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Cleaning Up the Energy Sector

Victory is when we won't buy any Russian gas.
—Prime Minister Arseniy Yatsenyuk[1]

Ukraine's energy sector is well endowed but extremely mismanaged. Since Ukraine's independence, it has been the main source of top-level corruption, and its prime beneficiaries have bought the state. This long-lasting policy has undermined national security, caused unsustainable public costs, jeopardized the country's balance of payments, led to massive waste of energy, and capped domestic production of energy. It is difficult to imagine a worse policy. Instead, conditions should be created so that Ukraine can develop its substantial energy potential and become self-sufficient in coal and natural gas.[2]

The solution to these problems is no mystery and it has been elaborated in a large literature for the last two decades. To check corruption energy prices need to be unified. That means raising key prices four to five times, which will eliminate the large energy subsidies and stimulate energy saving, while also stimulating domestic production of all kinds of energy. To make this politically possible, social compensation should be offered to the poorest half of the population.

The energy sector suffers from many shortcomings, and most of these need to be dealt with swiftly. Otherwise, new rent-seeking interests will evolve, and soon they will become entrenched and once again impossible to defeat. The new government has a brief window of opportunity to address the most important issues.

1. "Ukraina osvoboditsya ot 'gazovoi zavisimosti' ot RF cherez 5 let—Yatsenyuk" ["Yatsenyuk: Ukraine Will Free Itself from Gas Dependence on Russia in 5 Years"], *Ekonomichna pravda*, September 8, 2014.

2. In writing this chapter I have greatly benefited from the wisdom of Ed Chow and Mikhailo Honchar.

To sort out these problems, this chapter first scrutinizes the energy sector in general and then the gas and coal sectors. Their essence is the corrupt enrichment of a few. Next, it proposes a large-scale reform of the Ukrainian energy sector. Specifically, it discusses how private energy production can be promoted and questions whether Ukraine really ought to pursue gas trade with Russia.

What Is Wrong with the Ukrainian Energy Sector?

To understand Ukrainian energy policy, we need to examine its potential, shortcomings, and the causes of the persistent failures to reform this flawed policy. All along, the natural gas sector has harbored the worst mismanagement. Its basic problem is Ukraine's persistently very low domestic gas price for state-owned producers, households, and utilities. Ukraine has the lowest gas prices for households in Europe (IEA 2012). According to the International Monetary Fund (IMF 2014a, 20), "The retail gas and heating tariffs remain the lowest in Europe, only 11–25 percent of the levels in other gas-importing countries in the region and significantly below even the levels in Russia."

The worst concern is the extraordinary corruption in the gas sector (Balmaceda 2013, Global Witness 2006). The fundamental problem is that the Ukrainian energy sector has never been liberalized. The state continues to control both prices and allocation, and this state power has continuously been usurped for private benefit. Many energy prices are far below the market level, while others are market-oriented and up to 12 times higher as of September 2014.

Most large Ukrainian fortunes have been built on arbitrage between low energy prices fixed by the state and market prices that are several times higher. Initially this arbitrage took place between Russia and Ukraine but today it is primarily within Ukraine. The government has financed this boondoggle of the rich and powerful with price and enterprise subsidies, provided state guarantees, and forgiven nonpayments. Inefficient state energy corporations governed poorly and not subject to public audits aggravate the corruption.

In 1998, all state-controlled oil and gas companies were integrated into an unwieldy state holding company, Naftogaz Ukrainy. It is the largest company in Ukraine with 175,000 employees producing 8 percent of GDP, but Naftogaz has never functioned well. The state budget finances its large losses. Restrictive regulation, poor property rights, and ample red tape make it impossible for all but a few well-connected operators to produce energy. Reputable foreign companies have barely played any role in the Ukrainian energy sector.

With their energy policy, successive Ukrainian governments have favored corruption through arbitrage while penalizing domestic production through price discrimination. Ukraine has a sizeable gas industry, currently contributing 40 percent of its consumption. Each year Naftogaz buys 17 billion cubic meters (bcm) of natural gas domestically produced by partially state-owned companies at an extremely low price. In September 2014, the Ukrainian government paid only $30 per 1,000 cubic meters (mcm) of natural gas produced by the state-owned producer Ukrgazvydobuvannia (Ukrgazdobycha in Russian), while the domestic market price for industry was around $380 per mcm. Ukraine could produce far more gas, both conventional and shale gas, with a normal gas price (Kobolyev 2014). The state budget covers the losses of state-owned Ukrgazvydobuvannia.

The alleged reason for keeping the production price so low is to provide consumers with cheap gas. Deputy Prime Minister Volodymyr Groisman assessed that 40 percent of the 17 bcm was resold to the commercial sector, where gas prices are based on the Russian gas price of $380 per mcm. In that fashion, somebody close to Yanukovych made a fortune of some $2.5 billion a year.[3]

In the spring of 2014, the Yatsenyuk government appointed a 34-year-old investment banker, Andriy Kobolyev, CEO of Naftogaz. Since then, Kobolyev has been the driving public voice in favor of gas reform, demanding an early unification of the gas prices. Kobolyev (2014) characterized the old policy thus: "We give you gas for 100 hryvnia [$7], and you ignore that we steal $100."

Ukrgazvydobuvannia has a large number of gas fields, but much of the Ukrainian gas is located deep down, requiring drilling of 5,000 meters or more. Such wells are expensive to drill, and the company has currently only 42 such wells. Production at such wells typically costs $200 per mcm, which Ukrgazvydobuvannia cannot afford. It would be highly profitable for a private company that can sell gas to industry for the market price of around $380 per mcm, but few are allowed to drill. In order to limit its losses, Ukrgazvydobuvannia sells unprofitable wells for close to nothing to private gas producers, which belong to half a dozen big Ukrainian businessmen (Kobolyev 2014).

Nor is the subsidization of households through low gas prices socially just. Only 5 million households, one-third of the total, enjoy these gas subsidies. The poorest part of the population lives in the countryside, buying gas tubes that are not subsidized and spending five to six times more on gas per unit than privileged urban households (Kobolyev 2014).

The Ukrainian budget cost for direct and indirect energy subsidies is intolerably high, no less than 7.6 percent of GDP in 2012, according to the IMF (2014b, 87), and it has risen considerably with the depreciation of the hryvnia in 2014. The domestic energy prices are regulated in hryvnia, while the import cost is set in dollars. Domestic consumer prices for gas were hiked 56 percent on May 1, 2014, but the depreciation of the hryvnia has been far greater, which has increased the total energy subsidies.

Every year, Naftogaz is recapitalized with $3 billion to $5 billion from the government budget to cover its debts. In August 2014, the government decided to recapitalize Naftogaz with 63 billion hryvnia, at the time $5.1 billion.[4] The

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3. *Ekonomichna pravda*, September 11, 2014.

