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THE QUEST FOR GAS MARKET COMPETITION
Fighting Europe's Dependency on Russian Gas more Effectively

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EXECUTIVE SUMMARY

More, not less, competition in the EU's gas markets is required to achieve a Single Market and to therefore reduce Europe's vulnerability to gas supply cuts originating in Russia. In particular, the East-West divide within the EU in terms of competition policy revealed in this paper must be overcome.

The authors investigate the relationship between the level of competition in the gas markets of the EU member states and their vulnerability to supply cuts from Russia's monopoly company Gazprom, which is behind most of the recent gas supply disruptions in the EU. Most markets in Central and Eastern Europe are locked into a tight one-way relationship with Gazprom, not only as sole supplier of gas, but also as investor in the domestic markets, and through long term supply contracts. All incentives in the local gas markets are skewed in such a way as to favour Gazprom. Based on these insights, the paper launches a new "Index of Vulnerability to Gazprom Supply Cuts". The scores of the individual EU member states in this index show that the more the national gas market structure it monopolised, the greater a country is likely to suffer from gas supply disruptions.

The paper further takes a close look at the legislative measures and antitrust actions undertaken by the EU to foster such competition. It examines Brussels legislation moves to liberalise the EU's gas markets since the 1990s. The failure of these policies to foster sufficient competition in the markets led to the ambitious Third Energy Package. The Energy Package, adopted in 2009, attempts to introduce "full ownership unbundling" – a complete break-up of the existing vertically integrated gas majors – because increasing evidence shows that this is the only effective means to foster competition and thus improve customer service, reduce consumer prices and provide a more liquid and flexible market able to respond to crises. The paper also has a closer look at current antitrust cases launched by the European Commission against some of the EU's biggest vertically integrated gas companies in Western Europe. The cases concern "concerted practices" (cartels) and in particular the "abuse of market dominant" position. The company actions under scrutiny had as aim and/or effect to foreclose national markets. This foreclosure leads to insufficient investment in gas infrastructure such as pipelines and interconnectors.

An analysis of how the Commission's regulations and antitrust actions have played out on the ground reveals that the Third Energy Package provides for exemptions to the ownership unbundling rules. It also includes the Third Option, a watered down unbundling requirement, which will not fundamentally change incentives for gas companies. These exemptions and the Third Option will mostly apply to Central and Eastern Europe, thus perpetuating the uncompetitive status quo. Furthermore, the recent antitrust cases have focused on those markets that are least vulnerable to supply cuts from Gazprom, although Gazprom has been behind most recent gas disruptions. The EC's antitrust policy in energy has neglected the Achilles heel of Europe's supply security, its Eastern rim, and in particular the new EU member states. This must change.

The paper concludes that the Commission's priority on increasing competition in gas markets should be shifted to the East. In the short term, new legislation on full ownership unbundling of vertically integrated companies is not likely to be passed – political resistance is too strong. It is thus to Brussels' antitrust action, and especially abuse of market dominance, that the greatest attention should be shifted. Particular emphasis should be given to countries that need it most, namely Bulgaria, the Baltic States, and Slovakia.

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INTRODUCTION

In the summer of 2009, Russia silently withdrew from its commitment to provisionally apply the Energy Charter Treaty (ECT), the plurilateral agreement regulating investment protection and transit in the energy sector in Europe and the CIS. Russia is neither a member of the World Trade Organisation (WTO) nor signatory to any other international economic agreement with other international powers that would limit the discretionary power of its government in the field of energy. Such limitations would have been useful in the recent past. The Kremlin's lack of respect for property rights and for contracts has been costly to foreign energy investors as well as foreign customers. The EU is faced with a government that practically runs a gas monopoly and aspires to build national, government-run champions which can be used as tools of strategic foreign policy. In such a context, disciplines that could to some extent de-politicise Russia's commercial relationship with the EU and subject it to a structured legal order, are even more important.

Not surprisingly, Russia has declined demands that it subject its commercial, and in particular energy-related, policy to international disciplines. What is surprising, however, is that it has taken a long time for the rest of the world to wake up to the fact that Russia has not been prepared to engage in "top-down", that is pluri-/multilateral, approaches to regulate commercial relations. Some have concluded that the best solution would be to disengage from a relationship with a Russian government that is not willing to accept commercial rule of law. Few countries in Europe, however, have been in a position to pursue such a policy. Russia is a major supplier of energy to many European countries. Russia is also a close neighbour and a big market in its own right. Engagement is inevitable. Neither boycotts nor direct confrontation (other options often discussed) are possible, let alone desirable.

What has been the missing link in Europe's overall commercial-policy approach to Russia is a "bottom-up" approach: a willingness and determination to organise its own energy markets in a way that renders them less vulnerable. Current dependency has been profoundly troubling and embarrassing to Europe. Europe's thirst for gas, and the diminution of its own resources, has made it increasingly dependent on imports. That is unavoidable – and not a problem in itself. Yet as in all other sectors, it is troubling when a country (or, as in the EU, a bloc of countries), is dependent on a foreign monopoly state-owned supplier, in this case Gazprom. It is even more troubling when the same group of countries has organised its market in such as way as to reinforce the market power of that supplier. Yet this is what Europe has *de facto* chosen to do. Europe's energy markets remain strongly in the hands of the state, and remain fragmented along national lines. Too often there is too little competition among too small a number of suppliers. This state of affairs, after twenty years of Post-Soviet transition and five years into the integration of Central and Eastern Europe into the EU is not the result of some design by Russia. It is the result of Europe's own failure to unify its market.

Yet there is a growing number of voices calling for the EU to strengthen its Single Market in gas to reduce its asymmetric relationship with Russia. A Single Market for gas would be beneficial from the viewpoint of economic welfare at large. It would also, in the same stroke, reduce the EU's vulnerability to supply disruptions from Russia.[1] Brussels has partly responded to this call, but it has faced fierce resistance from some member states. The so-called Third Energy Package's core ambition to achieve the goal of creating a Single Market and the dismantling of vertically integrated gas companies ("full ownership unbundling"), has thus been watered down: it appears that powerful sections of the EU membership prefer the current structure of the European gas market.

The EU's response to its growing dependency on hydrocarbon imports from Gazprom, Russia's monopoly supplier, especially following the 2006 and 2009 gas crises, follows several tracks: diversifying the energy mix (20/20/20 policy) as well as energy supply routes (e.g. the Nabucco pipeline project) and techniques (Liquefied Natural Gas), improving energy efficiency, incentivizing cross-border infrastructure investment (e.g. Second Strategic Energy Review), and harmonizing and strengthening the competitive rules in the EU energy market. It is on the latter policies that this paper will concentrate.

Parallel to its ambitious legislative agenda to boost competition in energy markets as one of the means to create a Single Market, in particular a crucial drive to dismantle vertically integrated companies, the EU Commission has also stepped up its antitrust activities in the gas sector. The recent €553 million fines on Eon/Ruhrgas and Gaz de France, as well as other investigations involving RWE in Germany and ENI in Italy, are reflections of a new activism designed to discipline the restrictive practices by oligopolies that have led to underinvestment in infrastructure, restrictions in market access for potential competitors, and a national segmentation of the gas markets. Yet this new policy has not been comprehensive. It has so far only scratched the surface, and has failed to address problems with the underlying market structure. In particular, as this paper will argue, it has not acted on the EU's Eastern flanks and in particular in its new member states, despite the fact that competitive conditions in these markets are generally far worse than in the EU's Western member states. Is it really only a coincidence that Gazprom is strongly present in this market not only as the monopoly supplier, but also as investor in these countries' markets?

German Chancellor Angela Merkel is known for having told Vladimir Putin that "Gazprom should be proud to be treated like Microsoft", meaning that it should not resist the application of the same sort of antitrust policy that the American software giant had to face up to a few years ago. Of course, one cannot equate Gazprom with Microsoft. Microsoft had a dominant position across the EU, Gazprom only in some EU markets, for example. Nevertheless, practice shows that the EU has not dared to actually treat Gazprom with the same procedural "respect" in recent years, leaving the gas markets subject to monopolies and, in Central and Eastern Europe, to erratic regulatory supervision, and severe transparency deficits. This paper argues that it should now improve these activities, on top of its other recent moves to increase security of gas supplies. It should apply its antitrust tools to the Central and Eastern European Markets in a systematic and effective fashion. Under current EU energy market legislation, those countries in Europe's Eastern rim which would most require a thorough boost in competition are precisely those which will not receive it, because they will either apply the Third Legislative Package's weakest provisions or be exempted from them. This makes antitrust policies, in particular the repression of abuse of market dominance the more important. But so far the EU's antitrust policies have *not* given adequate priority to the region that has proven to be the Achilles heel in the EU's vulnerability to supply disruptions from the East.

The paper is structured as follows. The first section analyses the dependency of the EU member states on Russian gas and what role Gazprom-invested companies play in these countries' markets. The second section investigates the EU's legislative measures to create a Single Market and how the attempt to foster it through greater competition has not been fully successful. The third section analyses competition policy in the EU's member states located in its the Eastern Rim and how lack of enforcement of EU legislative proposals and antitrust policies perpetuates the EU's current vulnerability to supply cuts from Russia. It also discusses what could be done about the current situation.

1. GAZPROM AND THE EU'S ENERGY MARKETS

GAZPROM'S POSITION AS EXPORTER AND INVESTOR IN THE EU'S EASTERN RIM

Gazprom is responsible (wholly or partly) for the most important gas supply disruptions experienced in the EU. One reason why this company, which holds the monopoly over gas exports from Russia and a quasi-monopoly over gas production at home, has not hesitated to resort to supply cuts is its own favourable position as investor and importer operating in the domestic gas markets of some EU member states, notably in those which are most dependent on Russian energy. This can be clearly inferred from Table 4 in this paper's annex. These countries are the Central and Eastern European member states, the Baltics, Finland and Greece; in short: Europe's Eastern flanks.[2]

The purpose of this display of linkages is to demonstrate the involvement of Gazprom in more than just delivering the gas to wholesalers or distributors in the importing country. Gazprom is considerably more than an exporter of gas. Its expansion in the region has in some important cases been undertaken jointly with some of the EU's energy majors, generally E.On/Ruhrgas (in which Gazprom has a 6.4% share). Unsurprisingly, their collaboration occurs in those markets in which there has been rather fierce resistance to the European Commission's radical reform plans.

Bulgaria, Slovakia, Hungary and the Czech Republic were the most strongly hit markets by the January 2009 gas crisis. The Baltic countries have regularly been subjected to supply disruptions before and after their accession to the EU. This is generally ascribed to their high degree of dependence on Russian imports: up to 100%. This is true. Yet the problem runs deeper. The structure of the markets in those countries is such that supply disruptions are not ever likely to lead to a market-based "sanction" (i.e. switching to a competing provider) since those markets are locked into a monopolised relationship with Gazprom, either as a stakeholder in the most important companies or its involvement in the intermediary gas trading entities that import gas from Russia. Furthermore, the local gas monopolies/oligopolies tend to be locked into long-term gas supply contracts with Russia (see Table 1).

