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Improving Energy Relations with Russia:
The Roles of Energy Efficiency and Alternative Energy

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IMPROVING ENERGY RELATIONS WITH RUSSIA: THE ROLES OF ENERGY EFFICIENCY AND ALTERNATIVE ENERGY

EXECUTIVE SUMMARY

Europe can improve its energy relations with Russia by contributing to increased energy efficiency and the development of alternative sources there. Beyond worries about New Year's day shutoffs, price volatility and tenuous Russian-Ukrainian relations, Europe is concerned that Russia will not be able to meet its future energy needs because of stagnating production levels. Russia is one of the most energy inefficient countries in the world and its ability to export energy is increasingly constrained by growing domestic demand. Implementing greater energy efficiency would improve the effectiveness of energy use within Russia and therefore free up larger supplies of energy for export, serving both European and Russian interests.

Cooperation between Russia and the West on energy efficiency and alternative sources could achieve these goals. International cooperation is always complicated because countries primarily focus on promoting domestic industries, often maintain outdated equipment, fail to improve ineffective legal frameworks, and confront a dearth of reliable information. Beyond such universal problems, cooperation with Russia must overcome a variety of specific problems, such as the influence of energy subsidies which limit consumer incentives to save, Soviet-era infrastructure that prevents individuals from controlling the amount of energy they use, and the growing role of the state in the Russian energy sector.

Nevertheless, there is still much room for cooperation. Specifically, we propose efforts in the following areas: scientific exchanges, technology transfer, finance vehicles, grassroots civil society movements, and regulatory changes. In making these recommendations, we emphasize utilization of existing and successful tools of cooperation rather than inventing new mechanisms.

1. American, European and Russian scientists and engineers should work together to develop innovations in the areas of energy efficiency and alternative sources, building on past successes with scientific exchanges, and including key players from government and business. To insure equal status for all partners these efforts might center in a third country, such as Serbia or Kyrgyzstan. A coordinated effort to develop energy efficiency and alternative energy sources for poor, rural areas could serve as a useful pilot project for the collaboration. The EU-Russian Energy Dialogue or the Renewable Energy and Energy Efficiency Partnership (REEEP) would be logical organizations to convene the relevant partners.

2. The US, European, and Russian governments, in coordination with large companies like Google, should pool resources to create an independently managed fund that would finance some of the scientific exchanges and technology transfers discussed above. This fund would be an independent entity that sponsors efficiency and alternative source project proposals on the basis of a competitive selection process.
3. The US and Europe should make alternative energy and energy efficiency a key objective of their foreign direct assistance programs in all major theme areas: including economic growth, good governance, and civil society.
4. Western countries and the Russian government should provide aid to micro-level community and NGO initiatives to enhance energy efficiency and implement alternatives. Such groups are typically non-political and can demonstrate in concrete ways how society can benefit from developing alternative energy sources.
5. Russia must make a number of regulatory changes to enhance the efficiency of its energy use, such as reducing energy subsidies, installing meters to monitor individual energy use, and updating its building codes. Russia is planning to invest more than \$12 billion in new infrastructure for the 2014 Sochi Olympics, and it could use this event as a showcase for implementing new green technologies.

RUSSIA AND EUROPE: INTERDEPENDENT PARTNERS

While the political relationship between Russia and the West is deteriorating, the intensity of ties between Russia and Europe is growing with amazing speed.¹ Even though observers often claim that Russia holds the upper hand because it controls a considerable amount of Europe's energy supply, in fact, the two partners are mutually interdependent. Russia exported 143.5 billion euros worth of energy and raw materials to the European Union (EU) in 2007, while the EU shipped 89 billion euros worth of manufactured goods (machinery, transportation, equipment), food and live animals to Russia that year.²

Russia provides 30 percent of the EU's oil imports, accounting for 27 percent of overall oil consumption, and 44 percent of EU gas imports, which is 24 percent of overall consumption.³ Sales of oil, oil products and gas alone accounted for 70 percent

