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**Dirty Deeds Done Dirt Cheap:
The Economic and Legal Challenges of Bringing Clean Energy
Innovation to the Russian Federation**

By Matt Klomparens

In January 2016, Vladimir Putin signed an executive order proclaiming that 2017 would be the Russian Federation’s “Year of the Environment,” citing its goal to “attract public attention to Russia’s environmental issues, preserving biodiversity, and ensuring environmental security.”¹ This has prompted a range of domestic and foreign responses, from cautious optimism to dismissive skepticism.² Indeed, a complicated array of factors unique to Russia’s geographic, political, economic, and diplomatic circumstances all make for an uncertain future for clean and renewable energy sources in the Russian Federation.

This paper aims to explore the role of international actors and Russian lawmakers in shaping Russia’s clean energy policies. Looking to instances of private sector investment, international collaboration between academic institutions, and homegrown entrepreneurship, there are some surprising indicia that Russia has begun to make meaningful strides in its adoption of renewable energy sources. At the same time, the limiting force of

¹ Executive Order on Holding the Year of the Environment in 2017, Office of the President of Russia (Jan 5, 2016, Kremlin), archived at <https://perma.cc/FKA2-CTF3>.

² Nick Bohmann, *Russia’s Year of the Environment: Fact or Fiction?* (American Security Project, Nov 8, 2016), archived at <https://perma.cc/P4XG-H9NZ>.

international economic sanctions following the Russian annexation of the Crimean region are clearly also having the effect of inhibiting foreign investment in clean energy projects throughout Russia. Further, the Russian state itself has taken a firm and nationalistic stance against many forms of foreign investment in non-governmental organizations. These laws have limited the willingness and ability of environmental rights activists to lobby for policy changes toward clean energy. Entrenched state interests in Russia's monolithic and monopolized oil and gas sectors present additional reasons for skepticism that Russian investment in renewable energy sources is a legitimate priority.

Part I provides a cursory overview of Russia's energy sectors, noting the long-entrenched interests of Russian oil and gas producers as well as the significant recent growth in certain renewable energy sectors. Part II looks to the role of private sector organizations in the Russian energy economy and highlights three important developments as signals that Russia's cost-benefit analysis may be shifting in favor of increased adoption of clean and renewable energy projects. Part III explores the effects of the foreign economic sanctions that have been imposed on Russia since 2014, including their detrimental impact on the Russian economy, instilling a high degree of uncertainty in foreign investors, and limiting the ability of Russian clean energy enterprises to attain the investment capital needed to scale their

operations and develop technological innovations. Part IV looks to the self-imposed limitations against foreign influence and investment capital in the form of Russia's "local content requirements" and "foreign agent" laws.

I. Overview of the Russian Federation's Energy Industry

The Russian economy is highly dependent upon its energy production infrastructure. According to the United States Energy Information Administration, "Russia is the world's largest producer of crude oil and the second-largest producer of dry natural gas."³ In 2015, oil and natural gas revenues accounted for 43% of Russia's federal budget revenues.⁴ Due to Russia's vast and diverse geography, the Russian Federation is one of the world's most resource-rich countries.⁵ In 2005, the World Bank ranked Russia as the country with the highest total estimated value of sub-soil wealth in the world.⁶ A subsequent study has reaffirmed this finding and estimates the total value of Russia's natural resources at \$75.7 trillion USD.⁷ Russia's wealth of oil and natural gas reserves have helped the country to weather political turmoil over the past two decades, to mitigate a debilitating recession that began in 2009, and to deflect some effects of the U.S.-imposed

³ Energy Information Administration, *Russia* (Energy Information Administration, Oct 25, 2016), archived at <https://perma.cc/B99G-ANAG>.

⁴ Id.

⁵ Martin Russell, *The Russian Economy: Will Russia Ever Catch Up?* (European Parliamentary Research Service, March 2015), archived at <https://perma.cc/6NVK-FP6L>.

⁶ Id.

⁷ Id.

economic sanctions that commenced in 2014. In addition to providing the country's chief exports and servicing Russian citizens with basic utilities, the Russian energy sector is one of the most substantial sources of employment in the Russian economy.