TABLE 1: MAJOR LONG-TERM SUPPLY CONTRACTS BETWEEN GAZPROM AND EUROPEAN GAS INCUMBENTS SINCE 2006

COUNTRY	COMPANY	TERM OF CONTRACT (SIGNED)	TOTAL VOLUME	AVERAGE ANNUAL VOLUME	% OF NATIONAL GAS IMPORT VOLUME IN 2007
Bulgaria	Bulgargaz	2011-2030 (2006)	na	3 Bcm	88.2
Czech Republic	RWE Transgas	2014-2035 (2006)	na	9 Bcm	103.4
Slovakia	SPP	2019-2019	na	Na	Na
Germany	E.ON Ruhrgas (via Nordstream)	2011-2036 (2006)	100 Bcm	4 Bcm	4.5
Germany	E.ON Ruhrgas	2020-2035 (2006)	300 Bcm	20 Bcm	22.7
Austria	OMV	2012-2027 (2006)	na	7,5 Bcm	75.1
Italy	ENI	2017-2035 (2006)	na	22 Bcm	29.4
France	GDF	2017-2030	na	12 Bcm	25.6

Source: ECIPE estimations based on Catherine Locatelli (2008), "Gazprom's export strategies under the institutional constraint of the Russian gas market", Cahier de Recherche No 6 bis, LEPII.; Reuters

GAZPROM'S RESPONSE TO THE EU'S DRIVE TO LIBERALISE ITS ENERGY MARKETS

Gazprom's presence in the EU and in particular in Central and Eastern Europe is the result of two waves of liberalisation – the privatisations of the 1990s, and, also, quite paradoxically the EU's more recent Brussels-led liberalisation policies in the old and new member states. Table 4 in the annex provides an overview of Gazprom's best known investments in the EU's member states. The last EU-led liberalisation moves have allowed Gazprom to acquire interests in downstream and retail markets.

Yet the gradual liberalisation of the European gas market has also posed a dilemma for Gazprom. On the one hand, as spot trading and short-term gas sales (on which more in the next section) are likely to constitute an ever greater share of the gas market than in the still prevailing traditional model based on long term contracts with domestic monopolies, there is an incentive for Gazprom to participate in such trade. This would allow it to exploit margins between its marginal costs and short-term spot prices. On the other hand, it is exactly this short-term trading that will contribute to permanently lower gas prices in the European market. Such a permanent gas price may in the long term undercut Gazprom's revenues, as the company is becoming increasingly inefficient. Furthermore, a trend towards spot trading would undermine the contractual nature of the Russian-European gas relationship. The underlying rationale here is that increased price-flexibility calls for more volume-flexibility. Russian exports to a liberalised European gas market, then, would be more susceptible to *both* increased price- and volume-volatility. However, given its current business model, Gazprom needs constant, reliable sales income.

Moreover, the potential decline of national quasi-monopolies induced by progressive liberalisation of the EU's markets (of which too, more below), will harm Gazprom as their main contracted supplier. Although current incumbents still have contracts with Gazprom, new entrants at the wholesale level may import from other countries, as spot trading expands and the share of liquefied natural gas (LNG) of European gas consumption increases. LNG can be shipped across the world, which renders the natural gas wholesale market less oligopolistic. If, therefore, Gazprom is to defend its market share in a liberalised environment, it is indispensable that it expand its presence in downstream markets. Gazprom has long tried to do so. Yet Gazprom's downstream integration has long faced the risk of destabilising its commercial relations with traditional clients; as Gazprom increasingly tries to compete, rather than cooperate, with national incumbents, the latter become less interested in cooperative long-term supply contracts, on which Gazprom, in turn, depends. The only strategy open to Gazprom, therefore, is to acquire shares of these incumbents, rather than act as a new entrant to the retail and distribution market.

In short, Gazprom faces a choice between *either* adjusting its commercial and industrial strategy to a competitive single market *or* devising an energy policy aimed at maintaining the status quo, that is, its system of contracts with national incumbents, in which it maintains investment stakes as a means of influencing their policies. The latter has been Gazprom's priority choice so far.

CONSEQUENCES FOR SECURITY OF GAS SUPPLIES IN THE EU

The current gas market constellation has had, as was painfully felt during the last gas crisis, detrimental consequences. The monopolistic structure of the gas markets on the EU's Eastern rim has revealed all its flaws: indeed, the countries that have been least able to respond to the gas supply cuts are those that have done the least to build a diversified supply mix with less reliance on imports from Russia and on the domestic companies in which Gazprom is involved. Bulgaria, for instance, has a state controlled gas sector that is fully dependent on imports from Russia. The intermediary in the market is Topenergo, which is a subsidiary of Gazprom. Few efforts have been made to diversify away from dependence on Russian gas. Slovakia, to take another example, is also 100% dependent on imports of Russian gas, and its market is dominated by the distributor SPP, a joint venture between the Slovak government and Slovak Gas Holding, a Netherland's-based consortium co-owned by E.On/Ruhrgas and Gaz de France, and reputed to have links to Gazprom as well[3]. SPP has just recently signed a new long-term supply contract with Gazprom. It is not surprising to find that Bulgaria and Slovakia were the two countries that were most unable to respond effectively to the gas disruption in January, 2009. The problem for these countries is that all actors in the supply chain have an incentive structure linked to Gazprom. In the view of these companies, it is not economically rational to diversify imports or to invest in significant storage capacity.

TABLE 2: THE JANUARY 2009 GAS CRISIS IN THE EU

EU MEMBER STATE excl Malta and Cyprus	**SUPPLY DISRUPTIONS**
Austria	50-75% supply disruptions January 2009
Belgium	Not applicable
Bulgaria	More than 75% supply cuts January 2009; strong impact on population and economy
Czech Republic	More than 75% supply cuts January 2009; but low impact on economy
Denmark	Not applicable
Estonia	No disruption at that date. Yet Estonia has one single connection to Russian gas pipeline with total isolation from other EU gas markets
Finland	No disruption at that date. Yet Finland has one single connection to Russian gas pipeline with total isolation from other EU gas markets
France	less than 25% gas supply cuts in Jan 09
Germany	less than 25% gas supply cuts in Jan 10
Greece	More than 75% supply cuts January 2009
Hungary	More than 75% supply cuts January 2009; but low impact on economy
Ireland	Not applicable
Italy	25-50% supply disruptions Jan 09
Latvia	No effect in January 2009. Yet Latvia has one single connection to Russian gas pipe-line with total isolation from other EU gas markets
Lithuania	No effect in January 2009. Yet Lithuania has one single connection to Russian gas pipeline with total isolation from other EU gas markets
Luxembourg	Not applicable
Netherlands	Not applicable
Poland	50-75% reductions in gas supply Jan 2009
Portugal	Not applicable
Romania	25-50% supply disruptions Jan 09
Slovakia	More than 75% supply cuts January 2009; estimated €1bn losses for industry
Slovenia	50-75% reductions in gas supply Jan 2009; no major economic impact
Spain	Not applicable
Sweden	Not applicable
United Kingdom	Not applicable

Sources: Regional Centre for Energy Policy Research; The European Natural Gas Network

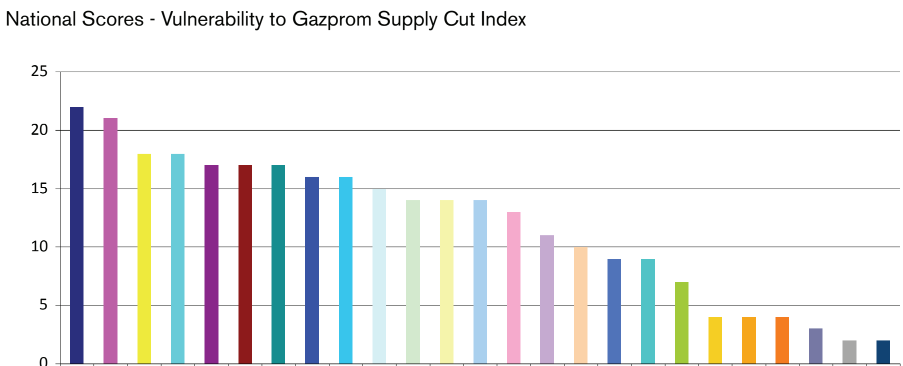
To cut a long story short: past gas market liberalisation in the EU has provided an opportunity for Gazprom to strengthen its position in the EU and the new member states in particular. Central and Eastern European countries cumulate many handicaps that render them particularly vulnerable to supply disruptions: up to 100% dependency on Russia for their gas imports, absence of integration with other EU markets, lack of competition in the gas markets, and ownership and contractual relations in gas trade with Gazprom and its local or other European partners that reinforce their dependency on Russia. Figure 1 below displays ECIPE's estimates of the EU member states' greatest vulnerability to supply disruptions from Russia. The most exposed countries are Bulgaria, Latvia, Estonia and Slovenia.

These estimates stem from an index developed by ECIPE, the "Vulnerability to Gazprom Supply Cuts Index" for which the details are set out in Table 5.2 in the annex.

BOX 1: "INDEX OF VULNERABILITY TO GAZPROM SUPPLY CUTS"

ECIPE developed a straightforward index of "Vulnerability to Gazprom Supply Cuts" in 25 EU member states. The indicators are: share of gas in primary energy consumption; import dependency on Russian gas; which Third Energy Package "unbundling" provision a country will adopt; whether a country has adopted the Second Gas Directive of 2003; the level of retail gas market concentration; the level of concentration in the wholesale gas markets; a compound score of competition levels in domestic gas markets made of the three previous criteria; the country's World Economic Forum rank in "Effectiveness of Antimonopoly Policy"; a score in proven vulnerability to Russian supply cuts (whether and how a country has suffered from gas supply disruptions); the presence of Gazprom in the domestic market as investor; and whether a country used to be part of the Soviet Union or the former Soviet bloc (which has historically proven an incentive for Moscow to decide in favour of gas cuts). An overview table (Table 5.1.) for all these indicators is provided in the annex to this report.

FIGURE 1: EU MEMBER SCORE IN ECIPE'S "VULNERABILITY TO GAZPROM SUPPLY CUTS INDEX"



	BG	LV	ET	SK	AT	HU	LT	PL	RO	FI	EL	IT	SL	FR	D	B	CZ	LU	ES	DK	IE	UK	SV	NL	P
Total	22	21	18	18	17	17	17	16	16	15	14	14	14	13	11	10	9	9	7	4	4	4	3	2	2

One can expect much more resistance to European liberalisation in those countries and some major Western markets, given this particular relationship with Gazprom. Yet any proposed solution to reinforce supply security that would lead to an exclusion of Gazprom is likely to be counterproductive. As the case of, say, the Netherlands or the UK shows, the fact that Gazprom has subsidiaries there *per se* (see Table 4 in the annex) does not stop the market from functioning on competitive terms. Both countries have a consistent competition policy. In particular, they have forced previously vertically integrated monopolies to "unbundle" their ownership of production, transmission and supply activities. This policy has unleashed competition in these markets, and contributed to the development of two of Europe's most flexible and liquid gas markets, as well as to a substantial degree of supply security for those countries. The experience of these countries is one of the factors that have led the European Commission to propose "full ownership unbundling" in the Third Legislative Package – to which we will come in the following section.

