
Assessment of the sustainability of regional socio-ecological-economic systems

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Abstract

Subject/Topic. The formation of tracks of sustainable development of territories remains an important task in the implementation of regional policy. Management decisions should be based on the results of the analysis of the socio-ecological-economic situation and the emerging trends in this area. The application of the method of sustainability window analysis based on the integration of economic, environmental and social components of sustainable development makes it possible to evaluate the quality of economic growth. **Goals/Objectives.** To explore the boundaries of the window of sustainability of economic development of regions, and to provide a qualitative characteristic of economic growth from a sustainability point of view. **Methodology.** A review of scientific sources was conducted and approaches to the assessment of sustainable development were considered. Methods of statistical and comparative analysis of data were applied. Comparable indicators that reflect the components of sustainable development of regions were calculated. Calculations were made and the boundaries of sustainable development of the North-Western Federal District (NWFD) regions were quantitatively assessed using the method of sustainability window analysis. **Results.** The boundaries of the sustainability window were determined for the regions of North-Western Federal District using three environmental indicators. It is revealed that not all regions of the district have the characteristics of qualitative economic growth. Calculations using «atmospheric emissions» as an environmental indicator showed that in most regions of North-Western Federal District there is a tendency to increase the available sustainability window. The calculations for the indicator «volumes of polluted wastewater discharge» also show positive trends. And for the indicator «volumes of production and consumption waste generation» only two out of ten regions have an available sustainability window, which indicates a negative trend in economic development. As a result, the most problematic area, characteristic of most regions of NWFD, has been identified, which is the «formation of production and consumption waste». **Conclusions/significance.** The study showed the presence of imbalances in economic growth from the perspective of sustainable development in North-Western Federal District. The method of sustainability window analysis allows using various statistical indicators that reflect economic, environmental and social processes in the region and is an accessible analytical tool. Solving the problems of waste generation reduction, waste disposal and recycling will improve the quality of economic development. **Application.** The method of sustainability window analysis can be used as an analytical tool for assessing the quality of economic growth. The results of the study can be practically applied in the formation of regional policy and managerial decisions of the authorities in the sphere of socio-economic development on the principles of sustainability, taking into account environmental, economic and social factors.

Keywords: *sustainable development, sustainability window analysis, economic growth, environmental pollution, North-Western Federal District regions*

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