Restructuring of the Russian Electricity Industry

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The Russian electricity industry is on the verge of fundamental change. Until now, electricity in Russia has been produced, transmitted, and distributed under the auspices of two main entities: Unified Energy System of Russia (UES), and the Ministry of Atomic Energy (Minatom). Minatom oversees Russia's 30 civilian nuclear power plants, of which only 9 are fully operational. These nine plants account for roughly 16 percent of the country's total annual electricity production of 815 billion kilowatt-hours. The percentage of electricity generated by nuclear power plants has been increasing in recent years as a result of the effort by Gazprom (the natural-gas monopoly) to emphasize exports and to cut back on the gas it provides for domestic consumption. Even so, fossil fuels and especially natural gas will likely remain the dominant source of electricity production.

UES, which controls the largest and most efficient power plants in Russia, is responsible for the remaining 84 percent of Russia's electricity production. A small percentage of this power is produced by 73 regional energy companies (*energos*), which also manage local distribution. UES's dominance in the electricity industry is reinforced by its control of the high-voltage power grid in Russia, amounting to some 2.75 million kilometers of power lines. UES has been partly privatized, but the government has retained a majority (52 percent) ownership stake. The *energos*, too, have been partly privatized, but UES (and thus the government) owns a controlling stake in them, in some cases more than 80 percent.

A three-stage restructuring of the electricity industry is provided for in the new federal law on electric power engineering (*Federal'nyi zakon ob elektroenergetike*), parts of which entered into force in March 2003, and in a breakup plan approved by the Russian government in June 2003. The official plan is based on a draft completed in the spring of 2003 by the chairman of UES, Anatoly Chubais, who has long pushed for the breakup. Chubais originally drafted a plan for the restructuring of UES in 2001 that envisaged a more ambitious liberalization and privatization, but he had to scale back his proposal to overcome opposition in the Federal Assembly and among UES shareholders. Although many of the details of the restructuring have yet to be worked out, the basic idea is that UES will be divided into a number of companies, most of which will eventually be privatized. The main exception is the body that will be known as the Federal Grid Company, which will be given exclusive control of the high-voltage grid on behalf of the state. (The much smaller low-voltage networks will remain under the

control of regional companies.) Ten new wholesale generating companies will receive jurisdiction over most of UES's generating assets. The first batch of shares in these generating companies will be allocated on a proportionate basis to UES shareholders, and the government initially will retain a stake of at least 49 percent in each company. Once a wholesale market for electricity is up and running, the government will sell off further shares in the wholesale generating companies to UES shareholders and perhaps eventually to outsiders. In the final stage of the restructuring, the electricity industry will be more extensively deregulated.

The ostensible goals of the breakup are to foster competition in electricity production, to reduce (and eventually eliminate) state subsidies for electricity, and to attract foreign investment. Some UES stockholders, however, surmised that the plan was also designed to allow Chubais to keep control of the most lucrative parts of the industry. Although the controversy surrounding the proposed restructuring prompted many foreign portfolio investors to sell their shares of UES, most of the shares have been bought up this year by Russian business and financial conglomerates and by western hedge funds. In any case, whether for good or for ill, the breakup of UES is likely to move ahead in accordance with Chubais's plan.

Purpose and Nature of the Restructuring

At present, the Russian electricity industry is extremely inefficient. Part of the problem is simply physical. Large portions of the electricity sector are obsolescent (some equipment predates the 1917 Bolshevik takeover), and the system as a whole is so feeble that a serious blow to it could prove crippling for a prolonged period. Up to $100–150 billion will be needed to upgrade the system over the next eight to ten years.