4. "Pravitel'stvo dokapitaliziruet 'Naftogaz' na 63 milliarda" ["The Government Recapitalizes Naftogaz with 63 billion"], *Ekonomichna pravda*, August 5, 2014.

IMF (2014d) forecasts that the recapitalization of Naftogaz will amount to 7.6 percent of GDP in 2014, suggesting that Ukraine's total energy subsidies in 2014 will amount to some 10 percent of GDP. These budgetary expenditures breed corruption and should be eliminated.

Nonpayments are chronic in the energy sector and poorly collected in spite of the low prices. One reason is that those who want to divert gas to private trade have successfully opposed the installation of gas meters, which Western donors tend to discuss as a technical problem. Similarly, Naftogaz has persistently refused to subject itself to public audit, which would undoubtedly reveal plenty of fraud and embezzlement. The new management hired EY in 2014 to audit Naftogaz, and the results have not been published yet.

The large corrupt revenues have been concentrated to a few beneficiaries who have bought Ukraine's political power and law enforcement, impeding the country's democratic, legal, and economic development. Ukraine cannot afford this robbery if it is to survive as an independent country. The leading gas traders have varied, but since 2006 Dmytro Firtash has dominated. In March 2014, at the request of the FBI, he was arrested in Vienna suspected of money laundering and released on bail of $172 million, but not allowed to leave Austria.[5]

The murky gas trade between Ukraine and Russia has undermined Ukraine's national security, making the country greatly dependent on Russia, which has insisted on nontransparent trading arrangements with private intermediaries, nonmarket prices, and barter. Although state-dominated Gazprom has a monopoly on exports of natural gas and on export pipelines in Russia, and state-owned Naftogaz has a monopoly on the pipelines and controls the imports and distribution in Ukraine, dubious private intermediaries controlled this trade on both sides until 2009 (Balmaceda 2013). The only and obvious explanation of this strange arrangement was the mutual interest in corrupt dealings, as has been well documented (Dawisha 2014, 239–40).

Until 2009, Russia charged a price below a normal market level, but even so the private Ukrainian importers did not pay Gazprom, passing on the bill to the Ukrainian state, which was in the end forced by Russia to pay whether it had a formal state guarantee or not. Since 2009, Russia has charged a high market price, while accepting large arrears from Ukraine, which have been the dominant theme of Ukrainian-Russian relations since 1991 (Balmaceda 2013).

An illustrative example of how this gas trade has undermined Ukraine's sovereignty was Viktor Yanukovych's extension of Russia's lease on the Sevastopol naval base for another 25 years in April 2010 in return for an alleged gas price discount. Another example was his agreement with Russian president Vladimir Putin on December 17, 2013, to abandon the European Association

5. David M. Herszenhorn, "At Request of U.S., Austria Arrests Ukrainian Businessman," *New York Times*, March 13, 2014.

Agreement again in exchange for a gas price discount of one-third; the Kremlin, however, suddenly withdrew this discount in early April 2014. Additional examples are Russia's cutting gas supplies to Ukraine twice during the Orange period in January 2006 and January 2009. Apparently, the Kremlin was more interested in corruption and in undermining Ukraine's sovereignty, or geopolitics, than in the commercial viability of Gazprom (Åslund 2010b).

Since 2010, gas rents have mostly been reaped within Ukraine, as Naftogaz has bought gas very cheaply from state-owned producers. It was supposed to pass these volumes on to consumers, but it diverted large amounts to the commercial market. "Since domestic prices for industrial users and budgetary institutions have been adjusted to import parity, the differential tariffs have created arbitrage opportunities for domestic gas sales (namely the possibility of siphoning of inexpensive gas for households and heating utilities to commercial sales), while also undermining the transparency of the energy sector and making it vulnerable to corruption" (IMF 2014c, 20).

Ukraine's energy inefficiency is stunning. The country "uses around 3.2 times more energy per unit of GDP [in purchasing power parities] than the average in OECD countries" (IEA 2012, 33). According to the IMF, "Ukraine is one of the least energy-efficient countries in Europe. Ukraine's energy intensity, defined as the ratio of total primary energy supply to GDP, is twice as large as that of Russia and ten times higher than the OECD average" (IMF 2014c, 20). Even so, the country's gas consumption has fallen by more than half since the Soviet era.

In 2013, Ukraine consumed 50.4 bcm of natural gas. The crisis in Ukraine has drastically cut gas demand. In 2014, gas consumption fell by 16 percent to 42.6 bcm.[6] Most of this decline was in industry (4.4 bcm) because steelworks and fertilizer factories in occupied Donbas have been standing still. If gas consumption falls by the same percentage in 2015 it would stop at 36 bcm. If gas consumption is further reduced to the Russian level through elementary energy savings, it could be cut to 25 bcm per year. On "the demand side, the potential for energy efficiency and energy savings is large, especially in the industry and residential sectors. This potential, however, remains largely untapped…" (IEA 2012, 9).

All Western initiatives to "help" Ukraine with energy saving have been meaningless, because the very low energy prices have not offered any incentives to invest in energy saving, nor to produce energy in Ukraine. As a consequence of the reduced consumption of gas in 2014, Ukraine imported only 46 percent of all the gas it consumed.[7] In the next five years, Ukraine should be able to cut

6. "Ukraina za god sokratila potreblenie gaza na 16%" ["Ukraine Cut Its Consumption of Gas by 16% in a Year"], *Ekonomichna pravda*, January 15, 2015.

7. "Dolya importa v postavkakh gaza Ukrainu upala nizhe 50%" ["The Import Share in the Gas Deliveries to Ukraine Fell to Less than 50%]," *Ekonomichna pravda*, January 15, 2015.

its energy consumption by half relative to GDP, as Poland and Slovakia have done. Then, Ukraine would not need to import any natural gas.[8]

The low prices for domestic energy production effectively subsidize imports, boosting them to a higher level than Ukraine can afford. The country suffers from a persistent big balance-of-payments deficit with Russia, and the main reason is the excessively large gas imports. In 2013, Ukraine imported natural gas for $11.5 billion and oil for $7.0 billion, a total of $18.6 billion, about 10 percent of GDP.[9] By comparison, the current account deficit was $16.3 billion, or about 9.2 percent of GDP in 2013, according to the IMF (2014c; cf. Chow, Ladislaw, and Melton 2014). Given that Ukraine can be self-sufficient in energy within five years if it pursues serious reforms, this is a great opportunity. Furthermore, the country does not require anything very original, just decent practices as applied in many other countries.

In reality, the Ukrainian energy sector has substantial potential in both production and energy saving. The International Energy Agency (IEA 2012, 9) noted:

> On the supply side,... Ukraine can eliminate its natural gas import dependency in the foreseeable future by substantially increasing domestic gas production, both conventional and unconventional, developing the country's biomass potential and maximizing the energy efficiency gains... there is strong potential to attract investors to the modernisation of Ukraine's coal, electricity and heat generation sectors as well as heat and gas transmission sectors.

