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EUROPEAN ENERGY SECURITY WHAT SHOULD IT MEAN? WHAT TO DO?

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European Energy Security

What should it mean?

What to do?

Working Paper No. 23 of the European Security Forum

Contents

Chairman's Summing-up

FRANCOIS HEISBOURG..... 1

Integrating Security of Supply, Market Liberalisation and Climate Change

CHRISTIAN EGENHOFER..... 4

Growth with Energy and Energy Security

LEONID GRIGORIEV 15

Caspian–Black Sea Region: Key to Diversifying Europe's Energy Supplies

VLADIMIR SOCOR..... 26

Energy Security, Gas Market Liberalisation and Our Energy Relationship with Russia

ALAN RILEY 30

Chairman's Summing-up

François Heisbourg*

In addressing the theme of European energy security, we were fortunate to have written presentations from Christian Egenhofer (CEPS, Brussels), Leonid Grigoriev (Institute of Energy and Finance, Moscow), Alan Riley (CEPS, Brussels) and Vladimir Socor (Jamestown Foundation, Washington D.C.).

In introducing the speakers, the chairman urged them to turn their thoughts to the following questions, *inter alia*:

- Is energy a strategic good? If it is, to what extent does it make sense to deny the extraction of political leverage from energy policy? In criticising Russian energy policy, are we not protesting too much against the fact that Russia (as others) is using energy for political ends – instead of criticising, as we should, the content of Russia's policy? And if energy is strategic, should a European Union energy policy be primarily about the liberalisation of the energy market?
- Is claiming reciprocity always smart? After all, do we really want Russian firms to control both the downstream as well as the upstream elements of the EU's energy supply chain, in exchange for access by EU firms to Russian energy production and transport?
- Should it really be EU policy to help Turkey to make full use of its potential as a major energy hub? After all, half of Russia's oil exports already pass through the Bosphorus, creating a major risk if that very vulnerable route were to be cut.

In addition to his written contribution, Christian Egenhofer stated that within the EU framework there is no basic contradiction between the quest for liberalisation and the need for energy security. He noted that four major risks needed to be addressed:

- at the economic level, insufficient long-term investment. The EU would, *inter alia*, have to double its electricity plant infrastructure (600 GW) by 2030, in terms of both new and replacement plants;
- failed regulatory environments leading to 'California electricity'-type outcomes;
- political risks, notably Russian; and
- environmental issues. On this score, he observed that climate change requirements and energy needs are not automatically congruent (thus the Athabasca tar sands in Canada could help alleviate the latter but at the expense of the former).

He agreed with the view that political leverage would be sought by both suppliers and consumers. In this respect, diversification is rational behaviour on the part of both.

Leonid Grigoriev noted the parallel evolution of Russian GDP and oil production. In the same way that oil production was now back to Soviet-era highs, Russia's GDP was now back to 'normal' (with personal consumption in 2005 at 140% of its 1990 level). Since 2000, however, Russian oil exports had doubled; this discontinuity had a major impact on world markets. He observed that the

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diversification of sources (by the consuming countries) and of the conduits of transit (by the supplying countries) were mirror cases. Nevertheless, diversification could also become a very costly ‘tax on fear’ – something that should be avoided.

From a Russian standpoint, a tax on fear would push Russia towards securing new markets in the Far East (China) and through exports of liquefied natural gas.

For his part, Alan Riley noted that the Russians had some reasons to oppose any liberalisation in EU access to Russia’s gas market that would go beyond that practised within the EU itself. Like Christian Egenhofer, he considered that liberalisation and security are not in opposition; on the contrary, the bigger the energy market (and the EU would be very big indeed), the greater the security of that market *vis-à-vis* any given external shock, hence the need for liberalisation from an energy security standpoint.

On specific issues, he considered that the problems of liberalisation in the UK’s energy market were largely owing to incompetence: there had been no strategy for coping with the well-forecasted depletion of reserves. He noted that in Russia, Gazprom has a major problem in terms of refurbishing its infrastructure – some \$170 billion (bn) were needed, but Gazprom already has debts of \$38 bn. Meanwhile, there still has not been any significant development of the Yamal field in Siberia.

Walter Slocombe, who had kindly accepted to stand in for Vladimir Socor, underscored the need for EU–US (or NATO) consultations for an energy security strategy. He noted the EU’s focus on long-term goals through energy types, versus the short-term supply of oil and gas or transit issues.

In contrast to Alan Riley, Vladimir Socor’s paper considers that ownership does matter. He holds that joint Russian–Ukrainian ownership of the gas pipeline is a strategic negative.

To launch the first round of discussions, we were able to count on the interventions of two senior European Commission officials. The first noted that the Commission’s Green Paper (March 2006) on energy rested on three pillars: Lisbon (through the European Council’s aims of economic competitiveness as set out in the Lisbon agenda), Kyoto (concerning the environmental goals of the Kyoto Protocol) and Moscow (for the security of supply). These three were neither identical, nor even in some cases congruent (he noted, as did Christian Egenhofer, that energy supply and environmental issues could be in conflict). The choice of the energy mix required to achieve an EU policy was left to each member state, within the constraints set by the Kyoto targets.

The German ‘Energy Gipfel’ [summit] and the UK’s energy review were examples on this score. Naturally, the Moscow pillar was linked to the ongoing Russia–WTO negotiations. As for reciprocity, the situation was not black or white; a lot of investment was already in place in both directions and it would be useful to take stock of the state of affairs in this regard.

The other Commission representative noted that it is usually the monopoly suppliers who explain that security and competition are contradictory. Yet the old system did not deliver energy security. Furthermore, there could be no EU-wide energy security policy without having created a liberalised energy market across the EU. The issue of reciprocity (i.e. by Russia in downstream activity in the EU and by EU firms in upstream operations in Russia) remained a difficult one, on which advice was sought.

In the first round of questions and comments, one participant wondered whether the makings of an EU–Russian energy deal were not already to be found in the draft transit protocol to be discussed at the St Petersburg summit.

On another score, he noted that the extension of the EU *acquis* to south-eastern Europe (the Balkans, Turkey and eventually Ukraine) would create a new situation. He expressed some doubt about the advisability of doubling the capacity of the Blue Stream natural gas pipeline (between Russia and Turkey), as suggested by Russia.

Another participant, from 'new Europe', underlined that energy is special merchandise and that market approaches would not be enough to keep the Russians in line. When European Commissioner for External Relations Benita Ferraro-Waldner notes that 75% of Gazprom's profits come from its sales to the EU, she is only giving a statistic, not an operative tool *vis-à-vis* Russia. In addition, for the EU, the geopolitics of energy extend far beyond the case of Ukraine.

In response to these comments and remarks by the other presenters, Leonid Grigoriev observed that Gazprom is now trying to increase domestic prices (against the wishes of the energy-consuming industries), which are now at a level reaching profitability. Ukraine should be considered a special case. Ukraine had enough of its own gas for household use and Russian gas had essentially been provided 'for free' to local industry in exchange for political influence. A big problem now is that of the deteriorating transit pipeline through Ukraine, which needs repair. He disagreed with the notion that Russia would lack resources for oil and gas development, as 18% of Russia's GDP is now available for domestic investment, after debt repayments and contributions to the stabilisation fund. The Stockman field (in the Barents Sea) would be an important precedent in terms of foreign investment.

Christian Egenhofer provided a nuance concerning the importance of ownership: it does matter in the sense that the market is not going to work if the pipelines are all controlled by one single upstream agent. He cautioned, however, against exaggerating the focus on Russia alone.

Walter Slocombe reminded participants that 'one can't drink oil'. Ownership thus may not be significant in the long run. But in the short term, monopoly ownership can act in a disruptive manner, for political or other reasons.

In the subsequent round of discussions, a Ukrainian participant considered that Russia was not abiding by its agreements. During the 1990s, Ukraine had benefited from major price rebates in exchange for very low transit and storage fees. Ukraine was no longer purchasing Russian gas, which was only transiting. Ukraine's gas comes from Central Asia as well as from domestic sources. He added a reminder that out of 160 bn cubic metres of Russian gas exports, 145 bn transited via Ukraine.

Another participant, with an International Energy Agency background, observed that Gazprom was now taking over producers in Central Asia, in part because of Gazprom's fear that it would not be able to deliver on its numerous commitments. Turkey, for its part, was moving from its role as an East-West corridor bypassing Russia (i.e. the Baku-Tbilisi-Ceyhan pipeline) to a Russian-European corridor through 'Blue Stream plus'. This move could have strategic implications. Finally, he noted that Russia's economy was being distorted by its oil and gas dependency.

A Scandinavian participant suggested that Gazprom should really be viewed as two companies – an international operator on the one hand and the owner of domestic infrastructure on the other.

In conclusion, a participant raised the issue of trust, which along with rule of law and democratic decision-making were crucial to the EU's ambitions: Where is trust in the energy relationship with Russia? In this respect, Leonid Grigoriev made the point that Russia's cut-off of gas through Ukraine at the start of 2006 was not a smart move.

Alan Riley posed a question that many oil and gas professionals have been quietly voicing: What happens when it becomes clear that Russia's many commitments (notably in the field of gas) simply cannot be fulfilled?

Integrating Security of Supply, Market Liberalisation and Climate Change

The European Commission's Green Paper on *Secure, Competitive and Sustainable Energy for Europe* from a Security-of-Supply Perspective

Christian Egenhofer*

The security of energy supply, having attracted only limited interest on the part of policy-makers in recent years, is back on the agenda. This interest was first evident in the wide-ranging debate launched by the European Commission with the publication of its 2000 Green Paper on the security of supply (European Commission, 2000). It was triggered among other things by the revival of OPEC, higher crude oil prices and international political instability, and underscored by terrorist attacks and the wars in Afghanistan and Iraq as well as recent developments in Iran and Russia. Anxieties in the EU over Russia were fed by the Russia–Ukraine standoff in early January 2006. Fears were then reinforced by Russian attempts to increase its natural gas outlets in Asia. Higher than projected demand growth with a limited or belated supply reaction has led to worries of permanent shortages and the perception that securing energy supply is a zero-sum game, wherein nations or regional blocs scramble for decreasing supplies.

Against this background the European Commission's 2006 Green Paper on energy (European Commission, 2006) has launched a debate on a comprehensive response to the challenges facing the EU. The overarching question is how to ensure secure and low-carbon yet affordable energy. Hence, it focuses on the interface of market liberalisation, security of supply and climate change.

Energy market liberalisation and growing international economic interdependence have affected the ability of governments to react to security-of-supply challenges. Prior to energy market liberalisation, security-of-supply policy predominantly consisted of government-initiated diplomatic (and sometimes military) actions to ensure physical supply, with limited emphasis on costs. With regard to the external aspects of security-of-supply policy, the focus was on diversification, in terms of both regions and types of fuel. This focus often led to relatively rigid long-term contracts, along with an accent on physical infrastructures, a dialogue between consumer and producer countries, and mechanisms that could deal with emergency situations (e.g. strategic stocks or interconnections). The frame of reference was usually the member state and seldom the EU. Domestically, the member states' response was to commit resources to developing indigenous energy sources, such as coal, peat, hydro or nuclear fission (considered almost indigenous), combined with largely unconvincing demand-side policies. Moreover, strong domestic companies or even monopolies were created, which could carry the 'necessary weight' externally and be able to support heavy investments internally. There were some initiatives at the EU level, however, such as in the fields of research and external relations, and national borders played a smaller role in areas where market integration was more advanced, as for oil products. With market liberalisation, many of these measures no longer work and other policy goals such as diversification need to be built into the new logic or markets (see Egenhofer & Legge, 2001).

Yet meanwhile, a case has been made that the EU faces an energy 'trilemma', in the form of potentially conflicting goals for security of supply, liberalisation and environmental objectives, and notably the link between energy supply and climate change.

