DEVELOPMENT OF PRODUCTIVE FORCES AND REGIONAL ECONOMY

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DEVELOPMENT OF MECHANISM FOR FORMATION AND ACTIVATION OF TERRITORIAL IMAGE POTENTIAL

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Zinchenko Olha, PhD, Associate Professor, Department of Management and Tourism Business, Oles Honchar Dnipro National University, Ukraine, e-mail: ol-zinchenko@ukr.net, ORCID: http://orcid.org/0000-0002-5414-7839

The object of research is the mechanism of formation and activation of the potential of the regional image. In the practice of regional management, a certain algorithm for creating an image is used, but the problem is the lack of a single tool for assessing and attracting the potential of the territory to create its attractive image. To overcome this problem, the author developed a mechanism for forming and activating the potential of a regional image. This mechanism envisages the attraction to the image-making system of the territory of its entire resource potential, a very broad toolkit not only of administrative science, but also of sociology, psychology, economic analysis, and marketing.

To solve the main research tasks, such methods as system analysis, structuring, dialectical method, control theory are used. With the help of these methods, the structure of the mechanism is proposed in the form of the functioning of systems for diagnosing potential, image formation and its promotion in external space. The functional content of these systems is revealed, their tools and methodological base are developed, which can be used at various stages of development and promotion of the image. As the main reference point for the functioning of the mechanism, the interests of the consumers of the territory are put forward, their characteristics are specified, a group of stakeholders is determined, their difference from consumers of the territory is justified. Among the basic principles of the functioning of the mechanism, the principle of predictability, phasing, feedback, and productivity is singled out. Their manifestation as a result of using the mechanism is determined.

The developed mechanism is universal, which makes it possible to develop measures, starting from the idea of the image of the territory to promote its holistic image. The use of the mechanism in the practice of regional management will make it possible to intensify the efforts of local authorities and the public to develop and promote the image of the territory on the national and global economic space. The tools of the mechanism can be used to diagnose the potential of regional development and develop measures for territorial marketing.

Keywords: image of the territory, image potential, regional management, territorial marketing, diagnostic system.

References

 Semchenko, O. A. (2013). Imidzhmeikinh rehioniv Ukrainy: praktychni napratsiuvannia. Osvita rehionu, 1, 174–179.

- Knight, D. B. (1982). Identity and Territory: Geographical Perspectives on Nationalism and Regionalism. *Annals of the Association of American Geographers*, 72 (4), 514–531. doi: http:// doi.org/10.1111/j.1467-8306.1982.tb01842.x
- Liu, L., Zhou, B., Zhao, J., Ryan, B. D. (2016). C-IMAGE: city cognitive mapping through geo-tagged photos. *GeoJournal*, *81 (6)*, 817–861. doi: http://doi.org/10.1007/s10708-016-9739-6
- Salesses, P., Schechtner, K., Hidalgo, C. A. (2013). The Collaborative Image of The City: Mapping the Inequality of Urban Perception. *PLoS ONE*, *8* (7), e68400. doi: http://doi.org/10.1371/journal.pone.0068400
- Rousseau, M. (2009). Re-imaging the City Centre for the Middle Classes: Regeneration, Gentrification and Symbolic Policies in 'Loser Cities'. *International Journal of Urban and Regional Research*, 33 (3), 770–788. doi: http://doi.org/10.1111/j.1468-2427.2009.00889.x
- 6. Jose, M. A., Vila-López, T. (2014). How can mega events and ecological orientation improve city brand attitudes? *International Journal of Contemporary Hospitality Management, 26 (4), 629-652.* doi: http://doi.org/10.1108/ ijchm-03-2013-0117
- Harcup, T. (2010). Re-imaging a post-industrial city: The Leeds St Valentine's Fair as a civic spectacle. *City: analysis of urban trends, culture, theory, policy, action, 4 (2), 215–231.* doi: http:// doi.org/10.1080/13604810050147839
- Balibrea, M. P. (2010). Urbanism, culture and the post-industrial city: Challenging the 'Barcelona model'. *Journal of Spanish Cultural Studies*, 2 (2), 187–210. doi: http://doi.org/ 10.1080/14636200120085174
- 9. Liu, Y., Chen, C. (2007). The effects of festivals and special events on city image design. *Frontiers of Architecture and Civil Engineering in China*, 1 (2), 255–259. doi: http://doi.org/ 10.1007/s11709-007-0032-0
- Romão, J., Guerreiro, J., Rodrigues, P. (2017). Territory and Sustainable Tourism Development: a Space-Time Analysis on European Regions. *Region*, 4 (3), 1–17. doi: http://doi.org/10.18335/region.v4i3.142
- Kim, H., Chen, J. S. (2015). Destination image formation process: a holistic model. *Journal of Vacation Marketing*, 22 (2), 154–166. doi: http://doi.org/10.1177/1356766715591870
- Smith, A. (2005). Conceptualizing City Image Change: The "Re-Imaging" of Barcelona. *Tourism Geographies*, 7 (4), 398–423. doi: http://doi.org/10.1080/14616680500291188
- Eli, A. (2004). Media Strategies for Improving an Unfavorable City Image. *Cities*, 21 (6), 471–479. doi: http://doi.org/ 10.1016/j.cities.2004.08.005
- Shao, Z., Li, D. (2011). Image City sharing platform and its typical applications. *Science China Information Sciences*, 54 (8), 1738–1746. doi: http://doi.org/10.1007/s11432-011-4307-7
- Zinchenko, O. (2017). Project approach to creating the regional image. *European Journal of Management Issues*, 25 (3-4), 176– 183. doi: http://doi.org/10.15421/191721