1 The author would like to thank Svetlana Frenova, Renewable Energy and Energy Efficiency Partnership Russian and Former Soviet Union Regional Secretariat; Michael E. Webber, Associate Director, Center for International Energy & Environmental Policy, Jackson School of Geosciences & Cockrell School of Engineering, The University of Texas at Austin; Vyacheslav Kulagin, Deputy Head of the Center for International Energy Markets Studies, Energy Research Institute at the Russian Academy of Science (ERI RAS) in Moscow; Dr. Andreas Goldthau, Assistant Professor in Policy Analysis at the Central European University, Budapest and Director of the Energy Security Program at CEU's Center for Environment and Security; and Indra Øverland, Head of the Energy Programme at the Norwegian Institute of International Affairs for their comments on a previous draft of this paper. Despite their advice, all remaining errors are the responsibility of the author.

2 http://ec.europa.eu/trade/issues/bilateral/countries/russia/index_en.htm

3 European Commission (EC), The European Union and Russia: Close Neighbours, Global Players, Strategic Partners, Brussels: European Commission External Relations, October 2007, 13, http://ec.europa.eu/external_relations/library/publications/34_eu_russia.pdf

of Russia's total exports in the first nine months of 2008 and represented 50 percent of federal budget revenues that year.⁴ Exports to the EU generate the bulk of this income. But, not only does the EU represent Russia's most important destination for oil and gas, it is also its most important trading partner: 56.2 percent of Russian exports went to the EU in 2005 and the EU accounted for 44.8 percent of Russia's imports. Conversely, Russia made up only 10.1 percent of the EU's overall imports and its purchases comprised only a meager 6.2 percent of EU exports.⁵

Questions of energy security shape the way that Europe and Russia view each other. The EU seeks security of supply and doubts that Russian energy output will meet its growing demands. Most importantly, with Russian hydrocarbon output leveling off, the Europeans worry that Russia is not investing sufficient amounts in oil and gas production to meet its growing needs.⁶ Based largely on these concerns, as well as the long-standing distrust of the Russian financial system, the Russian stock market lost more than half its value between May 19 and October 1, 2008 and continued to fall as the global economic crisis deepened, down to less than a quarter of its peak value in May 2008 by the end of the year. Therefore, the EU has a strong interest in helping to increase Russian energy efficiency levels so that the country will use less gas in its inefficient domestic market and be in a position to export more. At the same time, Russia focuses on security of demand and views suspiciously the EU's stated goals of reducing dependency on imported fossil fuels and diversifying imports. Such statements by European politicians make the traditional European oil and gas market look increasingly unstable for Russia. Given these concerns, the expansion of the European-Russian energy relationship to include technology sharing in the area of energy efficiency and the mutual development of renewables is all the more important.

BENEFITS FROM GREATER EFFICIENCY AND ALTERNATIVE ENERGY SOURCES

Like the EU, Russia can benefit from developing greater energy efficiency and alternative sources.⁷ Thanks to its massive gas, oil, and coal reserves, in the past Russia paid much less attention to energy efficiency and alternative energy than Europe or the US. While overwhelming majorities in the West support a greater emphasis on solar and wind power, only 50 percent of the population in Russia does so.⁸ Russia uses 3.2 times more energy per unit of GDP than the EU-25,⁹ though it is making slow improvements. According to Russia's Energy Strategy to 2020 (adopted in 2003), Russia could save

4 See Bank of Finland Institute for Economies in Transition (BOFIT), BOFIT Weekly, 14 and 21 November 2008 and the Brookings Institution, The Russian Federation, The Brookings Foreign Policy Studies Energy Security Series Washington, DC: The Brookings Institution, October 2006, 6, <http://www3.brookings.edu/fp/research/energy/2006russia.pdf>

5 EC, The European Union and Russia, pp. 13 and 26–31.

6 Philip Hanson, "The Sustainability of Russia's Energy Power: Implications for the Russian Economy," in Jeronim Perovic, Robert W. Orttung and Andreas Wenger, eds, Russian Energy Power and Foreign Relations, London: Routledge, 2009.

