

V. Liashenko,*DrHab (Economics), Professor,*

ORCID 0000-0001-6302-0605,

e-mail: slaval.aenu@gmail.com,**N. Trushkina,***PhD (Economics),*

ORCID 0000-0002-6741-7738,

e-mail: nata_tru@ukr.net,*Institute of Industrial Economics of the NAS of Ukraine, Kyiv*

CLUSTER COMPONENT OF SUSTAINABLE REGIONAL DEVELOPMENT: ROMANIAN PRACTICE AND UKRAINIAN REALITIES

Problem statement. In recent decades, economic conditions require the use of networked forms of partnership, clustering mechanism, and cluster landscape formation (development of national and regional cluster policy, creation of a proper innovation ecosystem, cluster infrastructure and system of measures to financially stimulate cluster initiatives). This will increase the level of cluster capacity and achieve balanced sustainable development of national economies around the world: the United States, Japan, the Netherlands, Finland, Germany, the Czech Republic, Lithuania, Poland and more.

At present, there are different types of cluster structures in foreign countries, namely cross-border, transport and logistics, agricultural, energy, IT, tourism, and innovation. There are more than 3 thousand specialized clusters in Europe, such as Imago-Mol. Experts estimate that these innovative business ecosystems provide 54 million jobs in the European Union. According to experts, the network of already established clusters provides more than 50% of the gross national product and increases the level of competitiveness of the economy.

Thus, in most countries of the world, the cluster approach is effectively implemented to ensure the sustainable development of economic systems of different levels in the context of the implementation of smart specialization strategies. This is in line with the main provisions of the EU Clustering Manifesto and the European Cluster Memorandum.

Analysis of recent publications on the problem.

The issue of methodological support for the implementation of national and regional policies of economic clustering is being studied by foreign scholars (M. Benner [1], M. Bleackley [2], M. Delgado [3], G. Devlin [2], P. Dussauge [4], M. Enright [5], E. Feser [6], D. Fornahl [7], M. Frankowska [8], B. Garrette [4], N. Grashof [7], R. Hassink [9], A. Kowalski [10], M. Kruczek [11], W. Mitchell [4], S. Morgulis-Yakushev [12], M. Porter [3; 13; 14], M. Preveser [15],

Ö. Sölvell [12], S. Stem [3], G. Swann [15], M. Szuster [16], Z. Zebrucki [11], J. Zrobek [17]).

Leading Ukrainian scientists (M. Buhaieva [18], O. Demedyuk [19], O. Dorovskyi [20], V. Dubnytskyi [21], O. Finagina et al. [22], V. Ilchuk [23], V. Khaustova [20, 35], I. Khomenko [23], V. Kozyk [24], Y. Kudriavets [25], Ye. Kuryliak [26], Yu. Kuts [27], M. Kyzym [20, 28, 35], A. Lebedeva [29], I. Lysenko [23], O. Makarenko [27], V. Mamonova [27], O. Myshchyshyn [24], A. Orlova [18], L. Ryneyskaya [30], M. Shashyna [31], H. Shevtsova [32], N. Shvets [32], S. Sokolenko [33], M. Voynarenko [21, 34], V. Zahorskyi [35]) have been actively engaged in research work on cluster issues in recent decades. They study the best international experience and consider the cluster mainly as an association, qualitatively new institutions of the economic system, which appear under the influence of institutional changes in the economy, the formation of fundamentally new elements of the institutional environment, and global competition and more.

This article is a continuation of the author's research [36-40] to substantiate the conceptual provisions for the creation and development of cluster structures as a priority for the modernization of national and regional economies; strategic institute of balanced sustainable development; network model of partnership in the economic regions of Ukraine, taking into account their specifics.

Coverage of previously unresolved parts of the overall problem. Despite the wide range of research on the chosen topic, multifaceted and controversial issues need to be further developed. And especially the solution to this problem is actualized at the present stage of globalization transformations in the conditions of smart specialization, modernization, digitalization and sustainable development of the regional economy.

In this regard, **the purpose of this article** is to study and summarize the Romanian practice of cluster policy in order to develop proposals for its possible

application in the current conditions of the regional economy of Ukraine.

To achieve this goal, methods of analysis and synthesis, systematic approach, comparisons and observations, classification, structural and logical generalization were used.

Outline of the main results and their justification. To implement the tasks of the National Plan of Regional Development of Romania and the relevant National Agency for Regional Development, eight regions were formed, the aim of which was to create network structures and clusters. For this type of cooperation in Romania, EU financial support was provided, as well as methodological guidance from the OECD through Italian cluster structures. The experience of Italian-Romanian cooperation at the regional level shows the viability and effectiveness of the exchange of experience and knowledge transfer in the field of business activity, overcoming the crisis in depressed regions. The clustering of the Romanian economy began in 1998. Between 1999 and 2001, clustering was externally supported by the Interreg II program and from 2001 to 2004 by the Weid program (FP5). Further development of Romanian clusters was carried out with the help of EU programs – FP6 and FP7 [41]. It is worth noting that most of the industrial clusters in Romania are formed on the example of the Italian model of “industrial districts”, which unite small companies or micro-firms.