IMPROVEMENT OF THE CONSTRUCTION INDUSTRY MANAGEMENT OF LATVIA BASED ON THE EXPERIENCE OF CONSTRUCTION ECO-LABELLING IN SCANDINAVIA

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Lisa Inara, Doctoral Student, Baltic International Academy, Riga, Latvia, e-mail: inara.lisa@gmail.com, ORCID: http://orcid.org/ 0000-0003-3087-1846

The object of research is the construction industry in Latvia. This branch of the national economy of Latvia has experienced significant downturns and ups in recent years. The study of the causes and consequences of these fluctuations is important for the country's economy. Among the significant shortcomings can be called a high level of shadow economy in construction, the use of poor-quality building materials, a shortage of labor at all levels of the industry, a long bureaucratic way in the preparation of documents,

Improvement of the Latvian construction industry is possible with the involvement of foreign experience. On an example of the countries of Scandinavia one of the important stages of formation of qualitative and ecological construction is considered. In the Nordic countries, since 1989, a system of eco-labeling of buildings has been applied to buildings commissioned. These documents confirm the use of high-quality building materials, energy efficiency of the building, certification of the company and used materials. Documents on ecolabeling are necessary for residential buildings, private houses and all types of educational institutions and kindergartens. This means that only materials that have been rigorously selected for quality and chemical composition are used for construction.

Using the experience of working with Scandinavian clients, the author has studied the experience of implementing the ecolabeling system of buildings, as well as collected the necessary information to study the research topic and determine the approaches to the Nordic experience in the construction industry in Latvia. The introduction of eco-labeling of buildings and passports into private homes, multi-storey residential buildings, schools, kindergartens and other educational institutions will lead to the use of better construction materials and also to an understanding of the responsibility of general construction contractors, construction companies, and suppliers of building materials. Also, the use of environmental building materials in residential and educational institutions will lead to better health of the population, in particular, to reducing allergies and diseases of the respiratory system.

The introduction of eco-labels and passports for buildings should be introduced at the state level, and the requirements of the European Union for the use of environmental materials in construction should be adapted for Latvia. It is important to competently and systematically develop a model for the introduction of modern management approaches to the construction industry based on the experience of advanced countries. Toughening requirements for all stages of the construction process, using safe building materials, as well as strengthening labor protection requirements, will improve the quality of the entire construction industry as a whole. The introduction of eco-labeling systems will take time, but will lead to positive results.

Keywords: construction industry, eco-labeling of buildings, experience introduction, building materials, Basta, Swan.

- BU030c. Construction output at current prices, thsd euro. Available at: https://data1.csb.gov.lv/pxweb/lv/rupnbuvn/rupnbuvn_ buvn_isterm/BU030c.px
- Sauka A., Putniņš T. Enu ekonomikas indekss Baltijas valstīs 2009-2017. gadā. Available at: http://www.sseriga.edu/en/ news-and-events/news/neskatoties-uz-stabilo-ekonomikas-izaugsmi-nu-ekonomika-latvij-ir-pieaugusi-par-1-3.html
- Būvkomersantu klasifikācija. Latvijas Būvuzņēmēju Partnerība. Available at: http://www.latvijasbuvnieki.lv/position/buvkomersantu-klasifikacija/
- 4. Būvuzņēmumi aizvien aicināti atbalstīt būvniecības ģenerālvienošanos; parakstījuši jau 99% no kvoruma. Latvijas Būvuzņēmēju Partnerība. Available at: http://www.latvijasbuvnieki.lv/ buvuznemumi-aizvien-aicinati-atbalstit-buvniecibas-generalvienosanos/
- Partnerība, FM un VID paraksta sadarbības memorandu. Latvijas Būvuzņēmēju Partnerība. Available at: http://www.latvijasbuvnieki.lv/1632-2/
- FICIL public discussion: «BUILDING TRUST». Available at: https:// www.ficil.lv/events/ficil-public-discussion-building-trust/
- Elektroniskā darba laika uzskaite pagrieziena punkts Latvijas būvniecībā. Available at: http://latvijas-buvnieku-asociacija. lv/?p=2545
- 8. Revenue of building construction in Latvia from 2009 to 2020 (in million U.S. dollars). Available at: https://www.statista. com/forecasts/393590/latvia-building-construction-revenueforecast-nace-f4120
- The Lead market initiative and sustainable construction. Screening national building regulations. Latvia. 14.02.2011. Official website of EU.
- Increased exchange in the Building Sector (2007). Nordic Council of Ministers, Copenhagen, 539. Available at: https://books.google.lv/books?id=YlkFD0f55eIC&printsec=frontcover&hl=ru#v=onepage&q&f=false
- Construction Sector Profile Estonie, Latvia, Lithuania. Enterprise. Available at: https://www.enterprisecanadanetwork.ca/ _uploads/resources/Construction-Sector-Profile-Estonie-Latvia-Lithuania.pdf
- Lielgaidina, L., Geipele, I. (2011). Theoretical Aspects of Competitiveness in Construction Enterprises. *Business, Management* and Education, 9 (1), 67–80. doi: https://doi.org/10.3846/ bme.2011.05
- Baldo, G. L., Cesarei, G., Minestrini, S., Sordi, L. (2014). The EU Ecolabel scheme and its application to construction and building materials. *Eco-Efficient Construction and Building Materials*, 98–124. doi: https://doi.org/10.1533/9780857097729.1.98
- 14. In 2017, construction output grew by 19.5%. Central Statistical Bureau of Latvia. Available at: https://www.csb.gov.lv/en/statistics/statistics-by-theme/construction-industry-trade/construction/search-in-theme/2367-construction-and-building
- Guidance on CLP. European Chemical Agency. Available at: https:// echa.europa.eu/web/guest/guidance-documents/guidance-on-clp

