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## **ECOLOGICALLY ORIENTED INNOVATIVE CULTURE AS A FACTOR TO ACTIVATE INNOVATIVE ACTIVITY IN SUSTAINABLE DEVELOPMENT CONCEPT**

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### **Introduction**

Human history shows that economic development without ecological limitations leads to environment degradation and threatens human civilization. These positions provide updating of the economic development processes ecologization in either separate enterprises and institutions, or national economies at a whole. This problem attracts more attention for innovative development, because on the one hand, innovations provide increase of their developer's and producer's activity efficiency, grow their consumption usefulness etc, however, on the other hand, they bring the problem to consider ecological limitations in the innovative process to higher level. For example, possible ecodestructive impact of the nuclear engineering is higher, than made by thermal energetic. Analogical warnings may be mentioned concerning gene engineering, nanotechnologies, thermonuclear fusion and other innovations, which are leading in scientific and technical progress. Practice shows that innovative way in development has no alternative, and ecological problems aggregating, which become equal with social and economic ones, requires innovative activity ecologization. One of its main prerequisites is to form and to develop ecologically oriented innovative culture. In general, innovative culture is observed as social and cultural mechanism to regulate human and social innovative culture (Yu.S. Shypulina, 2013).

Problem to form innovative culture, its role determination while forming the innovatively available environment at various generalization levels (national or organization) were studied in works of many scientists.

They underline problems to form innovative culture in society (V.O. Balabanov, 2004), present innovative culture role in innovative development (A.I. Nikolayev, B.K. Lysyn, 2002), provide economic systems sustainable development (Oksana Bondar-Pidgurska, Yana Korotych, 2012), form innovative policy in state (S. Bykonya, 2006). General approaches to form (L. Patora, N. Tsymbalista, 2008) and to diagnose

innovative culture of the organization (K.K. Kameron, R. Queen, 2001; S. Kazmirchuk, 2010).

However ecologization problems of the innovative culture were not practically studied. That's why it doesn't allow to use existing and to develop new mechanisms of the social and cultural regulation in innovative process subjects' ecologically oriented innovative behavior.

Thus, object of this article is to determine the concept ecologically oriented innovative culture, to specify mechanisms structure and to outline main problems of its formation and to investigate recommendations to solve them, to develop methodic grounds to define ecological innovations chances of success, depending on organization innovative culture constituents state.

### **1. Mechanisms to form and develop ecologically oriented social innovative culture and their action results**

Based on the definition, given in (Yu.S. Shypulina, 2013) and taking into account lack of options in the innovative activity ecologization (S. M. Illyashenko, 2013; O.V. Prokopenko, 2010), author's definition of the ecologically oriented innovative culture is suggested. It is observed as a set of social and cultural mechanisms to regulate ecologically oriented innovative behavior of the innovative process subjects, which form stable traditions to accept something new, ability and readiness to use it fully in the general progress interests, followed by keeping or improving of the environment quality.

Systematic analysis and generalization of the literature sources, where the problem to control and stimulate innovative activity ecologization, is observed, particularly (S.M. Illyashenko, O.V. Prokopenko, 2002; O.V. Prokopenko, 2010; S. M. Illyashenko 2012), gave reason to define main mechanisms to form and develop innovative culture:

13 Informing of citizens about negative consequences after using the non-ecological items and technologies, ecological state of the environment, ecological and non-ecological goods (products and technologies) and their producers, actions, used to protect environment;

14 Informing of citizens and commodity producers about ecological items and technologies, their descriptions, about benefits from production and consumption ecologization etc;

15 Formation of the public behavior norms, moral values, which demonstrate life success of all ecological innovations and ecologically oriented innovative activity, tolerant attitude to innovators' success, wish to follow their example;

16 Formation of commodity producers' (purchasers) to the consumers' ecological needs by principle "consumer is always right". However one has to take into account the following notices, according to "clever" orientation principle to consumers' needs, which limits the previous principle keeping: consumers can not always accept great modifications of the traditional goods and also principally new goods; while modifying and developing the new products, based on consumers' inquiries results, it is necessary to consider that consumers are usually sensitive to small, but significant changes in goods; consumers may not perceive any goods or changes in traditional goods for their health protection or more comfortable labour conditions;