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This short paper attempts a first analysis of the challenges related to security of supply and climate change and how they can be integrated into an overall energy policy, which increasingly has to work with the grain of the market. The paper is based on previous CEPS work on energy security and climate change, notably the INDES Working Paper series.¹ As the European Commission's 2006 Green Paper arguably raises many more questions, which this short paper does not address, the analysis will necessarily be partial.

Are the risks associated with Russia unique?

Following the publication of the 2006 Green Paper on 8 March, the public discussion has largely been focused on Russia and the EU–Russian energy relationship, including the role that external policy can play. The Polish government has even called for a NATO-type of approach for energy. This section first reviews concepts of security of supply and the risks posed to it. It then considers the question of whether the risks involving Russia are special or unique and thus whether a particular approach to the Russian import dependency is needed.

Definitions of security of supply

On previous occasions (e.g. Egenhofer et al., 2004) CEPS has reviewed a number of concepts of security of supply (see also Box 1). They all have in common that they see security of supply essentially as a strategy to reduce or hedge risks that derive from energy use, production and imports. These security-of-supply concepts consist of a variety of approaches aimed at ‘insuring’ against supply risks with an emphasis on cost-effectiveness and the shared responsibility of governments, firms and consumers.

There are nuances regarding cost-effectiveness, which are mainly driven by different appreciations of risks. Either directly or indirectly, the approaches include price as a concern. While price volatility can be seen as proof that markets work, nevertheless, security of supply is, albeit more loosely, tied to a concept of price. Energy must be available at a ‘reasonable’ price – not at any price. By definition, if the price were allowed to increase without a limit, there would always be a sufficiently high price at which demand would equate to available supplies – but it would be naïve to say in this case that the security of supply was guaranteed. If we were to lift any restrictions on the movement of prices, the issue of security of supply would simply evaporate (see Luciani, 2004).²

¹ See the following INDES papers: P. Cayrade, *Investments in Gas Pipelines and Liquefied Natural Gas Infrastructure: What is the Impact on the Security of Supply?*, INDES Working Paper No. 3, CEPS, Brussels, March (2004); V. Costantini & F. Gracceva, *Social Costs of Energy Disruptions*, INDES Working Paper No. 6, CEPS, Brussels, March (2004a); V. Costantini & F. Gracceva, *Oil Security: Short- and Long-Term Policies*, INDES Working Paper No. 7, CEPS, Brussels, March (2004b); L.J. de Vries & R.A. Hakvoort, *The Question of Generation Adequacy in Liberalised Electricity Markets*, INDES Working Paper No. 5, CEPS, Brussels, March (2004); C. Egenhofer, K. Gialoglou & G. Luciani, *Market-based Options for Security of Energy Supply – Summary and Conclusions*, INDES Working Paper No. 1, CEPS, Brussels, March (2004); and G. Luciani, *Security of Supply for Natural Gas Markets: What is it and what is it not?*, INDES Working Paper No. 2, CEPS, Brussels, March (2004).

² Yet just how far is it acceptable to allow prices to move in order to restrict demand and allocate scarce supplies is a question that can only be decided politically (by the government or regulator) or contractually (by the parties accepting limits to price increases) and not by a theoretical discussion. At times the Directorate-General for Energy and Transport (DG TREN) appears to consider price fluctuations themselves as a threat to security – in particular with respect to crude oil. Indeed, in the case of crude oil, the logistics are such that the risk of physical shortages is minimal and any tightness of supplies would immediately be reflected in prices. Gas, however, is different – it has different logistics, different pricing mechanisms, etc.

Box 1. Concepts of security of supply

In its 2000 Green Paper on the security of supply the European Commission notes that “energy supply security must be geared to ensuring...the proper functioning of the economy, the uninterrupted physical availability...at a price which is affordable...while respecting environmental concerns...Security of supply does not seek to maximise energy self-sufficiency or to minimise dependence, but aims to reduce the risks linked to such dependence” (European Commission, 2000, p. 2). The 2006 energy Green Paper very much stays in this line of thinking by describing the proposed energy strategy for Europe as an attempt “to balance security of supply, competitiveness and environmental protection” (European Commission, 2006). The International Energy Agency (IEA) attaches more importance to the market:

Technological developments will affect the choice and cost of future energy systems but the pace and direction of change is highly uncertain. Governments will...have an important role to play in reducing the risk of supply disruptions. Regulatory and market reforms...will also affect supply. Increased competition between different fuels and between different suppliers of the same fuel will tend to narrow the gap between production cost and market prices, reducing monopoly rents, encouraging greater efficiency and lowering the cost of supply (IEA, 2001).

The European Parliament sees that “being dependent on imports is neither necessarily a bad thing nor economically inefficient provided the sources are diverse, no one supplier is dominant and we can produce sufficient goods and services to pay for them” (European Parliament, 2001).

What is a risk?

The literature traditionally distinguishes between two different kinds of risks: short term and long term (see for example IEA, 1995 and Stern, 2002).³ Short-term risks are generally associated with supply shortages because of accidents, terrorist attacks, extreme weather conditions or technical failure of the grid. Such risks are sometimes described as ‘operational security’ or ‘systems security’. Long-term security concerns the long-term adequacy of supply, the infrastructure for delivering this supply to markets and a framework to provide strategic security against major risks (such as non-delivery for political, economic, *force majeure* or other reasons). In line with the European Commission’s 2000 Green Paper on the security of energy supply, the following types of risks can be identified:

- *Technical risks* include systems failure owing to weather, lack of capital investment or generally poor conditions of the energy system.
- *Economic risks* mainly cover imbalances between demand and supply, stemming from a lack of investment or insufficient contracting.
- *Political risks* concern potential government decisions to suspend deliveries because of deliberate policies, war or civil strife, or as a result of failed regulation, which is referred to as ‘regulatory risk’.
- *Environmental risks* describe the potential damage from accidents (oil spills or nuclear accidents), including pollution, the effects of which are less tangible or predictable (e.g. greenhouse gas emissions).

It is also interesting to note that all recent supply disruptions in the EU have had domestic causes, e.g. grid failure, a lack of reserve capacity or oil product shortages as a result of refinery blockages. As this above list shows, there are many different risks to the security of supply, of which import dependence on politically unstable or unpredictable countries is but one. Therefore, in order to identify a suitable response, it is necessary to first clarify the exact nature of the risk including its likelihood and potential consequences (i.e. a risk assessment) (Table 1).

³ There is no agreement on terminology. Different terms are used for the same concepts.

Table 1. Classification of security-of-supply risks in the EU by sector – Oil, gas, coal, nuclear, renewable energy sources (RES) and electricity

Classification	Event	Disruption	Price rise		Probability in 20 years	Duration	Fuel affected						
			International	Domestic			Oil	Gas	Coal	Nuclear	RES	Elec.	
Political risks													
1	Export embargo	Embargo of specific exporter (e.g. Iraq)	Little	Little	Little	High	Months, years	x	x	–	–	–	–
2	Output reduction	Quotas on production to raise prices (e.g. OPEC cartel)	Yes	Yes	Yes	High	Months, years	x	–	–	–	–	x
3	Local market disruption I	By pressure groups (e.g. fuel price protest)	Yes	–	Yes	Medium-high	Weeks, months	x	–	–	–	–	x
4	Local market disruption II	Regulatory shortcomings (e.g. California power crisis, Nordic market)	Yes	No	Yes	Medium-high	Weeks, months	–	–	–	–	–	x
5	International market disruption	Regulatory failure, (e.g. regulation, competition, financial markets)	Yes	Yes (or rationing)	Yes	Medium	Weeks, months, years	x	x	–	–	–	x
6	<i>Force majeure</i>	Civil unrest, war, deliberate blockage of trade routes	Yes	Yes	Yes	Low-medium	Variable	x	x	–	–	–	–
7	Import embargo	Embargo of importing state by export or transit country (e.g. gas cut-off)	Yes	No	Yes	Very low for EU	Months, years	–	x?	–	–	–	–

Table 1. Continued

Economic risks													
8	Public opinion on large-scale investment	Delay in planning, under-investment	Yes	No	Yes	High	Years	x	x	x	x	x	x
9	Supply discontinuity	Lack of infrastructure	Yes	Yes	Yes	Low-medium	Months, years	x	x	–	–	–	x
10	Production discontinuity	Shortage of production capacity	Yes	Yes	Yes	Low	Years	x	x	–	–	–	x
Environmental risks*													
11a		– Major oil spill (land or sea)	No	Yes	Yes	Medium	Weeks, months	x	–	–	–	–	–
11b	Accidents	– Major nuclear accident	Yes	No	Yes	Low	Months, years	–	–	–	x	–	x
11c		– Burst of major gas pipeline	Yes	Yes	Yes	Low	Weeks, months	x	x	–	–	–	x
12a	Disruption/ destruction of habitat	1) Massive biomass plantations 2) Ultrasonic waves (of wind turbines)	Yes	No	Yes	High	Months, years	–	–	–	–	–	–
12b	Run-away greenhouse effect	Clear indicators in biosphere (e.g. the melting of permafrost)	Yes	No	–	Very low	Perm./ irreversible	x	x	x	–	x	x
Technical risks													
13	System failure	Technical failure (e.g. due to extreme weather conditions, technical neglect)	No	No	Yes	Medium	Days, weeks	–	–	–	–	–	x

* Environmental risks are risks to supply only in an indirect way. Risks from accidents or other environmental dangers are related to subsequent government action, which might act as a dampener to investment and therefore create bottlenecks. Strictly speaking, environmental risks could also be listed under political risks.

Source: Adapted from Egenhofer & Legge (2001).

The second step in this respect is then to identify the possible responses and the responsible actor/s (more specifically, those involved with risk management).⁴

Turning to gas and notably European dependence on Russia, the risks associated with import dependency can be mitigated by a number of general, well-known (horizontal) measures. These not only include diversification by region or by fuel to the extent possible, but also storage requirements, mutual solidarity and the development of liquefied natural gas. In addition are measures for network development and for improving the functioning of the internal gas and electricity markets, which will provide for further flexibility within the gas markets and which by extension should increase security. Moreover, previous work by CEPS (Luciani, 2004) has shown that in the case of Russian gas, import dependence does not necessarily entail greater insecurity⁵ – actually, the opposite may well be the case, provided adequate EU policies are in place, as the next section and Box 2 shows.

Box 2. A market-based mechanism to hedge risks arising from import dependence

Luciani's (2004) proposal for a market mechanism to deal with Russian import dependence starts with the premise that not all consumers have the same needs. He therefore makes a distinction between priority (firm or non-interruptible) and interruptible customers. Gas suppliers should be required to protect their priority customers, in essence households and other small consumers. As long as their exposure to the possible negative event (percentage shortfall in supplies) is lower than the share of priority over total customers, they may not need to worry about the security of supplies. This idea suggests that the security-of-supply standard could be defined as the guarantee that all the gas volumes demanded by non-interruptible (firm or protected) customers are available at a reasonable price. Such a standard is best established at the EU level. As a result, an increase of natural gas in power generation will improve the non-interruptible and interruptible consumer ratio and therefore increase the security of supply for gas. Nevertheless, to some extent this increases the risks for power generators, who would eventually need to invest in dual-fired generation, which is likely to increase their costs. Interruptible customers need to be offered lower prices since they do not require protection in the event of a crisis (they may opt to withdraw from the market or maintain their own alternative fuel capacity).

Source: Luciani (2004).

Security of supply as an externality

The old monopolists used to claim that they guaranteed the security of supply – a statement supported by the experience of decades of service to the public, during which very little disruption was experienced. It is not clear, however, that security of supply was truly guaranteed in the past – as it was in fact never challenged by any major disruption. The old monopolists were in a position to decide unilaterally how much security they intended to provide and did engage in some precautionary investment, thanks to their ability to pass on the cost to the final consumer. The security they provided may have been too little or too much. There was no benchmark for measurement.

