ANALYSIS OF THE EXPERIENCE OF STATE SUPPORT FOR THE DEVELOPMENT OF THE ECO-ECONOMY MARKET IN THE COUNTRIES OF THE EUROPEAN UNION

ANALIZA EXPERIENȚEI SPRIJINULUI DE STAT PENTRU DEZVOLTAREA PIEȚEI ECO-ECONOMIEI ÎN ȚĂRILE UNIUNII EUROPENE

https://doi.org/10.52327/1813-8489.2022.1(113).08
CZU: [338+502/504]:061.1EU

Alexei CHIRTOCA,
PhD student,
Academy of Economic Studies of Moldova

REZUMAT

Piața globală a eco-economiei a început să se formeze abia în ultimele decenii, crescând anual și depășind semnificativ dezvoltarea altor sectoare ale economiei și, de asemenea, deschizând noi nișe de piață. Dezvoltarea rapidă a economiei mondiale actualizează necesitatea studierii tiparelor de formare și a mecanismelor de susținere a statului pentru piața eco-economiei. Introducerea managementului orientat spre ecologizare, în special, în contextul lansării pe piața eco-economiei, nu s-a răspândit încă, inclusiv din cauza prezenței unor probleme cu alegerea instrumentelor de management care țin cont de specificul acestei piețe. Articolul examinează experiența susținerii statului pentru dezvoltarea pieței eco-economiei în Uniunea Europeană prin introducerea inovațiilor care au contribuit la soluționarea problemelor actuale economice și de mediu la nivel european.

Cuvinte-cheie: *eco-economie, piață, management de mediu, eco-inovare, competitivitate.*

SUMMARY

The global eco-economy market started to form only in recent decades, it shows high annual growth rates, significantly exceeding the growth of other sectors of the economy, and also opens up new market niches. The rapid development of the world economy actualizes the need to study the patterns of formation and mechanisms of state support for the eco-economy market. The introduction of management focused on greening, in particular, by entering the eco-economy market, has not yet

become widespread, including due to the presence of problems with the choice of management tools that consider the specifics of this market. The article examines the experience of state support for the development of the eco-economy market in the countries of the European Union by the method of introducing environmentally-oriented innovations that contributed to solving current economic and environmental problems at the European level.

Keywords: *eco-economy, market, environmental management, eco-innovation, competitiveness.*

The global economic crisis, an increase in the number of environmental problems, environmental degradation demonstrates the need for radical changes in the economy. As new approaches to solving these problems, it can be considered as a natural process of greening the economy, in particular, the formation and development of the eco-economy market. An analysis of the existing scientific groundwork showed that, along with significant progress in the study of greening business and the development of environmental management, as well as environmentally oriented state policy in economic activity, many issues related to the formation of an eco-economy market, as well as mechanisms of state support and regulation of the development of this market has not yet found sufficient coverage in the scientific literature. This is especially true for the development and substantiation of promising organizational and economic mechanisms for supporting the greening of the economy since, at the initial stages of development of the eco-economy market, its formation and development is impossible without state support.

Possible ways of business development, considering the greening of the eco-economy market, were described in the works: Williams R., Acar S., Yeldan E., Skinner G., Crafer K., Filip N., Târţiu VE Theoretical aspects of public policy implementation and state support mechanisms implementation of eco-innovations was reflected in the works of OECD and UN (ONU) specialists Bahn-Walkowiak B., Wilts H., Gözet B., Vehmas J., Saarinen's L.

The research aims to study the features of the development of the eco-economy market and the introduction of environmentally oriented innovations in the countries of the European Union.

For the most complete analysis of the features of the development of the eco-economy market and the introduction of environmentally oriented innovations, the author proposes to consider the experience of the countries of the European Union. This will allow us to study and use successful practical experience and barriers that hinder the greening of business, as well as explore the mechanisms of state support for the implementation of eco-innovation. The research showed that one of the priorities of the developed state policy of the European Union in the economic and social spheres was to promote the efficient, environmentally friendly, and sustainable use of natural resources.

