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MARKET AGAINST POLITICS OR POLITICS THROUGH MARKETS? LIBERALIZATION OF THE GAS MARKET IN THE EUROPEAN UNION AND SECURITY OF SUPPLY

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Abstract

The following thesis investigates the consequences of the EU natural gas sector's liberalization on security of supply, in particular in terms of long-term, physical access to resources which require upfront, very large investments. Academic literature tends to be divided into two camps: economists and lawyers on the one hand who consider energy as an ordinary commodity and see no justification for special treatment, foreign policy analysts on the other who often focus on ‘hard’ security aspects at the expense of economic factors like price, though equally important in a broad definition of energy supply security.

The following thesis attempts to balance both approaches and to provide recommendations for enhancing the EU's security of supply on the basis of three different ranges of elements characterizing natural gas trade. The first chapter recalls the steps which have progressively given birth to the Internal Energy Market and describes today's state of the play. The second chapter provides the reader with a picture of investment needs in the natural gas sector, both on the downstream and upstream sides, and tackles the question of incentives that could trigger them. Finally, three potential or actual game changers — LNG, shale gas and the Energy Community — have been selected in order to detect possible deep transformations of the sector.

In conclusion, according to the author, a certain balance has been struck on the downstream side and what is now necessary is more stability in the regulatory environment. Accommodating consumers' and producers' interests and making upstream investments happen would however require political action, for instance the creation of a pan-EU, public Gas Supply Agency. More attention should also be paid to neighbouring countries, which are not only central for gas trade but more generally for the EU's relative weight vis-à-vis other big regional players.

Keywords: natural gas, liberalization, security of supply, Internal Energy Market

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Introduction

On May 5, 2010, Jerzy Buzek, then President of the European Parliament, and Jacques Delors, former President of the European Commission, decided to endorse in a common declaration the idea of a "European Energy Community"[1], almost sixty years after Robert Schuman unveiled his plan for the European Coal and Steel Community (ECSC). This Community is not to be confounded with the Energy Community, an intergovernmental organization which already exists since 2006 and puts together the European Union (EU) and some of its neighbours — the Energy Community will be dealt with later in the course of the present thesis —. The Buzek and Delors Declaration directly drew however from a report released one month earlier[2] by *Notre Europe*, a think-tank whose founder is Jacques Delors himself.

Why was it necessary to make such a call while the European Union and its predecessors seem to have dealt with energy issues from the very beginning? Was it because, as the common declaration stems, "the rules that ensured equal access to common resources no longer exist"[3] or because, in the words of Jacques Delors alone, "despite a spectacular increase of the legislative activity aiming at creating a wide European energy market and fighting climate change, the European Union has been experiencing recurrent problems in enforcing a common energy policy"[4].

Historical studies on European energy policy tend to substantiate rather the second hypothesis, if considered the "multifaceted"[5] character of energy policy. Coal did enjoy for a long time a special treatment under the ECSC and represented a certain success of European integration, yet it became progressively marginal as Member States started to rely more and more on other sources of energy like oil or gas. On the other hand, cooperation in the field of nuclear energy within the framework of Euratom was limited mainly to low-key aspects such as research and development[6] due to divergences between countries on the future to give to this

1. Jerzy Buzek and Jacques Delors, "Full text of the Buzek and Delors Declaration on the creation of a European Energy Community", *European Parliament*, 5 May 2010, retrieved 29 March 2012, http://www.europarl.europa.eu/president/en/press/press_release/2010/2010-May/press_release-2010-May-4.html.
2. Sami Andoura, Leigh Hancher and Marc van der Woude, *Vers une Communauté européenne de l'énergie : un projet politique*, Paris, Notre Europe, 2010.
3. Buzek and Delors, *op. cit.*.
4. Andoura, Hancher and van der Woude, *op. cit.*.
5. Buzek and Delors, *op. cit.*.
6. Andoura, Hancher and van der Woude, *op. cit.*, p. 9.

industry and on technological choices, which had then strong geopolitical implications vis-à-vis the United States (USA).

The central element of European integration however, i.e. the European Economic Community (EEC), had no specific competence in energy matters, even if such proposals had been made during the Messina Conference in 1955. Only with the Maastricht Treaty in 1992 did the word of 'energy' officially make it among the competences of the Community, while the Lisbon Treaty eventually created for this policy field a separate title. It contains only one article, Art. 194 of the Treaty on the Functioning of the European Union, and sets to the "Union policy on energy" four objectives in the following order:

(a) "ensure the functioning of the energy market;

(b) ensure security of energy supply in the Union;

(c) promote energy efficiency and energy saving and the development of new and renewable energy; and

(d) promote the interconnection of energy networks."[7]

This is not to say though that the EEC and its successor remained inactive in the realm of energy until 2009. In reality, as early as 1968, the Council adopted a Directive "imposing an obligation on Member States of the EEC to maintain minimum stocks of crude oil and/or petroleum products"[8]. Rising dependence on external energy supplies could already be perceptible in the aftermath of the Suez Crisis in 1956, and would become even more flagrant after the 1973 oil shock. The fourfold price increase put an end to the era of cheap energy and responses such as strategic storage, which could be effective against sudden disruptions, were no longer sufficient to address the new configuration. Therefore, the Commission proposed to introduce more structural changes, both on the demand side (enhanced energy efficiency, shift from oil to electricity) and on the supply side (development of nuclear power generation, increased reliance on coal and gas)[9]. In the same document,

7. European Union, "Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union of 30 March 2010", *Official Journal of the European Union*, C83, 30 March 2010, art. 194 TFEU.
8. Council of the European Communities, "Council Directive 68/414/EEC of 20 December 1968 imposing an obligation on Member States of the EEC to maintain minimum stocks of crude oil and/or petroleum products", *Official Journal of the European Communities*, L308, 23 December 1968.
9. Commission of the European Communities, *Towards a new energy policy strategy for the European Community. Communication and proposals from the Commission to the Council*, COM (74) 550 final/2, Brussels, 26 June 1974.

the Commission also recalled suggestions formulated the year before[10] in order to foster cooperation with "energy importing" as well as "oil-exporting" countries.

The fact that the submitted strategy encompassed most aspects of energy policy, from energy efficiency to diversification of energy sources, foreign relations, investment planning and price volatility, proves that the Commission services already had in the early 1970s a comprehensive view of the energy sector, and its strategy can by consequence genuinely be called an "energy policy". Yet reluctance on the one hand from Member States to transfer more sovereignty to the Communities in this sensitive field, and pressure on the other hand from the United States to avoid political engagement with Arab, oil-producing countries ruined the attempt of the Commission. The opportunity window to adopt a common, coherent and independent energy policy was largely missed by the Member States of the Communities, and the second oil crisis in 1979 hardly brought about any significant turning point. The Sleeping Beauty of a real energy policy was still lying in political limbo.

The 1980's decade offered a radically different picture of the world energy scene. Successful energy efficiency measures and investment programmes allowed to reduce coupling between economic growth and energy consumption while at the same time substituting in certain sectors oil with nuclear power — in the case of France — or natural gas — in the Netherlands and United Kingdom (UK) thanks to domestic production or in the Federal Republic of Germany (FRG) through newly built pipelines to the Soviet Union —. As a result, oil prices fell sharply and disruption risks looked more and more distant. From a political point of view, the wave of neoliberal ideas provided tools to reform the energy sector, in many countries dominated by state monopolies which controlled the entire value chain. With adequate infrastructures in place, it was believed that energy could from then on be left to market forces and the USA and UK were among the first to experiment deregulation and privatization in this field. Positive effects on prices, at least in the short run, encouraged other countries to follow the same path. On the Community level, the end of Eurosclerosis and the launch of the Internal Market project in 1985 regave to

10. Commission of the European Communities, *Guidelines and Priority Actions under the Community Energy Policy (Communication from the Commission to the Council presented on 27 April 1973)*, SEC (73) 1481, Brussels, 19 April 1973.

European integration some momentum which would pave the way for a new approach when dealing with energy issues.

In regard with the White Paper on the Completion of the Internal Market, two elements are here worth mentioning. First, energy was given very little attention in the document[11] and the only objective set in the area was to extend general public procurement rules to this sector, alongside with other network industries. Second, the memorandum of the Roundtable of European industrialists (ERT), which is often cited as a direct source of inspiration for Jacques Delors's programme, contains only one reference to energy — in relation with the need to upgrade infrastructure and to develop "indigenous sources and linkages"[12]. The fact that energy-related themes were hardly considered as an obstacle to growth, despite the presence of very energy-intensive industries among corporate members, is quite meaningful as it shall be later shown.