In addition to these physical limitations, the Russian electricity industry is hindered by state interference and practices left over from the Soviet era. Prices for electricity charged to households and businesses are not determined by the market, but by the Federal Energy Commission and affiliated regional energy commissions. In part because of rampant interference by local officials (who wield extensive influence over the *energos*), the prices of electricity for households have been kept negligible. The rates for farms are only slightly higher; and the rates for industrial companies, while three to four times higher than for households, are much lower than they would be under market conditions. The pricing is based on each year's official estimates of production costs. If the estimates rise, the rates also rise, and if the estimated costs go down, the rates are also reduced. The generating companies thus lack any incentive to cut costs and are forced to operate on a loss-making basis. This problem is exacerbated by the interference of local officials, who have compelled the *energos* to keep on supplying electricity to influential customers that have ceased or fallen behind on their payments. Huge subsidies from the federal budget, and the cross-subsidization provided by the higher prices charged to industrial plants, have been necessary to sustain electricity production.

As a result of these shortcomings, the Russian electricity industry is pervaded by waste. Russia consumes several times as much electricity as the average Western country does per unit of gross domestic product. Up to 40 percent of Russian energy production is

lost either because of inefficient production, transmission, and distribution of electricity or because of egregiously wasteful consumption of electricity at artificially low prices.

The proposed restructuring of the electricity industry is intended to redress these problems. Under the plan adopted in mid-2003, the Russian government will retain full control over the high-voltage electricity grid, but the rest of UES will be divided into ten wholesale power generators, distributors, and sales units, which eventually will take part in a liberalized wholesale market. Shares in these successor companies will be allocated initially to UES stockholders, who also will be given priority when the government eventually sells off its own large stakes in the new companies. Detailed rules for the operation of the wholesale market have not yet been devised, but the broad plan stipulates that a government-controlled entity known as the System Operator will be responsible for coordinating power supplies through the high-voltage grid. Another entity, known as the Trade System Administrator, will oversee the power trading system to ensure that it works properly and does not unduly favor specific distributors or generators. The dissolution of UES and the phased privatization of the spin-off companies will be coupled with a gradual (though not complete) deregulation of retail pricing. Over time, rates will be adjusted to bring them more into line with market requirements, and the new power companies will be permitted to decide for themselves whether to cut off supplies to non-paying corporate and government customers.

Despite the aim of deregulation, the Russian government will retain extensive influence over the electricity industry not only through its control over the high-voltage power grid and the System Operator, but also through its appointment of a federal board that can overturn decisions by the Trade System Administrator. In addition, the federal board will have the right to specify the terms of long-term power supply contracts with guaranteed suppliers and to determine which regions will have free power trading. The guaranteed suppliers are themselves designated by the state to provide closely regulated supplies of electricity to households and other "socially important" customers. Even after price controls are phased out or greatly reduced for most customers (a process that will not be completed until 2008), the guaranteed supplier system will enable the government to maintain limits on prices for low-income households and other select customers.

Apart from the objections raised by some shareholders of UES, resistance to the breakup has come from some Russian parliamentarians, who contend that the restructuring will lead to excessively high prices for poor families, and from at least a few prominent Russian business executives whose industrial holdings have been beneficiaries of cheap supplies of electricity. In Khakassiya, for example, the governor has sought to ensure that the region's giant aluminum smelter, owned by the Russian Aluminum magnate Oleg Deripaska, will continue to receive electricity at discounted rates from the Sayano-Shushinskaya hydropower plant through at least 2020. Because more than 70 percent of all electricity in the region is consumed by the smelter, this arrangement, if allowed to materialize, would thwart the purported goals of the UES restructuring.

Lessons from Abroad

It is not yet known for certain what caused the recent blackouts in North America and Western Europe, but some of the implications of those events may offer useful lessons

for Russia. The energy crisis in California in 2000–2001 also provides some important lessons for the pending changes in Russia.

One of the clear implications of the recent power outages is that although deregulation in North America has brought greater competition among electricity generators and lower wholesale (and in some cases retail) prices for electricity, it has not provided for sufficient upkeep and modernization of the high-voltage grid. Electricity production has been deregulated, but transmission and distribution have not. Local power producers have not had sufficient incentive to modernize their transmission links and to ensure that the software they use to manage local loads is compatible with the software used by other generators. Moreover, the grid as a whole has been deprived of the funding needed to upgrade and expand it.