Improvements in environmental management performance and an increase in eco-innovation have contributed to addressing current economic and environmental challenges at the pan-European level. The European Economic Stimulation Strategy 2020, proposed by the European Commission, aims to build a resource-efficient and competitive economy with sustainable growth over the current decade. Following this document, the process of greening the economy should, first of all, contribute to an increase in the share of alternative energy in the EU energy balance. The state strategy assumes a significant improvement in the position of the countries of the entire European Union in achieving low levels of greenhouse gas emissions as a result of the development of environmental management systems and eco-innovations, while economic development will not depend on natural resources. Strategy 2020 shows that economic growth and environmental protection improve business. In some European regions, a priority has been established to support small and medium-sized enterprises in the implementation of environmental management systems and the implementation of eco-innovations. To achieve leading positions and increase the level of competitiveness of products in the global market, the countries of the European Union contribute to the expansion of the implementation of eco-innovations in industry, especially in small and medium-sized enterprises. One of the support mechanisms for the implementation of eco-innovation is the Europe INNOVA platform, which focuses on supporting research and development aimed at promoting the competitiveness of eco-innovation.

The INNOVA platform aims to become a laboratory for the development, testing and promotion of new tools, and tools to support innovation with the aim of helping innovative enterprises innovate faster and better. The aim is to support all forms of innovation with competitiveness in mind. The INNOVA platform aims to become the premier pan-European platform for innovation professionals, enabling them to discuss, develop, test and share "best practices" to support innovators and foster a better understanding of innovation models across sectors. To this end, Europe INNOVA relies on innovation agencies and other public or private innovation companies that are interested in working together. New methods, and tools must be tested in real conditions. For this, the Europe INNOVA platform has chosen three themes: clusters, services (KIS) and eco-innovation. An innovative platform (IP) has been created around each topic: Cluster-IP, KIS-IP and Eco-IP.

The key direction in the activities of Europe INNOVA is the establishment of interaction between business and science, 25 partners from 20 European countries, as well as Turkey and Israel. The platform supports research, and innovation developments, the implementation of environmental policy measures, helps to attract funding for the development of eco-innovations from the stage of research and development to their promotion on the market. The Europe INNOVA platform

funds research, contributes to the creation of a networked information platform for European eco-innovation, assesses the potential, and identifies possible development problems. The platform also develops mechanisms to simplify the promotion procedure on the European market [3].

The implementation of eco-innovations in the EU countries has a special specific. The experience of Finland, which is rightfully considered the world leader in the implementation and development of eco-innovations, is indicative in this sense. As a result of an increase in state funding for research and development of high-tech technologies, the principles of environmental friendliness and energy efficiency formed the basis. Thus, the innovation policy pursued by the state made it possible to integrate the environmental factor in all aspects of research and development. There are reportedly around 2,000 companies in Finland working in the research and development of environmentally friendly technologies and generating annual exports of € 12 billion, or 20% of Finland's total exports.

In February 2012, the Finnish Ministry of Employment and Economy launched a Strategic Program for the Development of Clean Technologies. The goals of the program were to create 40,000 jobs by 2020 and to double the profits from the cleantech business. The program proposes the use of the Finnish domestic market as a basis for the development of environmentally friendly technologies and the preparation of Finnish products for export, especially to emerging markets such as China.

Government support is essential in promoting environmentally friendly technologies. Thus, in June 2013, the Finnish government developed a mechanism based on the inclusion of an environmental parameter in the public procurement program. When implementing the public procurement procedure, the authorities undertake to give preference to new environmentally friendly technologies, paying special attention to the analysis of the product life cycle and energy efficiency indicators. The mechanism of public procurement of environmentally friendly products contributed to the development of small and medium-sized innovative businesses. In addition, through government incentives, it was possible to achieve the promotion of 80 Finnish companies producing environmentally friendly technologies on the international market [10].

Also, the experience of Austria is noteworthy as an example of an increase in the export of eco-technologies. The fruitful cooperation between business and scientists in solving environmental pollution problems has resulted in a leading position among the EU countries in terms of the number of companies that have introduced resource-saving and energy-efficient technologies, which has led to an increase in company profits, an increase in the export of environmentally oriented technologies. Currently, more than 20 thousand companies are engaged in the production of environmentally friendly technologies in Austria, including energy

technologies, waste management, and wastewater disposal technologies [5].

Economically, Austria is a country of innovations, with the dynamics of economic development that only a few regions of the EU can match. For companies choosing a location for a business location, one of the priority areas may be the "Valley of Green Technologies" in Styria, which ranks second in Europe in terms of research and development (with an indicator of 4.3%) and is the second region in Europe on innovation; five universities and leading research centers in the field of energy and clean technologies provide a search for specialists and key employees in these areas. Austria generates 28% of the final energy consumption from renewable sources. Already, this figure exceeds the plans of the EU.