Ukraine has vast energy reserves. The government estimates the country's total hydrocarbon reserves at 9 billion tons of oil equivalent. Its conventional gas reserves are huge at 1.1 trillion cubic meters of proven reserves and 5.4 trillion cubic meters of potential reserves.[10] Its reserves of gas condensate exceed 400 million tons and its oil reserves amount to 850 million tons (IEA 2012, 82). Yet Ukraine's total production of primary energy dropped by 47 percent from 1990 to 2010, and its import dependency was 39 percent in 2010 (IEA 2012, 21). Many old wells and mines have been exhausted, but Ukraine possesses large energy resources, especially coal and natural gas. The cause of the decline in production has been persistent mismanagement and a hostile business environment, which has been so poor that even the hardened energy majors have found it impossible to work in Ukraine.

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8. The costs and distributional consequences of Ukraine's gas pricing have been thoroughly studied, especially by the IMF (Mitra and Atoyan 2014, Parry et al. 2014, Ogarenko and Hubacek 2013).

9. State Statistics Service of Ukraine, 2014, http://ukrstat.org/uk/operativ/operativ2013/zd/tsztt/tsztt_u/tsztt1213_u.htm.

10. BP sets Ukraine's reserves at only 0.6 trillion cubic meters, 0.3 percent of the global total (*BP Statistical Review for Energy*, June 2014, www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf). BP is more cautious than the IEA and tends to use official figures. Since exploration has been neglected for long in Ukraine, I trust the higher figure more.

With better governance, Ukraine would be able to replace the exhausted energy sources, and it could be self-sufficient with energy for a century. At the 2013 level of gas consumption, its proven reserves would suffice for 22 years, and if gas consumption is halved Ukraine's proven reserves would last for 40 years, which is a great potential. If all the potential gas reserves turn out to be real Ukraine would have gas reserves for no less than 271 years.[11] Even after the loss of Crimea, which accounts for 2 bcm of gas production per year, the country still produces 18 bcm per year, and for years foreign energy experts have assessed that Ukraine could raise its production to 30 to 35 bcm per year of conventional gas (Pifer 2014). This potential includes large capacities of shale gas. In short, under normal market economic circumstances Ukraine would be a significant gas exporter. Instead, it has been a persistently large importer of gas.

Ukraine has repeatedly failed at energy reforms for three reasons. One is that the energy sector harbors powerful commercial and bureaucratic interests, those of the richest people of the land, who will defend their interests against any reform. Therefore, the new government needs to hit hard and fast to accomplish energy reform. Technical assistance is at hand. Numerous international agencies have engaged constructively with Ukraine on energy reform, each within its particular segment, because they all understand that energy reform is key to Ukraine's economic success.

Another reason for these reform failures is that the international agencies do not understand the political economy of reform very well. They think that the main threat is popular reaction, not understanding that the oligarchs are far more powerful. Because of this misunderstanding, the international agencies have persistently proposed too timid and gradual reforms. In its nine programs with Ukraine, the IMF has demanded multiple but gradual energy price increases. The government of the day has accepted to carry out one initial price increase, but stopped, contrary to its agreement with the IMF, because strong vested interests of the incumbent regime had seized control of the energy price arbitrage. Clearly, Ukraine needs to carry out a full-fledged liberalization of its energy prices to break out of its corruption trap.

The IMF and the other international organizations make the assumption that reforms have to be gradual. For example, the IEA (2012, 15) states: "Energy sector structural reform in Ukraine requires time to develop and take hold," arguing that "within three-to-four years the subsidy burden can be eased and progressively removed as prices are raised to market-based levels." But this is the policy that has failed.

Naftogaz CEO Kobolyev (2014) advocates early adjustment of all energy prices to a normal market level in one single step. Only then can corruption be defeated, whereas a gradual price increase is a vote for the maintenance of corruption. Nor can Ukraine afford to spend 10 percent of GDP on energy subsidies (IMF 2014d). The public reaction will not be greater if the prices are

11. Admittedly, some of these reserves are located on Crimea and in adjacent areas in the Black Sea.

quadrupled than if they are doubled, Kobolyev argues. A quick adjustment will convince the public of the need to save energy and entrepreneurs to produce more gas.[12]

The Coal Sector Is Also Bad

Ukraine's coal sector is also problematic. The maintenance of low state-controlled prices requires large state subsidies, while facilitating arbitrage by monopolists between state-controlled prices and much higher market prices. Inefficient and corrupt state companies incur unwarranted losses because of large arrears, which they regularly forgive. This is the result of wrong priorities, nontransparency, absence of clear guidance for state support, and no reform. The situation is well understood and extensively discussed.[13]

Ukraine has vast coal reserves and a viable private coal industry. Yet, the policy on coal mining has led to the most unsatisfactory financial and economic performance, with discretionary state regulation and excessive state ownership holding back the industry. Coal production has been stagnant. Labor productivity is low and falling, while costs are rising, because some very inefficient mines continue operating. Poor safety standards at many Ukrainian coal mines have led to the deaths of numerous miners. The security in Ukrainian coal mines, both private and state-owned, is weak, resulting in many serious accidents.

The only positive development is that most coal mines have been privatized, but otherwise the coal sector has never seen any real reform. The private coalmines have expanded their production because of better assets and management, while production in state-owned mines has continued to shrink. Like all murky industries in Ukraine, the coal industry is highly concentrated in the hands of a few major businessmen. The coal mines belong mainly to three groups: the state, Rinat Akhmetov (DTEK and Metinvest), and companies close to the Yanukovych family in the Donetsk and Luhansk regions.

The state has continuously paid large subsidies to loss-making coal companies, each year about 1 percent of GDP in direct budget subsidies. In 2013, the coal subsidies amounted to 13.2 billion hryvnia, that is, 0.9 percent of GDP (Vyshynsky 2014a). In 2003, Ukraine created a state intermediary company, Vuhillya Ukrainy (Coal of Ukraine), which was supposed to support state coalmines that produced low-quality coal at high costs by purchasing their coal at a subsidized high price. A more reasonable policy would have been to close down these unprofitable coal mines, but the political will was missing.

In 2013, the state-subsidized price of one ton of commercial coal was 480 hryvnia, whereas the production cost in a Donbas state mine was almost three times as high at 1,350 hryvnia. State subsidies covered the difference. When

12. Discussion with Kobolyev on January 20, 2015.

13. An outstanding source for most of this section is Vyshynsky (2014a).

Yanukovych was in power, a group from his family that controlled a large share of illegal (unofficial) coal mines in Donbas extracted these subsidies meant for loss making state mines, although their production cost was only about 500 hryvnia per ton (Vyshynsky 2014a). Their protector was Minister of Energy Eduard Stavytsky, who fled abroad after the ouster of Yanukovych and has been sanctioned by the European Union.[14] DTEK's private coalmines were both more resourceful and better run, able to produce coal at a cost of 500 to 550 hryvnia per ton. The same was true of other private mines, because the best mines had been privatized first.