Russia's oil and gas reserves have served as a valuable safety net, but there are several indicia that this reliance has made Russia vulnerable and unprepared to meet numerous risks and challenges facing private and governmental energy interests worldwide. Much of the Russian energy production infrastructure is outdated, which presents a host of potentially costly risk factors. Pipelines and refineries must be maintained and updated to avoid catastrophic spills and production accidents. Antiquated nuclear power facilities pose significant health and safety risks to their employees and citizens in neighboring towns.⁸ Furthermore, increasing investments in clean and renewable energy by European countries, combined with international political pressure favoring environmentally-friendly energy policies, is likely to result in decreased demand for Russian crude oil and natural gas. These market forces may take an adverse effect on the Russian energy economy sooner than anticipated, and Russia may find itself caught flat-footed when forced to catch up in the new energy economy.

⁸ See Igor Koudrik, Alexander Nikitin, *Second Life: The Questionable Safety of Life Extensions for Russian Nuclear Power Plants*, Bulletin of the Atomic Scientists (Dec 13, 2011), archived at <http://perma.cc/4S77-ZBPJ>.

Despite Russia's slow start out of the gate towards modernizing its energy infrastructure, there are some signs for optimism that President Putin's gesture for 2017 as the "Year of the Environment" is not merely ceremonial. In 2016, Russia joined the Paris Agreement, promising to reduce its greenhouse gas emissions by 70% of its 1990s levels by the year 2030.⁹ Although Russia has drawn criticism for not going far enough with its environmental commitments relative to most other countries, the tone of Russian lawmakers concerning renewable energy investments has changed significantly within the past two years.¹⁰ Russia has seized upon opportunities to gain international political points in criticizing the United States for its decision to opt out of the Paris Agreement, noting that Russia places "great significance" to the agreement and lamenting the reduced effectiveness of the climate accord absent the United States' participation.¹¹

Perhaps most promising of all, Russia remains on track to fulfill the clean energy infrastructure commitments of former President Medvedev. In 2009, Medvedev's energy plan mandated a more than 400% increase in

⁹ As numerous critics have pointed out, Russia's use of a high, Soviet-era baseline level of emissions essentially bases its reduction levels on an outlier. The country could actually *increase* its current greenhouse gas emissions by 40% and still meet its promised 2030 target. See Coral Davenport, *A Change in Tone for Vladimir Putin's Climate Change Pledges*, NY Times (Dec 1, 2015), archived at <http://perma.cc/4CAR-3FUQ>.

¹⁰ See Henry Foy, *Russia Struggles to Unleash Clean Energy Potential*, Financial Times (May 7, 2017), archived at <http://perma.cc/W846-ZPPZ>.

¹¹ See Ian Johnston, *Russia backs the Paris agreement on climate change as Donald Trump set to announce US Decision*, Independent (June 1, 2017), archived at <http://perma.cc/S9LU-JA99>.

renewable energy utilization by 2020.¹² Through a mix of increased output from existing hydroelectric and geothermal power plants, plus some proposed investments in solar and wind power facilities,¹³ Russia may be on track toward realigning economic growth incentives in connection with renewable energy commitments. The next Part takes a closer look at the nature of these incentives from the perspective of the private sector, and tracks some of the successes and failures in bringing clean energy investments to Russia.

II. Private Sector Investments and Incentives

The past decade has seen significant reform in several sectors of the Russian energy economy. Keeping in mind the close state control of the oil and gas sectors, the electricity sector has been subject to particularly significant liberalization and privatization. Free market influence has disrupted some of these stagnant sectors with inflows of major foreign investments and efforts to modernize the Russian infrastructure. However, for every Russian success story there is also a setback due to corruption or international pressures against doing business with Russia.¹⁴ Meanwhile, the state-established Gazprom, with its legal export monopoly, remains a

¹² Woodrow Clark and Demitri Elkin, *Russian Resources Start to Flow into Renewable Energy* (Huffington Post, Sept 29, 2016), archived at <https://perma.cc/7SVC-CYK5>.

¹³ Sunny Lewis, *Russia's Bright Renewable Energy Future* (Max Impact Ecosystems, Jan 7, 2016), archived at <https://perma.cc/8EXU-EFDP> (noting governmental approvals of 557 megawatts of renewable energy projects in 2015).