The level of waste disposal is more than 70%, technologies are actively used to promote the recycling of raw materials. In Austria, the area of biomass energy production is developing intensively. Technological eco-innovations include the original "Waste biomass to energy" technology: waste biomass is processed by cracking into second-generation biodiesel or converted into alternatives for coal or biogas.

No less significant progress has been made in the field of energy production from renewable sources. Since the 1970s, Austrian companies have been developing intelligent solar solutions. Austrian technologies for generating heat from solar energy, solar heating, and solar cooling systems have become widespread. At the same time, many well-known green technologies are implemented in Austria both on a small scale for the private sector and at large industrial and municipal facilities. Despite the progress made, the development of new technological eco-innovations continues, including technologies for sorting materials. Certain progress has been achieved in the development of technologies for the treatment of wastewater and sludge residues, as well as water disinfection. An interesting experience has been gained by encouraging the implementation of an environmental management system in enterprises, public organizations, municipalities, schools, hospitals, and other public institutions. The state program is aimed at creating economically viable management systems aimed at solving the problems of environmental pollution and the consequences of climate change. As a result of its successful operation in Austrian enterprises, the program has become widespread throughout Europe.

The essence of the Austrian state program for the introduction of an environmental management system (and thereby encouraging greening of activities) consisted in a three-tier voucher system, which allowed Program participants to choose the most suitable level of complexity for them.

The entry-level is less expensive and more suitable for small businesses. The level included a short program of environmental management system consultations. At the second level, consulting support and analysis of the general organizational structure of the company are expected. The third level involves the implementation of the ISO

14001 series standard and certification of the organization. The program is aimed at solving the problems of environmental pollution, developing and introducing technologies for energy efficiency, rational use of resources, and waste disposal.

From 2007 to December 2014, 850 programs and consultations were implemented, 3021 companies took part in them. The cost of the Program was € 550,000 per year. It assumed 50% coverage by the participant, the remaining 50% - by the government through vouchers. Since 2007, the Austrian government has invested € 236,000 in support of the first tier, € 1,589,170 in the second tier, and € 1,390,045 in the third tier. The cost of vouchers is up to € 1,440 (equivalent to four days of consultation) on the first level, € 3,600 on the second level (ten days), and € 7,200 (20 days) on the third level.

Some elements of Austria's environmental management have been adopted by other European countries, such as Italy. Thus, the implementation and dissemination of eco-innovation in Italy were facilitated by the development of the Cleantech network, which is based on stimulating the development of eco-innovation by attracting foreign investment. Expansion of the network has contributed to the diffusion of eco-innovation in the international market [4].

To achieve the goals of the eco-economy, the leaders of Sweden and Denmark decided to create an innovative science cluster Oresund, which brought together scientists and researchers, entrepreneurs and politicians to implement plans to promote the development of environmentally-friendly innovation. Oresund specializes in technological eco-innovation in water and waste management, green building and eco-cities, renewable energies, and biofuels. In addition to research and development, the Oresund cluster supports green businesses. For example, the development of environmentally friendly technologies, in particular water bodies, is being carried out by the DHI Group, which specializes in the development of technological eco-innovations for purifying water, the environment, and improving human health; Novozymes develops technologies for the production of biofuels; Vestas is the leading wind turbine manufacturer in Denmark. Eco-cluster membership will require dues, a location near Oresund, and research and development. Oresund is made up of 70 corporate members, 500 green technology innovation companies, 900 scientists, 13 research institutes and several local governments. The cluster's activities are aimed at assisting in the development and development of innovations in the field of environmental protection, their dissemination, and commercialization [7].

Also, an interesting experience in the development of eco-innovation in agriculture was obtained in Slovakia. Because tillage is usually done using heavy machinery such as tractors, which help improve agricultural productivity, but due to the heavyweight, the soil is compacted and the consumption of fossil fuels results in air pollution. This led the Slovak eco-entrepreneur

John Slinski and his company Agrokruh to invent a device that looks like a movable bridge or barrier, the main task of which is plowing and loosening, planting seeds, weeding, and technological maintenance. The structure revolves around a center point and can be equipped with a variety of tillage tools. Since the structure control system is very accurate, the result of using this structure in agriculture is 30 tons of vegetables harvested from 2 hectares of land. In addition to the fact that the design features made it possible to minimize the area of soil compaction, energy savings were also achieved as a result of processing. If we consider the use of electricity from renewable sources, then Agrokruh can claim the title of completely "green" production [6].