Much of the coal is burnt by power stations, whose tariffs are controlled by the state far below cost. In addition, arrears to and from the public utilities have been chronic. Ironically, the lower the prices, the more obvious it seems to be to the consumers that they do not have to pay. As a consequence, the power distributors and generators have often suffered from large arrears to their suppliers, mainly coal producers. As long as the power utilities were publicly owned, the state tended to give away shares to the coal producers in intermittent debt settlements. Under Yanukovych, three big businessmen were allowed to buy a large share of the electricity sector in privileged privatizations with low prices.

Once most power stations were privatized, they turned the tables, running up arrears to the state coal trading company Coal of Ukraine, which buys coal that has not yet been produced on credit that it draws from state banks. However, it regularly restructures the arrears of the coal producers. This cost is shared by the state banks, which are regularly recapitalized by the state, and Coal of Ukraine, which receives a steady stream of subsidies from the state budget. Since power companies realize they might not have to pay, arrears naturally mount (Vyshynsky 2014a).

When I had lunch with Akhmetov in Donetsk in 2006, I asked him what he thought should be done to the coal industry. As a strategic businessman, he was prepared to work without any state subsidies if coal prices were freely set. Under such conditions, he would buy more coal mines, and has since done so.

It appears as if the government will abolish all coal subsidies in 2015 and liberalize the coal prices. This decision has been facilitated by coal production having plummeted and being concentrated to the occupied parts of Donbas, and it was controlled by Yanukovych cronies that have fled the country.

The Energy Sector Can and Must Be Reformed

The problems of the Ukrainian energy sector are as obvious as their solutions. The key reform is to unify energy prices at the market level. Then state energy subsidies would be superfluous, though a minor share could be allocated

14. "Council Regulation (EU) No. 208/2014 of 5 March 2014 concerning restrictive measures directed against certain persons, entities and bodies in view of the situation in Ukraine," *EUR-Lex*, April 15, 2014, http://eur-lex.europa.eu/legal-content/AUTO/?uri=CELEX:02014R0208-20140415&qid=1421953606327&rid=20 (accessed on January 22, 2015).

to fully compensate poor people for higher energy prices. Energy enterprises would be given normal price incentives to work efficiently for a profit and everybody would have an interest in saving energy. In addition, state corporations need to be disciplined through public audits, division mainly between production and transportation, and privatization. Private corporations should be offered normal conditions to produce energy.

This solution is known and has been tried in many East European countries, Poland, Estonia, and Georgia being outstanding successes. All these steps have been endorsed in manifold publications by the relevant organizations: the International Monetary Fund, World Bank, International Energy Agency, European Union, Organization for Economic Cooperation and Development, and European Bank for Reconstruction and Development.[15]

Unify Energy Prices and Abolish All Energy Subsidies Quickly

The most fundamental issue in economics is to get prices right. All energy prices—natural gas, coal, and electricity—should be unified and raised to a level that will cover the costs of production plus a competitive profit margin commensurate with an international market price. The tariffs on the transportation of gas are also too low and do not allow operators to modernize or even maintain underground storage facilities and gas pipelines. The whole infrastructure is neglected. All price subsidies and cross-subsidization should cease, and social compensation should be provided to truly needy groups.

Price hikes, therefore, must be radical, as was the case in Estonia and the late reformer Georgia (Laar 2002, Bendukidze and Saakashvili 2014). Poland raised energy prices by 220 percent in 1991 and by 1992, household gas tariffs were at a market level (Radeke and Walter 2012, 6). Ukraine needs to learn from the successes of these radical reformers and not repeat its old mistakes. Energy prices should be raised all the way to the market level in one single step, when there is a political window of opportunity. The new Naftogaz management favors an instant unification of gas prices for industry and households (Kobolyev 2014).[16] Over time, markets should evolve for natural gas and electricity, but initially their regulation appears necessary. The pipeline system and electricity grid should offer equal access to all at market-related prices.

Although private enterprises dominate the coal sector, prices remain regulated at too low a level. Coal products are priced on the basis of regulatory acts, not market forces. Here too price liberalization should be pursued and accompanied by the elimination of nontransparent subsidies that vary depending on their success in bargaining. Neither the distortion of coal prices nor the exten-

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15. Recent policy papers are Clements et al. (2013), Gill et al. (2014), IEA (2012), Meissner, Naumenko, and Radeke (2012), OECD (2011), and World Bank (2012b).

16. “Ukraintsev prepupredili o podorozhanii gaza srazu v 4 raza” [“Ukrainians Were Warned of Gas Price Increase Four Times”], *Ekonomichna pravda*, September 24, 2014.

sive state subsidies can be justified, as they do not encourage coal producers to produce more and become more effective. Since a coal market does exist, coal prices can simply be liberalized.

Reinforce a Unified Regulatory Agency for Natural Monopolies

Ukraine has had a National Energy Regulatory Commission (NERC), which was supposed to regulate natural monopolies in the power sector, the oil and gas complex, and heat generation (Energy Charter Secretariat 2013, 58) and a separate National Communal Services Regulatory Commission (Vashchenko 2013). Not surprisingly, related business interests had captured the NERC.

On August 27, 2014, President Poroshenko abolished both commissions and merged them into a new commission that will regulate both energy and utilities (communal) services. His intention was to reinforce the integrity and competence of the unified regulator.[17] The new national commission is supposed to be truly independent and strong. The best solution appears to be a well-paid board of independent and competent regulators, as for example Latvia has done. Their status would resemble that of an independent board of a central bank with fixed long terms. To make the independence more credible, it would be beneficial to invite some foreigners to serve on the commission.

To reinforce and unify the regulation of all natural monopolies this strong independent regulator should control pricing of services provided by all natural monopolies, that is, natural gas, electricity, the pipeline companies, the electrical grid, communal heating, and the railways. Its aim should be to ensure a balance of interests between producers, consumers, and state. It should guarantee reliable supply of high-quality services to consumers at fair prices, while making sure that the natural monopolies can make sufficient profits to develop (Golod 2014).

The national commission should propose and the parliament adopt laws and regulations for the Ukrainian natural gas market. They should include a gas network code with rules for access to gas pipelines and underground storage, and so on, in line with Ukraine's commitments as a party to the Energy Charter Treaty and its Transit Protocol.

