ЕКОНОМІКА ПРИРОДОКОРИСТУВАННЯ ТА ОХОРОНИ НАВКОЛИШНЬОГО СЕРЕДОВИЩА

UDC 338.12

ECOLOGIZATION OF THE ECONOMY IN TERMS OF GLOBALIZATION

ЕКОЛОГІЗАЦІЯ ЕКОНОМІКИ В УМОВАХ ГЛОБАЛІЗАЦІЇ

Virkovska A.A.
Candidate of Economic Sciences,
Lecturer at Department of Economic Theory,
Ternopil National Economic University

The relevance of the theme is due to the fact that at the beginning of the XXI century, the environmental crisis, affecting almost all spheres of human activity, is becoming increasingly limiting factor in its socio-economic development. In this regard, the world community is increasingly aware of the fact that without changing the existing devastating nature of the economy's development into sustainable is impossible to implement ecologically balanced social progress through a variety of complex environmental and economic problems. Therefore, there is a shortage of natural resource potential, which leads to an increase in the amount of industrial waste and, consequently, an increase in environmental pollution According to world statistics, over the global environmental crisis today, more than $ 270 billion is spent, which corresponds to 1% of world GDP, while for achieving significant results this number should be 5–7%. Ecologization of the economy is a process of implementing economic policy instruments in resource conservation and rational nature management.

Keywords: *ecologization, ecologization of economy, globalization, natural resources, rational nature management, increasing pollution, environment, eco-innovations, business strategies.*

Актуальність теми обумовлена тим, що на початку XXI століття екологічна криза, що зачіпає майже всі сфери людської діяльності, стає все більш обмежувальним чинником соціально-економічного розвитку. У зв'язку з цим світова спільнота все більше усвідомлює той факт, що без зміни існуючого руйнівного характеру розвитку економіки на сталий, неможливо здійснити екологічно збалансований соціальний прогрес через різноманітність складних екологічних та економічних проблем. Тому існує дефіцит природно-ресурсного потенціалу, що призводить до збільшення кількості промислових відходів і, як наслідок, збільшення забруднення навколишнього середовища. За даними світової статистики, сьогодні на вирішення глобальної екологічної кризи витрачено більше $ 270 мільярдів, що відповідає 1% світового ВВП, тоді як для досягнення значних результатів ця цифра повинна бути 5–7%. Екологізація економіки – це процес реалізації інструментів економічної політики у сфері збереження ресурсів та раціонального природокористування.

Ключові слова: *екологізація, екологізація економіки, глобалізація, природні ресурси, раціональне природокористування, збільшення забруднення навколишнього середовища, екологічні інновації, бізнес-стратегії.*

Актуальность темы обусловлена тем, что в начале XXI века экологический кризис, затрагивающий практически все сферы человеческой деятельности, становится все более ограничительным фактором социально-экономического развития. В связи с этим мировое сообщество все больше осознает тот факт, что без изменения существующего разрушительного характера развития экономики на устойчивое, невозможно осуществить экологически сбалансированный социальный прогресс через разнообразие сложных экологических и экономических проблем. Поэтому существует дефицит природно-ресурсного потенциала, что приводит к увеличению количества промышленных отходов и, как следствие, увеличение загрязнения окружающей среды. По данным мировой статистики, сегодня на решение глобального экологического кризиса потрачено более $ 270 млрд. что соответствует 1% мирового ВВП, тогда как для достижения значительных результатов эта цифра должна быть 5–7%. Экологизация экономики – это процесс реализации инструментов экономической политики в сфере сохранения ресурсов и рационального природопользования.

Ключевые слова: *экологизация, экологизация экономики, глобализация, природные ресурсы, рациональное природопользование, увеличение загрязнения окружающей среды, экологические инновации, бизнес-стратегии.*

Problem statement. Aggravation and deepening of environmental problems, degradation of environment potential and natural resources in Ukraine continue despite a significant decline in industrial production in the last 20 years. Raw material preservation of the economy, high natural resources and raw material orientation of production, absence of positive changes in the direction of resource reduction and energy-consuming and environmentally dirty industries, and considerable physical and moral depreciation of the basic means of production require special attention to the environmental factor in the implementation of economic activity in the conditions of formation and development of market relations. All this confirms the urgency of environmentalization problem of the economy and envisages increasing attention to the issues of finding ways to effectively solve it [1].

Ecologization of the economy, due to scientific and technological progress and its results, is accompanied by the shift of the centre of the economic analysis of costs and interim results for the final results of the economic activity, and further on the projected development trends. The European integration process of Ukraine objectively lies in the formation of a common ecological, economic, social, political, and legal space with the EU. At the same time, having to reverse the impact of European environmental factors, Ukraine must properly perceive trends in the EU's environmental policy, adapting them to national environmental policies, but in the context of creating an environmentally safe European space.

