**Concept for a new approach to modelling strategic scenarios for sustainable regional development subject to the climate change agenda**

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Despite the high profile of climate issues on the global public agenda, the direct impact of global warming on people and businesses has been very slow, allowing the economy and social sphere to adapt reasonably well. In contrast, the issue of carbon regulation requires rapid action on the part of public decision-makers, as well as large and medium-sized businesses. Decisions on balancing interests of this kind should be supported by relevant scientific research.

The climate agenda has so far been discussed mainly at national level, but there is no doubt that it is the regional aspects of the problem that will come to the forefront when specific carbon management measures are implemented. In this context, the focus should be on regions with economies that are heavily dependent on exports of those products which would be the first to be regulated. One of the most relevant examples of such regions is the Krasnoyarsk Territory, which is home to, among others, important metallurgical and coal production facilities, whose products may soon be subject to additional import duties, for example to the European Union.

Attempting to use the UN Sustainable Development Goals directly to formulate and assess region-specific sustainable development scenarios does not seem to be the right approach, as they are formulated as broadly as possible and include many issues that are not relevant to the local context. For example, an important block of SDGs is related to solving the problems of the world's least developed countries (elimination of hunger, poverty, problems of providing the population with quality drinking water, etc.). For upper middle-income countries, such as Russia according to the World Bank's classification, these problems are obviously solved. Thus, for the case of a single Russian region it is logical to structure a cascade of territorial sustainable development goals. This analysis will be carried out on the basis of previous developments by the authors of the project, as well as the objectives of the current agenda.

The research methodology involves the application of hybrid system dynamics models, complemented by agent-based simulation, based on the description of the state and resource flows and the interaction of multiple feedback loops in its structure. The state of the regional economic system is described by variables: e.g. population size (grouped by different age cohorts and other characteristics), production assets, natural resources consumed, etc. External influences and management decisions determine the behaviour of the modelled system (the rate of resource inputs and outputs). For modelling purposes the region as a socio-economic system should be decomposed into the following components: population, production, non-production sphere, environment, space, budgeting process, and foreign economic activity. Then, the corresponding flows of interactions between the blocks are built with the help of coupling equations.

The approach developed as a result of the study will make it possible to formulate scenarios for sustainable socio-economic development of Russian regions, including the challenges of the climate agenda.

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