In this context, with the measures of the White Paper being adopted at a rapid pace to try to complete the project by the end of 1992, the Commission unveiled in 1988 a "working document" on the "Internal Energy Market"[13] which, although drawing its inspiration from the wider Internal Market programme, was not foreseen by it. Though it is true the working document was a response to a Council resolution[14] adopted two years earlier, it appears that the Commission slightly altered the mandate it had been entrusted. Indeed, while the Council stated that "the aim of any energy policy is to enable consumers to have adequate and secure supplies of energy under satisfactory economic conditions"[15], the Commission focused its work on only one of objectives set by the Council, i.e. achieving "greater integration, free from barriers to trade, of the internal energy market with a view to improving security of supply, reducing costs and improving economic competit-

11. Commission of the European Communities, *Completing the Internal Market. White Paper from the Commission to the European Council (Milan, 28-29 June 1985)*, COM (85) 310 final, Brussels, 14 June 1985.
12. European Round Table of Industrialists, *Foundations for the future of European industry (Memorandum to EC Commissioner E. Davignon before the EEC summit meeting at Stuttgart on June 17-19)*, Amsterdam, 1 June 1983, retrieved 29 March 2012, http://www.ert.eu/sites/default/files/1983%20-%20Foundations%20for%20the%20future%20of%20European%20Industry%20-%20Memorandum%20to%20EC%20Commissioner%20E.%20Davignon.pdf.
13. Commission of the European Communities, *The Internal Energy Market. Commission Working Document*, COM (88) 238 final, Brussels, 2 May 1988.
14. Council of the European Communities, "Council Resolution of 16 September 1986 concerning new Community energy policy objectives for 1995 and convergence of the policies of the Member States", *Official Journal of the European Communities*, C241, 25 September 1986.
15. *Ibid.*

iveness"[16]. In other words, what had been defined as a brick of a broader energy policy became a goal *per se*., an inversion also visible through the modified rank of priorities and instruments. Cost reduction was singled out as the main objective of the initiative, with potential gains amounting to "at least 0.5% of the Community's GDP."[17]

At that stage, whereas the word 'liberalization' was not used as such, the declared intention of the Commission to enforce provisions like free movement of goods or competition law on the energy sector went in this direction. Nevertheless, it recognized at the same time that "the existence of adequate infrastructure is a *sine qua non* for the transfer of energy"[18] and that "special treatment" may be granted for the purpose of guaranteeing it. The landmark approach defined in the working document has continued, as it shall be demonstrated below, to inspire the EU's energy policy up to now, in spite of salient changes that have in the meantime transformed the energy sector and, more particularly, the natural gas market.

For instance, compared with 1986, the share of natural gas in the Union's primary energy consumption in 2008 rose from 18% to 24.5%, a figure which is likely to climb further due to the unique role of natural gas as a 'bridge fuel' smoothing the transition from coal or nuclear power to renewable energy sources (RES). Even more striking, the ratio between imports from non-EU countries — mainly Algeria, Norway and the Soviet Union/Russia — and consumption jumped from 35% to 64%. Assuming that indigenous gas production already reached a peak and should consequently pursue a trajectory of slow decrease[19], the gap with stronger demand will have to be made up through additional imports, at the condition sufficient infrastructures are in place to receive them[20].

Political conditions have also evolved: in 1988, dependence was not seen as an issue, since deliveries had been so far reliable and market power was progressively being removed from sellers' hands to the benefit of buyers thanks to re-

16. Commission, *The Internal Energy Market*, *op. cit.*, p. 2.
17. *Ibid*, p. 6.
18. *Ibid*, p. 27.
19. The shale gas scenario for Europe shall be elaborated upon later in the present thesis.
20. Figures extracted from Commission, *The Internal Energy Market*, *op. cit.* and Market Observatory for Energy, *Europe's energy position — 2010 Annual Report*, Publications Office of the European Union, Luxembourg, 2011.

cord-low oil prices[21]. Since then, the enlargement process has taken on board the EU countries which present a different pattern of their energy sector while, on the other hand, certain observers have been lately talking about '(re)politicization' of energy trade. Last but not least, growing awareness for environmental aspects and especially climate change have further complicated the equation of a balanced energy policy. It is therefore possible to question whether the liberalization process of the gas market, initiated in the early 1990s, is still relevant today.

Because the effectiveness of a tool can only be assessed at the light of the function it is supposed to fulfill, reference must be made to the 2006 Green Paper on a "European Strategy for Sustainable, Competitive and Secure Energy"[22]. This submission, prepared after a informal European Council meeting in Hampton Court in October 2005, has been the first attempt since the beginning of the construction of the Internal Energy Market to reformulate a comprehensive energy policy. Three objectives, still in force today, have been then laid down: sustainability, competitiveness and security of supply.

However, in the course of the present thesis, focus shall be limited to security of supply, here defined narrowly as "*availability [...] at all times,* [...] *in sufficient quantities, and at reasonable and/or affordable prices*"[23]. All the three dimensions are important due to the peculiarities of energy. First, storage is usually expensive and not possible for individuals, while they need timely and ininterrupted deliveries in order to meet basic needs such as light and heating. For the same reason, demand is hardly elastic to prices, at least in the short run and 'excessive' prices are more likely to generate poverty than to affect energy consumption. It must be noted though that environmental concerns, though equally legitimate, shall be left aside from this analysis for the purpose of clarity and length.

That being said, security of supply can be handled only in view of corresponding risks. Solutions such as strategic stocks or demand management constitute adequate responses to short-term, episodic crises whereas liberalization, which is a

21. Commission, *The Internal Energy Market*, *op. cit.*, p. 60.
22. Commission of the European Communities, *Green Paper. A European Strategy for Sustainable, Competitive and Secure Energy*, COM(2006) 105 final, Brussels, 8 March 2006.
23. United Nations Development Programme, *World Energy Assessment*, UNDP, New York, 2000, p. 113.

long-term process involving structural modifications of the entire European gas market, is to be confronted with risks of a comparable timespan. In this context, particular attention shall be paid to infrastructure capacities, since gas production and transmission require huge upfront investments that must be decided well in advance before they start to be effective and that additional decades are necessary for their amortization. Considering the higher degree of flexibility but also of volatility brought by liberalization, one may therefore wonder about its impact on investment decisions and on the long-run security of supply of the EU. This issue is made even more complex because in the case of natural gas, upstream investments largely depend on actors, either public or private, located outside the EU. Legal coercion is by consequence hardly an option, and triggering the necessary investments is more a matter of setting appropriate incentives in order to ensure producers a certain level of security of demand rather than of trying to build purely consumer-oriented markets.

Based on official documents, academic literature both from the side of lawyers and economists and of foreign policy experts as well as first-hand opinions from practitioners of energy issues, this thesis represents an attempt to answer, at least partly, the forementioned questions following a multidisciplinary approach and taking into account the latest evolutions of the EU's position, especially the Commission's, in this policy field. For the purpose, the present thesis shall be broken down into three parts. In the first chapter (I), the reader shall be provided with a historical overview of the liberalization process of the Internal Gas Market and the results achieved so far. The second chapter (II) shall deal with investment requirements and actual plans for the sector, and to which extent the gap between them may be caused or aggravated by the liberalization policy undertaken in the EU. It shall be shown at the same time that over recent years, the EU has not remained inactive before this risk and has soften its stance in order to better accommodate a liberalizing market with investors' legitimate concerns. Finally, in the third chapter (III), major, exogeneous (r)evolutions of the natural gas sector shall be reviewed alongside their implications both for the development of the Internal Gas Market and security of supply.

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I – Liberalizing the natural gas market: what does it change?

The liberalization process of national gas markets cannot be properly understood without having in mind their original design inherited from the post-war period (A). This process has been mainly carried out through the adoption of three important directives (B), separated by over ten years, as well as other policy instruments in the hands of the Commission. What is today's state of the play (C)?

A) Characteristics of the historical natural gas trade model

Although natural gas has been used in Europe as a source of energy at least since the 19th century, for instance in public lighting, its share in primary consumption was for a long time relatively marginal compared to coal and, later, oil while international trade was very limited, if not inexistent, due to sufficient national reserves and transport constraints. Only with the discovery of abundant resources in the province of Groningen, Netherlands and technical progress in pipeline construction, gas started to become in the 1960s a commodity available for exports.

At that time, the legacy of World War II was such that most national energy markets in Europe were dominated by state-owned, monopolistic utility companies that controlled the whole value chain, from production to distribution through transmission. Even in countries where several firms coexisted, competition was actually hampered by regional segmentation of national markets. Such monopolies were considered justified for two reasons. First, the energy sector, with its highly capital-intensive facilities and non duplicable infrastructures, was seen as a typical case of natural monopoly for which a single actor setting standards and planning networks on a country-wide scale would be the most efficient solution. Second, the strategic character of energy meant this actor had to be in the hands of the state.

This was all the more true that natural gas soon acquired a foreign policy dimension in addition to its economic function. Indeed, the Netherlands, Norway and the United Kingdom were not the only countries to find significant gas reserves throughout the 1960s. Simultaneously, the Soviet Union discovered giant gas fields

and the rise of this industry in the West gave ideas on both sides of the Iron Curtain that cooperation could be possible. Despite the Cold War context, a *détente* was occurring in international relations, and some European countries found the moment opportune to develop a more independent foreign policy. Paris and Bonn in particular were eager to engage with the Eastern bloc, although for different reasons. This shift took the form in the FRG of the so-called *Ostpolitik*, and gas trade was to play a major role in the new strategy.