- 16. About BASTA. Guidance to Sustainable Construction Materials. Available at: https://www.bastaonline.se/about-basta/aboutbasta/?lang=en
- What are Ecolabelled products? Available at: http://www.svanen. se/en/About-us/Why-Ecolabelling/

ANALYSIS OF THE THEORETICAL AND METHODOLOGICAL SUPPORT OF THE STUDY OF ENERGY SECURITY OF THE COUNTRY

page 18-23

Kyzym Mykola, Doctor of Economic Sciences, Professor, Corresponding Member of NAS of Ukraine, Research Center for Industrial Problems of Development of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine, e-mail: m.kyzym@gmail.com, ORCID: http://orcid.org/0000-0001-8948-2656

Rudyka Victor, PhD, Research Center for Industrial Problems of Development of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine, e-mail: ndc_ipr@ukr.net, ORCID: http://orcid.org/0000-0001-9563-3422

World energy consumption is constantly growing. In these conditions, the problem of finding new opportunities to meet the growing needs in energy resources is becoming more acute. This situation leads to the need to consider the directions and prospects for development of synthetic liquid motor fuel in the context of solving the problem of enhancing the country's energy security. The object of this research is the energy security of the country and its components that characterize the internal and external factors of the functioning of the country's energy system. The components of the country's energy security are fuel and energy resources and the economic and infrastructural elements of the energy system are developed on its territory. One of the main problem areas of the research object is the lack of a unified approach to the interpretation of the essence of the concept of «energy security» and the organization of its assessment process.

During the research methods of analysis, synthesis and system analysis were used.

A systematic analysis of the components of energy security has proved that the generally accepted view is the inclusion of «energy accessibility» to the content of the concept of «energy security». Other components are complementary to this component. Energy security is a generalizing concept of various components and components that can't be characterized by a single indicator. The lack of consensus on the content of this concept leads to a variety of methodological approaches to its evaluation. It is established that most often for the assessment of energy security a system of indicators is used, distributed by components and aggregated in a weighted standardized form into a single integrated indicator, which is the measure of energy security.

It is proved that most of the existing methods provide for the allocation and assessment of individual components of energy security, but not enough attention is paid to assessing its market component. It is substantiated that the basis of the market approach to the assessment of the country's energy security should be an analysis of the market situation of individual energy resources with the aim of determining the reliability and balance of the provision of energy needs.

Keywords: energy security of the country, energy system, fuel and energy complex, liquid motor fuel, methodical approach.

- Ang, B. W., Choong, W. L., Ng, T. S. (2015). Energy security: Definitions, dimensions and indexes. *Renewable and Sustainable Energy Reviews*, 42, 1077–1093. doi: https://doi.org/10.1016/j. rser.2014.10.064
- 2. Voropay, N. I., Senderov, S. M. (2011). Energeticheskaya bezopasnost': sushchnost', osnovnye problemy, metody i rezul'taty issledovaniy. Otkrytiy seminar «Ekonomicheskie problemy energeticheskogo kompleksa». Moscow: Institut narodnohozyaystvennogo prognozirovaniya RAN, 91. Available at: https://ecfor.ru/ wp-content/uploads/seminar/energo/z119.pdf
- Mihalevich, A., Poplavskiy, P., Rimko, D. Metodika ocenki energeticheskoy bezopasnosti Litvy i Belarusi. Institut energetiki Nacional'noy akademii nauk Belarusi. Available at: http://vddb. library.lt/fedora/get/LT-eLABa-0001:J.04~2012~ISSN_2029-0225.V_12.PG_35-48/DS.002.2.01.ARTIC
- Zemlyanij, M., Barannik, V. Kriterii otcinki ta pokazniki energetichnoi bezpeki. Konceptual'ni pidhodi. Nacional'nii institut Strategichnyh doslidzhen' NAN Ukraini. Available at: http:// old.niss.gov.ua/Monitor/november08/19.htmhtml
- Kyzym, M. O., Leliuk, O. V. (2012). Netradytsiynyi pryrodnyi haz u sviti ta Ukraini: zapasy ta perspektyvy vydobutku. Kharkiv: VD «INZhEK, 156.
- 6. Ebinger, C. K. The Meaning of Energy Security Depends on Who You Are. The Brookings Institution. Available at: https:// www.brookings.edu/opinions/the-meaning-of-energy-securitydepends-on-who-you-are/
- Jewell, J. (2011). The IEA model of short-term energy security (MOSES). International Energy Agency. Available at: https:// www.iea.org/media/freepublications/oneoff/moses_paper.pdf
- Sovacool, B. K., Mukherjee, I., Drupady, I. M., D'Agostino, A. L. (2011). Evaluating energy security performance from 1990 to 2010 for eighteen countries. *Energy*, *36* (10), 5846–5853. doi: https://doi.org/10.1016/j.energy.2011.08.040
- 9. Yueh, L. (2010). An International Approach to Energy Security. *Global Policy*, 1 (2), 216–217. doi: https://doi.org/10.1111/j.1758-5899.2010.00004.x
- White, J. B. Wall Street Journal: Chamber Attempts to Put Number on Energy Security. Available at: https://www.globalenergyinstitute.org/wall-street-journal-chamber-attempts-put-numberenergy-security
- Energy security and climate policy: assessing interactions (2007). OECD/IEA, 149. Available at: https://www.iea.org/publications/freepublications/publication/energy_security_climate_ policy.pdf
- Measuring Short-Term Energy Security (2011). International Energy Agency, 16. Available at: http://www.iea.org/publications/freepublications/publication/Moses.pdf
- 13. International Index of Energy Security Risks: Assessment Risks in a Global Energy Market. Institute for 21st Century Energy, U.S. Chamber of Commerce. Available at: http://www.energyxxi.org/ sites/default/files/InternationalIndex2012.pdf