The concern about security of supply in liberalised markets is connected to viewing security as a public good or externality. In liberalised markets, new competitors will be tempted to 'free-ride' on the security provided by the incumbent suppliers and competition may have a negative effect by downplaying security or prioritising cost-cutting. Similar fears have been expressed with regard to other network industries such as airlines, railways and electrical grids.

⁴ Note that some risks might deliberately go 'uninsured' because they are 'uninsurable', at least in the short term (e.g. terrorist attacks) or may be extremely unlikely (e.g. a meteorite falling on a major installation). It is impossible to maintain security of supply in any circumstance, for instance, if all major exporters to the EU were simultaneously to decide to interrupt exports.

⁵ Such a threat means that if gas of a significant proportion is not delivered, it can cause physical interruptions over a period of time but not indefinitely.

Normally, security is viewed as a matter for governments to look after. This perception holds true for small commercial or household customers, who will not be in a position to judge their security requirements exactly and will need standard contract formulae that set the level of protection to be decided by the regulator. The level of protection does not need to be 100%. Gas in households and small commercial establishments is primarily used for cooking and for ambient- and water-heating. In situations of emergency, all such uses can be reasonably curbed to some degree. It is therefore also reasonable to set the guaranteed level of supplies at an appropriate percentage of ‘standard’ consumption.

Not all customers need to be protected against supply disruptions. In liberal markets, customers have a choice of whether to assume responsibility for security of supply themselves or to allow the supply company to bear the responsibility and subsequently pay for it⁶ through higher energy prices. The former is typically done by large industrial users, for which (short-term) security might not be a problem if they can switch fuels. A large industrial user may choose to buy gas from a risky but cheap source, accepting the risk of higher short-term prices from a spot market or mitigating the risk by installing a dual-firing capability or a back-up from another supplier. See also Box 2, which proposes a market-based mechanism to cope with risky supplies.

Indeed, the Commission has frequently argued that a unified EU gas market would be intrinsically more secure than the individual member countries’ markets. The reasoning here appears to be based primarily on scale: a larger market, served by a wider and well-interconnected network that receives supplies from a larger number of exporters, may be expected to be more stable. This conjecture may well be the case; however, numerous conditions need to be fulfilled, notably that the markets function, that the interconnections are established and more generally that the necessary regulatory or contractual arrangements are in place.

Integrating climate change and security-of-supply policies

In addition to availability (the physical dimension) and affordability (the price dimension), the Green Paper adds a third element, sustainability (the environmental dimension), to the security of supply, more specifically to address climate change.

According to the Intergovernmental Panel on Climate Change (IPCC) in its Third Assessment Report (IPCC, 2001), evidence is growing stronger that most of the temperature rise that has occurred over the last 50 years is attributable to human activity. This authoritative scientific body warns that an increase in global temperatures is likely to trigger serious consequences for humanity and other life forms, including a rise in sea levels (which will endanger coastal areas and small islands) and a greater frequency and severity of extreme weather events.⁷ The spring 2005 European Council endorsed the target of limiting the future global average temperature increase to 2°C above its pre-industrial level and indicated its willingness to explore with other countries the possibility of reducing greenhouse gas emissions from industrialised countries by 15% to 30% from a 1990 level by the year 2020 (see Egenhofer & van Schaik, 2005).

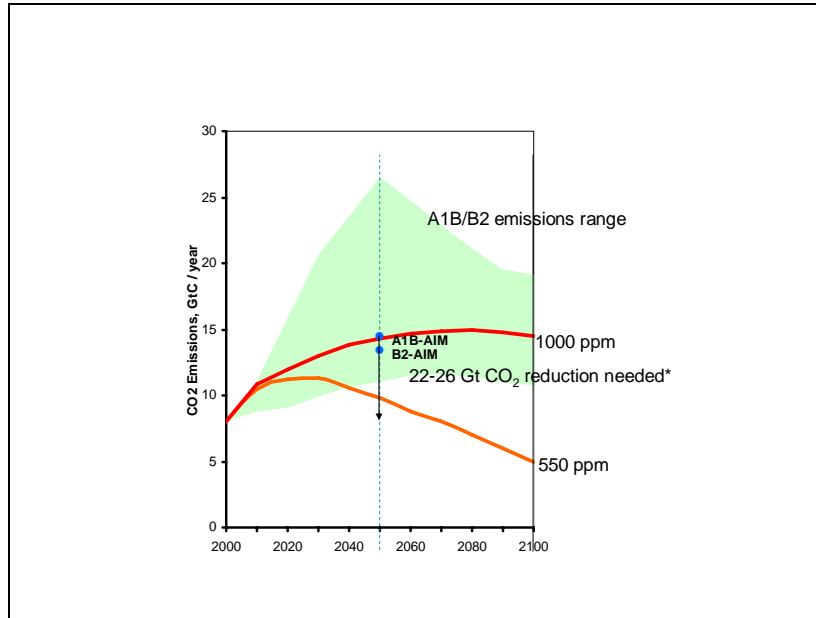
In the long term there is probably a need to reduce some 25 bn tonnes of CO₂ per year globally after 2050 (IPCC, 2001 and WBCSD, 2004; see also Figure 1) to avoid dangerous climate change. For comparison, the initial Kyoto Protocol target of the EU was around 400 mn tonnes, i.e. a tiny fraction

⁶ Payment in this respect includes a risk premium. With oil, for example, prices in long-term energy supply contracts tend to be higher than in spot markets, reflecting a lower security-of-supply risk.

⁷ For the EU, the European Environment Agency has found similar indications (see EEA, *Impacts of Europe’s changing climate: An indicator-based assessment*, EEA Report No. 2/2004, EEA, Copenhagen, 2004). For the most recent update on climate impacts, see H.J. Schellnhuber et al., *Avoiding Dangerous Climate Change*, Cambridge, MA: Cambridge University Press (2006) (retrieved from <http://www.stabilisation2005.com/index.html>).

of it. The 25 bn tonne reduction assumes that in the long term industrial countries will need to reduce emissions by some 50-60% by 2050 and 80% or beyond by 2100. Given that within the EU 80% of all emissions are related to fossil fuel burning in the energy, transport, household and industry sectors, energy policy will increasingly be constrained by climate change objectives.⁸

Figure 1. Achieving an acceptable CO₂ stabilisation



Notes: The figure of 22-26 Gt of CO₂ is equal to 6-7 Gt of carbon. A1B-AIM/B2-AIM are IPCC scenarios used by the WBCSD; B2 describes the lower energy-use scenario, i.e. an intermediate level of global growth while A1B is the higher energy-use scenario, i.e. very rapid global economic growth.

Source: WBCSD (2004), based on scenarios from the IPCC's *Third Assessment Report* (IPCC, 2001).

Table 2 shows the scale of the task by breaking down the overall target into specific activities, the implementation of which could achieve reductions of 3.7 bn tonnes of CO₂ emissions (or 1 gigatonne (Gt) of carbon), out of the total 22-26 Gt of CO₂ that will be needed. For example, one could install 150 times the current wind power capacity, bring into operation 1 bn hydrogen cars to replace conventional cars offering 30 (US) miles per gallon (7.84 litres per 100 kms) or install five times the current nuclear capacity. Alternatively, one could use half of the US agricultural area for biomass production.

For illustration, the World Business Council for Sustainable Development (WBCSD), a pro-environmental grouping of multinational companies including most energy industries, has developed a possible EU-25 pathway (WBCSD, 2005). It foresees an overall reduction in primary energy demand, electricity as the main end-use energy source, a broad-based energy mix including nuclear power, petroleum, bio-fuel or hydrogen in the transport sector and the large-scale use of renewable energy sources. Milestones by 2025 would include some 30-plus large generating stations using carbon capture and storage, a rise in the use of natural gas by 35% from 2002 (mainly for power generation)

⁸ It is generally assumed that fossil fuel use will not peak not because of resource availability but because of requirements to mitigate greenhouse gas emissions. Although oil is predicted to peak around 2020, fossil fuel use (i.e. when including coal) is not expected to do so before 2050.

and a restart in nuclear power growth. Alongside these targets would be a rapid spread of renewable energy, an increase in the use of wind power by some 10-15 times the 2002 level and vehicle efficiency improvements by nearly 50% with bio-fuels or hydrogen (or both) having a strong foothold (resulting in 10% of on-the-road usage). Going down such a pathway will have a fundamental impact on energy policy.

Table 2. The challenge: A fall of CO₂ emissions by 3.7 bn tonnes per year requires reductions to achieve 550 ppm of stabilisation (a decrease of 25 Gt of CO₂ by 2100)

Technology	Required for 3.3 Gt of CO₂ per year
Coal-fired power plant with CO ₂ capture/storage	700 x 1 GW plants
Nuclear power plants replace average plants	1500 x 1 GW (5 x current)
Wind power replaces average plants	150 x current
Solar PV displaces average plants	5 x 1 million ha (2000 x current)
Hydrogen fuel	1 bn H ₂ cars (CO ₂ -free H ₂) replacing 1 bn conventional cars of 30 mpg (7.84 litres per 100 kms)
Geological storage of CO ₂	Inject 100 mb/d fluid at reservoir conditions
Biomass fuels from plantations	100 x 1 million ha (half of the US agricultural area)

Notes: Based on an assumed stabilisation at 550 ppm (parts per million); an ‘average plant’ describes the current fuel mix; mb/d = million barrels per day.

Source: Egenhofer & van Schaik (2005), p. 8, updated.

The EU has claimed on several occasions (European Commission, 2005a and 2005b) that energy security and climate change policy are compatible, and even mutually reinforcing. Both energy security and climate change objectives would benefit from an improvement in energy efficiency, a higher market share of renewables as well as investment in technology development. While this is the case for the short term (i.e. meeting the Kyoto Protocol targets), the relationship between energy security and climate change might also see tensions. Strategies to reduce import dependence on oil and natural gas could lead to a shift to ‘dirty’ substitutes such as tar sands, oil shales, coal or coal-to-liquids, all of which are available from countries seen as more friendly by the West. Similarly, worries about nuclear proliferation could lead to a rethinking of the expansion of atomic energy. The natural substitute for nuclear fuel is coal.

The likely absence of a global climate-change agreement – as the setting of a carbon constraint at the global level is unlikely to be achieved before 2020 – will reduce investment certainty, principally in the energy sector. The resulting uncertainty might lead to insufficient investment in low-carbon technologies that are in line with long-term climate change targets, necessitating an early retirement of the capital stock that is currently built. The importance of this issue at the present time is underlined by the need for investments in the capital stock over the next 20 years. For example, the EU will require 600 GW in new investment before 2030 in the power sector alone, while being unsure about the exact nature of the future carbon constraint.

Conclusion

In 1963, in a book Harold Lubbell expressed his concern about the vulnerability of the Western economies to potential future events. He sketched some possible scenarios, including an Iraqi invasion of Kuwait, a revolution in Iran, a coup in Iraq that brings a ‘young Turk’ to the helm, a breakdown in relations between oil companies and governments, civil war in Lebanon and the nationalisation of the Arabian American Oil Company (Horsnell, 2000, p. 1). In 2006, talk about similar scenarios can be observed. There is a lot of discussion about the new role of governments and generally more interest in the ‘securitisation’ of energy policy, i.e. using security and defence policies for security-of-supply purposes. Markets and security policy can make strange bedfellows, however.

Our analysis has found little evidence that market liberalisation is in conflict with the security of supply, and hence the need for heavy state intervention, other than traditional measures such as diversification, consumer-producer dialogue or technology development. As the 2006 Green Paper argues, by and large market liberalisation will enhance the security of supply, provided adequate provisions are put in place to deal with certain specific risks. While dependency on Russian gas may indeed pose a supply risk, the point has been made that there are many other supply risks of which Russia is but one. In fact, all recent supply disruptions have been ‘domestic’, i.e. caused by events within the EU. Some possible market-based measures have also been sketched out to deal with gas-import dependence on Russia.

