UKRAINE'S GAS SECTOR

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Foreword

Roughly 20% of Europe's gas passes through Ukraine and the country has the third largest gas production and the fourth largest gas market in Europe. Yet until January 2006, when the brief curtailment of Russian gas supplies created shock waves across Europe, little attention was paid to the importance of Ukraine and there is still remarkably little easily accessible information about the development of its gas market. This study therefore fills an important gap in the literature on European gas issues. It is the first in a series of papers on CIS gas markets which the Gas Programme will publish over the next year, culminating in a book to be edited by Simon Pirani which will be published in 2008.

I agreed with Simon Pirani that he would write this study more than a year ago but at that time neither of us quite appreciated the magnitude of the task. The fact that this paper is so comprehensive is a tribute to his hard work and tenacity both in terms of desk research and frequent visits to Ukraine.

Professor Jonathan Stern
July 2007

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As well as consulting published sources, I have interviewed more than 50 people, including government and company officials, bankers, lawyers, economists, financial analysts and journalists. Those whom I am able to thank publicly include Konstantin Borodin, spokesman, Naftogaz Ukrainy; Aleksei Cherniavskii, editor, *Energobiznes*; Sergei Fursa, analyst, Ukrsibbank; and Vladimir Nesterenko, senior analyst, Concorde Capital. Many others shared information on a non-attributable basis and I thank them too, as well as my colleagues at the Oxford Institute for Energy Studies. Thanks to Anita Gardner, who designed the map and diagram.

1. INTRODUCTION

The paper aims to provide an overview of the Ukrainian gas sector. Public discussion in western Europe has turned to Ukraine as a transit country – through which more than four-fifths of Russian gas exports to Europe pass – when its disputes with Russia have threatened to interrupt supply. Such an occasion was in the first week of January 2006. Pressure was reduced in some pipelines, pending resolution of that year's particularly bitter dispute.

The Ukrainian gas sector is important for other reasons, however. Ukraine is not only the most important transit country for Russian gas, but is also a significant gas producer in its own right with an output of 18–20 billion cubic metres (bcm) per year in the post-Soviet period and the potential to increase it. Ukraine is also the largest Confederation of Independent States (CIS) gas consumer after Russia: it consumes 70–80 bcm/year. By common consent this is far too high a figure, and a significant drain on the Ukrainian economy.

Ukraine has not made much progress in reducing the dependence on gas that it developed in the late Soviet period, which brings us to another reason for the importance of its gas sector. Its progress, and lack of it, is integral to the economic, political and social course taken by post-Soviet Ukraine, and to its relations with Russia and other CIS states. An understanding of the gas sector is therefore not only vital for the European and world gas industry, but is also an essential prerequisite for understanding Ukraine's post-Soviet development.

Section 2 summarizes the economic, political and social changes in Ukraine that form the background to the changes in the gas sector in the post-Soviet period, and the place of gas in Ukraine's energy balance. Section 3 traces the main changes in the gas sector during that period. Section 4 concerns supply: the import of gas from Russia and central Asia is discussed, the way in which the commercial and trading arrangements for import have changed in recent years is reviewed, corporate governance and other controversies hanging over the transit trade are discussed and domestic gas production is reviewed. Section 5 concerns consumption: it provides an outline of the domestic market and reviews recent market developments and changes in market structure. Section 6 provides an overview of the transit network. Section 7 discusses the impact of the changes in Russo–Ukrainian gas relations, i.e. the impact of price increases on the Ukrainian economy and the changes in Ukraine's position as a transit country.

Conclusions are offered about the relationship between Russia and Ukraine in the gas sphere, about the way in which slow political and economic development has impacted the sector and about the future of the domestic market and the impact of higher gas prices.

2. THE WIDER CONTEXT

Ukraine, with 46.5 million inhabitants, is the fifth largest country in Europe by population[1] and the largest by land area, if European Russia is excluded. Historically, Ukraine suffered division and colonization. At least since the 10th century, it existed as an aggregate of borderlands under Polish, Russian and/or Austro–Hungarian domination, clutching for nationhood briefly during the Russian civil war (1917–1920) before being incorporated into the Soviet Union in 1922. During industrialization in the 19th century under tsarism and in the 20th century under Soviet rule, there was large-scale Russian migration to the industrial centres of eastern Ukraine. For this reason, the Ukrainian population now comprises a Ukrainian-speaking majority, mostly in the west and centre, and a large Russian-speaking minority based in the east.[2] Allegiances in Ukrainian politics are often presented as a reflection of this regional divide, but this is an oversimplification. The business groups that influence politics are often regionally based, e.g. those in Donetsk influence the Party of Regions led by Prime Minister Viktor Yanukovich, those in Dnipropetrovsk have good relations with opposition leader Yulia Timoshenko and those in western Ukraine support some of the 'Orange' parties. However, economic factors are at least as important as regional ones in determining alliances and policies. For example, frictions between Russian-speaking Donetsk and Russian-speaking Dnipropetrovsk are as significant as western–eastern conflicts.

Ukraine became an independent modern state in 1991. The changes in the country's gas sector have been conditioned by economic, social and political changes associated with post-Soviet transition, and changes in Ukraine's relationship with Russia, Ukraine's largest trading partner and largest energy importer. To highlight relevant events, the period since independence may be divided as follows: 1991–1994 (establishment of independence, economic slump); 1994–1999 (first attempts at market reform during continuing recession); 1999–2004 (economic recovery, but greater friction with Russia on energy); 2004–2006 (political change brought by Orange revolution and culmination of the gas crisis).

[1] Behind Germany, France, the UK and Italy.

[2] In the most recent census in 2001, 67.5% of the population declared Ukrainian their native language and 29.6% Russian; other surveys have shown that more than half of Ukrainians speak Russian every day. Almost all Ukrainians understand both Ukrainian and Russian. Many Ukrainians speak *surzhyk*, a mixture of Ukrainian and Russian.

2.1 Independence and slump (1991–1994)

The break-up of the Soviet Union and re-establishment of an independent Ukrainian state in 1991 was followed by one of the greatest ever peacetime economic slumps. In the seven years from 1991 to 1997, officially-measured real gross domestic product (GDP) fell by 68%, industrial output by 52% and capital investment by 74%. By 1998, GDP per capita had fallen to $2000, roughly half that of Russia, and between that of India and China.[3] In many respects, the Ukrainian slump was part of the broader collapse that embraced all post-Soviet states. The demise of the 'command economy' and the disruption of its trading networks drove the decline in industrial production. In fiscal and monetary terms, Ukraine unwillingly followed Russia into hyperinflation. In 1991–1992, the Soviet ruble continued to circulate. The government tried to prevent consumer goods being diverted to Russia, where prices were higher, and when Russian prices were liberalized in January 1992 Ukraine had little choice but to follow suit. In 1993, when Ukraine's first independent currency (the Karbovanets) was introduced, it was too late to stop the descent into hyperinflation, aggravated by soft credits and subsidies to industry.[4] Capital flight, a hallmark of the Russian slump of the 1990s, also afflicted Ukraine. Estimates of the cumulative total are between $25–50 billion.[5]

What most sharply distinguished Ukraine's slump from Russia's was that it was aggravated by dependence on Russian imports of energy: specifically, gas. In Soviet times, cheap Russian gas had been used to subsidize industry and to provide heat and fuel to the population, in Ukraine as elsewhere. The break-up of the USSR and integration into the world market disrupted all such arrangements. Following the break-up in 1990–1991 of the Council of Mutual Economic Assistance (CMEA or Comecon), trade between former Soviet republics was conducted in convertible currencies, using prices related to world markets. There was a huge and rapid decline in intra-CIS trade.[6] In the case of energy and raw materials exports to its former Soviet neighbours, who were in many cases now unable to pay for them, the Russian government had to take political decisions about the expediency of these exports. In the case of gas exports to Ukraine it was politically

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[3] Economic data from D'Anieri *et al*., *Politics and Society in Ukraine*, 1999, p. 91. For the six years 1992–1997, the data of the European Bank for Reconstruction and Development (EBRD) show a cumulative decline of GDP of 57% and a cumulative fall in industrial output of 48%. There are disputes about the reliability of statistics from this period, particularly given the size of the 'shadow economy' which may have accounted for more than one-third of the economy. See discussions in D'Anieri *et al*. op. cit., p. 1 and pp. 169–173; EBRD, *Transition Report*, 2001, p. 225; GDP per head data in van Zon, *The Political Economy of Independent Ukraine*, 2000, p. 1.

[4] D'Anieri *et al*. op. cit., pp. 190–195.

[5] D'Anieri *et al*. op. cit., p. 175.

[6] See for example, Smith, *Russia and the world economy: problems of integration*, London: Routledge, 1993, especially pp. 199–217; and Michalopoulos, *The Integration of Transition Economies into the World Trading System*, September 1999, WPS-2182, World Bank.

undesirable and practically impossible to reduce them, and it remained only for Russia and Ukraine to haggle over the price as they have been obliged to do ever since.

Against the background of economic collapse, Ukraine's governing class was trying to establish a new nation state. The elite itself was in flux. At the top, many politicians (including, famously, Ukraine's first president Leonid Kravchuk) traded in their Soviet ideology for nationalism. Of the members of the Soviet bureaucratic class, some stayed in position, wielding power through ministries, industrial authorities and local government institutions; others became businessmen, starting their empires with assets picked up in cut-price privatization sales. In the short term, the frictions between these groups were evident in the mixed success of the privatization programme, which brought those who sought to retain control of industry through the state into conflict with those who sought advantage from the post-Soviet property relations.

At government level, against this chaotic background, effort was devoted to creating new institutions and setting precedents of statehood. The National Bank was set up in 1990, independence declared in 1991 and in 1992 International Monetary Fund membership was obtained and a currency was created. To describe the government's survival measures as coherent policy would be an exaggeration. Holding the new state together without significant bloodshed – which some observers doubted could be done[7] – was itself some kind of achievement. Initial economic reform plans adopted in 1990–1991 concentrated on separating Ukraine from Russia. The first plan with any more substance was introduced in September 1992. Under it, Leonid Kuchma, then prime minister, tried to gain control of monetary and privatization policy. He was opposed by Kravchuk, however, who feared Kuchma was trying to accumulate too much power. Simultaneously, the combination of budget cuts and hyperinflation were provoking social unrest; a ten-day strike in May 1993 by the Donbass miners threatened to escalate into wider action.[8] A few months later, Kravchuk's own attempts to rein in budgetary spending brought him into conflict with the *Rada* (parliament) where state enterprises and new, private businesses were both strongly represented, and forced him to call presidential elections in March 1994. Kuchma won these elections on a ticket of renewed ties with Russia and an evolutionary approach to reform.

[7] In 1994, the Central Intelligence Agency (CIA) issued a warning that Ukraine was likely to dissolve (Van Zon, op. cit., p. 19; Aslund and de Menil, *Economic Reform in Ukraine*, 2000, p. 7).

[8] Yekhanurov, *The Progress of Privatisation*, in Aslund and de Menil (eds.), op. cit., pp. 190-192; D'Anieri *et al*., op. cit., pp. 190–195; Aslund and de Menil, op. cit., pp. 5–7.

Themes first manifested in this initial, traumatic period of new Ukraine's history – such as the importance of the relationship with Russia in domestic affairs, the strength of bureaucratic and business interest groups in the state and politics, conflict between president, prime minister and parliament rooted in a weak constitution and the disruption of market reform measures by popular opposition – have been repeated, in different forms, up to the present.

2.2 Early attempts at reform (1994–1999)

The five years after president Kuchma's election were characterized by friction between Ukraine and Russia: the economy experienced continuing recession and slow, uneven progress towards market relationships and politics was dominated by the rising power of business clans. An important factor in Russo–Ukrainian relations was the active intervention in the former Soviet Union by the US, which sought to bolster Ukraine's political and economic independence from Russia for its own strategic reasons, and the international financial institutions, especially the IMF, whose approach was influenced by the US and some European powers. Russia had itself hit the nadir of its economic crisis; the Russian economy was in recession and poverty was widespread. The only significant signs of growth were in the commodity-exporting industries, principally oil and metals, which were now mostly controlled by the oligarchs (politically powerful businessmen). Amid concern in the west that president Yeltsin would be beaten by the Communist candidate in the 1996 presidential election, the IMF extended a series of controversially generous loans to Russia. At the same time, the US made Ukraine the third largest recipient of its own bilateral aid, surpassing Russia and behind only Israel and Egypt. The IMF, with strong US encouragement, helped Ukraine to restructure its energy debts to Russia, despite being unable to meet IMF fiscal and monetary targets, and the IMF apparently pressured Russia and Turkmenistan to renegotiate Ukraine's debts.[9]

Ukraine's economy bumped along in a recession deeper than Russia's: in the six years from 1994 to 1999, growth averaged –8.4% per year. One important measure of economic paralysis was Ukraine's payments arrears crisis, which was significantly worse than that in Russia and other former Soviet states. IMF economists found that at the end of 1996, the total indebtedness of state enterprises and organizations amounted to 102% of GDP, and the overdue debt to 71% of GDP,

[9] D'Anieri, *Economic interdependence*, 1999, p. 91; Balmaceda, "Gas, Oil and Ukraine", in *Europe-Asia Studies* 50:2, 1998, pp. 262 and 264.

compared to 47% and 24% in Russia.[10] Nevertheless, some sort of financial stability was achieved: while external debt rose from $7.7 billion (1994) to $11.9 billion (1999), the budget deficit fell from –24.2% to –2.4% of GDP. Inflation was brought down to an annual rate of 19%. The contraction of the economy was slowed down: GDP growth recovered from –22.9% in 1994 to –0.2% in 1999.[11] At the end of this period, Ukraine's return to positive growth was delayed by the fall-out from the Russian financial crisis of August 1998. Ukraine's exports to Russia were sharply reduced and its currency depreciated.

Ukraine's political environment in the mid 1990s was characterized by the business groups' increasing influence on state institutions from the Cabinet of Ministers downwards. The consensus among observers was summed up by Kuchma, who identified "abuse of power, bribery and extortion" as "the main obstacles" to Ukraine's economic development.[12] The political strength of the business groups, and the distorting impact on the economy of their drive to acquire assets, formed the background to a significant episode in the Ukrainian gas industry's history: the gas trading concession system. This was introduced in April 1996 under pressure from the IMF, as part of a set of radical measures aimed at stopping the accumulation of sovereign debt to Russia and reforming the gas market. The system created an unsatisfactory cartel of traders and was scrapped in 1998 (see Section 3).

2.3 The economic recovery under Kuchma (1999–2004)

From 1999, both Russia and Ukraine put the post-Soviet crash behind them and both countries have maintained economic growth ever since. The background to this was the fundamental rise in world commodity prices. World oil prices rose from approximately $15 per barrel (bbl) in 1998 to more than $60 bbl in 2005 where they currently remain. Continental European long term contract gas prices followed oil prices upwards, essentially doubling over the same period. Prices of both non-ferrous metals and steel also experienced a secular increase. In Russia, the export revenues from oil and gas sales funded an economic boom that spilled over to other sections of the economy and transformed the country's finances. For Ukraine, a net energy importer, the effect was far less pronounced. But Ukraine's own exports of steel and chemical products – and the fact that its

[10] The research found that Ukraine's dependence on imported energy resources and government intervention in the gas sector were among the key factors that aggravated the payments crisis (Bagratian and Gurgen, *Payments Arrears in the Gas and Electric Power Sectors*, December 1997, pp. 4–5 and 10).

[11] Aslund and de Menil, op.cit., p. 4; EBRD, *Transition report*, 2003, p. 210.

[12] Pidluska, "Corruption versus clean business in Ukraine", *Economic Reform Today* 2, 1998, p. 20; Lyle, Robert, "Ukraine Under Corruption Spotlight", *The Ukrainian Weekly*, 7 March 1999.

economy was partially shielded from the negative impact of higher energy prices by cheap Russian gas – helped it to maintain growth. Crucially, living standards rose.[13]

A second, political, factor came into play during this period in Russia: the election of Vladimir Putin as president in 2000, and his pursuit of a strong state policy. In key sectors of the economy including energy, this resulted in state intervention and an expansion of state ownership, driven by Putin and the statist group in Russian government that he represents, aimed initially at tilting the balance of power away from the oligarchs and other private interests that became strong in the Yeltsin period.[14] There was no analogous shift in Ukraine, where Kuchma continued to rule by balancing between the business groups.

2.4 The Orange revolution and its results (2004–2006)

It is self-evident that the Orange revolution was a turning point in Ukraine's domestic politics and its relationship with Russia. The revolution grew out of the presidential election during November–December 2004, in which Viktor Yanukovich was publicly supported both by the incumbent, Kuchma, and by Putin. Viktor Yushchenko was supported by an opposition coalition and by the US and western European powers. Yanukovich narrowly won a second-round run-off, but there were widespread allegations of ballot-rigging. A huge crowd gathered in Kiev to protest. Hundreds of thousands of people participated for days in sub-zero temperatures, outnumbering those who turned out in Ukraine and elsewhere at the time of the USSR's collapse. Sections of the Ukrainian security services, as well as politicians, indicated their support for the protests. In response, the Supreme Court nullified the result and ordered the vote to be re-run, resulting in a narrow victory for Yushchenko. The underlying causes of the revolution were sometimes portrayed as a yearning by young Ukrainians for a closer relationship with Europe and the US, but such stereotypes probably say more about American and European commentators' high opinions of their own countries than about Ukraine. More likely, the popular protests, which came after five years of slow economic

[13] On economic recovery and Russia's finances, see for example World Bank, *Russian Economic Report*, nos. 1-13, 2001–2006; World Bank, *Ukraine Economic Update*, November 2006 and April 2007; IMF World Economic Outlook database. 2007. http://www.imf.org/external/pubs/ft/weo/2007/01/data/index/aspx and IMF, *Russia: Selected Issues* (Country Report 06/430, December 2006); Spilimbergo, *Measuring the Performance of Fiscal Policy in Russia*, December 2005, IMF, WP/05/241. On Ukrainian exports, see for example World Bank, *Ukraine Economic Update*, op. cit., and World Bank, *Ukraine Country Study: Building Foundations for Sustainable Growth*, August 2004, especially vol. 1, pp. 7–8; Troika Dialog, Economics: *Ukraine Growth Update*, February 2007. On Ukrainian living standards, see for example World Bank, *Ukraine Country Study: Building Foundations for Sustainable Growth*, August 2004, especially vol. 1, pp. 9-17.

[14] On Putin's strategy, see for example Sakwa, *Putin: Russia's Choice*, 2004, London, Routledge, especially pp. 88-103, and Shevtsova, *Putin's Russia* (2nd edn.), 2005, Washington, Carnegie Endowment for International Peace, especially pp. 323-351.

recovery, were partly fuelled by people's belief that they deserved a greater share in the fruits of this recovery, as well as by frustration with the endemic corruption of Ukrainian politics. A part was also played by fears (especially in the embryonic middle class) about the increasingly thuggish character of Kuchma's regime, which seemed to be borne out not only by the ballot rigging but also by the poisoning of Yushchenko two months before the presidential election.[15] Another factor in the Orange revolution was the desire by many in the Ukrainian elite to keep their distance from Moscow, expressed in the first place by Yushchenko's aspirations to NATO and EU membership.

The results of the revolution have not only disappointed its supporters but have also fallen short of many commentators' expectations. Perhaps its most significant outcome was the alarm and anger it caused in the Russian government, at the prospect of Russia's closest and largest ally taking an independent, or pro-western, path. This resulted in the deterioration of relations in the gas sphere, culminating in the breakdown of price negotiations and the January 2006 crisis. It is argued below, in Sections 3 and 4, that although import prices were increased by Russia for economic reasons (low prices for Ukraine and other former Soviet states represented an ever-growing loss as European prices rose), the timing of the demands placed on Ukraine were politically motivated. It is instructive to compare Russia's stance on gas prices in Ukraine and Belarus respectively. In Belarus, the same economic factors applied, and Gazprom had long argued for substantial price increases. Political factors dictated that prices for Belarus were raised much later than those for Ukraine, and it has been argued that Moscow avoided bringing the gas price issue to a head with Minsk before its conflict with Kiev had been resolved. The prices for Belarus remain lower, because the government in Minsk, in contrast to that in Kiev, has agreed in principle to sell Gazprom an interest in the transit network.[16]

Domestically, the Orange revolution changed remarkably little. At first, old relationships in government were disrupted. Yulia Timoshenko, appointed as prime minister in January 2005, promised an end to Kuchma-era corruption. The only substantial outcome of this campaign, however, was the repeat privatization of Krivorozhstal, Ukraine's largest steelworks.[17] Timoshenko also staged an abrasive dispute with the Russian oil companies, who dominate the Ukrainian

[15] There is a substantial body of evidence that ballot-rigging was practised, e.g. wide discrepancies between results and exit polls, reports by election observers and municipal authorities and the Supreme Court decision. There is no conclusive evidence about the cause of Yushchenko's poisoning, which left his face pockmarked. Most observers speculated upon the involvement of elements within the Russian or Ukrainian security services.

[16] Yafimava and Stern, *The 2007 Russia-Belarus Gas Agreement*, January 2007, Oxford Institute for Energy Studies

[17] Krivorozhstal had been sold in 2004 to business interests linked to Kuchma and was re-auctioned in 2005, when it was bought by Mittal Steel, the Anglo-Indian group.

petroleum products market, and briefly imposed a price cap. But in September 2005, Timoshenko herself was dismissed. In the March 2006 parliamentary elections, Yanukovich's Party of Regions received the most votes, Timoshenko's bloc came second, and Yushchenko's Our Ukraine alliance came a poor third, underlining the president's perceived political weakness. Yuri Yekhanurov, who headed a post-Timoshenko caretaker government, was replaced as prime minister in August 2006 by Yanukovich, the presidential candidate defeated by Yushchenko during the Orange revolution. The eastern Ukrainian industrial lobby, whose influence had been diminished after the Orange revolution, appeared now to be more powerful than ever. Relations with Russia improved. Yushchenko's inability to push forward the NATO membership issue was exemplified by the isolation of his foreign minister, Boris Tarasyuk, within the government. The constitutional stand-off in April 2007 served to underline his weakness concerning the eastern industrial lobby and other business interests that support the government.

To summarize on post-Soviet Ukraine: the weakness of the newborn Ukrainian state throughout the 1990s must always be kept in mind. This weak state was dominated by an elite, itself in the process of formation, more concerned with accumulating wealth and power than with devising long-term national strategies in energy or any other sphere. This was the principle reason for the absence of a coherent energy strategy, and for the dismal failure to reduce Ukraine's disproportionate volumes of gas imports – a burden to Ukraine's economy and a manifestation of its dependence on Russia. Even after the Orange revolution, Ukraine's model of capitalism remains little changed: the powerful business groups that accumulated assets in the 1990s remain dominant in politics. Ukraine's dependence on Russia, for trade in general and for energy imports in particular, and conversely Ukraine's continuing importance to Russia as a trading partner and energy transit country, mean that Ukraine's relationship with Russia will continue to be its most important one for some time. In early 2007, Ukraine seems further than at any time since the Orange revolution from any significant movement towards EU or NATO membership. With a weaker presidency under the constitutional changes implemented in 2005, and parliament dominated by the eastern industrial lobby, progress on this seems unlikely, at least until the next presidential election in 2009. Events since the Orange revolution suggest that politicians' desire to take greater distance from Russia will not translate into practical results as long as Ukraine's economy is so closely bound up with Russia's.

2.5 Ukraine's energy balance and energy strategy

Ukraine has the most energy-intensive economy in the world (Table 2.1). Inefficient consumption of cheap gas and an overdependence on (particularly imported) gas are an integral part of this problem. In 2005, Ukraine consumed 73 bcm of gas, an amount similar to Japan, Italy, Saudi Arabia or the entire African continent. Gas was by far the largest component in its primary energy supply. Ukraine's dependence on energy imports is high. They account for 60.7% of its primary energy supply compared to a 51% average for the EU, but are not as high as Germany's (61.4%) or Spain's (74.3%), for example. The problem, as explained by the *Energy Strategy* released by the government in April 2006[18], is that these imports are not well diversified.

Table 2.1. GDP energy content, compared to the world average

Country	GDP energy content
UK	0.67
Germany	0.76
China	1.00
Poland	1.00
World average	1.00
US	1.06
Belarus	1.47
Russia	2.47
Ukraine	2.61

Source: author's conversion from *Key World Energy Statistics,* 2003–2004, quoted in *Energy Strategy*, p. 9. Note: Ukraine can also be shown to be the most energy-inefficient country in the world using other methods, e.g. total primary energy supply per unit of GDP, converted on the basis of purchasing power parity (UCELA, 2006).

Ukraine's energy consumption per capita is also not particularly high. In 2005 it was higher than that for China and Turkey, but lower than the CIS, EU and US average (Table 2.2). The problem is Ukraine's ratio of energy use to GDP, which is the world's highest (Table 2.1).

Table 2.2. Energy consumption per capita, 2005

Country/Average	Energy consumption per capita
China	0.19
Turkey	0.29
Ukraine	0.69
CIS average	1.00
EU average	1.03
US	2.52

Source: author's conversion from table in *Energy Strategy*, p. 8.

[18] Government of Ukraine, *Energy Strategy of Ukraine for the Period until 2030*, Kiev, April 2006.

The changes in energy intensity in post-Soviet Ukraine may be divided into three stages:

- In the period 1991–1995, energy intensity grew by 30%. This was due to the fall in the share of GDP accounted for by relatively energy-efficient industries (engineering, light industry, food, etc.) and the corresponding increase in the share of energy-intensive, export-oriented sectors (steel production, chemicals, etc.)
- In the late 1990s, energy intensity stabilized due to the relative expansion of the service sector and increases in energy prices.
- In 2000–2005, Ukraine's energy intensity fell by 40% (an average of 5.5% per annum). As a result, Ukraine was 20% more energy efficient in 2006 than in 1990. During this period, substantial economic growth was accompanied by energy efficiency improvements in energy-intensive industries e.g. in 2000–2004, fuel per unit of production fell by 45% in the glass industry, 35% in the chemical fertilizer industry and 25% in oil refining.

A contributory factor to these trends may have been reporting methods: as the shadow economy contracted as a proportion of the whole (from 50% in the mid 1990s to 35% in 2002, according to IMF estimates), more economic activity was reported, reducing the amount of energy consumption per reported unit of GDP. A warning note is however expressed by the International Energy Agency (IEA), as intensity of final energy consumption declined more rapidly than the intensity of primary supply, suggesting that efficiency of energy transformation (production of electricity, heat, etc.) was improving at a slower rate than end-use efficiency was. This could reflect the fact that some heat and power systems were actually becoming less efficient.[19]

The shares of total primary energy supply (TPES) in Ukraine in 2004, with 1993 figures for comparison, are listed in Table 2.3.

Table 2.3. Shares of total primary energy supply, by fuel

	2004 (%)	1993 (%)
Gas	47.0	43.0
Coal	23.6	30.0
Nuclear	16.2	10.5
Oil	12.4	15.7
Renewables	0.9	0.6

Source: IEA, *Ukraine Energy Policy Review*, 2006, pp. 75-77

[19] UCELA, *Energy Efficiency in Ukraine*, January 2006, pp. 5–6; IEA, *Ukraine Energy Policy Review*, 2006, p. 80.

More than 40% of TPES is transformed into secondary energy sources, such as electricity, heat and oil products, including 20% of TPES that goes into the electricity and heat sectors. These sectors, and in particular the district heating sector, the main input for which is gas, are unusually inefficient. Government data show that losses and own needs in the electricity and heat sectors stand at more than 30% (24% in 1993). This is due to underinvestment in replacement, maintenance and repair of infrastructure; low regulated tariffs and lack of metering. Electricity generation, the main input for which is nuclear fuel, has declined overall; Ukraine is a net exporter of electrical energy, and sold 5300 GW hours abroad in 2004. [20]

The shares of total final energy consumption in Ukraine in 2004, by sector, with 1993 figures for comparison, are listed in Table 2.4.

Table 2.4. Share of total final energy consumption, by sector

	2004 (%)	1993 (%)
Industry	39	49
Residential	29	29
Transport	15	12
Communications and public services	3	2
Petrochemicals	6	0
Agriculture and forestry	4	5 +
Other	4	2

Source: IEA, *Ukraine Energy Policy Review*, 2006, p. 63

Industry has experienced the strongest drop in energy consumption, about 40% from 1993 to 1998, since when its consumption has been more or less stable. However, the IEA notes that consumption in energy-intensive industries (mining, metallurgy and chemicals) declined at a lower rate than in other industries. Between 1993 and 2004, industry consumption of natural gas, oil products and heat strongly decreased in absolute terms, while the share of coal and coal products in industry's fuel supply grew from 12% to 20%, while gas's share of industrial consumption grew slightly overall, from 32% to 34%. The residential sector is the second-largest consumer of energy, and decline in energy consumption there was less sharp than in industry. According to the IEA, the factors that slowed it included energy price distortions such as very low tariffs, the lack of metering, and non-payment in the 1990s. The share of natural gas in final residential consumption grew from 35% in 1993 to 55% in 2004, driven by relatively low prices, while the share of heat and coal decreased.

[20] IEA, op. cit., pp. 75–79.

By fuel, some important trends in demand can be described as follows. Gas consumption declined between 1993 and 2004, mainly due to (1) the decline in demand from industry, and (2) the decline in consumption by the district heating sector by 42%, attributed by the IEA partly to a decline in demand for district heating from industry, and partly to forced cuts in consumption because of supply constraints and disruptions. The latter is caused, for example, by gas supplies being denied to district heating companies that are behind with payments for them, which have in turn led to customers investing in other heat sources. The largest consumers of coal are the power and steel industries; demand from the latter has been increasing since 2000 with increased production. Electricity consumption fell during the 1990s slump, but fell less steeply in the residential sector.[21] It should be noted that historically, the main fuels used for electricity production in Ukraine are nuclear and coal, with natural gas being the third largest input for electricity production as shown in Table 2.5.

Table 2.5. Structure of electricity production by fuel, 1993 and 2004

Fuel	1993 (%)	2004 (%)
Hydro	5	6
Petroleum products	7	–
Natural gas	17	21
Coal	38	25
Nuclear	33	48

Source: IEA, op. cit., p. 79

Against the background described above (a weak state, economic collapse, the political power of the business groups) there have been many discussions of energy strategy in Ukraine, but repeated failure of implementation. Aims such as raising the domestic production of coal and nuclear energy to reduce dependence on imported gas have been approved by governments. However, the plans imply huge sums of unavailable investment capital, and so have not been realised. Moreover, there has been insufficient political will to prioritize cheaper and smaller tasks with which change could begin. There have been discussions and local initiatives on energy saving, but little action at government level. No link has been made between price reform policy and energy saving. (This issue is further discussed in the next section.)

The *Energy Strategy of Ukraine for the Period until 2030*, adopted by the government in 2006 after several years of discussion, has been criticized by the IEA and others on the grounds that it suffers from the same shortcomings as many previous plans: it sets out ambitious aims that cannot be

[21] IEA, op. cit., pp. 62–74.

funded at this stage and pays little attention to demand side measures. The document envisages that Ukraine's coal production will double, and the production of nuclear energy more than double, as the central means to reduce dependence on imported gas. It projects that domestic gas production will double, oil production more than treble and that the participation of Ukrainian companies in oil and gas production abroad will be increased. Its projections are listed in Table 2.6 below.

Table 2.6. Projections of Ukraine's energy strategy of consumption of domestic and imported energy resources (millions of tonnes of oil equivalent, MTOE)

	2005		2030	
	MTOE	%	MTOE	%
Imported energy				
Natural gas	45.0	32.0	7.6	3.6
Oil	13.7	9.8	9.2	4.4
Coal	1.4	1.0	7.9	3.7
Uranium	16.4	11.7	0	0
Total imported energy	76.5	54.5	24.7	11.7
Domestically produced energy				
Uranium + hydro + alternative	14.1	10	77.4	36.6
Natural gas	16.4	11.7	32.2	15.2
Oil	4.3	3.1	14.6	6.9
Coal	29.0	20.7	62.7	29.6
Total domestically produced	63.8	45.5	186.9	88.3
TOTAL	140.3	100	211.6	100

Note: The projections are set out in millions of tonnes of standard fuel. Conversion to millions of tonnes of oil equivalent by the author
Source: *Energy Strategy of Ukraine for the Period until 2030*, p. 15

The implementation of the government's proposals depends on major investment and considerable changes to the regulatory and legal frameworks. Even if the money and political will were to be found, the proposals could only be implemented in decades, rather than years.

2.6 Energy saving issues

In terms of energy saving, the *Energy Strategy* projects energy savings of 223 millions of tonnes of oil equivalent by 2030, i.e. slightly more than the total energy use predicted for that year. The IEA points out that such energy saving is equivalent to the production of more than 400 large nuclear plants. The *Energy Strategy* estimates that 38% of the improvements will come from structural changes in the economy, i.e. the shift from heavy industry to a more service-oriented GDP. The remaining 62% would come from technological improvements. In its analysis of potential sectoral savings, the *Energy Strategy* confirms commonly-held assumptions about potential for rapid improvement. Replacing open-hearth production in the steel industry would save 1.4 bcm of natural

gas per year and new blast-furnace technology in cast-iron production would save 2.6 bcm of natural gas per year. The upgrade of gas compressor stations and the use of cogeneration in the gas pipeline system would result in substantial savings, estimated by Naftogaz at around 2.5 bcm of natural gas per year. The *Energy Strategy* points out that the replacement of boilers and heat insulation measures in the domestic heating system would "almost halve" energy consumption in that area, but these measures require more capital investment and time.[22]

Although the world's most energy-intensive economy, Ukraine is less energy intensive than it was. As noted above, there have been considerable improvements since 2000. Furthermore, the increase in gas prices has concentrated the minds of policymakers and industrialists in the last two years. One survey on the subject observed that in the second half of 2005, "Ukraine experienced as many policy discussions, conferences and seminars on energy efficiency as during all 15 years of its independence". A National Agency of Ukraine on Efficient Energy Use was established by presidential decree and given a larger budget than that of its predecessor bodies in the 1990s. In industry, gas price increases provided the impetus for energy-saving measures such as the replacement of open-hearth furnaces in the steel industry (see Section 7 below). There are various forums of international cooperation with Ukraine on energy-saving, and a wide variety of non-governmental organizations working on the problem. However, as the Ukrainian Centre for Economic and Legal Analysis notes, various pilot projects during the last ten years were "rather narrow-based and locked within particular industries and public services, while having little effect on the economy and society as a whole". The Centre points to "a vacuum of political will at higher levels" and "a weak nexus between policy makers and energy consumers" as well as a lack of financial resources that hampered the pooling of efforts and created obstructions. There has been a comparable lack of progress on these issues throughout the post-Soviet space. The most realistic prospect for energy-saving measures to move forward is that they are considered in the context of economic and price reform.[23]

[22] *Energy Strategy*, pp. 82–91; IEA, op. cit., pp. 121–123.