Identification of previously unsettled parts of the general problem. Ecological globalization, which manifests itself, on the one hand, in transforming local problems of environmental degradation into global ones, and on the other hand, in spreading the best experience of integrating environmental imperatives into all spheres of social life, is a hallmark of the present. Under such conditions, the ecological component of innovation development becomes inalienable and gradually transforms into a dominant one. This increasingly evident tendency in the development of society against the backdrop of a structural economic crisis can be successfully used to ecologize the economy, adequately correcting market signals for this and using environmental information that does not pass through the context of market transactions.

Against the backdrop of slowdowns in the economic growth and sluggish economic processes, trends in the continuous growth of the environmental technologies sector in recent years are very evident. In order to support the emerging ecologization processes of all human activity, and above all economic, and thus accelerate the integration of scientists' and politicians' achievements, engineers and managers, producers and consumers in the area of our ecological imprint reduction, economic science should expand the subject matter of its researches, develop a categorical apparatus, rethink decision criteria, develop new, sensitive not only to market signals, but also to environmental costs of methods for analysing the effectiveness of managerial decisions. From methodological reasons to solve such problems, it is necessary to change in the paradigm of economic theory – the philosophy of economic science, consistent with the formation of a general scientific post-neoclassical paradigm.

Analysis of recent research and publications. Theoretical and methodological developments and practical recommendations for the implementation of ecologization of the economy are highlighted in scientific works of Ukrainian scientists O. F. Balatskyi, I. K. Bystriakov, L. S. Hryniv, I. M. Syniakevych, O. O. Veklych etc. and foreign scientists H. Dale, J. Farley, R. Costanza, T. Kuhn, P. Söderbaum etc.

The double denial, present in the term "post-neoclassical paradigm", as a tribute to the dialectical tradition, means returning to the original thesis due to the enrichment of its antithesis content. In this case, we are talking about the possibility of returning to the classical economic paradigm, perhaps even in the form of quasiclassical approaches, but necessarily taking into account the synergetic nature of ecological and economic systems.

In this interpretation, the term "scientific paradigm" that was given by T. Kuhn [2], the need to change the scientific paradigm arose together with new problems, for the solution of which modern science must overcome the deep differentiation of scientific knowledge, the limited systemic approach to problem-solving, which arose in the triangular "Man-Nature-Society". Misunderstanding of the synergetic nature essence of the ecological-economic systems, and hence the neural in their non-linearity, generation, and self-organizing ability, led to a schematic interpretation of objective reality in the system of "cause-effect", to the concentration of interests in the plane, outlined the context of market transactions, and, consequently, to serious mistakes in the assessment of the ecological and economic situation and, of course, in the forecast of relevant processes.

The very discrepancy in the concepts of "income" and "benefits" raises the question "What are the goals of the decision-maker?" In the conditions of the "filled world", this question appears particularly strenuous and unnecessary. And the data needed for decision making is uncertain because we do not always understand the measure of a particular natural phenomenon or process. And we do not have the opportunity to experiment with the global ecosystem, biodiversity or gene pool. A nonlinearity of the nature of ecological-economic systems, which manifests itself in their stochastic, chaotic, and dynamic interaction of positive and negative feedback bonds inherent in synergetic systems, is manifested every time more tangibly and more threatening. Since the question of defining the very goals of development, its advantages and benefi-

ciaries is normative in its nature and requires the identification of values and preferences, it is precisely its violation that proves the relevance of the change in the scientific paradigm.

Some epistemological tension arises also from other considerations. In particular, Swedish economist P. Söderbaum [3] rightly points out the methodological limitations of the prevailing simplified, mechanistic approaches to the study of real systems, the non-consideration of values in the process of making managerial decisions, the insensitivity to the context of the situation under consideration, somewhat "understandable", limited the interpretation of the role of science as the only generator of knowledge in society. Instead, there is a need today for the formation of evolutionary, value-oriented, context-sensitive causative approaches, which should take into account the so-called "traditional knowledge" of certain systems accumulated by humanity in the process of its co-evolution with natural systems, move away from over-ambitious attempts to find optimal solutions, and focus on studying possible scenarios for the development of phenomena and processes, the search for ways to reach the consensus of contradictory and destructive positions. By the highly debated economists-ecologists of the neoclassical economic theory, the neoclassical theory of consumer choice and the axiom of a single point existence of equivalence are considered. The need for further development of consumer choice theory concerns, first of all, its provisions, such as the invariance of consumer preferences, the continuity and concavity of the utility function, the ability to express all the requirements in monetary terms, ignoring the role of institutions.