- Developing an Energy Security Index. Chap. 2 (2011). Quantitative Assessment of Energy Security Working Group ERIA Research Project Report. Jakarta: ERIA, 7–47. Available at: http://www.eria.org/Chapter %202. %20Developing %20and %20Energy %20Security %20Index.pdf
- 15. World Energy Trillema. A more sustainable path to development // World Energy Council. URL: http://www.jisea.org/ pdfs/2014_annual_meeting_macnaughton.pdf
- 16. The Global Energy Architecture Performance Index World Economic Forum. Available at: http://stateofgreen.com/files/ download/905

THE SUBSTANTIATION OF THE NECESSARY TO OBSERVE THE SOCIAL JUSTICE IN THE COURSE OF REFORMING THE TERRITORIAL STRUCTURE OF UKRAINE

page 24–29

Krasnonosova Olena, PhD, Associate Professor, Department of Macroeconomic Policy and Regional Development, Research Center for Industrial Problems of Development of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine, e-mail: krasnonosova@gmail.com, ORCID: http://orcid.org/0000-0002-0863-3705

Mykhailenko Daria, PhD, Associate Professor, Department of Macroeconomic Policy and Regional Development, Research Center for Industrial Problems of Development of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine, e-mail: mikhailenko.dg@gmail.com, ORCID: http://orcid.org/0000-0002-8420-6510

The object of research is the process of observing social justice in the course of reforming the territorial structure of Ukraine. The reform of local self-government, which significantly intensified over the last five years in the social and economic system of Ukraine, is implemented against the backdrop of eurointegration processes and the globalization of the economy, can't but affect the results of decentralization of power. One of the important problems of the process of reforming the territorial structure of Ukraine is the observance of social justice when achieving an economic effect from activities that are being implemented.

During the research, theoretical and empirical methods and techniques were used, namely: analysis and synthesis, induction and deduction, logic theory, cognitive modeling, comparative studies, abstraction, formalization and structural decomposition, content analysis.

A number of new scientific results of varying degrees of novelty were obtained. Generalized and analyzed theoretical aspects of the worldview platform for reforming the territorial structure. It is proved that the implementation of foreign experience should take into account the mental specifics of Ukrainian society. A cognitive model of the cause-effect relationships between the economic and social components of the regional system is constructed. It proves the priority of the three-level construction of the state, in which the territorial communities are the basic link. The composition of the model of the economic system of the region proposed to include raw materials and human components, as well as the main means of production, as characteristics of the state of the economic system. It is calculated the tightness of the links between economic and social indicators, as an indicator of the observance of social justice in society.

The construction of a model of cause-effect relationships between the components of the socio-economic system of the region made it possible to prove that the notion of social justice is inseparable from the economic results of managing its primary links. Effective functioning of each of the territorial communities, as primary links in the administrative system of the region, is an indispensable condition for the formation of social standards of living of the population at the level of world analogues.

Keywords: socio-economic system of the region, administrative structure, territorial community, social justice, economic efficiency.

- Terytorialna hromada: poniattia, funktsiyi, rol, status. Available at: http://www.ukr.vipreshebnik.ru/finans/341-teritorialnagromada-ponyattya-funktsiji-rol-status.html
- Konstytutsiya Ukrainy. Zakon vid 28.06.1996 No. 254k/96-VR. Verkhovna Rada Ukrainy. Available at: http://zakon3.rada.gov. ua/laws/show/254 %D0 %BA/96- %D0 %B2 %D1 %80
- Storonianska, I. (2006). Otsinka asymetriyi sotsialno-ekonomichnoho rozvytku rehioniv Ukrainy ta obgruntuvannia priorytetiv derzhavnoi rehionalnoi polityky. *Rehionalna ekonomika*, 4, 101–111.
- Umanets, T. (2007). Informatsiyno-analitychna baza rehionalnoho upravlinnia: suchasnyi stan ta perspektyvy rozvytku. *Ekonomika Ukrainy*, 8, 39–45.
- Rehiony u systemi terytorialnoho podilu pratsi. Available at: https://pidruchniki.com/1644061038779/rps/regioni_sistemi_ teritorialnogo_podilu_pratsi
- Danylyshyn, B. (2010). Sotsialna bezpeka pidhrunttia staloho rozvytku. Visnyk NAN Ukrainy, 1, 20–28.
- Brelik, A. (2010). Marketing terytorialny a kreowanie regionów. Zeszyty naukowe. *Polityki europejskie, finanse i marketing, 3 (52)*, 322–327.
- 8. Sheridan, P., Rommelfanger, E., Schroers, J. O. (2005). GISbased modeling of land use systems: EU Common Agricultural Policy reform and its impact on agricultural land use and plant species richness. 45th Congress of the European Regional Science Association. Amsterdam, 24.
- Sarafopoulos, G., Hazakis, K. J., Ioannidis, P. G. (2014). Modeling economic growth policy interaction with local government reform: Evidence from Eastern Macedonia and Thrace. *Journal* of Economics and Business, XVII (2), 39–67.
- Rutherford, T. F., Törmä, H. (2009). Efficiency of Fiscal Measures in Preventing Out-migration from North Finland. *Regional Studies*, 44 (4), 465–475. doi: https://doi. org/10.1080/00343400802508786
- Barrington, M. Jr. (2012). Social origins of dictatorship and democracy: lord and peasant in the making of the modern world (with a new foreword by Edward Friedman and James C. Scott ed.). Boston: Beacon Press, 430.
- Masuda, Y. (1985). Hypothesis on the genesis of homo intelligent. *Futures*, 17 (5), 479–494. doi: https://doi.org/10.1016/0016-3287(85)90060-6
- Friedmann, J. (1966). Regional Development Policy: A Case Study of Venezuela. MIT Press, 279.

