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## MODEL OF ECOLOGICAL AND ECONOMIC DYNAMICS WITH LINEAR FUNCTIONS OF ECONOMIC BEHAVIOR

### *Summary*

There has been analyzed a decisive role of negative impact of human factors on the processes of nature management and environmental pollution by the remnants of production activities, which in case of neglect lead to environmental crises, climate change and significant deterioration of the quality of human life. The urgency of the problem of economy ecologization, the mechanisms of ecologization associated with the introduction of technologies that are waste-free or most closely approximate to them, with the development of environmental education, culture, scientific and information support of society in its quest to create environmentally safe living space and, also, the need to balance its socio-economic and environmental characteristics have been disclosed. These characteristics a priori suggest that in modern conditions economy and ecology are closely interrelated, therefore, any economy or economic system should be understood as a single integral ecological-economic system which, in contrast to its constituent subsystems, has some peculiarities inherent only to it. The complexity of the ecological and economic system as an object of research requires the development of a new research methodology that combines a set of principles, methods and tools of scientific knowledge used in various scientific fields. There has been developed dynamic model of a one-sector economy, in which, in addition to the production of basic aggregative products, industrial waste utilization is also carried out. The formalization of the model also takes into account the socio-economic clustering of society, makes it possible to identify groups of production owners and workers in the model and describe the dynamics of their liquid savings, whose role in the functioning of the economy is fundamentally important. In addition to these values, the model variables also include the price of basic products, the tariff for the disposal of production residues and the volume of environmental pollution by non-utilized waste. Taken together, all variable models form the phase space of the trajectories of the ecological-economic dynamics. The model is designed for a qualitative and quantitative analysis of the dynamics of ecological-economic systems of the described type. The research of such dynamics is possible in the mode of simulation experiments with a model, the results of which make it possible to identify general trends and patterns of development of a one-sector economy in terms of its ecologization and socio-economic clustering. The features and characteristics established as a result of experimental studies with the model can serve as an important information support for the development of scenarios of ecological-economic development and management decision on the functioning and dynamics of ecological-economic systems in real practice.

*Keywords:* model, ecological-economic dynamics, one-sector economy, function of economic behaviour, socio-economic clustering.

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