[23] UCELA, op. cit., p. 7. A large amount of background information is available in the IEA, *Ukraine Energy Policy Review*, 2006 and in the Energy Charter Secretariat's *Energy Efficiency Protocol and Related Environmental Aspects: Regular Review*, 2002, for Ukraine.

3. GAS IN UKRAINE

3.1 Gas in Soviet Ukraine

Ukraine played a central part in the early history of the Soviet gas industry. In the 1950s, fields in the Prikarpathian region of western Ukraine were the USSR's most important producers, accounting for nearly half of the total Soviet output of 5–6 bcm in the 1950s.[24] The apex of production from the western Ukrainian fields of 12–13 bcm was reached in the late 1960s. Meanwhile, growth of Ukrainian production centred on the giant Shebelinka deposit in central Ukraine, which started producing in 1956 and accounted for more than two-thirds of Ukrainian output in the late 1960s, before going into decline in the 1970s. Ukraine occupied a leading position in Soviet gas production in the 1960s, but output peaked at 68.7 bcm in 1975 before declining continuously until the late 1990s when it hit a nadir of 16–18 bcm.[25]

Table 3.1 shows Ukrainian production as a proportion of total Soviet production between 1960 and 1980, and shows how during the 1970s Ukraine lost its specific weight in the Soviet gas balance with its share of total output falling from nearly one-third to one-eighth.

Table 3.1. Soviet gas production by region, 1960–1980 (bcm/year)

	1960	1965	1970	1975	1980
Ukraine (% of total)	14 (30.9%)	39 (30.5%)	61 (30.8%)	69 (23.8%)	54 (12.4%)
Rest of European USSR and Urals	30.5	70.7	77.9	85.0	103.0
East of Urals total	0.8	18.0	59.0	135.0	278.0
TOTAL	45.3	127.7	197.9	289.0	435.0

Note: the 1980 figures are plan figures, the others actual
Source: Stern, *Soviet Natural Gas Development*, 1980, p. 26

The trick played by late Soviet history on Ukraine was that while its own gas production fell, and it became increasingly reliant on imports from western Siberia and Turkmenistan, its industries, like those across the USSR, were becoming more gas-intensive. At the same time, the economic and political stresses in the Soviet system were mounting, to produce the rapid changes of the Gorbachev period. The resulting turmoil propelled Ukraine into political independence combined

[24] In 1955 the Prikarpathian fields accounted for 2.8 bcm of the total Soviet output of 5.9 bcm: "Gazodobyvaiushchei promyshlennosti Ukrainy – 80 let", *Energobiznes*, 14 June 2004.

[25] Stern, *Soviet Natural Gas Development*, 1980, pp. 26–30

with energy dependence, mainly in the form of gas imports. The IEA has calculated that Ukraine's dependence on gas imports increased from 56% in 1985 to 81% in 1992.[26]

3.2 Cheap gas, expensive debts (1991–1994)

In the 1990s, cheap gas was used to sustain the perilously weak state in Ukraine in the face of potential social upheavals and a widely perceived threat of complete collapse, analogous with the way that gas was used to maintain infrastructure and industry in Russia. Oil import prices to Ukraine reached world market levels in 1993, but both Ukrainian gas import prices and transit fees for Russian exports to Europe were set in bilateral negotiations, below European levels to some degree.

The system of commercial relationships established following the break-up of the Soviet Union centred on negotiations around gas sales prices and transit tariffs. These two prices were set in relationship to each other. Only in the last few years, during which European prices have risen steeply, has the concept of net-back from European prices been brought into the negotiating arena. Throughout the post-Soviet period, gas trading relationships were conducted under bilateral intergovernmental agreements. These provided a framework for sales, transit volumes and prices and sometimes other issues such as storage and establishment of production joint ventures. Under these contracts, commercial agreements were then negotiated between the relevant companies which were then supplemented by annual agreements specifying exact prices and volumes for the following year.

In the case of Russia and Ukraine, these procedures turned out to be a framework within which a sequence of problems developed, from which they only began to escape a decade later. These problems manifested themselves in the forms of: large-scale deliveries of relatively cheap Russian gas; accumulation of Ukrainian debts and non-payment; unsanctioned diversion of gas and alleged theft from the transit system; and Russian pressure on Ukraine to hand over infrastructure in return for debts. The annual negotiations on volumes and prices became entangled in the ups and downs of the two countries' political and diplomatic relationship. Little was done to change Ukraine's status as one of the world's least energy-efficient countries and largest gas importers. The first time that this cycle was interrupted was with the commercial agreement of 4 January 2006, the first such agreement concluded outside the framework of a broader intergovernmental agreement.

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[26] IEA, *Natural Gas Transportation and Regulation*, 1994, p. 335.

Ukraine's largest debts for Russian gas built up immediately after independence. In 1991–1994 Ukraine accumulated debts to Russia for natural gas deliveries totalling $4–4.5 billion.[27] These debts would have been much larger but for the fact that in response to the economic slump, Ukraine's energy consumption – and gas consumption in particular – fell. Roughly, total energy consumption fell by a quarter between 1993 and 1998, while total gas consumption fell by 29% between 1990 (118.8 bcm) and 1996 (85 bcm).[28] In the midst of the economic collapse, the very continuation of gas supplies to Ukraine was threatened. In 1992, 1993 and 1994, during disputes about debts and non-payment, Russia suspended supplies. This led to illicit diversions of gas from transit pipelines by Ukrainian companies and institutions in September 1993 and November 1994. Ukraine acknowledged such diversions on these occasions; however, there were other times when Russia accused Ukraine of making such diversions but these claims were disputed.[29]

The Russian policy of seeking to take control of assets in the Ukrainian gas sector in return for debt forgiveness, or to press strategic aims outside the gas sphere, dates from this early post-Soviet period. In September 1993, at the height of Ukraine's economic and political crisis, the Russian government introduced into diplomatic negotiations the linkage between the repayment of debts for gas and other issues in dispute. At a summit conference in Massandra, Crimea, Russian president Boris Yeltsin offered to Ukrainian president Leonid Kravchuk cancellation of debt in return for control of the Black Sea fleet and Ukraine's nuclear warheads. It appears that Kravchuk had agreed in principle to this, but after a strong reaction from politicians in Kiev, the idea was abandoned by both sides.[30] In the last few weeks of Kravchuk's presidency (January–February 1994), the issue of the nuclear warheads was settled separately under a trilateral agreement between the US, Ukraine and Russia. The issue of the Black Sea fleet lingered and another attempt was made by Russia to swap gas debt forgiveness for a pole position in the Ukrainian gas sector; Kravchuk acquiesced. An intergovernmental agreement was drafted on gas issues which included a clause stating that Ukraine would "enable Gazprom to participate in the privatization of enterprises in the gas and other sectors

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[27] Krasnov and Brada, "Implicit subsidies in Russian-Ukrainian energy trade", *Europe-Asia Studies*, 1997, 49(5) p. 828, provide a thorough analysis of Ukrainian debts to Russia for energy deliveries.

[28] The IEA gives a figure of total fuel consumption of 84.6 millions of tonnes of oil equivalent (MTOE) in 2003, 77% of the 1993 level, with almost the entire reduction taking place before 1998 (IEA, op. cit., pp. 62-64). Gas consumption figures are from the Committee on Fuel, Energy and Transport of the Verkhovnaia *Rada*, citing the State Statistics Committee of Ukraine. Gas consumption is discussed in more detail in Sections 3 and 4.

[29] Stern, *The Russian Natural Gas 'Bubble'*, 1995, pp. 60-61 provides a summary of the incidents. See also Stern, *Soviet and Russian Gas*, in Mabro and Wybrew-Bond (eds.), *Gas to Europe*, 1999, pp. 157-159.

[30] D'Anieri, op. cit., pp. 78-80.

in Ukraine, in accordance with Ukrainian legislation".[31] But the agreement foundered, again because of political opposition in Ukraine to Russian control of energy assets. In March 1994, with Russia having reduced gas exports, a Ukrainian deputy prime minister agreed with Russian negotiators that Gazprom could take a 51% stake in the pipeline system, but the government, supported by parliament, decided against. In early 1995, a Russian government delegation agreed with the Ukrainian government to form a new Russo–Ukrainian company: Gaztransit. Transit assets would be concentrated in this company in exchange for the write-off of much of Ukraine's debts to Russia. However, the Ukrainian *Rada* first blocked this proposal and then went on in November 1995 to adopt a law prohibiting privatization of oil and gas assets altogether. This policy remained in place in the gas sector and Russian capital remained absent, whereas significant oil refining assets came under Russian control in the late 1990s.[32]

3.3 Russia seeks control; Ukrainian traders seek rents (1994–1999)

During president Kuchma's first term of office, the first, ultimately unsuccessful, attempt was made to reform the gas industry. The gas trading concession system was introduced in April 1996, with the encouragement of the international financial institutions (IFIs). Its stated purpose was to stop the accumulation of sovereign debt to Russia and to reform the gas market. The sovereign guarantee for gas imports was eliminated. Selected gas traders were awarded exclusive rights to import gas and sell to all consumers in areas of Ukraine assigned to them, and these sales and supply functions were unbundled from transmission and distribution. The measures had been designed to de-monopolize the market, but they ushered in a cartel of wholesale traders. Business groups associated with the selected trading companies profited from barter and tolling schemes, and with payments arrears still prevalent, debt-for-equity swaps were used to acquire industrial assets. A month after the system was introduced in May 1996, president Kuchma sacked Prime Minister Yevhen Marchuk and replaced him with Pavlo Lazarenko, who was close to the Dnipropetrovsk-based business group. Lazarenko was an executive of United Energy Systems of Ukraine (UESU), which rose to become the most powerful of the traders. UESU, then headed by the future Prime Minister Yulia Timoshenko, won the coveted mandate for wholesale gas sales in Donetsk, Ukraine's largest industrial region. UESU also played a regulatory role through a related company, the Ukrainian Gas Resources Consortium. Another significant beneficiary of the gas trading

[31] Translation of '*Ugoda mizh Uriadom Ukraini i Uriadom Rosiys'koi Federatsii pro eksport rosiys'kogo prirodnogo gazu v Ukrainu i iogo tranzit cherez teritoriiu Ukraini v evropeis'ki kraini*', 18 February 1994. Downloaded from the Verkhovnaia Rada web site.

[32] Balmaceda, op. cit., p. 261 and p. 265; D'Anieri, op. cit., pp. 81–83

concession system was Itera, the Russian trader that was contracted by Gazprom for transit, shipping and sales in a number of CIS countries. From 1996 Itera acted both as the second largest importer of gas to Ukraine after Gazprom, and as a wholesale trader on the domestic market.[33]

In 1998 the trading concession system was dismantled by the government as a model for industry reform. It was widely judged to have failed, since the traders who won the regional concessions had used it to accumulate quick profits and control over other industrial assets and to extend their political influence. World Bank officials acknowledged that battles over concessions had sometimes led to violence. The trading concessions system was replaced by a vertically-integrated structure, the state-owned Naftogaz Ukrainy, which controlled almost all gas and oil production, gas transit and gas supply and distribution. Lazarenko, who had been dismissed in July 1997, was subsequently tried and convicted in the US on fraud and money-laundering charges.[34]

The end of the trading concession system coincided with an easing of tensions between Ukraine and Russia in the gas sphere. A Basic Treaty had been signed in May 1997 covering border issues, lease payments for the Sevastopol naval base and with a general declaration of intent to improve relations in the gas sphere. In 1998 Gazprom and the newly-created Naftogaz agreed on a modus operandi for import and transit, under which Gazprom would pay for transit with volumes of gas, with a link between gas prices and transit tariffs. Other gas would be imported by Itera, the Russian trader, which emerged from the gas trading concession episode as the strongest player in the domestic market after Naftogaz.[35]

3.4 Russia recentralizes, Ukraine reforms (a little) (1999–2004)

The picture of gas relations between Russia and Ukraine was impacted by changing alliances and strategies on both sides. Friction between the two countries was exacerbated by gas debts: the question of old debts had been left unresolved by the 1998 agreements, and that of new ones made more complicated by the withdrawal of the Ukrainian sovereign guarantee. From late 1998,

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[33] Balmaceda, op. cit., pp. 270-274; Lovei and Skorik, "Energy Sector Reform in Ukraine", in Hoffman and Seidenberg (eds.), "Ukraine at the crossroads", 1999, pp. 341-350; Lovei, "Gas Reform in Ukraine: monopolies, markets and corruption", Public Policy for the Private Sector note no. 169, December 1998; Global Witness, *It's A Gas: Funny business in the Turkmen-Ukraine Gas Trade. Washington, Global Witness Publishing*, April 2006, pp. 23-24; Koleznikov, Andrei, "Za kazhdyi shag protiv menia budet otvechat" (interview with Yulia Timoshenko), *Kommersant*, 11 April 2001, pp. 1 and 11.

[34] Kane, Justin and Warner, Tom, "Ukraine's ex-PM found guilty in US of money-laundering", *Financial Times*, 4 June 2004.

[35] Stern, "The Future of Russian Gas", 2005, pp. 88-89; Balmaceda, op. cit.

Gazprom and the Russian energy ministry protested more frequently about thefts of gas from pipelines. In 2001, then Deputy Prime Minister Oleg Dubina acknowledged that in 2000 alone 8.7 bcm of Russian gas had been siphoned off from export pipelines. Russia redoubled its efforts to reduce dependence on Ukraine for transit and proposed, as a partial solution, to build a new pipeline to bypass Ukraine.[36] In October 2001 the two sides signed an intergovernmental agreement on gas, the last of its kind. It sanctioned the import of Russian gas to Ukraine in lieu of transit fees, and provided a framework for the balance of Ukrainian imports to be provided by Turkmenistan. The agreement also included mechanisms for payment when extra gas was taken from pipelines and replaced a straight ban on re-export of Russian gas with a steep export duty.[37] The agreement aimed at regularizing the import and transit arrangements, and was followed in 2002 by the establishment of the international consortium to manage the Ukrainian pipeline system.

The political changes in Putin-era Russia led to a further important change in gas relations. Itera, a Yeltsin-era company that had benefited from strong relationships with senior Gazprom managers, was replaced by Eural Trans Gas (ETG) as shipper of Turkmen gas to Ukraine in January 2003. On the Ukrainian side of the border, Naftogaz Ukrainy, with the regulatory authorities' support, put an end to discount schemes run by other traders in the industrial market in July 2002. It then displaced other traders from the wholesale and industrial markets and cut Itera's share from about half to about one-fifth. Finally, after a brief period in late 2002 when Itera continued to market its gas, received as payment for shipping services, Naftogaz squeezed Itera out of the Ukrainian domestic market almost completely.[38]

Ukraine not only sustained economic growth in the second half of Kuchma's presidency, it also felt its way towards a relatively coherent economic reform policy. Some initial steps were taken towards reform of the energy market, largely at the initiative of Viktor Yushchenko who was appointed prime minister in 2000, and Yulia Timoshenko as deputy prime minister in charge of fuel and energy. These included the expansion of the wholesale power market, which had been set up in 1996 but had barely functioned; the unbundling and partial privatization of power generation and distribution assets; and a rapid improvement in payment discipline for both electricity and gas. Change in the gas sector was slower, as following the failure of the gas trading concession system,

[36] UCELA, *Ukraine as a 'Gas Corridor'*, 2004, p. 6; Stern, 2005, p. 89.

[37] *Ugoda mizh Kabinetom Ministriv Ukraini i Uriadom Rosiys'koi Federatsii pro dodatkovi zakhodi shchodo zabespechennia tranzitu rosiys'kogo prirodnogo gazu po teritorii Ukraini*, 4 October 2001 (downloaded from Verkhovnaia Rada web site); Stern, op cit., 2005, p. 90; UCELA, 2004, op cit., p. 7.

[38] Maskalevich, Igor, *'Neftegaz Ukrainy': my zhe vas preduprezhdali*, *Zerkalo Nedeli*, 13 June 2002; Maskalevich, Igor, "'Iterizatsiia' vsei strany", *Zerkalo Nedeli*, 7 June 2003.

efforts at government level were concentrated on centralizing assets in Naftogaz Ukrainy. Another important factor was corruption. When Naftogaz Ukrainy was founded in 1998, a significant proportion of transactions were still settled by a barter system that afforded many opportunities for corruption (see Section 4.6, Ukraine's relationship with central Asian producers). Furthermore, Naftogaz was exceptionally opaque in its first two years. No audited financial information is available for the years prior to 2001. This, and the publication of circumstantial evidence that Ihor Bakai, a close associate of Kuchma's who was chairman of Naftogaz from 1998 to 2000, had operated a multi-million-dollar slush fund for political purposes for Kuchma, added to the resentment against Kuchma that culminated in the Orange revolution of 2004.[39]

3.5 Breaking up and making up (2004–06)

It was argued in Section 2 that one of the most significant results of the Orange revolution turned out to be Moscow's reaction. Against a background of alarm in the Russian government at the level of popular discontent in Ukraine, and concern over the potential loss of a geopolitical ally, Russo-Ukrainian gas relations deteriorated sharply in 2005. In Kiev, Yulia Timoshenko waged an aggressive campaign against the use of Rosukrenergo for transit (see Section 4) during her spell as prime minister (January–September 2005). The Ukrainian security service (SBU), then headed by Timoshenko's ally Aleksandr Turchinov, began an investigation of the company and its business partners. Yuri Boiko, the head of Naftogaz appointed by Kuchma, was replaced by Oleksiy Ivchenko. In Moscow, the government became more determined (1) to end the implicit subsidy to Ukraine in import prices and barter payments for transit services with gas volumes, and (2) to reorganize transit to Russia's advantage.

The implicit subsidy referred to here is the difference between prices paid by the former Soviet states to Gazprom and those paid by Gazprom's European customers, which widened sharply from 2000. The term needs to be used with care. As Vladimir Milov has pointed out, the word 'subsidy' has often been used by Russian politicians in a way reminiscent of "the thesis, so popular in 1990–1991, that 'it's time to pack in feeding these brother republics'". Until 2000, import prices for Ukraine were at a discount to European prices that may have been around 25%. However, a

[39] Bakai is now living in Russia and is the subject of an extradition request by the Ukrainian authorities; his immediate successor, Ihor Didenko, who was chairman of Naftogaz briefly in 2000, was convicted of embezzlement charges (relating not to Naftogaz but to compensation payments due to Nazi labour camp victims) and jailed in Germany in 2004 (Krushelnycky, Askold, "In Russia, Former Soviet Bloc, the Ruling Clique Heads Corruption", Radio Free Europe/Radio Liberty web site, 5 September 2000; Warner, Tom, "Dubious dacha sale raises tricky questions over Ukrainians fleeing to Moscow", *Financial Times*, 6 May 2005; Global Witness, *It's A Gas*, pp. 25 and 29).

comparison of nominal prices (as contract information is not available) would not provide a realistic reflection of the situation as it would exclude a different type of subsidy arguably provided by means of non-payment and the accumulation of Ukraine's gas debt to Russia. The material point is that price differences in trade between former Soviet republics were an inevitable consequence of the lack of market conditions. Milov argues that price subsidies have usually appeared in the gas trade due to the lack of transparent market mechanisms, i.e. that "the problem is not subsidies, but the lack of a market".[40] In this broader context, the 2006 crisis between Russia and Ukraine and its results may be seen as a step towards the wider application of market principles and pricing mechanisms in intra-CIS gas trade.

In any case, throughout 2005 Moscow accused Kiev of refusing to negotiate seriously on prices. At the same time Gazprom complained loudly and publicly that 7.8 bcm of gas (worth about $1.5 billion at current prices) had disappeared from storage in Ukraine, and eventually resolved the issue by having Rosukrenergo pay for the missing volumes. (It remains unclear what happened to this enormous quantity of gas.) The climax of this conflict was the breakdown of negotiations on import prices for 2006. In the last three months of 2005, Gazprom officials repeatedly insisted that Ukrainian import prices would be set at European levels of $160–230/mcm while Ukrainian politicians called for prices to move to market levels over a longer period of time. The dispute remained unresolved on 1 January 2006, and Russia famously cut gas supplies to Ukraine on 1–3 January.[41]

As has been argued in Section 2, Moscow's long-term considerations were economic (the Russian government and Gazprom sought to end the subsidy to other former Soviet republics implied in low gas prices). In the short term, political factors featured, including Moscow's concern over the Orange revolution and pro-western direction of Ukrainian policy. In late 2006, there was a political shift in Ukraine back towards Russia, following the appointment of Viktor Yanukovich as prime minister and the resulting decline in tension with Moscow. The policy of price increases continued, but its implementation is more measured. Import prices for 2007 have been set at $130/mcm, a favourable level for Ukraine when price increases in central Asia are taken into account. It (1) indicates that some benefit or favour has probably been provided to Russian companies in return (Section 4) and (2) possibly includes an implicit recognition by the Russian side that in the trend towards market principles, Ukraine is due substantial compensation for the extremely cheap storage

[40] Milov, Vladimir, "Politekonomia: kakie subsidii?", *Vedomosti*, 24 January 2007

[41] Stern, *The Russian-Ukrainan gas crisis of 2006*, OEIS, January 2006, pp. 6–8 and 10–13.

services it provides near its western border (Section 6). Publicly, Gazprom managers have stated that prices need to reflect the sum of Central Asian purchase prices, transit prices and the shipper (Rosukrenergo)'s margin, i.e. a net-forward from Central Asian prices.

To summarize, it may be stated that the development of the Ukrainian gas sector has been thwarted over the last 16 years not only by the absence of a national energy policy, but also by the focus of both politicians and businessmen on securing control over the gas imported from Russia in lieu of transit fees, and the business of supplying this to industry. No sooner had Ukraine established institutional and political independence from Russia, than a considerable part of its elite occupied itself with the task of gaining control over these gas flows, which yielded both revenue and opportunities to take control of other industrial assets. Some economists have proposed that this 'rent seeking' is the central and dominant feature of Ukraine's economy in the 1990s.[42] This author regards that view as exaggerated; nevertheless, 'rent seeking' clearly held back the most urgent change in the gas sphere, i.e. cutting consumption. This could have reduced dependence on Russian imports, and given Ukraine more options for economic reform and development. The attempt of the IFIs to apply to the gas sector standard formulae for liberalization produced, in the case of the Ukrainian gas trading concession system, a cartel that just exacerbated 'rent seeking'. The IFIs often criticized Russia for maintaining a unitary corporate structure in the gas industry (Gazprom), and in Ukraine encouraged the break-up of a similar structure (Ukrgazprom). However, this produced only an unsuccessful experiment with private traders, and a subsequent return to a unitary structure (Naftogaz Ukrainy).

3.6 Gas prices and subsidies

Prices for natural gas and electricity in Ukraine, especially for households, remain below the cost of delivery, as do the prices of district heating and nuclear power. However, the situation is changing rapidly, due to the steep increases in gas import prices in 2006. Oil and oil products prices roughly follow those on the world market, except in the case of oil imported by foreign vertically-integrated oil companies to their own refineries. Coal prices, although formally set by the market, are heavily impacted by sales within industrial groups and by state subsidies to the coal industry. The IEA states that low prices, including low state-regulated tariffs, have a serious effect on investment. Based on information from the Ministry of Construction, it estimates that district heating tariffs cover about 80% of delivery costs. Electricity prices do not fully include the capital costs of power

[42] Aslund and de Menil, op. cit., pp. 3–29.

stations, which are particularly high for nuclear power. The tariff for nuclear energy generation includes a small decommissioning charge, but is insufficient.[43]

Real energy prices increased during the 1990s: between 1990 and 1997, electricity and fuel prices outperformed the producer price index (PPI) by 40–85%. However, in the early 2000s, real energy prices decreased. In 2001–04, the retail price index increased by 47%, while prices for natural gas and heating only grew by 22% over the same period. Prices for energy are again likely to outperform the producer price index as a result of tariff increases implemented in 2006. The gas prices approved by the National Energy Regulatory Commission (NERC) in May 2006 averaged about 25%, and in July a further 80–85%. Electricity tariff levels are also being raised with the intention of reaching cost-recovery levels by 2008, and district heating prices will also rise over the same period.

Some general points should be made about gas prices in a European context. Bearing in mind the lack of an international gas market, Ukrainian prices are usually compared with those in central and western Europe. The Ukrainian government's *Energy Strategy*, published in April 2006, produced the comparative prices displayed in Table 3.2.

Table 3.2. Prices for natural gas delivered to European consumers, 2006 (including VAT)

Residential customers	$/mcm
Ukraine	36.6
Russia	44.8
Moldova	118.0
Poland	460.0
Germany	478.7
Average for EU	523.4

Industrial customers	$/mcm
Ukraine	141.6
Russia	61.7
Moldova	118.7
Poland	237.4
Germany	420.0
Average for EU	430.0

Source: *Energy Strategy*, 2006, p. 75; Eurostat (for EU) and official statistics (for CIS)

[43] IEA, op. cit., pp. 45–47.

Since this information was published, prices for residential customers in Ukraine have more than doubled. Notwithstanding the increases, Ukraine will continue to be paying among the lowest prices in Europe for imported gas, as Table 3.3 demonstrates.

Table 3.3. Import prices of gas sold by Gazprom, 2006–2007 ($/mcm)

	2006	2007
West European average	257	293
Germany	290	320
Poland	230	240
Estonia	191	260
Latvia	142	220
Moldova	160	170
Georgia	110	235
Azerbaijan	110	Exports suspended
Belarus	47	100
Ukraine	95	130

Source: "Gazprom's higher prices cause economic pressures in the region", *Gas Matters*, January 2007, pp. 27-28; Ukrsibbank, "Skol'ko stoit gaz po $130?", October 2006; moldova.org, 17 February 2007; today.az, 17 February 2007.

Three points may be made in conclusion: (1) In 2007, Prices for Ukrainian industrial consumers are more than double those in Russia, and are expected to increase further. (2) Prices for residential consumers more than doubled in 2006, but are still among the lowest in Europe. The issue remains politically sensitive and, amid Ukraine's political turmoil of 2006, it was that of gas prices on which parliamentary deputies chose to provoke a confrontation with the government and president. (3) Even after import prices were raised to $130/mcm in January 2007, they were still the lowest in Europe with the exception of Belarus.

4. GAS SUPPLY 2006–2007

Ukraine's principal sources of gas in the mid 2000s were:

- import from central Asia, principally Turkmenistan (35–37 bcm);
- import from Russia (20–25 bcm); and
- domestic production (18–20 bcm).

As information on transit arrangements and contractual relationships is limited, it has always been difficult to obtain accurate statistics on Ukraine's gas balance. The disparity between different sets of statistics is discussed in Note 1. The best available, published by *Energobiznes* magazine on the basis of information from the fuel and energy ministry, is presented in Table 4.1.

Table 4.1. Ukraine's gas balance, 2003–2006 (bcm)

	2003	2004	2005	2006
Total gas inputs	**224.3**	**229.6**	**228.3**	**220.8**
Ukraine production	19.4	20.3	20.5	20.7
Ukraine, pumped from storage	17.2	17.3	17.6	15.3
Soiuzprominvest[a]	0.4	0	0	0.1
Total import	187.1	191.6	189.9	184.5
(for Ukraine, from Central Asia)	(34.4)	(25.6)	–	(47.8)[b]
(for Ukraine, from Itera)	(0.3)	(0)	–	–
(for Ukraine, from Russia)	(26.0)	(34.1)	–	(9.1)
(for Rosukrenergo)	–	–	(1.5)	-
(for Naftogaz, from Central Asia)	–	–	(37.0)	–
(for Naftogaz, from Russia)	–	–	(20.4)	–
Total gas outputs	**224.3**	**229.6**	**228.3**	**220.8**
Ukraine, consumption[c]	68.7	68.1	68.9	65.9
Ukraine, technical requirements	7.6	7.6	7.4	8.1
Ukraine, production of LPG[d]	–	–	0.1	0.2
Transit to CIS countries	16.8	16.7	14.9	14.7
Transit to Europe	112.4	120.4	121.5	113.8
Transit by other suppliers[e]	0	10.1	8.8	–
Exports of Ukrainian gas	0	3.9	2.7	0
Ukraine, pumped into storage	18.2	16.3	15.3	18.1

[a]Soiuzprominvest is a Moscow company controlling Dongazdobycha, which produces gas from the Markhovskoe deposit in southern Russia and transports it to Ukraine.
[b]In 2006, the total 47.767 bcm of Central Asian gas imported into Ukraine included: 36.501 bcm from Turkmenistan, 4.778 bcm from Uzbekistan and 6.488 bcm from Kazakhstan.
[c]In 2003, the Ukrainian balance with transit gas stripped out is 2.8 bcm greater than consumption; in 2004, it is 1.4 bcm greater; in 2005, it is 2.6 bcm greater.
[d]This minor item, production of liquefied petroleum gas, represents natural gas used as a raw material input for LPG, which comprises another market. It is not considered in this paper.
[e]Presumably 'other' means non-Gazprom suppliers, i.e. Euraltransgas. In 2004 this item was designated 'Transit of gas'.
Source: *Energobiznes*, based on ministry of fuel and energy statistics.

The items in the gas balance are discussed in the following order. This Section deals with the main input items, i.e. imports and domestic production. The largest output item, domestic consumption, is

discussed in Section 5. The other significant output item, exports of Ukrainian gas, is discussed at the end of Section 5. Technical gas, an output item, is discussed in Section 6, as are some issues about storage. For the purposes of the balance, the gas pumped into storage (an output) over time replaces gas pumped out of storage (an input).

4.1 Gas imports

The terms for import sales and Russian payments for transit of gas to Europe have long been at the centre of Russo–Ukrainian gas disputes, and were the cause of the dispute that erupted in January 2006. There were both economic and political factors in the background. The economic factor is clear: in the late 1990s, CIS prices were around 70–80% of European prices. The gap steadily widened in the 2000s and as oil prices rose sharply from 2003, so did European gas prices (e.g. German border prices more than doubled between 2001 and 2006). By the mid 2000s, CIS prices had fallen to less than one-third of their European counterparts and from Gazprom's standpoint, this meant a sharply widening differential between sales prices in the CIS (more than half of which is to Ukraine) and those in Europe. Gazprom regularly draws attention to these figures, displayed in Table 4.2.

Table 4.2. Average prices for Russian gas exports ($/mcm).

	1998	1999	2000	2001	2002	2003	2004	2005
Average export prices to Europe[a]	38	46	103.2	120.1	105.9	134.1	139.6	192.5
Average export prices to CIS/Baltics[b]	28	34	53.3	48.3	53.2	49.8	54.2	60.7
Export prices to Ukraine	50	50	50	50	50	50	50	50

[a] Including duties and customs charges
[b] Including taxes and duties
Note: Transit tariff paid by Gazprom to Ukraine during 1998–2005 was $1.094/mcm/100 km which was roughly equivalent to a price of $50/mcm for 26–28 bcm/year.
Sources: Rows 1 and 2, 2000–2005: *Gazprom v voprosakh i otvetakh*, 2006; Rows 1 and 2, 1998–1999: calculated from *Gazprom Annual Report*, 1999.

These figures need to be adjusted to take account of transport costs and the trade-off between prices charged by Gazprom and transit fees charged to Gazprom. Regardless, the difference between prices in Ukraine and other CIS countries and the prices of gas sold in Poland and Germany almost doubled over this period. With demand for Russian gas in Europe high and expected to rise, and prices high and rising, this was a cost that Gazprom has in recent years felt less and less inclined to bear. The company's management has consistently lobbied for higher prices both in the Russian market and in CIS countries, while political leaders in Russia, Ukraine and other CIS countries have all publicly acknowledged that prices need to move to European net-back levels. Table 4.3 displays prices reported for gas imported to Ukraine in 2005–2007.

Table 4.3. Prices paid by Naftogaz Ukrainy, Rosukrenergo and Ukrgazenergo ($/mcm)

	Purchases, net of transit			Ukraine import prices		
	Price	Source	Customer	Price	Source	Customer
2005	44	Central Asian gas	RUE	44 + trans (~30)	Central Asian gas	Naftogaz U
	80–93	Russian gas	RUE	50	Russian gas (nominal, for debt repayment)	Naftogaz U
	150[a]	Gas in storage	RUE	80	Russian gas (cash)	Naftogaz U
2006	55	Turkmen gas	RUE	95	RUE 'cocktail'	Ukrgaz–En
	50	Kazakh and Uzbek gas	RUE			
	230	Russian gas	RUE			
2007	100	Turkmen gas	RUE	130	RUE 'cocktail'	Ukrgaz–En

[a]The purchases of gas in storage by Rosukrenergo were made in order to settle the Russo-Ukrainian dispute over the whereabouts of 7.8 bcm of 'missing' gas in the summer of 2005.
Source: company statements

Alongside the commercial factors, there are political factors at work, subject to widely differing interpretations. The price increases demanded by Gazprom in January 2006 are widely assumed to have been an act of political aggression against Ukraine. The ultimatum presented by Gazprom representatives that Ukraine pay $230/mcm for Russian gas (days beforehand the implication had been that prices may rise to between $100–180/mcm) was certainly provocative, and conditioned by political considerations. The political decision needs to be seen in its economic context, however.

Taking into account both the non-market conditions in the former Soviet Union and the substantial increase in European prices, gas at $50/mcm in 2004–2005 represented a significant subsidy to Ukraine (the word 'subsidy' only being used in an economic sense). Russia's tougher stance on prices for 2006–2007 stemmed from a political decision to withdraw this subsidy. However, notwithstanding declarations on both sides, it is being withdrawn in stages and will last in some form at least until 2011. The decisive driver for this political decision was the Russian government's concern about the Orange revolution, its impact across the former Soviet space in general, and its appeal to the Ukrainian political class. As a consequence it resolved (1) to end the economic and political concession to Ukraine implicit in the $50 gas price (which was a central element in a system of mutual concessions); (2) in line with Putin's 'strong state' outlook, to end the practice of direct Ukrainian gas purchases from central Asia in order to take control of this additional lever in dealings with Ukraine; and (3) to use the process of negotiation over gas prices as a means to achieve the long-standing Russian aim of increasing Gazprom's role in ownership and operation of the gas transit system and in Ukraine's domestic gas market.