The ecological economy as a bright representative of post-neoclassic science has developed its own, interdisciplinary paradigm of its nature, which clearly proves the inadequacy of decisions that ignore the cost of natural and social capital. It is a model of a full-scale world, in which the economic subsystem destroys a viable global ecosystem.

Presenting the main material. The global ecosystem is subordinated to the laws of nature and, therefore, it is open only to the flow of energy. Materially, this system is closed because of thermodynamics laws, the amount of natural resources is limited, and the quality deteriorates. In the beginning, social and economic systems do not feel these limitations and, therefore, they grow in accordance with the needs and desires of people, it would seem – infinitely. However, having sensed the unexpected resistance of the ecosystem, its ability to self-organization, as well as its limited resources and lack of knowledge about its environment, is social and, consequently, economic systems must acquire the form and content acceptable to the global ecosystem. Otherwise, all three systems will be destroyed. The society, its formal and informal institutions must adjust our desires, production and consumption, environmental policy and human activities to prevent non-reversible destructive processes in the global ecosystem.

Modern business strategies, long-term plans for the development of an independent, highly specialized organization or an independent economic entity of a diversified organization – are developed taking into account environmental constraints. According to the 2010 Davos forum, among the pioneers of technologies that the Forum identifies each year between the most innovative enterprises of various industries, the share of those working in the "Entrepreneurship" sector has increased from almost zero in 2000 to 38% in 2009, while the sector "Information Technologies" for the same period decreased almost twice: from 83% to 43%.

There are several explanations for this fact. On the one hand, the very conditions of the economy change: the natural resources become more expensive, access to excess resources that a few years ago were too difficult. On the other hand, society is becoming increasingly sensitive to the loss of environmental quality since the negative experience of several past decades undeniably suggests the limited ability of the ecosystem to absorb waste of human negligence. However, the most important is the fact that an adequate adjustment of the economic background, even if only declared in the future, let alone in individual national economies, already today prompts the most open to innovation part of entrepreneurs to look for ways to ecologize their activities.

Eco-innovations mean the creation of new and competitively valued goods, services, processes, systems, and procedures designed to meet human needs and ensure a better quality of life for everyone, which is achieved with the minimal use of natural per unit of output, as well as the minimum emissions of toxic substances.

It is important to note that the effect of introducing eco-innovations is viewed throughout the life cycle of a product (service, system) rather than limited to design and production processes, as it usually is. And this already means the possibility of changes in consumer behaviour, their way of life, and the use of products [4].

Depending on the level of integration of innovations, distinguish the innovation of processes, products, and system innovations. According to experts, the processes are the easiest to be ecologised.

Eco-innovation processes are characterized by the application of a new or noticeably improved production and delivery method. To the same category belong organizational innovations, such as the application of new methods in the practice of business, the organization of the working space or in external organizations, as well as training and retraining of staff. At the final stage, innovative processes are applied to the marketing of innovations (design, packaging, placement, and promotion of products), in particular, the environmental labelling of products and processes. There are such rele-

vant approaches as leaner production, zero waste, and resource efficiency.

Eco-innovations consider products (services) that have a minimal impact on the environment throughout their life cycle. Reducing the resource and energy imprint of products is more complicated as it covers all parts of the life cycle and, therefore, may require infrastructure development, changing habits, and appropriate consumer information. The design and production of these products are based on the following approaches: ecodesign, environmental technology, technological sustainability innovations, and dematerialization of products [5].

The 9th edition of the Global Innovation Index shows us the report features a ranking of world economies' innovation capabilities and results, and an in-depth look at how innovation is born across the globe.

As the above Table 1 shows, Switzerland is the highest ranked country for global innovation, while the USA makes the Top 5. With the exception of Singapore and the USA, most countries in the Top 10 are located in Western and Northern Europe. The report looks at a variety of factors that fall under seven pillars: institutions, human capital, and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs, and creative outputs [6].

The implementation of systemic eco-innovations in business strategies gives the greatest return but also requires the greatest effort. These innovations touch not only technological systems, they require fundamentally new technologies that change the market conditions and cause various types of systemic changes: in production, society, and behaviour. The relevant terms can be life-cycle analysis, eco-efficiency, cradle-to-cradle strategy, material flow analysis, integrated environmental assessment, integrated sustainability assessment, closed-loop material cycles, decoupling, factor-4 and factor-10, sustainable production and consumption, eco-sufficiency, immaterialization, user-oriented systems and sustainable lifestyle [7].

