

# SYNERGISM OF ECOLOGICAL-ECONOMIC SYSTEMS

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Nowadays scientific researches concerning problems of definition of ecological-economic system and stating the principles, tasks and strategies of systems development are very important. Sustainable development goals and strategies are in the centre of national and local government attention. There is the process of new approaches formation concerning solution of ecological problems. These approaches are based on research of regional enterprises and economic branches and their integrated activities directed at solving the whole complex of ecological problems.

Ecological-economic activities can be studied depending on the level of ecological-economic relationships. There is the level of households, economic subjects, territorial production complex and national economy.

We consider that, ecological-economic system is the unity of interdependent and interrelated components of the environment, as well as anthropogenic factors, which provide the function of reproduction of natural factors and conditions of life, as well as production of goods and services and utilization of wastes. Mechanism of functioning is presented in Fig.1.

We consider that synergism, in ecological-economic systems can be in the form of unity of all resources that an enterprise has. These resources are necessary for realization of socio-ecological-economic goals. Among such goals there is reproduction of the natural environment and utilization of wastes. Relationships within the ecological-economic system based on synergetic principles can lead to decrease of ecodestructive pressure on the environment. Besides, it is necessary to incorporate external effects for the sake of stating economic, social and ecological results of economic subjects.

In ecological-economic systems economic synergism is shown as the result of integration processes. As a result there can be a positive synergetic effect and sufficient increase of efficiency functioning of ecological and economic systems.

We consider that development and efficient functioning of ecological-economic systems can be based on synergetic principles. Among them there can be the following principles:

a) *adaptivity* – separate elements of the system must have possibility to react to changes which happen in the environment. It can happen due to in time changes of the character of links inside the system;

b) *coherence* – this principle foresees the existence of conditions (including communication) for realization by the separate element of the system coherent behavior and synchronization of functioning processes of the separate system's elements;

c) *co-evolution* – the main essence of this principle is the following – there must be a concordance of transformation development cycles in different systems elements. It is reflected happens in longtime period;

d) *co-addition* – incorporation of this principle means that links between the system's element must be built on different characteristics of different elements;

e) *interdependence* – changes of some elements state must lead to changes in other elements of the system;

e) *co-beneficence* – mutual functioning of the systems elements must lead to its better state, than their separate functioning.

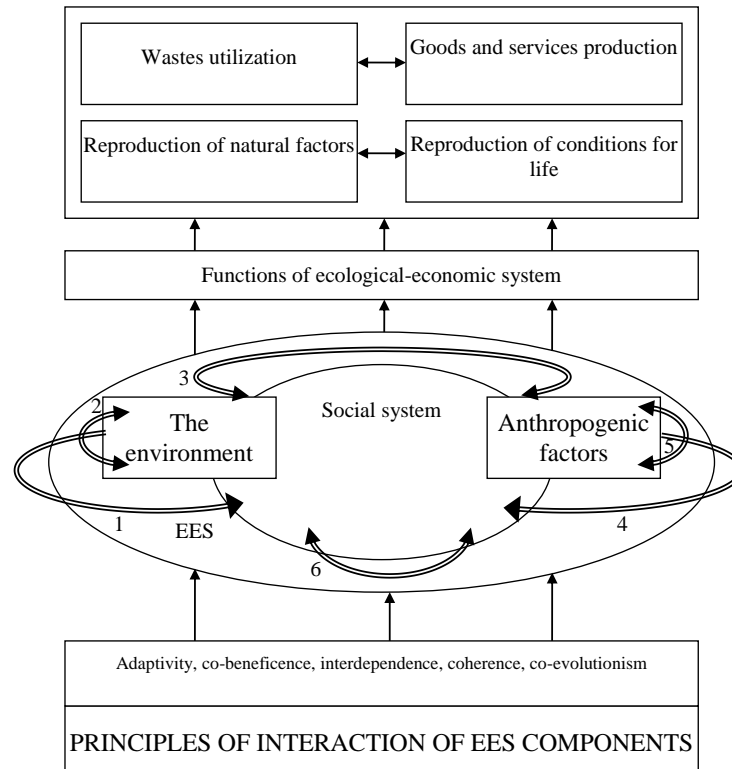


Fig. 1. Mechanism of ecological-economic system's functioning  
 Links: 1 – social-ecological, 2 – ecological; 3 – ecological-economic;  
 4 – social-economic; 5 economic; 6 – social

All in all, the environment and anthropogenic factors must co-exist in such a way that efficiency regimes can be the characteristic features of the links that appear during interrelation of these two systems.