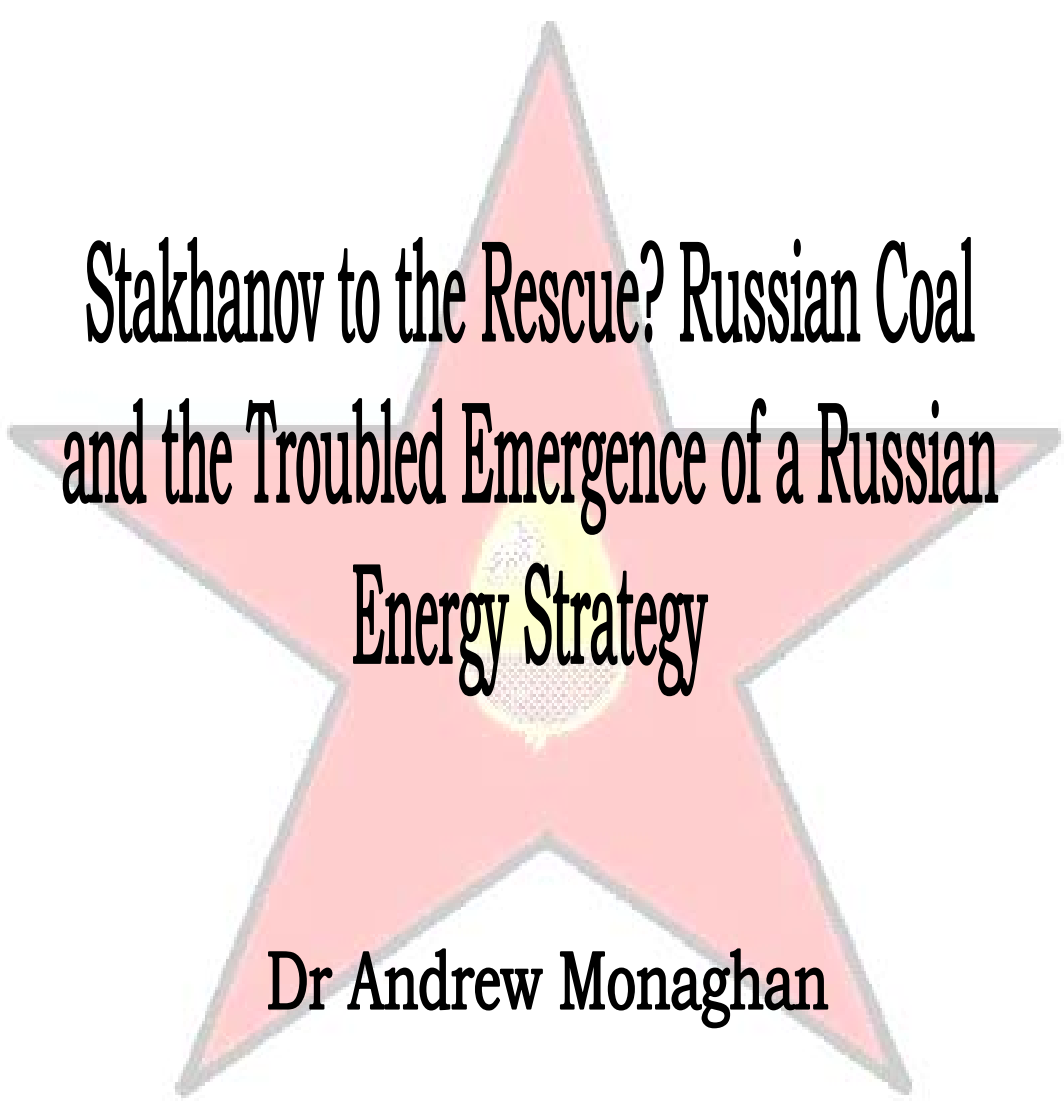


Advanced Research and Assessment Group

Russian Series

07/34



Stakhanov to the Rescue? Russian Coal and the Troubled Emergence of a Russian Energy Strategy

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November 2007

Defence Academy of the United Kingdom

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Key Points

- * Russia faces potential energy shortages: gas and electricity production is stagnating while consumption is rising.
- * The Russian government has realised the problem and is attempting to address the shortfall. The focus of the plan is to reduce domestic consumption of gas and replace it with coal.
- * Russian coal reserves are vast and production is growing, reflecting the increasing capacity of the reformed, restructured and largely privatised Russian coal sector.
- * As with many other Russian energy issues, this plan faces competition. Opposition has tended to focus on the impracticality of replacing gas with coal in many areas of Russia and the proposed Joint Venture between Gazprom and SUEK, the leading Russian coal company.
- * Though the coal sector seems capable of meeting the increased production requirements, a number of infrastructure limitations exist, particularly a shortage of coal-fired power plants and railway networks. Moreover, for coal to be really competitive, other parts of the government's plan, such as raising gas prices need to be implemented, or customers will continue to prefer the artificially cheap gas.
- * These disputes and limitations mean that the plan cannot be implemented in full in the short term, though domestic coal consumption is still likely to rise. If in the medium-to-long term the various elements of the plan come together, Russia's position as an energy supplier, consumer and transit state will be radically different.
- * The rise of domestic coal consumption has consequences for Europe: it suggests that in case of a gas shortage in the short term, Gazprom will try to favour its foreign, profitable contracts – though it is obliged to meet domestic demand. However, increasing Russian domestic coal demand is likely to cap the amount of coal available for export. In any case, there are limits to how much Russia can export, and Europe will face increasing competition from other markets for the improving but nonetheless finite production capacities of the Russian coal and transit sectors.

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Stakhanov to the Rescue? Russian Coal and the Troubled Emergence of a Russian Energy Strategy

Dr Andrew Monaghan

Sibirskaya Ugol'naya Energeticheskaya Kompaniya (SUEK), Kuzbassrazrezugol' (KRU) and Yakutugol are names all but absent from western discussions about energy security, even about Russian energy more specifically. Partly because of attention grabbing developments in the Russian oil and gas sectors, this is also because coal is unfashionable: though it features in the climate change debate, it seems an unlikely subject to set the pulse of the "energy security" discussion racing or command attention in its own right. Yet these three companies, SUEK, KRU and Yakutugol' represent an increasingly important dimension of energy security: Russian coal.

This overlooked dimension of Russia's energy sector demands our attention if we are to understand Russia's roles both on the global energy stage and as an energy partner for Europe – and the UK more specifically.

Why coal? Simply, it is a key element of fossil fuel supply. Both BP's Annual statistical review (2007) and the International Energy Agency (IEA)'s World Energy Outlook (2006) show that the consumption of all fuels (except nuclear) accelerated in the period 2001 – 2006 compared to the previous five years. Coal was "again the fastest growing fossil fuel in 2006 (for the fourth year running). Global consumption rose by 4.5% compared with the 10 year average of 2.8%." Coal, which is the most abundant and widely found fossil fuel,¹ accounted for more than 50% of the growth in global primary energy consumption, which was largely driven by its increased use in power generation. The IEA predicts that coal use will grow by 32% by 2015 and 59% by 2030, with power generation accounting for 81% of this increase.²

The USA and Europe use large quantities of coal and seem likely to increase this consumption. In the USA, 60% of electricity is coal produced – a figure expected to rise. In Europe, coal is increasingly becoming a substitute for natural gas because of the latter's relatively higher price and also because of concerns about oil supply security.³ But it is the Asia/Pacific region that accounts for nearly 90% of growth in consumption. Demand for solid fossil fuel in the Asia-Pacific region is predicted to reach 320 million tonnes per annum (mtpa) by 2010.⁴ Coal is the backbone of Chinese energy supply and is drawn both from its own domestic production and, increasingly, from imports: China began importing coal in January 2007. By 2010 it is expected to be a "decent size" net importer – not least because of the soaring consumption of its electricity generation sector: China is increasing its rate of construction of coal-fired power plants, from on average 1 to 2 plants *per week*. Thus some predict Chinese coal consumption, driven by a quadrupling of electricity demand, to triple in the near future. Coal consumption is also rising in India and Indonesia.

In this context, coal, particularly in China, Russia, the USA and India will have a major impact on CO₂ emissions: China is predicted by some to overtake the USA as the leading emitter of CO₂. Thus the global context of coal use is important reflecting both energy security concerns (price and availability of supply) and environmental and climate change issues. Indeed, if we are to understand the growing tensions between political aims of both having energy security and simultaneously addressing climate change issues, we must consider coal. The debates in Europe about the reliability of Russian gas exist largely because of Europe's "dash to gas" to become more environmentally friendly. Anxieties about energy security and especially the reliability of gas imports from Russia, raise the prospect of a return to more coal use. As a result any government that seeks both to make climate change a priority and engage with states which are significantly increasing their use of coal, as the UK government does, must consider Russian coal carefully.⁵

But why *Russian* coal? Russia fits into this global picture of increasing coal consumption, particularly for power generation – though it would be the first state to reintroduce coal to the fuel balance on such a scale; and also seeks to be a major supplier to these growing markets. Russia has vast coal reserves, is the world's fifth largest producer and third largest exporter – and is likely to become increasingly important to the EU as a coal provider. Russian coal is particularly attractive to European consumers because its low sulphur content means that it can be used in European plants that lack desulphurisation units. In Germany, nearly 50% of power production in 2005 was based on coal and there are plans to build some 20 to 30 coal fired power plants over the next 10 years. The decision by the German government to halt coal production by 2018 due to its high cost means that these power stations will have to be fuelled by imported coal. Germany already imports coal from Russia and this seems likely to increase, since negotiations are already underway between Germany's RAG Coal International GmbH and SUEK (among others) to provide the necessary coal.⁶ Finland, Greece, Spain and Romania all import significant quantities of Russian coal.