Another implication of the California crisis and the more recent power outages is that deregulation has not given utilities sufficient incentive to maintain an adequate reserve of production and transmission capacity. Unlike oil, which can be stockpiled in a strategic reserve for emergencies when demand outstrips supply, electricity cannot be stored efficiently. Hence, there is no practical way to develop a central reserve of power. The only reliable way for the electricity industry to ensure an uninterrupted flow of power is by maintaining a surplus of production and transmission capacity that would enable companies to generate and transmit additional power if demand should surge unexpectedly. By most estimates, the amount of spare capacity needed is at least 20 percent above expected peak demand.

The problem, however, is that the maintenance of such a large reserve is very expensive. Power companies have no incentive to maintain the spare capacity unless they can pass on the costs to rate payers (or to the government). Consumers in the United States have been resistant to rate hikes for a number of reasons. In some cases (notably California), they have been paying higher, not lower, rates since deregulation began, contrary to what was promised. Moreover, unless confronted by a prolonged power outage, many consumers find it hard to grasp the importance of ensuring a reliable supply of electricity.

Another conclusion drawn by some analysts from the recent blackout in North America is that electric power deregulation has been driven to a large extent by a theory that does not work well in practice, at least in most countries. Two factors, in particular, have often been cited to explain the difficulty of electricity deregulation. First, the ability and incentive of power-generating companies to manipulate power markets is inherent in the deregulatory model because of relatively inelastic short-run demand and supply and the large share of production that each power-generating company represents in relation to the total market. Second, econometric analyses of the costs of different types of utilities show that the traditional, vertically integrated electric utility can provide substantial cost savings as a result of the unified coordination of power generation and transmission. Each of these two factors suggests that the drawbacks of power deregulation, as practiced in California and other areas, exceed the potential benefits.

What does all this imply about the proposed changes in Russia's electricity industry?

First, the maintenance of a reliable supply of electricity and heat is vital for such an immense country with extreme wintertime temperatures. A prolonged power outage in

the Arctic or Siberia could prove fatal. If, as some have argued, vertically integrated utilities are in the best position to ensure an uninterrupted supply of electricity, the breakup of the Russian electricity industry into separate production, transmission, and sales operations may be misguided.

Second, the gradual deregulation of Russia's power sector could pose complications of its own. Even if the deregulatory formula is better than in California, serious problems may arise in a country that is as poor and corrupt as Russia. The continued quotas and controls provide tempting opportunities for rent seeking. Electricity deregulation began in the United Kingdom and has worked reasonably well there, but two circumstances are thought to account for this superior performance: First, in the United Kingdom, unlike in the United States, the government has encouraged ample investment in the high-voltage grid. Second, the UK's Office of Gas and Electricity Markets (Ofgem), the body that regulates electricity, has consistently intervened to correct for market failures.

Each of these points about the United Kingdom highlights potential problems for Russia. In the case of the grid, Russia's aging high-voltage network is in urgent need of modernization and upgrading, but that will require vast infusions of money. In principle, foreign investors could provide the needed capital, but they will do so only if they are allowed to recoup their outlays, and this will almost certainly require much higher prices for household consumption. Whether that will be politically feasible in Russia is uncertain. Even if household rates are substantially increased under the deregulatory plan, there is little reason to believe that they will be increased enough to induce foreign investors to put up tens of billions of dollars for upgrading of the grid. Moreover, so long as Russia remains an unattractive venue for foreign direct investment, potential investors will be extremely wary of sinking enormous amounts of capital into Russia's electricity industry.

With regard to the crucial role that Ofgem plays in the United Kingdom, Russia does not have comparable regulatory capacity. This underscores a paradox in the deregulatory model itself: One of the reasons to deregulate is to reduce regulation and associated costs, but if the deregulated model is to work well (as in Great Britain), it seems to require at least as much regulation as the traditional model. Moreover, the regulation must be more sophisticated—a requirement that the Russian government will have an extraordinarily difficult time fulfilling.

Despite these pitfalls, the train has left the station. The Russian electricity industry certainly is in need of far-reaching reform, but the changes that will be implemented over the next several years may not be the optimal route to go.