Negotiations between Moscow and Bonn began in 1969 and led to the signature of the 'gas for pipes' deal one year later. West Germany committed itself to buy gas from the USSR and to build the necessary pipelines for this purpose — Soviet technology was less advanced in this regard — while the Soviet Union was to accept more exports from the FRG. Moreover, agreements were passed on reciprocal investments and technology transfers. The *Erdgas-Röhren Geschäft* was presented as a win-win situation thanks to which the Soviet Union could get direly needed 'hard' currency, advanced technologies and machines while West Germany, on the other hand, could mitigate its dependence on Middle East oil, find new export opportunities and build relations of interdependence with the Communist bloc. Increased reliance on a power which nevertheless remained an ideological enemy was not then considered as a major source of concern for West German leaders, an important element to underline for the sequel of the story. Their bet eventually turned out to be successful since even during times of more intense confrontation between the two blocs, Moscow did not attempt to use gas as a political weapon[24].

Due to the capital-intensive nature of pipeline construction and the structural interdependence these infrastructures establish between producing and consuming countries, a suitable financial arrangement had to be found in order to distribute in a fair way risks between the two parties. The task of building pipelines was usually entrusted to a joint venture co-owned by them, while amortization was to be guaranteed by a long-term contract lasting between twenty and twenty-five years. It would be based on a special provision named 'take-or-pay' (TOP) by which the buyer would commit itself to acquire a minimum quantity of gas. If they did

24. Kirsten Westphal, "Germany and the EU-Russia Energy Dialogue", in Pami Aalto (ed.), *The EU-Russian Energy Dialogue: Europe's Future Energy Security*, Aldershot, Ashgate, 2008, pp. 94-95.

not, they would have nevertheless to pay for the non-ordered volume. The seller could therefore count on regular, previsible cash flows and would in counterpart be contractually bound to deliver this minimum volume of gas. Beyond the quantity agreed under the TOP formula, parties could still trade, if pipeline capacity was still available, additional gas according to their respective needs and production margins. Interestingly, the TOP system was also used by Algeria's Sonatrach and its European partners to develop liquefied natural gas (LNG) facilities which, although less constraining in terms of structural interdependence, were equally very expensive.

Having described how volumes were settled, one should not omit the other key variable of a market transaction, i.e. price. Because there was at the time no world market for natural gas and taking into account long-term commitments of both parties, it was thought difficult to simply leave price adjusments to the law of supply and demand. Instead, the pioneering Dutch proposed a solution which would later on be adopted in many gas deals and remain valid until today. They observed that at the difference of oil, hardly substitutable, natural gas could be. In consequence, they submitted a formula which would anchor the price of gas on the price of its most likely alternatives, namely crude or petroleum products. Thus, both consumers and producers would be certain that gas would always be competitive relatively to its substitutes, avoiding fuel switching on the consumers' side but also allowing producers to make huge windfall profits as sale prices had little connection with real costs of production.

These fundamentals started to be strongly shaken in the 1980s. First, theoretical justifications for state-controlled, vertically integrated utility firms were partially challenged by new concepts such as unbundling, according to which it was possible to reduce the scope of the natural monopoly to a strict minimum and to introduce competition in other segments of the value chain. Moreover, since infrastructures were in place, the sector was deemed mature enough to be reformed according to these guidelines. Precedents were provided in the form of the American and British experiences, and their results were considered as positive enough to be imitated. The collapse of the Soviet bloc further strengthened the influence of neoliberal ideas and the conviction that they could be spread to the entire world.

Governance through markets in the energy sector was not only rendered possible by the new turn of international relations and record-low prices of oil, it began to be politically attractive for the Commission as an instrument to foster European integration[25]. The Single European Act, which conferred EU institutions extended competences in order to complete the Single Market Programme, opened an opportunity window for the Commission to step in the energy sector where it had exerted until then very little power.

B) The gradual opening of the EU natural gas sector

Six years passed between the presentation by the Commission of the first major legislative proposal to reform the natural gas market and the adoption in 1998 by the European Parliament and the Council of the so-called 'First' Gas Directive[26]. Interestingly, it was voted two years after its counterpart for electricity despite the fact both were introduced at the same time with numerous similarities. Yet this difference would not repeat again as Second and Third Gas and Electricity Directives would eventually be adopted simultaneously.

Tough opposition, especially on the behalf of Member States like France that promoted an alternative model, led to a toning down of the initial proposal but did not succeed in changing its key features. Unbundling for instance would require vertically integrated companies to keep separate books for their transmission and distribution activities. In other words, though they were not forced to choose one of them and to get rid of the second, they would be obliged to give new competitors in the distribution segment access to infrastructures while account unbundling would ensure that this access would not be overpriced.

Another significant change introduced by the Directive is the possibility made for consumers to buy gas to other firms than the incumbent provider. This was tantamount to abolition of national monopolies, sometimes stated by law, on

25. Nicolas Jabko, *L'Europe par le marché : Histoire d'une stratégie improbable*, Paris, Presses de Sciences Po, 2009, p. 143.
26. European Parliament and Council of the European Union, "Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas", *Official Journal of the European Union*, L204, 21 July 1998.

the condition consumers had physical access to the gas supplied by another company. Because of such technical constraints, it was decided to narrowly define the category of 'eligible' consumers as gas-fired power generators and other facilities "consuming more than 25 million cubic metres of gas per year"[27], though Member States retained the freedom to expand it. A target of "20 % of the total annual gas consumption of the national gas market"[28] to be opened was set, with the view to increase it to 28% by five years and to 33% twenty years later.

The parallelism of approches followed by the Commission to liberalize both the electricity and natural gas sectors surprised many observers at the time and continue up to now to raise certain interrogations. Indeed, it is not so obvious whether these branches are more alike than different. The first major dissonance is that natural gas is not produced in majority on the territory of the Union, contrary to electricity. In consequence, it might turn difficult for the EU authorities to shape their gas market according to their own rules if they fail to gain support from external producers. The context is here again very helpful to understand that in the wave of optimism of the 1990s, the superiority of market-based principles could have looked so evident that it would speed up their adoption everywhere. If it would have been the case, the model heralded mainly by the Directorate General for Competition[29] might have had some chances to function smoothly. However, history took another path.

A second structural character of natural gas is that, in Europe at least, it is before all transported through pipelines which commit sellers and buyers for a long period of time and impede a rapid change of supplier in case a better offer would appear on the market. Therefore, competition could be at best generate efficiency gains at the distribution level while the rest of the value chain leaves little room for market forces to operate. Physical limitations associated with pipelines also mean that natural gas is, from an economic point of view, a "non-renewable"[30] re-

27. *Ibid*.
28. *Ibid*.
29. Quentin Perret, "Objectifs et contradictoins de la politique européenne de l'énergie : tentative de bilan", in Dirk Buschle, Simon Hirsbrunner, Christine Kaddous (eds.), *European Energy Law*, Basel, Helbing Lichtenhahn, 2011, p. 255.
30. Ole Gunnar Austvik, "EU Natural Gas Market Liberalization and Long-Term Security-of-Supply and -Demand", in Gunnar Fermann (ed.), *The Political Economy of Energy in Europe: Forces of Integration and Fragmentation*, Berlin, Berliner Wissenschafts-Verlag, 2009, p. 95.

source in the sense that higher prices are not sufficient to bring in the short run additional gas on the market. This assumption might be challenged by rising production of LNG, an hypothesis that shall be dealt with later in the course of the present thesis.

Having these elements in mind, the first Gas Directive unsurprisingly failed to meet its objectives, as the Commission acknowledged in consecutive benchmarking reports. This is why a new Directive[31] was introduced and eventually adopted, with more advanced provisions to guarantee third party access. In addition to accounting unbundling, transmission system operators (TSOs) had this time to be given a separate legal personality, though they could still remain the property of vertically integrated groups. Independence of TSOs was be ensured thanks to strict rules regarding the composition of their management boards and relations with the parent companies. Distribution system operators (DSOs) were to subject to the same principles.