Furthermore, Russian coal is directly relevant to UK interests. Given the importance of imported coal (which makes up some 75% of UK steam coal consumption) the scale of consumption of Russian coal in the UK is significant. In 2005, Russia provided more than 30% of coal used in UK power stations.⁷ In 2006, Russian coal supply exceeded supply from UK mines and may have provided some 15% of UK electricity supply. Indeed, in 2006, Russia provided more than 50% of steam coal imports into the UK, according to UK experts such as Nigel Yaxley, Managing Director of the Association of British Coal Importers; Sergei Romanov, Research Director at the Russian Coal Market Research Institute, notes a six-fold increase in British consumption of Russian coal over the last 7 years.⁸

KRU began cooperation in 2006 with Richard Budge in a nearly £1 billion venture to re-open Hatfield colliery and build a clean coal power station close to the mine.⁹ For the last two years, SUEK has been recognised as international supplier of the year to the UK: SUEK supplied some 22% of steam coal export to the UK with 8.75 million tonnes (mt) in 2006, up from 5.3mt in 2005.¹⁰

The UK has also been active in the Russian coal sector. The Department of Trade and Industry (CDTI)¹¹ supported a technology transfer project to examine the key issues affecting coal mine methane and abandoned mine methane project development.¹² Such cooperation was rather unfortunately highlighted recently following the explosion in the Ulyanovskaya mine, which killed (among many others), a UK citizen, Ian Malcolm Robertson, a financial services consultant who was evaluating the coal reserves.¹³ The mine was fitted with British safety

equipment which was apparently not re-activated following unofficial access to lower the methane content reading for inspection; the explosion occurred as a result of an undetected build up of methane gas in the mine shaft to three times permissible levels.¹⁴

In 2006, the DTI suggested that “any political difficulty over Russian gas would also constitute a political difficulty affecting Russian coal supplies”.¹⁵ Interestingly, however, Russia is to date broadly considered a reliable coal supplier.¹⁶ (This is in contrast, of course, to the considerable and rather widespread anxiety in the UK – as in Europe and the USA – about increasing European “dependence” on imports of Russian oil and gas because of its potential political unreliability and/or technical inability to fulfil its export commitments.)

There are nonetheless some concerns regarding attitudes to safety in the Russian coal sector and about Russia’s attempts both to diversify its coal exports, particularly to China and also increase the percentage of coal in its domestic energy mix. Such moves would potentially reduce the amount of coal available for export at this time of rising consumption.¹⁷ As the paper will show, all of these concerns have some merit.

Finally, examining Russian coal provides a prism through which to enhance understanding of the complex evolution of the Russian energy sector. Thus the paper, though focusing on coal, seeks to illustrate the broad, complex and interconnected nature of the Russian energy sector as a whole. If major coal companies are largely absent from the discussion, it is also true that the electricity giant RAO Unified Energy System of Russia (RAO UES) and railroad monopoly Rossiiskie Zheleznie Dorogi (RZD) – the second largest company in Russia after Gazprom – are equally too often overlooked as key elements of the Russian energy sector (among several equally strategically important others). Russia is widely considered to be a producer state – which of course it is. Yet it is important to understand that Russia is also a major transit and consumer state – points that have increasing impact on its status as a reliable producer.

Furthermore, despite the conclusions already drawn by many in the West, Russia has not had a coherent energy “grand strategy”, in terms of a coordinated overall plan of who is to achieve which aim, with what resources and in what time frame. While a *political idea* regarding Russia and its energy resources may be broadly espoused by the Russian elite, this is not yet translated into a coherent Russian “grand strategy”.¹⁸ Indeed, incoherence and disorganisation have tended to characterise “Russia’s” approach to energy issues. Political tensions and uncertainties continue to create a very short-term horizon in Russian political and energy planning and strategic policy formulation; ongoing problems with domestic corporate and bureaucratic indiscipline and corruption make any plans difficult to implement.

Yet the most important reason is that significant debates continue in Russia, reflected in a variety of different strategies espoused by different actors in Russia, both public and private. Though some of these strategies coincide (for varying lengths of time), many of them are not linked or are even contradictory and competitive; some plans also depend on decisions by a committee with many and varied interests, with the consequent delay in achieving consensus. The Eastern Gas Programme took five years to develop for this reason. This situation is compounded by the opaque nature of the Russian energy sector: as one Russian analyst commented, there are no real figures, no real forecasts for either gas

production or consumption and it is difficult to talk of the long term in Russia: the horizons are one, two or three years, not fifteen. This to all intents and purposes rules out the efficient formulation and implementation of a strategy.¹⁹

Gazprom remains the main focus of analysis and there is a tendency to conflate a “Gazprom” strategy with a “Russian” strategy. But a Gazprom strategy (in itself more complex and less coherent than many allow) does not simply translate into or equate to a “Russian strategy”: other powerful parallel and competing interests exist, not least those of Rosneft, RAO UES and certain elements of the Russian government. Indeed, as this paper shows, both Gazprom and RAO UES are fighting the government over the prices of gas and electricity respectively and each other about domestic gas consumption. Acknowledging the existence of these debates and understanding these various strategies underscores both the rather disjointed nature of thinking in Russia to date and the ongoing tensions between strong vested interests.

Moreover, analyses often criticise both Gazprom’s failure to invest sufficiently in upstream exploration and new project development and its increasing investment in both downstream projects and non-gas related projects. This twin “failure” to invest its money “appropriately” in its core business of gas production is creating a situation whereby Russia cannot concurrently meet both its domestic and international gas demands. Some therefore predict a serious shortage to emerge by 2010.²⁰ This is where analysis usually stops, however and while these may indeed be valid criticisms, many questions remain and others emerge from these criticisms. Are such difficulties recognised in Russia? If they are, by whom and who is doing what, if anything, to address them?

This paper continues by briefly looking at Russia’s energy shortages. The third part looks at one of the major suggested responses to the potential energy shortages, the proposed increase of coal use in the domestic mix and the restructuring and capacities of the Russian coal sector, before finally turning to assess the problems with Russian domestic energy infrastructure.

The key point to emerge is that Russia is re-drawing its energy strategy and the restructuring of its fuel balance as a response to the fuel shortages is an important part of this. Coal is planned to play a far more significant role in the Russian energy sector. The coal industry, one of the most reformed parts of the Russian energy sector, is increasing its production and indeed is one of the driving forces, alongside Gazprom, behind this “dash to coal”. There are a number of constraints, particularly with regard to infrastructure limitations, meaning that the pressures on the Russian domestic energy sector in the short term will remain significant. Moreover, it seems that rising domestic consumption will begin to limit the availability of Russian coal for export. At the outset, two caveats should be noted. First, as with the rest of the Russian energy sector, precision regarding statistics is difficult to obtain. Officially, much information regarding reserves and production is a state secret. Evidence therefore draws on published official sources and a range of company and sector expertise estimates. It should be noted that these sometimes vary and sometimes are rather contradictory. Clarity is not a feature of the Russian energy sector; coal is no exception.

The second caveat concerns the scope of the paper. The aim to increase the role of coal in the domestic energy mix is just one of several significant interconnected Russian responses to the tensions in the Russian energy sector. This paper only lightly touches on two important and complex issues despite their relevance to the plan to increase coal consumption. The first is gas pricing, a topic of much debate in Russia. If it is economically desirable for Gazprom to raise prices, it has clear

political ramifications for domestic and industrial markets that are used to low prices. In September 2006, German Gref, then Minister for Economic Development, objected to the proposal by the Minister for Industry and Energy, Viktor Khristenko, to make almost all industrial consumers and RAO UES pay for gas at higher, unregulated prices, while keeping low, regulated prices for domestic consumers, arguing that it was impractical. Subsequently in November 2006, then-Prime Minister Mikhail Fradkov announced that the Russian government would prevent a dramatic price increase over the next two years (a period largely coinciding with the electoral cycle in Russia). Debate has focused on the level of price rises: high-level energy strategy meetings were postponed several times because of disagreements between ministries about the increase of gas (and electricity) prices, not least over the effect it will have on inflation and the competitiveness of Russian businesses. Though consensus is currently superficially achieved, how long this will last is open to question, especially after the presidential elections scheduled for March 2008. Prices are already rather high for domestic Russian consumers and increasing pressure from industry to keep prices low is likely.