2. ENERGY MARKET REFORM IN THE EU: LIBERALISATION WITHOUT AN ADEQUATE COMPETITION FRAMEWORK

Will the Third Legislative Package untie the competitive knots that strangulate the EU's gas markets? The section below examines Brussels' liberalisation and competition legislation initiatives with a particular emphasis on the last Gas Directive of 2009. As will be explained in detail below, the most important provision of the Gas Directive, full ownership unbundling, was watered down due to member state resistance. As a consequence, the chances for more genuine competition and therefore greater supply of security, in particular on Europe's Eastern borders, are not good. This section will provide an historical and analytical overview of the EU's gas market that explains the genesis of the Commission's radical proposals in its Third Legislative Package. It assesses whether the legislation as it has been adopted following two years of negotiations with member states is likely to contribute to solving the EU's supply security concerns in particular to its East.

EARLY ATTEMPTS AT ENERGY MARKET UNIFICATION AND LIBERALISATION

During the 1980s and the 1990s, demands for the integration and liberalisation of the European gas market grew increasingly prominent on the European political agenda. A modest set of reforms was legally embedded in the first Gas Directive of 1998. In 1998 the European gas market resembled a patchwork of fragmented national markets exhibiting high market concentrations. To the extent that regulatory bodies existed at the national level – their legal remit and practices were utterly heterogeneous. The first Directive timidly set out to reform this firmly entrenched status quo. While as early as the year 2000 the European Commission expressed its expectation that full liberalisation would be achieved by 2004, it eventually acknowledged in 2002 what had been evident since the publication of the first official benchmarking report published by the Commission in 2001: the European gas market still lacked signs of improving competition, cross-border integration and harmonised regulation.

Consequently, following tenacious political back-and-forth between the European Parliament, the Commission and major member states, the second Gas Directive was adopted in June 2003. Its objective was to accelerate the liberalisation process thanks to stronger requirements on ownership structures of energy companies to boost competition. Largely due to the active resistance of France and Germany, however, the reform progress which could possibly be achieved by this second Directive was severely curtailed from its outset. Most importantly, the unbundling requirements for vertically integrated companies had not been strengthened relative to the first Directive.

In June 2005, as it became evident that the European gas market was still characterised by rising prices, high market concentrations and slow integration at best, the Commission initiated its so-called Energy Sector Inquiry[4]. It implicitly concluded that certain market parameters were unlikely to cease to impede the development of a fully competitive internal market even after July 2007, the deadline for the transposition into national law of the second Gas Directive. In spite of its rather critical assessment of past legislation, however, the inquiry's overall gist was largely optimistic. Thanks to its unprecedented precision and depth, the sector inquiry went a long way to providing the key parameters of further legislation.

It was clear to all parties involved in the process, policy-makers and market stakeholders alike, that a third legislative package was needed to catalyze further the initiated reforms. Yet opposition to the reform process in itself had not abated since the 1990s. A number of stakeholders brought their influence on national governments to bear on the policy-making process. As a result, the Commission again struggled to translate its energy strategy, formulated in the Sector Inquiry and other documents, into adequate legislative provisions. Major concessions were made to member states. Most notably, the first-best policy towards vertical market foreclosure, namely ownership unbundling of vertically integrated gas companies, came to be coupled with, and thus watered down by, the economically less viable alternative of 'independent system operators' (ISOs).

TABLE 3: MAJOR DEVELOPMENTS IN THE EU'S ENERGY MARKET LIBERALISATION PROCESS

June 1998	First Gas Directive (1998/30/EC)
June 2003	Second Gas Directive (2003/55/EC)
March 2006	Energy Green Paper
January 2007	Energy Sector Inquiry
July 2009	Third Gas Directive (2009/73/EC)

The principal objectives of the liberalisation process are to complete the internal market and to make it as competitive as possible. It is hoped by the European Commission that this will increase efficiency, reduce prices and improve pan-European supply security. There remains widespread academic, policy and business sector opposition to the notion that a competitive internal market is desirable by way of achieving these goals. It has been argued, for instance, that gas prices will generally rise as residual markets are generally served by inefficient new entrants.[5] Some have claimed that securing supply of energy should remain in the remit of national governments in much the same way as national defence. This view ignores the fact that economists have worked out ways in which policy-makers and regulators at all levels may pursue all three objectives simultaneously.[6]

BASIC PARAMETERS OF THE CURRENT EU GAS MARKET BEFORE THE THIRD GAS DIRECTIVE OF 2009

THE PROCESS LAUNCHED by Brussels in the mid-1990s to integrate the EU's market through greater liberalisation has not achieved the results hoped for. This section outlines the current state of play, before implementation of the 2009 Gas Directive that aims to address the remaining structural problems of the EU's gas markets.

Remaining Market Concentration

Today, despite the liberalisation drives launched in 1998, the Continental European gas market is oligopolistic with respect both to production and the wholesale sector. Production and wholesale are industrially separated, since most production takes place outside the EU. In addition, there is a distribution system at the retail level which is almost entirely in the hands of local quasi-monopolies. Although there is a considerable number of gas producers active on the global gas market, the EU in general and some regions in particular are highly dependent on a very limited number of producers, due to infrastructure constraints as well as the fact that gas transport costs increase more than proportionally with distance. The EU imports 78% of its gas consumption; for continental Europe this figure is even higher. 84% of total imports in 2008 came from Russia, Algeria and Norway.[7] Given that production in these countries is more or less dominated by one energy giant respectively, it becomes evident that the production segment of the European gas market is highly oligopolistic.

As the Commission found in its Energy Sector Inquiry,

> "at the wholesale level, gas markets maintain [as of 2005] the high level of concentration of the pre-liberalisation period".[8]

Table 3 below illustrates that the five most voluminous wholesale markets in Europe are dominated by incumbent national energy giants[9] (See also Table 5.1 in the report's annex). The interesting exception to the rule is the UK, whose largely autarkic gas market was gradually liberated prior to 2004. More specifically, the UK legislated full ownership unbundling of the former gas supply company Centrica, the network operator NGT and a gas production company BG Group. The case of the Netherlands, for its part, illustrates the fact that significant domestic production of gas does not alter the market concentration relative to countries that depend on gas imports. This confirms that the lack of competition is mainly a structural problem.

Entrenched Vertical Foreclosure

Vertical integration continues to pose another major obstacle to competition: undertakings at different economic levels of the supply chain are commonly owned or controlled by so-called vertically integrated undertakings. Prior to the Third Legislative Package, affiliated gas undertakings operating in different market segments were required to be legally separated and to run their day-to-day operations independently. This regulation proved to be insufficient, as affiliated companies still faced economic incentives to engage in market foreclosure. The Commission acknowledged in its Sector Inquiry that 'the current level of unbundling of network and supply interests has negative repercussions on market functioning and on incentives to invest in networks.'

More specifically, operators of transmission systems and other gas infrastructure are suspected of favouring their upstream affiliates at the expense of non-affiliates. One major aspect here is the lack of openly accessible, reliable and timely information, especially with respect to short-term availability of pipeline capacities. The Commission particularly lamented the information asymmetry between vertically integrated incumbents and their competitors, which posed a considerable entry barrier.

Furthermore, vertical integration of transmission and supply undertakings, even where they are legally separated, has led to a situation in which investment decisions are taken with a view to the supply interests of the integrated company, rather than in the interest of the network at large. As the network is not designed to maximise the volume of gas transports, new entrants suffer from lack of transmission and transit capacities. This is exacerbated by long-term contracts between supply, transmission and production undertakings.

In addition to the widespread vertical integration of supply and transmission undertakings, there prevails a considerable degree of vertical foreclosure in the form of long-term gas supply contracts between gas producers and incumbent wholesale suppliers. This makes it decidedly difficult for new entrants to access gas on the upstream market. In principle, the longer the duration of these contracts, the smaller the scope for competition. The average duration of contracts involving European companies is roughly 19 years, the longest contract having been signed for a period of 39 years[10]. Although even the European Commission has no access to verifiable information on the number of long-term contracts, the authors estimate that 10 to 15 long-term contracts are signed annually. Furthermore, these contracts are often renewed or extended in a way that does not allow for effective ex ante competition.

Long-term contracts are used to minimise transaction costs, and to overcome the 'hold-up problem' which occurs in the absence of vertical integration[11]. This gives rise to the desirability of long-term contracts on the part of both buyers and suppliers, and thus constitutes a systemic obstacle to a competitive market.

The problematic feature of the hold-up problem is that it arises most prominently where market foreclosure through vertical integration is impossible, as this is the more standard method of minimizing transaction costs. Historically speaking, the European-Russian gas relationship came to be based on uncommonly long-term contracts because mergers between Russian producers and European downstream undertakings were impossible.

Another problem is that, notwithstanding liberalisation, long-term contracts traditionally index gas import prices to oil or even general energy derivatives, leading to a close correlation between gas prices on the one hand and oil and energy prices on the other. Yet since demand for energy in general and gas in particular does not normally exhibit such a close correlation, this linkage has often resulted in wholesale prices for gas that failed to reflect changes in supply and demand for gas. This evidently led to shortages and temporary lack of liquidities in the European markets. Again, this was perceived as being highly detrimental to security of supply. The hope is that spot prices for gas at short-term commodity hubs will be more reflective of underlying demand for and supply of natural gas itself.

Lastly, access to gas storage is severely foreclosed by long-term reservations. This often results in reserved storage not being fully used. As with vertically integrated supply, transmission and distribution undertakings, unbundling of suppliers from affiliated storage operators has not been sufficiently far-reaching. Discrimination against third parties is still prevalent. The distribution segment exhibits similar problems.

Entrenched Market Fragmentation

It is still generally the case that incumbent suppliers rarely enter other national markets as competitors. Partly this is attributable to final-destination clauses in long-term contracts, which obligate suppliers to sell imported gas to contractually agreed national wholesale markets. It is also partly due to simple path dependency.

It was hoped by the Commission that new entrants would fill the gap and integrate the national segments of the European gas market. This has not happened. The reason for this is to be identified with unavailable or limited cross-border capacities. The small size of the balancing zones even after the implementation of Directive 2003/55 was considered the main reason for the complexity and excessive costs of transporting gas across the EU area. These costs were increased by highly complex and divergent rules in each zone, and by the obligation to reserve capacity at each border point. In general, limited primary capacity in transit pipelines, or so-called interconnectors, was controlled by incumbents in accordance with contracts signed prior to liberalisation, which were thus not subject to anti-discrimination rules. Thus incumbents had neither economic incentives nor legal obligations to serve the needs of new entrants.

Increasing Signs of Rising Competition in the EU's Gas Market

There are, however, signs that the gas markets in the EU are changing the structure of their supplies as a result of both technological progress (LNG technology) and the effect of the EU's – if incomplete - liberalisation policies: long-term contracts are in relative decline, more liquid markets such as gas swap[12] arrangements and spot markets are rising, not least because LNG markets have developed, as investment projects by European and Middle Eastern oil and gas players have come on stream.

The EU has witnessed a noticeable trend towards less recourse on the margin to long-term contracts and a concomitant development of spot markets. This trend is not uniform across the EU. However, the January 2009 gas crisis, as well as the recent decline of the oil price has accelerated the trend. The head of the Austrian Energy Regulator E-Control noted in a recent interview[13] that

> "today for the first time companies realise that the long-term contracts they have defended for many years could be also averse, because they oblige them to buy a lot of gas for a very high price."