- Produktyvni syly yak materialna osnova vyrobnychoi systemy. Available at: https://uk.wikipedia.org/wiki/Продуктивнi_сили
- Ofitsiynyi sait Derzhavnoi sluzhby statystyky Ukrainy. Available at: http://www.ukrstat.gov.ua
- Vyrobnycha funktsiya Ch. Kobba ta P. Duhlasa. Available at: http://library.if.ua/book/120/8022.html

INTRODUCTION OF THE SMART CITIES MODEL AS ONE OF PRIORITIES OF SOCIAL AND ECONOMIC DEVELOPMENT OF TERRITORIES

page 30-35

Haibullin Linar, Postgraduate Student, Department of Economy of the Region, Branches and Enterprises, Rostov State University of Economics (RSUE), Rostov-on-Don, Russia, e-mail: linxai10@yandex.ru, ORCID: http://orcid.org/0000-0002-3838-8341

The object of research is the perspective model of creation of the cities of comfortable accommodation of the population under the name «Smart cities». This model is an effective and advanced solution of the problem of development of regional and municipal economy now.

One of the most problem places of the continuing growth of the cities and the accelerated rates of an urbanization of territories is emergence new conditions of use of scarce resources against the background of the growing needs of the population. The most important task of municipalities in modern conditions is finding solutions for creation to the population of the region of comfortable conditions of accommodation. The growing rates of urbanization define set of such conditions of use of energy and water resources, elements of social infrastructure which would meet in full degree requirements of society. Therefore the relevance of use of criterion of efficiency from the point of view of satisfaction of needs of social and economic character and limitation of the available resources increases.

In work during the research methods of the scientific analysis by means of which has become possible to analyze the most different interpretations of the concept Smart cities and approaches to its formation were used. The statistical data used during the research have shown that the efficiency of social and economic development of regions and the country anyway assumes formations of «the clever cities» and reduction of city and regional infrastructure by all according to norms of Smart city.

By results of a research data that as the solution of the problems arising during urbanization, one of innovative concepts assuming development of city infrastructure and increase in efficiency of use of resources – «Smarts city» can be applied are obtained.

Thanks to it an opportunity to depict a concrete set of unique characteristics which the region or the city has to have is provided to have the right to be called «Smart city» and to define the major factors influencing their formation.

Keywords: regional economy, regional development, Smart city, priorities of regional development.

References

 Bouskela, M. Casseb, M., Bassi, S., De Luca, C., Facchina, M. (2016). *The Road toward Smart Cities: Migrating from Traditional* *City Management to the Smart City*. Inter-American Development Bank, 7101. doi: http://doi.org/10.18235/0000377

- Perboli, G., De Marco, A., Perfetti, F., Marone, M. (2014). A New Taxonomy of Smart City Projects. *Transportation Research Procedia*, *3*, 470–478. doi: http://doi.org/10.1016/j.trpro.2014.10.028
- Namiot, D., Sneps-Sneppe, M. (2014). On software standards for smart cities: API or DPI. Proceedings of the 2014 ITU Kaleidoscope Academic Conference: Living in a Converged World – Impossible Without Standards? 169–174. doi: http://doi.org/10.1109/ kaleidoscope.2014.6858494
- Kortov, S. V., Tolmachev, D. E. (2018). Kontseptsiya postroeniya «umnogo regiona» na territorii Sverdlovskoy oblasti. Ekaterinburg. Available at: www.midural.ru/download.php?id=_2018611109.pdf. Last accessed: 19.03.2018
- Zhertovskaya, E. V., Yakimenko, M. V. (2018). Vozmozhnosti i perspektivy ispol'zovaniya tekhnologiy SMART CITY dlya razvitiya turizma territorii. *Fundamental'nye issledovaniya*, 2, 83–89.
- 6. Manville, C., Cochrane, G., Cave, J., Millard, J., Pederson, K. J., Thaarup, R. K. et. al. (2014). *Mapping smart cities in the EU. European Union*. Available at: http://www.europarl.europa. eu/RegData/etudes/etudes/join/2014/507480/IPOL-ITRE_ ET(2014)507480_EN.pdf. Last accessed: 19.03.2018
- Towards Open Urban Platforms for Smart Cities and Communities (2015). Berlin: Memorandum of Understanding. Available at: https://ec.europa.eu/digital-single-market/en/news/memorandum-understanding-towards-open-urban-platforms-smartcities-and-communities. Last accessed: 19.03.2018
- 8. Vanolo, A. (2013). Smartmentality: The Smart City as Disciplinary Strategy. Urban Studies, 51 (5), 883–898. doi: http://doi.org/10.1177/0042098013494427
- 9. Shelton, T., Zook, M., Wiig, A. (2014). The actually existing smart city. *Cambridge Journal of Regions, Economy and Society*, 8 (1), 13–25. doi: http://doi.org/10.1093/cjres/rsu026
- Titov, D. (2018). Smart Cities predlagayut vklyuchit' v strategii razvitiya territoriy. *Ekonomika i zhizn*, 25, 4.