The aim of raising gas prices is to create incentives both for Gazprom to develop new fields by providing increased income and for the main users to use gas more efficiently. Moreover, low gas prices mean that only the most efficient coal mines are capable of competing with gas in the power generation market and even then only in specific conditions, such as distances of gas or coal source from the power plants and connecting infrastructure. Rising gas prices also make coal more competitive: scheduled price rises (according to some doubling 2008-2010, tripling by 2011) are encouraging wholesale (OGK) and territorial (TGK) generating companies such as KES Holding, which owns TGK-5 and intends to take over TGK-6, TGK-7 and TGK-9, to build coal-fired power plants. Norilsk Nickel, the largest metals and mining company in Russia, and OGK-3 which it controls, are reported to have launched the construction of two coal-fired power plants in Tula in mid September 2007.²¹

The second important associated issue is the continuing liberalisation/monopolisation-state control tension within the Russian energy sector, important here partly because of the close links between electricity and gas sector reforms, but particularly because of the limitations of Russian electricity generation. The Russian power sector is elderly and inefficient. In many cases the generation assets have already served their life expectancies. The electricity sector has not attracted investment for a number of reasons that will be familiar to experts on Russian energy: the sector is plagued by rampant corruption, poor law enforcement, uncertain property rights, a fluid tax regime, bureaucratic hurdles and political pressure to keep electricity prices low on the domestic market. Thus, in spite of the privatisation of the 1990s, the Russian power sector has “deteriorated over the last decade”, since there have been precious few incentives to invest or save costs. A decade of almost no investment means that RAO UES itself estimates that US\$10 billion investment is needed annually over the next 15 years. Others suggest the figure is closer to US\$15 bn over 25 years.²²

Many experts and officials in the west, and some in Russia, contend that there is a continuing reversal of the liberalisation process in the Russian energy sector and an increase of state influence and control, illustrating their argument with examples from the oil and gas sectors. There are many merits to this argument. But the issue is much wider, and indeed is by no means resolved with any significant degree of finality. Without investigating it in depth, the paper alludes to the liberalisation (“de-monopolisation”) of RAO UES – a major process due for completion on 1 July 2008. RAO UES is being reorganised in two stages. According to the company, it

will be the “logical completion of the electricity sector restructuring and the formation of the industry’s new de-monopolized structure. While competitive relations will be developing among new stand-alone electricity market players, RAO UES of Russia will cease to exist as a ‘state-owned monopoly’ and will be transformed into several state-owned and private companies”. The successful achievement of the first stage was announced by the company on 4 September 2007, and two first generation companies – WGC-5 and TGC-5 – have spun off from RAO "UES of Russia".²³ Analysts note, however, that restructuring was initially scheduled for completion in 2007, but that the process will now not “be completed before the next presidential election...and by 2009 at the earliest” – and the overall goals are also changing.²⁴ Moreover, there seems to be some tension over whether this represents a real “liberalisation” or simply a break up of RAO UES into smaller, “more digestible” parts to be swallowed up in a re-monopolisation process. The reform and restructuring of the Russian power sector warrants much more examination in its own right, and it is to be hoped that further research will be conducted into this issue.

Russia’s Energy Deficit and the Emergence of a New Strategy?

Russia faces an energy deficit.²⁵ Russian oil production which increased noticeably since 2000 is stagnating, while consumption, largely stable in 2003, 2004 and 2005, rose 4.2% in 2006 to 2.74 million barrels per day (mbpd).²⁶ As one leading Moscow-based expert on energy issues in the CIS observed, petrol consumption is rising dramatically and corresponds with the new-found taste among rich Russians for high-consumption luxury cars, burning it off in endless traffic jams. Russia faces potential electricity shortages, at a time of increasing consumption: consumption has risen 5.5% compared to the planned 2% over the last year, a rise which is predicted to continue at the rate of 4-6% per year to 2015, largely due to Russia’s fast economic growth (GDP growth is forecast by senior Russian officials to be between 7.3% and 7.7% in 2007). Some sources indicate that government plans are for a 70-120% increase in electricity generation by 2020, but RAO UES has regularly warned of consequent potential shortages.

And Russia faces potential gas shortages. Gas production is stagnating, in large part because of Gazprom’s reliance on three major but mature gas fields and insufficient investment in new fields at a time of rising consumption and major export commitments. The plan to increase gasification would also seem to assume a considerable increase in consumption: natural gas supply mains will be extended to over 2 million homes in 2007. The gas shortage point is an issue of some debate. At one end of the spectrum are those who argue that these major fields are depleting quickly. Gazprom is therefore a company “in crisis” and the looming gas shortage a train wreck in progress.²⁷ Moreover, planned main new projects, such as Shtokman, are running behind schedule and seem unlikely to begin producing significant quantities of gas before the middle of the next decade, creating an important lag-time of some 5-7 years between declining production and available new capacity. Thus, as noted above, there are those who predict serious shortfalls of gas supply as soon as 2010, if not before.

Equally, there are those who argue that Gazprom’s production has stabilised.²⁸ The Ministry of Industry and Energy anticipates gas output to rise 1.33% this year to 656bcm. Some Russian experts note that the warm winter of 2006-7 meant that the company overproduced by some 14 billion cubic metres (bcm) even before the summer, meaning that its storage capacity is full – gas is even being stored in pipelines. Dmitri Medvedev has recently stated that Gazprom has about 63.5bcm

stored in underground depots – “we’re ready both for a warm winter...and for an abnormally cold one,” he averred.²⁹ This lends it some resilience.

Others argue that additional supplies are already to be expected from the Yamal project in 2008; the Yuzhno-Russkoye field is anticipated to produce 1.4 bcm in the final quarter of 2007 and to reach a planned annual capacity of 25bcm in 2009;³⁰ and that plans are now laid for the development of the gas reserves in Eastern Siberia and Far East. Moreover, though such sources are not of the same scale as the major fields, Gazprom is starting to recycle more associated gas and to develop alternative gas sources, including from coal mines – Gazprom estimates the potential of the Kuzbass region’s methane gas deposits to be some 13 trillion cubic metres and is ready to begin large-scale production in 2008-9. Gazprom is also part of the wider Russian effort to improve efficiency in gas consumption – an effort which, though slow and uneven, is showing some signs of success, according to Russian energy experts. Finally, Gazprom has agreed deals with Central Asia gas producers.

These latter arguments are insufficient to allay all concerns about a gas deficit. Claims about increasing efficiency and imminent production from new projects have been made before and not realised in practice. Questions may be asked about Yamal’s real immediate potential – and the plans to develop the East Siberian and Far Eastern gas fields are ambitious and face serious impediments, particularly regarding the lack of infrastructure. Gazprom, which was recently put in charge of the development plan by the Ministry of Industry and Energy, will have significant difficulty in realising the project single-handed.³¹ Furthermore, Russia’s relations with its Central Asian neighbours are complex; and the reliability of these states as producers is questionable. Finally, coal methane gas is difficult to extract, especially in significant quantity.

But they do help to focus attention more clearly on specific issues. Is the potential gas shortage recognised? By whom? What is the rate of depletion of the major fields? Is it 5-8% per annum or as high as 10%? In case of gas shortage, which markets will Gazprom supply? Will it continue to supply its lucrative foreign (European) markets, or will it instead supply gas to its largest – but still loss making – market, the domestic one (a task to which it is theoretically bound)? The answer might well lie somewhere in between, with neither market being satisfied – and what are the ramifications for both Gazprom and the Russian government?³²

A number of Russian analysts argue that Gazprom will prefer its foreign markets. This position was also adopted by Gref while still in office, who stated that “if there is a gas shortage after all, we will perhaps be more worried about the domestic market”.³³ Gazprom’s inefficient production is likely to be either highlighted by somewhat unpredictable events such as particularly harsh winters – or masked by warm winters.

Leading Russian figures have acknowledged the looming potential gas deficit for some time. In November 2006, Khristenko argued that Russia may face a gas shortage of 4bcm in 2007;³⁴ his Ministry has predicted that by 2010 this could reach 27.7 bcm, and by 2015, some 46.6 bcm. In February 2007 Anatoly Chubais, Chief Executive of RAO UES, also predicted that Russia would face a shortage of 4 bcm in 2007, a shortage increasing to 8 bcm in 2008 and 40 bcm in a few years.

The problem stretches far beyond gas. Gref highlighted the interconnected nature of problems, arguing that “enormous difficulties” await the Russian economy, the

greatest being shortages of electricity and gas and infrastructure restrictions.³⁵ Gas fires the majority of Russia's electricity power stations: some 50% of Russian power plants are gas fired;³⁶ approximately one third of Russian gas consumption is taken by RAO UES. Shortages of gas have already led to limitations of electricity generation during the winter of 2005-6, when (much) more expensive fuel oil had to be substituted by generation plants. Put simply, slowing gas production – or especially decreasing production – means less capacity to supply electricity generation, which means more electricity shortages.

These official statements reflect the realisation in Russia at the most senior levels of a range of problems in the energy sector – a realisation that had already led to several meetings in an attempt to address the problem. Calling a series of meetings beginning in September 2006, President Putin has sought to orchestrate the development of a new energy strategy to 2015. Indeed, observers note that Putin's intervention reflects the serious nature of the problem and the inability of the government to address it without his direct involvement.³⁷ Putin returned to the subject during his high-profile Annual Address to the Federal Assembly in April 2007, during which he highlighted the prioritisation of electricity generation and acknowledged that Russia has already run up against a shortage of capacity for future growth. Putin stated that Russia needs to increase electricity production by 66% by 2020. To do so, infrastructure must be modernised – new electricity stations need to be built and existing ones modernised; and there is a need to change considerably the structure of electricity production by increasing the share of nuclear, hydroelectric and coal-based generation. Though focusing at greater length on nuclear power, he acknowledged that Russia possesses enormous coal reserves and should therefore focus also on increasing the share of new generation coal-based production.³⁸

Discussions about this “second coal wave” in electricity generation have been in the air for some time.³⁹ At the end of the 1990s, Anatoly Chubais sought to establish coal and power generation complexes. Such plans became more evident during the early stages of President Putin's first term in office and the preparations of Russia's Energy Strategy to 2020 (adopted in 2003), which noted the need to improve the structure of the fuel and energy balance by, among other things, both increasing the use of coal and building new generation and transport infrastructure, particularly in the east.⁴⁰ In the European part of Russian, plans were laid for “maximum” development of nuclear power plants, the replacement of steam power turbines by combined cycle units and the development of coal-fired thermal plants in the Urals. Coal-fired power plants and hydroelectric plants were the focus in Siberia and in the Far East hydro-electric and coal-fired power plants would be the priority.⁴¹

The plan has gathered momentum however since late 2005, with increasingly frequent announcements being made by senior executives and government officials. Power plants in the Urals and Siberian regions were already beginning to turn to coal to surmount restrictions on gas supplies by late 2005.⁴² In February 2006 – an important moment, as discussed below – then-Prime Minister Fradkov made several announcements emphasising the need to boost the coal industry and bring coal to its rightful place in the fuel and energy balance. The government would address the long-term development of Russia's energy sector at a cabinet session in June, he announced.