¹⁴ See Foy, *Russia Struggles to Unleash Clean Energy Potential*, Financial Times (cited in note 10).

formidable adversary against any meaningful attempts at competition in the staple oil and gas sectors.

Even amidst the warranted skepticism that Russia's administrative state has bona fide incentives to prioritize clean energy development in the short term, there are also signs of life that the Russian private sector is making independent progress. In 2009, a multi-billionaire named Viktor Vekselberg launched Hevel, an integrated solar power company. Hevel opened a \$320 million production plant in 2015, with additional expansion plans on the horizon.¹⁵ The company asserts that it will have capacity to produce more than 300 megawatts of solar power by 2020.

The hydroelectric power sector also has enormous growth potential. While most G8 countries utilize approximately 80% of their hydropower potential, Russia—with the second-highest natural hydroelectric power generation potential—utilizes only 20% of its potential.¹⁶ Russia's major hydroelectric power producers, including the partially government-owned RusHydro, have invested billions of dollars towards rejuvenating outdated facilities, building new facilities, and pursuing modernized energy storage solutions to allow for more efficient utilization of hydroelectric power.

¹⁵ Stephan Bierman and Anna Andrianova, *Billionaire Vekselberg's Hevel Opens Solar Farm in Russia* (Bloomberg, Feb 17, 2015), archived at <https://perma.cc/MD7Q-TJHJ>.

¹⁶ BBC, *Russia's Huge Hydropower Potential*, BBC (Nov 27, 2010), archived at <http://perma.cc/MJX7-PA93>.

RusHydro has participated in sizable investments in partnership with Chinese investors towards expanding and modernizing its operations in the Siberian region. The company has also participated in clean energy investments outside of Russia, including \$1 billion dollars in invested capital towards hydroelectric projects in India.¹⁷

Academic collaboration has also been an unlikely source of energy innovation in Russia. In 2013, the Massachusetts Institute of Technology opened the Skoltech MIT Center for Electrochemical Energy Storage. The facility has been home to researchers from MIT's Materials Processing Center and Lomonosov Moscow State University. This collaborative effort has borne fruit, including technological advancements in energy storage technology.¹⁸ In light of this and similar success stories, increased academic collaboration may serve as a valuable driver of clean energy innovation—provided that escalating tensions between Russian and Western governments does not severely restrict prospective collaborative engagements between academic research institutions.

III. International Tensions and the Impact of Economic Sanctions

This Part reviews the nature and effects of the economic sanctions imposed by the United States against Russia following the Russian

¹⁷ Reuters, *Russian, Indian Funds to Invest \$1 Billion in Hydro Power*, Reuters (Dec 10, 2014), archived at <http://perma.cc/V47S-QXKF>.

¹⁸ <http://news.mit.edu/2015/fostering-us-russia-energy-innovation-0410>.

annexation of Crimea in 2014. These sanctions have had clear detrimental impact on the already struggling Russian economy, and many view the sanctions as driving Russia to establish closer relationships with China and countries in the Middle East region. Reasonable minds can debate whether the sanctions have served their intended purpose, but one of the unavoidable effects has been to limit in-flows of investment capital. Would-be clean energy investors from the United States and various European countries opine that they have been cut off from investing in clean energy infrastructure projects in Russia.¹⁹ The sanctions may have had the effect of making it even more difficult for Russia to take affirmative steps away from its heavy reliance on fossil fuels and to justify investments in modernized energy infrastructure. Cutting off access to Western investment capital has likely worsened the situation by severing the connection between environmentally-conscious investors in the United States and technically proficient energy experts with clean energy aspirations in Russia.

¹⁹ Maria Domanska and Szymon Kardas, *The consequences of the Western financial sanctions on the Russian economy*, OSW (Mar 24, 2016) (“Obstructed access to capital may delay, and in some cases even prevent, the implementation of important energy infrastructure projects. One indirect consequences of the Western financial sanctions is Moscow’s increased openness to participation in the Russian upstream sector of foreign investors from other directions than the West (mainly from China and India).”), archived at <http://perma.cc/RFR9-5PWV>.