Like any other changes, eco-innovations have their own driving and deterrent factors. Under conditions of ecological globalization, society becomes more sensitive to environmental issues. Therefore, one can hope that public interest, a rethinking of values, changing legal and institutional environment will create the appropriate ground for the accelerated deployment of processes of taking into account environmental constraints in all spheres of public life.

The formation of the information society – a distinctive trend of the present – will contribute to the better informing of all its members about the environmental implications of their activities and on the best ways to prevent eco-destruction.

A powerful catalyst of these processes may also be the increase in natural resource prices, given their limited and exhaustive nature. The rapid increase in the costs of natural disasters and man-made disasters will force governments to shift reactive environmental policies to proactive in all areas of its implementation.

As for the deterrent factors, one must first of all recall the inertness of human thought and behaviour, the lack of our knowledge of the global ecosystem, its synergistic nature, the lack of adequate mechanisms for internalizing external effects, as well as the usual financial constraints that arise from the self-centeredness and limitations of our interests.

Strengthening the drivers of eco-innovation and overcoming obstacles will allow us to internalize external effects, the existence of which decrease competition between companies, and contribute to the formation of an environmentally balanced economy through the spread of successful eco-innovations at the global level [7].

It is important that business receives signals from leading markets and understands its benefits from the prompt updating of activities, both material and intangible. In conclusion, effective environmental policy, consumer and economic science, which should prepare the groundwork for the formation of an environmentally balanced economy, should help it.

Eco-innovative business strategies vary by nature. For methodological reasons, they are

Table 1

Global Innovation Index 2016 rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	Efficiency Ratio	Rank	Median: 0.65
Switzerland	66.28	1	HI	1	EUR	1	0.94	5	
Sweden	63.57	2	HI	2	EUR	2	0.86	10	
United Kingdom	61.93	3	HI	3	EUR	3	0.83	14	
United States of America	61.40	4	HI	4	NAC	1	0.79	25	
Finland	59.90	5	HI	5	EUR	4	0.75	32	
Singapore	59.16	6	HI	6	SEAO	1	0.62	78	
Ireland	59.03	7	HI	7	EUR	5	0.89	8	
Denmark	58.45	8	HI	8	EUR	6	0.74	34	
Netherlands	58.29	9	HI	9	EUR	7	0.82	20	
Germany	57.94	10	HI	10	EUR	8	0.87	9	
Korea, Rep.	57.15	11	HI	11	SEAO	2	0.80	24	

divided by the nature of the impact on the reactive or preventive. The reactive strategies, such as the pollution control strategy (the 60s of the 20th century) and the prevention of pollution (the 70s of the 20th century), have actually been involved in the production process at the last stage of it. Therefore, their sphere of influence was reduced to manipulation with the concentration of return place or time of pollutants to the environment (quasi-natural-protective approach). Preventive strategies, in particular, the cleaner production strategy (the 80s of the 20th century) and the eco-efficiency strategy (the 90s of the 20th century), focus on preventing harmful effects. Therefore, it is understandable that researchers are focused on the tools for achieving eco-efficiency.

Conclusions. Achieving sustainable development is one of the goals stated in the "Millennium Development Goals. Ukraine – 2010". Challenges for the formation of low carbon economy are outlined as a priority; the same need for eco-innovation is obvious and urgent. At the same time, in the conditions of a systemic financial crisis, it is difficult to rely on broad financial support for such innovations by the state or environmental funds. The domination of eco-innovations in business strategies should ensure that the correct environmental policy is both internationally and nationally.

Uncertainty caused by the volatility of carbon prices, non-internalized externalities, eco-destructive subsidies, and inadequate macroeconomic indicators that obstruct the true nature of human activity make the cost curve indifferent to the loss of environmental quality, inhibit the processes of environmental production, contribute to an increase in pace already non-economic growth.

REFERENCES:

1. National Institute for Strategic Studies – Available at: http://www.niss.gov.ua/articles/807/
2. Kuhn T.S. The Structure of Scientific Revolutions. – Chicago: University of Chicago Press, 2000.
3. Soderbaum P. Understanding Sustainability Economics. Towards Pluralism in Economics. – London, Sterling / VA: earthscan, 2008. – 158 p.
4. Business strategies for eco-innovation. – Available at: https://link.springer.com/chapter/10.1057%2F9780230244856_5
5. Product-related protection of our environment. – Available at: http://en-uk.sennheiser.com/about-sennheiser-sustainability-product-related
6. Global Innovation Index 2016. – Available at: https://www.globalinnovationindex.org/
7. Eco-innovation for better business. – Available at: https://www. businessgreen.com/bg/sponsored/2409410/eco-innovation-for-better-business