In accordance with the specifics of the Romanian approach to clustering the economy in the framework of the Innovation Development Program in the country allocated “Public Clusters” (“state” clusters), which include associations of state-established companies such as technology and science parks, business incubators, research centers, etc. In addition, there are “Natural Clusters”, i.e. natural clusters (e.g., clusters of automotive, nanotechnology, IT industry), whose operation is focused on creating added value in a particular area.

By industry, cluster structures in Romania are mostly formed in the IT sector, smart specialization, agro-industrial complex, energy, mechanical engineering and engineering, biotechnology and medicine, tourism and recreation, woodworking, creative industry.

There are currently 51 clusters in Romania, 47 of which are most active in the Clustero. The Romanian Ministry of Education and Science has launched a Project Funding Program for the organization and development of innovation clusters and a project to support innovation clusters. Special support is given to the growth of value-added created by the ICT sector and innovation in this area through the development of clusters (900 thousand euros) and POC 2014-2020 (7 million euros), POC/PI2.2/OS2.2/Action 2.2.1 (4 million euros) [42].

An example of Romania's successful cluster development is the modernization of the automotive

industry. In the early 1990s, the country's automobile industry experienced a period of stagnation and even collapse. However, in the early 2000s, thanks to radical restructuring, innovative development, attracting foreign direct investment, and networking, Romania's automotive industry revived as a new global supplier of low-cost automotive components to large manufacturers (Renault, Michelin, Bosch).

Another example of effective implementation of cluster initiatives in Romania is the formation of the IT cluster (Cluj IT Cluster, Cluj-Napoca), which includes organizations in the field of information technology (software and solution providers, universities and research institutes, government agencies, others catalyst organizations, etc.). The main mission of this cluster structure is to become one of the most reliable suppliers from Central and Eastern Europe of innovative IT services and products, as well as organizational support systems. The task of the cluster is to promote innovation in processes, design products to increase competitiveness at the European and international level, create a culture of cooperation based on trust and reliability, promote the Romanian IT services market, and establish long-term public-private partnerships for the mutual benefit of cluster members and society. The IT cluster was able to become a network of more than 80 members without state support, and thanks to an active presence on the European platform for cluster cooperation, membership in the European Alliance of SMEs in the field of ICT and more.

In the woodworking sector of Romania, a regional wood cluster Pro Wood has been established, the priority tasks of which are the development of products and services, participation and/or initiation of innovation and development projects, development of clear cluster policies and legislative projects.

Among the key tasks to support the development of cluster structures in Romania are the following: promoting research and development and the introduction of new technologies; strengthening innovation ecosystems and innovation potential of regions; support for internationalization and best practices of cluster members, cooperation structures between companies or between industries and science; promotion of entrepreneurship, startups and scaling.

If we consider Ukraine, the strategic directions of regional economic development include the transformation of transport and logistics systems on the basis of clustering. This corresponds to the main provisions of the Association Agreement between Ukraine and the EU, the “National Security Strategy of Ukraine”, approved by the Decree of the President of Ukraine dated 14.09.2020 no. 392/2020, the State Strategy for Regional Development 2021-2027 and the National Transport Strategy of Ukraine until 2030.

Chapter 7 “Transport” of the EU-Ukraine Association Agreement deals with the development of a multimodal transport network linked to the Trans-European Transport Network (TEN-T) and the

improvement of infrastructure policy in order to better identify and evaluate infrastructure projects for different types of transport.

The State Strategy for Regional Development for 2021-2027, approved by the Resolution of the Cabinet of Ministers of Ukraine dated 05.08.2020 no. 695, contains tasks in the field of “Transport Infrastructure Development” to achieve the operational goal “Infrastructure Development and Digital Transformation of Regions”. This strategic document emphasizes the need to promote the creation of world-class regional, interregional and national clusters, as well as the internationalization of cluster initiatives.

In the National Transport Strategy of Ukraine for the period up to 2030, which was approved by the order of the Cabinet of Ministers of Ukraine dated 30.05.2018 no. 430, the main tasks that need to be addressed are the creation of a network of multimodal transport and logistics clusters and basic logistics centers, “Dry ports”, terminals, specialized transshipment complexes, etc.

Thus, in modern economic conditions, transport and logistics clusters are an important factor in ensuring competitiveness, given the significant transit and logistics potential of economic regions of Ukraine: Donetsk (Donetsk, Luhansk regions); Carpathian (Zakarpattia, Ivano-Frankivsk, Lviv, Chernivtsi

regions); North-West (Volyn, Rivne regions); Podillya (Vinnytsia, Ternopil, Khmelnytsky regions); Polissya (Zhytomyr, Kyiv, Cherkasy, Chernihiv regions); Prydniprovsky (Dnipropetrovsk, Zaporizhia, Kirovohrad regions); Black Sea (Mykolaiv, Odesa, Kherson regions); Slobozhansky (Poltava, Sumy, Kharkiv regions).