Further attention is needed, however, to address the climate change dimension of energy security. While energy security and climate change policies have synergies with regard to energy efficiency, renewable energy sources, nuclear fuel (where politically acceptable), public R&D spending and technology development, there are equally tensions between the two objectives. Fears about import dependence for oil and natural gas might lead to a revival of high-carbon fuels such as tar sands, oil shales, coal and coal-to-liquids, notably for the power sector. Worries about nuclear proliferation could undermine further nuclear investment. Moreover, current uncertainty about the future global climate regime is likely to stop or at least delay investment in the power sector, which will put added pressures on energy supplies and potentially increase the risks surrounding supply adequacy.

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Growth with Energy and Energy Security

Leonid Grigoriev*

The global economy has been enjoying an economic upturn for four years. Normally, at this stage of the global cycle economists would be discussing the threat of inflation and high interest rates coming from high commodity prices. The current situation is different, however.¹ If one had expected that high oil prices would slow down economic growth in OECD countries (as has happened before), the effect has yet materialise. So far, the strong import demand from oil-producing countries has been facilitating a rise in the exports of manufactured goods and services from the United States, Germany, China and other countries. A few of the other important features that have emerged in the first decade of the 21st century include

- persistent major imbalances (such as in the US current accounts);
- the continual move of manufacturing to Asia;
- the demands for heating/cooling and fuel by a growing middle-class worldwide;
- oil (and gas) prices that remain high (although still under 1982 levels in real terms); and
- the savings that are accrued from emerging market economies (especially Russia) are not being utilised domestically.

The current situation follows 15 years (1986–2000) of relatively low oil prices – \$19-20 per barrel. The long period of low prices resulted in a low level of investment in the oil industry. During this period, supply was sufficient and in 1998–2000, it seemed that inexpensive oil was assured for the time being.² But seemingly overnight, political events rapidly began to destabilise some of the oil-producing countries. At first, no one believed that oil prices would exceed \$30-40 per barrel, but it soon became a new reality. During 2001–04, an additional 3 million barrels of oil per day from the countries of the Commonwealth of Independent States – chiefly Russia – helped to balance the market. Yet with OPEC's spare capacity (if any) sitting at its lowest level historically and no immediate prospects for tranquillity in the Middle East, the price of oil shot up to the range of \$60-70 per barrel, pushing up the price of natural gas alongside it.

Here we have three initial points to make. First, the global political instability – especially in oil-producing countries – makes everyone nervous about future investments and supplies. Second, Russia and Russian companies have played a positive role recent years. Third, the prospect of global energy demand growing by 50% (according to the International Energy Agency or IEA) by 2030 makes a perfect case for international cooperation, given that time is rather short.

Current trends in Russia – Economic growth and the interests of companies

Russian economic recovery in 2000–03 was based on four factors: devaluation of the ruble, spare capacity in many industries, a devaluation (or writing off) of enterprise debt and the growth in oil prices. By that time, the country had made a short-cut from a quasi-egalitarian society to one similar to those in Latin America in terms of market liberalisation, but had failed to revive manufacturing and innovation. The long-awaited macroeconomic stabilisation did not bring modernisation and a burst of

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¹ See for example D. Gros, T. Mayer and A. Ubide, *A World out of Balance?*, Special Report of the CEPS Macroeconomic Policy Group, CEPS, Brussels (2006).

² See J. Mitchell, K. Morita, N. Selley and J. Stern, *The New Economy of Oil – Impact on Business, Geopolitics and Society*, Royal Institute of International Affairs, London (2001).

investment. The specific aspects of privatisation favoured the formation of big industrial groups, mostly in the natural resource sectors. Russia's elite and intellectuals keep hoping that after the prolonged and painful transitional crisis the country will eventually re-emerge as an intellectual and cultural force. That is important with regard to the case of energy because Russia's main problems (which influence everything) are domestic: democracy and modernisation. Domestic debates mostly concern health care and education, administrative reform and the survival of hi-tech industries.

After two more years of economic upturn, Russia's GDP had reached 89% of its 1990 level and 140% of real personal consumption. Nevertheless, Table 1 shows evidence of what Russia still lacked economically at that stage.

Table 1. Main economic indicators for key EU countries, Russia and the US (2001–05 averages)

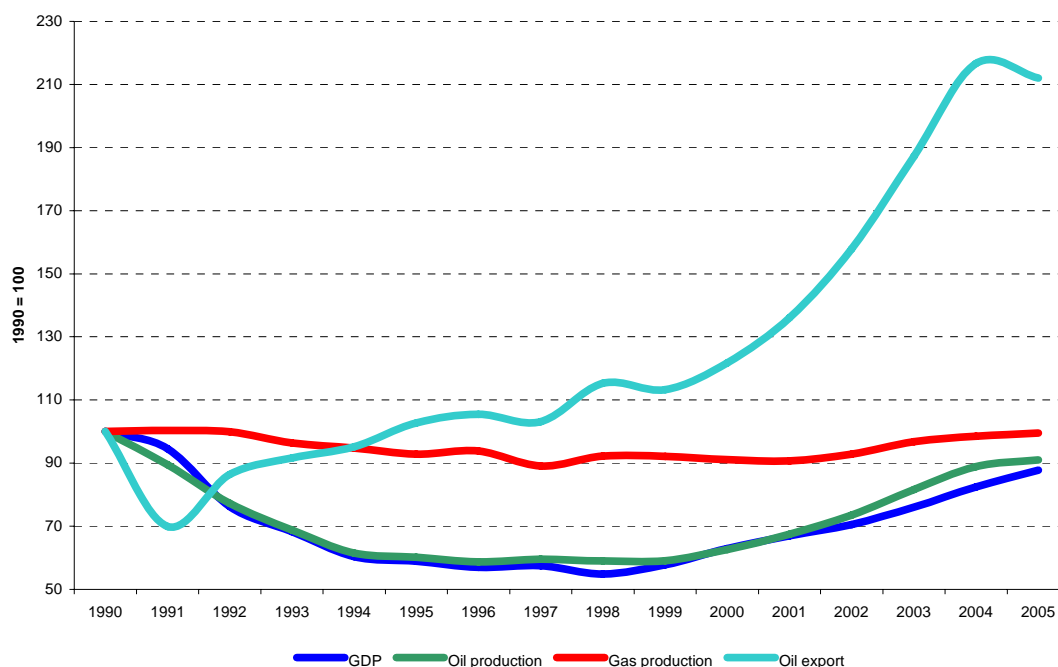
	GDP per capita 2005 (\$)	GDP 2005/1990	GDP average growth rate (%)	Savings rate (% of GDP)	Investmt. rate (% of GDP)	General gov. expenditures (% of GDP)	General gov. budget deficit (% of GDP)
EU-15	33,390	1.35	1.6	20.8	19.5	47.4	-2.2
France	33,734	1.35	1.5	19.8	19.2	52.9	-3.1
Germany	33,922	1.23	0.7	22.2	18.1	47.5	-3.5
Italy	30,450	1.23	0.6	21.3	20.8	47.8	-3.4
UK	36,599	1.44	2.3	13.2	16.4	42.3	-2.2
NMS-10	9,450	n/a	3.6	19.3	22.0	42.3	-3.3
Poland	7,875	1.67	2.9	16.4	18.8	43.6	-3.6
Norway	64,268	1.63	2.1	33.2	18.1	45.7	11.6
Russia	5,369	0.89	6.7	36.0	18.2	28.8	3.6
US	42,101	1.56	2.7	14.2	19.1	33.0	-3.7

Sources: Eurostat, Rosstat, IMF and the Bureau of Economic Analysis.

Russia could not utilise its savings (36% of GDP) and turn them into capital formation (18%). Russia exports commodities and imports consumer goods because the strong ruble makes a substantial proportion of domestic industries less competitive. The export of capital from Russia is composed of foreign direct investment in addition to capital flight, while the import of capital is mostly portfolio-related (including some round-tripping). Without improvements to its investment climate, strengthened property-rights protection, reductions to corruption and the development of small and medium-sized firms, etc., it is hard to make better use of its own savings. So far, the country has failed to use available financing for investments, either private or public. Russia's budget surplus represents a relatively low level of government expenditures – 29% of GDP versus 47% for the EU-15. In any case, Russia is a country with substantial economic problems, supplying energy and other materials to more developed and prosperous countries.

Actually, Russia is just coming out of the crisis and may reach its 1990 GDP level in 2007 (Figure 1). High oil prices have brought new income to the government budget and to companies, which serves as a resource to solve some problems, but it has come hand-in-hand with a severe case of the 'Dutch disease'. The government is experimenting with national projects in an effort to find a way to put some money into housing, agriculture and the rehabilitation of education and health care systems.

Figure 1. Dynamics of GDP, oil and gas production, and oil exports for Russia during 1990–2005 (1990=100)



Sources: Rosstat, BP Statistical Review and the IMF.

Figure 1 shows that the economic decline and recovery in terms of real GDP and oil extraction were quite similar. The limited domestic demand for oil provided for substantial additional exports of oil in the period of 2001–04. Russian oil exports have doubled in recent years. The gas industry was able to prevent a major reduction in upstream gas during the transitional crisis in the 1990s but has had limited additional supply in the last few years. Recently, the blackout in Moscow on 25 May 2005 led to the discovery that regional limitations may appear in the supply of electricity.

In these conditions, we believe the government is taking into account the interests of large companies in terms of economic legislation and regulation. Russian firms in the energy sector are trying to extend their service chains and achieve higher tariffs for gas and electricity in the domestic market. The interests of Russia's national utility firm RAO UES and Gazprom are often involved in the conflicts over tariffs, with their general aim of higher domestic prices. Oil companies are trying to establish a name for themselves globally and are hiring good technicians, lawyers and financiers to pave the way to the world of major international companies.

Russian energy companies are positioning themselves strategically for long-range development. They have just come to the global market to compete with the veterans of a century of competition. This approach is rather close to one that the World Bank suggested for large net exporters, whereby the reasonable strategy would focus on three major goals:

- establishing a position on the strategic markets with reasonable prices;
- diversifying the export markets for energy; and
- securing financing for investments in infrastructure and the exploration of energy resources.

Russian national interests lie in modernising its society and the state, strengthening democracy and advancing its economy from being oil- to technology-driven. From our point of view, corporate governance and financial systems are still very weak. Building a national financial market and

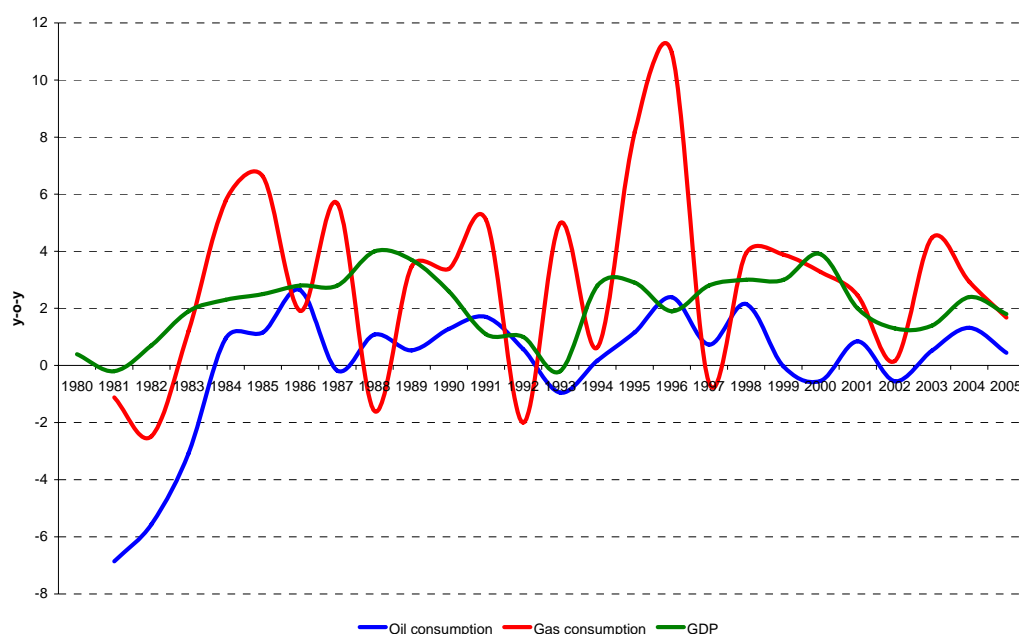
institutions is not an easy task in a country with huge social and regional inequalities, along with the dominating interests of big companies. While oil money is useful, it is causing a rise in the ruble and import competition. At the same time, the general advice for Russian monetary authorities is to put such income into a portfolio fund. Currently, public and other new investment funds for financing domestic projects are small, especially in the circumstances created by 15 years of low investment. The varying interests of companies and regions are not easy to reconcile with federal policy. In this situation, large Russian companies are positioning themselves globally as any trans-national corporation would do in their place. And domestically they are trying to improve and protect their positions in taxation and competition policies.