In January 2013, Tallinn became the first European capital to develop free public transport. Tallinn's authorities believe that free public transport schemes can help move from private cars to buses and trams, reduce congestion and reduce carbon dioxide emissions. The reduction in carbon dioxide emissions has already reached 45 thousand tons. in year. Now we can say that the introduction of free public transport has helped to reduce congestion in the city by 15% compared to the previous year, and the use of private cars has decreased by 9% [2].

The experience of the company's transition from classical energy sources to renewable ones was gained in Belgium. Automotive giant Volvo, which is working on a track called Trucks, has teamed up with energy supplier Electrabel to create the world's first CO2-free plant in Ghent, Belgium. The original factory in Ghent produced over 40,000 trucks a year, with air emissions of over 14 tones. CO2 per year, which is comparable to the activities of 7.5 thousand households. To solve this problem and get electricity and heating without any burden on the environment, it was decided to merge with Electrabel. Joint investments amounted to about € 10 million and it was decided to use energy from renewable sources - energy from hydroelectric power stations, wind (2 windmills providing the plant with 14 GW of electricity per year, an additional 150 photovoltaic panels with a capacity of 28 MW per year). Surplus electricity was proposed to be sold to local residents. Thus, Volvo has introduced a procedure to reduce energy consumption. The combination of improved technological processes and new types of energy allowed the plant to reduce total energy consumption by 23% and increase production by 33% [8].

Spain is one of the world leaders in desalination and the largest producer of water-based eco-innovations. Eco-innovation is critical to the water sector due to looming freshwater supply challenges. Using new technologies, it is possible to solve the acute water shortage. In 2015, more than 700 desalination plants were installed in Spain, which produces 1.6 million cubic meters of water per day - enough to meet the water demand of eight million people [9].

Research in the field of eco-innovation and environmental technology is an important element in the development of the German economy. German companies are among the most innovati-

vely developed in Europe. Today, German companies play a leading role in the export of environmentally friendly technologies, especially in the areas of product disposal, air quality, and sound insulation. Nearly 1.5 million people currently work in the green technology sector in Germany. The German Federal Government is focusing legislatively on stimulating research and development of eco-innovations, which will be of key importance in the future - in the field of environmental protection and energy technologies. Particular attention is paid to biotechnology and nanotechnology, which have a high potential for application in many areas of the economy. Germany's competitive advantage in eco-innovation will continue to depend on the speed of integration of new technologies. The goal of the Eco-Innovation Development Strategy is to create interaction between scientists and businesses for the development of new markets [1].

As a result of the presented analysis (Table 1), it can be concluded that the dominant role of state support and state incentives contributing to the greening of business, as a result of which the eco-economy market develops in the countries of the European Union. The studied experience of the EU countries indicates that the mass nature of eco-innovations largely depends on the scale and depth of research and development in the field of recycled materials, the transition to energy-saving technologies, investments in the processing of products, in developments that extend the service life of the goods produced. The highlighted areas of eco-innovation are currently a priority. Their implementation requires not only external conditions (institutional environment, environmental regulation, customer behavior) but also internal business parameters (qualified personnel, high-tech laboratories, and equipment). An analysis of the stimulators used for the growth of the number of eco-innovations in the EU countries allows us to conclude that the spread of eco-innovations of ecologically oriented innovations directly depends on 3 main components: state regulation of environmental management, the level of technological development, and market influence. It is important to note here that the market itself (and only the market) cannot sufficiently orient companies towards the introduction of eco-innovations, as some authors sometimes suggest.

In this regard, the author considers it possible to emphasize the dominant role of the state in the development of legislation in terms of creating additional incentives for the promotion of environmentally friendly products and conditions for the dissemination of information about eco-innovations, popularization of environmentally friendly behavior, as well as business support, the purpose of which is the mass production of environmentally friendly products. At the same time, the economic stimulus for the introduction of eco-innovations for companies is the desire to obtain the maximum possible profit in a saturated market, by including an environmental component in the production of new, environmentally friendly products.

Table 1. Benchmarking of the use of stimulants for the growth of the number of eco-innovations in the countries of the European Union.