The formation in August 2006 of a government headed by Viktor Yanukovich, with the resulting political defeat for former Prime Minister Yulia Timoshenko and the entry of politicians close to the eastern Ukrainian industrial bloc into ministerial posts, emphasized just how limited the changes brought about by the Orange revolution were, and eased the Russo–Ukrainian conflict. The first result was a compromise on 2007 import prices, discussed below. The second result was that Russia, apparently with some support in the Ukrainian government, raised once more the issue of taking a share in the ownership or management of the Ukrainian pipeline system, but this time in exchange for production assets in the Russian gas fields. On 1 February 2007 President Putin said at a press conference that discussions were in progress at government and corporate level on this (see Section 6 below). At the time of writing, a reordering of Russian–Ukrainian gas relations on these lines in the medium to long term remains under discussion.

From 2007, another important long-term consideration is the possibility of political change in Turkmenistan, raised by the death of President Saparmurat Niyazov. This is unlikely to impact on gas exports in the short term, but in the long term it may affect production levels and therefore export volumes and the trading and gas pricing policy of the Turkmen government. If for example Turkmenistan further increased the prices of volumes sold to Rosukrenergo, this would put upward pressure on Ukrainian import prices.

4.2 Commercial and trading arrangements for imports of Russian and central Asian gas 2003–2005

Arrangements for the purchase and shipping of central Asian and Russian gas for Ukraine have changed each year since the Russo–Ukrainian agreement of 4 October 2001. In 2002–2004, under the agreement of 4 October 2001 and an additional memorandum signed in mid 2002, Ukraine paid for gas imported from Russia mainly with the provision of transit services (i.e. transit of Russian gas to Europe) with a small extra quantity (1–3 bcm) paid for in cash. Gas imported from Turkmenistan was bought by Naftogaz Ukrainy from Turkmenneftegaz, the Turkmen producer, at the Turkmen–Russian border (with a large proportion of payments made in the form of barter goods, such as building and engineering services and consumer goods). It was then shipped to Ukraine by an independent trader, i.e. Itera until the end of 2002 and ETG in 2003–2004.

The structure of the contractual arrangements in 2003–2004 was as follows. Naftogaz Ukrainy stated in 2004 (1) that the shipping service was "provided through sale and purchase contracts with ETG", i.e. Naftogaz Ukrainy sold the Turkmen gas to ETG at the Turkmen–Kazakh and/or the

Turkmen–Uzbek borders, and purchased it back at the Russo–Ukrainian border; (2) that gas not repurchased by Naftogaz at the Russo–Ukrainian border is "left by ETG in Naftogaz's storage facilities", with Naftogaz retaining a first-priority right to purchase it at times of peak demand, and ETG bearing the risk of loss and leakage; and (3) that the shipping contracts had a confidentiality clause that meant that their prices and key terms could not be disclosed. ETG was paid for its shipping services in kind, i.e. with volumes of gas (approximately 13.5 bcm/year of the Russian gas that Naftogaz Ukrainy received in lieu of payment for transporting Russian gas to Europe); some of these volumes were sold in Ukraine, and others exported to the central European market.[44]

No information is available about the exact volumes of Turkmen gas sold to Naftogaz Ukrainy, or bought by Gazprom and resold to ETG, Rosukrenergo and/or Naftogaz Ukrainy, under this arrangement. Table 4.1, based on official Ukrainian sources, indicates that 34.4 bcm of Turkmen gas was exported to Ukraine in 2003 and 25.6 bcm in 2004; which proportion of this came under the direct sales contract and which via Gazprom is unclear.[45] Assuming that this gas was all transported by ETG under its contract with Naftogaz, and assuming a cost of $30/mcm for the transit of gas from the Turkmen border to Ukraine, the price of transit services sold by ETG to Naftogaz in 2004 was a nominal $768 million, implying that ETG was paid for these services in gas priced at $56.88/mcm at the Ukrainian border. Gazprom's annual report for 2005 states that in 2004 ETG paid Gazprom 12,579 million rubles (approx $440 million) for transport services (i.e. the use of its pipelines) in Kazakhstan, Uzbekistan and Russia for 34.6 bcm of gas; this would presumably have included the cost of transporting gas for resale in Ukraine and also the cost of transporting ETG's 'own' gas for resale in central Europe.[46]

It should be noted that, under these arrangements, some crucial elements of the current system for trade and transit were already in place. ETG bought most of Turkmenistan's gas output at the Turkmen border (from Naftogaz Ukrainy); this gas remained its property until it reached Ukraine; volumes not resold to Naftogaz Ukrainy were held in storage by ETG and/or sold in central Europe.

In July and August 2004, Gazprom and Naftogaz signed agreements regulating their relationship in the mid and long term. These were supported by protocols of agreement at government level, but

[44] Stern, op. cit., 2005, pp. 90–93; Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 68 and 84.

[45] The only information made available by ETG is that in 2003, it had a turnover of $2 billion and a gross profit of $220 million, "arising from the transit and trade of 35.4 bcm of natural gas" (http://www.etg.hu/en/etg2.html). No breakdown is provided between Turkmen gas sold to Naftogaz Ukrainy, or Russian gas provided to Naftogaz Ukrainy in lieu of payment for transit, etc.

[46] Gazprom, *Finansovy otchet*, 2005, p. 83.

without any new inter-state treaty. First, the new joint venture, Rosukrenergo, would from 1 January 2005 replace ETG as the shipper of Turkmen gas to Ukraine. Rosukrenergo would transport 44 bcm of Turkmen gas, bought from Turkmenneftegaz by Naftogaz Ukrainy and immediately resold to Rosukrenergo at the Turkmen border. In addition, the agreement provided for Naftogaz Ukrainy to buy an additional 7 bcm from Rosukrenergo in 2005 and up to an additional 10 bcm in 2006. An agreement between Naftogaz Ukrainy and Rosukrenergo stipulated that between 2007 and 2028: "Naftogaz will be able to purchase up to 60 bcm of Turkmen gas directly from RUE and will cease to purchase gas directly from Turkmenneftegaz".[47] The commercial framework agreement between Gazprom and Naftogaz set out terms for Ukrainian transit of Russian gas to Europe: it provided for Naftogaz to transport about 128 bcm of Russian gas in 2004; it stipulated that Gazprom would make a prepayment of $1.25 billion for some transit services up to 2009 by writing off Naftogaz debt; and the gas transmission tariff was fixed at $1.09/mcm/100 km up to 2009.[48]

These agreements added two new elements to the scheme established with ETG. First, whereas ETG's ownership had been entirely non-Russian, Rosukrenergo was controlled on a parity basis by Gazprom and (then unknown) Ukrainian beneficiaries. In retrospect, it is clear that there was more continuity of management and ownership between ETG and Rosukrenergo than was discernible at the time. The switch from ETG to Rosukrenergo was an adjustment, and tightening, of Gazprom control over the transit scheme, but not a significant change of strategy. The second new element, probably more significant, was Ukraine's acceptance that from 2007 Naftogaz Ukrainy would have no direct contractual relationship with Turkmenneftegaz. This spelled an end to the fractious three-sided relationship (Russia, Turkmenistan and Ukraine) that had been at the centre of CIS gas transit for a decade, and reflected Russia's determination to sever direct Turkmen–Ukrainian relations, and to compel Ashgabat and Kiev to negotiate only through Moscow. Gazprom managers argued that this would avoid them being called upon to supply extra gas to Ukraine if and when Turkmenistan punished Ukraine for late payment by cutting off supplies. Room for Ashgabat to play Moscow off against Kiev, or for Kiev to play Moscow off against Ashgabat, was being closed down. Moscow pursued this strategy with still greater energy after the Orange revolution. In September 2005, Gazprom agreed with Uztransgas of Uzbekistan that Gazprom would use all of Uzbekistan's pipeline capacity during 2006–2010. Gazprom then agreed with Turkmenistan to buy the country's

[47] Gazprom press release, 29 July 2004 (gazprom.ru/eng/news/2004/07/13373.shtml); Naftogaz Ukrainy, *Offering Circular*, 2004, p. 84.

[48] Stern, op. cit., 2005, pp. 92 and 95.

entire output from 2007 onwards and resell some of this gas to Rosukrenergo. This was a promise from Turkmenistan, for what it was worth, to end direct sales to Naftogaz in future.[49]

In 2005, Rosukrenergo bought (1) gas purchased by Naftogaz from Turkmenneftegaz at the Turkmen border (presumably the 37 bcm indicated in Table 4.1); (2) Turkmen, and possibly Uzbek, gas, from Gazprom for $44/mcm; (3) Russian gas from Gazprom, for $93/mcm in the first half of the year and $80/mcm in the second half; and (4) gas in the Ukrainian storage system, whose ownership had been the subject of a Russo–Ukrainian dispute in July 2005, for $110/mcm. (This dispute concerned 7.8 bcm of gas belonging to Gazprom that had been stored in Ukraine but that Gazprom alleged was not available for pumping out of storage on request, as it should have been. See Section 3.) The volumes from Gazprom (i.e. (2), (3) and (4)) totalled 16.6 bcm, but no more detailed breakdown is available. In 2005, Rosukrenergo paid 6,508 million rubles (about $232 million) to Gazprom for transport services (the use of its pipelines) for 43.2 bcm of gas. The payment was substantially lower than that made by ETG the year before. Gazprom explained that this was due to the fact that it had "moved over to agency agreements with a number of counterparties, and thus received payment only in the form of an agency fee".[50] Rosukrenergo's turnover in 2005 was about $4.2 billion, on which profits of about $741 million were made.[51]

4.3 Commercial and trading arrangements for imports 2006–2007: (i) Gazprom and Rosukrenergo

The next change in transit arrangements came as a result of the acrimonious Russo–Ukrainian negotiations at the end of 2005, the gas crisis at the New Year during which pipeline pressure was temporarily reduced and the agreement of 4 January 2006 between Gazprom, Rosukrenergo and Naftogaz that followed.[52] There were three important new elements to this agreement. The most significant of these concerned the roles assigned to Rosukrenergo and to a new Naftogaz–

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[49] "Russia and Ukraine remain tetchy despite storage agreement", *Gas Matters*, July 2005, pp. 15–19; "Ukraine squeezed by Russian and Turkmen gas pricing ambitions", *Gas Matters*, October 2005, pp. 18–21; Liven, Oksana, "Na ch'ei ulitse prazdnik?", *Energobiznes*, 26 July 2005; Kachanov, Vitalii, "My za tsenoi ne postoim?", *Energobiznes*, 6 September 2005; Marianenko, Ivan, "TEKovskii optimism", *Energobiznes*, 24 October 2005.

[50] Gazprom, *Finansovy otchet*, 2005, pp. 44 and 83

[51] The notes to Gazprom's consolidated financial statements for 2005 show that Rosukrenergo (which is based in Switzerland) had 121.1 billion rubles turnover, 21.4 billion rubles profit, with assets of 57.3 billion rubles and liabilities of 35.6 billion rubles Gazprom, *IFRS Consolidated Financial Statements*, 31 December 2005, p. 27).

[52] The agreement was published by Ukrainska Pravda, the news web site, on 5 January 2006 (www2.pravda.com.ua/ru/news/2006/1/5/36448.htm). For a detailed account of the events, see Stern, op. cit., 2006.

Rosukrenergo joint venture, Ukrgaz–Energo, a wholesale trader in the Ukrainian market. First, the agreement provided for Ukrgaz–Energo to buy 34 bcm of gas in 2006 and 58 bcm/year from 2007 onwards from Rosukrenergo to sell in Ukraine. This means that Naftogaz's near-monopoly in Ukraine's wholesale market, established in January 2003 at Itera's expense, was being partly then wholly surrendered to Ukrgaz–Energo. Second, the agreement positioned Rosukrenergo as the main buyer of central Asian gas. It specifies that Rosukrenergo's gas balance will be 41 bcm of Turkmen gas, purchased from Gazprom Export, Gazprom's international export subsidiary, and Naftogaz; up to 7 bcm of Uzbek gas and up to 8 bcm of Kazakh gas, to be purchased from Gazprom Export and swapped for Russian gas delivered to Caucasus countries; and up to 17 bcm of Russian gas, with a base price of $230/mcm. These clauses gave Rosukrenergo access to Uzbek and Kazakh gas that Gazprom had previously envisaged buying to supplement its own gas balance, and brought Gazprom one step nearer to its strategic aim of depriving Naftogaz of the ability to buy gas directly from central Asia. The third significant element of the agreement concerned prices and transit and storage tariffs. The delivery of Russian gas at $50/mcm in lieu of transit tariffs was stopped; import prices charged by Rosukrenergo were fixed for six months at $95/mcm; transit tariffs were increased to $1.60/mcm/100 km and fixed for five years; and storage fees to be paid by Rosukrenergo were set at a fraction of European levels and fixed to 2030 (see Section 6.5 below, Payment for transit and storage). In retrospect, the long-term freezing of storage fees is one of the most interesting aspects of the agreement, as it shows how far both sides were from the market principles to which, in public, they aspire. Naftogaz and the fuel and energy minister, Ivan Plachkov, were widely criticized in Ukraine for accepting this price structure, on the grounds that it was too great a concession to Russia. It was indeed a concession, although it should be borne in mind (1) that the domestic market position handed to Ukrgaz–Energo was probably more significant, and (2) that it was offset by an ongoing concession on import prices by Moscow. The changes in the domestic market as a result of the establishment of Ukrgaz–Energo are discussed in the Section 5.

4.4 Commercial and trading arrangements for imports 2006-07: (ii) Central Asian supply and prices

In April 2003, Russia and Turkmenistan had signed a long-term agreement on cooperation in the gas sector, which provided for sales of gas by Turkmenneftegaz to Gazexport to rise from 5–7 bcm

in 2003–2006 to 60–70 bcm/year from 2007 and 70–80 bcm/year from 2009.[53] However, in December 2005, Turkmenistan signed bilateral agreements for the sale of gas in 2006 with both Russia and Ukraine, which appeared to be mutually exclusive, i.e. it could not sell the same gas or pipeline capacity twice. During the first half of 2006, Turkmenistan unilaterally breached its agreement with Ukraine, which had provided for the sale of gas to Naftogaz at the Turkmen border for $50/mcm in the first half of 2006 and $60/mcm in the second half of 2006. No gas was delivered under this agreement, and on 29 June the Turkmen ministry of foreign affairs announced that the contract was no longer valid. Judging by Turkmen statements, deliveries were stopped partly because of debts built up under previous contracts. The presence of another customer, Russia, paying an extra $15/mcm, surely helped. Rosukrenergo, having been unable to buy Turkmen gas at $50/mcm, apparently relied on Turkmen gas from Gazprom (for $65/mcm), supplemented by some Kazakh and Uzbek gas from Gazprom (for $50/mcm) and some Russian gas from Gazprom (for $230/mcm) to make up its 2006 gas balance. Over the summer, Turkmen president Niyazov made a series of public statements warning that prices at the Turkmen border, for both Russia and Ukraine, would be raised to between $100–$125/mcm. His position was strengthened by Kazakhstan, which was reported in the Russian press to have agreed with Russia that sales at the Kazakh–Russia border would be made at $138–$140/mcm from 2007, and later in the year opened talks with Russia with a view to achieving higher tariffs for the transport of Turkmen gas across Kazakhstan. Uzbekistan, too, resolved not to miss out on the trend towards higher prices, and announced in October that its gas would also cost $100/mcm from 1 January 2007. Niyazov's intransigence appears to have forced Russia and Ukraine into a united front in their dealings with Turkmenistan, and on 5 September an agreement was signed between Turkmenistan and Gazprom providing for sales of 50 bcm/year of gas at $100/mcm at the Turkmen border up to 2009. In any case, it is difficult to see how there can be further direct sales by Turkmenistan to Naftogaz, since the following year Turkmenneftegaz is committed to sell its gas to Gazprom at the Turkmen border, which will then sell it on to Rosukrenergo.[54]

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[53] Gazprom press release, "Ob itogakh visity delegatsii OAO 'Gazprom' v Turkmenistan", 15 April 2005, accessed on www.gazprom.ru.

[54] On Turkmen sales and negotiations, "Dolg, kotorogo net", *Energobiznes*, 14 February 2006; "Gazovy optimizm", *Energobiznes*, 19 June 2006; *Gas Matters Today*, 20 June, 2006; Kachanov, Vitalii, "Otlozhenoe reshenie", *Energobiznes*, 26 June 2006; Petrov, Ivan, "Bes gazovogo tranzita", *Delovaia Stolitsa*, 3 July 2006; Gavrish, Oleg, "Gazprom perekryvaet gaz Turkmenii", *Kommersant* 3 July 2006. On agreement, Liuta, Ganna, "Gazprom dogovorilsia s Turkmenistanom", *Zerkalo Nedeli*, 9 September 2006; Kachanov, Vitalii, "Uskol'zaiushchaia Aziia", *Energobiznes*, 12 September 2006; On Kazakhstan, Grib, Natalia and Konstantinov, Aleksandr, "Ukraina za vse zaplatit", *Kommersant*, 22 May 2006; Bernatskii, Vitalii, "Tsena gaza", *Energobiznes* 29 May 2006; *Gas Matters Today*, 1 December 2006. On Uzbekistan, ukroil.com.ua, 12 October 2006.

As for the prices set under the 4 January agreement, it should first be stated that, despite the wealth of public comment on the $230/mcm being charged for Russian gas, it is unlikely that much, if any, gas will be sold at this price in Ukraine. $230/mcm was adequately described by a senior Naftogaz executive as "alchemy … the price talked about by politicians".[55] In fact, most of the gas that Rosukrenergo buys from Gazprom at that price will be sold at a margin in central Europe, where Rosukrenergo has reported that it sold 8.95 bcm in 2006.[56] Much of the volumes previously delivered from Russia to Ukraine in lieu of transit fees are now being delivered as swaps for Uzbek and Kazakh gas, whose volumes are sold to Rosukrenergo in central Asia for $50/mcm, or replaced by the higher volumes of Turkmen gas earmarked for Ukraine (41 bcm/annum under the agreement, compared to the volumes of 25–37 bcm/annum shown in Table 4.1).

It is helpful to think of Rosukrenergo's gas as a 'cocktail', which – if it took up all the volumes referred to in the 4 January agreement – would have comprised roughly 23% Russian gas, 56% Turkmen gas, 11% Kazakh gas, and 10% Uzbek gas in 2006.[57] Rosukrenergo has reported 2006 sales of 50.13 bcm to Ukraine and 8.95 bcm to central Europe, and it seems likely that under 10% of what went to Ukraine will have been priced at $230/mcm.[58] This said, under these arrangements Rosukrenergo may have to increase the proportion of expensive Russian gas in the 'cocktail' during seasonal surges in demand. This is exactly what happened in the first quarter of 2006, before Ukrgaz–Energo had started operating and when Rosukrenergo was selling directly to Naftogaz. Rosukrenergo reported a $390 million loss for the quarter, and a company spokesman complained that during the particularly cold weather in January–February 2006 there had been "unsanctioned" pumping of gas in Ukraine, which had compelled the company to buy additional volumes of expensive Russian gas. At this same moment Naftogaz Ukrainy was struggling to deal with the initial impact of the price increases, and various spokesmen for the company stated that it had built up a $381 million debt to Rosukrenergo in the first quarter.[59]

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[55] Aleksei Bolkisev, then head of Gaz Ukrainy (and subsequently briefly CEO of Naftogaz), "Ukrainian gas sector in further crisis as Naftogaz boss quits", *Gas Matters*, May 2006, pp. 1 and 4-8.

[56] Rosukrenergo gives this figure on their company website for sales "for export" as opposed to those in to Ukraine. See www.rosukrenergo.ch.

[57] Fursa, Sergei, "Strategiia i taktika gazovykh batalii", *Kompanion*, 18–24 August 2006.

[58] Rosukrenergo provides total sales figures on its web site (www.rosukrenergo.ch), but no breakdown of the sources of gas. Ministry of fuel and energy statistics (see Table 4.1 above) show that the 56.9 bcm of gas imported into Ukraine in 2006 comprised 9.1 bcm (16.1%) from Russia, 36.5 bcm (64.1%) from Turkmenistan, 4.8 bcm (8.4%) from Uzbekistan and 6.5 bcm (11.4%) from Kazakhstan. However some of the volumes of Russian gas will have been swapped for Uzbek and Kazakh gas imported by Rosukrenergo to Russia under the arrangements described.

[59] On Rosukrenergo losses, Gazprom, *IFRS Consolidated interim condensed financial information* (unaudited), 31 March 2006, p. 13; Derbilova, 2006. On Naftogaz debts, Kachanov, Vitalii, "Rasplata za perekhodnii period", *Energobiznes*, 17 July 2006.

Contrary to many Ukrainians' fears, import prices remained at $95/mcm for the remainder of 2006 although they had only been fixed up to 30 June in the 4 January agreement. A reduction in political tension between Russia and Ukraine probably helped, due in part to the formation of the Yanukovich government. Prices for 2007 were fixed at the lower end of analysts' projections. On 24 October, Rosukrenergo and Ukrgaz–Energo issued a joint press release stating that the import price for 2007 for 55 bcm of gas produced in central Asia would be $130/mcm. Volumes were also contracted for 2008–2009, with prices to be negotiated annually.[60] Assuming that Turkmen gas costs $100/mcm at the Turkmen border, that Uzbek and Kazakh gas may cost more than that, and transit costs from central Asia are about $30/mcm, industry analysts had some difficulty seeing where Rosukrenergo would earn its margin.[61] Ukrainian politicians and the media responded to the announcement by asking what Russia had received from the Yanukovich government in return. Even sources in President Viktor Yushchenko's administration were quoted asking whether assurances had been given on an extension of the lease on the Black Sea naval base, renunciation of Ukraine's NATO membership ambitions or of greater Russian involvement in managing the gas pipeline system. Another possible concession would be for Ukraine to delay its WTO membership application to synchronize with Russia's, a proposal mentioned by Russian Prime Minister Mikhail Fradkov at a meeting in Kiev unrelated to gas. It seems likely that such political bargains have been struck in the background to the negotiations, but it is difficult to pinpoint any direct correlation to the price-setting for 2007. On the other hand, Rosukrenergo's owners are apparently enjoying some commercial advantages in Ukraine that may be partly in return for low import prices.[62]

4.5 Corporate governance controversies in Russo–Turkmen–Ukrainian gas relations

The long history of controversy over corporate standards and transparency in the intra-CIS gas trade began in the mid 1990s, when barter settlement and non-payment was at its height both in gas and other areas of the economy. From 1994, Gazprom handed much of its CIS trade and transit business to Itera, the trading company headed by Igor Makarov. Itera supplied Turkmen gas not only to Ukraine, but also to Uzbekistan, Kazakhstan, Belarus and some smaller former Soviet republics; it

[60] Rosukrenergo/Ukrgaz-Energo press release, "Ob itogakh peregovorov", 24 October 2006.

[61] The energy industry journal *Energobiznes* speculated that Rosukrenergo could (1) reduce transit fees, although this could raise the issue of reducing the transit fees across Ukraine also; (2) source some cheaper gas from Kazakhstan, whose government has stated its intention of raising prices to $138–140, but not reached any final decision on the matter; or (3) develop a swap scheme with Gazprom to cover the difference (Kachanov, Vitalii, "Gaz po $130", *Energobiznes*, 24 October 2006).

[62] "Ukraine's gas industry restructures while industry absorbs price increases", *Gas Matters*, December 2006, pp. 11-16; Ukrsibbank

also built up a domestic Russian trading business and production assets that by 2000 had an annual output of nearly 18 bcm. Itera had an opaque offshore ownership structure typical of Russian companies at the time. However, it appeared to receive special favours from Gazprom and the government, including cheap production assets, participation in transfer pricing schemes, a share of the central European export market, etc., which led observers to assume that it was engaged in stripping state assets and/or that its unknown beneficial owners included Gazprom managers. The gas transit business was made especially opaque by barter settlement methods, and Itera stood accused of gross profiteering, for example in Ukraine in 1998 when it became the monopoly importer.

From 2000, two factors in Russia worked against Itera: first, the accession of Putin, and the appointment of his ally Aleksei Miller to head Gazprom, with a brief to centralize control of revenues; and second, the general shift in Russian business towards western-style capital markets and taxation arrangements, and the resulting increase in transparency. Under Miller, Itera gradually lost its preferential access to pipeline capacity and export business, and Gazprom bought back control of all its significant production assets. In January 2003, Itera lost the lucrative contract to ship Turkmen gas to Ukraine to Eural Trans Gas (ETG), which is now known to have been headed by Dmytro Firtash, who worked with Makarov on the Turkmen transit business in the early 1990s.

Despite the appointment of the former head of British Gas Cedric Brown as ETG chairman, ETG's ownership structure was not much more transparent than Itera's, and nor were its relations with Gazprom or the details of its transit contracts. It consequently came under fire, firstly from Russian and Ukrainian politicians and media who argued that the transit contract amounted to an unjustly lavish reward from Gazprom to the unknown shareholders, and secondly from western financial institutions trading Gazprom shares, who saw the arrangement with ETG as an unnecessarily expensive cost item. Some in western European government circles were concerned at the lag in transparency in an area so crucial to Europe's energy supply. In 2005, the transit contract was shifted from ETG to its successor company Rosukrenergo, whose position was further strengthened after the 2006 crisis. There followed a surge of understandable suspicion among Ukrainians that the country's gas supplies were in the hands of an opaque, Kremlin-connected entity, and a wealth of commentary, much of it sensationalist, by politicians and journalists.

To put these matters into context, attention is drawn to four issues: firstly, the transit of central Asian gas to Ukraine has been managed continuously by one group of people (Dmytro Firtash and his associates) since they took over from Itera in January 2003. When Rosukrenergo was set up in

2005, the same management team stayed in place. Firtash was a key executive of ETG and then Rosukrenergo; so was Oleg Palchikov. The only significant difference between the two companies was in ownership structure: Gazprom, which had no apparent share in ETG, controls 50% of Rosukrenergo. The beneficial owners of the other 50% are Firtash (45%) and Ivan Fursin, chairman of Misto, a small Ukrainian bank (5%). When Firtash disclosed his role in Rosukrenergo in newspaper interviews in mid 2006, he explained the relationship between ETG and Rosukrenergo. He stated: "In October 2001 [this was a slip of the tongue; it was 2002] I founded ETG, and in November we signed a contract with Gazprom." The reason that ETG was replaced by Rosukrenergo was that "Gazprom decided to take a share in the business and was prepared to buy 50% of ETG, but a scandal was being whipped up around the company. And so the idea came up of founding Rosukrenergo, 50% of which would be owned by Gazprom."[63] The significance of this is that there has been a greater degree of continuity and stability in the transit arrangements than was previously discernible: Firtash and his associates are only the second entity, after Itera, to have managed transit for Gazprom.

Secondly, the welcome disclosure of Rosukrenergo's ownership structure still leaves questions over the manner in which Rosukrenergo and ETG operated in the past. Throughout the period when ETG managed central Asian gas transit (2003–2004), its beneficial ownership was mostly concealed by a complicated network of holding companies. When Rosukrenergo was set up, Gazprom's control of 50% of it was made public from the start, but the beneficial ownership of the Ukrainian 50%, held in trust by Raiffeisen International, a subsidiary of Raiffeisen bank, remained unknown until Firtash's interviews in mid 2006. In March 2006, just a few weeks before Firtash's 'coming out', Presidents Putin and Yushchenko simultaneously claimed not to know who the Ukrainian owners of Rosukrenergo were. Claims of alleged links between Firtash and the criminal gang leader Semyon Mogilevich have been raised in the Ukrainian parliament and in the international press. Firtash, who met Mogilevich in the 1990s and shares a lawyer with him, has denied ever doing business with Mogilevich. In December 2006, it was reported that the US Justice Department had, during 2006, been investigating alleged links between Mogilevich and Highrock Holdings, one of Firtash's trading companies.[64] Firtash strenuously denies any such links. Many Russian and Ukrainian

[63] Reznik, Irina, "Dmitrii Firtash: 'ia vsego dobilsia sam'", *Vedomosti*, 27 June 2006; "Kto vladeet ukrainskim gazom", *Izvestiia*, 26 April 2006; Warner, Tom, "Secretive gas trader reveals its owners", *Financial Times*, 27 April 2006; Wagstyl, Stefan and Warner, Tom, "Gazprom's secretive Ukrainian partner tells of lone struggle to build business", *Financial Times*, 28 April 2006.

[64] On ownership structures, see Global Witness, *It's A Gas*; Shleinov, Roman, "Kto ostalsia na trube", *Novaia Gazeta*, 16 January 2006; Shleinov, Roman, "Rossia i Ukraina zakliuchili barachnyi kontrakt", *Novaia Gazeta*, 6 February 2006; Mostovaia, Yuliia, "Eto po-vashemu – Van Gogh, a po-nashemu – Gogen", *Zerkalo Nedeli*, 28 January 2006; Mostovaia, Yuliia, "Gazovaia Firtashka", *Zerkalo Nedeli*, 29 April 2006. On Putin and

businesses have begun life in a relatively opaque manner and become more transparent, with many having international share listings and the requisite level of disclosure. Rosukrenergo and its associated entities appear to be moving along the same path, although it may be more difficult for them, partly because of the international character of their business. In June 2007, the formation of a new company into which Firtash's assets will be consolidated, Group DF, was announced.

Thirdly, there is every reason to expect that Rosukrenergo and related companies, using the advantage provided by the transit business and their access to the Ukrainian market via Ukrgaz-Energo, will build a powerful presence not only in the gas sector but in related industries (power, chemicals, etc). Some outlines of an integrated business group are apparent, i.e.:. (1) Rosukrenergo and Ukrgaz–Energo are seeking to acquire Russian gas production assets. In October 2006, companies controlled by Firtash and Gazprom jointly acquired control of Pechoraneftegaz, a small Exploration and Production (E&P) company based in the Komi republic in northwest Russia.[65] The group already owns other gas industry companies such as Zangas, a Russian pipeline construction company, which is active in both central Asia and Ukraine.[66] (2) With Rosukrenergo seeking to build on ETG's gas sales business in central Europe, and Ukrgaz–Energo expanding aggressively in the Ukrainian market (see Section 5 below), the two companies jointly established a commanding position in Ukraine's gas storage system. In November 2006, in advance of the winter peak, most of the gas stored in Ukraine belonged to them. In October 2006 Ukrgaz–Energo also entered the oil trading business, although shortly afterwards it cut back its plans to expand this activity due to current trading conditions (i.e. high domestic oil prices).[67] (3) Rosukrenergo and associated companies have shown interest in Ukrainian gas distribution assets (see Section 5 below). (4) The group is moving into electricity trading. Emfesz of Hungary, the gas trader controlled by Firtash, which sells 3 bcm of gas in Poland and Hungary, was in October 2006 contracted by the Ukrainian state electrical power exporter Ukrinterenergo to handle all its exports to central Europe.[68] (5) The group controls substantial assets in the chemicals sector, including fertilizer manufacturers for

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Yushchenko, "Chei tuflia?" *Vedomosti*, 2 March 2006. On Firtash: Warner, Tom, "Under scrutiny: how the trader at the centre of Ukraine's gas dispute faces questions about his past", *Financial Times*, 14 July 2006. On US Justice Department, Glenn Simpson, "US probes possible crime links to Russian natural gas deals." *The Wall Street Journal Europe*, 22 December 2006.

[65] Author's information from the Firtash group.

[66] Warner, Tom, "Gas trader chief unveils plan to upgrade titanium plant", *Financial Times*, 29 May 2006; Starostin, Andrei, "Zangas – novyi gazovyi favorit?", Ukrainska Pravda, 8 September 2006.

[67] "Ukraine's industry restructures while industry absorbs price increases", *Gas Matters*, December 2006, pp. 11–16; "Ukrgaz-Energo otkazalsia ot operatsii s neftiu na ukrainskom rynke v 2007 g.", *Delo*, 26 December 2006.

[68] Interfax-Ukraine, 31 October 2006; www.lenta.ru, 1 November 2006; "UkrInterEnergo starts exporting power to Hungary's Emfesz Kft", *The Ukrainian Journal*, 27 January 2007.

whom natural gas is the principal raw material, and the metals sector: it has stated that it intends to consolidate these holdings, which include Crimean Titan (a titanium maker), Crimean Soda and Rivneazot (Ukraine), Nitrofert (Estonia) and Tajikazot (Tajikistan).[69]

Fourthly and finally, Firtash's group of companies relies on the continued good relationship between their owners and Gazprom, since the transit contract with Gazprom is the mainstay of the gas business, upon which other businesses heavily rely. As indicated above, this relationship has already proved durable since 2003, although it remains sufficiently opaque that it is difficult to determine its long-term sustainability. The Firtash group's vulnerability in this respect was underlined in March 2007, when Valerii Golubev, a senior Gazprom official, publicly described the transit arrangement with Rosukrenergo as "not the optimal one", and said that a new scheme could be introduced. The Ukrainian government, anxious to keep all options open, not only acknowledged that talks were underway on various proposals to change the transit arrangements, but also publicly resumed contacts with Itera. Senior managers met with Prime Minister Yanukovich. These statements suggested that no change is proposed in the short term, but that it could be, for example, in the case of a successful outcome to the negotiations on swapping a stake in the Ukrainian transit system for Russian production assets.[70]

4.6 Ukraine's relationship with central Asian producers

By early 2007, Gazprom had achieved its aim of severing direct sales of Turkmen gas to Naftogaz Ukrainy, as discussed above. This brings to an end a prolonged period in which (1) arrangements for the import of gas to Ukraine were negotiated between Russia, Ukraine and Turkmenistan, and often became the subject of political and diplomatic horse-trading; and (2) Ukraine paid for Turkmen gas partly in kind, in the form of barter goods, under an opaque scheme that afforded generous opportunities for corruption. Russia's drive to end direct sales of central Asian gas to Ukraine has been undertaken in line with Putin's 'strong state' strategy and it seems unlikely that such direct sales will soon be reinstated. But the central Asian exporters still have the option of working to re-establish direct commercial relationships with Ukraine, although this carries the potential overhead of Russian disapproval or obstruction. Moreover, Ukraine is likely to continue

[69] Warner, Tom, "Gas trader chief unveils plan to upgrade titanium plant", *Financial Times*, 29 May 2006.