What is described here is not a situation of ‘Russia Incorporated’ as some view from the outside, but a multifaceted world of competing interests. Domestically it is a problem for economists and politicians to find an effective way of rebuilding such a complex country, which has lost 15 years of development during the very period of strong technological progress worldwide. Russia’s energy sector and policy cannot be studied separately from the deep modernisation problems the country currently faces or the analysis may be doomed to be incomplete and from time to time mistaken.

Current trends in the EU – Economic objectives and energy security

Economic growth in the EU in recent years required relatively little additional oil but a lot of gas – as shown in Figure 2. There are numerous forecasts for the future needs of the EU-25 in terms of oil and gas, but most were formulated before the last surge in prices. Now the EU is facing the time of decision on its energy future. Actually, the energy security issue has a long history, during which the supply of oil from the Middle East has come into focus in recent years: “Russian oil is being seen as a ‘security blanket’ in case of a Saudi disruption”.³ The cold winter of 2006 forged a new angle in the problem – the sufficiency and security of gas supplies to the EU.

Figure 2. Growth rates of GDP and consumption of oil and gas in the EU-15 (1980–2005)



Source: BP Statistical Review.

³ This quote is derived from J. Nanay, “Russia and the Caspian Sea”, in *Energy Security*, Baltimore, MA: John Hopkins University Press (2005), p. 133.

The European Commission's Green Paper of March 2006 is an excellent document describing the actual problems of sustainability, competitiveness and the security of energy supply for the EU-25. Growing EU dependence on imported energy resources is considered a threat for three reasons: a rising dependence on imports (for up to 70% of overall energy and 80% of gas by 2030), too large a share of imports are derived from just three neighbouring countries and high prices affect competitiveness.⁴ From the Russian perspective we need to look at the forecasting process anew – how the demand for imported energy would be affected by high prices and decisions about saving energy in the long run. At least the demand for energy in the EU with respect to GDP growth was somewhat lower for 2005. Still, the objectives the Green Paper presents for meeting the EU's energy demands are very wide-ranging and complex – and it is indeed a very complicated undertaking even for developed countries with the huge economic, financial and managerial capacities of the EU. The economic analysis is quite correct on the trends and forecasts of energy needs. But in the short run it is a very hard to expect an effective solution for all problems.

Prioritisation is an important issue, as a multi-objective policy may be overly complex and experience delays and indecision. We will not judge for the EU or its countries but it appears that hard budget constraints must be considered when sequencing actions. The costs related to high energy prices plus EU enlargement and other important tasks are considerable. A figure of €1 trillion for energy investments breaks down into €50 bn per year, so it still looks like prioritisation is needed. We do not doubt the possibility of achieving all three goals (ensuring competitiveness of the economy and environmental protection along with securing energy supplies) in the long run. But it is a gargantuan job to achieve all of them at the same time. We see the prioritisation of EU energy objectives as follows: 1) sustainability, 2) competitiveness (liberalisation) and 3) security.

First, on the goal of sustainability, stabilising the climate is the real problem now and in the near future. Natural disasters are becoming more and more damaging and costly in terms of human lives, infrastructure, financial costs (e.g. insurance), repairs, etc. Climate change is also starting to affect the lifestyles and expectations of people. All decisions in this sphere are expensive because they limit output, but there is no escape.⁵ This objective invokes the issue of nuclear energy policy, which is not popular in Germany or among the majority of non-governmental organisations (NGOs) worldwide. Climate change is growing more serious and exacerbating the global situation; it will inevitably lead to political decisions and spending.

Renewable energy sources are still rather costly and in the next 25 years we will not be able to change the lifestyles and modalities of energy consumption radically. Major technological changes are on the horizon but are not ready for use today. The Russian government is ready to go forward on a major revival of nuclear electricity, which is likely to face less resistance from domestic NGOs. The American–Russian nuclear initiative and all other sophisticated aspects of this issue are connected to the trade of nuclear materials and potentially to the Energy Charter negotiations.

Second, the liberalisation of energy markets looks like a natural and low-cost option for governments but not for companies.⁶ It affects the interests of major players in the energy sector on the corporate level. Sometimes it is much easier to change legislation than the method of operation. Furthermore, the openness of a market affects the way outsiders (large companies from supply countries) see their future in that market and how much investment they can bring to the EU. We sometimes read

⁴ See European Commission, *Secure, Competitive and Sustainable Energy for Europe*, Green Paper, Brussels, 8 March 2006.

⁵ See the statement published by Civil G8 of the NGO meeting in Moscow on 9-10 March 2006, "On Activities to Ensure Global Energy Security, Recommendations of the Forum on the Meeting of the Heads of G8 Countries in St. Petersburg in July 2006", Civil G8 Documents, G8 Civil Forum (2006) (retrieved from <http://www.civilg8.ru>).

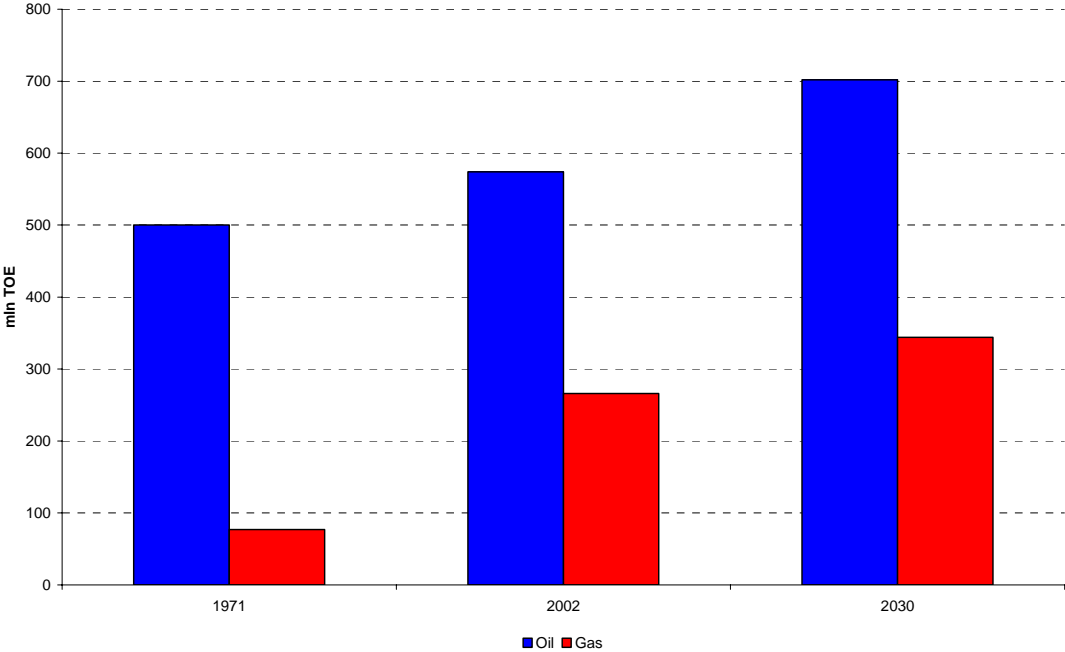
⁶ The European Commission is conducting an investigation into corporate behaviour in the gas market.

statements by incumbent companies on ‘preventing’ new entrants in the EU downstream (retail) market, which are not consistent with official EU policy.

The success of gas market liberalisation in the UK is obvious – only in the UK do we observe the predominance of short-term contracts and transparent access to pipes. But it has not been able to prevent price rises in 2004–06 for general reasons. Gas prices in the winter of 2006 exceeded those on the continent, despite the fact that the interconnector was half-empty (or half full).⁷ In any case, in the short run the EU is dealing with the potential gas supplies covering the period 2015–20. In this respect, the effectiveness of policies should not be overestimated, while gas requirements should not be underestimated (Figure 3).

The continued concentration of dominant businesses in the EU’s energy sector is affecting competition in this market. At the same time, it is clear that the EU-wide liberalisation of the gas market is still mostly at the ‘paper and regulation’ stage. Actual access to pipelines and the number of contracts remain very limited in the EU. In this situation, outsiders are naturally very cautious about subscribing to future rules. The history of negotiations on the transit of energy resources across the EU shows that the rules of conduct associated with this important matter have not been defined so far within the EU. A liberalised gas market in the EU will take years to build additional physical infrastructure, information systems, legal rules on the ground and actual good practice. It would be much easier to convince outsiders in neighbouring countries to liberalise after such liberalisation in the EU market shows some attractive success.

Figure 3. Forecasts of demand for oil and gas by the EU-25 (mn tonnes of oil equivalent (TOE))



Source: International Energy Agency, *World Energy Outlook 2004*, IEA/OECD, Paris (2004).

The liberalisation of energy markets with huge energy (combined gas–electrical) companies as major players will not be easy. To assure the positive competitive result some new players would be helpful. New producers will be trying to reach the retail level of gas distribution by applying the old market rule of squeezing ‘the middle man’. The positive impact would as usual be shared between consumers and suppliers. With the prospect of falling oil and gas prices in the medium term it is important to have

⁷ See IEA/OECD, *Natural Gas Market Review*, IEA/OECD, Paris (2006), p. 28, Fig. 8.

these players enter the market and start spending their profits on investments before these entrants face cash limitations. One may expect that companies from outside the EU would come from a different business culture and business climate. From our point of view, the obligations undertaken by entrants, the amount of money paid for equity stakes and the legal and business environment for new entrants in the sophisticated world of the EU (institutions!) matter. These factors could help companies to adjust their practices to EU standards much faster than the EU's trade agreements in terms of the agreements' aim of changing the business climate in the countries from which the entrants originate. Again, some of these new players may be Russian – and include Gazprom at the very least. Russian capital is pouring out abroad because of limitations in the business climate at home and the amount of available financing. Many analysts foresee different possibilities for corporate deals in the future – including downstream activities for upstream participation. And actually, the transformation of wholesale suppliers into a vertical structure with a retail chain for a major share of final customers is something trivial in the history of economic development.

Third, the secure delivery of energy is a complicated matter for at least four reasons:

- At all stages, the access (rights) to resources, upstream operations and the transit or transport of energy have their specific risks, possible reasons for delays, etc.
- The existing delivery infrastructure inside and outside the EU was built for different historical, commercial and other reasons, and sometimes for different purposes (especially that in the former USSR area).
- Demand forecasting, investment planning and the actual construction of infrastructure and the development of big fields take years and are very risky for investors.
- Finally, there is the subjectivity of risk perception, the difference in the languages of comfort and assurance between nations and political cultures, the different readings of real events and the political and mass media interference in economic considerations.

The security of energy supply leads us to the issue of contracting and pricing. We have contracting conflicts of the usual nature with deep historical roots. Sometimes it is hard to distinguish between political pressure for enforcing a contract and political pressure for rent protection.