However, the reemergence of supply security issues, attested by the release in 2000 by the Commission of a Green Paper dedicated to this question[32], led to the creation of exemptions from third party access obligations. Only "major new gas infrastructures" were eligible and under relatively stringent conditions:

"(a) the investment must enhance competition in gas supply and enhance security of supply;

(b) the level of risk attached to the investment is such that the investment would not take place unless an exemption was granted;

(c) the infrastructure must be owned by a natural or legal person which is separate at least in terms of its legal form from the system operators in whose systems that infrastructure will be built;

(d) charges are levied on users of that infrastructure;

(e) the exemption is not detrimental to competition or the effective func-

31. European Parliament and Council of the European Union, "Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC", *Official Journal of the European Union*, L 176, 15 July 2003.
32. European Commission, *Green Paper: Towards a European strategy for the security of energy supply*, Luxembourg, Office for Official Publications of the European Communities, 2001.

tioning of the internal gas market, or the efficient functioning of the regulated system to which the infrastructure is connected."[33]

National regulatory authorities were entrusted to grant such exceptions but they could still be challenged by the Commission, acting as the 'guardian of the Treaties' and in particular of the proper functioning of the Internal Market. Despite the narrowness of the window left for these exemptions, it seems that regulatory authorities have been rather generous with applicants, even too much according to the European Regulators' Group for Electricity and Gas[34]. In consequence, the Commission published additional guidelines[35] in order to limit the scope of exemptions. Nevertheless, it has apparently not tried to question decisions taken priorly, either because it wanted to avoid confrontation or by lack of resources. Last but not least, the Second Gas Directive stated that from 1 July 2007 onwards, the gas market should become open for all consumers.

Again, looking at the annual reports published by the Commission and the motives of the Third Gas Directive[36], one could hardly deny that progress had very, very slow. National markets were still dominated by incumbents and very few consumers switched to another distributor. It is true the persistance of regulated prices in most Member States removed the main incentive for consumers to experience change[37]. This is why, ten years after the adoption of the First Gas Directive, the Union took the resolution to defend a more radical stance in view of finally making effective the Internal Energy Market.

Unbundling has been e.g. be pushed to its maximum degree, in other words it would not only require accounting and legal separation but also ownership. Yet,

33. European Parliament and Council of the European Union, "Directive 2003/55/EC", *op. cit.*.
34. European Regulators' Group for Electricity and Gas, *European Regulators' Experience with Article 22 exemptions of Directive 2003/55/EC. 2008 Update of ERGEG's internal survey*, Brussels, 2009.
35. Commission of the European Communities, *Commission staff working document on Article 22 of Directive 2003/55/EC concerning common rules for the internal market in natural gas and Article 7 of Regulation (EC) No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity*, SEC(2009)642 final, Brussels, 6 May 2009.
36. European Parliament and Council of the European Union, "Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC", *Official Journal of the European Union*, L 211, 14 August 2009.
37. Commission of the European Communities, *Communication from the Commission to the Council and the European Parliament. Report on progress in creating the internal gas and electricity market*, COM(2009) 115 final, Brussels, 11 March 2009.

to accommodate French and German opposition[38], an alternative solution was developed in the form of the so-called 'independent system operator' (ISO). This entity would act as a transmission system operator with corresponding independence guarantees so that third party access would be ensured. Concerning DSOs, they have also been made subject to unbundling rules to the level of accounting but may remain the property of vertically integrated companies.

Investment matters have been tackled through the strengthening of regulatory authorities, which have become in the paradigm of the Third Gas Directive the driving force of the Internal Energy Market. They are notably in charge of supervising the implementation of ten-year development plans submitted by TSOs/ISOs and have the power to force operators to realize the investments they have committed to make.

Another interesting provision relevant for this question is the certification process of TSOs when they are owned by persons located outside the EU. Although certification is compulsory in any case, the particularity of this situation is that certification can be denied if the Commission deems it would "put at risk the security of energy supply" or when the owning company does not comply with unbundling principles. Article 11 was dubbed the 'Gazprom clause' in reference to the various attempts on behalf of Russia's monopolistic gas exporter to take over downstream assets inside the EU, thus exploiting market opportunities offered by liberalization without following the same process[39].

At this point, it is possible to say that after a difficult start, the EU has progressively revised its approach to better take into consideration the specificities of natural gas and to create a regulatory environment more favourable to investments. As one of the experts from the French Ministry for Ecology, Sustainable Development and Transport — also responsible for energy issues — put it, "the worst is behind us"[40]. However, before inquiring about the current picture in terms of investments, it is necessary to describe how the natural gas sector has been transformed by these ten years of liberalization.

38. Simon Taylor, "Commission seeks to break up energy giants", *European Voice*, 30 August 2007, retrieved 24 April 2012, http://www.europeanvoice.com/article/imported/commission-seeks-to-break-up-energy-giants/58090.aspx.
39. Catherine Locatelli, "Gazprom's export strategies under the institutional constraint of the Russian gas market", *OPEC Energy Review*, vol. 32, no. 3, 2008, pp. 246-264.
40. Answer to a questionnaire sent by the author of the present thesis.

C) Today's EU natural gas market

Efforts to open the natural gas sector in the EU and to foster competition have been carried out with one main objective in mind: slashing prices through the reduction of so-called 'X-inefficiencies' caused by monopolistic situations. Paradoxically or not, successive reforms of the Internel Gas Market have rather led to concentrations than to the birth of new competitors. In a sense, the market has indeed never been so European[41], with a few giants like E.ON Ruhrgas or GDF Suez having a foot in several countries besides their homelands. At the same time, the feature must be relativized, considering that top management is still pretty much dominated by nationals from the home market. In any case, liberalization, intentionally or not, has facilitated this concentration process since the abolition of rules establishing national monopolies has made smaller entities more vulnerable to takeovers, hostile or not.

One should not though draw the conclusion that a reduced number of players is tantamount to less competition or less competitiveness on the market. In reality, alike the telecommunications sector, intense rivalty is compatible with a highly concentrated market. This is actually the most probable scenario in network industries due to very large investment costs required to enter the market, combined with heavy obligations resulting from regulation. Nevertheless, it seems difficult to qualify the current gas market in Europe as open to competition, since operators have expanded but not to the same countries. Therefore, the current outlook is closer to a situation of market sharing, even unintendedly.

Lack of interconnections bears an important responsibility in this phenomenon, and one of the mistakes of the EU may have been to dismantle monopolies before putting in place adequate infrastructures to favorise transborder exchanges. Only last year a substantial envelope of funding has been earmarked to energy infrastructures — €9.1 billion — but the proposal on the Connecting Europe Facility[42] must still be adopted by the European Parliament and the Council. In comparison,

41. Christian Schülke, *The EU's Major Electricity and Gas Utilities since Market Liberalization*, Paris, Institut français des relations internationales (IFRI), 2010, p. 171.
42. European Commission, *Proposal for a Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility*, COM(2011) 665, Brussels, 19 October 2011.

under the soon expiring 2007-2013 Multiannual Financial Framework, around 20 million euros per year have been reserved for Trans-European energy networks (TEN-E), mainly for funding feasability studies[43]. This issue shall be dealt with again later, yet it is important to remember that infrastructures are as much essential for security of supply than for the success of the Internal Energy Market itself.

Regarding prices, liberalization has not managed to bring them down. On the contrary, they have drastically increased over the last decade[44], even if this is probably not the result of market structure changes. With the boom of the oil barrel and gas contracts indexed on its value, gas prices at the pipeline rose significantly and this has logically been passed on to consumers. At the same time, the shale gas revolution in the United States left the world with enormous surpluses of LNG, especially since economic recessions went along with reductions in energy demand. By consequence, wholesale spot prices significantly fell[45].

It does not follow however that all EU countries have benefited from this evolution. Due to TOP clauses, certain utility companies have been forced to buy more expensive pipeline gas and in extreme cases, commitments have even been higher than actual needs. Nevertheless, price differentials have pushed contractual parties to renegotiate their deal and to give a greater role to spot prices in the formation of pipeline gas prices. The other reason why price convergence has been so far very limited in the EU is the forementioned lack of interconnections. Instead, one can observe the regionalization of natural gas markets with the development of a few, relatively well integrated areas like in North West Europe (Benelux countries, France, Germany and the UK)[46]. On the opposite end, Baltic states constitute a so-called 'energy island' with no connection to the rest of the EU network. This obviously makes them very vulnerable to possible supply disruptions but, as it shall

43. "Summaries of EU legislation. Trans-European energy networks", *Official website of the European Union*, 5 April 2007, retrieved 24 April 2012, http://europa.eu/legislation_summaries/energy/internal_energy_market/l27066_en.htm.
44. "Price developments on the EU retail markets for electricity and gas 1998 – 2011", *Energy Market Observatory*, 29 March 2012, retrieved 24 April 2012, http://ec.europa.eu/energy/observatory/electricity/doc/analysis_retail.pdf.
45. Market Observatory for Energy, *Europe's energy position — 2010 Annual Report*, *op. cit.*, pp. 50-51.
46. Rudolph Harmsen and Catrinus Jepma, "North West European gas market: integrated already", *European Energy Review*, 27 January 2011, retrieved 25 April 2012, http://www.europeanenergyreview.eu/site/pagina.php?id=2695.

be seen, the Union has finally become aware of the existence of this weak point.

II – Investment needs and incentives in a liberalizing market

In the first chapter, it has been shown that through successive reviews of market structure reforms, the EU has paid increasing attention to investment issues in the natural gas sector. It has however mainly focused on the downstream side (A), whereas needs are also immense on the upstream level (B) and their satisfaction, through the concept of security of demand, depends largely on the evolution of the EU's Internal Energy Market.