Provide Social Cash Compensation

To render the desired energy price changes politically and socially possible, the World Bank is already providing Ukraine with assistance to give conditional cash transfers to households. In July 2014, the Ukrainian government started doing so after gas prices were hiked on May 1. It uses the country's

17. "Prezident ob'edinil NKRE i Natskomuslug v edinuyu natskomissiyu" ["The President United NERC and the National Commission for Communal Services in a Unified National Commission"], UNIAN, August 28, 2014, http://economics.unian.net/energetics/956198-prezident-obyedinil-nkre-i-natskomuslug-v-edinuyu-natskomissiyu.html (accessed on August 30, 2014).

well-developed system of 745 local social welfare bureaus that can provide cash transfers to 4.5 million households (IMF 2014a, 20). The Bank can extend this support to half the households. It has successfully implemented such schemes in more than 30 countries across the world, mainly in Latin America (Fiszbein and Schady 2009).

The current energy subsidies of prices and to energy companies not only breed corruption but also are socially unjust. According to the IMF (2014b, 88), the bottom quintile obtained 13.6 percent of total energy subsidies, while the top quintile received twice as much (26.5 percent). The government could expand its scheme to half the population. The cost would not be more than 2 percent of GDP, and the savings of the energy reform would be 8 percent of GDP. The losses would be borne by major corrupt operators.

Separate the State Energy Companies

A key target of energy reform must be Naftogaz Ukrainy. This large state holding company has never functioned acceptably. Nor has it been publicly audited. It contains many different kinds of companies. Some are fully state-owned, while others have large private minority shareholders. In either case, almost every company is controlled by one private business group, and the controlling interest for each company is well known. The four main Naftogaz subsidiaries are Ukrgazvydobuvannia, which produces gas, Ukrnafta, which produces oil and some gas, the gas trunk pipeline company Ukrtransgaz, and the oil trunk pipeline company Ukrtransnafta.[18]

Naftogaz, and all its subsidiaries, should be given proper governance with professional, competent supervisory boards, including independent directors. They should be subject to international auditing and their annual reports made public. Many old managers were replaced in 2014, but the management turnover should be complete. Two conditions for new managers should be that they are competent and that they do not have conflicts of interest, representing some related business interests.

Next, Naftogaz should be divided into separate companies. In December 2010, Ukraine ratified the protocol on its accession to the European Energy Community Treaty, and it joined the Energy Community in February 2011 (European Commission 2012b). By doing so, it has committed itself to specific reforms. The EU "third energy package," which the European Union adopted in July 2009, applies to Ukraine, which has thus committed itself to integrate its electricity and gas markets with the European Union, while separating transportation of natural gas from production as well as distribution.

Specifically, the gas transit system, that is, the company Ukrtransgaz, should be legally separated into an independent company. The same is true for Ukrtransnafta, the oil trunk pipeline company. The operation of underground

18. The main components of Naftogaz and their specializations are described in "Rada provalila reform 'Naftogaza'" ["Parliament Blocked Reform of Naftogaz"], *Zerkalo nedeli*, July 24, 2014.

gas storage should be divided from gas transportation. All enterprises should be guaranteed nondiscriminatory and transparent commercial access to the gas transmission systems and storage.

Members of the Energy Community can choose from three options for dealing with vertically integrated companies. The first option envisions compulsory separation of their property by selling pipelines to an independent operator without the right to any controlling interest. The second allows vertically integrated companies to remain the owner of their pipelines, provided they are managed by an independent operator appointed by the national government upon prior approval of the European Commission. The third choice foresees the retention of vertically integrated companies, monitored by a special supervisory authority, with an independent subsidiary in charge of daily operation of the pipelines. For Ukraine, the second option appears natural, since privatization by necessity will take some time and strong national security interests as well as current legislation oppose it, considering the risk that Russia will seize control of this strategic infrastructure.

The financial dissolution of Naftogaz must be handled with care. A careless liquidation could easily put Ukraine into default, and its debtors could find their debts written off. Presently, the corporation has liabilities on the order of $10 billion and would go bankrupt if it lost its state support. Its creditors need to be consulted and their interests considered before its liquidation.

Privatize Distribution and Production Companies, but Not Transportation

Enterprises in the energy sphere fall into four groups: producing companies, transportation companies, distributing or trading companies, and noncore assets. Each needs to be treated separately. Noncore assets are the easiest. They should be sold off as soon as the Ukrainian economy starts stabilizing.

State trading and distribution companies should be liquidated or sold off. In the electricity and gas industry, all regional and local distribution companies appear to have been privatized. Three groups own the regional electricity distributors: Akhmetov's DTEK, Konstantin Grigorishin's Energy Standard Group, and Aleksandr Babakov's VS Energy International.[19] Dmytro Firtash's GDF appears to have purchased all regional gas distributors. Refining has been largely privatized, but what remains should be sold off. The main remaining state asset is Coal of Ukraine, whose key function is to subsidize coal prices, which is no longer desired. However, when it is liquidated state claims on private companies should be maintained and collected. Naftogaz and several of

19. Babakov is a nationalist member of the Russian State Duma. In 2014, he was sanctioned by the European Union for having business investments in Ukraine and Crimea and voting in favor of Russian annexation of Crimea.

its subsidiaries are also distribution companies.[20] These functions should be liquidated or sold off.

The producing companies should be sold after energy prices have been liberalized and markets stabilized so that these companies can be reasonably valued. The most valuable is the gas-producing company Ukrgazvydobuvannia. Naftogaz's CEO Kobolyev (2014) has assessed that it could fetch a price above $12 billion, so its privatization has to be carefully done.

Ukrnafta, Ukraine's main oil-producing company, is the most problematic. For many years, the government has owned 50 percent plus one share and Privat Group[21] 42 percent, with the balance floating freely on the stock exchange. Although the state owns a majority of the shares, Privat Group has controlled Ukrnafta's management, letting it work in the interests of Privat Group. As Ukraine's leading brokerage, Dragon Capital, put it "the company's major shareholders have effectively stripped it of all profits generated... since 2010 despite the company suffering from heavy underinvestment in its upstream segment for years."[22] As the majority shareholder, the government needs to seize control of Ukrnafta, introduce proper governance, and impose new management. In January 2015, it passed such a law.[23] In due time, the state should sell its shares, but its shares must not be given as a bargain to Privat Group.

The main goal of coal sector reform needs to be a cardinal increase in efficiency and workers' safety. The best way of accomplishing that after liberalization of coal prices and the coal market would be to sell off the remaining state coal mines and introduce a competitive coal market. Ukraine can follow the successful Russian coal reform of 1998–99 that was spearheaded by the World Bank. The pillars of reform are privatization of the remaining public coal mines; liberalization of coal prices, which leads to the development of a normal coal market; simultaneous elimination of coal subsidies; and social support for restructuring (World Bank 2003). The private Russian coal industry has thrived since these reforms, developing a vibrant coal market, steadily expanding production, and generating substantial profits. Many loss-making Ukrainian state mines should be closed down, and social programs are required to take care of redundant miners and their communities.