7 Russian Minister of Industry and Energy V. B. Khristenko and EU Commissioner for Energy A. Piebalgs put forward an initiative to deepen Russian-European cooperation in the field of energy on February 28, 2006. See the "Final Report of the Thematic Group on Energy Efficiency of the EU-Russia Dialogue" at http://ec.europa.eu/energy/russia/reference_texts/doc/2006_10_energy_efficiency_en.pdf

8 "World Publics Strongly Favor Requiring More Wind and Solar Energy, More Efficiency, Even If It Increases Costs," http://www.worldpublicopinion.org/pipa/pdf/nov08/WPO_Energy_Nov08_pr_emb.pdf

9 Andreas Goldthau, "Improving Russian Energy Efficiency: Next Steps," Russian Analytical Digest, no. 46, 25 September 2008.

between 360-430 million tons of oil equivalent (toe) or 39-47 percent of its current use if it were to adopt energy efficiency measures, such as industrial restructuring or removing energy subsidies and raising energy prices within Russia.¹⁰

Russia currently has no policy to promote energy efficiency, but is working to address this issue. The federal five-year program Energy Efficient Russia expired in 2006 and policy-makers are preparing a new program. Instead of revising the 1996 law "On Saving Energy," the government decided to prepare a new law and submitted a draft concept to the parliament on 17 October 2008. On 4 June, President Medvedev issued a decree stipulating a 40 percent reduction in energy intensity by 2020. This process is already underway as Russia is reducing the amount of energy it uses to produce a unit of GNP as its economy evolves away from manufacturing toward less energy-intensive services. In addition, the Ministry of Energy functions as a coordinating body on sustainable energy issues, having created departments to address renewable energy and energy efficiency.

The main opportunities for saving energy in Russia are in the energy and communal services sectors: reducing the amount of flared gas at Russian oil wells, cutting losses in natural gas transmission and distribution; increasing the efficiency of oil refineries; replacing outdated electricity generation stations and distribution grids, and improving domestic heating systems, according to the German Energy Agency's Petra Optiz.¹¹ Russia wastes much of the energy devoted to heating its homes because it produces the heat centrally and then transports it to the end-user, with significant losses along the way.¹²

In addition to drawing on increased efficiency, Russia boasts enormous potential in the development of renewable energy sources. Russia's Energy Strategy to 2020 suggests that as much as 30 percent of the country's energy needs could be met using alternative sources. Russia currently obtains only about 3.5 percent of its energy supply from renewable sources, including its numerous hydro-electric dams.¹³ Non-conventional energy sources, such as solar and wind, currently make up less than 1 percent in Russia's overall energy output.¹⁴ There are Russian companies that deal with wind energy, but the country maintains only a few large wind energy production systems at present (Russia produced 7 Gwh of wind power in 2005).¹⁵ In October 2007, Tatarstan announced plans to build Russia's first biofuel plant, one that will use first generation sources such as rye, wheat, and corn. The Ministry of Energy, which prepares new legislation on renewable energy, claims that the government set aside significant sums of money to create a market for renewable energy and engage private investors. Additionally, the ministry is preparing a decree on the use of renewable energy in electricity generation to increase the use of renewable sources (including hydro) to 20 percent by 2020.

10 See Vyacheslav Kulagin, "Energy Efficiency and Development of Renewables: Russia's Approach," Russian Analytical Digest, 46, 25 September 2008.

11 Petra Optiz, "Energy Savings in Russia – Political Challenges and Economic Potential," Russian Analytical Digest, no. 23, June 19, 2007.