A) Investment needs in the EU's natural gas sector

Before entering into details with figures and projects essential for the proper functioning of the EU's natural gas market, it is necessary to explicit hypotheses on which the below assessment relies on. Investments are by definition long-term projects and their possible realization will intervene only if they are profitable or If public authorities are ready to bear their costs. Today's investments, which will ensure tomorrow's security of supply, are therefore decided on the basis of key variables such as expected future demand, prices paid to producers, acceptable prices for final consumers, and capital expenditures (CAPEX) to mention a few. With these data, financial specialists can determine a return on investment rate that determines whether the project will be conducted or not.

Lately, due to the economic crisis, natural gas demand in the EU has dropped and rather than shortage, markets have experienced oversupply. *Ceteris paribus*, one may think that no capacity increase is required to meet EU needs. Indeed, were European economies to go through a lost decade like Japan in the 1990s, the projection would sound fairly well grounded. Yet in the present thesis, a different, more optimistic scenario shall be followed since the whole issue of long-term security of supply would hardly have any relevance in absence of growing demand. Accordingly, if the figures of the International Energy Agency are retained, EU demand for natural gas is expected to increase by 20% between 2009 and 2035, from

500 to over 600 billion cubic meters. Moreover, with depleting reserves in the UK and the Netherlands, imports should have a larger share at that time, from 61% to 86%. In other words, by 2035, the EU will have to be ready to annually import additional 230 billion cubic meters[47]. Meeting this challenge is estimated to require one trillion dollars of cumulative investments, including the maintenance costs for existing infrastructures[48].

Contrary to China and India for instance, which are still relatively distant from producing countries, the EU has access within a range of 2000 km to 70% of the world's oil and gas proven reserves[49]. Russia in particular is likely to play a central role in helping to satisfy the Union's appetite for energy as it possesses alone more than the quarter of proven gas reserves[50]. Gas transportation economics are such that with current technologies, pipelines are more competitive than LNG up to a distance of 4000 km[51]. Therefore, significantly higher reliance on LNG should not spontaneously occur even if its market share, reaching 22% of European imports in 2010[52], may still rise by a few points.

The persistance of the pipeline model means that both buyers and sellers will have to find appropriate incentives and risk-sharing schemes in order to invest in these expensive infrastructures which involve structural, long-term interdependence. The Commission, after a period of scepticism towards long-term contracts and their compatibility with competition law, now acknowledges their contribution to security of supply. In support of this thesis, it is interesting to see that LNG development around the world has not always gone hand in hand with a more liquid market since, in the case of Asia e.g., 87% of sold volumes are traded through long-term contracts[53].

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47. International Energy Agency, *World Energy Outlook 2011*, Paris, 2011, p. 93.
48. *Ibid*, p. 98.
49. Alessandro Ortis, "The Challence of the European Union's Energy Policy and Regulation", in Federiga Bindi and Irina Angelescu (eds.), *The Frontiers of Europe: a transatlantic problem?*, Washington D.C., The Brookings Institution and Scuola Superiore della Pubblica Amministrazione, 2011, p. 135.
50. Claude Mandil, *Sécurité énergétique et Union Européenne. Propositions pour la présidence française*, 21 April 2008, p. 22.
51. Clingendael International Energy Programme, *Study on Energy Supply Security and Geopolitics. Final Report*, The Hague, Institute for International Relations 'Clingendael', 2004, p. 260.
52. Capgemini, *European Energy Markets Observatory. 2010 and Winter 2010/2011 Data Set Thirteenth Edition*, October 2011, p. 8.
53. Marcin Kaczmarski, *Bezpieczeństwo energetyczne Unii europejskiej*, Warsaw, Wydawnictwa Akademickie i Profesjonalne, 2010, p. 20.

Will the EU be up to the challenge? In 2010, investments emanating from both the public and private sector reached €11 billion, a sensible increase in comparison with 2009[54]. The Union itself has been providing more and more funds to set up mechanisms such as interconnectors and reverse flows and is likely to continue to do so thanks to the Connecting Europe Facility. Despite this major step forward, it is obvious that investment needs will be covered only if public expenditures can leverage bigger envelopes of private money. At a time at risk with the introduction of ownership unbundling requirements, which would have reduced incentives for utility companies to invest in transmission infrastructures, the ISO option sounds more likely to secure them.

Nonetheless, the main guarantee in this area is connected with the new competences given to regulatory authorities. Liberalization has taken here a surprising turn by entrusting public organizations the tasks to supervise investment plans, their implementation and if necessary to sanction their non-realization. Therefore, it would be difficult to speak about deregulation, contrary to American or British precedents, as market decisions in relation to infrastructures are tighly constrained by public authorities. To summarize, in the traditional model, governments had a direct say on investments through state-owned utility firms while in this new structure, an additional layer is inserted in order to preserve public authories' voice in critical infrastructure matters while fostering competition amongst their users.

Two questions however remain open. Regulatory authorities can help shaping investment plans but they are materially unable to provide funding if no firm has sufficient means to finance them. Market watchdogs can set incentives in the form of access tariffs, but they would be very delicate arbitrages between the project owner's financial interests and the room left open to new entrants to exploit it. The forementioned observation concerning exemptions from TPA rules rather leads to believe that competition will not be much more intense in the future. Moreover, physical characteristics of gas trade make duplication quite unlikely so that one may question in the end whether the opening of the market, excepting in the distribution segment, will really bring about deep changes in terms of competition.

54. Capgemini, *European Energy Markets Observatory*, *op. cit.*.

B) Investment needs in producing countries

Possessing adequate pipelines to receive natural gas only makes sense if there is enough production to fill them. A larger focus shall be given in this section to Russia, for the reasons mentioned above. If Gazprom, which has a monopoly over Russian gas exports, intends to satisfy a significant part of EU future needs, it will have to make huge investments in order to modernize its networks dating back from the Soviet Union, to develop new gas fields and to build infrastructures linking them to markets.

The IEA, in the same scenario enounced previously, estimates that the Russian natural gas sector must find one trillion dollars by 2035[55], i.e. grossly as much as the EU for the downstream side. This way, it is hoped that Russia will be able to increase annual production from 637 bcm (2010 figures) to 860 bcm. Considering that domestic consumption is also expected to rise, the Paris-based organization retains the hypothesis of a 140 bcm increase in net annual exports[56], among which a large share should continue to the EU for economic — European prices are more attractive than their Asian counterparts — and physical motives — next fields to enter into service are mainly located in Western Siberia and in the Barents Sea, closer to European than to Asian consumers.

It is also useful to look at Russia's own estimates, since the IEA is essentially a consumers' club where Russia is not a Member State. Although methodologies and timeframes may differ, comparison remains nonetheless important to detect potential biases. The official "Energy Strategy of Russia for the period up to 2030"[57] for instance assesses that Russia's natural gas sector will require up to 590 billion dollars of invesments by 2030, a slightly lower figure than the IEA's but still massive. Production is forecast to increase from 664 bcm (in 2008) to a maximum of 940 bcm in 2030, a more optimistic prevision than the IEA's. Over the same period, exports are to rise from 241 to 368 bcm. Therefore, one can notice that the 127 bcm differential is relatively close to the IEA's own calculation.

55. IEA, *World Energy Outlook 2011*, *op. cit.*, p. 98.
56. *Ibid*, p. 283.
57. Ministry of Energy of the Russian Federation, *Energy Strategy of Russia for the period up to 2030*, Moscow, Institute of Energy Strategy, 2010.

How likely are Gazprom and/or the Russian governement to realize such heavy investments? For the moment, most experts agree to say that they are not on track. Although Gazprom makes enormous profits from sales to European markets, it is very much indebted and loses money on the domestic base due to highly subsidized prices set by law and other obligations resulting from political influence. Moreover, many investments are not driven to the development of new fields or infrastructure but rather to take over foreign companies[58], either in the countries of the Community of Independent States (CIS) or even in EU Member States.

These operations are alternatively politically or economically motivated. When the EU started to attack energy state monopolies and to introduce its liberalization policy, Gazprom saw many business opportunities in small, downstream companies that could be easily swallowed. Interests are twofold: first, the distribution segment is very profitable while, at the same time, controlling this part of the value chain would guarantee 'captive' clients for the upstream, mother firm. In a context of expected increased competition, such an advantage was highly valued by Gazprom which feared to lose market shares on the European soil.

The tactics was more or less welcome according to the country targeted. In France or Germany, it mainly led to the creation of joint ventures with incumbent companies (cf. Annex I) but in Central and Eastern Europe, direct penetration in national operators' capital was sometimes seen as a hostile gesture aimed at giving Russia a certain political leverage on the country. Indeed, since natural gas is often the main fuel for household heating in the region, steep price rises in the type Lithuania experienced last winter immediately hit the population.