Indeed, they have been recently subject to fine threats by Gazprom because, due to the recession and a tendency to buy less from Gazprom, there is roughly $2.5 billion worth of undelivered gas to the EU.[14]

Liquefied natural gas (LNG) supplies have also been part of the EU's security of supply and competition strategy. LNG has been a useful tool for meeting marginal demand, globally as well as in Europe.[15] LNG has traditionally been imported by national incumbents owning LNG terminals in the initial stages of the development of the technology. This has prevented LNG imports from increasing downstream competition. Yet recent trends point to more capacity going to new entrants and to producers, thus widening upstream competition. The January 2009 gas crisis has also already induced greater use of LNG gas and a more efficient use of existing storage capacity and LNG terminals, thus creating greater liquidity and marginally increasing gas-to-gas competition in the EU[16].

THE EU COMMISSION'S APPROACH IN THE 2007 ENERGY PACKAGE

The new proposals made by the EU Commission in its 2007 Energy Package draw the lessons from the developments in the gas markets. Its approach to unblock the remaining competition hurdles in the EU's gas markets that hamper the creation of a flexible, liquid, unified Single Market is described below.

In its *Energy Sector Inquiry*, the European Commission concluded that 'only a strengthened regulatory framework can provide the transparent, stable and non-discriminatory framework that the sector needs for competition to develop and for future investments to be made.' Reinforced coordination between national energy regulators, particularly as regards cross-border issues and areas most critical for market entry, was regarded as indispensable to overcoming the persisting regulatory cross-border gaps. Clearly, these cannot be remedied by competition rules alone. Coordination between transmission system operators should be reinforced, and it was decided that enhanced powers for independent national regulators would help further increase the competitiveness of the European gas market.

The single most important aspect of the third legislative package is the extension of the unbundling requirements for gas (and electricity) companies controlling or owning – in ways that will be defined – both production/supply facilities and transmission systems. The Commission distinguishes analytically between three major segments of the gas market: production and supply, transmission, and distribution. Hydrocarbons undertakings can naturally be active in any or all of these segments simultaneously, as was certainly the case with traditional monopolies and has long been the case with most privatised national gas companies.

Competition law passed initially by the EU in the first and second Gas Directives sought to break up such traditional vertically integrated undertakings into legally separate entities with the aim of furthering a competitive, transparent, non-discriminatory internal market. The economic rationale here was the assumption that, under perfect market conditions, an independent transmission system operator would strive to diversify its customer portfolio by offering transparent, non-discriminatory tariffs, and maximise their transmission capacity qua revenue-maximisers.

Appropriate legislation was passed in the second Gas Directive in 2003. Implementation of this Directive by national law-making bodies was hesitant and partial (see Table 5.1 in the annex). The absence to date of an internal market for gas is partially attributable to this failure to implement the existing directives and regulations. However, as mentioned in the introduction, the Commission was quick to acknowledge that the unbundling requirements set forth by the Directive, even where they had been fully implemented, were grossly inadequate to separate the economic incentives of vertically integrated gas undertakings.

For example, the German energy giant E.ON transferred its transmission system assets to a new, legally separate subsidiary, E.ON Gastransporte GmbH. It is not surprising that the latter was soon found to disseminate confidential and sensitive market information to its parent company at the expense of other gas suppliers. Although E.ON Gastransporte was legally required to provide its services to any supply undertaking, the supply and marketing branch of E.ON was greatly advantaged by favourable balancing period conditions.

The main way in which the third Gas Directive differs from preceding regulations thus pertains to unbundling requirements. The two alternative requirements set out in the third Directive go beyond earlier provisions that required legal separation.

At its simplest, gas transmission systems will henceforth be operated by so-called transmission system operators (TSOs) that *either* are independently in charge of operating, administrating and even developing the transmission system owned by a vertically integrated undertaking, *or* are the direct, i.e. majority, owners of the transmission system assets they operate. The latter option amounts to ownership unbundling; the former option has been called the ISO solution.

Notwithstanding the considerable concession that the ISO solution makes to existing vertically integrated gas undertakings – namely the possibility of minority shareholding and thus revenue extraction - France and Germany, amongst other member states, have vehemently resisted it. Instead, at the Energy Council of June 2008, they introduced an alternative model, now called Independent Transmission Operator (ITO) or the Third Option. The main difference between the ISO and ITO requirements is that under the latter arrangement the parent company retains important modification rights, for which purpose it appoints a supervisory board. The supervisory board not only appoints the management of the TSO, but, more importantly, has a pivotal say in important financial decisions. As a consequence, the vertically integrated undertaking remains in control of investments carried out by the TSO, though, like in the ISO model, the parent company cannot control the management of the TSO. The TSO is considered a means to not rattle the status quo in any significant way.

3. AFTER THE THIRD ENERGY PACKAGE: CAN SECURITY OF SUPPLY STILL BE IMPROVED?

The current situation is this: the Third Energy Package was passed in the spring of 2009 in its watered down version. It is precisely the countries that have proven to be the most vulnerable to supply disruptions from the East in January 2009 and further in the past who will adopt the weakest proposition for "unbundling": the ITO, or the Third Option (see above, and Table 5.1 in the annex). This is the case of Bulgaria, Slovakia, and Latvia, for example. Other countries will seek exemptions (see below). In such a context, what can be done to improve competitive conditions? The EU Commission itself has given answers to this question.

PROHIBITION OF CARTELS AND OF ABUSE OF DOMINANT POSITION IN THE ENERGY SECTOR

In parallel to its legislative activity the Commission has leveraged the EU's basic antitrust rules (Article 81 and 82 of the Treaty – prohibition of cartels and of abuse of market dominance) to counter the anticompetitive behaviour of the European energy majors. In the past the EU Commission has forced changes on long-term gas supply contracts that involved Gazprom and national incumbents, in Austria[17] and in Germany. Germany's case is interesting[18], since it involved British Gas and Wingas, a joint venture between Wintershall and Gazprom (see Table 4). At that time, the Commission had set its eye on disciplining the territorial restrictions included in long-term contracts with other monopolistic suppliers beyond Gazprom, namely the Norwegian and Algerian companies. The EU Commission's moves in those areas must be seen as a parallel strategy accompanying the preparations and implementation of the 2003 Energy Directive.

Recently, the EU's new regulatory drive was also accompanied by competition rule enforcement. In July 2009, the competition authority in Brussels imposed heavy penalties of more than Đ500 million on E.ON and Gaz de France for concerted practices dating back to 1975 around the joint MEGAL pipeline:

> "they agreed not to enter each other's home markets through two side letters which prohibited GDF from supplying customers through MEGAL and Ruhrgas from transporting gas via the pipeline to France". [19]

More interestingly, a new emphasis has now been given to *abuse of market dominant position*

(Article 82), in order to tame the structurally and inevitably restrictive behaviour of oligopolistic market players. This new trend clearly draws on the insights of the Energy Market Inquiry. In the spring 2009, the German company RWE gave in to pressure from the competition authorities to divest investment in its Western German high-pressure gas transmission networks. The company had come under investigation on suspicions that it had abused its position to refuse gas transmission services to other companies, and that it had displayed

> "behaviour aiming at lowering the margins of RWE's downstream competitors in gas supply".[20]

The EU Commission is currently examining proposals by the consortium GDF Suez to remedy concerns that it has been abusing its market dominant position in France.

> "The Commission was concerned in particular that GDF Suez might be closing off competitors from access to gas import capacity into France"[21].

The EU Commission is also investigating alleged foreclosure of Italian gas supply markets in Italy by ENI. The Commission suspects ENI of

> "capacity hoarding and strategic underinvestment in the transmission system leading to the foreclosure of competitors and harm for competition and customer in one or more supply markets in Italy".[22]

These cases highlight the correlation between absence of effective competition in the gas markets and the underinvestment and exclusivity in markets that fuels a country's vulnerability to supply disruptions. One advantage of antitrust policy is that it can be applied in the energy sector independently of the status of the countries in which the companies investigated operate within the EU's Energy regulatory framework (e.g. implementation of Second Energy Package of 2003, choice of Third Option in unbundling package). Antitrust policy is a horizontal policy in the EU.

THE ENERGY PACKAGE AND COMPETITION POLICY IN CENTRAL AND EASTERN EUROPE

Energy Package Exemptions

The January 2009 gas crisis has led to new legislative responses from Brussels. A new Regulation was proposed by the Commission concerning measures to safeguard security of gas supply[23]. This regulation emphasises the need for investment in storage capacity and cooperation among transmission systems operators in cases of emergency. It is clearly aimed at helping the new member states. All this is certainly a positive and helpful response to the crisis. However, the regulation does not address the underlying structural problem of competition that reinforces their particular vulnerability to gas supply disruptions.

Furthermore, when taking a closer look at the details of the Energy Package and the Gas Directive one realises that precisely those markets that would need most improved competition conditions to boost investment and connect their gas markets to the rest of the EU are those that are most exempted. The Gas Directive explicitly allows for an extensive host of derogations, that is, discretionary and temporary national and case-by-case exemptions from the unbundling rules. Most importantly, national governments are entitled, and are in practice likely, to decide against fully implementing the new unbundling requirements if their national gas markets are either (1) geographically isolated or (2) nascent, or if they (3) require infrastructure investments that are concomitant with considerable economic risk and/or can be expected to advance the Community's security of supply. As regards (1), the third Gas Directive[24] sets out that

> "Member States not directly connected to the interconnected system of any other Member States and having only one main external supplier may derogate [from the article requiring effective unbundling of transmission system operators]...A supply undertaking having a market share of more than 75% shall be considered to be a main supplier."

This clearly defeats the whole purpose of the Third Legislative Package.

The next subparagraph explicitly exempts Estonia, Latvia and Finland from the unbundling requirements on these grounds. This obviously makes for the interesting fact that Gazprom's investments and subsidiaries in Finland and the Baltic States will not be affected by the unbundling requirement for the time being, that is, as long as *both* a) Gazprom remains the main external supplier of gas to these countries *and* b) these countries remain cut off from the transmission systems of other member states. As the Gas Directive states, the isolated-markets derogation

> "shall automatically expire where at least one of [these conditions] no longer applies".

Under current circumstances it is not likely that the conditions for greater security of supplies will improve anytime soon.

It is clear that any drive for more competition in those markets must be accompanied by investments in alternative supply possibilities. Indeed, in a worst-case scenario, the process of enforcement *could* lead to short-term gas supply disruptions by Gazprom. In that sense the 2009 Security of Supply regulation put forward by the Commission this year, with its insistence on providing for emergency and storage solutions, goes in the right direction. But both the Energy Package exemptions and the Security of Supply regulations fail to address head-on the underlying competition problem which contributes to entrenching Europe's Eastern overreliance on Gazprom.

This leaves us with the avenue offered by antitrust rules.

Abuse of Market Dominance: the Gap in the EU's Eastern Rim

So far, contrary to its strategy in the big markets in the West, the EU Commission has not openly challenged the situation in Central and Eastern European markets.

