

Facilitating Microgeneration and Renewable Energy Transition in Russia

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Russia's position regarding the 7th UN sustainable development goal "Affordable and clean energy" is unique. On the one hand, most of its population has access to affordable electricity, with about 17 percent of the total electricity demand being met with renewable energy sources. Only about 7 percent of Russia's population is off-grid, and many off-grid residential areas are supplied with power produced by diesel generators. On the other hand, the affordability of electricity for the Russian residential sector is largely guaranteed by cross-subsidies and other types of subsidies that distort the economics of the energy sector and dwarf the development of renewable energy. Moreover, renewables are dominated by large hydropower, with bioenergy and waste accounting for only 0.3 percent of the total generation. Other renewables, like solar, wind and geothermal, still account for negligible shares.

Thus, one of the most urgent tasks for Russia on the 7th sustainable development goal is to develop renewable energy technologies except for large hydropower. Successful progress on this task, alongside with the progress on energy efficiency and power infrastructure, as well as with the enhancement of international cooperation in this spheres, will allow Russia to create a sustainable energy system.

Russia has already started to develop renewables other than large hydropower. In 2013, it adopted a novel capacity-based scheme to support solar, wind and small hydro in wholesale power and capacity market. In 2015, Russia introduced a support scheme for renewable energy sources in retail power market, which also covered the off-grid segment of the power market. As of 2017, Russia has commissioned about 100 MW of solar PV plants under the new legislation.

Currently, in 2017, Russia is preparing to introduce microgeneration and to allow microgenerators with total installed capacity of up to 15 kW to feed excess energy into the grid. When rules for microgeneration are enacted, the Russian renewable energy legislation will cover all major electricity segments, except for one: microgenerators that need more than 15 kW of installed capacity and are not ready to comply with the strict requirements of the retail market.

Since microgeneration is currently of high interest in Russia, the main goal of this paper is to explore its costs for the most popular microgeneration technology – residential solar PV – and to estimate its economic viability in terms of payback time and levelized cost of electricity (LCOE). To complete this task the author will use the data of Russian solar PV solutions providers and compute various scenarios: off-grid and on-grid systems, with and without storage. The results of this research will allow to develop recommendations on the microgeneration support scheme in Russia. The author will also propose the general recommendations for the Russian renewable energy sector to enhance the sustainable development of the country's power system.