Analytical assessment of the current state of development of regional transport and logistics systems shows that in most economic regions there is a tendency to increase the volume of cargo transportation by regional branches of JSC “Ukrzaliznytsia”. Thus, according to the State Statistics Service of Ukraine, the volume of freight traffic by the South-Western Railway increased from 2000 to 2020 by 168.6% (share by 10.8 percentage points or from 5.4 to 16.2% of the all-Ukrainian volume); Odesa – by 145.8% (share of 8.5 percentage points or from 4.8 to 13.3%); South – by 59.7% (share of 5.1 percentage points or from 6.5 to 11.6%); Lviv – by 31.4% (share by 3.4 percentage points or from 7.1 to 10.5%); Prydniprovsk – by 3.8% (share of 5.3 percentage points or from 31.5 to 36.8%). However, the volume of cargo transportation by Donetsk Railway decreased during this period by 71.8% due to hostilities in eastern Ukraine, and its share in the all-Ukrainian volume decreased by 30.5 percentage points or from 44.7 to 14.2% (Table 1).

Table 1

Dynamics of cargo volumes by public railway transport

Years	Regional branches of JSC “Ukrzaliznytsia”, million tons					
	(1)	(2)	(3)	(4)	(5)	(6)
2000	132.4	21.0	14.2	93.3	15.9	19.1
2005	157.8	25.1	24.6	112.0	27.9	31.5
2010	142.4	20.6	27.5	110.4	29.1	28.0
2013	139.0	22.5	30.0	118.3	37.7	29.8
2014	99.4	22.8	27.6	107.9	38.5	29.0
2015	69.2	24.3	29.7	104.9	37.1	29.1
2016	71.7	23.6	31.3	99.4	36.9	29.2
2017	48.7	27.0	32.4	97.6	40.8	30.8
2018	45.4	26.4	31.5	96.7	38.5	29.1
2019	41.2	27.0	33.2	96.7	40.6	29.8
2020	37.3	27.6	34.9	96.8	42.7	30.5

Notes: Donetsk Railway (1); Lviv (2); Odesa (3); Prydniprovsk (4); Southwest (5); Southern (6).

Source: compiled by the authors on the basis of information and analytical materials of the State Statistics Service of Ukraine.

During 2000-2020, the freight turnover of the Odessa Railway increased by 71.1%, and the share by 14.1 percentage points, or from 20.7 to 34.8% of the national freight turnover of public rail transport; South-West – by 22.4% (share of 3.7 percentage points or from 17.8 to 21.5%); Southern – by 20.6% (share of 1.4 percentage points or from 7.6 to 9%). At the same time, the freight turnover of Donetsk Railway decreased by 66.8% (share by 13.1 percentage points or from 19.5 to 6.4% of the national freight turnover of public

railway transport); Prydniprovsk – by 22.4% (share of 5.4 percentage points or from 23 to 17.6%) (Table 2).

According to the Main Department of Statistics in 24 oblasts, the volumes of goods transported by rail in the Podillya district increased in 2020 by 279.2% compared to 2000; Northwest – by 96.8%; Slobozhansky – by 82.6%; the Black Sea – by 78.2%; Polissya – by 63.5%; Prydniprovsky – by 17.5%; Carpathian – by 4.8%. In the Donetsk economic region, the value of this indicator decreased by 61.8% (Table 3).

Table 2

Dynamics of freight turnover of public railway transport

Years	Regional branches of JSC "Ukrzaliznytsia", billion tkm					
	(1)	(2)	(3)	(4)	(5)	(6)
2000	33.7	19.7	35.7	39.8	30.8	13.1
2005	36.9	22.5	51.6	48.1	42.3	22.6
2010	37.3	18.6	54.1	45.4	42.4	20.3
2013	34.6	19.2	60.7	44.6	46.7	18.6
2014	22.8	20.0	62.2	36.7	46.7	21.8
2015	13.8	21.0	66.1	30.2	42.2	21.8
2016	17.5	21.1	58.5	31.2	38.4	20.9
2017	13.2	22.2	61.6	32.0	42.8	20.1
2018	13.2	21.9	59.5	32.8	41.4	17.5
2019	11.6	19.3	62.2	31.2	41.7	15.8
2020	11.2	18.9	61.1	30.9	37.7	15.8

Notes: Donetsk Railway (1); Lviv (2); Odesa (3); Prydniprovskya (4); Southwest (5); Southern (6).

Source: compiled by the authors on the basis of information and analytical materials of the State Statistics Service of Ukraine.

