

## Analytical project:

# Climate change impacts on energy generation and consumption in Russia

It is now widely accepted that global warming could cause serious economic, political and social problems for many countries in the coming decades of the XXI century. On the one hand, it can manifest itself in increasing the frequency and intensity of short-term and long-term dangerous and extreme climatic and weather regimes at regional level. On the other hand, global warming could cause the favorable climatic and weather conditions in some regions. In any case significant financial resources would be required to adapt the social and economic structure of the countries to the changing climatic conditions and ensure their sustainability. There are large uncertainties in the climate change projections and the impacts they may exhibit on economic activity and social processes in different regions, as well as on the functioning of public institutions.

Most of the territory of Russia is the area of significant observed warming as compared to that global. Reduction of the cold period in Russia may extend the range of comfortable living conditions, drop the cost of electricity during heating season, improve ice conditions and, accordingly, the logistics in the Arctic seas, facilitate the Arctic shelf developments, etc. On the other hand, the warming may cause the growth of frequency of droughts in some areas and floods in others, contribute to the degradation of permafrost, which can cause serious damage to buildings and transport infrastructure in the northern regions of Russia. In this case, the uncertainty of climate change impacts on agriculture, water resources, energy potential, flora and fauna, the demographic situation can be quite significant. Climate warming in Russia can influence both the production of energy and its consumption. Moreover, this effect may be different depending on the region and the energy source.

Energy System of Russia is a key sector of the national economy, the development of which received much attention. Energy Strategy, adopted by the Russian government in the beginning of this century in 2030, defines the goals and objectives for the energy sector. It identifies priorities that achieve the objectives adopted in the Energy Strategy (<http://www.energystrategy.ru/projects/energystrategy.htm>). However, in this document the development of energy indicated by excluding possible climate changes in Russia caused by global anthropogenic warming. It is known that this warming may have numerous implications for (favorable or negative) on the energy potential of the country, and in particular on its renewable energy sources.

The purpose of the project is to determine what impact global warming could have on the energy production in the climate-dependent energy sector of Russia in XXI century. In addition to the impact on the production of energy the global warming also affects energy consumption. Thus, the major objective of the project is to formulate physically based recommendations for the further development of the energy sector in Russia in the context of global and regional climate change using state-of-the-art climate models projections of future climate change.