The state sold off most of the electricity generating companies under Yanukovych, but Enerhoatom, which owns four large nuclear power stations producing 47 percent of Ukraine's electricity, remains fully state-owned. A mi-

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20. "Rada provalila reform 'Naftogaza'" ["Parliament Blocked Reform of Naftogaz"], *Zerkalo nedeli*, July 24, 2014.

21. "Rada otobrala u Kolomoiskogo kontrol' nad 'Ukrnaftoi'" ["Parliament Took Control of Ukrnafta from Kolomoisky"], *Ukrainskaya pravda*, January 13, 2015.

22. Dragon Capital, *Dragon Daily*, September 4 and October 13, 2014.

23. "Rada otobrala u Kolomoiskogo kontrol' nad 'Ukrnaftoi'" ["Parliament Took Control of Ukrnafta from Kolomoisky"], *Ukrainskaya pravda*, January 13, 2015.

nor oligarchic group has controlled it, clearly benefiting financially. The state should recover control and sell off the nuclear power stations as separate entities when electricity prices have been liberalized and the market stabilized so that they can fetch reasonable market prices. A current proposal to sell off 40 percent of Enerhoatom makes no sense. The sale of a large minority post is a typical technique to scare off all bidders but the current controlling oligarchs because no other minority owner would be able to achieve control.[24]

The main transportation companies are the gas transit system Ukrtransgaz, the oil pipeline company Ukrtransnafta, the petroleum pipeline company Ukrspetstransgaz, and the electrical grid. Each of them should become an independent state corporation with proper governance, management, and audit, but for the sake of national security, they cannot be privatized in the near future. The risk of Russian interests taking them over is too great, as has happened in many other post-Soviet countries, notably Armenia, Belarus, and Moldova. No legal guarantees are strong enough in Ukraine to block such a development if private ownership is permitted. Therefore, the Ukrainian Parliament has prohibited the privatization of the gas transit system and the giant gas reservoirs.

Create Markets for All Kinds of Energy

Ukraine has an open and competitive market for gas tubes, oil, and petrol. After coal prices have been liberalized, a competitive coal market could arise without any further government intervention, and Coal of Ukraine should be liquidated. Natural gas and electricity, however, raise problems. In both cases, prices first have to be unified at the market level.

Ukraine has never had a gas market. The Cabinet of Ministers should develop a law on liberalization of the gas market to be adopted by parliament. It should be based on the principles of transparency and efficiency to stimulate competition. These principles should harmonize Ukrainian legislation with EU gas directives. This law should ensure legal and organizational independence of the gas transmission operators and prohibit cross-subsidization.

In the mid-1990s, the country undertook far-reaching structural reforms in the electricity sector with the support of the World Bank. The infrastructure for an electricity market was created. The power companies were restructured. A handful of generating companies were created, each region received its own distribution company, and the grid became a separate state company. A public wholesale market was organized, but since electricity tariffs remained regulated by the state at too low a level to recover costs, the wholesale market could not develop.

At present, the largely privatized generating companies incur chronic losses because of low consumer prices and massive nonpayments. They cannot generate profits for the maintenance and modernization of existing electricity

24. Yuriy Korol'chuk, "Privatizatsiya 'Energoatoma' yavlyaetsya nesvoevremennoi" ["Privatization of Enerhoatom Is Untimely"], *Ekonomichna pravda*, August 26, 2014.

generation or the grid, threatening the stable supply of electricity. These conditions offer no incentive to increase efficiency. The whole power sector suffers from excessive wear and tear on equipment. If electricity prices were liberalized, however, a market could easily evolve, as long as the state stays out of any role as an intermediary trader.

Save Energy and Reduce Pollution

The opportunities to save energy in Ukraine are truly enormous, which is a favorite topic of international organizations. Three sectors stand out: the steel industry, the chemical industry, and the heating sector. The World Bank (2013, 1) puts the situation in clear terms: "While Ukraine faces one of the highest average costs of gas supply, its gas and heating tariffs are among the lowest in Europe. The current low gas and heating tariffs are not targeted to the poor, adversely affect service delivery, impose a heavy fiscal burden, and result in inefficient use of energy." According to the Ukrainian Ministry of Regional Development, Construction, and Communal Services, about 3 bcm per year could be saved by modernizing the district heating systems, an amount worth $1.2 billion a year at a natural gas price of $400 per mcm (IEA 2012, 55).

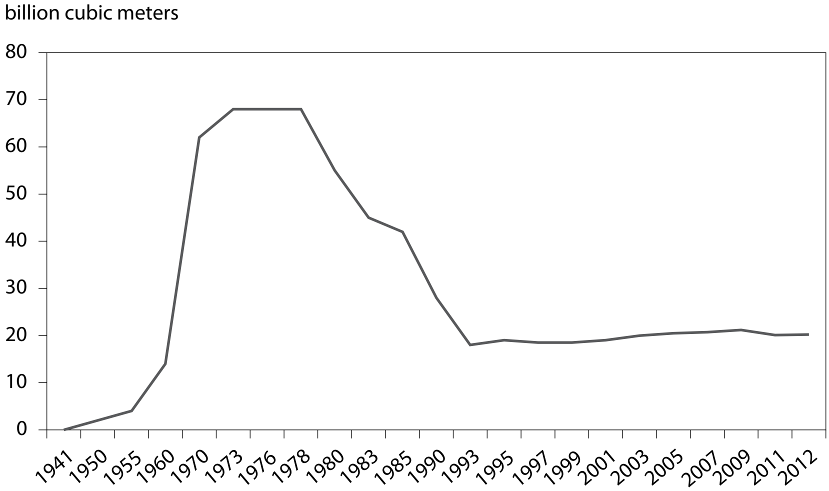
The largest energy savings can presumably be achieved in the metallurgical sector. Among Ukraine's many steelworks, only one is newly built (Interpipe Steel in Dnipropetrovsk) and one fully modernized (Alchevsk Iron and Steel Works belonging to the Industrial Union of Donbas). All the others are old Soviet steel mills with varying degrees of modernization. The same is true of Ukraine's large fertilizer sector.

Although Ukraine has done little to save energy, both primary energy usage and greenhouse gas emissions fell by more than half from 1990 to 2000 and they have stayed at that level. Ukraine's gas consumption fell steadily from 110 bcm in 1989 to 42.6 bcm in 2013. Even if the energy sector has not been subject to much reform, Ukraine's economy as a whole has become a market economy, and private enterprises do economize. The most energy-inefficient Soviet factories were unprofitable even with very low energy prices and were forced to close down.

Since Ukraine is lagging so far behind in energy saving, it can easily accomplish great results. The most important lever is market-conform energy prices, which will convince private producers to save energy. If prices rise, effective collection and meters are likely to follow, because the economic interests have changed.

A favorite object of Western assistance to Ukraine has been energy saving devices, such as new technology or meters, presuming that energy saving is a technical issue, but it is a matter of economic interests. If meters would hinder powerful interests to divert gas and electricity for their own profits, they would not be installed even if given for free. Instead the Western donors should advocate instant energy price deregulation and assist with social cash compensation to the needy.