[70] Mostovaia, Yuliia, "Tiazhest' gaza", *Zerkalo Nedeli*, 3 February 2007; Ukrainska Pravda, 6 February 2007; Itar-Tass, 12 February 2007; Zaika, Andrei, "Itera razrushit monopoliu Firtasha", *Delo*, 14 February 2007; Zaika, Andrei, "Gazprom otkazyvaietsia ot uslug Dmitriia Firtasha", *Delo*, 2 March 2007; Grib, Natalia and Gavrish, Oleg, "Gazprom perevedet Ukrainu na priamye kontrakty", *Kommersant-Ukrainy*, 2 March 2007.

efforts to rebuild direct relationships in the gas sphere with Turkmenistan and possibly Uzbekistan. From Kiev's point of view, such relationships in the long term offer the prospect of diversifying away from Russia as a supplier, either by agreeing terms to ship directly-purchased central Asian gas through Russia, or by building alternative transport routes (see Section 4.9, Possibilities of diversifying supply). Furthermore, Ukraine's trading relationship with central Asia (including barter trade) has been highly profitable to powerful Ukrainian business interests, who are unlikely to abandon it willingly. For these reasons it is worth highlighting some aspects of Ukraine's gas relationships with Turkmenistan and Uzbekistan in the recent past.

The first point concerns the payment methods for Turkmen gas bought by Naftogaz at the Turkmen border until the end of 2005 (shipped by or sold to Itera from the mid 1990s, immediately resold to ETG in 2003–2004, and in 2005 immediately resold to Rosukrenergo). The sale contracts for this gas provided for 50% of the cost (or 60% in some years) to be paid with barter goods and services. These goods and services were bought from Ukrainian companies, usually in the steel and steel products, construction and consumer goods sectors, by Naftogaz; Naftogaz then supplied them to Turkmen institutions and companies and used this income to pay for Turkmen gas. The barter goods were usually priced at between 1.5–3 times their market value, using so-called coefficients (see text box). Naftogaz has stated that the total book value of the goods and services sold to Turkmenistan in 2003 in this way was 4.49 billion uah ($810 million), but the terms of Naftogaz's purchases of these goods from Ukrainian companies was one of the best-kept secrets of Ukrainian business.

How the barter scheme worked

A description of the barter scheme is provided in Naftogaz's Offering Circular for eurobond holders in 2004. It said that "Naftogaz pays for gas it purchases from Turkmenistan half in cash and half in goods and services. As a result, the purchase price of gas from Turkmenistan depends on the price at which Naftogaz is able to obtain the goods and services it delivers as payment in kind and the price at which these goods and services are valued for the purposes of such payment. […] Naftogaz's purchase of these goods from third parties is accounted for as a cost of sales, while the sale of these goods to Turkmenneftegaz is accounted for as income. Naftogaz then applies this income to the purchase of gas from Turkmenneftegaz, which is accounted for as a cost of sales, and then Naftogaz eventually sells this gas to customers which is accounted for as income." The 4.5 billion uah of income from barter sales to Turkmenistan in 2003 was 13.5% of its total income in that year (33.3 billion uah). "A company similarly situated to Naftogaz, paying solely cash for Turkmen gas, would have recorded, for [2003], lower consolidated income (for the amount equal to the income from the sales of goods to Turkmenistan) and lower consolidated cost of sales (for the amount equal to the cost of goods supplied to Turkmenistan)." Naftogaz Ukrainy, *Offering Circular*, p. 22. Yuri Boiko, after leaving his post as Naftogaz CEO, publicly referred to the level of co-efficients used in the scheme as averaging 1.9–2. See "Ukraine squeezed by Russian and Turkmen gas pricing ambitions", *Gas Matters*, October 2005, pp. 18-21. The scheme is discussed in Global Witness, *It's A Gas*, 2006, pp. 26–27.

The January 2006 agreement provided for direct sales of Turkmen gas to Ukraine to continue during 2006 and to be ended in 2007, but, as described above, the Turkmen government decided unilaterally to suspend them. During the subsequent diplomatic row between Turkmenistan and Ukraine, constant reference was made to Ukrainian payments by barter for gas delivered in 2003–2005. Some of these payments were outstanding, and some fell due during 2006 under a deferred payment scheme that formed yet another opaque twist to the barter arrangements. In March 2006, Ukrainian government and Naftogaz officials stated that the debt for Turkmen gas comprised $169.6 million, including $80 million that was overdue ($46.8 million cash and $33.1 million in barter goods) and $89.6 million deferred payments that would fall due during 2006. Most of the latter part of the debt comprised quotas of barter goods that the Turkmen government had not yet distributed to institutions and companies. After it was renegotiated in late March, and the quotas distributed, it comprised $58.3 million worth of large diameter pipes to be delivered by August 2006 and smaller amounts of "prespecified goods" to be delivered by April and August. In July 2006, Prime Minister Ekhanurov said the debt stood at $43.7 million, and was equivalent to money owed by Turkmen entities to Ukrainian companies for work undertaken in Turkmenistan.[71]

In the short term, the re-establishment of direct Turkmen gas sales to Ukraine is unlikely. However, the long-term course of Turkmen relations with both Russia and Ukraine is uncertain, due to the death of President Niyazov in December 2006, the election of his successor Gurganguly Berdymukhammedov in February 2007 and the political changes that will inevitably follow. The political system that evolved under Niyazov shifted all important decisions, including those on the gas industry, into the president's hands. The election of a new president therefore opens up possibilities for change, although there is no indication that Berdymukhammedov plans to make any radical or rapid changes. Berdymukhammedov and his advisers may decide to explore a foreign policy that is less dependent on Russia and pursue closer relations either with China and/or with the EU. If they do, the resumption of a closer relationship with Ukraine is an option. A week after Niyazov's death, Viktor Maiko, Ukrainian ambassador to Turkmenistan, recognised this in a newspaper interview. He stated that "no-one [in Ashgabat] has crossed us off the list of potential negotiating partners", and that the negative legacy of the gas trade and associated corruption was

[71] Naftogaz Ukrainy press release, 30 March 2006; Ukroil.com.ua, 31 March 2006; Bernatskii, Vitalii, "Turkmenskii surpriz", *Energobiznes*, 3 April 2006; Ukroil.com.ua, 27 July 2006.

balanced by positive commercial ties in fields including construction and defence. Ashgabat would listen to "serious, well-thought out" proposals; the hard part would be convincing Moscow.[72]

In the case of Uzbekistan, agreements made in late 2006 between Gazprom and Uzbekneftegaz appear to preclude direct sales to Ukraine, as in the Turkmen case. However, it may be expected that Ukraine will continue to try to re-establish direct sales, given their importance to one of Ukraine's largest industrial corporations: the Industrial Union of Donbass (IUD). The IUD has built a substantial business relationship with Uzbekistan, based on the sale of steel products and construction services and the purchase of gas for resale in Ukraine. Historically, gas trading has been a key part of the IUD's business; it was one of the licensed traders under the gas trading concession system of 1996–1998 described in Section 3. The considerable scale of the IUD's gas import business is evident from press reports republished on its web site. It is stated that between 1996 and 2003 the IUD imported 27.5 bcm of gas purchased from Uzbekneftegaz (i.e. 3–3.5 bcm/year) and that in 2003–2004 an IUD subsidiary, Eastern Distribution Ltd of the UK, supplied about 3 bcm of Uzbek gas to Naftogaz Ukrainy. Alongside these gas purchases, the IUD and Uzbekneftegaz set up a consortium to supply steel and steel products to Uzbek companies, and the IUD supplied equipment and construction services for pipeline construction. The IUD accounts for about three-quarters of Ukraine's trade turnover with Uzbekistan. In 2001, the IUD purchased a 39% holding in Uzneftegazstroi, a construction company controlled by Uzbekneftegaz. In 2004 the company was merged with its parent and Sergei Taruta, one of the IUD's principal owners, joined the board of Uzbekneftegaz.[73]

In January 2007 the IUD agreed with its Uzbek partners to renew its purchases of Uzbek gas, and to import up to 3 bcm of it to Ukraine in 2007–2008, subject to agreement at government level and with Gazprom and Rosukrenergo. A corresponding agreement had been accepted by the Ukrainian government (in which Vitalii Gaiduk, one of the IUD's main owners, currently serves on the national security council). In February 2007, the IUD announced that it was in pre-merger discussions with Gazmetall, a Russian industrial group with steel and iron ore assets. If a merger or

[72] "Gas industry eyes Turkmenistan elections and their implications", *Gas Matters*, January 2007, pp. 24–25; Kravchenko, Vladimir and Eremenko, Alla, "Ukraina-Turkmenistan: my poidem svoim putem?", *Zerkalo Nedeli*, 30 December 2006.

[73] "Predsedatel' sovet direktorov ISD Taruta voidet v nabliudatel'nyi sovet 'Uzbekneftegaza'", Interfax-Ukrainy, published on IUD web site, September 2004; "V 2007-2008 gg. Ukraina mozhet poluchit' 3 mlrd kub gaza ot Uzbekistana", Press-iz.info, published on IUD web site, January 2007.

alliance results, this could give the IUD greater bargaining power with which to revive aspects of its central Asian gas business.[74]

4.7 Domestic gas exploration and production

Natural gas production in Ukraine fell from a peak of 69 bcm in 1975 to about 20 bcm in 1990, due to natural exhaustion of fields. It then stabilized at about 18 bcm in the mid 1990s, fell to 16–17 bcm at the end of the decade, and began to slowly increase again over the last five years as demonstrated in Table 4.4.

Table 4.4. Ukrainian natural gas production in selected years (bcm)

	1992	1997	2002	2003	2004	2005
Naftogaz Ukrainy and its subsidiaries	20.9[a]	17.8[a]	17.8	18.2	18.9	19.2
Other producers	0	0.3	1.0	1.3	1.2	1.3
Total production	20.9	18.1	18.7	19.2	20.5	20.6

[a] Figures from predecessor entities to Naftogaz

Source: IEA, *Ukraine Energy Policy Review*, 2006, p. 173

Naftogaz Ukrainy and its subsidiaries account for the bulk of production, but there are a growing number of other producers, highlighted by Table 4.5.

[74] Zaika, Andrei, "Gaiduk posiagnul na monopoliu", *Delo*, 6 November 2006; Rozhkova, Maria and Fedorinova, Yuliia, "Nash otvet 'Arcelor'", *Vedomosti*, 19 February 2007.

Table 4.5. Ukrainian natural gas production in 2005–2006 (bcm)

	2005	2006
Naftogaz Ukrainy and its subsidiaries	**19.180**	**19.323**
Ukrgazvydobuvannya	14.654	14.713
Ukrnafta	3.271	3.333
Chernomorneftegaz	1.254	1.277
Other producers	**1.386**	**1.396**
Nadra Ukrainy (state exploration company)	0.463	–
Poltava Oil and Gas Co. (j.v. with JKX of the UK)	0.356	0.387
Neftegazdobycha (privately owned Ukrainian co.)	0.285	0.367
Plast	0.061	0.053
Dnepregazresurs	0.061	0.055
KUB-GAZ	0.035	0.063
Marinskoe	0.032	0.035
Delta j.v.	0.030	0.022
Borislavskaia neftiannaia kompaniia	0.017	0.013
Tisagaz	0.015	0.012
Ukrnedraservis	0.007	0.012
Region	0.006	0.002
Ukrkarpatoil	0.006	0.007
Oberon-Ugol’	0.004	0.004
Evropa neft i gaz Ukraina	0.003	0.002
Kashtan Petroleum	0.002	–
Esko-sever	0.002	–
Devon	–	0.073
Sakhalinskoe	–	0.088
Sirius-1	–	0.039
Regal Petroleum	–	0.026
Ukrainskaia Torgovaia Kompaniia	–	0.005
Interneftegazstroi	–	0.002
Neftegazrazvedka	–	0.006
Ukrnerudprom	–	0.004
Ukrneftegazinvest	–	0.025
Prom-energo-produkt	–	0.022
Ukrenergo	–	0.012
Turboplast	–	0.003
INTEK Geo	–	0.035
Prirodnye resursy	–	0.008
Total production	**20.567**	**20.719**

Note: it is an anomaly that no figure appears in the 2006 statistics for Nadra Ukrainy, which certainly produced gas in 2006.
Source: *Energobiznes*, 16 January 2006 and 16 January 2007.

There are three hydrocarbon basins in Ukraine: (1) the onshore Dnipr–Donets basin, which contains the most undiscovered reserves, with mainly oil in its northwest part and mainly gas in its southeast part; (2) the Carpathian basin in western Ukraine, which extends into Poland in the north and Romania in the south; and (3) the Black Sea/Azov–Kuban basin, which is mainly gas-prone and includes natural gas fields offshore in the Azov sea and onshore in Crimea. The size of Ukraine's gas reserves is a matter of controversy. The government's *Energy Strategy* estimates remaining reserves at 1,024 bcm. Miller and Lents (the international oil and gas consultants) made a study of the reserves in 2003 and estimated them to be 317.2 bcm, i.e. 280.9 bcm of developed (producing) reserves, 11.9 bcm of developed (non-producing) and 24.4 bcm non-developed. Undiscovered gas reserves were estimated in 2000 by the US Geological Survey to be 779.8 bcm (673.3 bcm in the Dnipr–Donets basin, 60.5 bcm in the Black Sea/Azov–Kuban basin, and 46.0 bcm in the Carpathian basin).[75]

The main challenge for the industry is that the most significant reserves are at depths that require considerable investment and the most advanced technology for recovery. For example, more than 200 deposits have been discovered in the Dnipr–Donets basin at depths of 400–6300 m. In the Black Sea, which has been stipulated to be the priority for field development by government, most deposits are more than 300 m deep, whereas Chernomorneftegaz, the state-controlled offshore production company, is accustomed to working at depths of about 100 m.[76] Development of such deposits is crucial if Ukraine is to achieve its aim of increasing domestic production to substitute expensive imported gas. Under the national programme for the oil and gas industry to 2010, it is projected that exploratory drilling operations will rise from their 2004 level of 165,000 m to 415,000 m/year, but the success of this programme depends in large part on Naftogaz Ukrainy finding investment capital. It is difficult to see how it will do so, given its current financial problems (see Section 5.8, Changes in structure of the industry).

The international oil majors have technology and financial resources that Naftogaz does not, but progress in attracting these to Ukraine has been slow. BP undertook some onshore exploration work in Ukraine from 1997, but discontinued plans to establish an upstream joint venture (it now has an

[75] *Energy Strategy*, p. 70; IEA, *Ukraine Energy Policy Review*, 2006, pp. 172-176; Stefanovski, *Ukraine Oil and Gas Sector Overview*, 2005, pp. 8-14.

[76] "Resursnaia baza neftegazovogo kompleksa Ukrainy", *Energobizes*, 10 November 2003; Liven, Oksana, "Sokrovishcha Chernomora", *Energobiznes*, 19 September 2006.

interest in the Ukrainian oil refining sector via its Russian joint venture TNK-BP)[77]. The only major with a significant commitment to E&P in Ukraine so far is Shell. In May 2005 it agreed with Naftogaz to carry out joint studies in a 31,000 km^2 area of the Dnipr–Donets basin. In June 2006, Shell Exploration and Production signed a joint activity agreement with Ukrgazvydobuvannya, under which Shell has farmed into eight of Ukrgazvydobuvannya's licence areas, which partly lie beneath shallower fields already in production. Shell will acquire a 50% interest in these licences (excluding the producing fields).[78] How the relationship between Ukraine and the international majors develops from here is partly a political question. In 2005, parliament began considering legislation that would restrict foreign investment in Ukraine's offshore fields, and since the appointment of the Yanukovich government, leading political and industry figures have placed emphasis on the development of reserves by Ukrainian companies, and argued against encouraging strategic investment by the oil majors.[79]

Most gas production is by Naftogaz's production subsidiaries. The largest producing areas are the Shebelynske (Kharkiv region), Yablunivske (Chernigiv region), Zakhidno-Khrestyshynske (Kharkiv) and Melykhovske (Kharkiv) fields, all onshore. In the Black and Azov Seas, Chernomorneftegaz already produces from four offshore deposits, and various policy initiatives at government and company level envisage relatively rapid development of further deposits.[80] A small amount of production is accounted for by subsidiaries of smaller foreign producers (of which the Poltava Oil and Gas Company, owned indirectly by JKX of the UK, is the largest), and under joint ventures or joint activity agreements with foreign participation (e.g. by Cardinal Resources of the UK). Nadra Ukrainy, the state exploration company, also produces a small amount of gas. It had customarily sold this to Naftogaz, but in early 2007 was refusing to do so due to a dispute about sale prices.[81] Gas extraction costs in Ukraine have recently been estimated as displayed in Table 4.6.

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[77] "A teper' – British Petroleum", *Zerkalo Nedeli*, 4 October 1997; Eremenko, Alla, "Khoteli by videt' vas ne raz v godu …", *Zerkalo Nedeli*, 14 June 2003; "Ukraine and its energies", *Alexander's Oil and Gas Connections*, 28 August 2001.

[78] Shell press releases of 10 May 2005, 1 December 2005 and 8 June 2006.

[79] Diyak, "Energetichna bezpeka derzhavi: naiblizhchy kroki", *Golos Ukrainy*, 6 October 2005; *Global Insight Ukraine Country Report*, January 2006.

[80] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 80; http://www.blackseagas.com/ru.

[81] Pesotskaia, Ruslana, "Gaz spriatalsia v 'Nadrakh Ukrainy'", *Delo*, 1 March 2007.

Table 4.6. Average gas extraction costs, $/mcm

	2005	2006	2007
Extraction, including exploration work	18	19	20
Royalties	6	6	10
Capital construction, including well-boring costs	26	27	28
Total	50	52	59

Source: Troika Dialog, *High Gas Prices: Motivating Efficiency*, 21 September 2006

The publicly available figures from Naftogaz show that in 2006 extraction costs (i.e. not including royalties or capital construction) were 94 uah/mcm ($18.80/mcm) for Ukrgazvydobuvannya, 175 uah/mcm ($35/mcm) for Ukrnafta and 120 uah/mcm ($24/mcm) for Chernomorneftegaz. The latter company's costs are higher because it operates offshore.[82]

4.8 Issues of taxation and upstream terms of access

Successive Ukrainian governments have made major changes both in the tax code and in the legislative framework, for investment generally and for hydrocarbons E&P particularly. The activity of foreign companies such as JKX and Shell in the gas sector is evidence of their success. Nevertheless, there are elements of the tax code and legal framework that still present major obstacles to the industry. Both Naftogaz and foreign companies argue that the level of taxes on E&P is punitive. Naftogaz is lobbying government (1) for changes to the tax regime for hydrocarbons exploration projects; (2) for a regularization of a series of taxes that the company says are imposed in addition to those in the tax code, e.g. non-budget duty on geological exploration and royalties on transportation fees; and (3) for a resetting of duties on the export of natural gas. Foreign companies, and law firms working with them, say the level of tax on E&P is substantially higher than in most comparable jurisdictions.[83]

The licence regime is criticized by the IEA and others as a disincentive for exploration. There are two types of licences granted by the Ukrainian state: 5 year exploration licences and 20 year production licences. If an exploration licence holder makes a find of resources, there is no guarantee that he will be granted the production licence, although one piece of legislation refers to the exploration licence holder's 'priority right' to the production licence for the same deposit or field. Ukrainian lawyers interviewed by the author consider that legislation covering joint activity

[82] Anastasieva, Liudmila, "Ossenie igry", *Energobiznes*, 10 October 2006. Naftogaz reported extraction costs in 2003 as 65.0 uah/mcm for Ukrgazvydobuvannya, 97.7 uah/mcm for Ukrnafta and 119.2 uah/mcm for Chernomorneftegaz; royalties were 30.6 uah/mcm. Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 74 and 80.

[83] Author's information from Naftogaz and other interviews.

agreements is also confusing with respect to limitations on the transfer of licences between partners and SPV companies.

There have been a series of legal, political and corporate disputes on licensing issues in recent years. In 2004, the State Committee on Natural Resources was created to issue and oversee licences, and legislation was amended to the effect that if the exploration licence holder applied for the production licence, no tender would be held. In 2005 this amendment was repealed; in 2006 it was reintroduced. After the Orange revolution, in response to widespread reports of abuses in the State Committee's work, president Yushchenko's government brought the State Committee under the authority of the Ministry of Environmental Protection and instituted a review of all licences issued in 2004. Regal Petroleum of the UK, which has undertaken exploration in Ukraine but has yet to become a significant producer, spent all of 2006 fighting a legal battle to establish the legitimacy of licences it had been granted in 2004. Its former joint activity agreement partner, Chernihivgazgeologia, a subsidiary of the state-owned exploration company Nadra Ukrainy, had instituted legal proceedings for the licences to be withdrawn, and in December 2006 the Supreme Court ruled in Regal's favour.[84]

Ukraine's law on production sharing agreements (PSAs), adopted in 1999, has also been criticized as being insufficiently beneficial to investors. It includes exemptions from profit repatriation tax, VAT and customs duties for exported PSA products. However, the ownership of oil and gas produced under PSAs is complicated; it first passes into the state's ownership and is then shared between PSA participants. There is also a 40% limit on foreign participation in PSAs in offshore areas. The first successful tender for the right to conclude a PSA was achieved in early 2006; Vanco Energy Company of the USA won the rights to Prykerchensky block in the Black Sea. The PSA is awaiting government approval at the time of writing.

It is not obvious how Ukraine will get out of its dilemmas on domestic production. Oil and gas producing countries are using this period of high prices to negotiate better terms from international oil companies. It is hard to see Ukraine bucking this international trend: certainly the Yanukovich government is set against doing so. However, even neglecting the issue of PSAs, it seems likely that the level of foreign investment under non-PSA arrangements (e.g. joint activity agreements) will

[84] IEA, *Ukraine Energy Policy Review* 2006, pp. 165–167; Liven, Oksana, "Bol'shie den'gi liubiat tishinu", *Energobiznes*, 14 March 2006; Liven, "Regal Petroleum lishili litsenzii", *Energobiznes*, 7 February 2006; Bream, Rebecca, "Regal Petroleum halts Ukraine gas output", *Financial Times*, February 16, 2006; press release of 12 December 2006 on Regal web site (www.regalpetroleum.com)

also remain limited, until some especially arbitrary aspects of Ukrainian legislation – and in particular the disconnect between exploration and production licences – are changed. The alternative to attracting foreign strategic investors is for Naftogaz itself to develop new production, but, as discussed above, it is hampered by its lack of financial resources.

4.9 Possibilities of diversifying supply

Discussions on Ukrainian energy strategy often touch on the possibilities of diversifying the supply of imported gas, and of Naftogaz participation in foreign production projects. In February 2006, in the immediate aftermath of the gas dispute with Russia, the issue was prioritized by President Yushchenko, who ordered the establishment of a special working group of the National Security Council. The group, headed by Deputy Prime Minister Anatolii Kinakh, was charged with "working on questions of the diversification of supply, and of supply routes, of natural gas". The *Energy Strategy*, published three months later, highlighted (1) the possibility of increasing imports from Turkmenistan and Kazakhstan, which began to be realised in 2006, and (2) the possibility of imports from Azerbaijan, Iran or Iraq.[85]

There are two types of difficulties to be overcome before imports from this latter group of countries become a realistic prospect. The first type is political and economic: Iran, which has vast undeveloped gas reserves, intends to export large volumes from about 2010, but will face obstacles, including sanctions, if its dispute with the US and other powers continues. It will have to overcome a poor track record as a reliable exporter. And even if Iran increases exports, the prospect of exporting to Ukraine will depend on the two sides reaching agreement on price. They have been discussing gas issues since 1998, and first signed a memorandum of understanding in 2003. But the question of price remains open. The second set of issues concern the transport of gas from the Caspian to Ukraine. The *Energy Strategy* emphasizes the prospect of transport via the Nabucco pipeline (Caspian–Turkey–Bulgaria–Romania–Hungary). From that pipeline the gas would reach Ukraine by (1) a disused pipeline from Lozinets, Bulgaria, to Ismail, Ukraine, which would be refurbished; or (2) being converted to LNG at Trabzon, Turkey, or Supsa, Georgia, and transported by ship to Odessa, Ukraine; or (3) being swapped for Russian gas at the Ukraine–Russia border. Another project to bring Caspian gas to Europe via Ukraine, which could also benefit Ukraine as an importer, is the Georgia–Ukraine–European Union (GUEU) pipeline, currently the subject of a pre-

[85] Starostin, Andrei, "SNBO naidet novye istochniki", *Delovaia Stolitsa*, 13 February 2006; *Energy Strategy*, pp. 68–69 and 72.

feasibility study by a US-based consortium, Pipeline Systems Engineering. It would require building a branch line from the existing Baku-Tbilisi-Erzurum pipeline and/or the future Nabucco pipeline.[86] All of these projects are still far from being launched, however.

The difficulties surrounding Naftogaz Ukrainy's plans to participate in foreign gas production are much more straightforward: the lack of investment capital. Naftogaz has been in discussion with oil and gas companies in Syria, Libya and the United Arab Emirates with a view to producing there, and the *Energy Strategy* sets out the aim of starting production in 2010 and raising it to 11.6 bcm by 2030.[87] However, none of these plans can move forward until Naftogaz's financial situation improves; at the time of writing it continues to deteriorate. Moreover, each of the countries mentioned have a choice of partners, and it remains for Naftogaz to convince them to prioritize their relationship with Ukraine, which has no evident competitive advantages for them.

[86] "Mirazhy v iranskoi pustyne", *Energobiznes*, 11 August 2003; Opimakh, Roman, "Perspektivy Iranskogo gaza pod ugrozoi", *Zerkalo Nedeli*, 17 June 2006; "Proposed Caspian pipeline offers eastern Europe alternative to Russian supplies", *Gas Matters*, February 2007, pp. 28–29.

[87] *Energy Strategy*, p. 72; "Naftogaz Ukrainy contemplating major projects", Ukrinform, 14 February 2005.

5. GAS CONSUMPTION AND THE DOMESTIC GAS MARKET

Annual consumption of gas in Ukraine is 25–30 bcm by industry; 6–8 bcm by power companies; 12–14 bcm by district heating companies; 2–3 bcm by public sector organizations (schools, hospitals etc); and 20 bcm by residential customers. Another 7–8 bcm is consumed by technical use, almost all by the gas transport company Ukrtransgaz, a subsidiary of Naftogaz Ukrainy. Between 2 bcm and 6 bcm is exported to central Europe. There are problems with statistics, similar to those with statistics for import and export volumes (Appendix 1). The most reliable statistics are displayed in Table 5.1.

Table 5.1. Consumption of gas during 2003–2006 (bcm)

	2003	2004	2005	2006
Consumers	**68.7**	**68.1**	**68.9**	**65.9**
Industry (excluding power)	27.3	28.2	29.0	24.3
Including metals industry	9.9	9.9	9.6	9.3
Chemicals industry	8.5	8.3	8.8	–[a]
Other industrial users	9.0	10.0	10.7	–[a]
Power industry	7.0	6.7	5.7	8.6
Including minimum of fuel and energy	7.1	6.6	5.7	–[a]
Via local government[b]	34.3	33.1	34.1	34.2
Including district heating companies	14.4	13.5	13.7	12.8
Technical use:	**7.6**	**7.6**	**7.4**	**8.1**
Ukrtransgaz	6.6	6.8	6.6	6.0
Ukrgazdobycha	0.4	0.4	0.4	0.4
Ukrnafta	0.4	0.4	0.4	0.4
Chernomorneftegaz	0	0	0	0
Regional gas co's and others	–	–	–	1.3
Total consumption in Ukraine	**76.3**	**75.8**	**76.4**	**73.9**

[a]The statistics for 2006 did not give separate amounts for the chemicals industry, the ministry of fuel and energy, etc.
[b]These volumes are accounted for via the public sector, and are categorized in statistics as "volumes for the regional state administrations" (fondy oblgosadministratsii, or fondy OGA). This category includes (1) residential consumers; (2) all state-financed organizations (i.e. municipal, schools, hospitals, etc.); and (3) district heating companies. In these statistics, separate figures are given only for (3).
Source: *Energobiznes*, based on information from the fuel and energy ministry

5.1 The domestic market in 2003–2005

The structure of the domestic market is changing, due to the introduction of Rosukrenergo as the sole importer, and the entry into the wholesale market of Ukrgaz-Energo. This is illustrated in Figure 1. Itera lost its transit contract and consequently its market share at the beginning of 2003. From then, until 2005, the structure of the domestic market was as follows. Naftogaz Ukrainy's gas balance comprised imported gas from central Asia and Russia (55–60 bcm), and gas produced in Ukraine by its own subsidiaries (18–19 bcm) and by independent producers (1–2 bcm). About five-

sixths of this gas was then marketed by the wholesale trader Gaz Ukrainy, a Naftogaz subsidiary, which sold it (1) directly to industry at unregulated prices ('unregulated' is a misnomer here, as there was and is a ceiling price); (2) to power generation companies, on the same basis; (3) to customers in the regulated market (i.e. residential customers, public sector organizations and some small-scale industrial enterprises) with regional distributors (*oblgazy*), which it partly owns, transporting and supplying the gas; (4) to district heating companies (also in the regulated market); and (5) to traders, who supplied about 5 bcm/year to industry. Market regulations assigned gas from different sources to different categories of customers at different prices: under a government decree, from 2002 Naftogaz Ukrainy supplied residential customers and state-controlled organizations with domestically produced gas, district heating companies with Russian gas received in lieu of transit fees and other industries with imported (mainly Turkmen) gas.

The one-sixth of the wholesale market not supplied by Gaz Ukrainy was shared, up to the end of 2005, by three other types of wholesale traders: (1) traders who supplied gas to industrial customers, having been licensed to do so by NERC; (2) Naftogaz's production subsidiaries Chernomorneftegaz, which traditionally marketed all gas wholesale in Crimea, where it is based, and to a lesser extent Ukrgazvydobuvannya and Ukrnafta; and (3) Gaz Teplo, another Naftogaz subsidiary that markets mainly to district heating companies. (Gaz Ukrainy's dominant position on the wholesale market up to 2005 can be seen by comparing the volumes it supplied to customers (58.54 bcm in 2005) with the fuel and energy ministry's overall consumption figures (68.90 bcm in 2005). See Table A2.1 in Appendix 2.)

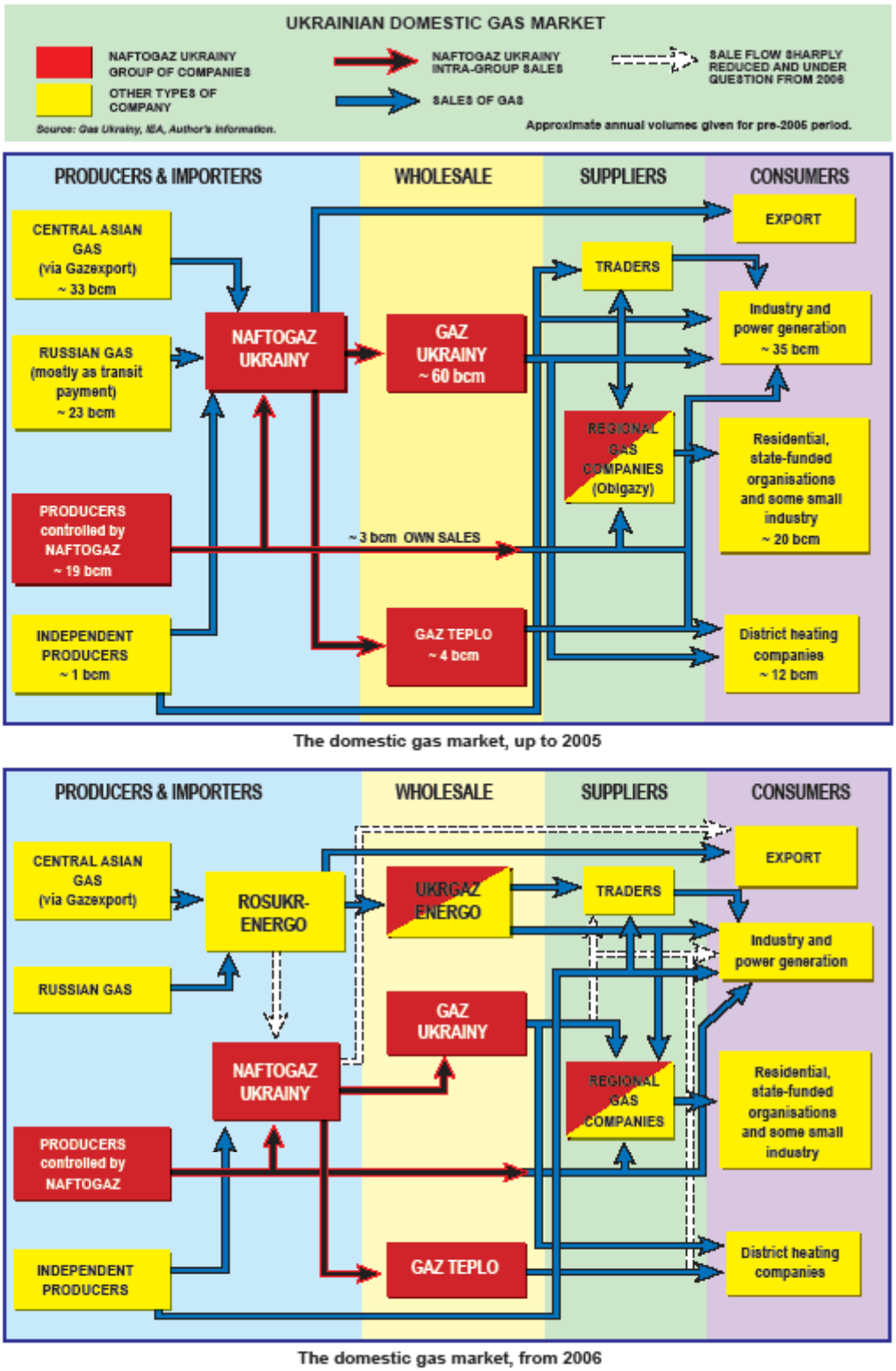
5.2 The domestic market from 2006

The agreement of 4 January 2006 stipulated (1) that Rosukrenergo would take over from Naftogaz as importer of central Asian and Russian gas, partly in 2006 and completely from 2007, and (2) that Ukrgaz-Energo would market 34 bcm of gas in 2006 and 58 bcm/year from 2007, thus changing substantially the roles of Naftogaz and Gaz Ukrainy. In the first quarter of 2006, Rosukrenergo imported volumes and sold them to Naftogaz, but from March 2006, the sales were made through Ukrgaz-Energo. At first, notwithstanding the 4 January agreement, NERC refused to license Ukrgaz-Energo to supply more than 5 bcm of gas/year to the unregulated market. Ukrgaz-Energo challenged this decision in court, and in June 2006 the limit was revised upwards to 32 bcm/year. In the industrial (unregulated) market, Ukrgaz-Energo had by the end of 2006 become the main wholesale supplier; its strategy has been to conclude contracts with end users where possible, minimizing sales to Gaz Ukrainy and to traders. In the (regulated) market for residential customers,

state organizations and district heating companies, Naftogaz has bought Ukrainian-produced gas from its own production subsidiaries as well as smaller volumes of imported gas from Ukrgaz-Energo to supply customers via the regional gas companies.