February also saw RAO UES publicising its own search for fuel diversification. By 2010, RAO UES seeks to accelerate coal consumption significantly. Though it has in the last six years only commissioned one power station of 215MW (at Khronor), in the next five years it intends to build 2000MW of capacity and another 20,000 by

2011-2015. Thus coal is likely to soar in RAO UES's mix by 2010, with just 31% to come from gas and 65.5% from coal.⁴³

Subsequently in June, RAO UES and Gazprom reached a deal to decrease the share of natural gas in electricity generation. The balance was to be altered from the 2005 figures of some 70% gas and 27% coal to 66% gas and 32% coal by 2010. As a consequence, RAO UES announced that it was imposing large scale restrictions on natural gas consumption at electric power plants forthwith.

The basic tenets of the Russian government's plan are that while Russia has huge quantities of coal it is not being used sufficiently in power generation and should be increased: comparisons are made with other regions where coal features more prominently in the energy balance: in Europe it provides 40-60%, in Australia 75% and South Africa 93% (both Australia and South Africa are leading coal producers).⁴⁴ Figures vary, but in Russia coal currently contributes just some 13-20% of power production. In 2005, while gas supplied 51.4%, coal provided just 15%. Other estimates show that coal use in electricity production more specifically followed a negative dynamic: in 2003 it was 19.5%, declining to 18.4% in 2004 and declining still further to 16.8% in 2005.⁴⁵ (Coal currently supplies approximately 17% of Russian electricity production, just 50% of the world average.)

The plan is to increase this to some 34-44% by 2020. Sergei Shatirov, First Deputy Chair of the Russian Industrial Policy Committee, estimates that coal should increase to 38-40 % by 2020.⁴⁶ Coal executives note that coal's share of power production will increase to some 30-35% and will supply 39-46% of Russia's overall fuel balance by 2020, and other private interests suggest that coal's role in electricity generation will increase from the current 23% to 31-38% by 2020. This creates two scenarios, according to one Russian coal sector executive. In one, Russian domestic coal demand will rise from the current 130 mtpa to 326 mtpa by 2020. In a more conservative scenario, it would rise to 252 mtpa. Either way, domestic coal consumption will double, according to Igor Gribovsky, Managing Director of SUEK AG.⁴⁷

Apparently with the (somewhat) tacit help of elements of government, including Fradkov, it seems, two main groups have pushed this agenda of increasing coal use – Gazprom and, not surprisingly, the coal sector, particularly SUEK. Gazprom has advanced the idea as the means to maximise its gas exports to the most profitable market (Europe) and the “second coal wave” is advocated strongly by leading figures in the organisation. The tensions in gas supply and desire to export mean that Gazprom does not seek to meet the demands of RAO UES to provide increasing amounts of gas, and indeed seeks to decrease it. Pyotr Rodionov stated in late 2005 that

If nothing is done to assure competitiveness of coal in areas of its traditional consumption by adjusting gas/coal prices, the internal demand for natural gas may grow to an even greater extent. Accordingly, it will become necessary to shut down even profitable collieries, which is fraught with social problems. The share of coal in Russia's fuel resources is 67 percent and its reserves may last for the next 880 years, whereas the available gas supply is for the next 80 years (less than 75 years if one counts in only recoverable reserves). Moreover, coal consumption is three times below consumption of gas.⁴⁸

Deputy Chairman of the Gazprom Board of Directors Valery Golubev reiterated such views in February 2006, noting the disproportionate use of gas in power generation. This was “extremely ineffective”, according to him, since the gas can be exported to generate increased budget revenues. Sergei Mironosetsky, Deputy Director General of SUEK, argues that gas can be replaced with coal in all Russian regions.⁴⁹ Vladimir Rashevsky, Chief Executive of SUEK – and who was appointed to the Board of Directors of RAO UES in June 2007 – concurred, stating that the “effective use of coal in the power sector will help meet the existing power shortage”, and, perhaps somewhat optimistically, that due to coal’s colossal potential, “all our energy problems will be solved in the next 5-7 years”.⁵⁰ Indeed, for some time now, according to Russian news reports, SUEK has not concealed its interest in reforming RAO UES and implementing a plan to increase coal in power generation.

Yet a number of obstacles have slowed the progress of the plan and consensus has been and remains difficult to achieve, reflected in frequent delays of meetings and disputes between interests. This contributed to the stalling of the re-development of both the strategy for the fuel balance and the new national energy strategy, the publication of which seem to have been set back significantly.⁵¹

Interestingly, there seems to be some dissent within the coal sector itself: the Kuzbass regional administration, for instance, has sought a moratorium on the granting of new licences because of the potential for overproduction. But other sources of both competition and opposition to the plan are more significant. Competition has particularly come from the nuclear sector. Nuclear power engineering has advantages over coal, particularly in transport, according to one Russian expert, who also noted that it makes more sense to build nuclear power stations than gas ones. The replacement of gas with nuclear power is a “strategic cause,” he argued.⁵²

Sergei Kiryenko, Head of the Federal Agency for Nuclear Power, has noted that Russia’s hydrocarbons will be depleted in 50 years and that nuclear energy must therefore replace natural gas in Russia’s energy balance. Indeed, he has argued that Russia has no option but to focus on nuclear power. Such proposals would require a substantial development of the nuclear sector’s infrastructure, but they seem to have caught the attention of the President, who focused on the nuclear industry during his Annual Address to the Federal Assembly and announced the plan to build 26 nuclear power plants over the next 12 years using the most advanced technology available.⁵³ Other moves suggest the importance accorded to nuclear power, and the sector is being re-structured. On 11 October, the Duma approved a bill on the establishment of a state nuclear monopoly, RosAtom. First Deputy Prime Minister Sergei Ivanov announced on 15 October that 140 bn rubles will be allocated for the development of nuclear power engineering in Russia in 2008-9.⁵⁴ This reflects the importance accorded by Russia to its nuclear sector as a means of showing that it is not simply a raw material producer. Russia’s nuclear capability is perceived by many elements of the government to be an important “high technology” part of its “great power” status and membership of the “developed world community” reflected in its United Nations Security Council and even G-8 membership.

Most direct opposition to the plan has emerged from interests in the electricity sector and various government ministries. This is not necessarily over the need to replace gas – RAO UES has often announced its desire to use more coal – but how to implement it and at what speed. Despite the agreements between Gazprom and RAO UES to increase the role of coal, there are elements within RAO UES who argue that such a conversion is not really possible or desirable.⁵⁵ Gas is cheaper – and the enforced use of coal and particularly fuel oil to generate electricity will

consequently drive up electricity prices and contribute to inflation. Indeed it is cheaper for RAO UES to pay the fine for over-consumption of gas than use alternatives. Moreover, greater use of coal in major cities, particularly in the European part of Russia where demand grows fastest, is difficult to implement because of both infrastructure and environmental reasons.

Perhaps the loudest and most widespread opposition has come in response to one of the means of developing this plan. It was noted above that February 2007 was an important moment. This is because it was during this month that Gazprom and SUEK announced the creation of a Joint Venture (JV). According to the companies, this JV would be aimed at “significantly boosting the economic efficiency and balanced use of coal and gas in the power industry and should contribute to the economic supply of gas for power generation purposes”.⁵⁶ It would both allow Gazprom to activate the coalmine methane extraction project, which is only productive in combination with coal mining, and, in effect, to save its gas supply by using its “own” coal. As Dmitri Medvedev announced, “the new company will allow us to balance fuel consumption in power generation”.⁵⁷

But this move has proven contentious and opposition has arisen from a variety of sources. The contribution by SUEK of all its assets to the JV and Gazprom’s 50% + 1 controlling stake in it, have caused concerns about the prospects for ongoing energy sector reform. Chubais, who is said to have found out about the deal in the media after its announcement, called the JV a “big mistake on the part of the government”. Gref, while still in office, also argued that the JV resembled a state monopoly and would have negative consequences undermining the competitive environment. The JV would mean that Gazprom and SUEK would hold a dominating 40% stake in the generating sector (RusAl, Norilsk Nickel and other major producers will hold 20% and hydro-electricity and nuclear 15% each). Statements by Russia’s Anti-Monopoly Service and Ministry of Industry and Energy reflected similar concerns. Igor Artemeyev, the Head of the Federal Anti-Monopoly Service, almost immediately announced his opposition to the deal, stating that if the deal went through, Gazprom would take complete control over both gas and coal industries and will control the whole reform of the Russian energy sector. Such a concentration of generation assets would limit competition on the energy market and threaten the reform of the national electricity sector, he argued, and he proposed to communicate this opposition to (then) Prime Minister Fradkov.

Two points are, however, worth noting. First, given Fradkov’s apparent support for increasing coal in the fuel balance, reflected in several months campaigning for it, the extent to which Artemeyev’s opposition was likely to receive a hearing could be considered to be limited. Nonetheless, the deal was expected to go through by July 2007 – but by the time of writing (October 2007) it is still incomplete and Gazprom and SUEK have yet to submit a formal request for approval of the JV. Though Rashevsky has stated that the JV could be formed by the end of this year, doubts about it being confirmed are growing, and President Putin’s seems reluctant to endorse it publicly.

But what is the condition of the Russian coal sector? Does it have the capacity to meet such intended increases? Are there limitations? What are Russian coal exports and how will this decision affect them? The next section of the paper examines the sector in greater depth.

The Russian Coal Sector

Russia has re-emerged as a key player on the international coal market. Its reserves are estimated to be in the region of 175 billion tonnes, some 17-23% of the world total. Much of these reserves are concentrated in the Kuzbass region in central Russia – largely in shallow and open cast mines, which keeps production costs low. Russia is now the fifth largest coal producer and in 2005 became the third largest exporter.