EU legislation does not appear to forbid its implementation in markets that are otherwise exempted from energy sector-specific regulations, such as exemption from unbundling. The 2003 *Regulation on Art 81 and 82*[25], stipulates that

> "In order to ensure the effective enforcement of the Community competition rules and the proper functioning of the cooperation mechanisms contained in this Regulation, it is necessary to oblige the competition authorities and courts of the Member States to also apply Articles 81 and 82 of the Treaty where they apply national competition law to agreements and practices which may affect trade between Member States".

With the new wave of enlargement the new member states have been obliged to adapt the

Community Acquis. In order to adapt competition institutions to enlargement, the EU Commission has *decentralised* implementation of the EU's competition rules. This decentralisation has had two results of interest to this analysis:

Firstly, clearly, the new member states are obliged to adopt all the EU's competition rules. It appears that in most cases, the law has been harmonised. However, Slovakia, for example, has required Commission pressure to comply with integration of articles 81 and 82 into national law, as late as 2009.[26]

Secondly, however, decentralisation has led to poor enforcement. Competition policy in the new member states is much weaker than in the more prosperous and institutionally developed markets of the West. Domestic energy regulators are also weak[27]. This has led to the following situation. In Western European member states, and in parallel to EU Commission activity, judicial activity to boost competition in energy markets was stepped up. This is the case in France, Spain, the United Kingdom[28], and Germany. Germany's case is of particular importance because it is pivotal in the entire debate on energy markets in the EU. In 2008, the German Federal Cartel Office (FCO) initiated more than 30 proceedings against gas suppliers from all regions of Germany[29]. None of this is happening in Central and Eastern Europe where such activity would be most needed. There appears to be a clear East-West divide in antitrust policy.

Table 4 below shows that the antitrust policy record of the new EU member states (highlighted in the table) is weak by European and international standards. The World Economic Forum's rankings in "Effectiveness of anti-monopoly policy" in its latest *Global Competitiveness Report 2009-2010* gives quite a bleak picture: out of 133 countries rated and ranked, Bulgaria stands out as 99th, Lithuania as 98th, Latvia 63rd, Poland as 51st (above Greece, though, which ranks 59th, and Italy, which ranks 76th). Such an indicator can only superficially gauge competition policies, but it provides a useful proxy for the state of affairs in the new member states. Weakness in this ranking correlates very interestingly with the new EU member states' non-competitive energy markets and the absence of activist policies to change the status quo.

TABLE 4 - EFFECTIVENESS OF ANTI-MONOPOLY POLICY IN EU MEMBER STATES

EU MEMBER STATE	GLOBAL RANK IN "EFFECTIVENESS OF ANTI-MONOPOLY POLICY" ACCORDING TO THE WORLD ECONOMIC FORUM
Netherlands	1
Sweden	2
Germany	3
Denmark	5
Finland	6
France	10
Austria	12
Belgium	14
Luxembourg	16
United Kingdom	17
Ireland	20
Czech Republic	27
Spain	32
Slovakia	34
Estonia	35
Slovenia	42
Portugal	43
Poland	51
Hungary	54
Greece	59
Latvia	63
Romania	66
Italy	76
Lithuania	98
Bulgaria	99

Source WEF GCR 2009-2010 - Rank out of 133 countries

DISCIPLINING GAZPROM'S BEHAVIOUR WITH MORE SYSTEMATIC ANTI-TRUST POLICIES IN CENTRAL AND EASTERN EUROPE

On the EU's Eastern flanks, we are thus in a deeply paradoxical situation. On the one hand, the insights provided by many energy economists and by the EU Commission's Inquiry into the energy sector point to lack of competition in transmission systems as an important cause of underinvestment and fragmentation of the EU's energy grids and supply systems. This situation in turn reinforces national markets' vulnerability to supply disruptions.

On the other hand, the path taken by EU policy *practise,* goes in the opposite direction. The member states that most need competition in their energy markets are those that are explicitly, or likely to be, exempted from the already watered down unbundling provisions and other competition requirements of the latest Energy Package.

Furthermore, antitrust policy is weak in these member states. Recent EC antitrust policy on Article 81 and 82 applied to energy markets has focused on the big EU markets in the West. These are the least vulnerable to supply disruptions from Russia. The policy response of the Commission to provide for more security of supply after the January 2009 crisis also misses this important angle and does not address competition issues. This policy should be the reverse, namely to face head-on the competition challenges in the weakest link of the EU's security of gas supply: its Eastern rim.

Hungary, contrary to most new member states, has chosen the path of greater competition in its gas market. In 2007, it implemented full unbundling of its until then vertically integrated company MOL. Immediately, investment into new infrastructure - storage capacity, interconnections with neighbouring country pipelines – took off. Hungary's new investments in (CAPEX - FGSZ Natural Gas Transmission) soared from insiginificant levels in 2006, to € 60 million in 2007, and more than four-folded in 2008 (more than € 250 million)[30]. This new–won dynamism in Hungary's gas markets explains why Hungary has been more resilient than others during the January 2009 gas crisis, and has been able to benefit from interconnections with Austria, Germany and other markets. In contrast, Slovakia and Bulgaria have suffered most from the gas crisis because they have not prepared for such an eventuality. Both have opposed full ownership unbundling and have pursued an explicit "security of supply" strategy consisting of nurturing friendly and close ties to Russia and Gazprom in recent years. Their domestic gas monopolies, encouraged by the above political choice, have had no incentive to invest in infrastructure for interconnections with other markets or in storage capacity, for example. This isolation has lead to large swathes of their population and industries being left out in the cold. These examples show: competition matters in security of gas supplies in Central and Eastern Europe!

It will take many years until a new legislative proposal of the scale of the Energy Package will be proposed again. Radical proposals such as full unbundling will continue to face fierce resistance as the status quo is maintained, and some European energy majors in conjunction with Gazprom benefit from it. The Security of Supply regulation of 2009, or the Baltic Energy Market Interconnection Plan[31] adopted last spring, are based on classic intergovernmental cooperation but do not directly address competition. They therefore do not solve the underlying structural problem that renders Europe hostage to a single supplier in the East in conjunction with one or two unpredictable transit countries, while the monopolistic company exporting gas maintains control on imports of its gas recipients via participation in local gas trading or vertically integrated companies.

In such a context, the EU should make use of existing tools to improve competition more systematically. The EU Commission has always accelerated antitrust policy in parallel to legislative initiatives. In the gas sector, the Security of Supply Regulation of 2009 should be complemented by an active control of the competition conditions in the countries that are most targeted by the plan. The new and interesting focus by Brussels on abuse of market dominance is the most relevant starting point. Why is this important?

Firstly, it is important as complementary step to encourage competition in the domestic gas markets and thus greater investment in infrastructure. As the EU Commission's *Energy Sector Inquiry* has shown, vertically integrated oligopolies or monopolies (where ownership between transmission, production and distribution is not separated), are structurally inclined to restrict access to their transmission networks by new entrants. More generally, they prefer long-term exclusive supply contracts (in the case of Eastern Europe this means supply contracts with Gazprom), which reduces the possibility for new market participants to sign supply contracts. This in turn reduces the incentives of other foreign investors to enter the new member states' markets. Worse, as the case of ENI in Italy currently under investigation shows, such oligopolies even practise restrictions such as "strategic underinvestment"[32] to maintain the grip on the domestic market. Therefore, special attention should be on EU members that have the most concentrated domestic gas market in order to at least discipline the behaviour of powerful incumbents and provide a better incentive structure for the investment programmes the EU and its member states are currently launching.

Secondly, and as a consequence, this is very likely to have a greater disciplining effect on the potential decision by Gazprom to shut off gas supplies in case of political disputes with a transit country or a former member of the USSR or the COMECON that is now a member of the EU. Indeed, in some countries where Gazprom has shares in domestic incumbent companies, it is likely to be affected by any potential (and as yet hypothetical) fine. This is likely to raise the opportunity cost of using gas cuts in its commercial decisions .

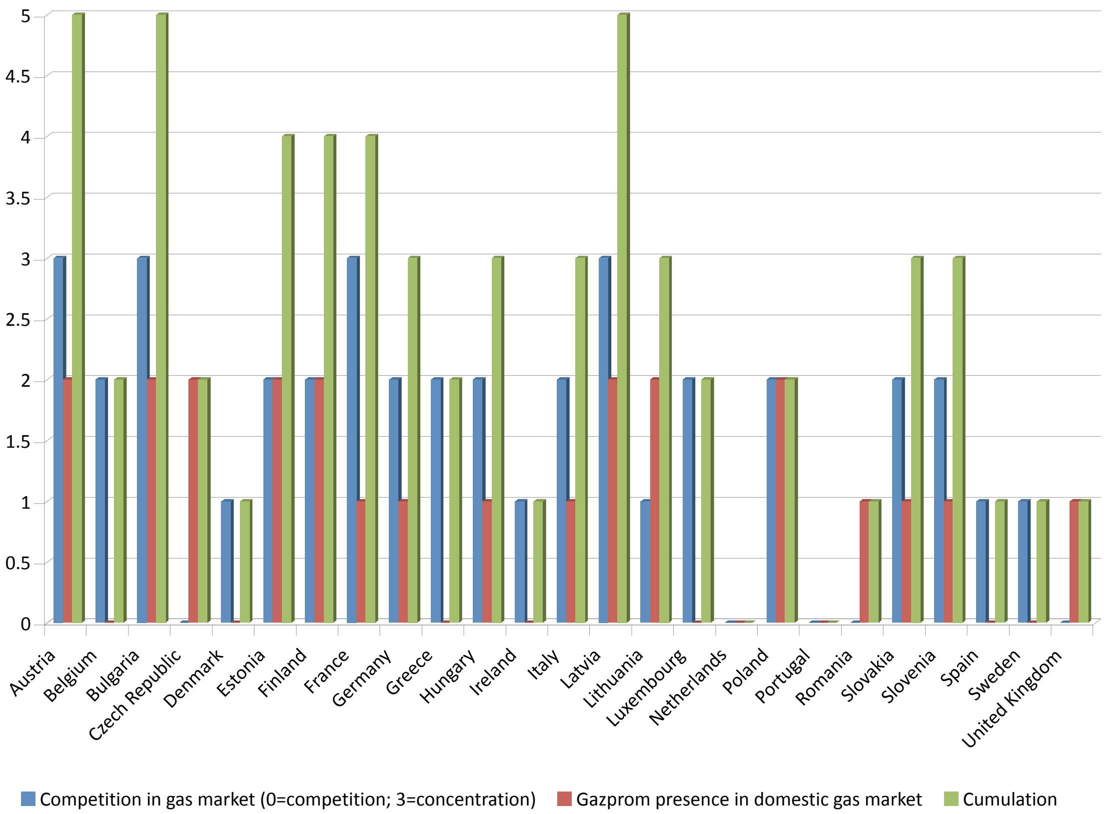
Gas supply cuts can indeed represent "abuse of market dominance". It has been shown in other cases that sectors with network properties and/or vertical integration are more prone to abuse of market dominant positions. Article 82 also points to the use of "unfair trading conditions", which in this case is a relevant description of the stop of supply to customers that have fulfilled the contractual obligations but nevertheless face supply disruptions.