12 Kulagin, "Energy Efficiency and Development of Renewables"

13 Russian Ministry of Industry and Energy, Energeticheskaiia strategiiia Rossii na period do 2020 goda, 2003, <http://www.gazprom.ru/articles/article4951.shtml>

14 Kulagin, "Energy Efficiency and Development of Renewables"

15 Peter Richards, "European Practices Offer a Good Model for Russia," Russian Analytical Digest, no. 46, 25 September 2008.

In addition to the economic paybacks, Russia and the West can benefit from the environmental gains from greater efficiency and the use of alternative sources. There is considerable room for cooperation in the reduction of emissions, particularly as the parties move forward with negotiations on the post-Kyoto climate change treaty.

OBSTACLES TO COOPERATION

International cooperation on developing innovative energy technology between Russia and the West can effectively pool funding and share technical information. Unfortunately, a number of obstacles often make cooperation between states and companies in Russia and the West difficult. In general terms, national interests can block international efforts when countries are unwilling to share advanced technology and are primarily focused on promoting domestic industries.¹⁶ Additionally, outdated equipment, a poor legal framework for companies, and a dearth of reliable information prevents potential international partners from working together. Western experience has shown that implementing energy efficiency solutions requires strong political will. But even beyond these issues, there are numerous specific problems for the West in cooperating with Russia:

Subsidies. The Russian energy market does not function effectively because of large subsidies for domestic consumers of natural gas, who account for 54 percent of Russian energy consumption. In 2006, average domestic Russian gas prices were only 29 percent of West European prices (taking into account transit charges). Such subsidies divert funds away from necessary investments in energy efficient equipment in industry, the housing sector, and power generation. On 30 November 2006, the Russian government announced a plan to gradually increase gas prices for domestic consumers to well over a \$125 per 1,000 cubic meters by 2011 (at the end of 2007, Russian domestic natural gas prices were around \$45 per 1,000 cubic meters).¹⁷ European consumers pay substantially higher prices. More recently, however, the government has slowed the rate of increase to minimize the amount of political pain it inflicts on the population. This suggests that subsidies are likely to remain part of the landscape for the long term.

Absence of price signals. Price signals in the energy sector do not work on Russian residential customers. If you live in a typical apartment building, the heating system is communal, so you cannot turn down the temperature in your apartment even if you wanted to. To address this problem, Russia needs to install meters to measure individual energy consumption and to establish variable electricity rates for periods of peak and low loads. Unfortunately, the authorities are only slowly implementing legislation to make this happen. Since one third of Russia's energy-saving potential is in the communal and housing sector, these issues deserve considerable attention.

16 Patrick Avato and Jonathan Coony, *Accelerating Clean Energy Technology Research, Development, and Deployment: Lessons from Non-energy Sectors*, Washington: World Bank, 2008, p. 17-8.

17 International Herald Tribune, 30 November 2006, <http://www.ihf.com/articles/2006/11/30/business/rusgas.php>

Growing state role. The Russian state is expanding its role in the country's energy sector as an owner and regulator, often leading to harsh treatment of international energy companies working in Russia. As the state role grows, it is more difficult for small innovative companies to find a niche. For example, there could be valuable international cooperation in the area of nanotechnology; this is a big new field that remains largely undefined and there is plenty of space for cooperation between Russia and the West as equal partners to explore the landscape.¹⁸ However, the state dominates nanotech funding in Russia, and bureaucrats inevitably seek to control everything, often emphasizing military over commercial applications. In these conditions, it is not clear how effective cooperation could be organized between Russian state entities and Western private companies.

Gazprom. Gazprom, a poorly regulated monopoly, currently produces more than 80 percent of Russia's natural gas. It has little incentive to increase efficiency since it makes large profits already. However, rising international demand and the recent end of cheap gas from Central Asia may start to change its incentive structure. By contrast, in reforms stretching through July 1, 2008, Russia broke up its electricity monopoly RAO UES, creating several generating companies to mitigate the effects of vertical integration and monopoly.