Naftogaz and its subsidiary Gaz Ukrainy will play, at best, a minimal role in supplying gas to industry in future; this market is likely to be dominated by Ukrgaz-Energo and the gas traders. Naftogaz operated a cross-subsidy until 2005, which involved the partial funding of sales of cheap gas to residential customers and district heating companies from the margin earned on sales of cheap Turkmen gas to industrial customers. The market has been divided; at one end, Ukrgaz-Energo sells Turkmen gas, now more expensive, to industrial customers, and at the other, Naftogaz sells cheaper Ukrainian-produced gas to residential customers. In the middle, Naftogaz also sells central Asian gas to district heating companies but, as tariffs rise and this business ceases to be loss-making, that could also change. The heavily-regulated and expensive business of selling gas to residential customers, currently in the hands of Gaz Ukrainy, is at this stage unattractive to Ukrgaz-Energo or other market participants working on commercial principles. However, the transportation and supply of that gas, which is the business of the regional gas companies, may become more attractive in the future (see Section 5.3, Regulation of prices, tariffs and trading).

Figure 1. The Ukrainian Domestic Gas Market



Source: Gaz Ukrainy, IEA

Sales, transportation and supply functions are carried out in three different ways. (1) Some of the largest industrial users have their own pipelines connected directly to the high-pressure transmission pipelines owned by Ukrtransgaz; they pay for transport on those pipelines only. Ukrgaz-Energo, Gaz Ukrainy or traders, including traders linked to related industrial groups, are the sellers and suppliers. (2) Other medium and large industrial users receive gas via low-pressure pipelines, which are all owned by the regional gas distribution companies. They pay a tariff covering transport on both high-pressure lines and distribution lines. The gas is sold and supplied by Ukrgaz-Energo, Gaz Ukrainy or traders in the same way. (3) Small industry, households and public sector organizations receive gas via low-pressure pipelines. They pay a transport tariff covering transport on both high-pressure transmission lines and distribution lines. The seller is a trader, almost always Gaz Ukrainy in this segment of the market; the regional gas company acts both as transporter and supplier of the gas.[88]

Gas traders that supply industrial customers buy gas from Ukrgaz-Energo, Gaz Ukrainy or from Ukrainian producers, either under contracts or (small volumes) at auction. The principal licensing requirements for traders are to demonstrate that they are fit and proper companies, and that they can establish a security reserve of gas in storage. They generally sell on terms of 20–30% prepayment, with one month's deferred payment and with a margin of around 5 uah/mcm ($1/mcm). Traders generally open credit lines with banks to finance their activity, using as security their reserve gas volumes in storage. Volumes for sale are agreed and adjusted between producers, traders and customers, and then reported each month to the dispatch service of Ukrtransgaz, which provides for transportation along high-pressure transmission pipelines.[89]

5.3 Regulation of prices, tariffs and trading

Ukraine's markets in gas, electricity and all other fuels, excluding petroleum and related products, have been regulated by the National Energy Regulatory Commission (NERC). In the gas sector, up until April 2007, NERC regulates tariffs for: (1) the maximum retail gas price for the regulated sector (residential consumers, state-financed organizations and district heating companies); (2) tariffs for gas transportation by high-pressure transmission pipelines and gas storage tariffs (for Ukrainian companies only, and not for transit through Ukraine to other destinations); (3) tariffs for transportation of gas by distribution networks and its supply; and (4) the maximum price for

[88] Author interviews; Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 84–85; Concorde Capital, *Gas Distribution Companies*, p. 10.

[89] Author interviews; NERC web site.

industrial customers.[90] In April 2007, the government ruled that prices would in future be set by government decree, instead of by NERC. Shortly after this, charges were imposed on industrial customers for pumping gas into storage and storing gas. Some large industrial customers protested vigorously but failed in their attempt to get this charge lifted. Prices paid by industrial customers until April 2007 comprise the elements listed in Table 5.2.

Table 5.2. Breakdown of gas price paid by industrial customers (prices current in November 2006)

Item	Amount per mcm (uah)	$ conversion	Paid to
Wholesale gas price (including 20% VAT)	657.60	131.52	Trader
2% investment surcharge	13.15	2.70	Trader
Transportation tariff (including transport on main pipelines and branch networks, plus 20% VAT)	57.00	11.40	Regional gas co/ Ukrtransgaz
Average supply tariff	18.00	3.60	Supplier (may be trader or regional gas co.)

Source: author interviews; NERC decree no. 176 of 16 February 2006.

The price structure for residential customers was changed slightly by the government in October 2006. From that date, those residents who do not use gas for heating pay on average 339 uah/mcm ($67.80/mcm) including all fees and charges; those who use it for heating pay on average 414 uah/mcm ($82.80/mcm). There is a discount of around 20 uah/mcm ($4/mcm) for those who have installed meters. In response to public concern about price increases, a further set of complicated differentials was introduced in January 2007, partly as a means of softening the effect of increases on less affluent sections of the population.[91] Prices comprise the elements listed in Table 5.3.

Table 5.3. Breakdown of gas price paid by residential customers, January 2007

Item	Amount per mcm (uah)	$ conversion
Price of natural gas (excl. VAT)	140.00	28.00
VAT 20%	28.00	5.60
Transport on main pipelines (inc. VAT)	38.34	7.67
Transport on branch pipelines (inc. VAT)	45.66	9.13
Supply	24.60	4.92
Fee for pipeline repair	62.40	12.48
(Surcharge for households with heating)	(75.00)	(15)

Source: Uriadovii kur'er, November 2006

[90] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 89, with reference to the Resolution of the Cabinet of Ministers no. 1548 of 25.12.96, as amended.

[91] Decree of the Cabinet of Ministers no. 1420 of 11 October 2006; NERC decree no. 1344 of 19 October 2006, and decree no. 1345 of 19 October 2006; Levitskii, Konstantin, "Bolee 160 dollarov za tysachi kubikov", *Zerkalo Nedeli*, 20 January 2007.

5.4 Price trends

Prices in the industrial market, while described as unregulated, are limited by a ceiling set by NERC. Prices did not change significantly between 2001 and 2004, but have risen steadily since then to a point which has been set at 548 uah/mcm ($109.60/mcm) (net of VAT) for 2007. This is roughly 55% of the German price of $200 netted back to the Russian–Ukrainian border. The steady increase in prices in the industrial market can be seen from the statistics displayed in Table 5.4.

Table 5.4. Market prices for industrial customers (net of VAT) 2003–2006 ($)

	Prices reported to author by traders	Prices reported by Ukrgaz-Energo	Prices paid at auction (agricultural bourse)	Prices reported by Gaz-Ukrainy
2003	52–53	–	–	n/a
2004	65–66	–	–	47
2005	76–77	–	73 (Nov)	64
2006 Jan–Feb	93–94	–	–	85
2006 March	101–102	106	105	102–103
2006 June	–	107–108	–	107–108

Source: Gaz Ukrainy; Ukrgaz-Energo

Prices in the regulated market moved upwards in the mid 1990s, but remained constant from April 1999 to April 2006.[92] After this prolonged period of price stability, the Cabinet of Ministers in 2006 authorized substantial increases in tariffs: by 25% on 1 May 2006, by 80% on 1 July 2006, and by a further 2–15% from 1 January 2007. Increases in ceiling prices for both the regulated market and industrial customers in 2006–07 are as displayed in Table 5.5.

Table 5.5. Natural gas tariffs (uah/mcm) set by the NERC

Consumer category	Up to 01.05.06	From 01.05.06	From 01.07.06	From 01.01.06
Ceiling for wholesale price of gas residential and district heating companies	185	231	414	423.8
Public sector organizations	288	360	648	737.3
District heating enterprises	304.5	383.4	686.0	686.0
Ceiling price for industrial customers, including VAT and transportation but net of 2% investment surcharge	422.1	714.6	714.6	720.0

Source: NERC web site, decree no. 739 of 8.6.06, decree no. 738 of 8.6.06 and decree no. 400 of 30.3.06 (for residents' prices); decree no. 176 of 16.2.06 (ceiling price for industrial customers); Ukroil.com.ua, 9 February 2007.

From an economic point of view, the price increases in 2006 were justified by the government's strategic aim of bringing Ukrainian prices into line with the netback level from European prices for

[92] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 17; Eremenko, Alla, "Otkuda u Naftogaza dolgy", *Zerkalo Nedeli*, 10 June 2006.

Russian gas. The difficult issue of undertaking such increases had simply been avoided by government during President Kuchma's second term. Nevertheless, when they finally happened, they caused considerable unease among ordinary Ukrainians, which in turn formed the background to a curious political conflict over the tariffs. In February 2006, parliament passed a law placing a moratorium on the increases; President Viktor Yushchenko vetoed it, condemning it as cheap populism. In September, parliament overrode the presidential veto, with members of the governing Party of Regions joining socialists, communists and former premier Yulia Timoshenko's bloc against Yushchenko. Parliamentary speaker Aleksandr Moroz came to Yushchenko's rescue and refused to sign the law; he was supported by ministers who said it was untenable. Finally, a parliamentary commission was appointed to re-examine the tariffs, and delay the increases for less affluent groups of residential customers.[93]

5.5 Wholesale and industrial market developments

In the first quarter of 2006, the industrial market was supplied, as previously, by Naftogaz Ukrainy. Ukrgaz-Energo began operations in March 2006. By April 2006 it was supplying a large group of industrial customers and had tied up 17 bcm/year worth of contracts with such customers. In April 2006, Rosukrenergo stopped selling gas to Naftogaz Ukrainy, which had built up $690 million worth of debt to Rosukrenergo in the first quarter, and switched to selling only to Ukrgaz-Energo; Ukrgaz-Energo also refused to sell volumes to Naftogaz in April and May 2006, preferring to pump gas into storage. Once it had overcome in court the limits set on its supply volumes by NERC (see above), Ukrgaz-Energo proceeded according to plan to a dominant position in the wholesale and industrial markets.[94]

Ukrgaz-Energo also negotiated with the gas traders, who saw in the replacement of Gaz Ukrainy as the near-monopoly wholesale seller of gas an opportunity to revive their business. From 2002, the traders had been largely excluded from the market; in 2005 they collectively supplied only about 4 bcm of gas. Most of this was produced in Ukraine (1) by joint ventures with the participation of Naftogaz Ukrainy or Ukrnafta whose main product is oil, and in which the state is the majority owner (the Privat group of Dnipropetrovsk is the largest minority shareholder and controls

[93] "Ukraine concerned at Russia-Germany energy alliance", *Gas Matters*, October 2006, pp. 40–41; Anastasieva, Liudmila, "Ossenie igry", *Energobiznes*, 10 October 2006.

[94] Ukrgaz-Energo, "Company Highlights", distributed at a press briefing in London, 24 May; Fursa, Sergei, "Strategiia i taktika gazovykh batalii", *Kompanion*, 18–24 August 2006; Kachanov, Vitalii, "Gazovy optimizm", *Energobiznes*, 19 June 2006; "Ukrgazenergo takes off while Naftogaz Ukrainy stares failure in the face", *Gas Matters*, June 2006, pp. 17–20.

management), and (2) by joint ventures with foreign participation, the largest of which is the JKX Group. With the appearance of Ukrgaz-Energo on the market in 2006, the traders saw a chance to regain, at least partly, their position as intermediaries between the wholesale seller and industrial customers. The president of the Association of Gas Traders, Roman Storozhev, called for greater market liberalization, for guaranteed prices for traders and for the revival of traders' purchases directly from Russian producers. The market is fairly opaque, but available statistics suggest that by March 2006, traders and entities linked to industrial consumers were already acting as suppliers of nearly half the gas used by industry.[95] There are indications that the traders' market share could rise further. At the end of May 2006, the Association of Gas Traders announced that Ukrgaz-Energo was contracted to sell 4 bcm of gas in 2006 through association members. Foreign companies working in Ukraine also see the domestic market as potentially profitable; in August 2006, Shell signed an agreement to buy 0.25 bcm of gas from JKX, with a view to gaining experience in the domestic market.[96]

The largest industrial groups sought to protect their position as gas consumers partly by diversifying purchases (between Ukrgaz-Energo, Gaz Ukrainy, regional gas companies and sometimes traders), but also by themselves acquiring licences to supply gas. In July 2006, Metinvest, the metals arm of the holding company SKM which contains the assets controlled by Ukraine's richest 'oligarch', Rinat Akhmetov, acquired a supply licence for 2 bcm of gas. Metinvest's subsidiaries consume about 2.2 bcm of gas, i.e. nearly 8% of total industrial consumption. Information made public by Metinvest shows that iron ore processing plants which it owns bought gas during January–April 2006 from Gaz Ukrainy, from traders and from regional gas companies, and in May–September 2006 exclusively from Ukrgaz-Energo. Metinvest's general director stated that from 2007 the group intends to buy gas supplies centrally, using the supply licence, and resell to subsidiaries.[97]

The potential for conflicts between Ukrgaz-Energo and traders linked to business groups was demonstrated in November 2006, when Energoalians and another smaller trader, Indeko, both linked to the Privat group of Dnipropetrovsk, claimed that Ukrgaz-Energo had refused to deliver

[95] Statistics for sales of gas to industry collected by the fuel and energy ministry in March 2006, the latest available at the time of writing, show that of a total of 2.996 bcm, Gaz Ukrainy and other Naftogaz subsidiaries supplied 1.536 bcm and other entities supplied 1.925 bcm. Among the largest non-Naftogaz suppliers were the traders Gaztreid (0.135 bcm), Slavia (0.102 bcm), Energoalians (0.093 bcm) and the steel company Zaporozhstal (0.063 bcm). *Energobiznes*, 15 May 2006.

[96] Liven, Oksana, "Gazotreidery zashevililis'", *Energobiznes*, 28 February 2005; Starostin, Andrei, "Gazotreidery zhazhdut revansha", *Vlast' i deneg*, March 2006; "Assotsiatsiia gazovykh treiderov dogovorilas' o pokupke 4 mlrd. kub. m gaza", Obkom.net.ua, 24 May 2006; Liven, Oksana, "Gazotreidery dogovorilis' s Ukrgaz-Energo", *Energobiznes*, 29 May 2006; IEA, *Ukraine Energy Policy Review* 2006, pp. 180 and 183–184.

[97] Liuta, Ganna, "Nu zachem popu garmon'", *Zerkalo Nedeli*, 7 October 2006.

volumes that they claimed were contracted for November. Ukrgaz-Energo replied by publicly urging the two traders to pump volumes they had in storage, arguing that these were displacing volumes sold to Naftogaz at regulated prices.[98] Whatever the rights and wrongs of this particular conflict, it underlined the whip hand that Ukraine's new near-monopoly supplier has in the market.

This dispute between Ukrgaz-Energo and the Privat group took place against the background of long-running efforts by Privat's enemies in government to undermine its position at Ukrnafta, of which it owns 42% and the management of which it controls. One area in which this battle has been fought is that of domestic gas sales. Legislation requires both Ukrnafta and Chernomorneftegaz, as majority state-owned companies, to offer right of first refusal for gas produced domestically to the regulated (residential) sector, via Naftogaz Ukrainy. However, gas from both companies has in recent years been sold to industrial consumers. During 2006, Naftogaz set the price of its purchases at $63/mcm and Ukrnafta refused to sell. In October 2006 the fuel and energy minister, Yuri Boiko, announced measures to stop Ukrnafta and Chernomorneftegaz selling gas on the industrial market. A legal dispute began, in which the general prosecutor intervened on Naftogaz's side, which was unresolved in early 2007.[99]

In October 2006, a business journal listed the largest licensed suppliers as displayed in Table 5.6:

Table 5.6. Major holders of supply licences, 2006

	Maximum volume (bcm)	Date licence awarded (2006)
Ukrgaz-Energo	32.00	March
Metinvest Holding, Donetsk (SKM group)	2.00	August
Industrial Union of Donbass	1.25	June
Shell Energy Ukraine Ltd	0.40	March
Energoalians, Dnipropetrovsk	0.30	September
Energoinvest, Kiev	0.08	September
Gazservis trading house	0.06	September
Poltavskii GZK	0.005	September

Source: *Kontrakty*, 9 October 2006

A final issue in the wholesale market is that of VAT payments on imported gas. Until the end of 2005, industry, the power generation sector and district heating companies all received gas free of VAT. Gas imports from Russia and Turkmenistan, made under intergovernmental agreements, were

[98] Zaika, Andrei, "Gazovaia zhila Kolomoiskogo", *Delo*, 10 November 2006.

[99] Alfa Capital, *Ukrnafta: Rough Diamond in the Ukrainian Crown*, 29 June 2006, p. 26; Troika Dialog, *Ukraine Monthly Strategy*, April 2007, p. 23; "'Ukrnafta' prodavala gaz ne naseleniiu, a promyshlennosti", *Zerkalo Nedeli*, 11 November 2006; "Goskompanii budut prodavat' dobytyi v Ukraine gaz tol'ko naseleniiu", Ukroil.com.ua, 5 October 2006.

free of VAT; only domestically-produced gas sold to residential customers and public sector organizations was subject to VAT. In January 2006, gas was imported without any intergovernmental agreement. (The agreement of 4 January 2006 was at corporate level, between Gazprom, Naftogaz and Rosukrenergo.) This has increased prices for industrial consumers and exacerbated non-payment problems.[100]

5.6 Regulated market developments and regional gas companies

In the regulated market sector, Ukrainian-produced gas is sold to residential customers and public sector organizations by Gaz Ukrainy and Chernomorneftegaz (much smaller volumes, in Crimea only). Gaz Ukrainy, whose share of this market is more than 90% (i.e. all of Ukraine except Crimea), provides gas to 12.05 million households, of which about 7 million are in blocks of flats and the remainder are individual properties. The company states that 5.4 million households use gas for cooking and about 1.5 million for boilers to heat water, where there is no centrally-provided hot water. Along with about 17 bcm/year of gas supplied to residential customers, about 1 bcm/year is supplied to public sector organizations.[101] There is also a significant market for bottled liquefied petroleum gas products (LPG), which is supplied to about 5.5 million households by regional gas companies.

The other major component of the regulated market, accounting for about 13 bcm/year, is the district heating sector. This comprises: about 900 local heat supply companies (*teplokomunenergos*) that operate heat plants and district heating networks and supply heat to final residential and industrial consumers; larger combined heat and power plants owned by the public sector *Energeticheskaia kompaniia Ukrainy* (Energy Company of Ukraine); and smaller cogeneration plants owned by regional electricity distribution companies and some industrial enterprises. The sector includes about 100,000 industrial and municipal heat-only boilers, which produce nearly 75% of total heat volumes and 450 combined heat and power plants (about half of which are in industry). Although the market share of the heat supply companies has fallen in recent years, they are still dominant.[102]

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[100] IEA, *Ukraine Energy Policy Review*, 2006, p. 184.

[101] Gaz Ukrainy, company presentation 2006; Naftogaz Ukrainy, *Offering Circular*, 2004, p. 84.

[102] *Energy Strategy*, pp. 28–29; IEA, *Ukraine Energy Policy Review*, 2006, pp. 307–313.

An essential part is played in the regulated market by 45 regional gas companies. Their functions are (1) to transport gas along local (low-pressure) pipelines (which accounts for about half of their revenue); (2) to supply gas to consumers; (3) to supply LPG products to households and LPG fuel stations; and (4) to service gas equipment including meters, construct and repair pipelines and provide other related services.[103] Most pipelines are leased by the state to the companies; some are owned by the companies. Up until 1997 the regional gas companies were wholly owned by Naftogaz Ukrainy's predecessor, Ukrgaz, after which they were partly privatized. As of early 2007, Naftogaz owns majority stakes in 15 of them and minority stakes in the rest. The regional gas companies have been seen as attractive long-term investments, due to the potential for increases in gas prices and transport tariffs, cost savings and for developing auxiliary businesses (e.g. production of polyethylene gas pipes or sales of LPG products). As a result, Russian and Ukrainian business groups have built up shares in the regional gas companies in 2004–2006.

The regional gas companies collect revenue from retail customers under the following complicated system, which resembles that used by NERC for local power distribution companies. The regional gas company collects from the customer the price of the gas and transport (along both main pipelines and local pipelines) net of all taxes apart from VAT, plus the fees for supply and pipeline repair and other supplements e.g. for heating and households without meters. This sum is placed in distribution accounts and divided between the wholesale gas supplier (i.e. usually Gaz Ukrainy, Ukrgaz-Energo or Chernomorneftegaz) which is paid for the gas, the high-pressure transmission pipeline transit company (Ukrtransgaz or Chernomorneftegaz) which is paid for main pipeline transport and the regional gas company which is paid for local pipeline transport and supply, etc.[104] The regional gas companies' main sources of revenue are the gas supply tariffs and their share of the transport tariffs. These tariffs are set by NERC; since they cut into the price of gas, increases have been opposed by Naftogaz.

Naftogaz has periodically introduced schemes to improve payment discipline. In the district heating sector, where levels of non-payment are higher on average and legislation prevents gas suppliers cutting off non-paying customers during cold weather, Naftogaz licensed its subsidiary Gaz-Teplo to supply gas at non-regulated tariffs in 2004. Gaz-Teplo then undertook a scheme in ten regions under which it sold the gas to the heating companies, supplied the heat to customers and collected the payments, thus depriving the heating companies of control over the cash flow and increasing

[103] Concorde Capital, *Gas Distribution Companies*, 2006, pp. 5–18

[104] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 85; Concorde Capital, *Gas Distribution Companies*, 2006, pp. 5–18.

revenues. This acted as a lever to improve payment discipline in the district heating sector.[105] However, the non-payment worsened in 2006 because of price increases. Although the regional gas companies slightly improved their rate of settlement to Naftogaz (85% compared to 84% in 2005), the volume of debt in 2006, at 459 million uah ($91.8 million), was 1.5 times greater than in 2005.

However, in early 2007, the government introduced wide-ranging changes in the gas supply and revenue collection arrangements that impacted unfavourably on many regional gas companies and could force their non-Naftogaz shareholders to sell up. An impetus for the changes was non-payment by consumers, which has increased rapidly in 2006–2007 as a result of higher gas prices. The new rules are also aimed at changing ownership structures, however. They (1) place additional responsibilities on regional gas companies for dealing with non-payers; (2) require regional companies to supplement their gas balances with expensive imported volumes from Ukrgaz-Energo; (3) limit the regional companies' capacity to make additional month-by-month purchases, effectively requiring them to store extra volumes; and (4) require that revenue from some industrial customers, which was previously collected by the regional companies (who then passed the gas sale price on to the wholesale seller) be handled by Ukrgaz-Energo. This provision directs additional cash flows to Ukrgaz-Energo.

Naftogaz will clearly benefit from the new arrangements, firstly by taking the low-pressure pipelines back from the regional companies that lease or own them. The subsidiary Ukrgazset' has been created to manage these, and in April the NERC issued Ukrgazset' a licence to transport gas in Chernivtsy region, setting a precedent that will allow Naftogaz to displace those regional companies with which it does not reach agreement. Industry observers presume that the new arrangements will also benefit Ukrgaz-Energo. It will become a creditor of many regional companies, and thereby increase its chances of taking ownership stakes.[106]

The groups who have been accumulating shares in regional gas companies (and who stand to lose as a result of these measures) include both Russian and Ukrainian groups active in the energy sector. Significantly, KES Holding of Russia, a major energy industry player controlled by Viktor

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[105] Concorde Capital, *Gas Distribution Companies*, 2006, pp. 19-26.

[106] Kachanov, Vitalii, "Novyi poriadok", *Energobiznes*, 13 February 2007; Bernatskii, Vitalii, "Gazovyi pas'ians", *Energobiznes*, 20 February 2007; Eremenko, Alla, "Izmenenie pravil igry kak sposob peredela sobstvennosti na rynke gaza Ukrainy", *Zerkalo Nedeli*, 27 January 2007; "Popali v seti", *Delovaia stolitsa*, 26 February 2007; Liannoi, Igor and Davidenko, Vitalli, "Za 'Cherkassygaz' voevali sutki", *Delo*, 2 April 2007; Gavrish, Oleg and Grib, Natalia, "Set' raz otrezh'", *Kommersant Ukrainy*, 23 April 2007. See also Bakhmatiuk, Oleg, "Eshche raz o skrytoi privatizatsii gazotransportnoi sistemy Ukrainy", *Zerkalo Nedeli*, 3 March 2007. It has been widely reported elsewhere that Bakhmatiuk is among the investors who stands to lose heavily from the new arrangements.

Vekselberg (the main owner of Sual aluminium company) acquired control of four regional gas companies in 2006 and the Dmitry Firtash group confirmed its interest in entering the sector. The potential for corporate conflict was highlighted in December 2006, when Naftogaz Ukrainy began criminal proceedings against managers in six regional gas companies controlled by the businessman-politician Igor Eremeev, and withdrew their licence to supply and distribute gas. The six companies had earlier been valued for possible sale to Rosukrenergo or associated entities; Eremeev claimed his refusal to sell had triggered the regulatory action, an accusation that Naftogaz emphatically denied.[107]

Notable business groups owning regional gas company assets are listed in Table 5.7.

Table 5.7. Business groups that own stakes in regional gas companies

Group	Main owners	Reported interests in regional gas companies
Continuum	Igor Eremeev	Majority stakes in Chernigovgaz, Volyngaz, Chernivtsygaz and Zakarpatgaz; 20–50% stakes in Lvivgaz, Ivano-Frankovskgaz and Rovnogaz
Gazeks (Russia & Rukom, Russia)	KES Holding (V. Vekselberg) Mikhail Abyzov	Controlling stakes in Kharkovgaz, Dneprogaz, Donetskgorgaz and Kryvorozhgas
Gaztek	n/a	Controlling stakes in Zhitomirgaz and Khmelnitskgaz, and 20-50% stakes in DnipropetrovskGaz, Ternopilgaz, Rivnegaz, Zaporizhgaz and Nikolaevgaz
Sodruzhestvo	n/a	A majority stake in Khersonoblgaz, a 20–50% stake in Kremenchuggaz, and other stakes
Tekhnovo	Nikolai Shkribliak and Bogdan Gubsky	Majority stakes in Luganskgaz and Sumyoblgaz

Source: Gaztek web site; press reports

Future ownership arrangements will depend largely on the implementation of, and reaction to, the changes proposed in January 2007.

5.7 Payment issues

The gas sector, along with other public services, was affected by substantial non-payment problems during the 1990s. This was in the context of economic depression, high levels of inter-enterprise and tax debt, late payment of wages and a significant 'grey' economy. The problem receded in the early 2000s, and in 2004–2005 many organizations paid more than 100% of their gas bills (i.e. paid

[107] On Naftogaz/Eremeev conflict, Naftogaz Ukrainy, "Roz'iasnennia shchodo zaiav predstavnikyv oblasnikh pidpriemstv z gazopostachannia ta gazifikatsii", 8 December 2006; Zaika, Andrei, "Na Igora Eremeeva zabrosila svet'", *Delo*, 11 December 2006; Lakushkin, Yuri and Drabchuk, Vladimir, "Firtash skupit ukrainskie oblgazy", *Delo*, 15 August 2006; "Eremeev prodast svoi gazovye aktivy Rosukrenergo", *Korrespondent*, 9 September 2006.

for gas and cleared some of their debt). As tariffs were increased in 2006, the non-payment problem returned. Its role in the conflict over regional gas companies' activities has been discussed above. Table 5.8 shows that the problem of non-payment is heavily concentrated in the district heating sector. Together, district heating companies and residential customers accounted for almost two-thirds of all debts to Naftogaz Ukrainy for gas delivered (including a portion of outstanding old debts). The last column is a rough calculation, which shows that the only substantial build-up of debt in 2006 was from heating companies (who together owed more than the cost of over six months' worth of their gas supplies) and from residential customers (who together owed more than the cost of three months' worth of gas supplies).

Table 5.8. Debts to Naftogaz Ukrainy at 1.10.2006

	Debt (m uah)	Debt (% of total)	Supply, bcm (9 months of 2006)	Cost of gas (m uah) (9 months of 2006)	Debt as months' supply[a]
Via regional government, including:	**2333.4**	**64**	**20.85**	**3992.7**	**5.3**
Residential	660.6		12.99	1646.6	3.6
Public sector organizations	11.0		0.73	164.6	0.6
District heating sector	1661.8		7.14	2181.6	6.8
Industry and power supply, including:	**751.2**	**21**	**11.10**	**5919.4**	**1.1**
Industry	385.0		4.74	2714.8	1.3
Other municipal[b]	35.5		0.24	135.3	2.4
Power supply industry	314.1		3.32	1650.9	1.7
Other users	16.4		2.80	1418.3	0.2
Long-standing debts, including:	**570.3**	**15**			
Under government decision of 10.12.98	22.7				
Gas traders for 1999[c]	234.5				
Gas traders for 2000[c]	223.8				
Other users 2001–2005	89.1				
Total	**3654.9**	**100**			

[a]Author's calculation (the debt divided by *x*, *x* being the cost of gas for the first 9 months of 2006, divided by 9).
[b]This small quantity was counted separately as cost-accounting municipal/local (*khozrashchetny kombyt*).
[c]A separate figure was given for Torgovy Dom trading house, but this has been included under Gas traders.
Source: *Energobiznes*, based on official statistics

In the autumn of 2006, Naftogaz Ukrainy announced that it would cut off non-payers and began to do so before the winter set in, achieving some improvement in payment levels. The progress made in improving payment discipline in the district heating sector appears to have been on account of the work done by Gaz-Teplo (see above). Efforts to improve payment in the residential sector are focused on installing meters, which should also reduce consumption. Gaz Ukrainy states that by

2004, 4.4 million households had been fitted with gas meters (i.e. about 38% of the total of 11.4 million household consumers). A further 643,600 meters were fitted in 2004 and 418,200 more in 2005.[108] There was no reduction in gas consumption in the regulated sector after the 2006 price increases; future consumption levels will depend both on price levels and on market reform.

5.8 Changes in structure of the industry 2006–2007

The political changes in Ukraine as a result of the Orange revolution and the changes in the market outlined above have caused changes to the corporate structure of the gas industry. The main change, discussed previously, is in the function of Naftogaz Ukrainy and the increased importance of Rosukrenergo and Ukrgaz-Energo (of which Naftogaz owns 50%). Naftogaz has lost its function as an importer of gas to Ukraine. Domestically, it has lost the unregulated market to Ukrgaz-Energo. Naftogaz has accumulated considerable debts to Rosukrenergo, Ukrgaz-Energo and foreign banks, largely as a result of increased import prices. Prime Minister Yanukovich has said that Naftogaz's total losses for 2006 may amount to $1.5 billion. A large part of this will comprise debts for gas deliveries by Ukrgaz-Energo and Rosukrenergo, which stood at $320 million and $381 million respectively in July 2006. In April 2006, the ratings agency Fitch downgraded Naftogaz's Issuer Default Rating (IDR) and senior unsecured ratings to B+ from BB–. In October 2006, spreads on Naftogaz's eurobonds widened, indicating market concern about its financial position.[109] In November 2006, Naftogaz presented plans for development to the banks, based on its remaining areas of business: (1) the transit business, from which it receives substantial revenue, and in which it hopes to start a major investment programme; (2) domestic gas sales, which, given the level of tariff increases proposed by government, should be profitable in 2007; and (3) domestic gas production.

The political changes in Ukraine have also led to a change of senior personnel at both the fuel and energy ministry and at Naftogaz Ukrainy. The first major change came shortly after the Orange revolution. Yulia Timoshenko, appointed prime minister in February 2005, and Ivan Plachkov, the fuel and energy minister in her government, announced the dismissal of Yuri Boiko in April 2005 (then CEO of Naftogaz) and five of the most senior managers in the company. They were replaced by Oleksiy Ivchenko as CEO and deputy CEOs which he brought in from Ivano-Frankivsk in

[108] Gaz Ukrainy, company presentation 2006

[109] Fitch Ratings, "CIS 2007 Oil and Gas Credit Outlook", December 2006; Bernatskii, Vitalii, "Neudachnoe znakomstvo", *Energobiznes*, 10 July 2006; Kachanov, Vitalii, "Rasplata za perekhodny period", *Energobiznes*, 17 July 2006.

western Ukraine such as Andrei Lopushansky and Roman Shimko. In August 2006, when the parliamentary stalemate ended and Viktor Yanukovich was appointed prime minister, politicians and managers close to the eastern Ukrainian industrial lobby were put in charge at both the fuel and energy ministry and Naftogaz. The two key ministers were Andrei Kliuev, deputy prime minister in charge of energy policy, a major shareholder in the Donetsk-based Ukrpodshipnik Corporation and one of Ukraine's wealthiest businessmen, and Yuri Boiko, returning as minister of fuel and energy. Vadim Chuprun, former ambassador to Turkmenistan and an ally of the eastern Ukrainian industrial lobby, was appointed Boiko's deputy in charge of the gas industry. Ivchenko was replaced as Naftogaz CEO and has subsequently been charged with a series of offences relating to mismanagement of funds and corruption. Ivchenko's immediate successor was Vladimir Sheludchenko, who previously headed the Donetsk regional gas company. He and some of his deputies, including Vladimir Yakubenko and Sergei Zubov, have strong links with the eastern Ukrainian group.[110] In February 2007, Sheludchnko resigned and was replaced by Evgenii Bakulin, former ceo of Ukrgazdobuvannya, while the remainder of the management team was unchanged.

Possible directions of change in market regulation are less clear. At the time of writing, the dominant factor is continuing price increases. In industry and power generation, these are already accelerating energy-saving measures and diversification to coal (see Section 6). In the regulated market, they are likely to push forward metering and alter the methods of subsidising low-income residential consumers. In February 2005, legislation aimed at complete liberalization of the wholesale gas market was drafted by officials of the Timoshenko government. According to press reports, this was supported by Russian independent gas producers including Lukoil and Itera, and by some Ukrainian industrial groups including the Industrial Union of Donbass. The predominant mood in Ukrainian business and politics was against it, however, and it met with opposition both within the Orange camp and from the Party of Regions. Such far-reaching changes in market regulation seem unlikely under a Yanukovich government.[111]

[110] "Ukraine's gas industry restructures while industry absorbs price increases", *Gas Matters*, December 2006, pp. 11-16; Anastasieva, Liudmila, "Pereselenie portfelei", *Energobiznes*, 23 August 2006; Kachanov, Vitalii, "Vremia donetskoe", *Energobiznes*, 23 August 2006.