So far, supply cuts to a Baltic state or a Central and Eastern European member state have not been decided by Gazprom because the companies with which Gazprom has contracts have not respected their obligations. It is rather that shutting the gas tap represents the easiest solution when there is a political problem or an unrelated contractual issue to solve with a particular client country or a transit country to the European Union. It is the easiest solution because there is no commercial sanction from such behaviour. The archetypical Central and Eastern European gas intermediary in which Gazprom often has a stake, has *no choice but* to contract with Gazprom. This is also the case for the domestic national monopoly that has to deal with this trader or with *Gazprom Export* directly, not least due to the long-term supply contracts that tie both sides together. Add to this the insufficient incentives to diversify supply sources or store for emergency as discussed above, and then a country is left with a total reliance on a dominant supplier. This supplier can renege with impunity on its contractual obligations although the other party has not reneged on its own contractual obligations.

The disciplining effect of potential antitrust measures on Gazprom can also be indirect. If a domestic gas monopoly (with no participation of Gazprom as investor) is found to abuse its dominant position and is obliged to open investment and alternative supply opportunities, competition in the domestic market is likely to rise. There will be more alternatives to Gazprom as supplier, which is likely to lead to more disciplined behaviour as it starts facing greater competition.

The chart below (Figure 2) shows that there is often cumulation between the presence of Gazprom as strong operator in a domestic market and a country's level of domestic competition. Bulgaria and Latvia stick out, as well as Austria, in terms of cumulating the two factors. Stepping up antitrust action in those countries is likely to help achieve two goals: support competition generally, and help discipline the external monopoly supplier of gas via its invested companies. Indeed, rather than shutting Gazprom out of the market, it is more rules and market-based behaviour that one wants to achieve. Finally implementing antitrust in the gas market, as in any other EU market, would be a necessary (if not necessarily sufficient) step in that direction.

FIGURE 2 – LEVEL OF COMPETITION IN MEMBER STATE GAS MARKETS AND GAZPROM PRESENCE IN DOMESTIC GAS MARKETS



In Central and Eastern Europe, unfortunately, the decision to decentralise the implementation of antitrust policies on accession after 2004 has not led to much concrete action on the ground, especially not in the energy sector. Legislation and, in particular, domestic regulatory institutions have not been able or willing to forcefully implement EU antitrust law. But decentralisation is not an obstacle to Commission action. As it has done for companies operating in the big markets such as France, Germany, or Italy, Brussels should and could do more to step in when national authorities don't. Antitrust is even more important in the EU's Eastern rim than in countries investigated so far. France, Germany and Italy have alternatives to Gazprom. Bulgaria and consorts don't.

The countries in which, in the authors' view, competition conditions should be scrutinised most are those that cumulate most handicaps when it comes to security of supply. The criteria proposed by the authors are based on ECIPE's Index of Vulnerability to Gazprom Supply Cuts. They are:

1. *Share of gas in total primary energy consumption*: the higher this share, the more urgency there is to act on the problem, given its greater economy-wide implications.
2. *Russian gas as share of total gas imports*: some EU member states are 100% dependent on Russian gas because they are isolated from the rest of the EU's gas markets.
3. *Strength of presence of Gazprom in domestic gas markets*: this provides an indication of the existing incentives to diversify away from Gazprom supplies.
4. *Country's choice in the Third Energy Package* ("Third Option" or outright exemption from unbundling provisions): this provides an indication on whether the competitive conditions in the market are likely to improve or not.
5. *Status in implementing the 2nd Energy Package of 2003*: this provides an indication of the level of competition in the gas markets.
6. *Concentration levels in retail and gas wholesale markets*: this provides an indication of the level of competition in the gas markets.
7. *Effectiveness of domestic antimonopoly policy*: this provides an indication as to where action from Brussels to complement poor domestic enforcement should be prioritised.
8. *Level of direct exposure to Russian gas supply disruptions*: this indicates which countries have already proven to not only be subject to supply cuts but of how much their citizens and economies have suffered from them due to insufficient preparedness.

As Figure 1 shows, the countries where most action in the field of competition is needed can be distributed in several categories. The top two countries on our index are Bulgaria and Latvia. These present the greatest weakness on all indicators in the Vulnerability to Gazprom Supply Cuts index. Then Estonia and Slovakia follow as a close second tier of vulnerable economies. Lithuania, Hungary, Austria, Poland and Romania would also deserve a much closer look due to their levels of dependency and levels of domestic competition.

CONCLUSIONS

BOX 2 - POLICY CONCLUSIONS

PREMISES:

Supply disruptions from Russia can in some cases be considered abuse of market dominance because member states which are strongly dependent on Russia as supplier have been subjected to them, although they have not breached their contractual obligations towards Gazprom.

Vertically integrated national incumbents in Central and Eastern Europe have no sufficient incentives to invest in alternative sources of supply and integrate with the rest of the EU's markets. This is due to their dominant position in the market and the absence of an adequate competition framework.

Most Central European countries and the member states located on Europe's Eastern rim will adopt the weakest competition rules foreseen in the Third Legislative Package, or even be exempted.

POLICY RECOMMENDATIONS:

In the absence of new legislation, step up antitrust actions in Brussels for Central and Eastern European gas markets

Concentrate on abuse of market dominance of domestic national incumbents and of trading companies. Model: Commission investigations into Germany's RWE and Italy's ENI

Continue to push for adoption of full ownership unbundling in Europe's Central and Eastern European member states

Concentrate on Bulgaria, Latvia, Estonia and Slovakia in greatest priority. Lithuania, Hungary, Austria, Poland and Romania would be the next tier of countries to scrutinise.

The biggest threat to the security of gas supplies in the EU today comes from Russia and the gas monopoly Gazprom that has become a tool for the Kremlin's foreign policy-cum-rent seeking ambitions. There are hardly any international legal tools to discipline Russia's behaviour, especially given that Russia is not in the WTO and pulled out of its Energy Charter commitments in the summer of 2009. This means that, unless something is done in the meantime, supply security for gas in the EU will remain an elusive goal.

An increasing number of analysts point out however, that the real remedy, not to supply cuts, but to the current inability to respond to them, is of domestic nature. Eliminating the Achilles heel in the EU's relationship with Gazprom, the national compartmentalisation of gas markets that has been exploited by the Russian government to pursue other geopolitical goals, begins at home. The problem of supply cuts will not be solved in the headquarters of the Energy Charter Treaty in Brussels but in the Berlaymont. The energy markets in the countries on Europe's Eastern flanks need to be made competitive very quickly to ease their connections with the rest of the EU. This will increase the EU's ability to cope with supply cuts, and in the same token reduce Russia's political leverage in Europe. There is fierce resistance to this view in some member states and by the major incumbent companies they support. The CEO of ENI, Paolo Scaroni, recently stated that "If you cannot liberalise gas in Russia there is no point liberalising gas in Europe"[33]. In fact, it is exactly the contrary that needs to be done: the EU needs to liberalise more, not less, if it doesn't want to continue to be vulnerable to Russian supply cuts.

While most markets of the EU's Central and Eastern rim have been successfully integrated with the EU, the energy markets have not. In the gas sector, former members of the Soviet bloc are still connected, in one-way gas pipeline routes, as through an umbilical cord, to their former political master. Twenty years into the fall of the Berlin Wall, this Soviet legacy needs to be done with once and for all.

This paper has shown that *more*, not less, competition is the most powerful tool to foster an environment that will lead to greater investment to interconnect EU gas markets and storage and other supply capacities such as LNG. Of course, full ownership unbundling and greater competition supervision in the markets that are most dependent on Russian gas is not a panacea. Russia will remain their countries' main supplier. Current efforts to diversify supply routes and provide frameworks and finance for investment in storage, interconnections and other means to respond to crises are crucial. However, they will not have the same effectiveness if competition is not stepped up in parallel.

Unfortunately, in the Third Legislative Package, member states in Central and Eastern Europe have been allowed to largely maintain the status quo in their energy markets. This will perpetuate their vulnerability to supply cuts from Russia. The paradox of the Brussels' energy policies is the following: although the substance of the Commissions' legislation proposals and the accompanying activities of its antitrust authorities are on the right track to remedy the EU's vulnerability to supply disruptions, the *implementation* of its policies is lopsided. Most member states that are the most vulnerable to Russian supply cuts are going to be either exempted from, or apply the weakest unbundling provisions for vertically integrated companies. The recent or ongoing spectacular antitrust cases against Eon/Ruhrgas, Gaz de France, or ENI, are only the beginning of a consistent and systematic policy in the EU. So far, they only take care of the markets that are least vulnerable to Russian gas cuts. Priorities must be shifted eastwards.

In the short term, new legislation on full ownership unbundling of vertically integrated companies is not likely to be passed. It is thus to Brussels' antitrust action, and especially abuse of market dominance, that the greatest attention should be shifted.

ANNEX 1 - GAZPROM IN EU MEMBER STATES

TABLE 4 – GAZPROM IN EU MEMBER STATES

EU MEMBER STATE	GAZPROM'S INVESTMENTS	GAZPROM'S SHARE IN COMPANY	TYPE OF ACTIVITIES OF THE COMPANY	GAZPROM'S PARTNERS
Austria	ARosgas Holding AG	100%	Gas marketing	none
	Centrex Europe Energy & Gas AG; Which owns: Centrex Europe Energy & Gas AG ; Central ME Energy & Gas GmbH; CEA Centrex Energy & Gas AG; GWH Gashandel GmbH (50%) JV with OMV; ZMB speicher Holding GmbH (66.67% by Gazprom, 33.3% owned by Centrex Europe & Gas AG)	100%	Holding company. Website says "its autonomous, specialist subsidiaries operate in the gas industry along the entire value chain - from developing new reserves to transportation, trading, processing and distribution. "	OMV
	Gazpromneft Trading GmbH	100%		none
	GHW (Gas- und Warenhandelsgesellschaft)	50%	gas trading	OMV (joint venture)
	Sibneft Oil Trade GmbH	100%	oil trading company	none
	ZGG Zarubezhgazneftechim Trading GmbH	100%	gas trading	none
Belgium	Interconnector	10%	pipeline connecting Bacton (UK) with Zeebrugge (B)	33.5% - La Caisse de dépôt et placement du Québec ; 10% ConocoPhillips; 11.41% Distrigas; 5% Electrabel; 5% ENI; 25.09% E.ON* Ruhrgas.
Bulgaria	Topenergo	100%	gas trading and transport	none
	Overgas Inc. AD Owns : OVERGAS Engineering, Gastec BG,Vestitel BG and Overgas Capital AD	50%	gas holding	Overgas Holding AD
	Overgas	50%	gas trading	n/a
Cyprus	Ecofran Marketing Consulting & Communication Services Company Limited	100%	n/a	n/a
	Ferenco Investment Limited	100%	investment company	n/a
	GASEXCO Gas Exploration Company Ltd	n/a	Gas exploration	n/a
	Greatham Overseas Limited	n/a	n/a	n/a
	Leadville Investment Ltd	100%	investment company (media)	n/a
	Private Company Limited by Shares GBPI (Cyprus Ltd)	n/a	n/a	n/a
	Leadville Investment Ltd	100%	investment company	n/a
	MF Media Finance (Overseas) Limited	n/a	investment company	n/a
	Odex Exploration Ltd	20%	oil exploration	Oilinvest/SOCO (Lybia)
	NTV World Ltd	100%	media company	none