Such moves should however come to a halt because of the new provisions introduced in the Third Gas Directive. With the view of establishing a level playing field between EU and third country firms, transmission asset ownership shall be subject to a certification procedure which involves, in the case of third country applicants, a control carried out by national regulatory authorities and the European Commission about the respect, in the country of origin, of unbundling principles and of possible threats to security of supply connected with the transaction.

58. Susann Handke and Jacques J. de Jong, *Energy as a Bond: Relations with Russia in the European and Dutch Context*, The Hague, Clingendael International Energy Programme, 2007, p. 22.

The solution is not tantamount to a real reciprocity clause as it leaves some room for appreciation in the hands of public organizations but it nonetheless constitutes an attempt to redefine the Russian conception of reciprocity so far, namely asset swaps through European majors' participation in developing gas fields against Gazprom's access to the lucrative downstream segment. The deal, fair in appearance, was not very much observed in practice due to doubtful administrative pressure on foreign companies in Russia which ousted many of them.

Unfriendly business climate is certainly one of the biggest obstacles to modernization and growth of the Russian natural gas sector. Yet it is more a domestic issue, and EU influence in the matter is extremely limited. The market rhetoric, dominant in the 1990s and best materialized in the Energy Charter Treaty (ECT) proposed by the Netherlands and signed in 1994[59], is unlikely to be adopted in Russia in the nearest future. President Vladimir Putin has repeatedly made it clear that the ECT will not be authorized for ratification by the Russian Duma[60], while his one-term successor Dmitry Medvedev has come up in April 2009 with a new project destined to replace the ECT[61]. It is not clear at the moment whether it is taken seriously by other partners.

Nevertheless, the EU is aware Russia is in dire need of technologies and investments that she can find only in the West. The so-called 'Gazprom' clause can therefore be interpreted as a tougher attempt to force Russia to convert to the European model, a 'product' already being exported to smaller neighbouring countries through the Energy Community. However, even in the case this switch would be beneficial to the Russian economy, political losses would certainly be too painful to be accepted. Rather than confronting Russia on this field and thus strengthening stereotypes of Brussels lecturing Moscow on how to behave civilly, the EU may be better inspired to admit that, at least in the short run, the structure of the Russian natural gas sector is very likely to stay the same and that cooperation should be sought on this assumption.

59. "About the Charter", *Energy Charter Secretariat*, retrieved 26 April 2012, http://www.encharter.org/index.php?id=7.
60. Edward Lucas, *The New Cold War: How the Kremlin Menaces both Russia and the West*, London, Bloomsbury, 2009, p. 213.
61. Andrew Rettman, "Russia invites Europe to join new energy charter", *EUobserver*, 21 April 2009, retrieved 26 April 2012, http://euobserver.com/24/27970.

It does not follow though that the EU is disarmed to foster investments in Russia. Conditions of its own gas market represent as many signals sent to producers and have a role in triggering or not new investments: this idea is best captured by the concept of 'security of demand'. On several occasions Russian political figures and Gazprom executives have criticized the EU's liberalization policy precisely because it would, in their opinions, render gas trade more volatile and would consequently diminish incentives to new, large projects. In particular, new unbundling rules would force Gazprom to get rid of certain assets in transmission systems. That is why Russia has threatened in retaliation to rather look East than West in the future[62].

The credibility of this move might be arguable but the EU should not ignore it on the premise that the gas market will always be on the buyers' side. The cyclical nature of energy trade, connected with remote horizons for exploration, production and transmission infrastructure building, means that LNG will probably not be as abundant as it is today. If the EU economy is to be growing again in the next ten years — one of the hypothesis here —, emerging countries will also be pulled by rising exports to Western markets and their energy demand will be booming. Considering LNG prices are higher in Asia than their current levels in Europe, cargos will first address the most profitable clients and European spot prices may then exceed their pipeline equivalents.

In addition, recent gas crises involving Russia should be resituated in a more historical perspective where supplies coming from this country have been generally reliable. True, not all the EU Member States agree on this assumption and there is a relatively clear division between 'Western', 'old' Member States such as France, Germany and Italy on the one hand and 'Central and Eastern', 'new' Member States like Lithuania and Poland on the other. Yet it is very doubtful that the EU can go very far in terms of diversification bypassing Russia, due to her geographical position and her immense reserves.

This gap could be bridged if all the EU-27 are exposed to a similar degree of risk, which is not the case at the moment because of different import structures and lack of interconnections. The Commission seems to have finally understood it

62. Alexandr Mazurkevich, "Russia to diversify gas supplies to Asia over disputes with EU", *RIA Novosti*, 18 October 2011, retrieved 26 Avril 2012, http://en.rian.ru/business/20111018/167818455.html.

by underlining the latter while, at the same time, setting obligations in terms of storage so that no country is tempted to behave as a free rider and to enjoy security thanks to investments realized at their neighbours.

One may go even a step further by laying the ground for a pan-EU Gas Supply Agency[63], as proposed by the think tank *Notre Europe*. It assumes very realistically that the EU has very few chances to expand its open market model to supplying countries like Russia or even Algeria. In this situation, to ensure that price convergence will eventually become a reality across the Union — a legitimate goal which would contribute to make competition fairer for businesses located in different Member States —, instead of leaving national champions negotiating bilateral deals with Gazprom and thus giving Russia a tool to divide Europeans, a single supply agency, recalling the French proposal of 'single buyer' in the 1990s, would be able to pass contracts that would be much more profitable from a EU-27 point of view.

Accompanied with a well structured, wider Internal Market, seasonal variations could be more easily balanced so that average demand would be more stable, for the benefit of both consumers and producers. As seen above, competition is not really occurring in any case on other segments than distribution, so the single buyer would simply accelerate the current tendency towards concentration without removing the possibility to have new entrants on the most downstream level. Giving this agency a public status and depriving it from the possiblity to directly sell gas to final consumers would in fact certainly be more effective than enforcing very sophisticated provisions aiming at guaranteeing the independence of transmission-related bodies inside vertically integrated corporations.

Last but not least, by cutting the possibility for third country operators to control the whole value chain from production to transmission and distribution, the single buyer model would allow Gazprom to enter, as it wishes, the retail sale market. The proposal may therefore constitute an acceptable compromise for both the EU and Russia, whereby Gazprom would no longer be able to milk downstream players with smaller market power but could compensate these losses through profits in the retail branch. This way, if the growth scenario materializes, both parties would have a strong economic interest in trying to meet the additional demand.

63. Sami Andoura, Leigh Hancher and Marc van der Woude, *Vers une Communauté européenne de l'énergie*, *op. cit.*, p. 125.

III – Potential or actual game changers

The second chapter argued that while the ground may have been finally made fertile for downstream investments to occur, with a combination of coercive instruments — regulatory power —, economic incentives — exemptions — and direct intervention — public funding —, forecasts are not so optimistic for the upstream and transmission segments where the participation of third country partners is required. The possibility to create an EU public supply agency has also been mentioned as a method to strike a balance between marketable conditions, both in terms of prices and quantities, on the EU side and legitimate concerns about security of demand on the suppliers' side. However, all the hypotheses have been so far laid down *ceteris paribus* and reality is often more complex. Therefore, three recent phenomena have been selected and shall be reviewed in the following and last chapter to see to which extent they may constitute game changers for natural gas trade: the growing role of LNG (A), the shale gas revolution (B) and the Energy Community (C).

A) LNG and gas OPEC

LNG is anything but a new technology and has been produced on a commercial scale at least for fifty years. However, it started to boom only very recently thanks to technological breakthroughs which have made such an option much more affordable than in the past. It already accounts for almost 10% of global gas supply and a third of traded gas in the world[64], a share which is expected to grow in particular thanks to Asian emerging powers' thirst for energy. Their geographical location is such that the competitive advantage offered by pipelines is for them less clear.

In comparison with pipelines, LNG posseses a striking difference, namely that there is no more physical connection between the seller and the buyer. In other words, once facilities have been built, LNG tankers can in theory navigate freely and deliver their loads where it is the most profitable to do so. For consumers,

64. David Jacobs, *The Global Market for Liquefied Natural Gas*, Reserve Bank of Australia, September 2011, p. 19.

they enjoy as well a greater freedom of supply since they have the choice to buy gas at the best available price.

However, in practice, this freedom is limited by the heavy sunk costs paid by suppliers and consumers for developing liquefaction and regasification terminals. To be sure that they will be recovered, both parties usually engage in long-term contracts in a similar fashion as for pipelines. Liquidity technically allowed by LNG is therefore not fully exploited by utility companies, which far prefer the security guarantees associated with long-term contracts[65]. The share of spot transactions is nevertheless higher in Europe than elsewhere in the world, since the majority of supplies comes from pipelines and LNG is first and foremost used as a complementary resource.

A much more significant role played by LNG amongst EU imports would have at least two consequences. First, it would facilitate diversification by opening the way for cargos from Qatar, Australia and perhaps soon the United States, which recently became the world's largest gas producer thanks to the shale revolution. Second, it may render gas prices more independent from oil, an objective sought by the Commission in order for investors to receive clearer signals on resource availability and thus take decisions more related with market fundamentals.