The so-called 'Ukrainian gas conflict' in the winter of 2006 had two stages and may now be used as a learning experiment. At first, it was essentially a conflict over gas prices in a country that has a monopoly of transit, yet a dominating supplier. Gazprom sought higher prices, since, as the IEA states, "Ukrainian prices were at very low levels compared to those paid by Western European countries in 2005".⁸ Another reason for the conflict was an attempt by Gazprom to disentangle the fees for transit from the price of gas, in accordance with the rules of the Energy Charter. The gap between Ukrainian prices and those charged for the EU had been creating huge levels of rent for Ukrainian enterprises in the steel, chemical and fertiliser sectors. Gazprom had been unable not single out and cut supplies to Ukraine alone because of the structure of the pipeline system. It thus tried to reduce deliveries to the transit country without affecting contracts in the EU. The reduction lasted for a day and a half and totalled 150 mn cubic metres (m³) (1 *promille* of annual transit capacity) according to IEA/OECD estimates.⁹

The second episode happened later in January and February against the background of a very cold winter in Europe. Regarding this instance Gazprom insists that it had tried to increase delivery but that the additional gas had been consumed in Ukraine outside any contract. So far, there have been no formal claims against Gazprom for non-delivery against contracts. Additional demand in the EU was probably offset by stored gas, which is considered a normal approach to shortfalls.

⁸ Ibid., p. 26.

⁹ Ibid., p. 25.

The nature and history of this conflict was covered by some very informative works by Western analysts.¹⁰ The position of this author has already been published (in the spring of 2006).¹¹ We believe that the political (and emotional) reading of this event was inevitable under the circumstances (one year after the Orange Revolution). The point is that a new contract for gas supply is a step in the right direction and closer to the Energy Charter rules (especially with regard to separating transit fees and the price for gas). It stirred up serious resistance because of the huge rent costs involved (\$230 minus \$50 per 1,000 m³). Diplomatic relations were involved since the previous low prices had been politically motivated.

Basically, Ukraine has enough of its own gas for its households (20 bn m³), and the cheap Russian gas was more for boosting the competitiveness of local chemical, fertiliser and metal companies (including Mittal Steel) and their profits. It is likely that the political side of the story was significantly exaggerated to protect the rent. Nevertheless, Ukrainian President Viktor Yushchenko finally supported the new deal. An American proposal for phasing in the new gas prices looks very attractive. But a few implementation problems and questions remain: Why has gas been singled out among all other market commodities? Why, after 15 years of shock-style ('therapy') transition for the 25 countries of Central and Eastern Europe, has this case become so prominent? Why should Gazprom as a commercial entity continue to subsidise Ukrainian manufacturing, and if so, how (and who bears the cost)? Actually, as things have evolved, the price package agreed looks like the proposal for phasing-in – from \$50 to \$95 and up to \$130 by autumn 2006. It should be noted, however, that the story of 2006 is again becoming difficult: Ukraine's state-owned energy firm Naftogaz is in debt (to the level of \$600 mn in June) and it appears that it is not pumping enough gas into storage for winter 2006–07 to offset seasonal fluctuations in demand by local consumers.

Finally, the hard issue of trust is difficult to discuss and predict. Yet we would just suggest separating the actual events from the media coverage of them in the gas delivery story, and ask business people from the EU energy community about the contractual issues in the supply of gas along Russian–German pipelines. We would all probably like to avoid being driven by the media into costly debates ('Hurst wars') and delays of important investment decisions. We have a 25-year history of honoured contracts. Given the time and investment constraints, it is important to look at the rational interests of the parties involved. If we try to apply the Basel principles of weighing banking risks to assessing the sources of supplies by political instability in the respective countries, we would find Russia – the traditional supplier to the EU – in the low-risk quarters.

Investment and diversification costs

We believe that some costs of ensuring alternative routes of oil and gas delivery and the diversification of supplies for countries are inevitable. But these costs should not be excessive and should be an avoidable burden for both sides. We hope some of the security costs will be reduced in the course of achieving two major objectives: more renewable energy sources or nuclear power stations and a greater number of corporate deals. Both sides – suppliers and consumers – must work to create more transparent rules, which will provide greater assurance to all the parties with regard to expected events, contractual requirements and so forth. These rules will not necessarily be the EU's internal ones; nevertheless, harmonisation of the legal space is important and achievable.

For suppliers the assurance of safe transit is a very important matter. Diversification of the sources of supplies and methods of transit are 'mirror' cases. Here it is important to avoid what we would call a

¹⁰ See J. Stern, *The Russian–Ukrainian gas crisis of January 2006*, Oxford Institute for Energy Studies, Oxford, 16 January (2006); see also PACE Global Energy Services, *White Paper: Russia–Ukraine natural gas dispute*, PACE, Fairfax, VA, 13 January (2006), p. 2 (retrieved from <http://www.paceglobal.com>).

¹¹ See L. Grigoriev and M. Salikhov, "Ukraine: Growth and Gas", *Economic Survey*, No. 2, Institute for Energy and Finance, Moscow (2006) (in Russian – but also published in English in *Russia in Global Affairs, April–June 2006*, St Petersburg: Globus Publishing House (2006), pp. 156–76).

‘tax on fear’ – an escalation in the building of pipelines and other facilities to create the illusion of independence on both sides. It is even more important to avoid overspending on these goals, as that would take money away from climate objectives and investing in upstream operations. And it would probably delay solutions to the problems of high prices and reserve capacity. With the naturally increasing role of different sources of oil and gas across the globe and the rise of liquefied natural gas, the immediate diversification of supplies looks by our account to be the third priority among the three tasks of the European energy policy.

In many ways, the existing delivery infrastructure in Eastern Europe represents the sunk costs of previous projects. It especially matters in the case of pipelines from Russia and Central Asia. For example, gas from Turkmenistan is physically processed (for quality reasons) in Orenburg. In another case, the Ukrainian transit system actually does not have the capability to limit consumption from the transit pipelines – the latter were built mostly for local supply and now badly need renovation. It is difficult to account for old and new investments in the case of the former Soviet Union – nothing is simple in the separating segments of the originally integrated systems.

The global reserve and supply situation is rather clear (Table 2). Consumers may try to make some energy savings and increase their energy efficiency but China, India and other growing countries are looking for sources of energy and trying to secure future supplies. For the next 25-30 years, the upstream operations for oil and gas will depend on reserves and the transaction costs of access and investments to a greater degree than in the recent past. At the very least, it will be a major factor for returning to ‘affordable’ prices.

Table 2. Production, consumption and reserves of oil and gas (2005)

	Oil						Gas					
	Production		Consumption		Reserves		Production		Consumption		Reserves	
	(Mn t)	World (%)	(Mn t)	World (%)	(Bn t)	World (%)	(Bcm)	World (%)	(Bcm)	World (%)	(Bcm)	World (%)
Canada	145	3.7	100	2.6	2	1.4	186	6.7	91	3.3	1.6	0.9
France	–	–	93	2.4	–	–	–	–	45	1.6	–	–
Germany	–	–	122	3.2	–	–	16	0.6	86	3.1	0.2	0.1
Italy	–	–	86	2.2	0	0.1	12	0.4	79	2.9	0.2	0.1
Japan	–	–	244	6.4	–	–	–	–	81	2.9	–	–
UK	85	2.2	83	2.2	1	0.3	88	3.2	95	3.4	0.5	0.3
US	310	8.0	945	24.6	4	2.2	526	19.0	634	23.0	5.5	3.0
Russia	470	12.1	130	3.4	10	6.2	598	21.6	405	14.7	47.8	26.6
G-8	1,010	25.9	1,803	47.0	17	10.2	1,425	51.6	1,516	55.1	55.7	31.0
EU-15	109	2.8	647	16.9	1	0.5	189	6.8	422	15.4	2.4	1.3
NMS-10	5	0.1	45	1.2	0	0.1	11	0.4	49	1.8	0.2	0.1
China	181	4.6	327	8.5	2	1.3	50	1.8	47	1.7	2.4	1.3
OPEC	1,626	41.7	363	9.5	123	75.3	488	17.7	343	12.5	88.1	49.0
Saudi Arabia	526	13.5	87	2.3	36	22.2	70	2.5	70	2.5	6.9	3.8
Total world	3,895	100.0	3,837	100.0	164	100.0	2,763	100.0	2,750	100.0	179.8	100.0

Notes: Mn t = million tonnes; bn t = billion tonnes; bcm = billion cubic metres

Source: BP Statistical Review.

A speed race for new upstream input against the depletion of old fields and additional demand for oil and gas is the reality of daily life. The cost of diversification is growing because of multiple needs and objectives. In any case, the EU-25 is too large a consumer to have any security from global affairs. Any country may try to achieve some diversity in energy input by spending some money on

infrastructure and developing a system of supply contracts, strategic reserves, spare capacity, etc. All it takes is just time and investments. But by no means can one avoid interdependence on a global scale. Table 3 presents well-known numbers for Russian involvement in supplying the EU. Given Russian reserves, that involvement will be continued in the future. The EU and EU companies may predictably spend enough money on liquefied natural gas, nuclear energy and renewable energy sources to limit Russia's share in the delivery of total energy supplies. That process will naturally force Russian companies to diversify their exports according to the situation. The global share of Russian deliveries of oil and gas will probably be flat, but may rise after coal and electricity are included. Naturally, any uncertainty in the terms of operation for outsiders usually postpones investment decisions. Companies may tend to divert exports to countries with low legal barriers and administrative costs in terms of operations.

Table 3. Russia's share in EU oil and gas imports, 2004 (%)

	Oil	Gas
EU-15, including	24.4	39.1 (EU-25)
Germany	33.7	43.3
France	14.9	21.2
Italy	23.5	34.8
UK	14.7	n/a
NMS-10, including	90.6	58.1
Poland	94.3	62.3

Sources: Eurostat and IEF estimates.

The economic cost of supporting the supply of energy for 2001–30 was put by the IEA at 1% of global GDP for this period or \$16 trillion.¹² Although this figure is widely accepted, we have the courage to weigh it with some doubt – we think it will cost more. First, the current exchange rate of the dollar may have an impact on the final number. Second, the IEA's 2003 report was prepared before the price surge and the reality is already different. Third, for oil alone some analysts estimate the figure for investments at \$5 trillion for 2006–30 (whereas an estimated figure for 2005 is \$205 bn) while the 2003 report for this sector assigns it just \$3 trillion. In this respect, even the new figure of €1 trillion for the EU for the next 20 years does not look sufficient. We should probably add to that the investments made outside the EU in the search for future suppliers.

The 2003 report expected Russia to contribute 5% of its cumulative GDP in 30 years to energy investments alone. At that time, such a figure looked excessive and unaffordable. Now Russia exports (or cannot use) three times more of its savings. Russian companies are either trying to develop energy projects on their own or on a joint venture basis, subcontracting the technology inputs. The successful example of oil from Western Siberia may continue and see certain aspects replicated elsewhere. Yet the country has domestic problems in using its own savings for development. Companies will be pushed hard to use their own national ground and resources as a platform for establishing themselves in the global economy.

Russia hopes to promote the growth of those branches of its economy that are not related to its natural resources. Progress in more advanced areas of manufacturing and innovation would make Russian society more receptive to the idea of greater extraction of natural resources for financing its modernisation and raise confidence about its future. An increasingly modernised and democratic Russia will be a better partner for the EU and will help to meet long-term energy needs.

¹² See the International Energy Agency's *World Energy Investment Outlook 2003*, IEA/OECD, Paris, November (2003).

