goal of European policy, but looking at the ongoing consolidation in the European industry and the importance of scale it seems uncertain whether or not such a structure will emerge. In this case there is a risk that splitting the companies up may lead to higher instead of lower prices for customers.

APPENDIX V

Coal

Whereas the gas and power industry seem to have reached the mature stage, this is different for coal. The use of coal had dropped drastically in the 1990s, mainly because of replacement of coal by natural gas in the power sector. The end of the earlier-mentioned ban on the use of gas in the power sector is one of the explanations for the fall in coal use after 1989. Another important explanation is the 'dash for gas' in the UK. The UK government wanted to break the power of the coal miners' union, because they obstructed reforms in the British economy. Because gas was allowed to be used for power generation (and because gas was cheap and available in the UK), privatisation of the UK electricity sector in the early 1990s led to the construction of a large number of gas-fired power plants, since these were more competitive than coal. It wasn't only in the 1990s that coal use went down. Just before the first oil crisis, coal use had fallen sharply. During this crisis, the dependence on oil imports became clear and coal consumption surged again, temporarily. The IEA expects that the use of coal in Europe will drop further towards 2030, mainly because of stricter environmental boundary conditions, like the CO₂ price. Carbon capture and storage as well as concerns related to the level of import dependence on natural gas might avoid a further drop in coal use.

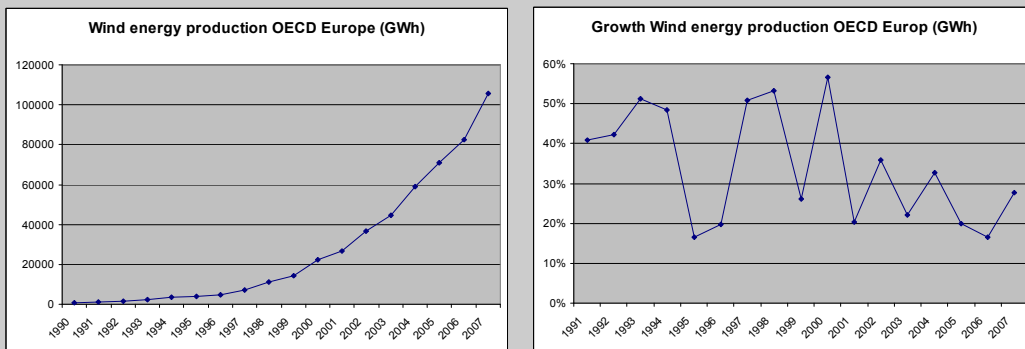
Figure 6. Coal consumption and growth of coal consumption in the European Union.



Wind

The wind industry is a great example of an expanding industry that is still at the beginning of the learning curve. The average annual growth rate between 1990 and 2007 was 37%, which means that the total wind power production has doubled every two years. The main drivers behind this growth are the introduction of a CO₂ price, the subsidies for renewables –which make wind projects competitive– and the large scale at which wind farms can be deployed (making wind the most competitive alternative for fossil fuels). The large utility companies have started to invest heavily in large-scale wind projects to make their fuel mix greener. Figure 8, in contrast to the other figures, shows an industry in the expansion stage with very steep growth.

Figure 7. Wind energy production and growth of wind production in the European Union.



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