Table 3

Volumes of goods transported by rail in economic regions, thousand tons

Economic region	Years				
	2000	2005	2010	2015	2020
Donetsk	99000.0	110100.0	94900.0	69200.0	37800.0
Carpathian	12674.1	15574.4	8089.8	9816.7	13285.9
Northwest	5044.9	9060.5	10084.7	8660.6	9928.2
Podillya	3088.5	5297.1	5653.9	10185.7	11712.9
Polissya	14726.3	23457.3	25361.8	25486.0	24078.8
Prydniprovsky	89449.2	110639.8	110775.1	111419.6	105105.9
Black Sea	20090.3	35716.1	37851.5	40264.8	35806.3
Slobozhansky	34362.8	57008.5	51513.9	54335.9	62735.4

Source: compiled by the authors on the basis of analytical and information materials of the Main Department of Statistics in 24 regions of Ukraine.

According to statistical analysis, the volume of road freight transport increased in 2000-2020 in the Prydniprovsky economic region by 56.3%; Northwest – by 52.8%; Slobozhansky – by 47.1%; Polissya – by 43.3%; "Podillya" – by 31.8%; in the Black Sea region – by 18.1%.

But in a number of economic regions, on the contrary, the volume of goods transported by road decreased during the study period. Thus, in the Donetsk

region this indicator decreased by 34.3%, and in the Carpathian region – by 7.7% (Table 4).

It should be noted that in economic areas there is a negative trend in the development of water transport. For example, in the Donetsk region the volume of cargo transportation by water decreased in 2020 compared to 2000 by 56.8%; the Black Sea – by 49.5%; Prydniprovsky – by 21.4% (Table 5).

Table 4

Volumes of goods transported by road in economic region, thousand tons

Economic region	Years				
	2000	2005	2010	2015	2020
Donetsk	151400.0	202300.0	174100.0	104300.0	99500.0
Carpathian	59180.6	52267.7	47649.5	48654.2	54641.8
Northwest	23068.6	28769.4	23850.4	23077.1	35243.7
Podillya	66632.0	61010.8	61241.6	71386.1	87836.7
Polissya	112709.6	130240.9	117592.0	128092.2	161472.9
Prydniprovsky	291308.4	375029.5	452196.2	372689.6	455341.5
Black Sea	51618.0	65235.8	61792.3	52539.7	60951.9
Slobozhansky	142473.2	158803.0	181681.3	201331.4	209575.9

Source: compiled by the authors on the basis of analytical and information materials of the Main Department of Statistics in 24 regions of Ukraine.

Table 5

Volumes of cargo transported by water in economic regions, thousand tons

Economic region	Years				
	2000	2005	2010	2015	2020
Donetsk	327.1	–	288.1	535.7	141.2
Carpathian	–	–	–	–	–
Northwest	–	–	–	–	–
Podillya	2.7	–	–	–	–
Polissya	108.9	259.1	90.0	–	–
Prydniprovsky	859.0	2366.2	1065.7	819.6	675.6
Black Sea	5446.4	8684.3	4661.0	2841.3	2750.6
Slobozhansky	–	–	–	–	52.0

Source: compiled by the authors on the basis of analytical and information materials of the Main Department of Statistics in 24 regions of Ukraine.

In this regard, regional and local governments need to pay considerable attention to the development of water transport. And for this, we should look for non-traditional sources of funding – venture capital, factoring, funds of investment funds and international financial organizations, green investment, and more. This is especially true with the transition to a green economy, as water transport is more environmentally friendly than road transport. And this is in line with the key provisions of the Green Pact for Europe or the European Green Course.

In addition, it should be noted that in the surveyed economic areas there are significant problems with the functioning of air transport, which need to be addressed. To this end, it is advisable to develop a set of measures for crisis management of air transport development within the National Transport Strategy of Ukraine until 2030 and the State Targeted Scientific and Technical Program for Aviation Industry Development for 2021-2030.

Currently, the functioning of transport and logistics systems is regulated in the Regional Development Strategies for 2021-2027. These strategic documents are in line with the Sustainable Development Goals until 2030 and the main provisions of the State Strategy for Regional Development until 2027 “Development and unity focused on people”, which includes the formation of a cohesive country in social, economic, environmental and spatial dimensions. Achieving this goal should be done through the modernization of infrastructure (including transport) to increase the investment attractiveness of the territories.

Based on the generalization of Regional Development Strategies in 24 regions, it was established that all documents refer to the creation of clusters (sectoral, territorial, innovative, tourism, agro-industrial, energy, etc.). The strategies of 11 regions emphasize the expediency of implementing a clustering mechanism, which provides for the development of a concept for the development of regional clusters, and measures to financially stimulate cluster initiatives and existing clusters in the regions. And only in documents of 7 regions it is a question of application of the cluster approach.

According to the analysis, only 4 regional development strategies indicate the need to create a transport and logistics cluster. The documents mostly use such terms as “Transport and logistics infrastructure” (16 regions); “Logistics centre” (14 regions); “Road transport infrastructure” (8 regions); “Transport and logistics hub” (4 regions); “Transport and logistics system” (4 regions); “Transport complex” (3 regions).