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Caspian–Black Sea Region: Key to Diversifying Europe’s Energy Supplies

Vladimir Socor*

Europe woke up suddenly in 2006 to a massive Russian challenge to its energy security. The challenge is five-fold. First is the seemingly unchecked growth in the market share captured in Europe by Russia’s state-connected energy companies – a process fraught with political risks. Second is Moscow’s ability to manipulate the flow of supplies, demonstrated in Ukraine’s gas crisis this past winter, with repercussions in European countries farther downstream. (Russian oil companies have also cut supplies to Latvia and Lithuania for extended periods in recent years.) Third is the disruption of energy export flows even before leaving Russian territory: thus, in the winter just past, a Siberian cold wave briefly reduced the gas volume available for Europe, while a well-organised though never-explained sabotage of three energy supply lines on a single day in the North Caucasus had a devastating impact on Georgia and Armenia. Fourth is Moscow’s middleman-monopoly on eastern Caspian hydrocarbons – a novel type of leverage, usable on producer as well as consumer countries. And fifth are the rapid inroads made by Russian state-connected energy companies into downstream infrastructure and distribution systems in Europe, aiming at locking out potential competitors.

These ongoing processes directly conflict with the European Union’s supply diversification and de-monopolisation goals and are incompatible with market economics. In the short to medium term, growing dependency on Russian energy supplies could impinge on the EU’s and some member countries’ foreign policy decisions and the political cohesion of the Euro-Atlantic community.

Last winter’s events have highlighted these long-neglected but now rapidly mounting risks to the energy security of the enlarged West and its partners in Europe’s east. Brussels and Washington are beginning to acknowledge some aspects of this manifold challenge. But they have yet to focus on the dangerous nexus now forming between disruptions by Russia or in Russia and growing dependence upon Russia.

The EU needs to organise consultation and coordination with the United States towards an overall strategic concept and measures for energy security. Brussels ought to clarify for itself and for the European public that energy security has become a key dimension to overall Euro-Atlantic security, and on that basis propose the establishment of a standing EU–US consultative mechanism that can evolve into a policy-planning framework.

Were the EU to stop short of proposing a Euro-Atlantic approach, then consideration might be given to asking NATO to initiate such an approach to energy security. A start to the discussion of this problem within NATO would seem to be a natural development. The alliance is rapidly evolving into a multidimensional security organisation; energy security has become more critical to the enlarged West’s overall security than at any time in modern history; and NATO remains – as it must – the principal trans-Atlantic consultation and policy-making forum.

The EU is moving piecemeal towards its declared long-term goal of a common foreign and security policy, but it has never proposed to develop a common energy-supply policy or at least an energy-security strategy. Such a step can no longer be delayed after last winter’s experience. Brussels should announce that goal and propose the necessary institutional format.

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The relevance of EU policy will hinge on identifying these risks and calling for the development of a common energy-security strategy. This strategy must be based on the diversification of supply sources, with direct access via the Black Sea region to the eastern Caspian as a major objective, and on ensuring national or EU control (as opposed to Russian-shared control) of energy transport systems in Europe.

Although Western companies have found and are extracting the oil and gas from Caspian countries, Russia holds a near-monopoly on the transit routes to consumer countries from the eastern Caspian shore, where the great bulk of reserves are concentrated. This situation has no precedent and no parallel in the world of energy and geopolitics. Russia, the world's second-largest producer and exporter of oil (behind only Saudi Arabia), and the global 'no. 1' for gas, absorbs the oil and gas produced in the eastern Caspian basin. As a result, Europe, the main potential consumer of Caspian energy, is sliding into a dual dependence on Russia – for Russian supplies as well as the Russian transit of supplies from this region. Such dependence on a single, powerful transit country is economically damaging and politically risky to producer countries as well.

Any EU strategy must recognise that eastern Caspian oil and gas and its westbound transit via the Black Sea region are key to diversification away from EU dependency on Russia. Such recognition is long overdue and yet seems far from the grasp of policy-makers even now. Policy prescriptions in Brussels tend to focus mainly on diversifying the types of energy being used, and less so on diversifying the oil and gas supply sources in general or obtaining direct access to Caspian reserves in particular. While conservation and saving, greater use of renewable sources, interconnection of energy systems and additions to storage capacity on EU territory are all necessary measures, it would be unrealistic to expect any significant decline in hydrocarbon requirements for at least the medium term.

Thus, a viable strategy for supply diversification should aim at linking the EU with the transit and producer countries in the Black Sea and Caspian basins. This link means opening up direct access to eastern Caspian supplies, and not going through Russian territory. In parallel, the EU needs to ensure that Ukraine and other countries that traditionally carry Russian energy to Europe do not lose control of their transit systems to Gazprom or other Russian interests. At the moment, the first of these goals has not yet been declared by the EU, while the second is in jeopardy, as Moscow began setting the stage this winter for transfers of control over the Ukrainian and other transit systems.

Transit projects indispensable to EU energy security (as defined above) and vital to anchoring the countries of Europe's east include the following, among other proposals:

1) *Trans-Caspian westbound pipeline for Turkmen gas via the Black Sea region*

Turkmenistan's gas output potential may well approach 80 billion cubic metres (bcm) annually at present, from incompletely explored reserves. The trans-Caspian pipeline project, initiated by the US in the late 1990s, envisaged an annual export volume of 16 bcm annually in the first stage (mainly to Turkey) and 32 bcm in the second stage (to south-eastern and potentially Central Europe). This project was shelved in the face of Moscow's opposition (in tandem with Tehran) and the Turkmen president's prevarications, which largely stemmed from fear of Russian reprisals against him.

The gas export potential of Turkmenistan – augmented by that of Kazakhstan – increases the commercial attractiveness of this project. The import requirements of the EU, Ukraine and the Balkan countries demand its reactivation and energy security considerations make it imperative. Russian objections to a trans-Caspian pipeline on legal and environmental grounds are poorly substantiated excuses for imposing a Russian monopsony on Turkmen and other Central Asian gas.

2) *Expansion of the Shah Deniz (Azerbaijan)–Tbilisi–Erzurum (Turkey) gas pipeline*

The line is due on stream in 2007. Proven reserves at Shah Deniz, considerably exceeding the earlier estimates, now suggest that exports of more than 20 bcm per year are realistic. With the Turkish market oversubscribed, Turkey's primary role in this project can change from that of a consumer to that of transit country for Azerbaijani gas en route to Greece and the Balkans.

Yet Azerbaijani gas volumes – even if augmented by volumes anticipated from Kazakhstan in the next few years – are too small to meet the needs of markets targeted by Gazprom for its expansion. Governments in those countries do not seem convinced by the argument that they can hold off Gazprom while awaiting supplies from Azerbaijan and Kazakhstan. Those volumes would need to be combined with volumes from Turkmenistan in order to compete with Gazprom.

3) *Kazakhstani oil transport and the Baku–Ceyhan pipeline*

Along with the completion of the Baku–Tbilisi–Ceyhan pipeline, a framework agreement was signed in June 2006 on a Kazakhstan–Azerbaijan oil transport system that would feed Kazakhstani oil into that pipeline. This agreement signifies the first serious dent into Russia's monopoly on the transit of oil from Kazakhstan. But it seems limited for the time being to transport by tankers (not pipeline) and an annual volume of only 7 mn tonnes initially, reaching 20 mn tonnes annually in the peak phase several years from now.

Therefore, this system should be seen as a short-term palliative. Tanker transport in the Caspian Sea is not cost-effective. Ultimately, this system will not be viable without a pipeline. Kazakhstan's oil output is projected at some 150 mn tonnes annually after 2015, largely on the strength of the Kashagan offshore field, which is due to come on stream by 2009. Routing that field's output via Russia would be unacceptable from the standpoint of energy security. The necessary solution is a westbound pipeline on the Caspian seabed to handle the volumes from Kashagan.

4) *Extending Ukraine's Odessa–Brody oil pipeline into Poland*

Originally intended to carry Caspian oil via Ukraine for refining in Poland and to serve Central European oil product markets, the Odessa–Brody pipeline lacks Caspian oil and is being used in the reverse direction by Russian oil-producing companies. Reverting to the originally intended function would necessitate supplies of Kazakhstani oil via the Black Sea to Odessa and enlarging the pipeline's annual capacity from 8 mn tonnes to 14 mn. This would make it commercially attractive and is considered technically feasible.

Two possible terminal destinations in Poland have been envisaged for this pipeline: the refining centre at Plock or the port and refinery of Gdansk. The Gdansk option might now be receding, as the Polish PKN Orlen company has just acquired the majority stake in Lithuania's Mazeikiiai refinery and proposes to target the market for oil products in northern Poland and north-eastern Germany. This leaves the Plock option of extending the Odessa–Brody pipeline or – an alternative proposed by some Ukrainian officials – of building a refinery at Brody for Kazakh crude oil. This solution would reduce Ukraine's dependence on Russian crude oil and Russian-controlled refineries.

A European policy focus on the Caspian Sea–Black Sea region holds major opportunities for common EU–US policies on energy security. The US initiated the East–West Energy Corridor almost 10 years ago, largely in the interest of European consumer countries' security of supply within the Euro-Atlantic community. The Corridor project has only materialised from Azerbaijan to Turkey, but stopped short of extending as planned in the 1990s to the far larger eastern-shore reserves in Kazakhstan and Turkmenistan.

The EU ought to make clear that monopolisation of access to eastern Caspian hydrocarbons is unacceptable – a principle that can also form a basis for EU–US policy coordination – and that the EU has legitimate, indeed pressing, interests in obtaining direct access.

A credible EU policy would need to demonstrate that the EU means business in the Black Sea and Caspian regions. Brussels must include energy supply and transit as high priorities in the mandates of its special representatives for the South Caucasus and Central Asia and of its delegations in Ukraine, Georgia and Kazakhstan. The EU can also propose launching and institutionalising discussions with Turkmenistan and Uzbekistan on commercial development of their energy deposits and a European alternative to the Russian monopsony.

The EU also needs to step in with expert assistance to Ukraine and Moldova, as these countries are having to renegotiate their gas agreements with Russia under pressure. Russia seeks to extend its dominance over gas transit to EU countries by obtaining incremental control over Ukraine's pipeline system and full control over Moldova's, leveraging the supplier's monopoly. Ukraine now apparently wishes to extricate itself from the dangerous five-year agreements it signed in January and February with Gazprom and RosUkrEnergo, while Moldova faces the expiry of its interim agreement with Gazprom. At Chisinau's initiative, Kyiv and Chisinau jointly requested the EU in January to provide advice on the formation of market prices for gas supplies and transit and to delegate expert observers to the Ukraine–Russia and Moldova–Russia negotiations. The EU missed that unprecedented opportunity in January. But it is still not too late to become involved.

Preventing a transfer of Ukraine's gas transit pipelines to some form of 'joint' Russian–Ukrainian control (as a guise for Russian *de facto* control) is a major EU interest in Europe's east. Moscow holds out two rationales to Ukraine for such a transfer: the incentive of price and debt relief, and that of Russian investment in the pipelines' modernisation. A transfer into Russian co-ownership would increase Gazprom's market dominance in the EU as a whole and would place Ukraine's western neighbours in the EU under pressure to cede portions of their national infrastructure to the monopoly supplier.

Before Ukraine's energy predicament deepens any further, the EU can immediately offer to send a taskforce of experts to Kyiv for an overall assessment of the situation. The assessment process could soon evolve into an EU–Ukraine standing consultative mechanism. Such a body could help formulate a Ukrainian energy strategy, map out energy sector reforms, plan the modernisation of its ageing transit systems for gas and oil to the EU and consider the formation of a European investment consortium to overhaul those systems as an alternative to a Russian-dominated consortium.

By the end of 2006, the European Commission will table specific proposals for action at the level of member states and the EU, taking into account suggestions from member governments, energy companies, analysts and neighbouring countries. The Commission's proposals should highlight the Caspian basin and Black Sea region if the EU wishes to seek a credible common policy and an external strategy for supply diversification.