The Russian Energy Strategy to 2020 anticipates an increase of some 75% in production by 2020: growth was anticipated to be between 270-280 mtpa in 2005, to 310-330 mtpa by 2010, 345-360 mtpa by 2015 and 375-430 mtpa by 2020. This growth is in large part due to the planned development of the Kansk-Achinsk region's reserves. These official estimates are broadly within the range of other Russian estimates, though some are more optimistic (450 mtpa by 2020), with others estimating that growth by 2015 to 305-345 mtpa and by 2020 would be 325-385 mtpa.⁵⁸ Moreover, the recent short-term development has tended to be broadly in line with the official estimates: some 296-298 mtpa was produced in 2005, and 308 mtpa in 2006. Reports of slight fluctuations in production by leading companies have reflected demand, resulting from a dip in power generation demand due to the warm winter in 2006-2007 and the high level of hydro-electricity use (causing domestic coal sales to fall by some 13%) rather than a serious dip in production capacity.

Nonetheless, coal has had a chequered history. It long occupied an important place in the Soviet energy sector – as noted above, the recent plans represent the “second coal wave”. Indeed, coal held the predominant share in the Soviet energy balance. The “first coal wave” began in the mid 1930s, driven by the legend of high production that grew up around the exploits of Alexei Stakhanov, from which this paper draws its title.⁵⁹ The key importance of coal to Soviet energy generation is illustrated by the very high percentage (90%) of coal-fired thermal power stations.⁶⁰ This “first coal wave” ended at the end of the 1960s and early 1970s with a largely unplanned and spontaneous changeover to gas-fired electricity generation, a move that was intended to be temporary.⁶¹ Despite the rise of gas in electricity generation, coal production continued to grow and peaked in 1988 at 488 mtpa. Even allowing for some manipulation of the figures, coal production was huge and reflected its capacity even though the industry was ponderous and had little regard to efficiency.

However, in line with the oil industry, coal production collapsed in the early 1990s and the industry went into steep decline, facing many complex and interrelated problems including the

- collapse of the power generation market in Russia
- steep reduction of government subsidies resulting in the cost of production in many cases being higher than revenues
- dependence on equipment manufactured in Ukraine – and the related collapse of the manufacturing industry in Ukraine
- high costs of coal sector production, particularly in coal transport; and limiting factors such as monopoly control of the railway network
- elderly state of the mining infrastructure: 50% of the mines had already been in operation for over 40 years, only 16 mines were less than 20 years old. Moreover, many of the seams being worked were thin and deep.
- high capital intensity nature of mining operations which reduced investment to the lowest priority with the consequent failure to bring new mines into production

- artificially low gas prices.

Thus the coal industry fell into crisis and its prospects were considered “dim”. Some commentators argued that the coal industry was in the most difficult position of all Russian heavy industry, with both a very high ratio of bankruptcy among mining companies and a very low rate of mining companies starting up.⁶²

Nevertheless, the industry went through a rigorous reform and restructuring process.⁶³ Though this process was, according to one analyst, a “disorganised programme” of mine closures and mass redundancies without social support, the coal industry has reversed the collapse and is now highly productive. Indeed the coal industry is almost entirely privatised and is able to operate profitably even against the unfavourable context of a hugely distorted energy sector dominated by low gas prices.

The key elements of the reform process included the large-scale closure of elderly, inefficient and often dangerous mines, the dissolution of the state coal monopoly RosUgol’ in late 1997 (facilitating restructuring at the national level) and a largely successful privatisation process, during which the industry stayed in the hands of groups with both roots in the sector and an intimate understanding of how it works.⁶⁴ Almost all of these groups were Russian. As the restructuring process reaches its conclusion, investments have risen significantly: in 2006 investment was up nearly 50% on 2005, mostly in equipment purchase and updates. A number of companies plan to put new mines into production this year and next.

This restructuring benefited from a more benign context, coinciding as it did with an increase in demand for raw materials for both electricity generation and steel production beginning in 1999. It was also assisted by the growth of the profitable coal export business which benefited from a significant increase in global demand for Russian coal – in large part because of high global gas prices and the higher price paid for coal abroad. Russia exports about one fifth of its production to some 45 states. Approximately 50% of this market is provided by Europe, 23.5% by the Middle East and 17% by the Asia Pacific region, though Japan is the single largest importer and Russia is seeking to meet an increasing proportion of Asia-Pacific steam coal needs more broadly. Exports rose from 80.2 mtpa in 2005 to 88 mtpa in 2006 (some suggest 91 mt in 2006). This year exports were nearly 64 mtpa in the first 9 months, a growth of 10% on the same period in 2006.⁶⁵ Therefore, the restructuring of the sector is largely considered to be successful and Russia’s coal production capacity is rising. The Russian coal sector can meet the demands of the new plan.

Continuing Problems and Limitations in the Coal Industry

Nevertheless, the industry continues to face a number of problems. Reports note the high levels of wear and tear in equipment and the continued need for modernisation, though this varies from region to region. Perhaps the most significant concern is the issue of safety. Almost all Russian mines suffer problems of gas drainage, illustrated repeatedly by explosions. In the Kemerovo region, there have been over 200 mine accidents since 2001. A rash of fatal explosions this year alone highlights the continuing problem. This seems indeed to be a tension between the restructuring of the industry and the drive for profits: safety is one of the deciding elements of whether a mine is to be closed down and therefore, as noted

above, companies are being accused of sabotaging the gas detection systems to mask the risks and avoid closure.

Aside from these problems, two major obstacles are visible regarding the planned increase of coal in electricity production. First is the dominance of gas-focused infrastructure and the age and inefficiency of existing coal-fired plants and the dis-balance in their location in Russia. In European Russia and the Urals, 75% of thermal plants are gas or oil-fired. If 90% of Eastern plants are coal fired, on average, natural gas still remains the basic fuel for over 70% of national generation.⁶⁶ As with Russian power generation assets in general, existing coal-fired assets are elderly and inefficient. Over 60% of units are older than 30 years of age, a further 20% are older than 20 years; most efficiency is between 30-35%, with only a few achieving efficiency of over 38%.⁶⁷

To allow the increase in coal use, therefore, extensive building of coal-fired generation capacity is necessary, perhaps some 40-50 GW by 2020.⁶⁸ As noted above, this requirement is recognised by both RAO UES and Gazprom. According to Gazprom, Russia's fuel balance "normalisation calls for Gazprom to become actively involved in coal-fired power generation projects and the construction of coal generation facilities in regions with a high share of natural gas in the balance".⁶⁹ Other experts note that this new plant is required in all regions across Russia, but particularly Western Russia and Western Siberia, and the majority of this will be built only in the period 2011-2015. Once an appropriate site is selected, the building of a new power plant typically takes 3-4 years.

Some experts doubt Russia's capacity to achieve what is necessary. While expertise exists in Russia to build old fashioned steam plants fairly easily, there is little experience of building more modern assets. Moreover, there are few providers of both expertise and technologically advanced capacity on the international market, all of which are international companies. Yet Russia currently prefers the control of such projects to be held by Russian companies. Those who question Gazprom's infrastructure investments to date and note its current financial situation may be inclined to doubt whether it will in fact make the necessary investments in coal-fired capacity.

Second, despite the elderly nature of some gas pipeline infrastructure, the potential scarcity of gas and the rising prices, gas retains certain overall advantages especially in infrastructure and pricing. As one analyst noted in the early 1990s, natural gas has in effect a "free pipeline ride" to the market, reducing the price to consumers – effectively drawing customers away from coal toward natural gas, not because of it being more environmentally friendly as in Western Europe, but because of price advantages.⁷⁰ Rail costs can double the cost of coal across the vast distances in Russia. Prices are set to increase by \$7 in 3 years from the current \$36 per tonne (and port handling costs are also likely to increase).⁷¹ Much therefore depends on the ability to agree and then implement and sustain gas price rises: artificially low prices will make it difficult for other types of fuel to be competitive. Thus some Western analysts argue that steam coal has a long-term future in Siberia, where it is competitive, but in the rest of the country it cannot compete with gas.⁷²

The vast distances involved create an important burden in the energy sector, one exacerbated by a lack of infrastructure or its elderly condition. All aspects of coal transport logistics need improvement. The absence of necessary strategic infrastructure is a problem compounded by both a lack of local infrastructure around mines and power plants and also limited freight capacities. The railcar fleet is aging. Some 110,000 open top cars are to be withdrawn from operation by 2010,

requiring more than 30,000 to be built each year until then. Though RZD launched a 2 year investment plan in 2007 to expand substantially the acquisition of rolling stock, especially freight carriages, RZD Vice President Sergei Kozyrev announced in November 2006 that 24,000 cars had been withdrawn from operation, with only 7,000 new ones purchased. Reports suggest that only 15,000 were due for delivery in 2007.⁷³

Additionally, Russia's ports require significant development. The ports are the "weak point" of Russia's transit infrastructure network, with limited capacity and high prices.⁷⁴ This deficiency was recognised both in Russia's Energy Strategy to 2020 and again recently by the President in his Annual Address to the Federal Assembly, during which he lamented that he had talked "of the need to develop our sea ports for several years now. But the situation has barely improved at all."⁷⁵

The Federal Regional Development Programme 2006-2008 has earmarked \$680m for the development of the rail network in Kuzbass and Kansk-Achinsk regions. RZD has developed a range of plans, including increasing the load of the Trans-Siberian and Baikal-Amur mainlines to transport hydrocarbon raw materials from their deposits. Late in 2006, a Russian investment commission recommended that the government considers financing a major project to develop a railway from Kuragino to Tuva to create the backbone for the development of one of the world's largest coking deposits. Companies such as SUEK and KRU are also investing millions of dollars in rail and port infrastructure development. Putin reiterated the plan to develop the railroad network in late October, announcing a strategy designed for the period up to 2030 – "now it is necessary to complete the final co-ordination phase as promptly as possible, and without pigeon-holing this matter start practical work".⁷⁶ But plans to develop the infrastructure network only highlight its current weaknesses and the isolation of a number of key coal deposits: Kuzbass is in central Russia, thousands of miles from the nearest ports and many of the main consumers, domestic and foreign. Moreover, Putin's statement acknowledges the difficulties of moving from plans to practice.