Thus, it was found that at the present stage of development of the regional economy it is advisable to transform the transport and logistics systems in the economic regions of Ukraine on the basis of clustering, taking into account their specifics.

Conclusions and prospects for further research.

As a result of the study, it was found that for the further development of clusters in Romania it is necessary to develop a set of measures, namely: stimulating exports through internationalization; formation of fundamentally new value chains integrated into vertical industries; business strategy; assistance in financing innovative projects for technology transfer based on the mechanism of public-private partnership and with the involvement of private investment; use of cluster management tools; developing tools that can support efficient resource allocation processes among cluster members; training; formation of proper organizational culture.

The implementation of these measures should be carried out with the help of the European Cluster Cooperation Platform and the European Cluster Improvement Program, the EU Action “Cluster Go International”, and the Eurocluster Program for the period 2021-2027.

It should be noted that it is advisable to adapt and implement the Romanian practice in the context of the regional development of Ukraine. This issue needs considerable attention from representatives of the scientific, educational, governmental, business, and civic environment.

Prospects for further research are the generalization and systematization of existing approaches to the interpretation of the concepts of “clustering of the economy”, “regional cluster policy”, “cluster infrastructure”.

References

1. Benner, M. (2017). Smart specialization and cluster emergence: Elements of evolutionary regional policies. In D. Fornahl, R. Hassink (Eds.). *The Life Cycle of Clusters: A Policy Perspective* (pp. 151-172). UK: Edward Elgar Publishing.
2. Devlin, G., Bleackley, M. (1988). Strategic Alliances Guidelines for success. *Long Range Planning*, 21(5), pp. 18-23.
3. Delgado, M., Porter, M., Stern, S. (2010). Clusters and Entrepreneurship. *Journal of Economic Geography*, 10(4), pp. 495-518.
4. Dussauge, P., Garrette, B., Mitchell, W. (2000). Learning from competing partners: Outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal*, 21(2), pp. 99-103.
5. Enright, M. J. (1992). Why Clusters are the Way to Win the Game? *World link*, 5, pp. 24-25.
6. Feser, E.J. (1998). *Old and New Theories of Industry Clusters*. London: Selected Works.
7. Fornahl, D., Grashof, N. (2021). *The Globalization of Regional Clusters. Between Localization and Internationalization*. Cheltenham, UK: Edward Elgar Publishing. DOI: <http://dx.doi.org/10.4337/9781839102486>.
8. Frankowska, M. (2015). Klastry logistyczne jako ogniwa globalnych lancuchow dostaw. *Logistyka*, 3, pp. 5633-5637.
9. Hassink, R. (2021). Strategic cluster coupling. In D. Fornahl, N. Grashof (Eds.). *The Globalization of Regional Clusters. Between Localization and Internationalization* (pp. 15-32). Cheltenham, UK: Edward Elgar Publishing.
10. Kowalski, A. M. (2020). Towards an Asian Model of Clusters and Cluster Policy: The Super Cluster Strategy. *Journal of Competitiveness*, 12(4), pp. 74-90. DOI: <https://doi.org/10.7441/joc.2020.04.05>.
11. Kruczek, M., Zebrucki, Z. (2014). Koncepcja klastrow logistycznych. *Zeszyty naukowe Politechniki Slaskiej. Seria: Organizacja i zarzadzanie*, 70, pp. 229-241.
12. Morgulis-Yakushev, S., Sölvell, Ö. (2017). Enhancing dynamism in clusters: A model for evaluating cluster organizations' bridge-building activities across cluster gaps. *Competitiveness Review*, 27(2), pp. 98-112. DOI: <https://doi.org/10.1108/CR-02-2016-0015>.
13. Porter, M. E. (1985). *Competitive advantage*. New York: Free press; London: Collier Macmillan.
14. Porter, M. E. (1998). Clusters and New Economics of Competition. *Harvard Business Review*, November – December, pp. 77-90.
15. Swann, G.M.P., Preveser, M.A. (1996). Comparison of the Dynamics of Industrial Clustering in Computing and Biotechnology. *Research Policy*, 25(7), pp. 1139-1157.
16. Szuster, M. (2012). Rola klastrow we wspieraniu innowacyjnosci. *Ekonomiczne Problemy Uslug*, 94, pp. 311-325.
17. Zrobek, J. (2011). Marketing w klastrach logistycznych. *Acta Universitatis Lodziensis. Folia Oeconomica*, 251, pp. 5-16.
