

The Modeling of Health Risk Factors in Russia with Using Input-Output and Econometric Approaches

Topic: Risks and disasters

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The paper analyzes particular reasons, or risk factors, that cause the deterioration of public health. In recent years, socio-economic instability in Russia have had a significant adverse effect on the health condition of the population. The number of yearly registered sick people increased by 75% during 1990 – 2008 years. Specialists single out the following risk factors that have had a negative influence on health of the Russians: economic, psychological, cultural, medical and environmental. The result of our investigations is a midterm forecast of Russian ecologo-economic development in the period of overcoming of World Financial crisis's consequences with using Input-Output (I-O) approach. The purpose of such investigations is to explore the moving forces and trends of social development, development dynamics of the branches of national economy, economic structural changes and conditions of competitiveness in the industries taking into consideration not only production characteristics, but estimates of industry pollution pressure. For these purposes we use a Dynamic I-O Model of Russia with a block of environmental protection, which has been created in the Intersectoral Research Department of the Institute of Economy and Industrial Organization (IEIE SB RAS) in Novosibirsk (Russia). The block considers two environmental protection activities: atmospheric air cleaning and sewage treatment. This model apparatus allows to forecast the level of pollution formation in the sphere of production depending on the economic development of Russia using coefficients of atmosphere and water-polluting substances formation per unit of industry's output. The difference between formation and pollution trapping gives us the volumes of waste water disposals and volumes of emissions.

In order to explain the dynamics of sickness rate of the Russian population we carried out a multi-factor analysis of indices that characterize the health condition of the Russian population depending on above-mentioned health risk factors. Having studied the most interesting regression equations received during the econometric analysis and having received estimates of economic and ecologic indices for the forecasting period, we evaluated the effect of the risk factors on the health of the population of Russia. The proposed approach combines the application of the advantages of intersectoral modeling methods and econometric methods for the purpose of analyzing and forecasting ecological-economic processes.