[111] Anastasieva, Liudmila, "Gazovaia NEP", *Energobiznes*, 31 July 2006; "Gazotreidery zhazhdut revansha", *Vlast i Deneg*, March 2006; Starostin, Andrei, "Zangas: novyi gazovyi favorit?", *Ukrainska Pravda*, 9 August 2006.

5.9 Gas exports

Small amounts of Ukrainian gas have been exported to central Europe throughout the 1990s and 2000s, with occasional interruptions. In essence, the exports provided a supplementary subsidy to Ukraine and its loss-making domestic sales, and were thus subject to the same political considerations as the setting of prices and transit tariffs. The export sales were regulated by the intergovernmental agreements on gas transit and sales, and the last of these, in 2001, allowed Ukraine to export up to 6 bcm of gas per year. Any additional amounts would be subject to a $100/mcm duty.

Naftogaz Ukrainy stated that it exported 5.9 bcm of gas in 2003, mostly for sales to Zarubezhgas, Gazprom's European marketing subsidiary, and Wintershall of Germany. Naftogaz reported income from export sales rising from 372 million uah in 2002 to 2.1 billion uah in 2003, and in May 2003 it entered into a sales agreement with Zarubezhgas that lasted until 2004. In October 2003, Naftogaz entered an agreement with PGNiG, the Polish gas company, to export gas to Poland. PGNiG received 2.67 bcm of gas in 2004 under this contract. In October 2004, Naftogaz and PGNiG entered into a contract under which it was planned to extend the Ukrainian pipeline system by 1.7 km from Ustilug to Hrubieszow on the Polish border, and deliver small quantities of gas by that route from 2005. In March 2004, Naftogaz entered a gas purchase agreement with Wintershall for deliveries of gas between 2004 and 2007. In July 2004, it agreed with Zarubezhgas to export a total of 20 bcm of natural gas until 2009.[112] Clearly not all of the volumes exported are included in the Ukrainian gas export statistics given above since in 2003, for example, when Naftogaz reported income of 2.1 billion uah from export sales, the statistics record a figure of zero. This may mean that the exported volumes were either of Turkmen origin, or were counted as such.

In 2005, the Russo–Ukrainian agreement again provided for 6 bcm of duty-free exports, 5 bcm of which had to be marketed through Gazprom intermediaries. In 2006, only a tiny quantity of gas was exported (4 mcm), since Naftogaz no longer had extra volumes. In late 2006, after the thaw in Russo–Ukrainian gas relations instigated by the formation of the Yanukovich government and the setting of import prices for 2007, Naftogaz Ukrainy indicated that it hoped to pursue in negotiations

[112] Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 48 and 85–86; PGNiG web site, "Polish-Ukrainian cooperation in the gas sector", press release of 22 April 2005 http://www.en.pgnig.pl/cp/news/477_498.htm; Liuta, Ganna, "Pod znakom Oil & Gas", *Zerkalo Nedeli*, 30 October 2004; Stern, op. cit., 2005, p. 91.

with Gazprom the possibility of offsetting increased import prices with the sale of some gas in the European market.[113]

[113] Export volume statistic, *Energobiznes*, 16 January 2007. On prospects for export, author's interview with Naftogaz Ukrainy spokesman, September 2006.

6. THE TRANSPORT NETWORK

The Ukrainian gas transport network is one of the largest in the world (Map 1); it features 37,800 km of pipelines, with an annual nameplate input capacity of 280 bcm and output capacity of 175 bcm. The transport network is the main route for the transit of Russian gas to Europe. Although Russia is attempting to reduce its dependence on the Ukrainian network, it still accounts for more than four-fifths of Russian exports to Europe. In 2000–2005 the network transported an average of 128.7 bcm of Russian and central Asian gas to Europe, peaking at 137.1 bcm in 2004, as well as transporting gas for domestic consumption. There is no information in the public domain about the real (as opposed to the theoretical) spare capacity in the network. What is certain is that, without substantial investment (the source of funds for which is not evident) Ukraine will suffer from continued Russian efforts to diversify the transit of its gas to European, Turkish and CIS destinations. When Naftogaz announced a modernization programme in late 2006, projected to cost $4.6 billion that it does not have, it emphasized that such investment is vital to "strengthen Ukraine's position in the competitive battle for gas transit business".[114] Ukraine also has Europe's second largest underground storage system after Russia; much of its 34 bcm capacity is close to Ukraine's western border and well placed to serve central European markets.

The transport network, built in Soviet times, has featured in all the Russo-Ukrainian disputes since the break-up of the Soviet Union. Throughout the 1990s, Russian threats to reduce or cut off gas supplies to Ukraine were usually met by Ukrainian threats to interrupt or disrupt transit to Europe and/or by illicit diversion of gas from the network. It has long been a strategic Russian aim to gain ownership, control or management of gas pipelines through former Soviet republics in general, and Ukraine in particular. Successive Ukrainian governments have talked to Moscow about ceding some measure of control, but have been forced back from doing so by strong political pressure (see Section 3). While Russia has made progress in gaining control of transit pipelines in Armenia (where it owns 45% of the pipeline company), Moldova (50%) and crucially Belarus from 2007 (which has agreed to sell 50%), it has failed to do so either in Ukraine or in other central Asian and Caucasian states.

An international gas transport consortium was set up in 2002 by Gazprom and Naftogaz, underpinned by intergovernmental agreements, to manage the Ukrainian network. The original plans envisaged European, specifically German, partners. However, political disagreements have

[114] Naftogaz Ukrainy, *Tematicheskaia spravka: rekonstruktsiia GTS*, September 2006

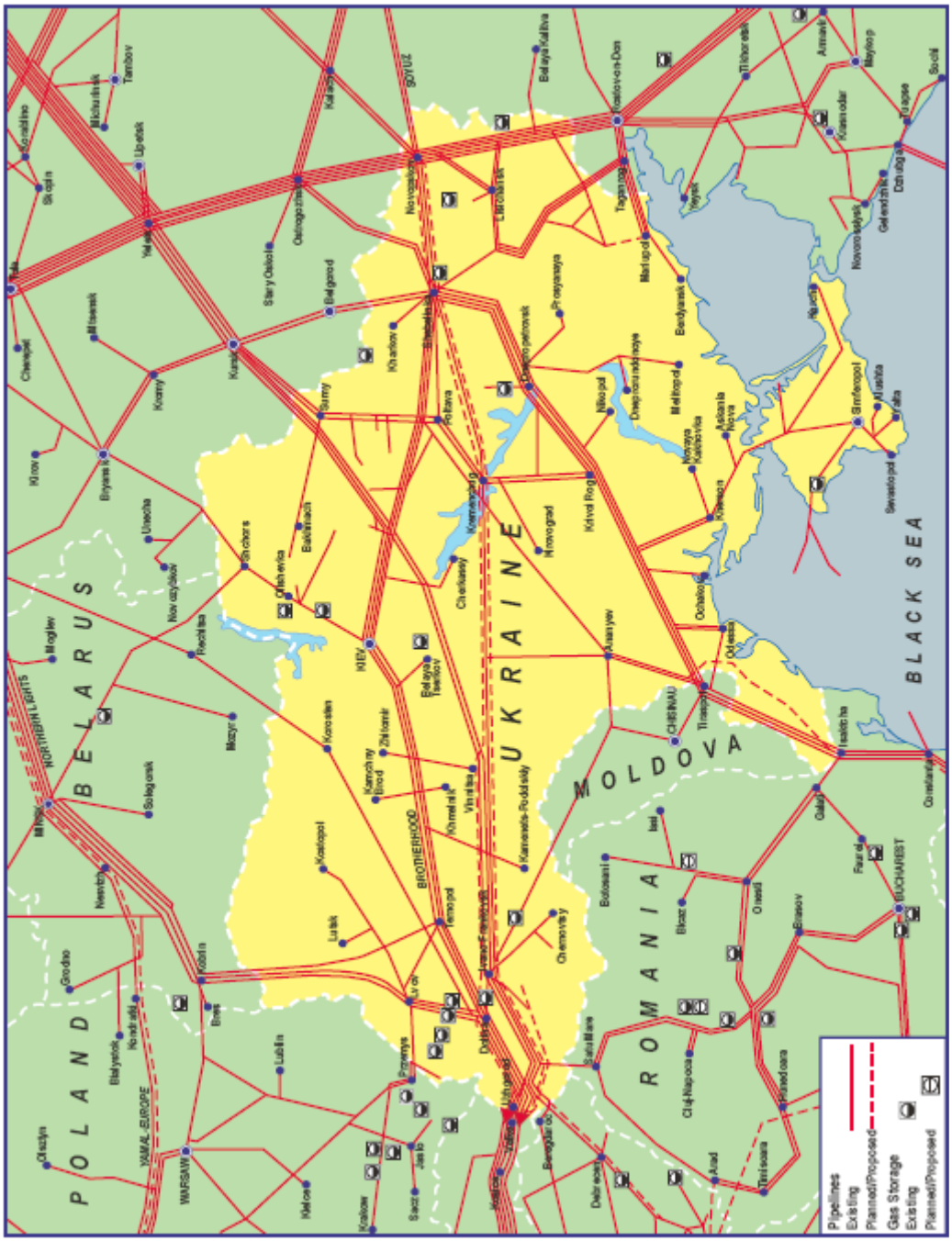
prevented any progress. The transport network remains owned by the Ukrainian state and managed by Naftogaz Ukrainy and its subsidiaries; under the new payment arrangements for transit established in 2006, Gazprom pays in cash instead of with gas. This payment, currently more than $2 billion/year, comprises a significant part of Naftogaz's revenue. Naftogaz also provides storage services to Rosukrenergo and Ukrgaz-Energo, at a fraction of European market rates (see Section 6.5, Payment for transit and storage).

The valuation of the Ukrainian transport network is a subject of political and commercial dispute, and estimates are $9–25 billion. In 2004, the Ukrainian Centre for Economic and Political Studies (Razumkov Centre), a regular consultant to the government and an advocate of privatizing the gas transport network, estimated its value at $12–13 billion.[115]

The transport network is technically reliable, and its capacity is expanding slowly, but major investment is required for upgrades that would underpin future expansion, cut serious wastage and meet environmental standards. The difficulty of raising the substantial sums required has been intensified by the political battles and prolonged uncertainty over the network's future management and ownership. A resolution of this issue continues to be postponed, storing problems for Russia, Ukraine and Europe.

[115] UCELA, *Ukraine as a 'Gas Corridor'*, 2004, p. 8; Ukraine Centre for Economic and Political Studies (www.uceps.org), *press release. Kruglyi stil:"Gazotransportnyii konsortsium u konteksti natsional'nykh interesiv Ukrainy"* (*3 bereznia 2004 r. m. Kyiv*).

Map 1. The Ukrainian Gas Transport Network



Source: Gaz Ukrainy, IEA, 2006

6.1 Overview

The gas transport network comprises 37,800 km of pipelines, of which more than 22,000 km are high-pressure transmission pipelines and about 13,800 km are large-diameter (1000–1400 mm) lines. The network has grown in the post-Soviet period from 31,400 km in 1991 to 34,900 km in 1996 to 37,100 km in 2001 and 37,800 km in 2007. It has 72 compressor stations with a total

capacity of 5,400 MW, in which there are a total of 706 compressor units. The network is owned by the Ukrainian state, and managed by two Naftogaz subsidiaries: (1) Ukrtransgaz, the national gas transport company (which in turn undertakes most pipeline management functions through six regional subsidiaries); and (2) Chernomorneftegaz, which manages a small part of the network (less than 5%) in Crimea. Of the 72 compressor stations, Ukrtransgaz manages 71. In these stations there are 686 compressor units, of which 432 are gas turbines, 158 are electric and 96 are reciprocating. Ukrtransgaz runs 4531 cathode protection plants and 113 drainage protection facilities.[116]

The Russian gas transported to Europe through Ukraine moves along three main pipeline corridors:

1. The central corridor, which includes the Urengoy–Pomari–Uzhgorod pipeline which starts at the Urengoy gas field in western Siberia, crosses the Russian–Ukrainian border just north of Sumy and traverses the country in a westward direction. It takes gas to the Uzhgorod pumping station on the Ukrainian border with Slovakia and to smaller pumping stations on the Hungarian and Romanian borders. Another parallel pipeline (the Progress pipeline), which originates from the Yamburg gas field in western Siberia, is included in this corridor.
2. The pipelines from Briansk and Tula (the Bratstvo lines) bring gas to Kiev and then join the main westward system.
3. The line from the Orenburg gas field in the Urals (the Soyuz pipeline), and other lines from Aleksandrov Gai on the Russian–Kazakh border, enter Ukraine east of Novopskov and run westward to Uzhgorod.

In addition, there are pipelines that bring Russian gas across southeast Belarus to the Ukrainian border to join the main pipeline system. There is also a pipeline system that crosses Ukraine from northeast to south, part of which traverses Moldova taking gas to Izmail on the Ukrainian bank of the Danube River and thence to Romania, the Balkans and Turkey. A major transport corridor carries gas from central Russia, into eastern Ukraine, through Novopskov and Lugansk, out of Ukraine again and via Rostov to parts of southern Russia. Thus gas enters Ukraine from Russia, and from Russia via Belarus. It exits Ukraine to Russia, Poland, Slovakia, Hungary and Romania; some gas crosses Moldova and re-enters Ukrainian territory. There are 12 metering stations that measure the gas as it arrives, and another ten that measure it as it leaves.

[116] Naftogaz Ukrainy web site; Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 9 and 66; Ukrtransgaz presentation booklet.

The total amount of gas transited through Ukraine in recent years is reported by Naftogaz as listed in Table 6.1. The table also shows the figures given for gas transported "pursuant to contract with Gazprom"; presumably, the difference comprises gas transported for other companies (e.g. ETG, Itera).

Table 6.1. Gas transported through Ukraine, bcm (total amounts, and amounts transported pursuant to Naftogaz's contracts with Gazprom)

	Total exports		To Europe		To CIS	
	Total	Gazprom	Total	Gazprom	Total	Gazprom
2000	123.6	119.9	109.3	109.3	11.3	10.6
2001	124.4	122.8	105.3	104.3	19.1	18.5
2002	121.6	119.4	106.1	104.3	15.1	15.1
2003	129.2	121.4	112.4	104.8	16.8	16.6
2004	137.1	126.3	120.3	n/a	16.8	n/a
2005	136.4	n/a	121.5	n/a	14.9	n/a

Source: Naftogaz web site; Naftogaz, *Offering Circular*, 2004, p. 69; *Gazprom v voprosakh i otvetakh*

In addition to transit gas to European and CIS destinations, the transport system carries imported and domestically-produced gas for consumption in Ukraine.

The dilemmas over management and ownership of the network (see below) and the lack of finance have thus far hindered all proposals for large-scale expansion of the network. Nevertheless, since 2000, two projects have raised external private finance to expand the network. The first was an expansion of the Trans-Balkan pipeline in southwest Ukraine, which carries Russian gas from Ukraine to Turkey, Bulgaria, Romania, Macedonia and Greece, aimed at reducing bottlenecks at peak periods. The expansion – including construction of the Tarutino compressor station which increased the capacity of the system overall by 3.8 bcm and 70 km of additional (parallel) pipeline in the Ananiev–Izmail section – was undertaken in 2001–2003 by Gaztransit, a joint venture between Naftogaz Ukrainy (37%), Gazprom (37%), Turusgaz (owned by Botas, Gazprom and Enka) (18%) and Transbalkan (a consortium of four Turkish construction companies) (8%). Zangas, the pipeline construction company in the Firtash group, was a major contractor. Loans were raised from the European Bank for Reconstruction and Development, the Black Sea Trade and Development Bank and the private sector. The pipeline is owned by Gaztransit, whose income derives from transit fees paid by Gazprom, and is the first transit pipeline in Ukraine not owned by

the state; it is operated by Ukrtransgaz. Second and third phases of the project, to complete a 380 km stretch of parallel pipeline, are pending.[117]

A second smaller project, for domestic distribution not transit, is the construction of a privately-owned branch pipeline from the Soyuz pipeline to the Uman' and Ulianovka areas of Kirovograd region and the Pobuzhskii ferro-nickel works. The project has been supported by the government and Naftogaz Ukrainy and undertaken with the cooperation of the local gas distribution company, Kirovogradoblgaz, which will benefit from the extension of the distribution network. The owners of the Pobuzhskii works will be the principal owners of the pipeline; it will be operated by Kirovogradoblgaz. Construction has been financed mainly by the pipeline's owners.[118]

6.2 Storage

The gas storage system comprises twelve underground facilities operated by Ukrtransgaz (of which ten are in depleted gas fields and two in aquifers) with an aggregate capacity of 32.5 bcm and one operated by Chernomorneftegaz with a capacity of 1.5 bcm. The storage is concentrated in four main areas: (1) the western underground storage complex, Ukraine's largest, which includes five facilities (Ugerskoe, Bil'che-Volitsko-Ugerskoe, Dashava, Opary and Bogorodchany); (2) Kyiv/central Ukraine (two facilities); (3) Donetsk/eastern Ukraine (five facilities); and (4) Crimea (one facility).[119] Highlights of the information provided by Naftogaz to the IEA regarding the storage system are listed in Table 6.2.

[117] Gaztransit brochure; EBRD project information document and press release; "Geral'diki ta veksilologii", *Palivno-energetichnii kompleks Ukrainy*, p. 78; UNIAN, 19 December 2001.

[118] Ukroil.com.ua, 27 August 2004; UNIAN, 15 March 2005; Starostin, "Zangas: novyi gazovyi favorit", *Ukrainska Pravda*, 9 August 2006.

[119] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 69; Naftogaz Ukrainy, *Tematicheskaia spravka: rekonstruktsiia GTS*, September 2006; IEA, *Ukraine Energy Review*, 2006, p. 210.

Table 6.2. Features and capacity of Ukrainian gas storage facilities, 2005

Storage facility	Year built	Maximum daily capacity (actual, mcm)	Volume of gas in storage (actual, mcm)	
			Total	Active
Bil'che-Volynsko-Ugerske	1983	90.0	32.1	15.7
Ugerske	1969	20.0	3.7	1.8
Dashavske	1973	25.0	5.3	2.2
Loparske	1969	20.0	4.8	2.1
Bohorodchanske	1979	46.0	3.4	2.3
Solokhivske	1987	9.9	2.0	1.2
Oleshivske	1964	2.5	0.6	0.3
Chervono-partyzanske	1968	12.5	3.0	1.5
Kehychivske	1988	8.5	1.3	0.7
Proletarske	1986	8.2/–	2.0/1.2	1.0
Krasnopopivske	1973	4.4	0.8	0.4
Verhunske	1987	3.0	0.9	0.4
Hlibivske	1983	4.0	1.0	0.5
Total		254	62.2	30.0

Source: IEA, *Ukraine Energy Review 2006*, p. 212, citing Naftogaz Ukrainy

During the 1990s and up until 2005, Gazprom was Naftogaz's main customer for storage services. The western storage facilities are almost exclusively used for servicing export, and gas is stored there for delivery to European customers at peak periods. There is unused capacity, and Naftogaz has been trying for some years to sell storage services to customers in Germany, France and Poland. In 2004, Naftogaz signed a memorandum of understanding on supply of storage services to PGNiG of Poland, and in 2005 the two companies exchanged draft agreements on this. Since then, however, no information has been made public about this proposal.[120]

The companies that have shipped gas to and through Ukraine under contract with Gazprom have also used Ukraine's storage facilities. In 2003–2004, ETG stored central Asian gas in Ukraine, and Naftogaz had first-priority rights to purchase it. Presumably, similar arrangements were made in 2005 with Rosukrenergo when it took over the shipping contract. Also in 2005, when Russo–Ukrainian gas relations deteriorated sharply (see Section 3), Gazprom complained that 7.8 bcm of gas had disappeared from Ukrainian storage facilities. Following this dispute, the 4 January 2006 agreement was made, supply obligations were transferred to Rosukrenergo and Gazprom ceased to use Ukrainian storage facilities. In 2006, Rosukrenergo was reportedly allocated the right to inject 15 bcm annually into storage. Certainly, during 2006, gas was injected into storage by

[120] Press releases of 2004 and 2005 on PGNiG web site.

Rosukrenergo (approximately 6–7 bcm), Ukrgaz-Energo (approximately 11–12 bcm) and Naftogaz (approximately 5 bcm).[121]

6.3 Modernization and maintenance

The modernization of the gas transport network, to expand its capacity and to meet current energy efficiency and environmental standards, is a central strategic issue for the Ukrainian gas sector and the Ukrainian economy. Naftogaz Ukrainy management and industry observers all concur that without substantial investment in the network, Russia will intensify efforts to diversify transit away from Ukraine, and Ukraine will lose some of its significance as a transit country. Despite the importance of this issue, no solution has been found to the problem of financing modernization. An indication of the sums required is given in the reconstruction and modernization programme for 2007–2010 announced by Naftogaz Ukrainy in September 2006, which incorporated elements of previous similar programmes announced in 2003 and 2005. This was estimated at 23.1 billion uah ($4.62 billion), the vast majority of which will have to come from external sources. Naftogaz emphasized that the modernization would be "the largest infrastructure project in Ukraine since independence" and "would allow Ukraine to maintain a key position in energy transit for Europe in forthcoming decades". The corollary of this, which was not spelled out, is that failure to fund the programme will diminish Ukraine's importance in that regard. Since the gas transport system will continue to deteriorate until investment is made, its future is largely dependent on how and where the finance is raised, which is largely contingent upon the highly political issue of the ownership and management of the network, discussed below. Until these issues are resolved, it is difficult to see where more than a small portion of the necessary investment capital will be found. In early 2007, the European Bank for Reconstruction and Development (EBRD) and European Investment Bank (EIB) were holding discussions with Naftogaz about possible financing of repair, modernization and energy saving measures, under an EBRD–EIB memorandum of November 2006 that provides for joint financing of projects related to European energy security. However, any financing from this source would account for only a small proportion of Naftogaz's needs.

The Ukrainian transport network, while in need of modernization, is stable and reliable. Many of the main pipelines run in parallel and are served by multiple compressor stations, meaning that if one compressor station was disabled, the rest of the system could substitute for it. Nevertheless, the

[121] Naftogaz Ukrainy, *Offering Circular*, 2004, pp. 70 and 84; Fursa, Sergei, "Strategiia i taktika gazovykh batalii", *Kompanion*, 18–24 August 2006; Committee on Fuel, Energy and Transport of the Verkhovnaia Rada, briefing paper.

system, which was largely constructed in the 1970s and 1980s, requires modernization. Naftogaz Ukrainy stated in 2004 that the life expectancy of the pipelines is 33 years, and that 21.2% of pipelines were more than 33 years old, 65.8% of pipelines were 10–33 years old and 13% were under ten years old. The IEA and other international organizations have argued that lack of transparency about the technical state of the pipeline system has obstructed collaboration in its development. The information below is based on information made public by Naftogaz and Ukrtransgaz.[122]

Naftogaz's programme of reconstruction and maintenance work in recent years has centred on the replacement of outdated compressor units and pipeline diagnostics and replacement. Replacement of outdated compressor units began in the mid 1990s, when production of 6 MW, 16 MW and 25 MW units began at the Zaria-Mashproekt factory at Nikolaev and the Motor-Sich factory in Zaporozhye. The 25 MW DN-80 gas turbine compressor unit, which has a power efficiency of 36%, went into production at Nikolaev in 2001. A 10 MW unit with 37% power efficiency and the Vodolei combined-cycle gas turbine units went into production in 2005–2006. All these units are regarded in the industry as of high quality, and are exported to Russia and European countries as well as being used in Ukraine. In 2000–2005, 34 compressor units (i.e. about 5% of the total) were replaced, according to Naftogaz Ukrainy, indicating a very slow overall rate of replacement. Pipeline diagnostics, undertaken by Ukrtransgaz and Rosen, which worked as a contractor, were conducted along the entire network during the 1990s. Naftogaz has reported in recent years that 2000–3000 km/year of pipelines were subject to up-to-date diagnostic procedures (intelligent pigging). Pipeline replacement has been completed on 391 km of high-pressure transmission pipelines and 281 km of branch pipelines in 2000–2005, according to Naftogaz Ukrainy.[123]

6.4 Energy efficiency and wastage

There is insufficient information in the public domain about energy efficiency issues in the gas transport system and the potential for reduction of gas losses and wastage. However, some information was published on the Naftogaz web site in 2006. The main potential savings are from

[122] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 70; IEA *Ukraine Energy Review*, 2006, p. 208.

[123] Reports presented to the UN-ECE working party on gas "Actual Development of the Ukrainian Gas Industry" in 2004–2006; Naftogaz Ukrainy, *Tematicheskaia spravka: rekonstruktsiia GTS* (September 2006); Semenov and Mykhailov, "Gas transmission system of Ukraine: current status and priorities for sustainable development", 23rd World Gas Conference, Amsterdam 2006; Liven, Oksana, "Programma investitsii v modernizatsiiu ob'ektov gazpotransportnoi sistemy", *Energobiznes*, 10 October 2004; Liven, Oksana, "Budushchee gazotransportnoi sistemy Ukrainy v kontekste liberalizatsii gazovogo rynka ES", *Energobiznes*, 6 June 2005; http://www.zorya.com.ua/

(1) replacement of outworn gas compressor units; (2) use of energy resource emissions to produce electrical energy; and (3) the introduction of standard energy-saving practices throughout the company. The statistics displayed in Table 6.3 were given for "production and technical use, and losses, of fuel/energy resources" by the company in 2004.

Table 6.3. Production and technical use and losses of fuel/energy resources by Naftogaz in 2004 (tonnes of coal equivalent, TCE)

Gas	8.5 bcm	9,965,000
Electrical	1.73 billion kW/year	213,000
Heat	1.2 m Gcal	185,000
Other	–	910,600
Total		11,270,000

Source: http://www.naftogaz.com/www/2/nakwebru.nsf/0/CE41618E380A4C50C225710F003D9A1B?Open Document&Expand=3.4&

The figures are of limited use, since no distinction is made between "production and technical use" and losses. The only breakdown provided of the volume of losses of potential energy is by subsidiary company: 4.87 million TCE by Ukrtransgas, 0.17 million TCE by Ukrgazdobycha and 0.02 million TCE by Ukrnafta. Naftogaz highlights the problem of the gas turbine compressor units on the network, stating that these alone are responsible for 3.4 million TCE of emissions, and states that installation of cogeneration facilities could produce up to 15 billion Kw/h of electrical energy. The introduction of turboexpanders in the gas distribution network would produce a further 1.5 billion kw/h of electrical energy. Naftogaz summarizes potential energy savings in the group as listed in Table 6.4.

Table 6.4. Potential energy savings in the Naftogaz group (m TCE)

Modernization of compressor station units, saving natural gas		1.16
Use of cogeneration, substituting fuel for power generation		3.5
Introduction of turboexpanders on gas distribution network		0.35
Commissioning of power stations at oil and gas production fields		0.20
Introduction of standards throughout Naftogaz		0.40
	Total	**5**

Source: http://www.naftogaz.com/www/2/nakwebru.nsf/0/CE41618E380A4C50C225710F003D9A1B?Open Document&Expand=3.4&

These projections of potential energy savings are small for such a large network. Their publication is welcome. Nevertheless, the subject of energy losses in the transport network remains opaque and, because of the history of thefts of gas during the 1990s, raises governance issues. These were highlighted by Yuri Ekhanurov in a newspaper interview in December 2005 during his term as

prime minister. He expressed extreme disquiet at the level of wastage, and suggested that much of the gas reported as lost was being stolen.[124] Obviously the proper attribution of losses to their various causes (production, technical, theft) requires more information than is in the public domain.

The discussions at international, government and industry level about the metering and dispatch systems on the network are clearly essential to improving energy-saving and transparency. The technical standard of the metering stations on the Russian side of the Russo–Ukrainian border, and those on Ukrainian territory that measure gas flows as they leave the country, are considered within the industry to be reasonable. Further improvement, especially in metering large-diameter pipes, is envisaged as a result of the opening in December 2006 of the new metering centre at Boyarka, near Kiev, the result of a joint project by the European Commission, Ukraine, Belarus and Moldova. EC representatives have privately argued that metering stations should be installed on the Ukrainian side of the border with Russia, to complement the work of stations on the Russian side. Industry participants do not see this as a priority issue.

There is, however, a serious problem caused by the use of different measuring standards. The USSR standard RD 50-213-80 continues to be used in post-Soviet Ukraine; Russia has however moved to its own new standards, the principal instrument being GOST 8.563.(1.2.3.)-97. The new Russian standard is also currently in use in Ukraine. Neither Russia nor Ukraine uses the international standard used in Europe: ISO 5167-2003. In March–April 2005, *Zerkalo Nedeli* newspaper published a series of discussion articles on metering; Professor Evgenii Pistun deplored the "lack of mutual understanding" between Naftogaz Ukrainy and the state standards body Goskompotrebstandardt, which had had the "worst possible" outcome in the simultaneous use of the Soviet and new Russian standards, which he argued are incompatible. Valerii Panasiuk, head of oil and gas accounting at Naftogaz, wrote that as a result of recent meetings between Russian, Belarussian, Moldovan and Ukrainian pipeline operators, work had begun on introduction of ISO 5167–2003, but that it could not happen until "2007–2008 at the earliest".[125]

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[124] Iatsenko, Natalia, and others, "Prem'er ministr Ukrainy Iurii Ekhanurov: voina na dva fronta", *Zerkalo Nedeli*, 24 December 2005. Ekhanurov asked rhetorically: "Why are gas losses running at such a colossal rate?" His interviewers responded: "Essentially, you're talking about the theft of gas in Ukraine?" He answered: "Yes".

[125] Eremenko, Alla, "0.1% tochnosti ucheta 50 millionov griven sberezhet", *Zerkalo Nedeli*, 12 March 2005; Eremenko, Alla, "Pochemu-to dokument, sposobstvuiushchii povysheniiu tochnosti", *Zerkalo Nedeli*, 26 March 2005; Panasiuk, Valerii, "Naftogaz Ukrainy – ob uchete gaza", *Zerkalo Nedeli*, 9 April 2005; Pistun, Evgenii, "Uroven' ucheta energonositelei v Ukraine vse-taki nuzhno povyshat'", *Zerkalo Nedeli*, 23 April 2005.

6.5 Payment for transit and storage

The changes in gas relations between Russia and Ukraine described in Sections 3 and 4 has resulted in a shift from barter payment in gas for transit services to payment in cash. An attempt was made to move away from the cycle of non-payment and debt accumulation in the 1990s with agreements between Gazprom and Naftogaz during July–August 2004 (see Section 4), when (1) Naftogaz accepted prepayment for transit fees of $250 million a year for 2005–2009, which was used to settle some of its payment arrears to Gazprom for gas, and (2) transit fees were set at $1.09/mcm/100 km for the same period. Under the January 2006 agreement, Rosukrenergo took over as the supplier of gas to Naftogaz, and transit fees were raised to $1.60/mcm/100 km. Estimates of Naftogaz's income from gas transit are displayed in Table 6.5.

Table 6.5. Estimates of Naftogaz Ukrainy income from gas transit

Year	Amount ($ million)	Method of payment	Source of information
2001	1430.0	Cash + kind	Naftogaz, *Offering Circular*, 2004, p. 46
2002	1647.2	Cash + kind	Naftogaz, *Offering Circular*, 2004, p. 46
2003	1482.5	Cash + kind	Naftogaz, *Offering Circular*, 2004, p. 46
2004	n/a	–	–
2005	1550	Cash ($250m paid in advance) + kind	Analyst's estimate
2006	2200	Cash, including $250m paid in advance	Analyst's estimate
2007	2200	Cash, including $250m paid in advance	Analyst's estimate

Note: analyst's estimates for 2005 by East European Gas Analysis (www.eegas.com/ukrtran.htm) and for 2006–2007 Ukrsibbank, *Naftogaz: company research*

During the public discussion in Ukraine of the January 2006 agreement, the transit tariff of $1.60/mcm/100 km (fixed for five years) was criticized for being too great a concession to Russia. To answer the question of what constitutes a fair transit tariff in Ukraine, a comparison may be made with other European rates. This is made more complicated by the different methods used for charging (distance-based tariffs, distance-based commodity charges or entry-exit tariffs, etc.). The Energy Charter secretariat has compared charges in countries using these different methods, employing a model of gas being transported over a 350 km pipeline. Note that the comparison in Table 6.6 was made in 2005 before the charge in Ukraine had increased, i.e. it was still $1.09/mcm/100 km. The $1.60/mcm/100 km charge would therefore be represented as 41 euro/cu m/hours/year in Table 6.6, elevating Ukraine's position above those of Russia and Bulgaria.

Table 6.6. European gas transit tariffs (euro/cu m/hours/year)

Country	Tariff
Austria (Penta West)	96
Belgium (Fluxys)	78
Poland (Yamal)	71
Germany (Wingas)	63
Slovakia (SPP)	62
Interconnector	55
Bulgaria	43
Russia	28
Ukraine	**28**
Poland (Yamal, future)	26
Belarus (Yamal)	19
Belarus (N. Lights)	12

Source: Energy Charter secretariat, *Gas transit tariffs in selected Energy Charter treaty countries*, p. 65

The Energy Charter secretariat also made a more limited comparison between those countries, mainly in eastern Europe, that use the same distance-based commodity charge method as Ukraine. Here, too, Ukraine's transit tariffs were at the lower end of a range – higher than Belarus ($0.46/mcm/100 km and $0.75/mcm/100 km), but lower than Bulgaria ($1.66/mcm/100 km), Poland ($2.74/mcm/100 km, but due to fall to $1.00 by 2016) and the Czech Republic ($2.90/mcm/100 km). This supports the conclusion that the transit tariff in the January 2006 agreement was indeed a concession to Russia, possibly in part for the continued concession by Russia on price. But the Ukrainian concession on transit fees was much less significant than those made on storage fees (see below) and on Ukrgaz-Energo's status on the domestic market.