EU MEMBER STATE	GAZPROM'S INVESTMENTS	GAZPROM'S SHARE IN COMPANY	TYPE OF ACTIVITIES OF THE COMPANY	GAZPROM'S PARTNERS
Czech Republic	Gas-Invest S.A.	37.50%	investment company	n/a
	Vemex	33% (or rather: 100%)	gas trading	ZMB Gmbh Germany (100% Gazprom); Centrex (100% Gazprom); East West Consult AG (Switzerland)
Denmark	.-			
Estonia	Eesti Gaas AS	37.02%	gas trading and transport	E.ON Ruhrgas (33.66%), Fortum Oyj (17.72% - 51% Finnish government) and Itera Latvija (9.85% - links to Gazprom).
Finland	Gasum Oy	25%	gas transportation and marketing	Fortum 31% the Finnish State 24% E.ON Ruhrgas 20%
	North Transgas Oy	100%	pipeline construction beneath Baltic Sea	none
France	FRAgaz	50%	gas trading	Gaz de France; Ruhrgas
	Sofrasi	30%	representative office	n/a
Germany	Agrogaz GmbH	100%	Via ZGG	none
	Centrex Beteiligungs GmbH	38%	gas trading and investment company	n/a
	Ditgaz	49%	n/a	n/a
	Verbundsnetz Gas	5.30%	gas transportation and marketing	n/a
	Gazprom Germania GmbH	100%	gas trading	none
	Gazprom Lybien Verwaltungs GmbH	100%	n/a	n/a
	Wingas GmbH	50%	gas distribution	JV with Wintershall, subsidiary of BASF, and (50%) Gazprom for gas transportation and storage
	Wintershall Erdgas Handelshaus (WIEH) GmbH & Co KG	50%	gas trading	JV BASF/Gazprom
	ZMB Mobil	100%	gas-fuelled automobile technology	none
	ZMB - Zarubezhgaz Management und Beteiligungsgesellschaft GmbH (ZMB Gmbh)	100%	gas trading	Owned by Gazprom Germania
	HTB Europa GmbH	n/a	media company	n/a
Greece	Prometheus Gas	50%	marketing and construction	Copelouzos Group

EU MEMBER STATE	GAZPROM'S INVESTMENTS	GAZPROM'S SHARE IN COMPANY	TYPE OF ACTIVITIES OF THE COMPANY	GAZPROM'S PARTNERS
Hungary	Centrex Hungaria	100%	trading, wholesale distribution and various technical services for the oil and gas industry	via Centrex in Austria
	Panrusgas Rt	40%	gas trading and transport	joint venture with MOL
	Borsodchem	25%	petrochemicals	Permira, since 2009 Chinese company minority stake Wanhua; ownership structure reputed to be unclear
	TVK	13.50%	petrochemicals	?
	DKG-EAST Co	38.10%	Oil and gas equipment and manufacturing	HP TEAM Invest Kft
	Gazkomplekt KFT	n/a	n/a	n/a
	NTV Hungary Commerical Limited Liability Company	n/a	media company	n/a
Ireland	GPB Finance Plc	100%	investment company	n/a
Italy	Centrex Italia	100%	oil and gas trading	via Centrex in Austria
	Volta SpA	49%	gas trading and transport	joint venture with Edison S.p.A.
	Promgas	50%	gas trading and marketing	joint venture with ENI
Latvia	Latvijas Gaze	34%	gas trading and transport	E.ON Ruhrgas International AG (47.15%), Itera-Latvija" (25%).
Lithuania	Lietuvos Dujos	37.10%	gas trading and transport	38.9% Eon Ruhrgas and Latvian State Property Fund
	ZAO Kaunassakaya power station	99%	gas fired heat and power plant	gov
	Stella Vitae	30%	gas trading	n/a
Luxembourg	n/a	n/a	n/a	n/a
Netherlands	Brochan B.V.	n/a		n/a
	BSPS B.V.	50%	operator of the Blue Stream pipeline	ENI (50-50)
	Gazinvest Finance B.V.	100%	investment company	none
	Gazprom Netherlands B.V.	100%		none
	Gazprom Sakhalin Holdings B.V.	100%	Owns 50 + 1 share in Sakhalin Energy, the operator of the Sakhalin-II oil and gas field.	Owns 50% + 1 shares in Sakhalin Energy, the operator of the Sakhalin-II oil and gas field
	NTV Plus B.V.	n/a	media company	n/a
	NTV-HTB Holding and Finance B.V.	n/a	media company	n/a
	PieterGaz B.V.	51%	gas trading	n/a
	Sib Finance B.V.	n/a	investment company	n/a
	West East Pipeline Project Investment	100%	construction and investment company	none
Poland	EuRoPol Gaz	48%	Gas transportation - operator of the Polish section of Yamal Europe pipeline	"Polish government (PGNiG); 4% is in the hands of Gas-Trading, an unlisted company held by PGNiG, Gazprom and Bartimpex.
	Gas Trading	18.40%	gas trading	PGNiG

EU MEMBER STATE	GAZPROM'S INVESTMENTS	GAZPROM'S SHARE IN COMPANY	TYPE OF ACTIVITIES OF THE COMPANY	GAZPROM'S PARTNERS
Portugal	n/a	n/a	n/a	n/a
Romania	WIEE Romania SRL	50%	gas distribution	owned by WIEE, in Switzerland
	WIROM Gas S.A.	20%+	gas trading, controlled through WIEH	DISTRIGAZ SUD S.A. (49%), Gaz de France, EBRD, IFC
Slovakia	Under discussion	joint venture	gas storage	Slovak government
Slovenia	Tagdem	8%	gas trading	Gazkomplektimpeks, UralTransGas, Sever-gazrpom (holding 21.25 percent of the shares each), and the Slovenian firm Kovinotehna; (which holds 15 percent of the shares).
Spain	n/a	n/a	n/a	n/a
Sweden	n/a	n/a	n/a	n/a
United Kingdom	Gazprom UK Ltd	100%	investment company	none
	Gazprom marketing and Trading Limited (GM&T)	100%	gas trading	none
	Gazprom Global LNG	100%		none
	Wingas UK	25%	gas trading	Wingas Gmbh, which is already a 50% JV between Gazprom and Winterhsall
	Interconnector UK Limited	10%	operator of the Intercon-nector pipeline	see above under Bel-gium
	Sibur International	100%	petrochemicals	none
	WINGAS Storage UK Ltd	33%	underground gas storage reconstruction	Wingas Gmbh, which is already a 50% JV between Gazprom and Winterhsall; Wingas Storage UK is JV with Germany's ZMB Gas-speicherholding GmbH (.....a subsidiary of Gazprom)!
UK: Virgin Islands	Benton Solutions Inc.	n/a	n/a	n/a
	Dolby International Hol-dings Ltd	100%	n/a	none
	Gregory Trading S.A.	100%	n/a	n/a
	Jones Resources Ltd	100%	n/a	n/a
	Media Financial Limited	n/a	finance	n/a
	Nagelfar Trade & Invest Ltd.	n/a	finance	n/a
	NTV Media International Limited	n/a	finance	n/a
	Richard Enterprises S.A.	100%	n/a	n/a
	Sib Oil Trade	100%	oil trading	n/a

Sources: Gazprom website; Kuznetsov (2008); EC Commission; Individual company websites (when available), Wikipedia. This table is indicative and has no pretense to exhaustivity.
* Gazprom has 6.4% share in E.ON; acquired so that E.On can acquire 25% stake in Yuzhno Russkoye field in Russia

ANNEX 2 – COMPETITION IN EU GAS MARKETS

TABLE 5.1 COMPETITION CONDITIONS IN EU MEMBER STATE GAS MARKETS

EU Member State	Share of gas in primary energy consumption, 2007	Share of Gas of Russian Origin in Country's Gas Imports	Country's position in Energy Package Unbundling Debate: Full Ownership Unbundling vs. ITO	Status in Implementing 2nd Gas Directive 2003/55/EC	Share of 3 biggest companies in domestic gas market	Concentration in gas wholesale market - market share of biggest 3 shippers in available gas -	Effectiveness of anti-monopoly policy	Vulnerability in to supply cuts from Russia
Austria	15.5	82%	ITO	NO (case dropped)	80%	80-99%	12	50-75% supply disruptions January 2009
Belgium	27.7	4.00%	Full ownership unbundling	NO	99.40%	80-99%	14	nap
Bulgaria	11.1	100%	ITO	NO	100%	100%	99	More than 75% supply cuts January 2009
Czech Republic	22.8	73.90%		OK - after reminder	n/a	n/a	27	More than 75% supply cuts January 2009; but low impact on economy
Denmark	10.6	0	Full ownership unbundling	OK	n/a	90%	5	nap
Estonia	7.3	100%		NO	99%	100%	35	single connection to Russian gas pipeline with total isolation from other EU gas markets
Finland	3.2	100%	exemption from unbundling provisions	OK	100%	100%	6	single connection to Russian gas pipeline with total isolation from other EU gas markets
France	19.6	16.00%	ITO	NO	89.00%	80-99%	10	less than 25% gas supply cuts in Jan 09
Germany	27.0	44.00%	ITO	OK - after reminder	59.00%	<80%	3	less than 25% gas supply cuts in Jan 10
Greece	3.2	81.00%	ITO	OK - after reminder	100.00%	100.00%	59	More than 75% supply cuts January 2009
Hungary	36.1	80%	Full ownership unbundling	NO	93%	92%	54	More than 75% supply cuts January 2009; but low impact on economy
Ireland	12.0	0	Full ownership unbundling	NO	n/a	n/a	20	nap
Italy	29.8	30.00%		NO	86.70%	63.80%	76	25-50% supply disruptions Jan 09

EU Member State	Share of gas in primary energy consumption, 2007	Share of Gas of Russian Origin in Country's Gas Imports	Country's position in Energy Package Unbundling Debate: Full Ownership Unbundling vs. ITO	Status in Implementing 2nd Gas Directive 2003/55/EC	Share of 3 biggest companies in domestic gas market	Concentration in gas wholesale market - market share of biggest 3 shippers in available gas -	Effectiveness of anti-monopoly policy	Vulnerability in to supply cuts from Russia
Latvia	12.0	100%	ITO	exempt	100%	n/a	63	single connection to Russian gas pipeline with total isolation from other EU gas markets
Lithuania	11.2	100%		OK - after reminder	100%	100%	98	single connection to Russian gas pipeline with total isolation from other EU gas markets
Luxembourg	16.3	n/a	ITO	OK - after CJE court ruling	100%	100%	16	nap
Netherlands	36.0	0	Full ownership unbundling	OK	n/a	n/a	1	nap
Poland	12.8	68.80%		NO	100.00%	97.40%	51	50-75% reductions in gas supply Jan 2009
Portugal	7.6	0		NO	n/a	0	43	nap
Romania	27.1	94.00%		n/a	74.00%	83.00%	66	25-50% supply disruptions Jan 09
Slovakia	29.1	100%	ITO	OK - after reminder	100%	100%	34	More than 75% supply cuts January 2009; estimated €1bn losses for industry
Slovenia	13.2	52.00%		OK	100.00%	100.00%	42	50-75% reductions in gas supply Jan 2009; no major economic impact
Spain	16.0	0.00%	Full ownership unbundling	NO	75.00%	75.00%	32	nap
Sweden	1.6	.-	full ownership unbundling	OK	n/a	100.00%	2	nap
United Kingdom	30.7	41.20%	Full ownership unbundling	OK - after reminder	n/a	n/a	17	nap
Source or details for indicator	Source: Eurostat	Source: EU Commission, Second Strategic Energy Review		(Sources: EU COM(2009) 115 Final and Memo/06/481	(Source: EU COM(2009) 115 Final)	(Source: ERGEG 2008 Status Review Ref. C08-URB-15-04 and EC Commission)	Source: - WEF GCR 2009-2010 - Rank out of 133 countries	