Figure 10.1 Production of natural gas in Ukraine, 1941–2012



Source: Razumkov Center, *Ukraine's Gas Sector Development in the Context of European Integration*, 2014, www.razumkov.org.ua/upload/1392037862_file.pdf.

Stimulate Private Energy Production through a Good Business Environment

With its large reserves, Ukraine produced substantial amounts of natural gas, peaking at 68.7 bcm in 1975 (IEA 2012, 82). However, after the Soviet Union found its giant natural gas fields in West Siberia, it cut production prematurely in Ukraine. After the end of communism, the Ukrainian government failed to develop oil or gas production because of corrupt chaos. Although Ukraine has substantial oil and gas assets, its oil and gas production has been stagnating for more than two decades. The production of natural gas is almost constant at 20 bcm per year (of which 2 bcm in Crimea), while oil production at around 3 million tons a year is decreasing slowly (figure 10.1).

Ukraine possesses large known reserves of conventional gas, coal, and oil that can be commercially exploited. Vast gas assets are known to exist on the Ukrainian part of the Black Sea and Azov Sea shelves, but they have not been explored. Russia's annexation of Crimea deprives Ukraine of these assets and Chornomornaftogaz has been seized by Russia.[25] Ukraine has the third largest energy reserves in Europe after Russia and Norway.[26]

At present, only a few, small, private energy companies are producing oil

25. "Criminal Proceedings Against Seizure of Chornomornaftogaz's Station Launched," *Kyiv Post*, March 17, 2014.

26. *BP Statistical Review for Energy*, June 2014, page 20, www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf.

and gas in Ukraine besides subsidiaries of the state conglomerate Naftogaz. They are predominantly controlled by a handful of well-connected businessmen. Like coal and electricity production, oil and gas production in Ukraine is an inside ball game. Ukraine should set the not-very-ambitious target of doubling its production of oil and gas within a decade and become self-sufficient in energy.

The investment climate in the oil and gas sector in Ukraine must improve for both domestic and foreign investors so that they can be granted secure property rights, free market prices, and stable and reasonable rules of taxation. Price liberalization for production is the first condition, and prices of privately produced oil and gas are actually free today.

The second condition is trustworthy long-time licenses and permits. This is a great challenge, as the IEA (2012, 88) puts it: "Ukraine's upstream oil and gas industry remains complex and heavily regulated. State supervision in the upstream oil and gas sector has multiple layers and it remains challenging to fulfill the inconsistent requirements of the numerous legislative acts that are applicable to hydrocarbon exploration and production activities." The IEA lists 11 different authorities, each of which has to give its permission for any energy production to go ahead. This must be streamlined and simplified.

Finally, taxation must be stable, sensible, and predictable. Until the summer of 2014, private Ukrainian miners and energy producers paid small royalties on the natural resources. The Yatsenyuk government introduced or raised such resource taxes excessively, but taxation of all forms of energy production should be reasonable and coordinated.[27]

Ukraine adopted a law on product-sharing agreements (PSAs) in 1999, but it has not taken off. The Yanukovych government concluded PSAs with Chevron and Royal Dutch Shell on shale gas exploration and production in western Ukraine and Donbas, respectively. At the time of this writing, Shell has declared force majeure for some of its fields that were located in the worst war zone in Donbas, and Chevron has withdrawn.[28] ExxonMobil was intent on going ahead with PSAs for offshore blocks outside Crimea, but these plans have been stopped because of Russia's annexation of Crimea and the ensuing Western sanctions against Russia and Crimea.

The prospects for shale gas production in Ukraine are great. In 2012, the IEA (2012, 81) projected that Ukraine could produce 3 bcm of shale gas in 2020, rising to 20 bcm in 2035. Similarly, Chevron predicted that it could produce 5 to 10 bcm of shale gas a year in Ukraine within ten years after it starts, and Shell made similar projections. However, the Ukrainian energy bureaucracy is overwhelming even for these energy giants, and it will take years to sort out who is responsible for what in the energy sector.

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27. "Uryad zbil'shue opodatkuvaniya velikogo biznesu—Yatsenyuk" ["Yatsenyuk: The Government Increases Taxation of Big Business"], *Ukrainskaya pravda*, July 27, 2014.

28. Conversations with the Ukraine managers for Chevron and Shell in September 2014.

End Gas Trade with Russia?

Ukraine has had no economic relation more important than its gas trade with and transit of Russian gas. But nor has any economic activity been more harmful to the Ukrainian economy, welfare, governance, and politics. Ukraine's main problem, apart from current Russian military aggression, is pervasive corruption, and its gas trade with Russia has been the kernel of its top-level corruption. Ukraine's gas trade with Russia can be seen as the nation's original sin. Should Ukraine stop trading gas with Russia?

In its trade with Ukraine, Gazprom has three objectives. Its first goal is the enrichment of Russian top officials, the second geopolitics, and only the third is the commercial interests of its shareholders. Gazprom should be treated as an organized crime syndicate, with which no links are advisable (Åslund 2010b). Given that Ukraine's main domestic problem is corruption, the country needs to isolate itself from this center of corruption. Gas is becoming abundant as production is expanding more than consumption worldwide, and prices are falling.

Ukraine's trade with Gazprom consists of its gas purchases from Russia and its transit of Russian gas to Europe. Both are plummeting. Ukraine has played a major role in Russia's transit of oil and gas to Europe. Its Gas Transit System has a transit capacity of 120 bcm and with minor repairs it could be expanded to 160 bcm,[29] but Russia's Gazprom uses ever less of it, only 62.2 bcm in 2014.[30] The current Russian policy is to bypass Ukraine altogether and close down the gas transit system. Gazprom has already built Nord Stream, which has a capacity of 55 bcm per year and has replaced nearly half of the Russian gas transit through Ukraine. Before the construction of Nord Stream between St. Petersburg and Germany, Ukraine accounted for 80 percent of Russia's gas exports to Europe, which has now fallen to about 40 percent.

An investigative article by Reuters revealed how the Russian-Ukrainian gas trade really functions. Since 2002, soon after Putin took over the control of Gazprom, the Ukrainian businessman Dmytro Firtash was the dominant intermediary in this trade. "Gazprom sold more than 20 billion cubic meters of gas well below market prices to Firtash" during the years 2010–13. "The price Firtash paid was so low, Reuters calculates, that companies he controlled made more than $3 billion on the arrangement. Over the same time period,... bankers close to Putin granted Firtash credit lines of up to $11 billion. That credit helped Firtash, who backed pro-Russian Viktor Yanukovich's successful

29. Joint EU-Ukraine International Investment Conference on the Modernisation of Ukraine's Gas Transit System, Joint Declaration of the Government of Ukraine, European Bank for Reconstruction and Development, European Commission, European Investment Bank, and the World Bank, March 23, 2009, www.naftogaz.com/files/DECLARATION-Ukraine-EC-engl.pdf (accessed on January 22, 2015).