Energy Security, Gas Market Liberalisation and Our Energy Relationship with Russia

Alan Riley*

The thrust of this short paper is to argue that despite member state and European Union institutional endorsement of market liberalisation in the gas sector, liberalisation has almost entirely failed. The recent sectoral review paper in March 2006 by the European Commission's Directorate-General (DG) for Competition reads like a bill of indictment against the institutions, the member states and the incumbent energy firms as to their collective failure to liberalise European gas markets. Liberalisation is not a rightist free-market ideology; it is itself a means of enhancing European gas security and should reduce consumer prices over time.

This paper goes on to argue that while DG Competition's current focus on energy and particularly gas markets is welcome, the exclusion of upstream producers from the scope of its review is misguided. Only by reviewing the whole of the market upstream and downstream can the market be effectively liberalised and energy security enhanced.

In respect of Russia, the paper argues that the major threat to energy security does not come from the 'energy weapon' – the threat of politically motivated gas 'cut-offs' – but from the lack of investment in new gas fields. As a consequence, there is a serious developing threat to gas supplies to the EU as existing Russian fields go into decline. The solution to this problem is for Russia to liberalise its markets and improve legal security for investors to enter Russian energy markets by, for example, honouring the obligations under the Energy Charter Treaty and signing up to the Transit Protocol. The Russian state is currently opposed to such a development and the Kremlin can legitimately point to the EU and question why Russia should liberalise its gas market when the EU itself has signally failed to do so.

The paper argues for substantial and real market liberalisation including ownership unbundling to begin liberalisation and enhance energy security. In respect of Russia, the EU needs to focus on the real issue, the lack of gas supplies, and engage with Russia on the potential problems of falling gas supplies for both the EU member states and Russia.

Market liberalisation

Classically the EU gas markets were national markets in which a national energy company owned the pipelines and supplied the gas down the value chain, sometimes exclusively all the way to the consumer. In some markets, there may have been a number of retail companies but usually the national incumbent dominated the wholesale market and had exclusive import rights with any producers. The national incumbent had long-term supply contracts with both the retailers and the producers, which effectively foreclosed large parts, if not all the market to any potential competition.

Russia participated enthusiastically and was (and still is) part of this European managed-market system. Even after the end of the cold war, it continued, renewed or enacted new long-term supply contracts (LTSCs) with the newly independent Eastern European states, and it continued to develop and renew LTSCs in Western Europe.

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This managed-market system had its advantages. It provided a significant degree of predictability. The LTSCs certainly provided a means of funding major pipe construction programmes such as Yamal. It also secured the market to a few operators, minimised competition, limited innovation and kept prices high.

By contrast with almost all European markets (Spain and parts of Scandinavia being exceptions), under a Thatcherite ethos the UK liberalised its energy markets. As a result, the British market saw full ownership unbundling, the access of several players at the wholesale and retail levels and low gas prices compared with most of the rest of Europe.

Now in principle the single market rules applied to the gas market. Yet aside from some very early and weak single market legislation, along with the 1990 price transparency and 1991 transit directives, very little happened in the gas sector. In 1994, a European Energy Council meeting took the decision to prioritise the opening-up of the electricity market – effectively putting gas liberalisation on the back burner.

The gas market only saw its first sector-specific liberalising instrument in 1998, with the first gas directive. This directive was a relatively timid beast, however, in that it only required the unbundling of accounting, i.e. the separate accounting of the transmission pipes operation and the supply operation, and limited opportunity for third-party access to pipelines. It was only with the Lisbon European summit in 2000 that the EU member states formally committed themselves to market liberalisation of the gas sector. That political impetus resulted in the second gas directive and gas regulation, which require legal unbundling (i.e. the formal separation of the national incumbents into transmission and supply businesses) along with the establishment of a national regulator to ensure third-party access to the supply network and binding non-discrimination rules. Under the second directive, commercial gas customers were supposed to be free to choose suppliers by July 2004; residential customers are to have the ability to do so by July 2007.

Liberalisation, if achieved, would have a major energy-security benefit. Moving from national managed markets to a single European energy market massively increases energy security. By simply being a much larger market, the EU is better protected from the consequences of disruption. In a genuine, single European market, it is much easier to allocate the additional energy resources to deal with a market disruption than in a smaller national market.

Application of the competition rules to the gas market

Unfortunately, liberalisation has been comprehensively frustrated by the member states and domestic incumbents. DG Competition has launched a major sectoral review into the state of competition in the gas and electricity markets. The preliminary report of this review published in March suggests that many member states and their domestic incumbents have effectively sidestepped the liberalisation directives and the gas regulation. Although the laws may be on the statute books, effective circumvention practices are in place, for example:

- *Legacy contracts.* Just prior to markets opening up, dominant incumbents have been tying up both upstream and wholesale markets with 20-year contracts with renewal clauses, effectively foreclosing markets for the foreseeable future.
- *Confidentiality clauses.* Specific clauses are used to deny information on capacity and storage to potential new market entrants.
- *Possible market-sharing agreements among incumbents.* There is very little cross-border trade even where interconnectors make it possible. There is concern that this may be because some incumbents have colluded in illegal market-sharing.

From the evidence collected by DG Competition, it would appear that despite EU legislation the domestic incumbents remain in place across a large swathe of the EU and are largely unaffected by liberalisation. Any new entrants are wholly dependent on incumbents.

The European Commission has identified a whole host of problems concerning the European gas market. These problems include

- *Market concentration.* This problem essentially concerns the high level of concentration of the domestic incumbents of the pre-liberalisation era.
- *Vertical foreclosure.* This effect exists through both ownership and long-term supply contracts, and in both cases the result is similar – the foreclosure of new entrants.
- *Market integration.* Cross-border sales are not presently exerting any competitive pressure. Incumbents rarely enter each other's national markets; new entrants have difficulty obtaining pipeline access and LTSCs make it hard to obtain capacity.
- *Lack of transparency.* Potential entrants complain again and again about the lack of reliable and timely information on markets, particularly concerning capacity and storage.
- *Price issues.* Price formation is very opaque and many producer contracts are linked to oil prices, which do not reflect the levels of demand, supply or seasonal flows.

The determination of Ms Neelie Kroes, the European Commissioner for Competition, to tackle anti-competitive practices is welcome as is the opening of EU energy markets. Nevertheless, DG Competition has expressly left out of its energy review upstream issues, i.e. the role of energy producers in the market. This omission is unfortunate as it is difficult to leave out upstream or downstream actors without undermining any effective liberalisation process.

In particular, there is concern about a number of specific issues. One of these is the effectiveness of the competitive process upstream in the gas sector in relation to the potential for collusive activity by producers. Another issue is price formation and especially the link between oil and gas. There is also the matter of the destination clauses in supply contracts – the LTSCs between gas producers and domestic incumbents foreclosing national markets, as well as the impact within the EU of anti-competitive acts that foreclose foreign gas resources to the EU. An example of this latter issue is Gazprom's refusal to permit its pipeline to be used to export Central Asian gas into EU markets.

Russia

Although the Central and Eastern European states have faced approximately 40 energy cut-offs since the end of the cold war, and may face some more, the major threat to EU gas supplies from Russia does not stem from the 'energy weapon'.

The major threat in the gas sector is Gazprom's lack of investment in new gas fields resulting in the company, despite 47 trillion cubic metres of gas in the ground, being unable to supply the EU with gas. According to former Russian energy minister Vladimir Milov, Russia already has a gas deficit between foreign and domestic demand and its actual gas supplies of 69 billion cubic metres (bcm) – which may explain why Russia was not able to fulfil its contractual supply requirements to some EU member states last winter. He conservatively estimates that the supply gap could be approximately 130 bcm by 2010.

Gazprom's problems arise to a large extent from the need to supply a domestic market at very low prices, as a result of which the company does little more than break even in its domestic gas supplies. Even with the revenues coming in from the EU, Gazprom still does not have the financial firepower to refurbish the Soviet-era pipelines and compressor stations or develop new fields, which would cost tens of billions of dollars. The International Energy Agency recently put the figures required at over \$170 bn. Gazprom, it should be noted, is currently \$38 bn in debt.

A second factor is the lack (and perceived lack) of legal security in Russia for property rights, which makes Western investors wary of providing the scale of investment required. A third practical factor is that currently it is extremely difficult for Western investors to acquire upstream or downstream assets in the Russian gas sector (whereas by contrast Russian investors can easily buy up EU energy assets).

Part of the solution would be to honour the Energy Charter Treaty and sign up to the Transit Protocol, which provide guarantees of legal security to foreign investors to encourage Western capital to come into the Russian gas market. Currently, however, the Kremlin appears to be against such a development. The Kremlin can legitimately ask the question: Why should Russia liberalise its energy market when the EU has so signally failed to do so?

Conclusion

If the EU wants to engage with Russia in respect of encouraging Russia to open up its energy market it must take real and effective steps to liberalise its own market. The European Commission's DG Competition may have a very valuable role to play here. Evidence of substantial frustration of the EU's liberalisation rules by the member states and domestic energy incumbents gives the Commission justification to bring out its big antitrust guns. DG Competition has two major weapons to enforce liberalisation. The first is Art. 86(3), under which the Commission can adopt directives without recourse to the Council or Parliament requiring the member states to open up national markets. The second is the new power contained in Art. 7(1) of Regulation 1/2003, to adopt structural remedies against companies. Using these two weapons the Commission could potentially enforce liberalisation in the gas and electricity sectors by ordering the complete unbundling of ownership.

Such a step would enhance EU energy security through the liberalisation process and demonstrate to Russia the value of liberalisation. In the engagement process, the point has to be made to the Kremlin that both the EU and Russia face real problems if the gas runs dry. Thus, it is in both the EU's and Russia's interest to encourage large-scale investment into Russian energy markets, with the EU providing the capital and Russia providing legal security through the Energy Charter Treaty. Russia is misunderstanding its own vital interests in restricting foreign investment.

The Russians do not have to listen to the EU on this point; they just have to take note of the policy of their ancestors. The greatest period of growth in Russian history, from the emancipation of the serfs in 1861 to 1914, was fuelled to a very large extent by a huge volume of foreign direct investment (FDI). FDI does not threaten a loss of control of the 'crown jewels' of the energy sector, it is the means by which Russia can rebuild itself as a wealthy, great European power.

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The Centre for European Policy Studies (CEPS) and the International Institute for Strategic Studies (IISS) joined forces late in the year 2000, to launch a new forum on European security policy in Brussels. The objective of this *European Security Forum* is to bring together senior officials and experts from EU and Euro-Atlantic Partnership countries, including the United States and Russia, to discuss security issues of strategic importance to Europe. The Forum is jointly directed by CEPS and the IISS and is hosted by CEPS in Brussels.

The Forum brings together a select group of personalities from the Brussels institutions (EU, NATO and diplomatic missions), national governments, parliaments, business, media and independent experts. The informal and confidential character of the Forum enables participants to exchange ideas freely.

The aim of the initiative is to think ahead about the strategic security agenda for Europe, treating both its European and transatlantic implications. The topics to be addressed are selected from an open list that includes crisis management, defence capabilities, security concepts, defence industries and institutional developments (including enlargement) of the EU and NATO.

The Forum has about 100 members, who are invited to all meetings and receive current information on the activities of the Forum. This group meets every other month in a closed session to discuss a pre-arranged topic under Chatham House rules. The Forum meetings are presided over by François Heisbourg, Chairman of the Foundation for Strategic Research, Paris. As a general rule, three short issue papers are commissioned from independent experts for each session presenting EU, US and Russian viewpoints on the topic.

The Centre for European Policy Studies (CEPS) is an independent policy research institute founded in Brussels in 1983, with the aim of producing sound policy research leading to constructive solutions to the challenges facing Europe.

The International Institute for Strategic Studies (IISS), founded in London in 1958, is the leading international and independent organisation for the study of military strategy, arms control, regional security and conflict resolution.

The Geneva Centre for the Democratic Control of Armed Forces (DCAF) promotes good governance and reform of the security sector. The Centre conducts research on good practices, encourages the development of appropriate norms at the national and international levels, makes policy recommendations and provides in-country advice and assistance programmes.



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