Storage fees relating to international contracts are set in US dollars. Between 1993 and 2005, Gazprom was reportedly charged, on average, $4.95/mcm for gas injection, storage and withdrawal. Under the agreements made in July–August 2004, Rosukrenergo is charged $2.25/mcm for the same services; this fee was retained in the January 2006 agreement and fixed until 2030.[126] Research by the Institute for Economic Research and Policy Consulting in Ukraine shows that this fee is 40–50 times lower than those charged elsewhere in Europe: the Institute's economists have calculated, for the purposes of comparison, indicative prices charged by RWE Transgas of the

[126] The terms agreed on 4 January 2006 on storage were made known to the Ukrainian government only on 31 January, and were first published in *Zerkalo Nedeli* a week later. That report referred to the "Supplementary Agreement no. 4 to Contract no. 14/935–3/04 of 29 June 2004" (full title, "Dopol'nitel'noe soglashenie No. 4 k Kontraktu No. 14/935-3/04 ot 29 iiulia 2004 goda ob ob'emakh i usloviakh zakachki prirodnogo gaza v PKhG, ego khraneniia, otbora i transportirovki v 2005-2030 godakh"). The parties to the agreement did not comment publicly on this aspect of it. However, none of them have challenged this information, which has since been widely circulated, and in a public written discussion of the issue, Konstantin Chuichenko of Rosukrenergo implicitly confirmed the figures (Mostovaia, Yuliia, "Sovershite Vy massu otkrytii (inogda ne zhelaia togo)", *Zerkalo Nedeli*, 4 February 2006; Chuichenko, Konstantin, "Eksport gaza: printsip krivogo zerkala", *Vedomosti* 10 August 2006).

Czech republic at $110/mcm, and by BEB of Germany at $87/mcm, as against the $2.25/mcm charged by Naftogaz. Mikhail Korchemkin of East European Gas Analysis estimates that Naftogaz currently receives about $30 million a year for storage services, and could make an additional $1–2 billion/year if Ukrainian storage charges were brought into line with the European market.[127] This disproportion is a significant concession by Kiev to Moscow, part of the system of such mutual concessions on which the 4 January 2006 agreement was based, and a reminder that the agreement stood some way from the aim proclaimed, by both Russia and Ukraine, of moving prices to European levels and of introducing market principles into gas relations.

Storage fees for gas supplied to Ukrainian customers are set by NERC. During 2000–2005, total rates (including injection, storage and withdrawal) were 12 uah/mcm ($2.40/mcm) including VAT; in May 2006 this rose sharply to 39 uah/mcm ($7.8/mcm) including VAT. These costs are paid half on injection and half on withdrawal and are usually borne by the gas trader, who passes them on to the consumer.[128]

6.6. Discussions on management and control of transit and storage

Two interrelated factors will determine the future management and control of the transport network: (1) the underlying, unresolved conflict between Russia, which continues to seek ownership and/or management control of the system, and Ukraine; and (2) the urgent need to modernize the network and fund its expansion. Over the years in which the conflict over control of the network has dragged on, the issue of modernization has constantly been postponed. That in turn has strengthened Moscow in its resolve to diversify transit away from Ukraine. Latterly, advocates of Russian entry into management of the network on one hand, and privatization on the other, have both argued that these solutions will provide the impetus to raise finance for the modernization.

Russian efforts to take control of the system in the early and mid 1990s were described in Section 3. These efforts subsided in the late 1990s, but were revived in the early 2000s. Initially, the discussions focused on the idea of a gas transport consortium, which was proposed in a joint *communiqué* by Presidents Putin and Kuchma and the German Chancellor Gerhard Schroeder in June 2002, and approved in a Russo–Ukrainian agreement at prime ministerial level in October

[127] Gas Union cited in IEA, *Ukraine Energy Policy Review*, p. 213; Institute for Economic Research and Policy Consulting in Ukraine/ German Advisory Group on Policy Reform, *Gas storage tariffs along the export route to EU markets*, 2006; Korchemkin, Mikhail, "Eksport gaza: slaboe zveno", *Vedomosti*, 27 July 2006; Chuichenko, op. cit.

[128] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 90; IEA, *Ukraine Energy Policy Review*, p. 213.

2002. The consortium was set up in November 2002 as a Ukrainian legal entity, owned 50% each by Naftogaz and Gazprom. However, when negotiations between those two companies and Ruhrgas of Germany were held in April 2003, not even the most basic issues could be agreed upon. Gazprom pressed for the consortium to take over the transport system on a concession basis; Naftogaz refused and the nature of German participation remained undefined. In August 2003 the parties referred the issue of models for future management and maintenance of the existing transport network to separate commissions within Naftogaz and Gazprom, and moved to the issue of new construction, initially of a pipeline from Aleksandrov Gai in Russia to Novopskov in eastern Ukraine and alongside existing lines to Uzhgorod near the western Ukrainian border. Agreement could not be reached on this either; a Ukrainian proposal that the whole pipeline be managed jointly by the consortium was rejected, since Gazprom would not concede the principle of its control over gas transport on Russian territory.[129]

The negotiations were conditioned by Russo–Ukrainian political relations. On the Russian side, a long-term strategy has been in place aimed at diversifying transit of gas to Europe away from Ukraine. Until 1999, 95% of Gazprom's exports to Europe (excluding the CIS and Baltics) were transported via Ukraine, and by 2002 this proportion had fallen to 82%. Alternative routes are currently the Yamal-1 pipeline through Belarus and the Blue Stream pipeline to Turkey. In 2005, a Russo–German consortium was set up to build the North European Gas Pipeline, which is currently the most important element in Gazprom's diversification strategy. There are also ongoing discussions on developing a southern European pipeline as a means to bypass Ukraine, using Hungary as a transport and storage hub. The option of building bridges to the Yamal pipeline from the Bratstvo pipeline has also been discussed. Ukraine's leadership is very sensitive to the danger – exemplified in the North European pipeline project – that Russia's strategy weakens Ukraine's ability to use the gas transport system as a lever in negotiations with Russia. During Putin's visit to Germany in October 2006 for talks on energy and other issues with Chancellor Angela Merkel, Ukrainian president Yushchenko therefore telephoned Merkel to suggest restarting three-sided discussions on the international gas transport consortium to manage the Ukrainian pipeline system.[130]

On the Ukrainian side, there has been constant conflict between those politicians who were prepared to compromise with Moscow on the management and ownership of the transport network,

[129] UCELA, *Ukraine as a 'Gas Corridor'*, 2004, pp. 6-9; Stern, op. cit., 2005, pp. 91-92.

[130] Mozgovoi, Ivan, "Idea konsortsiuma reanimirovana", *Delo*, 12 October 2006; "Ukraine concerned at Russia-German energy alliance", *Gas Matters*, October 2006, pp. 40–41.

and those who rejected this. For example, in December 2003 Vitalii Gaiduk, then Ukrainian deputy prime minister in charge of fuel and energy, argued publicly that the various proposals for the consortium to manage the Ukrainian transport system were unacceptable. He was summarily dismissed by President Kuchma. This was neither the first nor the last time that Ukrainian political leaders were split in this way. Despite Kuchma's hopes, though, no agreement was reached on a wider role for the consortium; its role was scaled back to construction of a pipeline between Bogorodchany and Uzhgorod, i.e. the central and western Ukrainian section of the larger planned Aleksandrov Gai-Uzhgorod line. In January 2004, the parties in the consortium agreed to start work on the project, but failed to do so. In August 2004, it was mentioned in the agreements signed between Gazprom and Naftogaz; in October 2004, a further agreement was signed on the investment phase. After the Orange revolution and changes in Naftogaz management in June 2005, a further agreement was made to begin work on the project and a ceremony held, but no investment capital was forthcoming. In mid 2006, sources at Naftogaz indicated that no progress had been made. In February 2007, Yuri Prodan, an advisor to Yushchenko, said that Ukraine would seek new partners for the project as Russia had "lost interest" in it.[131] The stalemate surrounding the consortium has led to a search in Ukrainian political circles for other ways forward. In 2004, at a round-table discussion arranged by the Ukrainian Centre for Economic and Political Studies, alternatives were compared: (1) reforming the gas transport system under state ownership; (2) granting a concession to run the transport system; and (3) privatization. The possibility of spinning Ukrtransgaz off from Naftogaz, to end its cross-subsidization of other Naftogaz subsidiaries, has been mooted.[132]

In late 2006 and early 2007, after the appointment of the Yanukovich government, Moscow again publicly expressed its interest in the management and control of the Ukrainian transport system. In fact Viktor Khristenko, Russian deputy prime minister, had raised the issue in July 2006 when talks on the formation of the new Ukrainian government were still unresolved. The Ukrainian president Yushchenko had then replied that the transport consortium could only own new pipelines, starting with Uzhgorod-Bogorodchany.[133] In February 2007, Russian President Putin made public at a press conference a new proposal, that in exchange for Ukraine putting the transport system in the consortium's hands, Russia might offer ownership stakes in its gas production assets. He said the

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[131] UCELA, *Ukraine as a 'Gas Corridor'*, 2004, p. 9; Stern, op. cit., 2005, p. 95; Liuta, Ganna, "Pod znakom Oil & Gas", *Zerkalo Nedeli*, 30 October 2004; "Russia and Ukraine remain tetchy despite storage agreement", *Gas Matters*, July 2005, pp. 15–19; Ukroil.com.ua, 5 February 2007.

[132] Ukraine Centre for Economic and Political Studies (www.uceps.org), *Pres-reliz. Kruglyi stil: "Gazotransportnyii konsortsium u konteksti natsional'nykh interesiv Ukrainy" (3 bereznia 2004 r. m. Kyiv.)*.

[133] Kachanov, Vitalii, "GTS: torg ne umesten?", *Energobiznes*, 24 July 2006.

issue was being studied within Gazprom and Naftogaz, and pointed out that Russia had already swapped such stakes for shares in downstream assets in Germany. Putin's statement provoked a storm of protest in the Ukrainian parliament, which passed a law reiterating that ownership of the transport system had to rest with the Ukrainian state.[134] Subsequently, Yuri Boiko, the Ukrainian fuel and energy minister, suggested that Ukraine would offer distribution, but not transit, assets in exchange for Russian production assets – a proposal Russia seems unlikely to accept.[135]

It is important not to lose sight of the economic background of this dispute. For the first time since the fall of the Soviet Union, large-scale investment in capital stock replacement has begun in Russia, and the prospect of this occurring in Ukraine and other republics is not far off. In Russia, billions of dollars of new investment have already begun to pour into infrastructure and industrial projects similar in scale to the Ukrainian gas transport network modernization. Ukraine is far from reaching an analogous turning point: industrial production is only now (early 2007) regaining Soviet levels, and capital stock replacement has only begun, modestly, in the steel industry.[136] The dilemma surrounding the gas transport network could be posed in this way: will Ukraine reach the turning-point at which large-scale capital stock replacement can begin (i.e. the point Russia reached in 2006) in the near future, and find efficient methods of directing resources in order to be able to finance the network's modernization without heavy reliance on Russia? Or can it find other (European?) partners to finance the refurbishment? Will it be prepared to cede capacity in the network in return for finance, and if not will it be able to obtain any financial backing? The most likely answers to these questions seem to be negative, but neither possibility can be ruled out completely. Bearing this in mind, the options for the future management and control of the transit system may include the following:

1. Management by a consortium with 50% Russian participation. It appears from President Putin's remarks that this remains under discussion, and is one of the more probable options. This would allow Ukraine to share in Russia's investment boom, and create good conditions for raising the necessary funds to modernize the transport network. However, it would be stiffly resisted by some sections of the Ukrainian political elite who are committed to a pro-European orientation,

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[134] "Garnyi gaz", Gazeta.ru, 2 February 2007; Gavrish, Oleg and Grib, Natalia, "Ukraina i Rossiia ne somknut gaz", *Kommersant-Ukrainy*, 2 February 2007; Reznik Irina, Nadezhda Ivanitskaia and Ivzhenko Tatiana, "Ukraina prositsia v Rossiiu", *Vedomosti*, 2 February 2007; Ivzhenko, Tatiana, "SP s 'Gazpromom' pod zapretom", *Vedomosti*, 7 February 2007; Eremenko, Alla, "Zakon 'O Trube': kak zalatat' dyri", *Zerkalo Nedeli*, 10 February 2007.

[135] Reznik, Irina and Ivzhenko, Tatiana, "'Gazprom' zovet Ukrainu v doliu", *Vedomosti*, 20 February 2007.

[136] On Russia, see for example World Bank, *Russian Economic Report*, World Bank, December 2006, pp. 2–5; Nash, Roland, "21st century perestroika – Russian investment boom", Prime-Tass, 28 March 2006. On Ukraine, see for example Troika Dialog, *Ukraine Growth Update: Economics*, December 2006.

and perhaps by those in the gas sector who fear Russian economic dominance. The form of management contract (i.e. concession or other) would no doubt also be disputed.

2. Management by a consortium with less than 50% Russian ownership. The possibility of a consortium with German (or broader European) participation, as well as Russian and Ukrainian, was raised again in Kiev by an E.ON Ruhrgas representative in early 2007.[137] This would also provide a satisfactory solution to raising funds for investment, although it may be subject to similar political objections as the first option.
3. Privatization. Despite lobbying by market reformers in Ukraine for this approach, it seems the least likely.
4. Continued management by Ukrtransgaz. If the deadlock over (1) and (2) continues, then the management of the network may remain in Ukrtransgaz's hands for the medium term. The issue of raising funds for modernization would then become more closely entwined with Naftogaz's broader financial problems. If there are political changes in Ukraine, and a future government takes a more pro-European stance, then it might be possible to raise money for the modernization programme from European sources. It should be recalled that immediately after the Orange revolution Naftogaz, with support from president Yushchenko, negotiated a large credit limit with Deutsche Bank that was not fully taken up. However, if the network remains under Ukrtransgaz's management and the political situation in Ukraine remains as it is under the Yanukovich government or unclear, substantial investment could be further postponed. Ukraine would be unable to find the considerable resources needed to modernize the network until it reached the economic turning-point mentioned above. This would produce a further consequence: Gazprom would seek more actively transit alternatives at substantially higher cost, damaging the Ukrainian system's prospects as a seller of transit services.

[137] Eremenko, Alla, "Energoinvestory zhdut stabil'nosti", *Zerkalo Nedeli*, 7 April 2007.

7. IMPACT OF HIGHER GAS PRICES ON THE UKRAINIAN ECONOMY

The consensus view among economists is that the Ukrainian economy withstood the impact of higher gas prices during 2006 better than expected. The main factors contributing to the economy's resilience, including high prices for Ukrainian exports (of metals in particular), consumption-led growth and energy efficiency improvements in industry, may not retain the same force in 2007 or in succeeding years. Nevertheless, a consideration of these factors may provide a starting point for discussing the issues.

In December 2005, the World Bank issued a report suggesting that gas price rises would impact Ukraine's GDP negatively, potentially by about 4% in 2006 and 3% in 2007. The report observed that the impact of high energy prices had traditionally been mitigated (1) by the effect of Russia's oil wealth, which increased demand for Ukrainian exports, (2) by low-cost gas imports, and (3) by pro-cyclical increases in the prices of Ukrainian exports, e.g. metals and chemicals, which have maintained strong terms of trade. These same factors had however exacerbated Ukraine's energy intensity and vulnerability to price shocks. The World Bank's economists used a model assuming Urals oil prices of $57/barrel in 2006, $54/barrel in 2007 and a one-off increase in the prices of Russian and Turkmen gas at the Ukrainian border to $105 and $126 respectively. Although in the event price trends varied from these assumptions, they have remained within the World Bank's range of scenarios, which assumed a negative impact on GDP of between –0.4% and –8.6% in 2006 and –0.2% and –6.0% in 2007. During 2006, however, economic growth confounded the Bank's worst fears. Growth not only remained positive, but the decline in growth registered in 2005 has been reversed. In July 2006, an IMF mission to Ukraine increased its 2006 forecast from 2.3% GDP growth to 5%; in October an IMF Article IV consultation upped the forecast to 6% and reiterated that "macroeconomic outcomes for 2006 are poised to be better than expected". In November 2006, the World Bank also concluded that Ukraine's economy "reveals greater resilience to energy price increases than originally thought", although "a negative term of trade shock remains the key short term risk". This reflected the consensus among economists.[138]

[138] World Bank, *Ukraine: The Impact of Higher Natural Gas and Oil Prices*, World Bank, 6 December 2005; World Bank, *Ukraine Economic Update*, World Bank, November 2006; IMF, *Ukraine – 2006 Article IV Consultation*, 24 October 2006. See also EBRD, *Transition Report 2006*, p. 191; Dresdner Kleinwort debt research, *EM Macro Focus. Ukraine – Rushing Slowly Someplace New*, 15 September 2006; Institute for Economic Research and Policy Consulting, *Monthly Economic Monitor Ukraine*, September, October and November 2006.

The World Bank identified three factors that have contributed to the economy's strength during 2006, and warned that these are unlikely to have such a positive influence in 2007. First, terms of trade developments were as a whole positive, mainly due to the continuing strength of the prices of metals, a major export item. Second, consumption-centred growth is strong, partly due to public sector wage growth which the government intends to rein in during 2007 and partly because there has been a delay in passing on energy price rises to consumers (this will take effect much more forcibly in 2007). Third, according to the World Bank, "enterprises seem to have been able to absorb the energy price shock much more easily than anticipated". The impact of the additional rise of gas import prices to $130/mcm is unclear, the Bank says, but it assumes "that industry will continue to have good access to financing and will choose to invest in energy efficiency". The World Bank projects economic growth averaging 5% in 2007–2009 based on sustained investment demand, declining consumption momentum and, on the back of slower real import growth, an overall neutral net exports contribution. A team of economists in a US-based investment company focused on Ukraine forecast that GDP growth in 2007 would be 5–6%, despite a 1.5–2% negative impact of gas price increases; that the foreign trade balance would deteriorate due to the price increases, but that continuing strong foreign direct investment would cover the deficit; and that, in spite of pressures on the government, the budget deficit would be kept at about 2.5% of GDP.[139]

An important question is whether gas price increases have caused any significant decrease in consumption. The available statistics from the fuel and energy ministry suggest that there has been a decrease: with economic growth maintained, at a slightly slower pace than in 2004–2005, the consumption of gas has fallen to the lowest level since 2002, as displayed in Table 7.1.

Table 7.1 Gas balance for the year, selected items (bcm)

	2002	2003	2004	2005	2006
Consumption	**62.2**	**68.7**	**68.1**	**68.9**	**65.9**
Industry (excluding power)	24.7	27.3	28.2	29.0	24.3
(including metals)	8.6	9.8	9.9	9.6	9.3
Power industry	6.2	7.0	6.7	5.7	8.6
Via local government[a]	31.5	34.3	33.1	34.1	34.2
Technical use:	**7.4**	**7.6**	**7.6**	**7.4**	**8.1**

[a]Includes (1) residential consumers; (2) all state-financed organizations (i.e. municipal, schools, hospitals, etc.); and (3) district heating companies. See note [b] to Table 5.1.
Source: *Energobiznes*, based on ministry of fuel and energy statistics

[139] World Bank, *Ukraine Economic Update*, World Bank, November 2006; SigmaBleyzer/ The Bleyzer Foundation, "Impact of Gas Price Increase on the Economy of Ukraine in 2007", November 2006.

The statistics are insufficient to present a full picture, but the following points are apparent. Industry has cut consumption substantially (by about one-sixth between 2005 and 2006). The metals sector only accounts for a small part of the reduction. Since disaggregated figures for the chemical industry are not available, it is not clear what its part has been. The power industry has increased its gas consumption; the reasons are as yet unclear, although the unusually cold weather in the first two months of 2006 compared to 2005 may account for part of this. The regulated gas sector (the category 'via local government' in Table 7.1 which includes the residential and domestic heating sectors) has not cut consumption. Technical use has increased.

Other evidence about the impact of price increases may be adduced from considering how various sectors of the economy have reacted to them.

In industry, the extent to which Ukraine's main consumers of gas are vulnerable to price increases and able to diversify their fuel inputs differ substantially from one sector to another. Of the three largest gas-consuming sectors, the metals sector is least exposed to gas price rises and the companies, with healthy cash positions and access to debt finance, are beginning to invest in energy efficiency. The power generation sector is more vulnerable to price increases but also more easily able to switch to coal for fuel. The chemical fertilizer producers, which use gas as a raw material, are most vulnerable and least able to diversify, and in 2006 felt the most substantial impact from gas price increases. Financial analysts at Troika Dialog, the Russian investment house, produced the following estimates of companies' vulnerability to gas price increases, by calculating gas costs as the share of total cost of goods sold, as listed in Table 7.2.

Table 7.2. Selected companies' vulnerability to gas price increases

Company	Market cap'n 9.06 $ million	Main owners	Gas costs as share of cost of good sold, 2005 (%)
Chemicals and fertilizer			
Dnipro Azot	111	Privat group	39
Odessa Port plant	n/a	State	55
Severodonetsk Azot	n/a	Worldwide Chemical	44
Stirol	447	Management	48
Metals			
Azovstal	1915	SKM	5
Mariupol Steel	1716	Management	7
Mittal St. Krivy Rig	2954	Mittal Steel	5
Domestic utilities			
Centrenergo	348	State	14
Dniprenergo	315	State	12
Donbassenergo	162	State	11
Kyivenergo	167	State	50
Zakhidenergo	401	State	22

Source: Troika Dialog, *High Gas Prices – Motivating Efficiency*, 21 September 2006

In the metals industry, the largest gas consumer among industrial sectors, the major Ukrainian companies began in 2006 to undertake long-awaited modernization programmes that will make some of the most easily-attainable savings in gas consumption. This development, for which gas price increases have been one of the main triggers, is part of the significant shift towards capital stock replacement that has now begun in post-Soviet economies, referred to in Section 6. Ukraine is one of only four steelmaking nations that still uses open-hearth furnaces, and relies on them more than any other country: 44% of Ukrainian steel is produced with this method, implying gas consumption of about 74 cubic metres/tonne of output, and only 45% of production is by continuous casting. Only 3% of pig iron production uses energy-efficient coal-dust injection technology, compared with rates of 65-100% in western Europe. Troika Dialog's analysts estimate that the steel industry can achieve a 30% reduction in gas consumption by 2010. This includes 8% by substitution of gas with coal-dust and coke, 14% by switching from open-hearth production to converters and other savings in other stages of production.[140]

Some indication of the way that gas is consumed in the sector was provided by Metinvest, the holding company which includes the steel-making and iron ore processing assets of Donetsk-based

[140] Troika Dialog, *High Gas Prices – Motivating Efficiency*, 21 September 2006, p. 10; Lutsenko, Igor, "Udruchennye gazom", *Vlast i Deneg*, April 2006.

SKM, Ukraine's largest financial-industrial group. Metinvest consumes 2.2 bcm of gas/year. Table 7.3 lists a breakdown of its gas usage, publicized in July 2006.

Table 7.3. Users of gas within the Metinvest group

Division	Use of gas	Share of total Metinvest usage (%)
Blast furnaces	Component in blasting process	35.8
Production of iron ore pellets	Fuel for pelletization process	12.5
Power production	Fuel to produce steam and stand-by electrical capacity	10.4
Steel rolling mills	Fuel for reheating slabs prior to rolling	9.5
Open hearth furnaces	Fuel	9.2
Production of dead-burned dolomites and limes	Fuel for roasting furnaces	9.0
Converter steel production	To heat ladles to feed continuous casters	2.3
Other	(Various)	11.3

Source: *Zerkalo Nedeli*, 7 October 2006.

All the major steelmakers have announced modernization programmes during 2006, in which energy saving measures play a prominent part. The Industrial Union of Donbass has announced a $1 billion modernization programme, partly financed by loans arranged by the World Bank IFC ($250 million including syndication) and the EBRD ($200 million including syndication), covering its two largest steelworks, Alchevsk and Dneprovsky (Dnepropetrovsk). The corporation has stated that most gas consumed at the Alchevsk steel works, one of its two major plants, will be substituted by coke, surplus blast-furnace gas and other inputs, reducing it to a technically necessary minimum by the end of 2008. Part of the programme, supported by the EBRD, will involve construction of a combined-cycle gas turbine power plant within the Alchevsk works, utilizing waste gases that would otherwise have been flared. Mittal Steel, owner of Ukraine's largest works at Kriviy Rih, has announced a similar programme partly funded by the EBRD, and the Ilyich metal works at Mariupol has announced a $200 million investment programme, including switching from open-hearth production to continuous casting. There have also been announcements of significant investment in green-field projects. The most advanced at the time of writing was a $610 million investment by the steel pipe producer Interpipe, to build a steel mill with electric arc furnace technology in Dnepropetrovsk. Interpipe has hired Danieli of Italy for construction and begun negotiations with banks and export credit agencies to raise finance. Finance and Credit group, which controls the Poltava iron ore complex, also intend to invest in new steelmaking capacity. The

use of gas in such new plants will be substantially more efficient than in the Soviet-era plants with open-hearth furnaces.[141]

The sector most vulnerable to gas price increases is chemicals, which is one of the largest after metallurgy and accounts for 6.7% of Ukrainian industrial output and 7% of export revenues. The production of ammonia and fertilizers (urea, ammonium nitrate and other nitrogen fertilizers) is at the heart of the chemicals sector, with six major producers who account for 90% of output: Stirol, Odessa Port Plant, Severodonetsk Azot, Cherkasy Azot, Dniproazot and Rivneazot. These companies export ammonia to the US, Turkey and western Europe, urea mainly to Brazil and Turkey, and ammonium nitrate to India and Turkey. Table 7.2 highlights how natural gas, a raw material input for the production of ammonia and fertilizers, comprises a far greater proportion of costs for the chemical companies than for the steel producers. The increased costs have led to a deterioration of the producers' financial position during 2006. Stirol, the only fertilizer producer rated by an international agency, was downgraded by Fitch ratings agency in July 2006 because of concern that the gas price increase could further reduce profitability. Some observers have warned that Ukrainian fertilizer producers may be forced to shut down some production or seek mergers, particularly with Russian natural gas producers and/or ammonia producers, in order to survive.

A recent analyst's report by the investment company Concorde Capital concluded (1) since government support was unlikely for the fertilizer producers, they would cut ammonia production and try to increase urea production that in the short term, in which gas comprises a smaller proportion of costs; (2) that in the medium term, once gas costs at the plant exceed $154/mcm, savings could be made by shutting down ammonia production and instead buying ammonia imported from Russia; (3) that substantial energy-saving improvements may prove out of the companies' reach, as these would require replacement of plant rather than adaptation; and (4) that "in the long run, the only way for Ukrainian producers to survive is to integrate with businesses capable of supplying cheap gas", referring to Gazprom and its affiliates or – for those such as Stirol with access to the Togliatti-Gorlovka-Odessa ammonia pipeline – Russian ammonia producers. With regard to this last point, it may be added that the Firtash group, which already owns Rivneazot and has stated ambitions to expand in the chemicals sector, may be a gainer, while the Privat group,

[141] Industrial Union of Donbass, EBRD and IFC web sites; "Skromnoe predlozhenie na $1 mlrd.", *Delo*, 27 July 2006; Plaksina, Svetlana, "Men'she gaza i mazuta", *Ekspert*, 23 January 2007; Olearchyk, Roman, "Ukraine to launch costly upgrade of steel plants", *Financial Times*, 27 February 2007.

which controls Dniproazot and has been targeted in various ways by the current Ukrainian government, may be a loser.[142]

The power sector is Ukraine's third largest industrial gas consumer. The impact of price increases has been softened by its ability (1) to pass on cost increases to consumers and (2) to reduce gas consumption and substitute it with coal. Most of Ukraine's thermal power stations were built in the 1960s, with coal as their major fuel source. There are six major generating companies (Donbassenergo, Dniproenergo, Centrenergo, Kyivenergo, Zakhidenergo and Vostokenergo), all of which have the capacity to use both coal and gas as fuel. Prior to the gas price increase in January 2006, most power stations preferred to use gas where possible, as it was cheaper than coal and wear-and-tear of equipment was reduced. However, in early 2006, the companies cut gas consumption by nearly a half. Its use was almost eliminated in base-load power units (single-boiler 300 MW) but remains significant in manoeuvrable power units (150 MW and 200 MW blocks).[143] Gas's share of the fuel mix was reduced as displayed in Table 7.4.

Table 7.4. Share of gas in fuel mix of thermal generating companies (%)

	January–May 2005	January–May 2006
Dniproenergo	19.0	10.1
Donbassenergo	10.2	10.8
Vostokenergo	1.0	1.2
Zakhidenergo	39.6	10.8
Centrenergo	20.5	11.4
Average	18.1	8.9

Source: *Energobiznes*, reproduced in Troika Dialog, *High Gas Prices – Motivating Efficiency*, p. 11.

While the 2006 price increases motivated industrial owners and managers to undertake energy-efficiency measures and/or switch fuel inputs, a sharp contrast is struck by the district heating sector. Not only did the energy industry authorities fail to begin to tackle the huge waste in the sector but, on the contrary, the collapse amid scandal of the so-called Own Home (*Rodnoi Dom*) gas boiler installation programme highlighted the sector's lack of direction. The background is that the district heating system, which uses 13–14 bcm of gas/year, has Ukraine's highest levels of energy waste. The underlying problem is that most district heating systems are outworn and even dangerous. (In the particularly cold winter of 2005–2006, the system in the eastern Ukrainian city of

[142] Concorde Capital, *Nitrogen Fertilizer producers: on the edge*, 31 October 2006. See also Troika Dialog, *Broadening Horizons* vol. 2, April 2006, pp. 96-107; Fitch Ratings press release, 18 August 2006; Alfa Capital, *Stirol: still going strong*, 25 July 2006.

[143] Troika Dialog, *High Gas Prices – Motivating Efficiency*, 21 September 2006, pp. 10-11; Concorde Capital, *Power Generation Companies: outperforming the market*, 15 November 2006.

Alchevsk collapsed completely, leaving the population without heating for several weeks and requiring that a local state of emergency be declared.) The housing ministry estimates that the system loses 60% of its energy through waste, more than one-third of which could be saved by basic technologically feasible improvements.[144]

After the gas price increases were announced in January 2006, Naftogaz Ukrainy managers announced a grand scheme to provide credit to households for the installation of individual gas boilers, via its subsidiary Gaz-Teplo. The replacement of no less than 3.5 million pieces of equipment, including 1.3 million boilers in buildings whose heating systems were at "crisis" stage and 1.4 million water heaters was envisaged. But the credits were not forthcoming, and after the appointment of the Yanukovich government and the subsequent change of management at Naftogaz, the programme was scrapped. Igor Savel'ev, the new deputy manager of Gaz-Teplo, publicly denounced the programme for having been introduced without technical, organizational or legal preparation; he stated that it would have resulted in no energy savings and breached numerous safety standards. In the household sector non-payment levels are likely to continue to rise while substantial energy-efficiency improvements have yet to begin.[145] Until plans are made to tackle the broader issue of capital stock replacement in the public sector, inefficient use of gas in the domestic heating sector is sure to continue, constrained only by such price discipline as is imposed.

There are also considerable energy savings to be made in the local gas distribution networks, in which pumping technology is outworn and metering insufficient. The progress of such savings will depend on the reforms of the regional gas companies, discussed in Section 5.

[144] Ministry of construction, architecture, housing and communal services, quoted in IEA, *Ukraine Energy Policy Review 2006*, p. 310; Turov, Oleg and Prudka, Natalia, "Zamorozili reformy – zamerzaiut goroda", *Ekspert*, 30 January 2006.

[145] Rozhdestvenskaia, Maria, "Rodnoi dom pod kryshei Neftegaza", *Energobiznes*, 27 February 2006; Savel'ev, Igor, "Rodnoi dom Alekseiia Ivchenko", *Ukrainska Pravda*, 23 October 2006; "Kogo nagrel Rodnoi dom?", *Energobiznes*, 24 October 2006; IEA, *Ukraine Energy Policy Review 2006*, pp. 307–315.

8. CONCLUSIONS

8.1 Ukraine's relationship with Russia: causes and outcomes of January 2006 crisis

The causes of the Russo–Ukrainian gas crisis of January 2006 were both economic and political. In the sphere of the economy, rising world prices of oil, gas and other commodities from 1999 helped Russia and, to a lesser extent, Ukraine, to recover from their post-Soviet slumps. However, the new environment of higher prices put a strain on the non-market system by which intra-CIS gas prices were set. As European import prices rose sharply, the implicit losses to Gazprom of providing cheap gas to Ukraine, Belarus and Moldova, etc. also rose. These economic changes were concurrent with political changes, beginning with the accession to power of President Putin in Russia, and his pursuit of a 'strong state' policy. Putin sought to reverse the chaos of the Yeltsin years by centralizing the mechanisms of government. In the oil and gas sector he moved to increase state ownership, most directly through the sequestration of Yukos' assets. He consolidated state control over revenues from oil and gas: the oil companies started paying more taxes and the new Gazprom management, headed by Putin's allies, took a firm grip on export proceeds. Moscow sought to reduce its dependence on Ukraine and other former Soviet states for gas transit to Europe, and to raise import prices, while giving away as little as possible on transit and storage fees. It also sought, using the price negotiations as a lever, to gain control of transit infrastructure. Finally, using transit intermediaries (ETG and then Rosukrenergo), it sought to undermine Ukraine's bargaining power in central Asia, in particular its ability to negotiate directly with Turkmenistan.

For several years before January 2006 in Putin's Russia, the ground was being prepared in gas sector policy for the conflict that erupted. Gazprom management lobbied publicly for CIS export prices to be raised to European netback levels and reorganized transit without Itera; a confrontation with Belarus had been staged in early 2004. In Kuchma's Ukraine, by contrast, decision-makers muddled through in such a way that no progress was made in reducing Ukraine's dependence on cheap imported gas. Energy efficiency improved quite substantially in some processing industries, but may have actually deteriorated in the public sector. The improvements were certainly not translated into any reduction in Russian or Turkmen gas imports. No attempt was made to dismantle the opaque barter payment system for Turkmen gas or the profits made from it by Ukrainian business groups. The pro-market reform government of 1999–2001, when Viktor Yushchenko was prime minister and Yulia Timoshenko was deputy prime minister in charge of energy, introduced reforms in the power sector and tackled the non-payment problem there, but no parallel changes were made in the gas sector.

Russo–Ukrainian relations in the gas sphere were thus already strained before the Orange revolution of December 2004. Those events raised tensions further. During the presidential election campaign, Putin demonstrated both political ineptitude and an unpleasant contempt for Ukrainian democratic aspirations, in the manner of his public backing for Yanukovich. American support for Yushchenko was stealthier. While the huge demonstrations against ballot-rigging in Kiev came as a surprise to political leaders on all sides, the level of popular discontent caused particular concern in Moscow. When Yushchenko and his first government prioritized accession to NATO and the EU, Moscow faced another fear: the loss of an ally. In the gas sphere, efforts to abolish the implicit subsidy and deprive Ukraine of control over transit arrangements were now intensified. The proposal to increase Ukrainian import prices to European netback levels, previously used as a lever of persuasion on a generally cooperative Ukrainian leadership, became an ultimatum. This led to the crisis of January 2006.