30. "Tranzit rossiiskogo gaza cherez territoriyu Ukrainy upal na 28%" ["Transit of Russian Gas through the Territory of Ukraine Fell by 28%"], *Ekonomichna pravda*, January 15, 2015.

2010 bid to become Ukraine's president, to buy a dominant position in the country's chemical and fertiliser industry..." (Grey et al. 2014). "When Firtash was arrested in Vienna" a Russian businessman considered to be close to Putin "loaned the Ukrainian businessman $155 million for bail" (Ibid.). On the one hand, Firtash was widely seen as the second biggest and most powerful businessman in Ukraine under Yanukovych (after Rinat Akhmetov). On the other hand, *Forbes* assessed his net personal wealth at only $500 million (table 2.1). The question arises whether he merely operated on the basis of the $11 billion credit line from Gazprombank that Reuters revealed.

Russia's transit of natural gas through Ukraine has never functioned well. In hindsight, Ukraine would have been better off in terms of economic development, democracy, and governance if this gas transit had stopped with the end of the Soviet Union. Russia's oil transit through Latvia and Lithuania was the main source of high-level corruption in those two countries, and its end greatly helped both countries to check corruption. Both countries have flourished since they got rid of the dirty Russian energy trade.

In the long run, the Kremlin accepts gas and oil transit only through fully controlled pipelines. Joint ventures with 50-50 ownership have failed in many countries, such as Belarus and Moldova. The oil transit through the *Druzhba* (Friendship) pipeline in Ukraine functions well and attracts no attention. Even so, Russia appears intent on abandoning *Druzhba* within a few years. It is gradually diverting this oil transit to the Baltic Pipeline System, which transports oil entirely through Russia from West Siberia to St. Petersburg, where the oil is loaded on tankers. If the Kremlin is not satisfied with *Druzhba*, it will never be content with Ukraine's gas transit system. Gazprom's publicly announced policy is to reduce "the role of Ukraine as a transit country...to zero."[31] Ukraine is best advised to give up on both oil and gas transit from Russia until that country has cleaned up its top-level corruption. Ukraine has far too many serious problems to be concerned with Russia's sales of gas to Europe. The less time Ukrainian policymakers devote to this issue, the better for the country.

Similarly, the Ukrainian government should endeavor to manage without Russian gas supply. Prime Minister Yatsenyuk has set this as the goal for five years.[32] In the short term, Ukraine's gas supply challenges are somewhat difficult but manageable because internationally gas has become a normal traded commodity, global supply is ample, and prices are falling. Ukraine has three alternatives: to save energy, to import from Europe, or to make an agreement with Russia.

On June 16, 2014, Russia stopped delivering natural gas to Ukraine. Overtly, the dispute concerned the price and Ukrainian arrears, but Ukraine wanted

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31. Gazprom, Russian Television Interview with Gazprom CEO Alexei Miller, Rossiya 24, December 6, 2014.

32. "Ukraina osvoboditsya ot 'gazovoi zavisimosti' ot RF cherez 5 let—Yatsenyuk" ["Yatsenyuk: Ukraine will free itself from gas dependence on Russia in 5 Years"], *Ekonomichna pravda*, September 8, 2014.

to cancel the unfavorable bilateral gas agreement of January 2009. Instead, it wanted an agreement on a lower price and smaller volume, not only a temporary unilateral decision by Russia. Russia complained about Ukrainian arrears of $4.5 billion, part of which depended on no agreement on the gas price in the second quarter of 2014. Ultimately, Russia appears to have been pursuing an act of war.

Russia's gas prices had nothing to do with economics. In the first quarter of 2014, Ukraine paid $268.50 per mcm in accordance with the Putin-Yanukovych agreement of December 17, 2013. On April 1, 2014, Gazprom raised the price to $385 per mcm, and two days later to $485 per mcm, with the motivation that since Russia had annexed Crimea it no longer needed to give a $100 per mcm discount for the lease of the Sevastopol naval base agreed with Yanukovych in April 2010 (Socor 2014).

Ukraine should say good riddance to Gazprom and meet it in court. It has proven to be a highly unreliable supplier. Unfortunately, on October 30, Russia, Ukraine, and the European Union concluded a short-term, provisional agreement on some Russian deliveries of gas to Ukraine in the winter. The European Union was the main advocate of this agreement, which ensured that gas would flow from Russia through Ukraine to Europe through the winter. For Ukraine, on the contrary, this agreement seemed unfortunate. It did not need the gas, the agreement deprived Ukraine of scarce cash, $3.1 billion, possibly prejudiced its arbitration case against Gazprom, and presumably made gas reform that much more difficult in Ukraine (Gregory 2014). Elementary decency would have requested that the European Union at least lend Ukraine the funds it forced the country to hand over to Gazprom on dubious legal grounds.

The best cure for Ukraine would be to swiftly raise all its domestic gas prices to the international market level of around $350 per mcm to stimulate both energy saving and production (Kobolyev 2014). Considering that Ukraine can both save energy and produce so much more relatively soon, major infrastructure investments for imports, such as a terminal for liquefied natural gas (LNG) importation and its gasification, hardly make sense.

The second objective should be to secure gas supplies from Europe. Ukraine can import this volume from Europe, through Slovakia, Poland, and Hungary. Since October 2014, Norway's Statoil has become Ukraine's largest gas supplier, offering gas at only $340 per mcm.[33] Admittedly, much of the gas from Poland, Slovakia, and Hungary could ultimately be delivered by Gazprom, and Gazprom has tried to block this reverse flow, but that should not be possible according to the rather strict EU competition rules (cf. Zachmann and Giucci 2014). In addition, Ukraine holds large gas reserves. Ukraine has many real problems, but its gas supply is the most exaggerated problem.

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33. "Polovina reversnogo gaza v Ukrainu idet iz Norvegii" ["Half of the Reverse Gas to Ukraine Comes from Norway"], *Zerkalo nedeli,* October 8, 2014.

Recommendations

The Ukrainian energy sector can be reformed and turned highly profitable, rendering the country independent of energy imports within five years. To achieve these goals, the government needs to follow these recommendations:

1. Unify energy prices and abolish all energy subsidies as soon as possible.
2. Reinforce one unified regulatory agency for natural monopolies.
3. Provide social cash compensation to the poorest half of the population.
4. Improve governance and separate the state energy companies.
5. Privatize distribution and production companies, but not transportation.
6. Create markets for all kinds of energy.
7. Save energy and reduce pollution.
8. Stimulate private energy production through a good business environment.
9. Stop buying gas from Russia until it is cleansed of top-level corruption.
10. End gas transit from Russia to reduce Russia's corrupting Ukraine.