17 Economic stimulation (formation) of the producers' and consumers' ecological behavior, including: positive (state order, programming, financing of ecological projects and programs, tax discounts and credits, ecoinnovations subsidizing); negative (payments

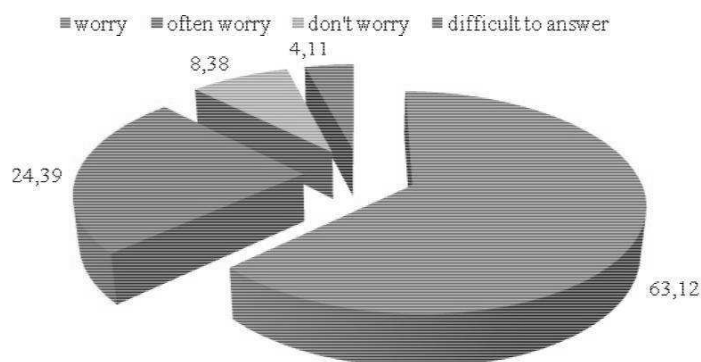
and fees for using of natural resources, fines, rights for pollution selling, price regulating);

18 Administrative regulating of the ecological production and consumption (production standardization, control of items and technologies, ecological expertise, licensing and limitation, administrative responsibility, bans, antimonopoly regulation, control etc);

19 Organizational provision (ecological education, ecologically oriented innovative infrastructure etc).

Owing to these mechanisms in Ukraine, as a result of investigations (O.V. Prokopenko, O.D. Alekseyenko, 2006; Yulia Karpinska, 2011; S. M. Illyashenko, 2013; S.M. Illyashenko, Yu.S. Shypulina, 2013), the following facts are formed:

1. Real ecologically oriented consumption readiness in relation to ecoinnovations: over 80% of population understands necessity to solve ecological problems; 40% - 90% of population (depending on production type) is ready to pay the mark-up for ecological compatibility. Fig. 1 presents results of research concerning Sumy citizens' attitude to the today's ecological problems.



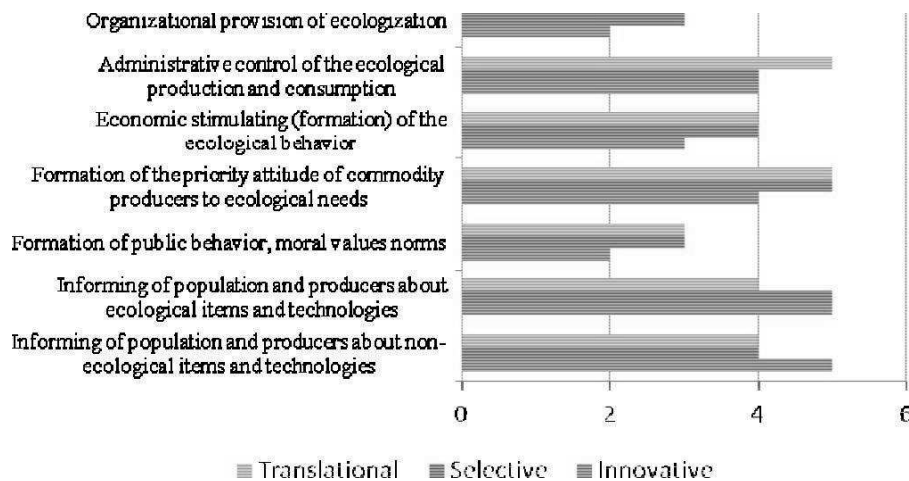
**Fig. 1. Structure of Sumy population attitude to ecological problems (S.M. Illyashenko, 2013)**

2. Potential readiness to production and technologies ecologization by producers-innovators, because they understand that ecological compatibility is competitiveness factor. Particularly, 67% of asked heads from Sumy region enterprises (S.M. Illyashenko, 2012) supposes production ecological compatibility to be competitive advantage, and 44% - ecological technologies of its production. Therefore 72% of managers are ready to invest money into technologies ecological compatibility and 83% - into production ecological compatibility. But this readiness is not usually transformed into real ones - owing to financing limitation, high value of the ecological technologies, inactivity of state support mechanisms etc.