Country	Buildings and structures	Food	Greening business	Recycling	Water	Renewable energy	Ecological funds	Financing energy-efficient technologies	«Green» government procurement
Albania	X	-	-	-	X	-	-	-	X
Austria	X	X	X	X	X	X	-	-	X
Belgium	X	X	X	X	X	X	X	-	X
Bulgaria	X	-	X	-	-	X	-	-	-
Croatia	X	-	X	X	X	X	-	-	-
Cyprus	X	-	X	X	-	X	-	-	X
Czech	X	-	X	X	X	X	-	X	-
Denmark	X	X	X	X	-	X	-	-	X
Estonia	X	-	X	-	-	X	-	-	X
Finland	X	X	X	X	-	X	-	-	X
France	X	X	X	X	X	X	X	X	X
Germany	X	X	X	X	X	X	-	-	X
Greece	X	-	X	X	-	X	-	-	-
Hungary	-	X	X	X	X	X	-	-	X
Iceland	X	-	-	-	-	X	-	-	X
Ireland	X	X	X	X	X	X	-	-	X
Italy	X	X	X	X	X	X	-	-	X
Lithuania	-	X	-	X	-	X	-	-	-
Luxembourg	X	X	X	X	-	X	X	-	X
Montenegro	-	-	-	X	-	X	-	-	-
Netherlands	XX	X	X	X	X	X	X	X	X
Norway	X	X	X	X	X	X	X	X	X
Poland	X	X	X	X	X	X	X	X	X
Portugal	X	X	X	X	X	X	X	-	X
Romania	-	-	-	X	X	X	-	-	-

Serbia	X	-	-	-	X	X	-	-	-X
Slovenia	X	-	X	X	-	X	-	-	X
Spain	X	X	X	X	X	X	-	X	X
Sweden	X	X	X	X	-	X	-	-	X

Source: Compiled by the author.

Conclusions. Analysis of the experience of state support for the development of the eco-economy market in the EU countries made it possible to formulate several conclusions:

- the essential foundations of state regulation of the development of the eco-economy market of the market have been created, integrated into the European Strategy 2020, where special emphasis is placed on renewable energy sources, low greenhouse gas emissions as a result of the development of environmental management and eco-innovation, including small and medium-sized enterprises (platform Europe INNOVA);

- there is a country specificity of the key areas of eco-innovation: environmental friendliness and energy efficiency (Finland); combating environmental pollution, resource-efficient technologies and environmental management systems at enterprises (Austria); creation of ecological clusters (Denmark); environmental management in agriculture (Slovakia); transition to renewable energy sources (Belgium); desalination and water eco - innovation (Spain); product utilization, air quality, noise insulation, bio - and nanotechnology (Germany), etc.

- it was concluded that the dominant role of government support and government incentives, contributing to the greening of business, nevertheless, significant barriers to the development of eco-innovation remain in Europe;

- the conducted benchmarking of the use of stimulants for the growth of eco-innovations in the EU showed their diversity, which is based on 3 main components: state regulation of environmental management, technological development and influence on the market.

BIBLIOGRAPHY

1. Bahn-Walkowiak B., Wilts H. Eco-innovation in Germany. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/germany_eco-innovation_2015.pdf (accessed on 17.11.2021).

2. Beckers D. Eco-innovation in Estonia. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/estonia_eio_country_profile_2016-2017_1.pdf (accessed on 17.11.2021).

3. Eco-Innovation in Europe. https://www.interregeurope.eu/fileadmin/user_upload/plp_uploads/policy_briefs/TO6_Policy_brief_on_eco-innovation.pdf / (accessed on 21.11.2021).

4. Gionfra S.. Eco-innovation in Italy. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_italy.pdf (accessed on 17.12.2021).

5. Gözet B. Eco-innovation in Austria. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_austria.pdf (accessed on 17.12.2021).

6. Ivanegová B. Eco-innovation in Slovakia. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_slovakia.pdf (accessed on 17.12.2021).

7. Nauwelaers C., Maguire K., Marsan G. Ajmone/ The case of Oresund (Denmark-Sweden) – Regions and Innovation: Collaborating Across Borders. https://www.oecd.org/cfe/regionaldevelopment/publicationsdocuments/Oresund.pdf (accessed on 17.12.2021).

8. Rensonnet M., et all. Eco-innovation in Belgium. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/belgium_eio_country_profile_2016-2017.pdf (accessed on 17.12.2021).

9. Retana M. Eco-innovation in Spain. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/spain_eio_country_profile_2016-2017_0.pdf (accessed on17.12.2021).

10. Vehmas J. Saarinen's L. Eco-innovation in Finland. https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_brief_2010_finland.pdf (accessed on 17.12.2021).

Prezentat: 03.02.2022.

E-mail: antocinatalia57@gmail.com