THE WAY FORWARD

The obstacles listed above make typical state and business cooperation with Russia difficult in the area of energy efficiency and alternative sources, so we propose work in the following areas: scientific exchanges, technology transfer, financing vehicles, grassroots civil society movements, and regulatory changes. In making these suggestions, we emphasize the advantage of utilizing existing tools of cooperation with a track record of success, rather than creating new instruments of cooperation from scratch.

1. Scientific Exchanges

American, European and Russian scientists and engineers could collectively address the global energy and climate change crisis by developing innovations in the areas of energy efficiency and alternative sources, thereby building on past successes with scientific exchanges. Such a project should include key players from government and business, emphasize multi-disciplinary knowledge, and insure equal status for all partners by working in a third country, such as Serbia or Kyrgyzstan. A project that meets these criteria would be a coordinated effort to develop energy efficiency and alternative energy sources for poor, rural areas. The EU-Russian Energy Dialogue¹⁹ or the Renewable Energy and Energy Efficiency Partnership (REEEP) would be logical organizations to convene the relevant partners and assign tasks.

18 Adam N. Stulberg, "Russia and the Nanotechnology Revolution," PONARS Eurasia Policy Memo no. 26, August 2008, <http://ceres.georgetown.edu/esp/ponarsmemos/page/55922.html>

19 <http://ec.europa.eu/energy/russia/>

Getting the mechanics of the project right – assembling the right players, keeping a multidisciplinary focus, and working as partners -- is the key to success. Pan-European players such as the EU-Russia Energy Dialogue and REEEP (which has a global reach) are best placed to assemble the team. From the European side, key players could include national governments, significant research institutions, such as the Swiss Federal Institute of Technology, and energy companies. The Russian Academy of Sciences should be a full contributing partner. In contrast to the 1990s, Russia now has extensive financial resources, and the Academy's research budget is six times larger than it was in 2001.²⁰ From the US side it is crucial to ensure the active participation of the Department of Energy, key research universities, and private business. The project should be multidisciplinary to cover all the technical and policy aspects of addressing current energy challenges. Working on an international project with a specific purpose should help free research funding from its usual disciplinary constraints and allow the researchers to rise above local and business preferences.

There are many international scientific projects that could serve as models for work on energy efficiency and alternative sources. One prominent example, is the International Thermonuclear Experimental Reactor (iter.org), which is a joint international research and development project among the EU, China, US, Russia, India, Japan, and Korea to demonstrate the feasibility of using fusion as an energy source.²¹ Soviet President Mikhail Gorbachev originally proposed this project to French President Francois Mitterrand and then US President Ronald Reagan. By pooling government funding, ITER successfully overcame governments' usual desire to seek control and credit for their support. With huge capital requirements and great potential rewards, but a payoff that is still uncertain and in the distant future, governments have been willing to share funding and risks to work together.²²

A multi-national project to promote scientific exchange in energy efficiency and alternative sources will not be easy and must build on past successes. Following the collapse of the Soviet Union, Western countries assisted Russia with the largest scientific aid and cooperation program in history.²³ Funders like George Soros, the Carnegie Corporation of New York, and the MacArthur Foundation provided extensive support that helped keep Russian science alive at a time of great need. Several Western companies, such as Honeywell, Boeing, Schlumberger, and Sun Microsystems, set up shop in Russia to work with Russian researchers in developing products for the international market. The success did not come without problems, however. Sometimes, the Russians felt as if the West was colonizing them and trying to steal their most

20 Glenn Schweitzer, "Engaging Russian Scientists," *Science* vol. 321, July 18, 2008, www.sciencemag.org

21 "ITER: Fusion Energy Future," *eJournal USA*, October 2006, pp. 26-30,

<http://usinfo.state.gov/journals/itgic/1006/ijge/ijge1006.pdf>

22 Patrick Avato and Jonathan Coony, *Accelerating Clean Energy Technology Research, Development, and Deployment: Lessons from Non-energy Sectors*, Washington: World Bank, 2008, p. 18.