It proves the effectiveness of separate from listed above mechanisms and active factors to involve ecoinnovations by the market, and above little impact of the ecological pressure factors.

## **2. Problems and peculiarities of the ecologically oriented innovative culture and society**

In order to determine main problems to form ecologically oriented innovative culture and their priority, the diagram is built in the fig. 2. It describes the impact of mentioned above mechanisms to implement main functions of the ecologically oriented innovative culture. The innovative culture subsystem structure (innovative, selective and translational), and their functions are taken according to (Yu.S. Shypulina, 2013). Estimations are shown in scale 1-10 by expert estimations method. Heads and leading specialists from Sumy region enterprises were invited as experts, and also scientists, who are specialists in environmental economics, ecological marketing and management.



**Fig. 2 Enlarged impact estimation of mechanisms to form and develop ecologically oriented innovative culture to implement its subsystems main functions**  
(investigated by authors)

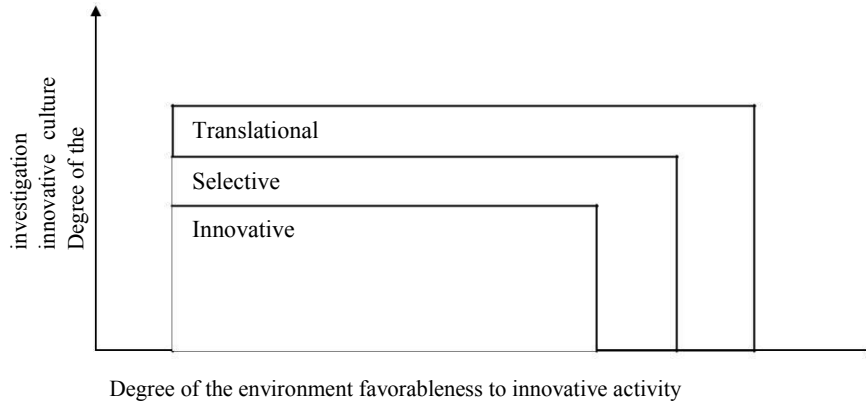
The analysis from fig. 2 shows that the most problematic is to realize innovative function (25 points from 70), then – selective (28 from 70) and translating (29 from 70). However all functions state is low, about 41% of maximum possible. The analysis results may be used to define ecologically oriented innovative culture development mechanisms priority. Fig. 2 shows that mechanism to form norms of social behavior and moral values, and ecologization organizational provision makes the least impact.

Analysis of innovative culture functions state shows that its ecologization is reasonably to start from innovative function, firstly, through formation of innovations producers', investigators' and consumers' ecologically oriented stereotypes.

According to the mentioned above, scheme to form and develop ecologically oriented innovative culture through its functions stage-by-stage involving is built (fig. 3). The scheme explains that innovative function is main (basic) function, on which base selective function is built, and then these both function provide building of the translational function.

However there is paradoxical situation in Ukraine, which consists in the fact that basic function is less developed, than add-in to it (see fig. 2). It proves that existing

practice of the ecologically-oriented innovative activity stands behind its theoretical ground development and real ecologically oriented consumer's readiness state.



**Fig. 3. Scheme of the functions consequent realization in the process of ecologically oriented innovative culture formation**  
(investigated by authors)

In order to better state of ecologically oriented innovative culture and putting it into harmony correspondence it is necessary to increase greatly economic stimulation (mostly positive) mechanisms of the administrative control, organizational support etc. Thus, in order to increase ecological pressure factors, mostly on producers, and on the ecologically oriented innovative production consumers, ideally – on all subjects in the innovative process.