On the other hand, the evolution from regionalized gas trade to a more global market could favorise the birth of a ‘gas OPEC’, on the model of the oil producers' cartel created in the 1960s. In fact, an embryo of such an organization already exists in the form of the Gas Exporting Countries Forum (GECF), a relatively loose structure which made its first steps in the early 2000s. The threat has been recurrent since then but has been so far judged hardly credible due to the regional character of gas trade, the difficulties to hoard capacity — storage is technically more challenging in the case of gas than of oil, and empty pipelines are a source of losses — and the absence of political common interests between countries such as Norway, Russia and Algeria.

LNG may push towards price convergence but does not fundamentally change the other terms of the equation. This is all the more true that numerous

65. *Ibid*, p. 23.

long-term contracts will continue to bind producers and consumers up to the 2025-2030 horizon[66]. Therefore, an agreement between suppliers with the view of withholding production to decide on the level of prices does not sound very probable. In these conditions, LNG should not significantly alter the pattern of global gas trade, even if it positively influences the case for European consuming countries. Indeed, physical availability of cheap gas, at least as long as the situation lasts, can serve as an argument for national champions to renegotiate deals with pipeline gas suppliers such as Gazprom. Developing adequate LNG infrastructures remains in consequence important for the EU in order to make this tactic effective and serious in partners' eyes, but one should not expect them to replace altogether the traditional pipeline system.

B) The shale gas revolution

Although technically disjoint, the rise of LNG and the shale gas revolution have gone in practice hand in hand. This is because new big gas producers such as Australia or the USA have in their surroundings no attractive market while thanks to LNG, they can export to more remote areas. The major feature of the shale gas revolution is that it opens perspectives of abundant and cheap energy in the very same countries that are the biggest consumers, an unprecedented configuration since the coal-based First Industrial Revolution.

Of course, gas is not oil and even if shale reserves also contain oil, it does not follow that developed countries will be able to become again energy independent. Nevertheless, the possibility of removing from the suppliers' hand a non-negligible instrument of political pressure has been particularly welcome in countries such as the USA or Poland, with an acute sensitivity to security matters. From an economic point of view, indigenous energy production also means stopping enormous wealth transfers from consumers to suppliers.

The shale gas option is as well highly relevant for the structure of the gas market in the EU. If, instead of importing resources through non duplicable infra-

66. International Energy Agency, *Security of gas supply in open markets. LNG and power at a turning point*, Paris, 2004, pp. 112-114.

structures, the EU could rely on domestic, less concentrated production, it would be much easier to shape a competitive market with lower entry barriers for new players and more competition at different levels of the value chain. The EU market would therefore look quite similar to its American equivalent.

Indisputably, the shale gas revolution has been a success in the United States. In a course of a few years, prices have been cut down and the country moved from a net importer's position to self-sufficiently and maybe soon gas exporting. The American gas industry, now the largest in the world in terms of production, has developed on its home market a very demanded know-how which will generate additional revenues through technology transfers to potentially shale gas rich countries like China, France or Poland.

Can Europe follow a similar path? For the moment, it still stands in the exploration phase, with economic and political incertainty regarding the possibility and profitability to start production. Different geological and geographical features are such in Europe that shale gas will very likely be more expensive[67] than in the USA, because resources are located deeper underground and higher population density will involve more expropriations — against, of course, compensation. The amount of reserves, subject to regular revisions, may not lead either to the same level of scale economies as in the USA. Environmental regulation, tighter in Europe, should as well increase operating costs.

Another cloud over the development of shale gas in Europe has to do with societal acceptability. Cases of water pollution and small earthquakes, proven or alleged, have been raised by opponents to hydraulic fracking and have sometimes secured bans or at least *moratoria* in countries like Bulgaria, France and certain German *Länder*. Even in Poland, arguably the most favourable EU country to shale gas because of historical fears towards Russia, consensus around a 'drill, baby, drill' policy is far from being clear.

The combination of economic and societal obstacles to shale gas exploitation leads to the conclusion that even if it eventually materializes on a commercial scale, it will probably not be a revolution of the same size as it was on the other

67. Florence Gény, *Can Unconventional Gas be a Game Changer in European Gas Markets?*, Oxford, Oxford Institute for Energy Studies, 2010.

side of the Atlantic and will not be sufficient to fully cover the EU's projected demand. Nevertheless, the fact it exists and is carried out in other parts is a positive element for the EU because it strengthens European champions' bargaining power vis-à-vis suppliers, concretely through the availability of resources from a broader range of partners and hypothetically through the mere possibility of increased indigenous production. This somehow recalls the American strategy to leave its massive oil reserves in the ground and to first exhaust, as long as it is affordable to do so, foreign stocks.

C) The Energy Community

The third potential game changer is of a different nature and is not exogenous, contrary to LNG and shale gas. It is the result of a double observation, namely that neighbouring countries may not be spontaneously convinced of the opportunity to follow the EU model in the energy sector but that they should do so for the Internal Energy Market to function properly. The problem could have been solved through enlargement, however this process would have taken an indefinite length of time considering the various degree of preparation of neighbouring countries and the EU's own doubts over further expansion. Nonetheless, energy was deemed an issue serious enough to be dealt with at a faster pace and in consequence, the EU, Albania and all former Yugoslav Republics — Slovenia excepted, since she was already an EU Member State — signed in October 2005 the Treaty establishing the Energy Community[68]. They would later on be joined by Moldova and Ukraine.

It is visible from the reading of both the Treaty and the Community's website that the EU's reflection over energy matters has matured compared with what it was during the 1980s and the 1990s. Investments are here given the key role to provide "all Parties [with] access to the stable and continuous energy supply that is essential for economic development and social stability"[69] and, said differently, "the security of supply of the single regulatory space [shall be enhanced] by providing a stable investment climate in which connections to Caspian, North Afric-

68. *Energy Community website*, retrieved 27 April 2012, http://www.energy-community.org.
69. Energy Community, *Treaty establishing the Energy Community*, art. 2, 25 October 2005.

an and Middle East gas reserves can be developed, and indigenous sources of energy such as natural gas, coal and hydropower can be exploited"[70].

Thus, the EU does not only intend to export its *acquis communautaire* to neighbouring countries to extend the Internal Energy Market but it also recognizes that their locations make them unavoidable transit countries between producers and the EU itself. Their ability to host transmission infrastructures and to manage them properly is therefore very important for the EU's security of supply, as the Ukrainian case has repeatedly showed.

For this purpose, the EU does not only propose its market-based rules but comes with a more tangible 'carrot', i.e. financial support. It does not take the form of direct transfers — the budget of the Community alone is very limited and mainly serves to cover daily expenses like administration and salaries — but of loans, granted through the Western Balkans Investment Framework. This vehicle pools resources from the EU as well as from public banks like the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB)[71]. Precise data for the amount of investments earmarked to the gas sector have not been found, however total commitments to energy infrastructures in the Western Balkans — figures for Ukraine are missing — between 2007 and early 2011 are almost 2.5 billion euros[72], a quite decent budget. Among projects, one can mention LNG facilities in Croatia or interconnections between countries as well as with the EU.

Yet the EU is not alone on this field. In June 2007, when Zagreb hosted the first Balkans Energy Summit, the guest of honour was the Russian President Vladimir Putin, who recalled that the region receives yearly as much as half of Russian gas exports to the EU. He also expressed Russia's willingness to invest in energy infrastructures of the area[73], not without return as it happened in the case of Serbia. For example, on accordance with its strategy to acquire downstream segments of

70. *Ibid*.
71. *Western Balkans Investment Framework website*, retrieved 27 April 2012, http://www.wbif.eu/About+WBIF/.
72. Energy Community, *Infrastructure investments in the Energy Community. Report of the Energy Community Secretariat on priority projects and next steps*, 7 October 2011, retrieved 27 April 2012, http://www.energy-community.org/pls/portal/docs/1068185.PDF, p. 8.
73. Edward Lucas, *The New Cold War*, *op. cit.*, p. 231.

the gas sector, Gazprom took over the Serbian oil company NIS at a 'friendly' price and will in exchange finance the modernization of Serbian energy networks[74]. This is also a way for Russia to buy political support for pipeline projects to Western Europe.

Ukraine is probably the most striking illustration of the battle for influence the EU and Russia are fighting in the energy realm. Being the main corridor for Russian gas to reach Europe, Ukraine holds a strategic position for both sides. On the other hand, it is well documented that Ukrainian pipelines are in a poor state and need to be renovated. In the aftermath of Russian-Ukrainian gas crises, the EU decided to get involved in the *dossier* and to help Kiev in modernizing its infrastructures in return for reforms[75]. The logic is therefore similar to the Energy Community's but the location and size of Ukraine made necessary to pass a bilateral deal possibly worth on its own 2.5 billion euros[76].