The crisis was settled by a series of compromises. The result was still some way from the principles of linkage to European price levels and use of market mechanisms, extolled publicly by both Russian and Ukrainian governments. By and large, the Russian government and Gazprom achieved most of their aims from the commercial agreement of 4 January. The agreement (1) ended the use of Russian gas as barter payment for transit services, and opened the way for Russia to move Ukrainian prices towards European netback levels; (2) moved prices closer to European levels, while securing below-European levels of transit fees, and storage fees which were frozen until 2030 at a fraction of European levels; (3) further tilted the balance of control of transit arrangements away from Ukraine, by consolidating Rosukrenergo's role as both shipper and supplier; and (4) gave Russia a powerful position in the Ukrainian domestic gas market, via Ukrgaz-Energo, thus moving towards another long-standing Russian aim. The agreement did not bring the Russian side any closer to controlling the management of, let alone ownership of, the Ukrainian transit system. However, during the thaw in Russo–Ukrainian relations that followed the appointment of the Yanukovich government, this issue has been raised once more.

Some points can be made about how the January 2006 crisis and its consequences have been dealt with in Russia and Ukraine. On the Russian side, the reduction in export volumes of gas on 1–3 January 2006 appeared to be a tactical mistake in terms of relationships with European customers. In its determination to move Kiev to a different price level and commercial structure, Moscow either (1) underestimated the extent to which European customers would interpret the reduction of export volumes as a sign of Russia's unreliability as a supplier, rather than Ukraine's unreliability

as a transporter, or (2) decided that such a European reaction was a risk worth taking, or (3) a combination of these. Much subsequent European comment has tended to rely on a stereotypical view of Russia's use of the 'energy weapon' to pursue geopolitical aims, a one-sided interpretation of Moscow's behaviour that is also extended to such events such as the Russian dispute with Shell over Sakhalin II or the cancellation of the tender to foreign companies to enter the Shtokman project as joint venture partners. In fact, Moscow's relationship with Europe is one of mutual dependence: it needs the export sales as much as Europe needs the Russian imports. The prospect of Russia failing to meet European long-term contract commitments is negligible. A much greater danger is that faced by Ukraine and Belarus, of Russia consorting with Germany and other European countries to devise means, such as the North European pipeline, to minimize Russian dependence on Ukraine and Belarus for transit. Even in this area there is a large measure of mutual dependence since Russia will only be able to reduce, but not free itself from, reliance on Ukrainian and Belarussian transit.

On the Ukrainian side, it is important to bear in mind the strength of political feeling generated by the agreement of 4 January 2006 and the changes that it caused. Ordinary Ukrainians, especially in the Ukrainian-speaking west and centre of the country, were fearful of Russia's imperial instincts and concerned at the Ukrainian government's perceived weakness before their larger and historically dominant neighbour. Elements in the agreement, such as the de-linking of transit tariffs and gas prices, led to accusations of the national interest being sacrificed; the opaque ownership arrangements of the Ukrainian half of Rosukrenergo led people to presume that the corruption of the Kuchma era was still prevalent. The initial concealment of important addenda to the 4 January agreement, including the reduction and freezing of storage tariffs which were reported to the Ukrainian government only three weeks after being signed, added to these fears. Some Ukrainian politicians appealed to these sentiments for their own reasons, and their denunciations of Russia struck a chord. This is understandable since, in the aftermath of the January crisis, residential gas tariffs were increased twice after a freeze of several years.

A recurring theme in political discussions in Ukraine is that Russia is playing the gas imports card to promote its strategic interests in the domestic gas sector and in the economy generally. This has certainly happened during 2006, and surely constitutes just one more reason why, from any Ukrainian standpoint, reducing dependence on Russian and Turkmen gas imports is of crucial importance. But none of Ukraine's three post-Orange revolution governments (i.e. those led by Timoshenko, Yekhanurov and Yanukovich) made any significant progress in that direction. Nor is

it clear, given the country's financial situation, how quickly this can be achieved in the future. However, moving the country's gas prices to European levels could accelerate that prospect.

8.2 Ukraine's relationship with Russia in future

For the foreseeable future, even if the most dynamic energy efficiency programme was to begin tomorrow, Ukraine will require large quantities of imported Russian and/or central Asian gas. Also for the foreseeable future, Russia will be able to reduce slightly, but not escape from, reliance on Ukraine to transit gas to central and western Europe. Notwithstanding the long-term possibilities of Ukraine reducing gas consumption, or Russia diversifying from Ukrainian transit, it is therefore in the interests of both Ukraine and Russia to find a way to cooperate on import and transit. Beyond that, there is scope for variable outcomes. The most important variables are (1) the speed at which Rosukrenergo raises import prices (a matter in which it is assumed that Russian and central Asian policy makers continue to have influence) and (2) the speed at which Naftogaz raises transit and storage tariffs (which under the January 2006 agreement are frozen for 5 and 24 years respectively). Beyond that, (3) Ukraine, which has already surrendered a key position in the domestic market to Russia, could cede control over the transit system, and/or gas distribution assets, to a greater or lesser degree; and (4) Russian industrial interests could more or less aggressively, with support from Gazprom, use gas as a means to seek control over sections of the Ukrainian economy and especially gas-consuming industries. If no settlement is reached on Russian participation in the transit network, then it may be expected that Russia will work progressively to decrease its dependence on Ukrainian transit, while at the same time maintaining its presence in the domestic market.

Politically, the Orange revolution placed a big question mark over Ukraine's relationship with Russia. For the first time since the establishment of modern Ukraine, the president and government strongly advocated membership of NATO and the EU, and, by implication, a more distant and potentially hostile relationship with Russia. However, the likelihood of any significant movement towards NATO and EU membership has been significantly reduced throughout 2006. Firstly, domestic politics has moved towards a pragmatic collaboration between Yushchenko and the eastern Ukrainian industrial lobby that dominates the Yanukovich government. The March 2006 parliamentary election weakened Yushchenko's hand, and although Yanukovich took office on the basis of an agreement that the government would retain its pro-NATO orientation, the sidelining of pro-NATO foreign minister Boris Tarasyuk in November 2006 showed that the tide had turned in favour of a less western-oriented foreign policy, potentially more favourable to Russia. The

constitutional stand-off of April 2007 showed that the Yushchenko-Yanukovich relationship remains brittle, but also that it can survive such crises. External factors also played their part: the difficulties of the EU in assimilating the most recent group of accession countries and the disagreement about Turkish accession suggests that, while Ukraine may improve its trading relations with EU member countries, further formal steps towards accession have been postponed indefinitely. NATO too has its problems. Although in April 2007 the US adopted a law to provide financial assistance for Ukraine and other former Soviet states to prepare NATO accession, the amount of funds was insignificant and Yanukovich responded immediately by saying that the issue was "not currently under consideration".[146]

In the longer term, there are three possibilities: (1) as a result of further political changes, e.g. at the October 2007 parliamentary elections and the 2009 presidential elections, the Ukrainian government could swing back towards the more aggressive pursuit of alliances with NATO and the EU; (2) Yanukovich and his allies pull the Ukrainian government back towards a closer working relationship with Russia, and the aims of NATO and EU membership are relegated to paper status; or (3) some combination of the two. In the first case of a resumed course towards NATO, which the author considers to be the least likely for the time being, there could be forceful repercussions in the gas sphere, e.g. rapid increases in import prices and in transit tariffs. Presumably any Ukrainian government that adopted such a pro-western course would be even less prepared than others to countenance greater Russian control over the pipeline system. Only in the second case of an improvement in overall relations between the Russian and Ukrainian government would the prospect of greater Russian control over the transit network increase, although it should be noted that even under the relatively pro-Russian Kuchma, such proposals were abandoned. Presumably the Ukrainian political class realises that control over the transit network is a trump card that, once handed to Moscow, could never be retrieved. Under a more Russia-friendly Ukrainian government, the danger of disruptive disputes over prices, tariffs, etc. would be less likely, as there would be greater scope for compromise and avoidance of too-rapid price changes. Russian attempts to gain greater control over sections of the Ukrainian economy are likely to continue, whatever the direction of Ukrainian foreign policy. However, as the experience of the Timoshenko government shows, a government that is less concerned about offending Russia might place administrative obstructions in the way of some or all of Russian business groups.

[146] "Yanukovych thanked the USA for NATO", ForUm news agency, 19 April 2007.

8.3 Future international relations in the gas sphere

The agreements reached on gas imports in 2006 and 2007 depended primarily on Ukraine's relationship with Russia, but there are other important factors, including both countries' relationship with Turkmenistan and other central Asian producers and changes in corporate relationships. It was argued in Section 4 that an implicit subsidy to Ukraine was contained both in the $95/mcm import price in 2006 and in the $130/mcm import price set for Ukraine for 2007. The former concession was given in exchange, primarily, for the domestic market position established by Ukrgaz-Energo and favourable storage terms for Rosukrenergo. The latter concession was apparently given in exchange for Ukrainian government support for Rosukrenergo and allied businesses (e.g. in acquisitions in the Ukrainian gas and chemicals sectors, a strong position in central European gas and electricity markets, etc.). These benefits to Rosukrenergo came in addition to handsome profits from the transit contract. It is worth reviewing the reasons why Gazprom and the Russian government (both of which continue to have a say in negotiations on Ukrainian import prices) might be so well disposed towards Rosukrenergo as to favour it in this way. First, the shipping of Central Asian gas operated first by Itera and then by ETG and Rosukrenergo enabled Gazprom largely to disentangle itself from the problems of payment collection in Ukraine and other former Soviet republics, and from opaque and controversial facets of the transit business such as the Ukrainian–Turkmen barter payment system. Second, since Turkmen sales to Naftogaz were stopped during 2006, Rosukrenergo buys gas at the Turkmen border either from Gazprom or directly from Turkmenneftegaz and has helped Russia to sever the direct commercial relationship between Turkmenistan and Ukraine. Third, in Ukraine itself, Rosukrenergo has managed issues of storage and of late payments for gas since 2006 and, via Ukrgaz-Energo, established a strong Russian position in the domestic market.

It is difficult to answer the question: how viable, in the long term, is the transit system established by Gazprom and Rosukrenergo. Rosukrenergo's position appears stronger than that of Itera, its effective predecessor. But Rosukrenergo and the Firtash group, the majority owners of its Ukrainian half, remain heavily dependent on their relationship with Gazprom and the Russian government, which is too opaque for predictions to be made about it with confidence. Russian control over the CIS gas trade is an essential policy aim for Moscow, but the use of Rosukrenergo for transit and supply of gas imported to Ukraine is not. This has been underlined by the repeated suggestions, made in both Moscow and Kiev in early 2007, that future transit arrangements might be made without Rosukrenergo. The useful functions undertaken by Rosukrenergo for Gazprom have been enumerated above. The other activities of Rosukrenergo and the Firtash group, e.g. gas and

electricity sales in central Europe, are of no obvious benefit to Gazprom. Assuming that all the public speculation about political or ownership links between the Firtash group and Russian political and business leaders is baseless, and considering the problem from a purely commercial point of view, Rosukrenergo will remain important to Gazprom for as long as difficulties persist in its commercial relationships with Ukraine and Turkmenistan. If and when these are regularized, and the problem of non-payment for Russian and central Asian gas in Ukraine has been minimized, the simple task of shipping central Asian gas to Ukraine could be undertaken by any entity chosen by Gazprom in consultation with the management of Naftogaz Ukrainy, which following the recent changes in government is now much more prone to compromise with Moscow. One way in which this could happen is if the Russian drive to participate in management of the Ukrainian transit network were to succeed. Then Rosukrenergo's role would be reduced. A decision to remove Rosukrenergo would be simpler in the medium to long term, if and when the regularization of payments takes place. If Rosukrenergo were replaced sooner, this would presumably be due to factors in its relationship with the Russian government, the details of which are unknown.

The severing of the direct Turkmen–Ukrainian link has been mentioned. If Russia is successful in preventing this from being re-established, this will amount to an important step towards further centralizing control over revenues not only from its own gas production but also from Turkmenistan's. At the time of writing, this seems to be the most likely prospect in the near or medium term (i.e. 1–3 years). Even if this does not happen, Russia will presumably continue to insist as it has done since the mid 1990s that Turkmen gas be sold to Ukraine at price levels lower than that of Russian gas sales to Europe, although moving towards those levels. An additional unpredictable factor that may impact Ukraine's gas imports is possible political instability in Turkmenistan, following the death of Niyazov. This will not change things in the short term since honouring gas export contracts obviously remains in the Turkmen government's interest. However, in the longer term, political change or instability in Turkmenistan could impact gas production, export and prices. Even in the case that direct Turkmen–Ukrainian relations remain severed, Ukraine will watch developments in Turkmenistan anxiously since, for example, Russia would want to pass on higher Turkmen export prices to Ukraine.

A final point about international relations in the gas sphere concerns the transit of Russian gas to Europe. Conclusions may be drawn about Russia's strengths and weaknesses regarding Ukraine on the basis of Russia's conflict with Belarus. Unlike Ukraine, Belarus has agreed in principle to sell to Russia a share in its transport system, which is the main alternative to the Ukrainian system for exporting Russian gas to Europe. However, negotiations on this issue became fractious at the end of

2006, although the relationship which Belarus has with Russia is much warmer than that between Kiev and Russia. The Russian and Belarusian leaderships have closer political and economical ties. Notwithstanding these ties, Moscow insisted that Belarusian import prices rise in early 2007, and has held back from increasing them still further only as the result of an agreement that it take a share in the transport system. This is a reminder of the importance of the economic, and not only political, factors in gas sector relationships.

If the economic determinants of Ukrainian import prices are abstracted, for hypothetical purposes, there are two important elements: (1) the purchase price of gas in central Asia, plus transit, which may be called the 'net forward' price; and (2) the average sale price of Russian and central Asian gas in central and western Europe, minus the transport costs from Ukraine, i.e. the 'net back' price that has been referred to in discussions. As market relationships spread in the gas sector in the CIS in general – a process for which the Russian government's intention of raising domestic tariffs to a European 'net back' level by 2011 provides an impetus – it may be expected that Ukrainian import prices will be set by a combination of these two factors, plus distortions introduced for political reasons.

8.4 Energy strategy and the impact of import price increases

The legacy of Ukraine's slow political and economic development over the last 16 years remains a key factor in the gas sector. In the early 1990s, cheap gas was a means of stabilizing society at a time of economic slump and social unrest. For sections of the elite, control of gas imports became a means of taking ownership of other industrial assets. Whether the weak state and government could have done anything to tackle over-consumption of gas at that time is debatable; in any case, no action was taken. The gas sector reform of 1996–1997 only provided a boost for parasitic rent seekers before collapsing in failure. In the early 2000s, decentralization and price reforms began in the power sector, but were not extended to the gas sector. Although the economic slump and fiscal chaos of the 1990s have been left behind, the power of business groups and comparative weakness of the state and government remains. The Orange revolution has not changed this.

Fundamental change in the gas sector depends, firstly, on reducing dependence on imports and on reducing consumption. The means to do so are well known and have been repeated in the government's 2006 Energy Strategy: energy saving measures, diversifying to coal as a fuel input, raising domestic production, seeking non-Russian supplies of gas, etc. Implementation of the energy strategy depends not only on finding financial resources but also, crucially, on more decisive

government and on institutional reform. Take the example of domestic production. Substantial progress can only be made if (1) there is a strategic decision by government to allocate sufficient investment resources to E&P, and/or (2) the tax regime is changed, and/or (3) the objections made by the international oil companies are met and energetic steps taken to undertake joint ventures or production sharing agreements. At the moment there is no clear strategy by the government for moving down any of these paths. Another example is that of reducing gas consumption in the district heating sector. Government and other bodies have deemed the possible reductions in this sector as potentially among the greatest and the easiest to implement. However, progress in replacing plant and equipment in the sector has been far slower than in industry. These difficulties, in pushing forward energy savings on one hand and institutional reform on the other are not unique to Ukraine. Russia and other former Soviet republics have suffered from the same problems.

Judging by events during 2006, price increases are an important driver of change, probably the most important. Gas price increases have been one of the main triggers for the substantial investments being made in renewing capital stock in the steel industry; if this continues, this will be an important new economic trend. The picture is so far incomplete, however, and price increases in future may have a greater negative impact on the Ukrainian economy than they did in 2006. As discussed in Section 7 above, the impact of price rises was mitigated in 2006 by factors such as strong consumer-led consumption and strong metals prices, which made the economy more resistant to the negative impact of price increases than had been expected. These factors will not necessarily persist in future. The initial price rises in 2006 were sufficient impetus for energy saving and fuel diversification measures in industry, although not in district heating or other public sectors. The speed with which measures were adopted in industry is cause for optimism as far as reducing consumption is concerned, but it is too early to say what their total effect will be.

In the medium term, considerable increases in import prices may be expected. Even at $130/mcm, import prices still have a considerable way to go to reach European net-back levels at 2006–2007 prices. Hopefully, the positive results of the price increases in terms of lower gas consumption, efficiency savings, etc. will be achieved without a negative impact on the economy or on living standards that will result in further hardship of the type that Ukrainians suffered during the 1990s.

8.5 Domestic market reform

Rising import prices and, to a lesser extent, the government's energy strategy, are factors that will shape changes in the Ukrainian domestic gas market. Corporate changes resulting from the

agreement of 4 January 2006 will also have an influence. As indicated in Section 4, Rosukrenergo and associated companies may become the dominant force, although this ultimately depends on Rosukrenergo's relationship with Gazprom, on whose goodwill its role as monopoly shipper depends.

Naftogaz Ukrainy, already deprived of the industrial market and being forced to deal with Ukrgaz-Energo as a monopoly importer in 2007, is being weakened. As Naftogaz's debts to Rosukrenergo and the banks have mounted, it has been suggested in the Ukrainian press that Russian strategic aims might be served by the bankruptcy of Naftogaz. It is hard to see, though, what Russia has to gain from this. Russia is achieving its aims in the domestic market without any such dramatic event. Russia should be able to become more closely involved in the management of transit and storage without much resistance from Naftogaz, the current management of which is close to the eastern Ukrainian industrial lobby that dominates the government. The fact that in early 2007, Ukrainian officials had apparently restarted discussions on the future ownership of the transport network with their counterparts in Moscow emphasizes that, again, Russia will probably be able to achieve its strategic aims by negotiation with the Yanukovich government. In the unlikely but possible event of a determinedly pro-western government taking over in Ukraine, and persistent efforts by such a government to distance itself from Moscow, Naftogaz could find itself under much greater pressure from Gazprom and Rosukrenergo.

The near-term prospects for market reform in the Ukrainian gas sector seem limited for the same reasons that implementation of the energy strategy and institutional reform in general will require time. In 2006, the industrial market was moving towards near-monopoly domination by Ukrgaz-Energo, which, as described in Section 5, supplies gas to industrial customers directly or via traders who make a limited margin. In the market for residential and public sector customers, it seems unlikely that any substantial change will precede the consolidation of control over most regional gas companies by business groups active in the sector. The government's January 2007 measures in the regulated sector give few grounds for optimism, as they seem focused as much on strengthening the hand of Ukrgaz-Energo in the consolidation process as much as on payment discipline.

A consistent energy strategy is likely to move from document form into practice only with longer-term planning in government and a reduction in the influence of the business groups over government.

APPENDIX 1. STATISTICAL INFORMATION ABOUT NATURAL GAS IMPORTS AND EXPORTS

One of the challenges of researching natural gas imports into Ukraine and exports from it is to find accurate statistical information, and to correlate the various statistics available. There are wide disparities between information from different sources, as Table A1.1 demonstrates.

Table A1.1. Imports and exports of natural gas, selected figures (bcm/year)

	CIS statistics (importers' information)		CIS statistics (exporters' information)		*Energobiznes* (Ukrainian ministry of fuel and energy)		Stefanovski (figures provided by Naftogaz)	
	2004	2005	2004	2005	2004	2005	2004	2005 estimate
Turkmenistan to Ukraine	29.845	35.137	no info	no info	25.6[a]	37.0[a]	33.8[b]	36.0[b]
Kazakhstan to Ukraine	0	0	0.596	0	–	–	0	0
Uzbekistan to Ukraine	0	1.893	no info	no info	–	–	0	0
Russia to Ukraine	32.287	23.166	32.287	23.166	34.1	20.4	24.0	23.0
Ukraine to non-CIS	–	–	4.086	2.656	3.9	2.7	6.0	6.0

[a]These figures are identified as "from Central Asia" (with no distinction between Turkmen, Uzbek and Kazakh gas). The 2005 figure is marked "for Naftogaz", and excludes 1.5 bcm sold to Rosukrenergo and pumped into storage.
[b]These figures include Turkmen gas re-exported from Ukraine, which may have been up to 6 bcm in 2004–2005
Sources: *External trade of the countries of the Commonwealth of Independent States in 2005: statistical abstract*, preliminary results (Moscow, 2006), pp. 79, 153-156 (cols. 1 and 2); *Energobiznes*, January 24, 2005 and January 16, 2006 (col. 3) and Stefanovski, *Ukraine Oil and Gas Sector Overview*, 2005.

The first, third and fourth sets of figures, generated by the Ukrainian trade ministry, the fuel and energy ministry and Naftogaz Ukrainy, respectively, vary widely. Turkmen exports to Ukraine in 2004 are counted as 29.845 bcm, 25.6 bcm and 33.8 bcm, respectively; Russian exports to Ukraine in the same year are counted as 32.287 bcm, 34.1 bcm and 24.0 bcm. The difficulties are exacerbated by the Turkmen and Uzbek authorities' failure to submit information on gas exports to the CIS Interstate Statistical Committee (see column 2). There are three factors which may account for disparity in the statistics, described below.

First, some Turkmen gas was re-exported in these years (Naftogaz reported that part of the volumes which it exported in 2004 were of Turkmen origin, and it was expecting that procedure to continue in 2005[147]). It is not clear how these volumes were treated by the reporting authorities.

[147] Naftogaz Ukrainy, *Offering Circular*, 2004, p. 85

Second, different authorities may use different methods of distinguishing between imported volumes of Russian gas and imported volumes of Turkmen gas. In both 2004 and 2005, Gazprom publicly reported sales to Ukraine of volumes in excess of the total imports of Russian gas measured by all the Ukrainian authorities (34.4 bcm in 2004 and 37.6 bcm in 2005).[148] Presumably these included Turkmen gas bought by Gazprom and resold to ETG (in 2004) and Rosukrenergo (in 2005) for sale in Ukraine and/or central Europe. In 2005, Gazprom provided in its annual financial report information on the proceeds of gas sales to Rosukrenergo, including sales of Russian gas, Turkmen gas, and volumes in storage in Ukraine. But Gazprom declined to provide a breakdown of gas from different sources, as this is not required under Russian or international accounting rules.[149] These volumes may have been treated differently by different reporting authorities.

Third, it is not possible to check the official statistical information against company information, since under the commercial contracts between Naftogaz and Turkmenneftegaz, between Gazprom and Turkmenneftegaz and between these companies and ETG (in 2004) and Rosukrenergo (in 2005), exact volumes delivered are rarely disclosed.

Throughout this article, statistics published in *Energobiznes*, which are based on information provided by the fuel and energy ministry, have been used as standard.

[148] *Gazprom in figures 2000-2004 fact book*, 2005, p. 30; *Gazprom v voprosakh i otvetakh*, 2006, p. 46

[149] Natalia Vavrishchuk's answer to author's question at Gazprom press briefing, Moscow, 29 June 2006.

APPENDIX 2. GAZ UKRAINY'S PREDOMINANT POSITION IN THE DOMESTIC WHOLESALE MARKET UNTIL 2005

Gaz Ukrainy's dominant position on the domestic wholesale market up to 2005 can be seen by comparing the volumes it supplied to customers with the fuel and energy ministry's overall consumption figures. Table A2.1 displays the comparative figures for the year 2005, broken down by sector.

Table A2.1. Gas consumption in 2005: Gaz Ukrainy's share of the total

Users of gas	Ministry of fuel and energy 2005		Gaz Ukrainy 2005	
Ukrainian consumers, including:	**68.9**		**58.54**	
Power industry	5.7		3.48	
Industry	29.1		25.51	
Via regional government, including	34.1		29.55	
District heating		13.7		10.94
Population and public sector organizations		20.4		18.61
Technical gas	**7.4**		**1.22**	
Gas for LNG production (Ukrnafta)	**0.1**		**–**	
Ukraine, total	**76.4**		**59.76**	

Source: *Energobiznes* (for fuel and energy ministry statistics); Gaz Ukrainy

BIBLIOGRAPHY

Alfa Capital. *Ukrnafta: Rough Diamond in the Ukrainian Crown*, 29 June 2006.

Aslund, Anders and de Menil, Georges. "The Dilemmas of Ukrainian Economic Reform", in Aslund and de Menil (eds.), *Economic reform in Ukraine*, London: M.E. Sharpe, 2000, pp. 3–29.

Bagratian, H. and Gurgen, E. *Payments Arrears in the Gas and Electric Power Sectors*, IMF Working Paper, December 1997.

Balmaceda, Margarita Mercedes. "Gas, Oil and Ukraine" in *Europe-Asia Studies* 50:2, pp. 257–286. 1998.

Balmaceda, Margarita Mercedes. "Ukraine's Persisting Energy Crisis", *Problems of Post-Communism*. pp. 40–50, July–September 2004.

Committee on Fuel, Energy and Transport of the Verkhovnaia Rada. Briefing paper, 2005.

Concorde Capital. *The Gas Issue: Ukraine to be Gazpromed?* 5 June 2006.

Concorde Capital. *Gas Distribution Companies: For Daredevils Only*, 22 August 2006.

Concorde Capital. *Nitrogen fertilizer producers: on the edge*. 31 October 2006.

Capital. *Power Generation Companies: outperforming the market*. 15 November 2006.

D'Anieri, Paul. *Economic interdependence in Ukrainian-Russian relations*. Albany: NY, State University of New York Press, 1999.

D'Anieri, Paul, Kravchuk, Robert and Kuzio, Taras. *Politics and Society in Ukraine*. Westview Press: Boulder, Colorado, 1999.

Diyak, Ivan. "Energetichna bezpeka derzhavi: naiblizhchy kroki". *Golos Ukrainy*, 6 October 2005.

Dresdner Kleinwort debt research. *EM Macro Focus. Ukraine – Rushing Slowly Someplace New*, 15 September 2006.

Energy Charter Secretariat. *Energy Efficiency Protocol and Related Environmental Aspects: Regular Review*, 2002.

Energy Charter Secretariat. *Gas transit tariffs in selected Energy Charter treaty countries*, 2006.

European Bank for Reconstruction and Development. *Transition report* 2001, 2003, 2005, 2006.

Fitch Ratings. "CIS 2007 Oil and Gas Credit Outlook", December 2006.

Gazprom. *Finansovy otchet*. 2005.

Gazprom. *IFRS Consolidated Financial Statements*. 2005.

Gazprom. *In figures 2000-2004 fact book*. Moscow 2005.

Gazprom. *Gazprom v voprosakh i otvetakh*. Moscow 2006.

Gazprom. *IFRS Consolidated interim condensed financial information* (unaudited). 31 March 2006.

Geral'diki ta veksilologii (Ukrainske naukove tovaristvo). *Palivno-energetichnii kompleks Ukrainy* (Novii svit, Kiev, 2006).

Government of Ukraine. *Ugoda mizh Uriadom Ukraini i Uriadom Rosiys'koi Federatsii pro eksport rosiys'kogo prirodnogo gazu v Ukrainu i iogo tranzit cherez teritoriiu Ukraini v evropeis'ki kraini*, 18 February 1994. On the Verkhovnaia Rada web site: http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?page=3&user=cy2001

Government of Ukraine. *Ugoda mizh Kabinetom Ministriv Ukraini i Uriadom Rosiys'koi Federatsii pro dodatkovi zakhodi shchodo zabespechennia tranzitu rosiys'kogo prirodnogo gazu po teritorii Ukraini*, 4 October 2001. On the Verkhovnaia Rada web site: http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?page=8&user=cy1994

Government of Ukraine. *Energy Strategy of Ukraine for the Period until 2030*. Kiev. April 2006.

Global Witness. *It's a Gas: Funny business in the Turkmen-Ukraine Gas Trade*. *Washington, Global Witness Publishing*, April 2006.

Institute for Economic Research and Policy Consulting. *Monthly Economic Monitor Ukraine*, September, October and November 2006.

Institute for Economic Research and Policy Consulting in Ukraine/ German Advisory Group on Policy Reform. *Gas storage tariffs along the export route to EU markets*, 2006.

International Energy Agency. *Natural Gas Transportation and Regulation*, Paris 1994.

International Energy Agency. *Ukraine Energy Policy Review*, 2006.

International Monetary Fund. *Ukraine – 2006 Article IV Consultation*, 24 October 2006.

International Monetary Fund. *Russia: Selected Issues*. Country Report 06/430, December 2006.

International Monetary Fund. *Ukraine: Selected Issues*. Country Report 07/47, February 2007.

International Monetary Fund. World Economic Outlook database. http://www.imf.org/external/pubs/ft/weo/2007/01/data/index/aspx, 2007.

Krasnov, Gregory V. and Brada, Josef C. "Implicit subsidies in Russian-Ukrainian energy trade", *Europe-Asia Studies* 49:5, 1997, p. 825–843.

Krushelnycky, Askold. "In Russia, Former Soviet Bloc, the Ruling Clique Heads Corruption", Radio Free Europe/Radio Liberty web site, 5 September 2000.

Lovei, Laszlo. *Gas Reform in Ukraine: monopolies, markets and corruption*, Public Policy for the Private Sector note no. 169, 1998.

Lovei, Laszlo and Skorik, Konstantin. "Energy Sector Reform in Ukraine", in Hoffman and Seidenberg (eds.), *Ukraine at the crossroads*, pp. 341–350, 1999.

Michalopoulos, Constantine. "The Integration of Transition Economies into the World Trading System", September 1999, WPS-2182, World Bank.

Naftogaz Ukrainy. *Offering Circular*, 2004.

Naftogaz Ukrainy. *Tematicheskaia spravka: rekonstruktsiia GTS*, September 2006.

Naftogaz Ukrainy. "Roz'iasnennia shchodo zaiav predstavnikyv oblasnikh pidpriemstv z gazopostachannia ta gazifikatsii", 8 December 2006.

Pidluska, Inna. *Corruption versus clean business in Ukraine*, Economic Reform Today 2, 1998.

Sakwa, Richard. *Putin: Russia's Choice*, London: Routledge, 2004.

Semenov, O. and Mykhailov, S. "Gas transmission system of Ukraine: current status and priorities for sustainable development" at *23rd World Gas Conference*, Amsterdam 2006.

Shevtsova, Lilia. *Putin's Russia* (2nd edn.) Washington: Carnegie Endowment for International Peace, 2005.

Siedenberg, Axel and Hoffman, Lutz. *Ukraine at the crossroads; Economic reform in international perspective*, New York: Physica–Verlag, 1999.

SigmaBleyzer/The Bleyzer Foundation. "Impact of Gas Price Increase on the Economy of Ukraine in 2007", November 2006.

Smith, Alan. *Russia and the world economy: problems of integration*. Routeledge: London, 1993.

Spilimbergo, Antonio. *Measuring the Performance of Fiscal Policy in Russia*, IMF, WP/05/241, December 2005.

Stefanovski, Zarko. *Ukraine Oil and Gas Sector Overview*. Fox–Davies Capital: London, December 2005.

Stern, Jonathan P. *Soviet Natural Gas Development to 1990: the implications for the CMEA and the West*. Lexington Books: Lexington, Mass., 1980.

Stern, Jonathan P. *The Russian Natural Gas 'Bubble': consequences for European gas markets*. Royal Institute for International Affairs: London, 1995.

Stern, Jonathan P. "Soviet and Russian Gas" in Mabro and Wybrew-Bond (eds.), *Gas to Europe: the strategies of four major suppliers*. Oxford University Press: Oxford, 1999.

Stern, Jonathan P. *The Future of Russian Gas and Gazprom*. Oxford University Press: Oxford, 2005.

Stern, Jonathan P. *The Russian–Ukrainian Gas Crisis of 2006*. OIES Working Paper, January 2006.

Troika Dialog. *High Gas Prices – Motivating Efficiency*, 21 September 2006.

Troika Dialog. *Ukraine Growth Update: Economics*. December 2006 and February 2007.

Troika Dialog. *Ukraine Monthly Strategy*, April 2007.

Ukrainian Centre for Economic and Legal Analysis (UCELA). *Ukraine as a 'Gas Corridor': Recent Developments and Future Implications*. Kiev, April 2004.

Ukrainian Centre for Economic and Legal Analysis (UCELA). *Energy Efficiency in Ukraine*, Kiev, January 2006.

Ukrsibbank. *Naftogaz: company research*, July 2006.

Ukrsibbank. *Skol'ko stoit gaz po $130?* October 2006.

Van Zon, Hans. *The Political Economy of Independent Ukraine*. Macmillan: Basingstoke, 2000.

World Bank. *Ukraine: Challenges Facing the Gas Sector*, September 2003.

World Bank. *Ukraine Country Study: Building Foundations for Sustainable Growth*, August 2004.

World Bank. *Ukraine: The Impact of Higher Natural Gas and Oil Prices*, December 2005.

World Bank. *Ukraine Economic Update*, November 2006 and April 2007.

World Bank. *Russian Economic Report*, December 2006.

World Bank. *Higher Gas Prices and Quasi Fiscal Deficits in the Gas Sector*, 29 December 2006.

Yafimava, Katja and Stern, Jonathan. *The 2007 Russia-Belarus Gas Agreement*, Oxford Institute for Energy Studies, January 2007.

Yekhanurov, Yuri. "The Progress of Privatisation", in Aslund and Menil (eds.), *Economic Reform in Ukraine*, pp. 190–192.

Newspapers, journals and web sites

Delo (Kiev), *Delovaia Stolitsa* (Kiev), *Ekspert* (Kiev), *Energobiznes* (Kiev), *Financial Times* (London), *Gas Matters* (London), Gazeta.ru (Moscow), *Kommersant* (Moscow), *Kompanion* (Kiev), *Neft i Kapital* (oilcapital.ru) (Moscow), Ngv.ru (Moscow), *Novaia Gazeta* (Moscow), Prime-Tass news agency (Moscow), *Radio Free Europe/Radio Liberty* (Washington), *Ukrainian Weekly* (Kiev), *Ukrainska Pravda* (pravda.com.ua) (Kiev), Ukroil.com.ua (Kiev), *Vedomosti* (Moscow), *Vlast i Deneg* (Kiev), *Zerkalo Nedeli* (Kiev)