One has to mention that there are no state programs in Ukraine, which are oriented to form some norms of the social behavior, moral values, which demonstrates innovators' life success, creates favourable image of innovators and innovative activity, tolerant attitude to innovators' success, wish to take their example. These programs actively work in economically developed countries – leaders not only in innovative activity, but also in the social and economic development. These countries have clear idea about ability to achieve life success owing to their intellect, knowledge, creative highly effective work. And it is always supported with examples of creatively thinking and working people's success, who create and introduce innovations into technique, technologies, management methods etc (Yu.S. Shypulina, 2015): Henry Ford was first to introduce line production of cars and to create automobile empire; Steve Jobs – his company "Apple" became world leader in IT-Technologies; Kiev citizen and graduate of Kiev Polytechnic Institute Sikorsky, whom the USA owe with creation of helicopters, F. D. Roosevelt, who brought capitalistic formation to the new development level and many others. In Ukraine those people achieved success who are not innovators, because real innovators practically have no chances, even theoretical, to come up to business leaders in popularity and successfulness, or policy, and moreover to achieve their material wealth level. That's why in order to provide program success to move to innovative development, it is necessary to form innovative culture, in this case – ecologically oriented culture, as prerequisite to create innovatively favourable environment at the national level. Innovative culture of the separate enterprise is formed under impact of social innovative culture. Although there are several examples of the successful innovative activity at some native enterprises, which have high level of the

innovative culture, with low level of the innovative culture in state on the whole: air and space technique, some types of military technique, weapons etc.

### 3. Considering of social ecologically oriented innovative culture and organization while choosing the ecological innovations type

The mentioned above mostly concerns specific to form ecologically oriented innovative culture in society. However, as it is shown in (Yu.S. Shypulina, 2013), efficiency to form favourable environment for innovative development (including ecologically oriented one) depends on either social innovative culture on the whole, or on the innovative culture of the concrete organization-innovator (enterprise or institution). Owing to it, let's observe approach to consider ecologically oriented innovative culture state at the society and organization level while choosing innovative activity directions choice.

Lower in fig. 4 we present matrix, which shows variants of society and organization innovative culture levels ratio and recommendations to choose proper strategies of its innovative development (directions of its trade innovative policy).

		Level of the society innovative culture		
		High	Average	Low
Level of the innovative culture at the enterprise	Low	Improving	Problematic variant	There are no chances for success
	Average	Ordinary	Ordinary or improving	Improving
	High	Radical	Radical	Ordinary or improving

**Fig. 4. Ratio of the ecologically oriented innovative culture levels in society and organization and proper directions of trade innovative policy**  
(S.M. Illyashenko, Yu.S. Shypulina, 2013 with author's additions)

Analyzing the reasonability of production and promotion of concrete ecological innovations to the market, they estimate real level of the innovative culture constituents level in society and analyzed organization by methodic (Yu.S. Shypulina, 2013) and using matrix in fig. 4 conclude the reasonability to investigate concrete ecoinnovations. Matrix may be also used to determine which complexes of actions, oriented to bring innovative culture components to the proper level, have to be developed.

### Summary

One has to mention the following conclusions:

- 13) Author's definition of the ecologically oriented innovative culture, as prerequisite to the ecologically-oriented innovative development is suggested;
- 14) Estimation of the mechanisms to form and develop ecologically oriented innovative culture for realization of its main functions, is conducted and systematized;
- 15) Main problems to form ecologically oriented innovative culture are described and recommendations to solve them are suggested;

[16] Scheme of the functions consequent realization is developed in the process to form ecologically oriented innovative culture;

[17] Approach to define directions of the trade innovative policy in organization according to ratio between its ecologically oriented innovative culture and society on the whole, is improved.

The received results deepen theoretical and methodic and applied aspects to form ecologically oriented innovative culture as one of the main preconditions to create innovatively favourable environment at the state level and one organization level to provide their sustainable development.

Further studies have to be focused on development of the formalized methodic concerning ecologically oriented components state diagnostics in order to form managerial actions system to increase its level.

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**Abstract**

The article deals with author's definition of the concept "ecologically oriented innovative culture", systematization of main mechanisms to form and develop it. Main problems to form ecologically oriented innovative culture are shown, and recommendations to solve them are suggested. Approach to determine directions of the trade innovative policy is improved according to ratio of levels between its ecologically oriented innovative culture and society on the whole.