Russia did not hide her discontent concerning this agreement, which would ruin her efforts to take control over Ukrainian energy assets because of unbundling principles. She also proposed her assistance and financial support in upgrading Ukrainian pipelines, upon the condition though that Gazprom will be allowed to take shares in Naftogaz, the Ukrainian firm which owns among other elements the national gas transmission system. Kiev has so far been very sceptical towards this offer which would weaken Ukraine's bargaining power vis-à-vis both the EU and Russia. At the same time, opening the gas sector would probably undermine current huge profits made by some oligarchs close to political authorities and Ukrainian demands to increase transit capacity in order to increase royalties may not be followed by additional supplies on the Russian side. It seems in consequence that Ukraine will have to find a solution with her two partners.

What lessons can be drawn from these discussions around the Energy Com-

74. Mark A. Smith, *Russian Energy Interests in the Balkans*, Shrivenham, Defence Academy of the United Kingdom, 2008, p. 3.
75. Anna Górska, "Russia objects to EU-Ukrainian gas co-operation", *Centre for Eastern Studies*, 24 March 2009, retrieved 27 April 2012, http://www.osw.waw.pl/en/publikacje/eastweek/2009-03-25/russia-objects-eu-ukrainian-gas-co-operation.
76. Centre for Eastern Studies, *Controversial statement by EU commissioner on Ukrainian gas pipelines*, 2 February 2011, retrieved 27 April 2012, http://www.osw.waw.pl/en/publikacje/eastweek/2011-02-02/controversial-statement-eu-commissioner-ukrainian-gas-pipelines.

munity? First, it is clear that even more than in EU Member States, liberalization will eliminate a certain number of rent seekers and while it should help to bring prices down, the question of how to have this process adopted and implemented is not easy. Proof by example is relatively ineffective, considering EU's own dispensations in the area, but financial incentives are much more convincing, especially with smaller countries like in the Balkans.

The regional character of gas trade, which is supposed in the present thesis to remain, implies that investments are transnational and that their realization depends not only on factors connected with the Internal Energy Market but also on the situation in transit countries. It is all the more true for pipelines, despite various attempts notably on the Russian side to circumvent 'difficult' partners. Having this context in mind, the Energy Community and associated financing instruments have a major role to play in 'securing' the transit area around the EU and laying the ground for investments to materialize.

Were they to succeed, they will with no doubt strengthen EU national champions' bargaining power vis-à-vis suppliers since transit will no longer constitute an issue that can be instrumentalized to pressure consuming countries, either economically or politically. Meeting this objective shall however require the EU to be very attentive to developments in the region and to make sure that its offer is not being overtaken by strategic competitors.

Conclusion

Arrived at the end of this analysis, the reader may actually feel comforted to see that the picture is not as gloomy as it looked at first sight. In a sense, over the last years, the EU has found back the terms of the problem it had been trying to revolve at the very beginning, i.e. how to get *secure* and *affordable* energy supplies in a environment where most players were beyond its legal and, sometimes, political reach.

The Internal Energy Market is undeniably one of the central elements of the formula, but not in the traditional meaning of the concept. Enhanced competition has, to put it bluntly, failed to appear in the natural gas sector and it is not sure Europeans should regret it. Price decreases have not materialized either, though the blame is not to put on liberalization. It is thanks to relatively high prices that the EU is one of the most energy efficient areas in the world, and social drawbacks of this feature of the EU market should rather be corrected by targeted redistributive instruments than by a general price cut.

Yet other, actual consequences of liberalization might be more alarming. Concentration of market power in the hands of a few national champions probably strengthens their bargaining position vis-à-vis suppliers but does little to guarantee EU-wide security of supply in the absence of a corresponding network. As it has been seen, infrastructures constitute the key both to the completion of the Internal Energy Market and to security of supply.

It is in this realm that the attitude of the EU has changed the most, with the inclusion of exemption possibilities and strong supervision powers attributed to regulatory authorities. It has been eventually acknowledged that infrastructures, far from being mature, will still need a lot of investments in the future and public budgets could only bring a smart share of them while they could, however, shape the legal environment in order to make them more likely. After three important directives in a relatively short timespan of ten years, it might be time for the EU's top decision-makers to leave now regulatory authorities and utility companies working out their own solutions, such as the Gas Target Model. These authorities have among other responsibilities the task to ensure security of supply and for the

moment, there is no reason to doubt of their commitment to this goal. If there is anything EU institutions or national governments can do now on the downstream sector to foster investments, it is rather to financially support them. Alas, public money is a scarcer resource than law, and prolixity is more frequent than patience and wisdom: the idea of a Fourth Package is already running in the corridors of Brussels. The author has not been made aware of its hypothetical content though, and this would go beyond the range of the present thesis anyway.

Nevertheless, action is possible and even desirable regarding upstream investments. If Russia, the EU's most obvious gas supplier, does not change course, she will fail to meet rising demand addressed by her most profitable consumer. Political conditions are certainly not optimal, and having Russia ratifying the ECT or joining the Energy Community sounds more like wishful thinking than a realistic assumption. Yet Russia needs cash, and the EU is her most accessible source. Her security of demand concerns are legitimate, but not at all costs, and having a Gazprom-like monopoly in a EU Member State or even a neighbouring country is not an option. It is however possible to accommodate Gazprom's wishes to enter the juicy distribution segment if a firewall is maintained with production activities. This is in essence what the certification process is about, but it is insufficient to rebalance Gazprom's market power with the majority of its clients'. Hence the suggestion to create a pan-EU, public Gas Supply Agency which could even cover in the future neighbouring countries to finally achieve price convergence and put a halt to political attempts to divide and rule by offering discriminatory gas tariffs.

The EU would be very optimistic to believe that LNG or shale gas could drastically alter its energy position. It will probably not, even if the EU will benefit from these innovations by having access to a more flexible and diverse import portfolio and by negotiating prices on more favourable terms in long-term contracts. Nonetheless, the pipeline model is to remain, as well as structural interdependence with Russia, and foreign policy experts would add this is for the best since, although the Soviet Union collapsed over twenty years ago, it is still necessary today to engage with Russia and anchor her in the West to keep stability in Europe and obtain her support in global affairs.

Of course, this will not be easy, having in mind rivalry between the EU and Russia over regions such as the Balkans or Ukraine, but they constitute at the same time good test cases for the EU model and its degree of attractiveness. The existing Energy Community may not be the one wished by Jerzy Buzek and Jacques Delors, but still it is based on the Founding Fathers' idea of sectoral integration. Some authors plead for ‘depoliticizing’ gas trade. On the contrary, the EU should rather, like its partners, use it to advance its interests and, before all, its values.

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Annex I : Gazprom's participations in the EU downstream natural gas sector

Countries	Company
Austria	Gazprom will have right to sell directly to customers through subsidiary GWH and Centrex (25% held by Gazprom) GWH : JV with OMV, marketing et trading
Germany	Wingas : JV with Wintershall, Transportation and sales WIEH : JV with Wintershall, Sales, marketing and storage WIEE : JV with Wintershall, sales of Russian gas to Central and South European countries
Finland	Gasum : JV with Fortum and E. ON, distribution North Transgas OY : JV with Forum ; transportation (gas pipeline)
France	Gazprom Marketing and Trading France SAS, Gazprom's subsidiary to sell gas directly to French consumers Fragas : JV with GDF-Suez, distribution et trading
Hungary	Acquisition of share in E.ON Foldag Storage and E.ON Foldaz and in regional gas and electricity suppliers as part of a deal with E.ON concerning its holdings in MOL Panrusgaz : JV with Mol, Marketing and distribution
Italy	Possibility of acquisition of 10% stake in ENIpower with direct sales of gas for electricity production
Poland	EuroPolGaz : JV with PGNiG, Transportation (Yamal-Europe pipeline in Poland)
Czech Republic	Vemex : JV, Gazprom is a shareholder by the mean of Centrex Energy, Trading of Russian gas
Romania	Winrom gas SA : JV WIEE-Distrigas, implication of Gazprom by the mean of WIEE, sales of gas
United Kingdom	Acquisition of share in gas distributor Pennine Natural Gas (PNG) Acquisition of gas distribution company NGSS (Natural Gas Shipping Services) Gazprom Marketing and Trading, Gazprom subsidiary enabling Gazprom to sell Russian gas directly in the UK
Switzerland	WIEE : JV with Wintershall, marketing
Estonia	Acquisition of share (37.5%) in marketing and transmission company Eesti Gaas
Latvia	Acquisition of share (34%) in marketing and distribution company Latvijas Gaze
Lithuania	Acquisition of share (30%) in transmission and distribution company Stella Vitae Acquisition of share (37%) in marketing and transmission company Lietuvos Dujos

Source: Sadek Boussena and Catherine Locatelli, "Gas market developments and their effect on relations between Russia and the EU", *Cahier de recherche*, n°38 ENG, Grenoble, Laboratoire d'économie de la production et de l'intégration internationale, October 2011, p. 4.

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