18. Orlova, A. A., Buhaieva, M. V. (2017). The experience of formation and development of clusters in post-socialist countries in the context of national security of Ukraine. *Efektivna ekonomika*, 11. Retrieved from <https://www.economy.nayka.com.ua/?op=1&z=5892> (accessed 27 October 2021) [in Ukrainian].
19. Demedyuk, O. P. (2020). Perspektyvy rozvytku transkordonnykh klasteriv v prykordonnykh oblastiakh Zakhidnoi Ukrainy [Perspectives of cross-border clusters development in the border oblasts of the Western Ukraine]. *Regional Economy*, 2, pp. 58-71. DOI: <https://doi.org/10.36818/1562-0905-2020-2-4> [in Ukrainian].
20. Kyzym, M. O., Khaustova, V. Ye., Dorovskiy, O. V. (2011). Klasterni struktury v ekonomikakh krain svitu [Cluster structures in the economies of the world]. *The Problems of Economy*, 4, pp. 24-32 [in Ukrainian].
21. Voynarenko, M. P., Dubnytskyi, V. I. et al. (2019). *Teoriia i praktyka klasteryzatsii ekonomiky* [Theory and practice of clustering of the economy]. Kamianets-Podilskyi: Aksioma [in Ukrainian].
22. Finagina, O. V. et al. (2018). *Kontseptualni zasady pidtrymky maloho ta serednoho biznesu v Ukraini: pytannia klasteryzatsii ta biznes-inkubatsii* [Conceptual principles of support for small and medium-sized businesses in Ukraine: issues of clustering and business incubation]: a collective monograph. Cherkasy, Publisher Ponomarenko R.V. [in Ukrainian].
23. Ilchuk, V. P., Khomenko, I. O., Lysenko, I. V. (2013). *Klasterna stratehiia rozvytku ekonomiky rehionu* [Cluster strategy for economic development in the region]. Chernihiv, CSTU [in Ukrainian].
24. Myshchysyn, O., Kozyk, V. (2020). Assessment of the potential of formation and development of cross-border clusters in the ukrainian-polish cross-border region. *Evropskyi časopis ekonomiky a managementu*, 6(4), pp. 6-13.
25. Kudriavets, Y. (2016). Zasady yevropeiskoi polityky stvorennia innovatsiinykh klasteriv ta pohlyblenoj vzaïmodii z Ukrainoiu [Principles of European policy of creating innovation clusters and deepening cooperation with Ukraine]. *Investytsii: praktyka ta dosvid – Investments: practice and experience*, 5, pp. 64-72 [in Ukrainian].
26. Kuryliak, Ye. (2014). Klasteryzatsiia: yevropeyskyi dosvid i yoho implementatsiia v Ukraini [Clustering: European experience and its implementation in Ukraine]. *Journal of European Economy*, 13(3), pp. 293-316 [in Ukrainian].
27. Mamonova, V. V., Kuts, Yu. O., Makarenko, O. M. et al. (2013). *Formuvannia terytorialnykh klasteriv yak instrumentu rehionalnoho rozvytku* [Formation of territorial clusters as a tool of regional development]. Kyiv, NAPA [in Ukrainian].
28. Kyzym, M. (2011). *Promyslova polityka ta klasterizatsiia ekonomiky Ukrainy* [Industrial policy and clustering of the economy of Ukraine]: monograph. Kharkiv, INZHEK [in Ukrainian].
29. Lebedeva, A. (2017). Problems and prospects of the establishment and functioning of cross-border clusters in Ukraine. *Derzhavne upravlinnia: udoskonalennia ta rozvytok – Public administration: improvement and development*, 11. Retrieved from <https://www.dy.nayka.com.ua/?op=1&z=1146> (accessed 27 October 2021) [in Ukrainian].
30. Ryneyskaya, L. S. (2016). Klasteri u suchasniï hlobalniï ekonomitsi [The clusters in the modern global economy]. *Efektivna ekonomika*, 5. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=4971> (accessed 27 April 2022) [in Ukrainian].
31. Shashyna, M. (2020). Instytutysniine zabezpechennia rozvytku prostorovykh form orhanizatsii biznesu v Ukraini [Institutional support for the development of spatial forms of business organization in Ukraine]. *International Humanitarian University Herald. Economics and Management*, 42, pp. 148-153. DOI: <https://doi.org/10.32841/2413-2675/2020-42-26> [in Ukrainian].
32. Shevtsova, H. Z., Shvets, N. V. (2017). Klasteryzatsiia khimichnoi promyslovosti: yevropeyskyi dosvid ta uroky dlia Ukrainy [Clustering of the chemical industry: European experience and lessons for Ukraine]. *Visnyk ekonomichnoi nauky Ukrainy – Herald of the Economic Sciences of Ukraine*, 2(33), pp. 103-109 [in Ukrainian].
33. Sokolenko, S. I. (2004). *Klasteri v hlobalniï ekonomitsi* [Clusters in the global economy]. Kyiv, Lohos [in Ukrainian].
34. Voynarenko, M. P. (2018). *Clusters in the institutional economics*. Schweinfurt, Germany: Time Realities Scientific Group UG (Haftungsbeschränkt).