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ANALYSIS OF PECULIARITIES AND PROSPECTS OF DEVELOPMENT OF UKRAINE IN THE CONCEPT OF «INDUSTRY 4.0»

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Andriushchenko Kateryna, Doctor of Economic Sciences, Associate Professor, Department of Economics and Entrepreneurship, SHEE «Kyiv National Economic University named after Vadym Hetman», Ukraine, e-mail: katya373@i.ua, ORCID: http://orcid.org/0000-0002-6274-5310

Shergina Lidiya, PhD, Associate Professor, Department of Economics and Entrepreneurship, SHEE «Kyiv National Economic University named after Vadym Hetman», Ukraine, e-mail: lidiyashergina@ukr.net, ORCID: http://orcid.org/0000-0001-9031-0616

Kovtun Vita, PhD, Associate Professor, Department of Economics and Entrepreneurship, SHEE «Kyiv National Economic University named after Vadym Hetman», Ukraine, e-mail: vitkovtun@ukr.net, ORCID: http://orcid.org/0000-0001-7212-6700

The object of research is the process of formation and peculiarities of application of the concept of «Industry 4.0» as an integral part of the modern economic worldview in Ukraine. But applying the concept «Industry 4.0», it is necessary to assess the possible negative social consequences of a new round of technological progress. So, this research is aimed at assessing existing problems, analyzing the features and prospects of Ukraine in applying the concept of «Industry 4.0».

The study used methods of theoretical generalization, the method of structural-functional analysis, dialectical and system-analytical methods. The dialectical method allowed to analyze and generalize some aspects of scientific knowledge and ideas about the nature of the concept «Industry 4.0». The system-analytical method allowed to study the functioning and development of the concept «Industry 4.0» as a factor of the country's socio-economic development.

The concept «Industry 4.0» is considered as the concept of «production of knowledge». Increasingly in demand are highly qualified and the corresponding level of knowledge. Compared with other European countries, Ukraine is behind in all indicators except for the coverage of higher education. Ukraine still takes a prominent position in terms of «higher, secondary and vocational education» and «market size», but has a critical gap in the «macroeconomic environment» ratings, «Institutions», «business development». Ukraine's Global Innovation Index shows the high potential for an innovative d evelopment model of the economy as a whole. So, the introduction of the concept of Industry 4.0 and digitization of the economy will lead to a change in production and sales system, will contribute to the organizational and structural transformation, the emergence of new models of using new technologies business.

The technological revolution, new technologies, rapidly changing needs of business and society, the emergence of new forms of interaction and diffusion of knowledge – is an essential component of the modern post-industrial world. Digitalization generates additional competitive opportunities, the implementation and development of which will increase the efficiency of social production and improve the quality of life of the population.

Keywords: new strategy of economic development, fourth industrial revolution, concept «Industry 4.0», digital economy.

- Pas'ko, I. (2015). Chto nuzhno znat' ob Industrii 4.0 i Internete veshhey. theRunet. Available at: http://therunet.com/articles/4826. Last accessed: 11.03.2018
- Pfohl, H., Yahsi, B., Kurnaz, T. (2015). The impact of Industry 4.0 on the supply chain. *HICLConference PROCEEDINGS*, 31–58.
- Qin, J., Liu, Y., Grosvenor, R. (2016). A Categorical Framework of Manufacturing for Industry 4.0 and Beyond. *Procedia CIRP*, 52, 173–178. doi: http://doi.org/10.1016/j.procir. 2016.08.005
- Babkin, A. V., Burkaltseva, D. D., Kosten, D. G., Vorobev, Yu. N. (2017). Formation of digital economy in russia: essence, features, technical normalization, development problems. *Nauchno-tehnicheskie vedomosti SPbGPU. Ekonomicheskie* nauki, 3, 9–25
- Babkin, A. V. (2017). Promyshlennaya politika v tsifrovoy ekonomike: problemy i perspektivy. Saint Petersburg: Politekhn. un-t, 699.

- Babakin, A. V.; Babakin, A. V. (Ed.) (2017). *Tsifrovaya ekonomi*ka i «Industriya 4.0»: problemy i perspektivy. Saint Petersburg, 685. doi: http://doi.org/10.18720/IEP/2017.1
- Dobryinin, A. P., Chernyih, K. Yu., Kupriyanovskiy, V. P., Kupriyanovskiy, P. V., Sinyagov, S. A. (2016). Tsifrovaya ekonomika razlichnye puti k effektivnomu primeneniyu tekhnologiy (BIM, PLM, CAD, IOT, Smart City, BIG DATA i drugie). *International Journal of Open Information Technologies*, 4 (1), 4–11.
- Kupriyanovskiy, V. P., Sinyagov, S. A., Lipatov, S. I., Namiot, D. E., Vorobev, A. O. (2016). Tsifrovaya ekonomika – «umnyy sposob rabotat'». *International Journal of Open Information Technologies*, 4 (2), 26–33.
- Industry 4.0 How to Navigate Digitization of the Manufacturing Sector (2015). McKinsey, 22–50.
- Nanry, J., Narayanan, S., Rassey, L. (2015). Digitizing the Value Chain. Available at: https://www.mckinsey.com/business-functions/operations/our-insights/digitizing-the-value-chain
- Geissbauer, R., Vedso, J., Schrauf, S. (2016). *Industry 4.0: Building the Digital Enterprise*. PWC, 6–27. Available at: https:// www.pwc.com/gx/en/industries/industries-4.0/landing-page/ industry-4.0-building-your-digital-enterprise-april-2016.pdf. Last accessed: 11.03.2018
- Wischmann, D. S., Wangler, D. L., Botthof, A. (2015). Industrie 4.0 Volksund betriebswirtschaftliche Faktoren für den Standort Deutschland. *Eine Studie im Rahmen der Begleitforschung zum Technologieprogramm AUTONOMIK für Industrie 4.0*. Berlin, 56. Available at: https://vdivde-it.de/system/files/pdfs/industrie-4.0-volks-und-betriebswirtschaftliche-faktoren-fuerden-standort-deutschland.pdf. Last accessed: 11.03.2018
- Chancen und Herausforderungen der vierten industriellen Revolution (2014). PWC, 3–37. Available at: http://www.strategyand. pwc.com/media/file/Industrie-4-0.pdf. Last accessed: 11.03.2018
- 14. Stock, T., Seliger, G. (2016). Opportunities of Sustainable Manufacturing in Industry 4.0. Procedia CIRP, 40, 536–541. doi: http://doi.org/10.1016/j.procir.2016.01.129
- 15. Lichtblau, D. K. et. al. (2014). Industry 4.0. Readiness, 76.
- 16. Andriushchenko, K. (2016). Formation of conceptual approaches to management of intellectual capital of knowledge considering hierarchical levels at the enterprise. *International Journal of Critical Accounting*, 8 (5/6), 379–395. doi: http://doi.org/10.1504/ ijca.2016.10002493
- Andriushchenko, K. (2017). The formation of the system of intellectual capital management at enterprises. *Technology Audit* and Production Reserves, 2 (4 (34)), 4–9. doi: http://doi.org/ 10.15587/2312-8372.2017.98178
- Pro rekomendatsii parlamentskykh slukhan na temu: «Natsionalna innovatsiina systema: stan ta zakonodavche zabezpechennia rozvytku» (2018). Postanova Verkhovnoi Rady Ukrainy, 06.07.2018, No. 8571. Available at: http://search.ligazakon.ua/l_doc2.nsf/ link1/DH6M300A.html. Last accessed: 11.03.2018
- Andriushchenko, K. (2014). State-private partnership as a factor of development of transport communications maritime industry. *Stredoevropsky vestnĺk pro vedu a vyzkum, 2 (21),* 43–48.
- 20. Russman, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P. et. al. (2015). *Industry 4.0: The future of productivity and growth in manufacturing industries*. The Boston Consulting Group. Available at: http://www.zvw.de/media.media.72e472fb-1698-4a15-8858-344351c8902f.original.pdf. Last accessed: 11.09.2018