Infrastructure limitations do not necessarily rule out either the government's decision to increase coal consumption or the ability of Russian companies to continue to develop their export market, not least because of these plans to develop the relevant infrastructure. And some infrastructure already exists: SUEK has just sent by rail a trial batch of coal from its Tugnuy open cast mine to China Datang Corporation, one of China's largest power generation companies, via the frontier transit point of Zabaikalsk-Manchuria. Until recently, SUEK has exported coal to China via the seaport of Vostochny in Russia's Far East – the shipment was the first rail delivery of coal by Russia to China in more than a century.⁷⁷ Much is on paper and the potential is significant. Moreover, there is a clear opportunity to profit: colossal potential earnings and influence will accrue to those who dominate the transport system, particularly if it is re-vamped.

The limitations do however slow down the implementation of plans significantly. Little is in existence. It will take time and huge *and sustained* injections of money to create it. Ear-marking the money does not mean that it will be spent either in the right places or at all; planning does not mean that it will happen: the plan to build the railroad between Kuragino and Tuva, for instance is not new – it was shelved by the Soviet Government in the early 1980s because of prohibitive costs.⁷⁸

Conclusions: Stakhanov to the Rescue?

Two broad conclusions about energy security emerge from this paper. First, Russia illustrates the global trend of increasing coal use – what might be called “the dash to coal”. Energy security is not simply made up of gas and oil, however strategically important they may be: coal is an increasingly relevant and important subject in international energy security. Furthermore, Russian coal is important for Europe, balancing supply and demand.

Second, energy security is not made up of “consumers”, “producers” and “transit” states each with differing and conflicting interests – in fact most states have at least two of these characteristics. One of the key underlying tenets of this paper is to highlight that Russia has all three. Indeed the only way to understand Russian energy at the moment is to consider the tensions that all three characteristics create. Its strength as a producer is being tested by its growing consumption and huge, but also limited transit capabilities.

More specifically, four other conclusions with regard to Russia emerge. First, gas shortages in Russia remain a key question for the short to medium term. But the shortages hang in the balance: though many of the arguments about Russia facing a shortage are valid, it is not a foregone conclusion that it will happen. The speed of decline of the mature major fields is unclear, as are the extent of Gazprom’s storage capacities and ability sharply to ramp up production to meet an emergency. Supplies are vulnerable to relatively unpredictable elements such as the weather: a harsh winter will show up the inefficiencies of Gazprom, another mild one will mask them. This is particularly important given the parliamentary elections (scheduled for December 2007) and the Presidential elections (scheduled for March). A harsh winter resulting in an electricity and gas crisis could create an uncertain, potentially even volatile electoral situation, the very thing that the Russian government seeks to avoid. Importantly, this is not simply a gas shortage: already there have been electricity shortages. Given that Russian electricity generation is largely currently gas fired, gas shortages will exacerbate electricity shortages.

That the Russian government has recognised the problem and is attempting to develop a strategy to deal with it is the second specific conclusion. Rather than seek to develop new exploration and production capabilities, one of the main concepts of this strategy is to reduce domestic gas consumption, substituting it with coal, of which Russia has vast reserves. This provides some indication of the intentions of Gazprom and parts of the Russian government: gas, it seems, is for export.

Why should such a move to coal work now? There are three reasons. First, gas scarcity and rising gas prices provide opportunities to increase coal’s market share and its role in the energy mix. Second, two of the key drivers behind this strategy have important vested interests: Gazprom and SUEK. The role of the coal sector in Russia is particularly important to note. Though gas exports are an important element of this new strategy, this is not simply a Gazprom driven plan. The coal sector is one of the most reformed parts of the Russian energy sector and is advancing its own interests. Consequently, the idea has strong political and bureaucratic support. Third, the reformed and restructured coal sector seems capable of meeting the increasing amounts of coal production required (which some estimates put at an increase of 7-10%); moreover, large sums of money are being ear-marked for major strategic development of Russia’s infrastructure. An increase in coal production and its role in the fuel balance are both feasible.

The third specific conclusion, however, is that there are significant problems obstructing the plan, both in terms of agreeing it and implementing it. It has long been discussed – since the early period of President Putin’s first term. And to be sure, some progress has taken place and power companies have already begun to acquire or build coal-fired generation assets. Yet significant competition and opposition to the specifics have often stalled the implementation of the plan, agreements are often transitory and rescinded, parties let down. Lack of consensus is a key reason for the delay in developing the new Russian energy strategy.

Moreover, the serious limitations of Russia’s current generating and railway network infrastructures mean that much development has to take place before the plan can be implemented. There may be considerable amounts of money being earmarked for infrastructure development, but the range of “priorities” – nuclear power plants, coal-fired power plants, gas-fired power plants, and railway and port development among many others – is an almost endless list. Neither are the key hurdles recognised in the mid 1990s resolved: the railway is still run by a monopoly and gas prices are still too low for coal to compete properly with gas.

Consequently, though coal is a major element of the Russian energy sector, and though the domestic consumption of coal is likely to rise despite these hurdles, there can be no simple switch to coal to cover an immediate serious shortfall of gas. This remains, therefore, a plan for the medium term.

Fourth, the consequences of the plan for Europe and the UK are important. How will the increasing use of coal affect the climate change dimension of EU-Russia relations? Russia plans to burn more coal and – until new, more efficient power plants can be built – in old and inefficient ways. This is not an environmentally friendly step and its ramifications for the Kyoto Protocol should be considered. More important still, the rise in domestic consumption of coal seems likely to absorb the increasing production and limit or even diminish the coal available for export. Above, it was noted that the DTI was concerned that “any political difficulty over Russian gas would also constitute a political difficulty affecting Russian coal supplies”. Though this cannot be ruled out, there is a more important aspect: any problem with the Russian gas industry enhancing its production would constitute a practical problem with regard to supplies of Russian coal – because they would be absorbed elsewhere. Equally, while coal companies may seek to maintain their exports, since these are profitable – they are also seeking to diversify their markets, including meeting the soaring Asia-Pacific market. This also will limit the amount of coal available for export to European consumers. The signs remain somewhat contradictory, with exports increasing but senior figures announcing their potential restriction or decrease. Though not forecasting a halt to exports, Gribovsky has noted that increasing domestic coal consumption is likely to constrict Russian coal exports from 2009, which may fall by approximately 50% of current levels in four years time.⁷⁹ This would in part be because the Russian market would be as profitable as the export one.

Perhaps the main problem faced in the West, however, is the apparent unwillingness to delve into the opaque world of the Russian energy sector. The contrasting willingness to rush to conclusions about a small number of admittedly important issues – Gazprom’s monopoly status, the “re-nationalisation” of the Russian energy sector, Russia’s refusal to ratify the Energy Charter Treaty and the Transit Protocol and the Kremlin’s “strategy” to wield energy as a tool of political influence on the international stage are four particularly popular favourites – has choked off thinking about the broader and deeper – and potentially yet more

important questions. But in global energy security, Russia cannot be ignored, avoided or simplistically categorised as a renationalising, recalcitrant and politically stagnating supplier. For all the faults, there is an undercurrent of dynamism within both Russian politics and more specifically the energy sector which is being missed by most Western analysis. To be sure, this is a dynamism characterised by inefficiency, power struggle and a degree of chaos and error. But it is an important one nonetheless and one that becomes increasingly significant as the elections approach.

To deal with the myriad questions and problems Russia poses – and let us not forget the opportunities – think we must. We must be prepared to engage with Russia, however difficult this may be. But to engage effectively, we must ask more questions. What are the wider knock-on effects to Europe of Russian gas shortages? There are many related questions demand attention. What is the broader significance of the announcement that Alstom and its Russian partner Power Engineering Group Energomashintroitelny Alyans (EMAlliance) are cooperating to construct a 420MegaWatt Combined Cycle Gas Turbine (CCGT) plant for Mosenergo scheduled for commissioning in 2009?⁸⁰ The project has no equivalent in the Russian power industry and has three important features. First, it replaces inefficient thermal gas-fired plant with CCGT and nearly double the thermal efficiency (59%). Second, since 80% of Moscow's power is thermal gas-fired, such a move frees up a considerable amount of gas. Third, it acknowledges the inevitability of foreign supply of utility-rated CCGT technology (there is no current or future Russian supplier).⁸¹

What are the political ramifications of the redevelopment of the energy strategy? How will all the infrastructure plans work? Will they be congruent? Or will the developed gas infrastructure simply increase competition for the railway network and thus coal transit? What are the prospects for the proposals by the Natural Resources and Economic Development and Trade Ministries to enhance replacement of depleted natural resources?⁸² Who are the other key actors in the energy sector? Are there real challenges to the continuing privatisation of the coal sector?⁸³ What roles do the major companies such as Norilsk Nickel, Mechel, Alrosa and RZD play? All possess or are involved in bidding for energy/resource assets as part of their broader growth, RZD is considering a stake in a generating company because of “bottlenecks in supplies”.⁸⁴ What are the roles of those such as Vladimir Yakunin, head of RZD and potential presidential candidate?⁸⁵

In the longer term, what will the situation for Europe be if the Russian domestic market becomes more profitable for Russian energy companies due to rising domestic prices? What will the new Russian energy strategy look like? Will it be published or remain a “strategy-in-progress” like the military doctrine? What will the ramifications be for Europe if – when? – the various dimensions of the Russian energy sector become more coherent and Russia does begin to implement an overall strategy?

