Cost and Benefits of Deep Decarbonization in Russia: a Thought Experiment

Topic: (10.5) Methodological Aspects of IO Analysis (4)
Author: Oleg LUGOVOY
Co-Authors: Andrey POLBIN, John Alan Laitner, Vladimir POTASHNIKOV

With the new Paris climate agreement, 195 nations have committed to lower planet-warming greenhouse gas emissions and limit global temperature growth within 2C, with a target 1.5C. This goal requires every country to radically cut their emissions, deeply decarbonize their economies, i.e. rebuild both energy supply and use sectors. Even bigger challenges meet natural resources exporting countries, which have also find new sources for growth to replace revenues from energy export.

The overall economic impact of the transformation is hard to quantify. From one hand, the decarbonization requires higher upfront investments in energy efficiency and alternative energy, which can be considered as a burden on the economy. From other hand, the additional investments in infrastructure can considered as a stimulating driver for an economy, which also brings energy savings in the future. Third, the transformation affects economy structure, slowing down fossil energy production, substituting energy consumptions with higher demand for manufacturing products, construction, and R&D.

In the paper, we propose a "Thought experiment" of economic impact of decarbonization, with quantification on input-output table for Russia. As participants of Deep Decarbonization Pathways Project (DDPP), the authors use results of the modeled DDPP scenario as an input to an IOT-analysis, estimating the impact of low carbon scenario on economy. We apply stochastically estimated IOT for Russia to estimate potential uncertainty in data and the overall outcome of the considered effect.

According to the results, the positive effects of decarbonization strategies can overcome negative in both short- and long-terms, and additional effects are fully consistent with officially announced long-term goals of modernization and reducing the Russian economy's dependence on energy and raw-materials exports.