23 This paragraph summarizes comments from various speakers at: "Improving US-Russian Relations through Cooperation in Higher Education and Research," conference at the Woodrow Wilson International Center for Scholars, Washington, DC, September 18, 2008. See also, Loren Graham and Irina Dezhina, *Science in the New Russia: Crisis, Aid, Reform*, Bloomington: Indiana University Press, 2008, p. 89.

valuable secrets. The deterioration in relations between the West and Russia in recent years made cooperative efforts more difficult. The EU ended its International Association for the Promotion of Cooperation with Scientists from the Independent States of the Former Soviet Union (INTAS) program on January 1, 2007, after spending 200 million euros over more than a decade.²⁴ Current US programs are limited to efforts to reduce the nuclear arsenal and contain nuclear materials, construct the international space station, and address HIV/AIDS. Moreover, in February 2008, the Department of Commerce closed its BISNIS office which sought to facilitate US business links to the former Soviet Union. Similarly, in March the US National Science Foundation terminated its 50-year support for the Academy of Science's scientist exchange program. After the August 2008 Russia-Georgia war, the Bush administration withdrew from Congress a treaty to expand civilian nuclear power cooperation. Likewise, the Department of Energy's research cooperation with the Russian Academy of Science lies dormant with few projects in the pipeline.

To facilitate cooperation with a focused objective, the effort to promote energy efficiency and alternative sources for poor areas could take place in a third country, such as Serbia or Kyrgyzstan, where the participants are on neutral ground and more likely to establish an equal partnership. In Russia itself there is potentially great demand for the fruits of this project since remote villages housing up to 10 million people are cut off from energy distribution grids meaning that energy from alternative sources could help alleviate energy needs in these areas.²⁵

2. Financing Vehicles

A key question about increasing energy efficiency and the use of alternative energy is how to pay for these projects. While such technology may save money over time, it requires large up-front investments. With energy prices gyrating wildly over the past year, this problem becomes even more acute. Although Russia is currently flush with cash, it has not spent much on developing alternative energy or promoting energy efficiency. In the West, both government and industry are working on this aspect of the problem and they could ultimately stimulate greater cooperation with Russia.

How can the various players raise sufficient funds? One solution is that the US, European, and Russian governments, in coordination with large companies like Google, could pool resources to create an independently managed fund that could finance some of the scientific exchanges and technology transfers discussed above. This fund would be an independent entity that sponsors relevant project proposals on the basis of a competitive selection process. Groups of states and private entities have set up similar funds to promote democratization and media development and could serve as models for an energy fund.²⁶ In addition to directly financing projects, the sponsors could

24 Graham and Dezhina, p. 100.

25 <http://www.nordicenergy.net/section.cfm?id=1-0&path=142,146>

26 See Aaron Presnall et al, *An Imperative to Innovate*, Belgrade: Jefferson Institute, 2007, <http://www.jeffersoninst.org/>

promote the ideas of Russian companies in Western markets and advocate the application of Western technologies in Russia. To be effective in Russian conditions, such funds would have to include the Russian government or at least one large Russian company among its decision-making partners.

The US government has devoted some resources to promote energy efficiency and alternative sources and is now looking to do more. Over the 30-year period from the Department of Energy's inception at the beginning of fiscal Year (FY) 1978 through FY2007, federal spending for renewable energy R&D amounted to about 16 percent of the energy R&D total and spending for energy efficiency was 15 percent compared with 25 percent for fossil fuels and 41 percent for nuclear.²⁷ However, in recent years, a larger share of the money has gone into efficiency and renewable sources. In his 2008 State of the Union address, President Bush committed \$2 billion over three years to a new international Clean Energy Technology Fund. The purpose of the fund is to increase and accelerate the deployment of all forms of cleaner, more efficient technologies in developing nations like India and China, and help leverage substantial private-sector capital by making clean energy projects more financially attractive.²⁸ The fund aims to pay for the difference between developing countries putting in a new coal plant or one that relies on renewable energy, such as wind.²⁹ While these aims are noble, critics point out that the amount of money going into this fund is small compared to the amount of money invested in energy projects, which are mostly focused on oil and coal. President-Elect Barack Obama has promised to invest \$150 billion over 10 years in clean energy. His campaign emphasized keeping this money in the US, but a small fraction of that sum invested in international projects could help improve US relations with Russia while also achieving energy goals.³⁰