Endnotes

¹ The USA, China and Russia possess some 50% of the world's coal, but 20 other states hold reserves of over 1 billion tonnes. This is a much broader spread than oil and especially gas.

² See *World Energy Outlook 2006*. <http://www.worldenergyoutlook.org/> p.125. Some experts note that IEA coal demand estimates are being revised upwards.

³ *BP Statistical Review of World Energy 2007*. p.33 at www.bp.com/statisticalreview; *IEA World Energy Outlook, 2006*. <http://www.worldenergyoutlook.org/> p.128.

⁴ *CoalTrans*, May/June 2007. By way of comparison, Russia, which is the fifth largest producer of coal, is estimated to produce 325 mtpa by 2009.

⁵ See, for instance, speech “New Diplomacy: Challenges for Foreign Policy” by David Miliband, at Chatham House, London, 19 July 2007.

⁶ Reported in <http://en.rian.ru/analysis/20070813/71247553.html>

⁷ *A Framework for Clean Coal in Britain. Paper prepared by the Clean Coal Task Group*, 7 June 2006. p.5, www.tuc.org.uk/extras/coal.doc; “Russian Thermal Coal Account for 15% Power Generation in UK in 2006” (sic), 25 July 2007, http://www.steelguru.com/news/index/2007/06/20/MjI4NDA%3D/Russian_thermal_coal_account_for_15%252525_power_generation_in_UK_in_2006.html.

⁸ “Thermal Coal Account for 15% Power Generation in UK in 2006”

⁹ www.dti.gov.uk/files/file31397.pdf, 27 June 2006. In the second week of March, KRU acquired a 51% stakeholding of Richard Budge’s company Powerfuel PLC for some £36 million with the understanding of more investment. A further £800 million is needed, but KRU expects that by the time it is fully refurbished, probably in 2009, Hatfield colliery could be producing 2 million tonnes per year. (The DTI noted that Powerfuel expects this production by 2010.) <http://www.minersadvice.co.uk/hatfieldmain.htm>

¹⁰ www.eng.suek.ru/mod_news_detailed.php?art_id=2870

¹¹ DTI: now the Department for Business, Enterprise and Regulatory Reform, BERR

¹² www.dti.gov.uk/files/file19910.pdf, 5 April 2005.

¹³ “Death Toll in W. Siberian Mine Blast Revised to 104”, *RIA Novosti*, 20/03/2007, <http://en.rian.ru/russia/20070320/62294325.html>

¹⁴ The explosion led to a series of investigations by the Federal Service for Ecological, Technological and Atomic Monitoring (Rostekhnadzor) of 58 mines in Kemerovo Oblast, which revealed 1842 violations of safety regulations, some apparently deliberate, in the interests of higher wages and profits. Reported in *RFE/RL Newsline* Vol. 11, No.117, Part I, 26 June 2007. Investigations were hampered by the deaths in the explosion of most of the company’s senior management, including the executive in charge of safety, but one result was that five mine safety inspectors were fired for “allowing the Ulyanovskaya mine to breach safety rules in order to make a profit”. Serious violations were also found at the Osinnikovskaya mine, which used the same system and is owned by the same company, Yuzhkuzbassugol. “5 Mine Inspectors Are Fired”, *The Moscow Times*, 24 May 2007. In another explosion at Yubileinaya mine in May 2007 – also owned by Yuzhkuzbassugol, but not equipped with the same safety technology – miners asserted that the sensors were showing 10% while the maximum concentration permitted is 2%. The unnamed miner stated that the gas detection system operators were informed that they would be fired unless they adjusted the sensors to show 0.6%. “38 Dead in Siberian Coal Mine Disaster”, *The Moscow Times*, 25-7 May 2007.

¹⁵ www.dti.gov.uk/files/file31241.pdf 27 June 2006

¹⁶ Interviews with European and UK coal experts and government officials, Spring-summer 2007. The greater confidence in Russian coal seems to have remained the case despite the announcements by Estonian officials that during and following the dispute between Russia and Estonia over the relocation of a monument to Soviet war dead, the Estonian economy was affected because Russia used “administrative measures, scaling down rail service and limiting exports and imports to and from Estonia”. Coal shipments declined some 60% year-on year. Cited in “Relocation of Bronze Soldier Slowed Estonia’s growth – paper”, <http://en.rian.ru/business/20070815/71708466.html>

¹⁷ *A Framework for Clean Coal in Britain*, p.11; Russian Thermal Coal Account for 15% Power Generation in UK in 2006”. For an in-depth examination of the wider UK-Russia relationship, including political, military and economic/energy relations, see Monaghan, A. (ed.) *The UK & Russia – A Troubled Relationship. Part I*. CSRC Paper 07/17. Swindon: CSRC, Defence Academy of the UK, May 2007.

¹⁸ For discussions of this tension, see Monaghan, A. “Russian Energy Diplomacy: A Political Idea Without a Strategy?”, *Journal of Southeast European and Black Sea Studies*, Vol.7, No.2, 2007; Ivanenko, V. *Russian Energy Strategy in Natural Gas Sector*, December 2006. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=953467

¹⁹ Interview, Moscow, May 2007.

²⁰ See, for instance, Evidence of J. Murphy MP, Minister for Europe, transcript of oral evidence to the House of Commons Foreign Affairs Committee, 18 July 2007. HC 495-iii; Fredholm, M. *Gazprom in Crisis*. CSRC paper 06/48. Swindon: CSRC, October 2006.

²¹ “Russian companies to be deprived of cheap electricity”, *RIA Novosti* <http://en.rian.ru/analysis/20070907/77390838.html>; OGK-3 will build two modern coal-firing power units, each with a capacity of 225 megawatts, at the Cherepets state district power plant in central Russia and a third coal-firing unit with a capacity of 225 megawatts at the Kharanor state district power plant in Russia's Far East as part of its development strategy until 2010. “Russian Wholesale Electricity Company Unveils Investment Plans” *RIA Novosti*, 23 March 2006. <http://en.rian.ru/business/20060323/44734623.html> Note the time delay between the announcement in March 2006 and September 2007.

²² For more detailed assessment, see Kornilova, A. *Russian Opportunities Under the Kyoto Protocol: The Sakhalin Power Plants – a Case Study on the Use of Kyoto Joint Implementation in the Russian Power Sector*. EV37.Oxford: Oxford Institute of Energy Studies, January 2007. pp.10,12,23,24.

²³ <http://www.rao-ees.ru/>

²⁴ Kornilova, p.25.

²⁵ For extended examinations of Russia's stagnating oil and gas production, see this author's *Russian Oil and EU Energy Security*, CSRC paper 05/65. Sandhurst: CSRC, November 2005 and “Dilemma energeticheskoi bezopasnosti”, *Pro & Contra*, No. 2-3, (32), 2006 respectively. Also see Fredholm, *Gazprom in Crisis*.

²⁶ *BP Statistical Review, 2007*.

²⁷ Fredholm, *Gazprom in Crisis*. Vladimir Milov, a Russian expert well known in the west has advocated this line.

²⁸ See, for instance, Mitrova, T. & Ya. Pappé, “Gazprom: ot ‘bolshoi trubi’ k bol’shomu biznesu”, *Pro & Contra*, No.2-3 (32) 2006.

²⁹ *Interfax*, 7 October 2007.

³⁰ http://www.gazprom.ru/news/2007/10/251930_25721.shtml

³¹ The cost is enormous – some \$21 billion annually, while Gazprom's current rate of capital spending is approximately \$12 billion and its current debt stands at some \$50 billion. The project is therefore “unlikely to be completed in time”. “Eastern Gas Programme Will Face Delays”, *Oxford Analytica Daily Brief*, 24 October 2007. Interview with Dr. Nazrin Mehdiyeva, October 2007.

³² It is worth remembering that although the dispute with Ukraine in January 2006 was the incident which raised concerns about Russia's reliability as a gas supplier, it was subsequent gas shortages in Russia in late January and February 2006 due to the severity of the Russian winter that in fact created the more significant gas shortages among European customers.

³³ Interview with Economy Minister German Gref (part 2), *RIA Novosti*, 5 May 2007 <http://en.rian.ru/analysis/20070502/64764095.html>

³⁴ “Why Russia has a gas shortage”, *RIA Novosti*, 17 November 2006

<http://en.rian.ru/analysis/20061117/55747646.html>

³⁵ “Glava Minekonomrazvitiya German Gref : “skoro vsya ekonomika kashlyat’ nachnyot”, *Izvestiya*, 1 November 2006. <http://www.izvestia.ru/economic/article3098037/>

³⁶ 70% of Russian power plants are thermal and 70% of these are gas fired.

³⁷ “Putin to Intervene on Energy”, *The Financial Times*, 7 November 2006.

³⁸ Putin's Annual Address to the Federal Assembly, Moscow, 26 April 2007. http://www.kremlin.ru/eng/speeches/2007/04/26/1209_type70029type82912_125670.shtml

³⁹ Project on new generation capacities, written by Gradetskii, A.V., Mitrova, T.A. & V.A. Sal'nikov, “Novaya Generatskiya: Vtoraya ugol'naya volna’, ruinoz gaza i reforma teploenergetiki”, including the results of expert conferences in November and December 2006. The project was organised by expert.ru, SUEK and Silovie mashini.