35. Zahorskyi, V. S., Kyzym, M. O., Khaustova, V. Ye. (2010). Klasteryzatsiia ekonomik krain svitu y Ukrainy: dosvid i problemy [Clustering of economies of the world and Ukraine: experience and problems]. *Problems of the economy*, 1, pp. 3-7 [in Ukrainian].
36. Ivanov, S. V., Liashenko, V. I., Trushkina, N. V. (2020). Pravovi aspekty stvorennia transportno-lohistychnykh klasteriv v rehionakh Ukrainy [Legal aspects of creation of transport and logistics clusters in the regions of Ukraine]. *Gesellschaftsrechtliche Transformationen von wirtschaftlichen Systemen in den Zeiten der Neo-Industrialisierung*: Collective monograph (s. 661-668). Nürnberg, Verlag SWG imex GmbH [in Ukrainian].
37. Trushkina, N., Dzwigol, H., Kwilinski, A. (2021). Cluster Model of Organizing Logistics in the Region (on the Example of the Economic District "Podillya"). *Journal of European Economy*, 20(1), pp. 127-145. DOI: <https://doi.org/10.35774/jee2021.01.127>.
38. Liashenko, V., Ivanov, S., Trushkina, N. (2021). A Conceptual Approach to Forming a Transport and Logistics Cluster as a Component of the Region's Innovative Infrastructure (on the Example of Prydniprovsky Economic Region of Ukraine). *Virtual Economics*, 4(1), pp. 19-53. DOI: [https://doi.org/10.34021/ve.2021.04.01\(2\)](https://doi.org/10.34021/ve.2021.04.01(2)).
39. Pushak, H. I., Trushkina, N. V. (2021). Obruntuvannia dotsilnosti stvorennia transportno-lohistychnoho klasteru v Karpatskomu ekonomichnomu raioni [Substantiation of expediency of creation of transport and logistics cluster in Carpathian economic region]. *Economic Herald of the Donbas*, 1(63), pp. 61-77. DOI: [https://doi.org/10.12958/1817-3772-2021-1\(63\)-61-77](https://doi.org/10.12958/1817-3772-2021-1(63)-61-77) [in Ukrainian].
40. Liashenko, V. I., Osadcha, N. V., Trushkina, N. V. (2021). Mozhlyvi orhanizatsiino-pravovi formy transportno-lohistychnoho klasteru v Prychornomorskomu ekonomichnomu raioni [Possible organizational and legal forms of transport and logistics cluster in the Black Sea economic region]. *Black Sea Economic Studies*, 67, pp. 60-70. DOI: <https://doi.org/10.32843/bses.67-10> [in Ukrainian].
41. European Union (2019). *Cluster programmes in Europe and beyond*. European Observatory for Clusters and Industrial Change. Luxembourg: Publications Office of the European Union.
42. Yurchak, O. et al. (2020). *Natsionalna prohrama klasterneho rozvytku do 2027 roku. Kontseptsiiia. Oriientyry rozvytku. Rekomendatsii* [National program of cluster development until 2027. Concept. Landmarks of development. Recommendations]. Kyiv, AIAU, Platforma Industry4Ukraine [in Ukrainian].

Ляшенко В. І., Трушкіна Н. В. Кластерна складова сталого розвитку регіонів: румунська практика та українські реалії

На даний час особливої актуальності набувають проблеми вдосконалення управління розвитком кластерних структур в економічних районах України з урахуванням передового румунського досвіду відповідно до сучасних викликів, пов'язаних із смарт-спеціалізацією, модернізацією виробництва та цифровізацією організаційних й управлінських процесів.

Для подальшого розвитку кластерних утворень у Румунії необхідно розробити комплекс заходів, а саме: стимулювання експорту шляхом інтернаціоналізації; формування принципово нових ланцюгів доданої вартості, інтегрованих у вертикальні галузі; стратегування діяльності; сприяння фінансуванню інноваційних проєктів для передачі технологій на основі механізму публічно-приватного партнерства та із залученням приватних інвестицій; використання інструментів кластерного менеджменту; розроблення інструментарію, який може підтримувати ефективні процеси розподілу ресурсів між учасниками кластеру; підготовка кадрів; формування належної організаційної культури. Реалізація перелічених заходів має здійснюватися за допомогою Європейської платформи кластерного співробітництва та у рамках Європейської програми удосконалення кластерів, Акції ЄС «Cluster Go International», Програми єврокластерів на період 2021-2027 роки.

На підставі узагальнення передового румунського досвіду встановлено, що для підвищення конкурентоспроможності національної й регіональної економік необхідно створювати кластерні структури як ефективні форми партнерства. Але у результаті дослідження виявлено, що в чинному законодавстві України не приділяється належної уваги формуванню й функціонуванню кластерів. Для цього необхідно внести зміни і доповнення до Концепції створення кластерів в Україні, Стратегії регіонального розвитку до 2027 року і Планів заходів з їх реалізації на 2021-2023 роки щодо створення кластерних структур як суб'єкта господарювання. Доцільним є розроблення та схвалення Концепцій кластерної політики та Цільової програми «Формування та розвиток кластерних утворень у регіонах України на 2021-2023 роки», у яких необхідно передбачити створення кластерів як особливого виду об'єднань підприємств у різних сферах діяльності та з урахуванням регіональної специфіки.