According to the United Nations Conference on Trade and Development, foreign direct investment in Russia fell by 92% in 2015.²⁰ Some scholars speculate that this precipitous drop was the result of a contracting Russian economy coupled with the chilling effects imposed on Russian investors due to the U.S.-imposed sanctions.²¹ This “psychological scare” resulted from sanctions targeted at “individuals or individual firms that may have played a role in decisions about [the Crimean encroachment].”²²

In addition to the retraction of Western investment capital from Russia as a result of the economic sanctions, there continues to be general unrest and uncertainty about Russia’s relationships with other European countries. Some of these uncertainties are quite complicated, the result of global political, social, and economic factors, whereas others are as simple as controversies over land rights. For example, prior to the Russian annexation of the Crimean region, there were only four operating wind power plants in Russia, producing a total of 15.4 megawatts per year.²³ The Crimean territory was home to six wind power plants with a total production capacity of more than 74 megawatts per year. However, due to uncertainties about

²⁰ Knowledge@Wharton, *Investing in Russia: Is the Risk Still Too High?* Wharton (Feb 27, 2017), archived at <http://perma.cc/3B9Q-679T>.

²¹ *Id.*

²² *Id.*

²³ European Wind and Energy Association, *Wind in Power: 2015 European Statistics* (European Wind and Energy Association, Feb 2016), archived at <https://perma.cc/RY64-776D>.

which country in which these wind power plants are now located, the plants have remained inoperative.²⁴ Similarly, uncertainty in the region has slowed investments and private sector advancements toward capitalizing Crimea's sizable hydroelectric and geothermal energy production potential.

There are signs that the U.S.–Russia economic relationship will continue to deteriorate before it improves. In June 2017, the U.S. Senate passed a bill reinforcing the 2014 Obama-era sanctions and establishing revocation authority with Congress rather than with the president.²⁵ The sanctions would permit the president to “prohibit any United States person from transacting in, providing financing for, or otherwise dealing in debt or equity” with Russian organizations.²⁶ Despite the enormous potential economic returns and social welfare upside of modernizing Russia's energy infrastructure, U.S. investors are likely to find that the risks outweigh the benefits so long as the economic sanctions policy remains in place.

IV. Russian Law as a Source of Self-Restraint

In addition to the key restrictions inhibiting the growth of clean and renewable energy infrastructure development in Russia, such as economic sanctions, international political conflict, insufficient skilled labor and

²⁴ Eugene Gerden, *Analysis: Russia Fails to Restart Crimean Projects* (Wind Power Monthly, Oct 22, 2014), archived at <https://perma.cc/KC6A-3VZG>.

²⁵ Kenneth Rapoza, *The Senate Sets the Table for Full-Blown Russia Sanctions*, *Forbes* (June 19, 2017), archived at <http://perma.cc/J43R-NH3B>.

²⁶ *Id.*

technical expertise, and deeply engrained reliance interests in state-sponsored oil and gas production, there are further limitations and exacerbations resulting from Russian legislation. “Local content requirements” and the “foreign agent” law serve as self-imposed isolationist mechanisms that are likely further limiting efforts to develop and modernize Russia’s clean and renewable energy infrastructure.

Part II provided three examples as cause for optimism that the Russian private sector and educational institutions are making advances towards greater adoption of clean energy technology—namely, Hevel’s expansion of wind power production, RusHydro’s hydroelectric power investment activities, and the successful collaborative relationship between researchers at MIT and Lomonosov Moscow State University. Despite these signals of percolating growth and potential from the private and academic sectors, a variety of economic and political roadblocks have served as obstacles against foreign investment in clean energy infrastructure projects in Russia. In addition to a slumping economy and an unstable ruble, Russian laws also commonly impose “local content requirements.” Such requirements mandate that private clean energy enterprises source a significant amount of the materials and labor necessary to build their operations from Russian resources and the Russian workforce. The scarcity of certain essential

materials and technically skilled labor has made it difficult even for homegrown Russian enterprises to profitably operate.