ANNEX 3 -"INDEX OF VULNERABILITY TO GAZPROM SUPPLY CUTS"- SCORE BY EU MEMBER STATE

TABLE 5.2 - "INDEX OF VULNERABILITY TO GAZPROM SUPPLY CUTS"- SCORE BY EU MEMBER STATE

RANK*	EU Member State	Score - share of gas in primary energy consumption	Score Import Dependency Russian Gas	Score Unbundling	Score Status of implementation 2nd Gas Directive	Score Gas market concentration	Score Wholesale gas market concentration	Compound score of level of competition in gas market	Score Antimonopoly policy effectiveness	Score Proven vulnerability to Russian supply cuts	Score Gazprom presence in domestic gas market as investor	Score Former COMECON or USSR member	Total
1	Bulgaria	1	3	2	2	2	2	3	2	2	2	1	22
2	Latvia	1	3	2	2	2	1	3	2	2	2	1	21
3	Estonia	0	3	1	2	2	2	2	1	2	2	1	18
4	Slovakia	2	3	2	0	2	2	2	1	2	1	1	18
5	Austria	1	2	2	2	2	2	3	0	1	2	0	17
6	Hungary	2	2	0	2	2	2	2	2	1	1	1	17
7	Lithuania	1	3	1	0	2	2	1	2	2	2	1	17
8	Poland	1	2	1	0	2	2	2	2	1	2	1	16
9	Romania	2	3	1	2	1	2	0	2	1	1	1	16
10	Finland	0	3	2	0	2	2	2	0	2	2	0	15
11	Greece	0	2	2	0	2	2	2	2	2	0	0	14
12	Italy	2	0	1	2	2	1	2	2	1	1	0	14
13	Slovenia	1	2	1	0	2	2	2	1	1	1	1	14
14	France	1	0	2	2	2	2	3	0	0	1	0	13
15	Germany	2	1	2	0	1	2	2	0	0	1	0	11
16	Belgium	2	0	0	2	2	2	2	0	0	0	0	10
17	Czech Republic	1	2	1	0	0	0	0	1	1	2	1	9
18	Luxembourg	1	0	2	0	2	2	2	0	0	0	0	9

RANK*	EU Member State	Score - share of gas in primary energy consumption	Score Import Dependency Russian Gas	Score Unbundling	Score Status of implementation 2nd Gas Directive	Score Gas market concentration	Score Wholesale gas market concentration	Compound score of level of competition in gas market	Score Antimonopoly policy effectiveness	Score Proven vulnerability to Russian supply cuts	Score Gazprom presence in domestic gas market as investor	Score Former COMECON or USSR member	Total
19	Spain	1	0	0	2	1	1	1	1	0	0	0	7
20	Denmark	1	0	0	0	0	2	1	0	0	0	0	4
21	Ireland	1	0	0	2	0	0	1	0	0	0	0	4
22	United King-dom	2	1	0	0	0	0	0	0	0	1	0	4
23	Sweden	0	0	0	0	0	2	1	0	0	0	0	3
24	Netherlands	2	0	0	0	0	0	0	0	0	0	0	2
25	Portugal	0	0	1	0	0	0	0	1	0	0	0	2
*1 = highest vulne-rability	Details on indicator	Source: Eurostat 2 = 25% and above 1 = 10-24.9% 0 = up to 10%	Source: Eurostate 3 = 90-100% 2 = 50-89% 1 = between 25-50% 0 = below 25%	2 ITO or exemption 1 undeci-ded 0 full ownership unbundling	2 = Non imple-mentation or exemption 0 =OK	2 = 75%< 1 = 25-75% 0 = 0-25%	2 = 75%< 1 = 25-75% 0 = 0-25%			2 = Direct 1 = Indirect, other EU transit country 0 = Not applicable			

FOOTNOTES

1. The term "vulnerability" in this paper will be used in the following way: not only meaning over-reliance on a single supplier of gas, but also an inability to respond to supply disruptions in case of emergency.
2. In Bulgaria, Gazprom controls gas trading company Topenergo, and holds a 50% stake in a gas holding, Overgas. In Estonia, Gazprom holds a 37% stake in Estonia's Eesti Gaas, which itself has shareholdings by E.On Ruhrgas (in which Gazprom has a 6.4% share), Finland's Fortum Oy, and Itera (which has links to Gazprom too). A similar pattern can be found in Latvia: 34% of Latvijas Gaze is owned by Gazprom, whilst the rest of the company is co-owned by the same E.On Ruhrgas and Itera. In the Czech Republic, Gazprom has significant weight in the local gas market with its gas trading entity Vemex. Gazprom only has a nominal share in Vemex of 33%. Yet in fact, the other shareholders of Vemex are fully controlled by Gazprom (Austria-based Centrex is a 100% subsidiary of Gazprom, ZMB Germany as well, and Switzerland-based East West Consult AG has direct links to Gazprom). In Hungary, Gazprom is in a joint venture with the local operator MOL for the latter's gas trading activities. In Poland 18% of Gas Trading is owned by Gazprom, the rest by the Polish government. EuRoPol gas, the operator of the Polish section of the Yamal Europe pipeline is a de facto joint venture between the government and Gazprom.
3. Gazprom has shares in Eon/Ruhrgas as highlighted above. It further had negotiated in 2002 the option to acquire stakes in the consortium itself. In 2009, Gazprom has been trying to penetrate the Slovakian market proposing a joint venture with the Slovak government to invest in new storage capacity when it saw the Slovak government was attempting to change strategy following the January gas blackout which had severely hit Slovakia.
4. http://ec.europa.eu/competition/sectors/energy/inquiry/index.html
5. For example, see Brakman et al, 'Market Liberalization in the European Natural Gas Market", *CESifo*, July 2009
6. For example the scholarly work undertaken at the Oxford Institute for Energy Studies, o*r the results of the EU Commission's two-year Energy Sector Inquiry itself*, or Anne Neumann and Christian von Hirschhausen (2005), "Long-term Contracts for Natural Gas Supply – An Empirical Analysis", Paper presented at the 9th ISNIE Conference, September 22nd-24th, 2005, Barcelona
7. See Erixon (2008), *ibid*, and Iana Dreyer and Brian Hindley (2008), "Russian Commercial Policies and the European Union – Can Russia be Anchored in a Legal International Economic Order?", *ECIPE Working Paper* No. 05/2008
8. EU Commission, *Report on Energy Sector Inquiry*, January 10, 2007
9. The figures cited are taken from the EU Commission's Energy Sector Inquiry and refer to the year 2004. Little has changed since then.
10. Neuhoff, K. & von Hirschhausen, C., 2005. "Long-term vs. Short-term Contracts; A European perspective on natural gas," Cambridge Working Papers in Economics, http://www.dspace.cam.ac.uk/bitstream/1810/131595/1/eprg0505.pdf
11. The hold-up problem is likely to arise when costly transaction-specific investments, such as pipelines, are required. For instance, given that a demand-supply relationship between, say, a German importer and a Russian exporter requires a pipeline between the two countries, the full economic cost of the pipeline is inversely related to the duration of the contractual relationship because risk over time is an underlying factor. So the asset-specificity of gas infrastructure investment, in combination with uncertainty, are the main contributing factor to a high level of transaction costs (This applies mainly to the financing of asset-specific investment projects).
12. Swaps occur when two parties agree either to exchange gas at one location for gas at another location or to exchange quantities of gas over varying periods of time. Swaps are instrumental in optimizing the use of constrained infrastructure and eliminate the risk of accidents or leakages along the transit route since they enable all parties involved to avoid actual transmission. Swaps, however, still amount only to 5% or so of the total gas volume consumed in the EU. Only the German market exhibits a significant volume of gas being swapped across both locations and time. Furthermore, despite the rising importance of such instruments, most swaps are attributable to the gas incumbents.
13. Euractiv, "Regulator: Renewed gas crisis "likely", 20 October 2009. http://www.euractiv.com/en/energy/regulator-renewed-gas-crisis/article-186570
14. *The Wall Street Journal*, "European Energy Firms Fall Short in Gazprom Purchases", October 24 2009.

15. Financial Times, “Qatar remains undeterred on LNG projects”, April 5, 2009.
16. See footnote no. 15
17. EU Commission, “Competition: Commission secures improvements to gas supply contracts between OMV and Gazprom”, IP/05/195, 17th February 2005. Case reference: COMP/38.085
18. EU Commission, “Antitrust: Commission clears gas supply contracts between German gas wholesaler WINGAS and EDF-Trading, IP/02/1293, 12 September 2002. Case reference: COMP/36.559
19. Official Journal of the European Union, “Summary of Commission Decision of 8 July 2009 relating to a proceeding under Article 81 of the EC Treaty (Case COMP/39.401 – E.On/GDF), (2009/C 248/05)
20. EU Commission, “Antitrust: Commission opens German gas market to competition by accepting commitments from RWE to divest transmission network”, IP/09/410, 18 March 2009. Case reference: COMP/39.402
21. EU Commission, “Antitrust: Commission market tests commitments by GDF Suez to boost competition in French gas market”, IP/09/1097, 8 July 2009. See also “Antitrust: Commission opens formal proceedings against Gaz de France concerning suspected gas supply restrictions”.MEMO/08/328, 22nd May 2009. Case reference: COMP/39.316
22. EU Commission, “Antitrust: Commission initiates proceedings against the ENI Group concerning suspected foreclosure of Italian gas supply market”, MEMO/07/187,11 May 2007. Case reference: COMP/39.315
23. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009PC0363:EN:NOT
24. Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005
25. Official Journal of the European Communities, “Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules of competition laid down in Articles 81 and 82 of the Treaty”, 4.1.2003.
26. Antitrust: Commission welcomes full application of EU antitrust rules by Slovak Competition Authority, IP/09/1182, 23 rd July 2009
27. This is the reason behind the establishment of an agency for the cooperation of energy regulators.
28. Ricardo Celli, Philippe Nogues, Christian Riis-Madsen (2009), “Energy”, in The European Antitrust Review 2010. Available on: http://www.globalcompetitionreview.com/reviews/19/sections/68/chapters/745/energy/
29. Michael Dietrich, Marco Hartmann-Rüppel, “Germany: Abuse of Dominance”, in *The European Antitrust Review 2010*.Avaiable on: http://www.globalcompetitionreview.com/reviews/19/sections/69/chapters/756/germany-abuse-dominance/
30. Source : MOL
31. http://ec.europa.eu/energy/infrastructure/bemip_en.htm
32. See footnote no. 22
33. Video Interview on ft.com on 15 October 2009