The private sector is also putting up money that will increase the business viability of alternative energy. Google is sponsoring a major effort to develop electricity from renewable energy that is cheaper than electricity produced from coal.³¹ This project makes good economic sense because it helps transform alternative energy into a cost-effective possibility for ordinary consumers. Google.org is making strategic investments and grants, advancing key public policies, and using Google products to unlock critical information along these lines.

In another innovative effort, US Ambassador to Sweden Michael Wood is introducing Swedish firms and researchers with promising alternative-energy ideas to American venture capitalists as part of a program to foster cooperation between the two countries in developing alternative energy technology.³² So far

27 Fred Sissine, "Renewable Energy R&D Funding History: A Comparison with Funding for Nuclear Energy, Fossil Energy, and Energy Efficiency R&D," Congressional Research Service Report for Congress, RS 22858, April 9, 2008, <http://fpc.state.gov/documents/organization/104708.pdf>.

28 <http://www.whitehouse.gov/stateoftheunion/2008/initiatives/energy.html>

29 <http://earth2tech.com/2008/07/14/bushs-clean-technology-fund-too-little-too-late/>. The World Bank estimates that the difference between building coal and renewable energy plants amounts to \$30 billion a year, so this effort would only be a small part of the solution. The plan will also basically be selling developing countries technology developed in the West and Western countries will keep the intellectual property rights.

30 <http://my.barackobama.com/page/content/newenergy>

31 <http://www.google.org/rec.html>

32 Joel Sherwood, "Green Diplomacy."

Wood's efforts are more of an individual effort rather than a state policy. Nevertheless, it shows how thoughtful government efforts can stimulate the private sector in specific ways.

3. Locally-Appropriate Technology Transfer

The US and Europe should make alternative energy and energy efficiency a key objective of their foreign direct assistance programs in all major theme areas: including economic growth, good governance and civil society. Currently there are a number of programs in place with the aim of promoting technology transfer. Unfortunately, these are small steps and represent only a fraction of what is required. Past efforts in this area have fizzled out, so it is important to give them new emphasis.

At the government level, the Joint Energy Efficiency Working Group of the Russian Ministry of Energy and the US Department of Energy has been operating for 10 years. Likewise, the EU-Russia Energy Dialogue provides a forum for exchange. Unfortunately, these organizations have made little progress in the area of efficiency and alternative energy. The Dialogue included a number of small-scale projects financed through the EU-Russia Cooperation Program. These projects were based in Arkhangelsk (energy-saving street lights), Astrakhan and Kaliningrad (wind farm) and an EU-Russian Energy Technology Center (www.technologycentre.org), which was founded in November 2002 but is now closed.³³ The purpose of the center was to coordinate all EU energy projects in Russia, and to serve as a link between policy-makers and medium and small business, research institutes, and regional energy companies.³⁴ The Tacis funding for these projects ran out and was not renewed.

The US and Europe are beginning to work together to promote alternative energy at the governmental level. Alexander A. Karner, assistant secretary for energy efficiency and renewable energy at the US Department of Energy under the Bush administration, signed an agreement in summer 2007 to expand the sharing of technology information between the US and Sweden. The two countries also have set up a working group to review and potentially fund promising research projects.³⁵ Such a project could eventually be expanded to include Russia.