Ключові слова: регіональна економіка, економічний район, кластеризація, кластерна ініціатива, кластерна політика, кластерний підхід, кластерна структура, транспортно-логістичний кластер, європейська практика, трансформація, модернізація, смарт-спеціалізація, цифровізація, глобалізація.

Liashenko V., Trushkina N. Cluster Component of Sustainable Regional Development: Romanian Practice and Ukrainian Realities

At present, the problems of improving the management of cluster structures in the economic regions of Ukraine, taking into account the best Romanian experience in accordance with modern challenges related to smart specialization, modernization of production and digitalization of organizational and managerial processes, are especially relevant.

For the further development of clusters in Romania it is necessary to develop a set of measures, namely: stimulating exports through internationalization; formation of fundamentally new value chains integrated into vertical industries; business strategy; assistance in financing innovative projects for technology transfer based on the mechanism of public-private partnership and with the involvement of private investment; use of cluster management tools; developing tools that can support efficient resource allocation processes among cluster members; training; formation of proper organizational culture. The implementation of these measures should be carried out with the help of the European Cluster Cooperation Platform and the European Cluster Improvement Program, the EU Action "Cluster Go International", and the Eurocluster Program for the period 2021-2027.

Based on the generalization of the best Romanian experience, it is established that in order to increase the competitiveness of national and regional economies, it is necessary to create cluster structures as effective forms of partnership. However, the study revealed that the current legislation of Ukraine does not pay due attention to the formation and functioning of clusters. To do this, it is necessary to make changes and additions to the Concept of creating clusters in Ukraine, Regional Development Strategies until 2027, and Action Plans for their implementation for 2021-2023 to create cluster structures as a business entity. It is expedient to develop and approve the Concepts of cluster policy and the Target Program "Formation and development of clusters in the regions of Ukraine for

2021-2023”, which should provide for the creation of clusters as a special type of enterprise association in various fields and taking into account regional specifics.

Keywords: regional economy, economic region, clustering, cluster initiative, cluster policy, cluster approach, cluster structure, transport and logistics cluster, European practice, transformation, modernization, smart specialization, digitalization, globalization.

Ляшенко В. И., Трушкина Н. В. Кластерная составляющая устойчивого развития регионов: румынская практика и украинские реалии

В настоящее время особую актуальность приобретают проблемы совершенствования управления развитием кластерных структур в экономических районах Украины с учётом передового румынского опыта в соответствии с современными вызовами, связанными со смарт-специализацией, модернизацией производства и цифровизацией организационных и управленческих процессов.

Для дальнейшего развития кластерных образований в Румынии необходимо разработать комплекс мероприятий, а именно: стимулирование экспорта путём интернационализации; формирование принципиально новых цепей добавленной стоимости, интегрированных в вертикальные отрасли; стратегирование деятельности; содействие финансированию инновационных проектов для передачи технологий на основе механизма публично-частного партнёрства и с привлечением частных инвестиций; использование инструментов кластерного менеджмента; разработка инструментария, который может поддерживать эффективные процессы распределения ресурсов между участниками кластера; подготовка кадров; формирование организационной культуры. Реализация перечисленных мероприятий должна осуществляться с помощью Европейской платформы кластерного сотрудничества и в рамках Европейской программы совершенствования кластеров, Акции ЕС «Cluster Go International», Программы еврокластеров на период 2021-2027 годы.

На основании обобщения передового румынского опыта установлено, что для повышения конкурентоспособности национальной и региональной экономики необходимо создавать кластерные структуры как эффективные формы партнёрства. Но в результате исследования обнаружено, что в действующем законодательстве Украины не уделяется должного внимания формированию и функционированию кластеров. Для этого необходимо внести изменения и дополнения в Концепцию создания кластеров в Украине, Стратегии регионального развития до 2027 года и Планы мероприятий по их реализации на 2021-2023 годы по созданию кластерных структур как субъекта хозяйствования. Целесообразно разработать Концепцию кластерной политики и Целевую программу «Формирование и развитие кластерных образований в регионах Украины на 2021-2023 годы», в которых необходимо предусмотреть создание кластеров как особого вида объединений предприятий в различных сферах деятельности и с учётом региональной специфики.

Ключевые слова: региональная экономика, экономический район, кластеризация, кластерная инициатива, кластерная политика, кластерный подход, кластерная структура, транспортно-логистический кластер, европейская практика, трансформация, модернизация, смарт-специализация, цифровизация, глобализация.

Received by the editors: 12.11.2021
and final form 16.12.2021