- Smit, J., Kreutzer, S., Moeller, C., Arlberg, M. (2016). *Industry 4.0*. European Parliament, 94. Available http://www.europarl. europa.eu/RegData/etudes/STUD/2016/570007/IPOL_ STU(2016)570007 EN.pdf. Last accessed: 11.03.2018
- 22. 2016 Industrial Internet of Things, Industrie 4.0 Study. Control Engineering. Available at: https://www.controleng.com/singlearticle/2016-industrial-internet-of-things-industrie-40-study/25f c285474eeebaf583ea942849a1872.html. Last accessed: 11.03.2018

PROBLEMS OF MACROECONOMICS AND SOCIO-ECONOMIC DEVELOPMENT

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ESTIMATED LOSSES OF INNOVATIVE CAPACITY OF THE PARTIES AS A RESULT OF «HYBRID» RUSSIAN AGGRESSION AGAINST UKRAINE

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Biloshkurska Nataliia, PhD, Associate Professor, Department of Marketing, Management and Business Management, Pavlo Tychyna Uman State Pedagogical University, Ukraine, e-mail: nickbrown@ukr.net, ORCID: http://orcid.org/0000-0002-7617-7836

Biloshkurskyi Mykola, PhD, Associate Professor, Department of Finance, Accounting and Economic Security, Pavlo Tychyna Uman State Pedagogical University, Ukraine, e-mail: nickbrown946@gmail.com, ORCID: http://orcid.org/0000-0002-2826-3983

Chyrva Hanna, PhD, Associate Professor, Department of Economics and Social-Behavioral Sciences, Pavlo Tychyna Uman State Pedagogical University, Ukraine, e-mail: ch56@i.ua, ORCID: http://orcid.org/0000-0001-5055-2645

The object of the research is the process of estimation of losses of the innovation potential of the states that are in «hybrid» military confrontation. But there appears a problem of trustworthiness of results of such estimation. It may be achieved by comparing deviations of the real dynamics of national production results taking into account factors of the physical and human capital and also technological progress.

The work conducts the estimation of losses (increment) of the innovative potential of Ukraine as a state-victim and Russia as a state-aggressor in the «hybrid» war, started from the temporary occupation of the Crimean Autonomous republic and continuing till today. Estimation results are based on real (official) statistical data of the World Bank, present in public access for 1995–2017. The estimation object is the dynamics of result of the national economies of the conflict parties taking into account production factors and technological progress.

There was realized the improvement of the methodical support of the estimation of innovation potential losses at the microlevel by modeling the production function of Tinbergen-Solow. As a result, there was obtained the fixed and current dynamics of the technological progress parameter for the states-antagonists in the «hybrid» conflict for 2013–2017. There were calculated differences of multipliers of Tinbergen-Solow production function by the technological progress parameter – fixed for 2013 and current for 2014–2017.

It was grounded that during 4 years of «hybrid» aggression renovation of the Ukrainian national economy is by 7.5 % slower

than in Russia. The increment of the Ukrainian innovation potential in 2014–2017 was 2.1 % of the GDP volume for the end of 2013. Losses of the Russian innovative potential for the same period were 8.5 % of the GDP volume for 2013.

The results of improving the methodical support of the process of estimating innovation potential losses of the parties of «hybrid» aggression form a base for modeling the dynamics of real GDP and its physical volume that increases a base of future studies essentially.

Keywords: innovative potential, production function, macroeconomic dynamics, «hybrid» aggression, GDP in real prices.