Non-governmental groups are getting into the act as well. REEEP, an international NGO registered in Austria, has a 230,000 euro program to improve building codes in Russia and Kazakhstan with the participation of the Institute for Market Transformation.³⁶ University research labs, such as the Renewable and Appropriate Energy Laboratory at Berkeley (rael.berkeley.edu) or the Center for International Energy and Environmental Policy at the University of Texas, Austin could serve as partners in research projects bringing together US, European, and Russian scientists interested in similar issues.

33 Goldthau, "Improving Russian Energy Efficiency."

34 Tatiana Romanova, "Energy Dialogue from Strategic Partnership to the Regional Level of the Northern Dimension," in Pami Aalto, ed., *The EU-Russian Energy Dialogue: Europe's Future Energy Security*, London: Ashgate, 2007, p. 73.

35 Joel Sherwood, "Green Diplomacy," *The Wall Street Journal*, March 24, 2008.

36 <http://www.reeep.org/index.php?assetType=project&assetId=89>

4. Civil society movements

A key way to advance the cause of energy efficiency and alternative sources is through grassroots civil society groups. In Russia, most energy conservation and alternative generation movements develop in housing units and local councils. Establishing such communities sets up the legal basis to organize home-owner investment in their buildings, including addressing energy efficiency issues.³⁷ Existing neighborhood-specific environmental groups interested in protecting their local surrounding can play a strong role here as well by assisting the housing-based groups. In Russia and other countries of the region, environmental groups have proven to be the most resilient members of civil society so they are likely to make the most effective partners in pushing for change in the energy sphere.

The problem is that most energy policy decisions are made and implemented at the top of the political system. Similarly, despite recent reforms, Russia's utilities remain highly centralized and are not built to accept smaller input even if a local housing or environmental group did install solar panels and start to generate its own electricity. The civil society groups will have to demonstrate to local and national policy makers that efficiency and alternative sources are strongly in their interest.

Both Western and Russian governments should provide support to these community groups. The Russian state is now offering aid to non-governmental organizations through the Social Chamber. Likewise, to encourage such efforts, the US and EU could sponsor trips by local community members to view successful alternative energy projects in the West to transfer ideas on what is possible.

5. Regulatory Changes

Russia has a long way to go in establishing an effective regulatory environment for promoting alternative energy and energy efficiency, as the discussion of obstacles to cooperation noted above. Russia needs to structure the alternative energy market, define how to sell the energy, and work out the pricing mechanism.³⁸ In particular, Russia lags behind Europe in establishing incentives that set a higher price for energy generated from alternative sources over traditional fossil fuels. Poland and the Czech Republic have such laws and they are attracting investors into alternative energy. Russia also needs to update its regulations on appliances and building codes.

The Russian government is planning to invest more than \$12 billion in new infrastructure to prepare Sochi for the Olympic games in 2014. Private firms will also green technologies. Krasnodar Krai, where Sochi is located, has already adopted a regional law on renewable energy.³⁹

To improve the conditions for alternative energy and energy efficiency, Russia likewise must address the problem of reducing its current high energy

³⁷ Optiz, "Energy Savings in Russia."

³⁸ Richards, "European Practices Offer a Good Model for Russia."

³⁹ Renewable Energy and Energy Efficiency Partnership, Policy and Regulatory Review: Second Edition, July 2007, p. 93.

subsidies. Raising the price of energy to the market level, combined with installing meters to measure individual use of energy (including new smart grid technology), provides consumers with strong incentives to save energy. Certainly Gazprom supports such moves since it currently makes little profit on the domestic market. However, higher prices are politically unpopular and it is not clear that the Russian government will feel secure enough to implement such measures. While users will become more energy conscious at the higher prices, adjusting to those prices will inevitably involve some political pain. Russia could learn a lot from the systems in Europe which have already made this adjustment to market energy rates, but first it will have to demonstrate interest in adopting such models.



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