However, there are some positive signs that the Russian government is open to temporarily relaxing local content requirements with respect to clean energy producers. For example, in 2015, regulators decreased the local content requirement as to wind power producers from 65% to 20%. The requirement will gradually ratchet back up to 65% by 2024. In the mean time, wind sector entrepreneurs have reacted favorably to the lowered barriers to entry and shown a willingness to expand their investments and operations.²⁷

In addition to the “local content requirements” imposed broadly by Russian lawmakers across a variety of industry sectors with the effect of raising artificial barriers to entry against prospective clean energy producers, Russia’s “foreign agent” laws may also be inhibiting foreign investment in energy sector projects. Enacted in 2012, the “foreign agent” law requires all Russian non-profit organizations receiving foreign donations and engaged in “political activity” to register with Russian officials as “foreign agents.” A later amendment provided the Russian Justice Ministry with the authority to label organizations at “foreign agents” at its discretion. Enforcement of this law has had drastic consequences for non-profits, and to date at least 30

²⁷ Eugene Gerden, *Russia Eases Local Content Rules*, Wind Power Monthly (July 20, 2015), archived at <http://perma.cc/VXC5-97DF>.

organizations have shuttered as a result of being branded as “foreign agents.”²⁸ According to Human Rights Watch, enforcement officials have targeted “groups that work on human rights, the environment, LGBT issues, health issues, . . . [and] social issues.” 11 of the 158 groups designated by the Justice Ministry as “foreign agents” are environmentally focused, with missions ranging from nuclear power safety, energy consumer protection, and general green initiatives.²⁹

At least twenty organizations have been freed of the “foreign agent” scarlet letter after satisfying the Justice Ministry’s requirements, and so the labeling isn’t necessarily a death sentence. However, the law greatly restricts the ability of Russian non-profits to solicit donations from and to develop partnerships with foreign organizations with a shared mission. As a result, environmentally focused non-profit organizations that would otherwise be able to conduct research or serve as advisors towards the development and utilization of foreign clean energy technology in Russia must rely entirely on domestic funding to operate. This can be prohibitively difficult in Russia, where the general population appears to be largely unconcerned about global

²⁸ Human Rights Watch, *Russia: Government vs. Rights Groups*, Human Rights Watch (June 1, 2017), archived at <http://perma.cc/76LQ-YDWU>.

²⁹ Id. See also Thomas Nilsen, *Kola Eco Centre labeled as “foreign agents,”* The Barents Observer (Apr 24, 2017) (describing how the “foreign agent” law has resulted in chilling potential partnerships between Russia-based environmental NGOs and foreign organizations, as well as in increased reporting and auditing costs), archived at <http://perma.cc/E8YJ-TH6C>.

warming issues.³⁰ These limitations suggest that private sector organizations will need to take on a greater share of burden towards clean and renewable energy infrastructure developments. With Russian non-profits hamstrung by the “foreign agent” law and private energy companies by foreign economic sanctions, it seems that the vast majority of resources will need to be homegrown. Even if there is a shift in the public mindset and a showing of increased interest in clean energy development efforts, these laws will severely limit the speed of adoption and technological development.

V. Conclusion

Finding itself at the center of heated international controversy, and combined with its ongoing economic downturn, Russia has continued to rely heavily on its pervasive oil and gas industry to stay afloat. As many other countries make rapid advances in their adoption of clean and renewable energy sources, Russian leadership have recently changed their message with respect to decreasing their reliance on fossil fuels and modernizing Russia’s clean energy infrastructure. Many have criticized these pronouncements as token gestures, not yet supported by substance—however, there are growing signs of life that Russia has begun to take clean energy improvement efforts seriously. Untapped hydroelectric, geothermal, wind, and solar resources

³⁰ See Richard Wike, *What the World Thinks About Climate Change in 7 Charts*, Pew Research Center (Apr 18, 2016), archived at <http://perma.cc/KG8H-3REA>.

have the potential of rejuvenating the Russian economy and workforce while also smoothing the country's rocky foreign relationships.

Despite this potential, Russia is unlikely to garner much foreign assistance in pursuit of a modernized energy infrastructure. One unfortunate irony of the U.S.-imposed economic sanctions is its effect of limiting socially beneficial investments in clean energy infrastructure developments and instead tightening the pressure on the Russia's oil and gas sectors to continue serving as the engine to Russia's economy. Similarly, Russia's own self-imposed legislation concerning "local content requirements" and "foreign agents" have severely limited the inflow of foreign investment capital, resources, and technical expertise. These obstructions will likely need to be lifted in order for Russia to keep pace as an increasing number of countries realize the benefits of renewable energy innovations.