⁴⁰ This represented a turnaround from the position of the first half of the 1990s, when the aim was to increase the use natural gas in energy production at the expense of oil and coal in the balance. See *Survey of the Energy Policies of the Russian Federation. Main Conclusions and Recommendations*. Paris: IEA, 1995. pp.14-5.

⁴¹ Mastepanov, A.M. *Energy Strategy of the Russian Federation to the Year 2020*, http://ec.europa.eu/energy/russia/presentations/doc/energy-strategy2020_en.pdf; *Energeticheskaya strategiya Rossii na period do 2020 goda*.

⁴² Hughes, G. *Prospects for the Electricity and Coal Sectors in Transition Countries*. Draft paper, December 2005. p.57.

⁴³ Zubkov, V. "A New Russian Energy Monopoly: For Better or For Worse?", *RIA Novosti*, 13 February 2007. <http://en.rian.ru/analysis/20070213/60667443.html>

⁴⁴ Tomberg, I. "Export Interests Above All?", *RIA Novosti*, 26 September 2006. <http://en.rian.ru/analysis/20060926/54287406.html>

⁴⁵ Tomberg, I. "Export interests Above All?", <http://en.rian.ru/analysis/20060926/54287406.html>

⁴⁶ 3rd CoalTrans Conference, 18-19 June 2007.

⁴⁷ "Russia Coal Exports to Start Falling", *Reuters*, <http://uk.reuters.com/article/electionsNews/idUKL0638050320070608>, where Rodinov is billed as Deputy Chair of the Board of Gazprom.

⁴⁸ Rodionov, P. *Gazprom as Participant in the Shaping of Russia's Energy Strategy*, 22 November 2005 <http://www.mmnk.org/journal/rodionov.htm>

⁴⁹ Cited in Tomberg, I. "Export Interests Above All?", *RIA Novosti*, 26 September 2006. <http://en.rian.ru/analysis/20060926/54287406.html>

⁵⁰ Both cited in "Gazprom Calls for Shift from Gas to Coal in Power Generation", *RIA Novosti*, 16 February 2006. <http://en.rian.ru/business/20070216/60833447.html>

⁵¹ According to one source, both were due to be published at the end of the summer of 2007. Interview with Russian official, July 2007.

⁵² Velikhov, Ye. "The World Will Not do Without Nuclear Power Engineering", *RIA Novosti*, 9 February 2006, <http://en.rian.ru/analysis/20060209/43446466.html>

⁵³ Putin's Annual Address to the Federal Assembly, Moscow, 26 April 2007.

⁵⁴ *Interfax*, 15 October 2007.

⁵⁵ See, for instance, "Putin to Intervene on Energy", *Financial Times*, 7 November 2006.

⁵⁶ See www.gazprom.ru & www.suek.ru

⁵⁷ Cited in Zubkov. It should be remembered that Dmitri Medvedev is Chairman of the Board of Directors of Gazprom, First Deputy Prime Minister and also a potential presidential candidate.

⁵⁸ For the latter estimates, see Mastepanov. It should be noted that the IEA is considerably more conservative in its reference scenario outlook, estimating production to be 306 mtpa in 2015 and, importantly, 301 mtpa in 2020. *IEA World Energy Outlook 2006*.

⁵⁹ During one night in August 1935, Stakhanov was reported to have produced 102 tons of coal, at that time 14 times the daily norm. This was at a time of the introduction of new technology and also the need for extra output in every sphere to support rapid industrialisation. His name was given to an entire movement calling for extra output. See, for instance, www.komersant.ru/k-money-old/story.asp?m_id=17594

⁶⁰ Gradetskii, Mitrova & Sal'nikov, pp.28-9.

⁶¹ *Ibid*, pp.28-9. The temporary nature of this transition meant that the generation infrastructure was converted in a slapdash fashion.

⁶² This brief description of the difficulties of the Russian coal sector draws on a number of sources, particularly Ebel, R. *Energy Choices in Russia*. Washington: CSIS, 1995; "Coal Industry 2000-2004", *Kommersant* 2 August 2004; Malyshev, Y.N. "Restructuring of the Coal Mining Industry of Russia: Objectives, Problems and Achievements", http://217.206.197.194:8190/wec-geis/publications/default/tech_papers/17th_congress/1_4_19.asp

⁶³ This brief overview of the restructuring and reform process draws on, among others, Hughes, pp.56-7; Gradetskii, Mitrova & Sal'nikov, pp.28-9; Lawson, P. "An Introduction to the Russian Coal Industry", <http://www.mma1.com/company/pdf/papers/An%20Introduction%20of%20the%20Russia%20Coal%20Industry.pdf>; Artemiev, I. & M. Haney, *The Privatisation of the Russian Coal Industry: Policies and Processes in the Transformation of a Major Industry*, World Bank Policy Research Working Paper, No. 2820. April 2002.

⁶⁴ Though it is notable that the roots of the senior executive management of SUEK are in banking.

⁶⁵ Exports to non-Commonwealth of Independent States (CIS) rose 8% to 56.5 mt and to the CIS rose 29% to 7.4 mt according to the Russian Federal Customs Service. *Interfax* 9 October 2007.

- ⁶⁶ “Russia’s Energy Industry and Its Global Role”, <http://eng8russia.ru/agenda/nrgsafety/russianrole>;
- ⁶⁷ See Kakaras, E. Tumanovsky, A. Kotler, V. Koukouzas, N. & E. Karlopoulos, “Current Situation of Coal Fired Power Plants in Russian Federation and the Implementation Options of Clear Coal Technologies. 5th European Conference on coal Research and its Applications, 2005.
- ⁶⁸ Gribanovsky, <http://uk.reuters.com/article/electionsNews/idUKL0638050320070608>; Blagov, S. “Russia Considers Increasing Coal Use to Facilitate Gas Exports”, 11 June 2007 www.jamestown.org/edm/article.php?article_id=237221
- ⁶⁹ www.gazprom.ru
- ⁷⁰ Ebel, p.92.
- ⁷¹ Gribanovsky, <http://uk.reuters.com/article/electionsNews/idUKL0638050320070608>
- ⁷² Hughes, G. *Prospects for the Electricity and Coal Sectors in Transition Countries*. Revised draft December 2005. p.57.
- ⁷³ Discussions with Russian energy experts. Also Argus Russian Coal, No.1, 1 November 2006. www.petroleumarus.ru/samples/ruscoal.pdf ; “Tariffs change targets railcar problem”, *Argus Russian Coal*, 15 December 2006, 15.12.2006 <http://www.npktrans.ru/Doc.aspx?CatalogId=529&docId=1812>. It is also worth consulting chapter 6 (Ugol’ i transport) of Tuleev, A. M. & S. V. Shatirov, *Ugol’: Rossii v XXI veke. Problemui i resheniya*. Moscow: Sovershenno Sekretno, 2003.
- ⁷⁴ See *CoalTrans*, Nov/Dec 2005 & Jul/Aug 2006.
- ⁷⁵ *Russia’s Energy Strategy to 2020*; Putin’s Address to the Federal Assembly, 26 April 2007.
- ⁷⁶ *Interfax*, 24 October 2007
- ⁷⁷ “SUEK Seeking New Ways to Increase Export”, *CoalTrans*, September/October 2007. <http://www.coaltransinternational.com/htm/n20071020.564181.htm>
- ⁷⁸ “Plan to Link World’s Largest Coking Coal Deposit to Russian Railway”, *CoalTrans*, November/December 2006.
- ⁷⁹ “Russian Coal Exports to Start Falling”, *Reuters*, 6 June 2007. <http://uk.reuters.com/article/electionsNews/idUKL0638050320070608>
- ⁸⁰ Mosenergo is currently building four combined cycle power generating units, including PGU-420 which, according to the company will be the “most state of the art and efficient thermal power generating unit in Russia”. www.mosenergo.ru
- ⁸¹ Correspondence with Russian energy expert, October 2007. Also see press releases at www.alstom.com, www.mosenergo.ru. In a CCGT plant, a gas turbine generator generates electricity and waste heat is used to make steam to generate further electricity through a steam turbine, improving efficiency.
- ⁸² The proposals envisage increasing federal funding for geological surveys to over 500bn rubles (currently 260 bn rubles) and introducing lower taxes for the development of the continental shelf. *Interfax*, 15 October 2007.
- ⁸³ In February 2006, some were noting potential challenges to the privatisation of Yakutugol’ by the Federal Authorities. www.Kommersant.com/page.asp?idr=500&eid=647211
- ⁸⁴ See *Interfax* reports 5 & 24 October 2007. Mechel won the auction to acquire 68.86% of coal producer Elgaugol’ and 75% - 1 share in Yakutugol’ from the Regional Republic of Yakutia. Mechel will reportedly invest £3bn in Elgaugol’ in 7-10 years.
- ⁸⁵ Yakunin’s potential candidacy was noted by some in mid 2005 and has continued to feature as a potential “dark horse”: though at the time of writing he has little public support, he has enjoyed a close relationship with senior figures in the Putin administration, including the President himself.

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Want to Know More ...?

See:

Artemiev, I. & M. Haney, *The Privatisation of the Russian Coal Industry: Policies and Processes in the Transformation of a Major Industry*, World Bank Policy Research Working Paper, No. 2820. April 2002.

Fredholm, M. *The Russian Energy Strategy and Energy Policy*. CSRC Paper 05/41. Sandhurst: CSRC, 2005.

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ISBN 978-1-905962-31-0

Published By:

**Defence Academy of the
United Kingdom**

Advanced Research and Assessment Group

Defence Academy of the UK
Block D, JSCSC
Shrivenham
SN6 8TS
England

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ISBN 978-1-905962-31-0