GREENING OF THE ECONOMY

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Unsustainable environmental practices pose increasing threats to the Earth's climate, water, forests, biodiversity, food and energy supply, and thus to the foundations of human existence and well-being. Ecological crisis and ecological safety became hot topics for scientists all over the world. Developing and transition countries disproportionately suffer the ecological consequences of the exploitation of the earth's limited natural resources by powerful corporations.

Given the magnitude and scope of the current economic crisis, the world is in the experience of a significant economic downturn. Of the many areas that will be impacted by the downturn, the environment stands out in particular. It's closely tied to the tempo of resource consumption, and significant efforts to ameliorate environmental decline will prove very expensive and out of reach for already-stretched budgets.

Ecosystem management is changing rapidly. Command-and-control programs that neglect intrinsic cycles of natural and social systems appear to be insufficient, or even worse than doing nothing (Holling and Meffe 1996). Instead, approaches that involve diverse participants in assessment, learning, and planning may lead to more flexible, adaptive institutions and sustainable outcomes (Lee 1993, Gunderson et al. 1995).

"Greening of the economy" aims to engage stakeholders, scientists, and managers in an ongoing dialogue about the kinds of ecosystems people want and the kinds of ecosystems people can get. Little is known, however, about the fluctuations of social and natural systems that might be created by greening the economy in its various forms. The dynamics of diverse human agents interacting with ecosystems fall between several traditional academic disciplines (Carpenter, 1999). Models that can bridge this greening economy theory to experience in specific, testable ways are lacking, especially in Ukraine.

During prediction of disaster trends in environment systems we obviously meet the dynamic complexity – it's the compulsory attribute of modern world. Usual methods of forecasting, planning and analysis are useless for operating with the dynamic complexity. Dynamic complex situation is a situation when the closest and further consequences of any action are principally different.

As the world industrialize and urbanize with increasing tendency, it is continually creating conditions for more and worse disasters in the future that will contribute further to environmental degradation and hinder developmental programs. The industrialization and urbanization processes, however positive in effects along some lines, will both increase the number of potential disaster agents and enlarge the vulnerabilities of communities and populations at risk.

Problems of preservation of the environment are mainly the topic for investigation for physicists, chemists, biologists. But as one of the main parts of state safety and as a component of a nation's level of development, a country's environmental strategy should be developed also from the position of economic theory – that is point of view for "greening economy".

There are next to no publications concerning economic tools for the evaluation of the impact of environmental risks in the world. The circumstances of shortage of internal capital resources in most countries force these countries mostly to rely on foreign investments to address environment issues.

Investments (by means of their impact on economic growth) in a recipient-state and transfer of new ecologically-safe technologies must stimulate improvements in environmental security. However "the reverse of the medal" is often in fact the "pollution haven". This means that investing companies move operations to transition countries to take advantage of less stringent environmental regulations than in other developed countries. Everybody has to cope with uncertainty and to manage various risks in the world that is changing more and more rapidly clearly stretching the social fabric. One of the dominant driving forces is efficiency, which has led to globalization, increased dependency among more diversified systems, a reduction in much safety (both technological and social) margins, and other factors which contribute to increased vulnerability.

Coping with uncertainty in decision-making, especially for integrated management of risk, environment risks require the mathematical analysis of various measures of outcomes resulting from applying alternative policy options. In modeling complex socio-ecological systems, the critical nature of many interactions between human and ecology are often unrecognized until the system experiences catastrophic consequences.

This report outlines methodological, social-economic, and technical problems related to the development of novel methods for such social-economic-environment mathematical models – the main skeleton of "greening of the economy". The objectives of this paper are to (i) point to issues in ecological disaster operations management and modeling, (ii) survey existing literature, (iii) suggest future research directions, and (iv) act as a tutorial for interested researchers.

We suggest a novel perspective on the relationship between the stringency of environmental policies and foreign direct investment (FDI). FDI is found to affect environmental policy, and the effect is conditional on the local government's degree of corruptibility. If the degree of corruptibility is sufficiently high (low), FDI leads to less (more) stringent environmental policy, and FDI thus contributes to the creation of a pollution haven. Our empirical results using panel data from Ukraine and other CIS countries support the model's predictions.

The main issue for the developing of the "greening economy" theory is finding possible models (stratagems) for heading of the Planet to the ecological equilibrium. These stratagems have to be mutually beneficial for economic and ecological development paradigms.