

Publishable Summary

The objective of the study is to develop and implement for Russia an integrated spatial-economic-ecological modelling approach, which represents the state-of-the-art in different areas of economic, transport, resource-use and environmental modelling, and can be used to assist policy makers in their choice of medium and long-term sustainability policies.

This implies the following interrelated aims:

- *to develop a modelling approach, which corresponds the complexity of the sustainability issues
- *to build a consistent database for the implementation of the developed approach for Russia
- *to construct the spatial-economic-ecological model for Russia
- *to develop a set of sustainability indicators, which allows for quantification of social, economic and environmental effects of sustainability policies
- *to apply the model to assess the effects of important sustainability policy measures in order to demonstrate the operation ability and reliability of the developed modelling approach

In pursuing the objective the following assumptions and methodological guidelines are adopted:

- Quantitative approach: existing European and international models such as GEM-E3, PACE, RAEM, EPPA and MIRAGE provide adequate references for the methodological basis of the project.
- Focus on three major dimensions - economic, environmental and social.
- Sensitivity tests and validation of results: taking into account the degree of uncertainty of any study focused on social and environmental issues, the SUST-RUS project provides robustness check of the main outcomes.

During the first part of the SUST-RUS project we developed the methodology of the modelling approach and constructed the SUST-RUS database.

The construction of the equilibrium database for the SUST-RUS model was developed in three steps:

- 1) Creation of the Russian social accounting matrix for year 2006;
- 2) Collection and analysis of Russian regional data; including interregional trade data;
- 3) Construction of a system of interconnected regional social accounting matrices for all (seven) federal districts of the Russian Federation.

The result of this work is an important addition to the Russian and international modelling practices, since the SUST-RUS updated an equilibrium dataset for the applied equilibrium analysis for Russian regions. The availability of Russian regional equilibrium database and the description of the methodology of its creation is a noticeable contribution to economic analysis in many fields, including sustainable development agenda.

We formulated the general analytical foundation of the SUST-RUS model structure which then was implemented in a rigorous mathematical setup. The mathematical formulation of the model is based on the regular properties of a regional CGE model, enhanced with interregional trade flows and a disaggregation of energy inputs in the nested production function. In addition to an analytical formulation of the model we constructed economic model with the SUST-RUS database as of 2006 benchmark year. We completed an implementation of the model in the modeling language (General Algebraic Modeling System - GAMS).

As a result, by the end of the first reporting period we have a first full operational version of the economic block of the SUST-RUS model. Another important result is a creation of a consistent set of sustainability indicators, quantifying social, economic and environmental effects of sustainability policies.

Dissemination of the project results

One of the major objectives of our project is to make SUST-RUS modelling methodology and modelling results available for both policy makers and general public. SUST-RUS partners succeeded in implementing this task by participating in the regional and international conferences and educating Russian researchers. Besides, from the start of the project the SUST-RUS internet site (www.sust-rus.org) is functioning as a gateway for public to the proceedings and findings of the project.