- Horbulin, V. (2017). The World Hybrid War: Ukrainian Forefront. Kharkiv: Folio, 158.
- Vlasiuk, O. S., Kononenko, S. V. (2017). Kremlivska ahresiia proty Ukrainy: rozdumy v konteksti viiny. Kyiv: NISD, 304.
- Sobkevych, O. V., Shevchenko, A. V., Mykhailychenko, K. M., Rusan, V. M., Bielashov, Ye. V. et. al. (2017). *Realnyi sektor* ekonomiky Ukrainy: priorytety rozvytku v umovakh zminy vektora ekonomichnoi polityky: analit. dop. Kyiv: NISD, 40.
- 4. Dodonov, R. O. (Ed.) (2017). *Hibrydna viina: in verbo et in praxi*. Vinnytsia: TOV «NilanLTD», 412.
- Horbulin, V. P., Vlasiuk, O. S., Libanova, E. M., Liashenko, O. M. (Eds.) (2015). Donbas i Krym: tsina povernennia. Kyiv: NISD, 474.
- Antonenko, A., Bambals, R., Berzins, J., Bond, I., Cepuritis, M., Dobrokhotov, R. et. al. (2015). *The War in Ukraine: Lessons for Europe*. Riga, 182.
- Banasik, M. (2016). Russia's Hybrid War in Theory and Practice. *Journal on Baltic Security*, 2 (1), 157–182. doi: http:// doi.org/10.1515/jobs-2016-0035
- Wither, J. K. (2016). Making Sense of Hybrid Warfare. Connections: The Quarterly Journal, 15 (2), 73–87. doi: http://doi.org/10.11610/connections.15.2.06
- S. Thomas, T. (2015). Russia's Military Strategy and Ukraine: Indirect, Asymmetric and Putin-Led. *The Journal of Slavic Military Studies*, 28 (3), 445–461. doi: http://doi.org/10.1080/13518046. 2015.1061819
- Thiele, R. D. (2015). Crisis in Ukraine the emergence of hybrid warfare. *ISPSW Strategy Series: Focus on Defense and International Security*, 347, 1–13.
- Charap, S. (2015). The Ghost of Hybrid War. Survival, 57 (6), 51–58. doi: http://doi.org/10.1080/00396338.2015.1116147
- Renz, B. (2016). Russia and "hybrid warfare." Contemporary Politics, 22 (3) Russia, the West, and the Ukraine Crisis, 283–300. doi: http://doi.org/10.1080/13569775.2016.1201316
- Petro, N. N. (2016). Ukraine in crisis. European Politics and Society, 17 (4), 421–423. doi: http://doi.org/10.1080/2374511 8.2016.1154128

- 14. Gardner, H. (2016). The Russian annexation of Crimea: regional and global ramifications. *European Politics and Society*, 17 (4), 490–505. doi: http://doi.org/10.1080/23745118.2016. 1154190
- 15. Kuzio, T. (2016). Ukraine between a Constrained EU and Assertive Russia. JCMS: Journal of Common Market Studies, 55 (1) Special Issue: Europe's Hybrid Foreign Policy: The Ukraine-Russia Crisis, 103–120. doi: http://doi.org/10.1111/ jcms.12447
- 16. Biloshkurskyi, M. V.; Shaposhnykov, K. S. et. al. (Eds.) (2013). Do problemy ekonomichnoi diahnostyky stanu rozvytku innovatsiinoi diialnosti pidpryiemstv. Sotsialno-ekonomichni transformatsii v umovakh hlobalizatsii: svitovyi ta vitchyznianyi vymiry. Kherson: Vydavnychyi dim «Helvetyka», 56–58.
- Lysenko, N. O., Biloshkurska, N. V. (2012). Zastosuvannia vyrobnychoi funktsii Tinbergena pry analizi innovatsiinoi skladovoi ekonomichnoi bezpeky pidpryiemstv APK. *Innovatsiina ekonomika*, 4 (30), 140–144.
- Biloshkurska, N. V., Biloshkurskyi, M. V., Omelyanenko, V. A. (2018). Evaluation of Ukrainian industry innovative development with a technological progress parameter. *Scientific Bulletin* of *Polissia*, 2 (1 (13)), 23–28. doi: http://doi.org/10.25140/2410-9576-2018-2-1(13)-23-28
- Tinbergen, J. (1942). Zur Theorie der Langfristigen Wirtschaftsentwicklung. Weltwirtschaftliches Archiv, 55, 511–549.

- Solow, R. M. (1957). Technical Change and the Aggregate Production Function. *The Review of Economics and Statistics*, 39 (3), 312–320. doi: http://doi.org/10.2307/1926047
- Moroney, J. R., Ferguson, C. E. (1970). Efficient Estimation of Neoclassical Parameters of Substitution and Biased Technological Progress. *Southern Economic Journal*, *37 (2)*, 125–131. doi: http://doi.org/10.2307/1056121
- 22. Biloshkurska, N. V., Biloshkurskyi, M. V. (2015). Prohnozuvannia rozvytku promyslovoho vyrobnytstva Ukrainy z urakhuvanniam vplyvu tekhnolohichnoho prohresu. *Priorytety rozvytku natsionalnoi ekonomiky Ukrainy: stratehiia i perspektyvy*. Uman: VPTs «Vizavi», 6–8.
- 23. Tinbergen, J. (1973). Exhaustion and technological development: A macro-dynamic policy model. *Zeitschrift Für Nationalökonomie*, 33 (3-4), 213–234. doi: http://doi.org/10.1007/bf01283657
- 24. Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics, 70 (1), 65–94. doi: http://doi.org/10.2307/1884513
- Cobb, C. B., Douglas, P. H. (1928). A theory of production. The American Economic Review, 18 (1), 139–165.
- **26**. Biloshkurska, N. V. (2015). Management of industrial production in Ukraine: innovative aspect. *Ekonomichnyi prostir, 98*, 54–63.
- 27. Free and open access to global development data. World Bank Open Data. Available at: https://data.worldbank.org