

УДК 330.341.1

L. Tsymbal

I. Uninets

GREENING AS A TREND OF BECOMING A SMART ECONOMY

The article substantiates the need to understand the essence of the green economy as an ecosystem in which the processes of economic, social, ecological, and political development are balanced. This is manifested in the implementation of important global events, political decisions at various levels, and the strengthening of analytical activities. The green economy includes three main concepts: low-carbon, resource-saving and socially inclusive development. In a green economy, employment and income growth is supported by public and private investment in infrastructure and assets that reduce carbon emissions and pollution, improve energy and resource efficiency, and prevent biodiversity loss. Various indices and indicators for measuring the development of the green economy are distributed in international analytics. The main indexes of measuring the greening of the economy include social parameters, social inclusiveness and greening. The Green Growth Index measures the performance of governments in achieving sustainable development goals (efficient use of resources, protection of natural resources, opportunities for implementing environmental initiatives, and social integration). The UNEP Green Economy Progress Index (GEP) does not remain unchanged and is constantly being improved and filled with new content to measure progress in achieving an inclusive green economy. The Green Economy Progress Index is a key tool for policymakers, analysts and other stakeholders in understanding the progress of the green economy.

Keywords: globalization, green economy, green growth, inclusive green economy, Green Growth Index, Green Economy Progress Index.

DOI 10.34079/2226-2822-2022-12-23-66-77

Introduction. The growing attention of the world community to solving the problems of ensuring greening, ecologically oriented development of the economy is manifested in numerous initiatives, programs and real actions, which is confirmed by the above examples. In our opinion, the further development of the concept of green economy is its inclusion in a wider perception within the scope of understanding the realities and essence of smart economy. The latter represents a type of economy in which increased intellectualization is accompanied by digitalization (the spread of digital and other new technologies), a combination of economic and environmental interests, ethical and cultural values, as well as the inclusion of all these important goals in management at different levels.

Theoretical background. The study of the formation of the smart economy and the development of smart cities is the basis of a significant number of scientific works. Thus, the key issues of the formation of a new type of society and its formation are explored in the works of D. Bell (Bell, 1973), F. Makhлup (Махлуп, 1966), D. Lukyanenko (Лук'яненко та Кальченко, 2008) and others. The analysis of individual factors in the formation of a new type of economy is studied in the works of M. Heylin (Heylin, 2006), D. Kellner (Kellner, 2002), D. Held, A. McGrew (Held, McGrew, Goldblatt, & Perraton, 1999) and others. Research into the use of smart city technologies became the object of research by Marciniak K. (Marciniak and Owoc, 2013), Greenfield A. (Greenfield, 2013), Soldatov S. (Солдатов, 2015), Novotny R., Kuchta R., Kadlec J. (Novotny, Kuchta, & Kadlec, 2014). The issue of implementing the concept of greening in the developed countries of the world remains open.

The purpose of this article is determination of key criteria for evaluating greening trends in the formation of a smart economy.

Results. The growing role of greening is confirmed by the spread in international analytics of complex indexes and indicators that measure the degree of development of the green economy in the general context of a smart economy. In the modern world, not only ecological aspects of the economy, but also parameters of comfortable living and characteristics of well-being are becoming important.

It should be noted that in most approaches to assessing the development of the green economy, there are also indicators that relate to other aspects of life. Moreover, the degree of development of the green economy can most likely be assessed in combination with such parameters as social issues, social inclusiveness, etc. For example, within the Green Economy Progress Index, gender equality, education, life expectancy, well-being, etc. are determined. The purpose of calculating another index – the Green Growth Index – is to measure the results of the governments of countries in achieving the goals of sustainable development, including in particular four main aspects: efficient use of resources, protection of natural resources, opportunities for implementing environmental initiatives and social integration. The Green Growth Index is determined for each region separately, including five geographic regions – Africa, the Americas, Asia, Europe and Oceania. Thus, various methods of assessing the development of the green economy take into account their own characteristics: key aspects, target direction, a set of indicators. All this once again confirms the growing importance of various aspects of greening for the modern development of the world economy.

Greening is becoming the main trend of modern political activity, first at the global level, and then at the level of national governments. The international practice of state support for the ecological orientation of the country's entire life activity is becoming increasingly diverse and large-scale. The introduction of economic incentives affects the greening of investments and the production of goods and services in general. This, in turn, forms a new nature of demand – consumption of goods and services taking into account the ecological component. Not only the general and technical characteristics of products or services, but also their impact on human health and the environment become important for consumers.

The green economy as a part of the implementation of the smart economy today requires state support and the formation of balanced approaches to the greening of economic activity. The decisions of the governments need to be implemented in the political and investment spheres, which in turn requires the formation and determination of priority areas of investment and the development of implementation mechanisms and tools. Measures can accordingly be chosen according to the capabilities and needs of each specific country. However, within the framework of the concept of smart economy, a general trend of greening is implemented, which transfers to the governments of the leading countries of the world the responsibility for solving global environmental problems and developing measures that can be implemented by all countries of the world, regardless of their level of development, opportunities, available resources and needs, structure management and political system. Adaptation of development plans for the ecological component of economic activity to the specifics of each country requires the development of general implementation plans as a priority, since regional or national measures must be implemented within the framework of key trends and problems of global development.

Based on the analysis of the key indices for the evaluation of the greening of economic activity, we can note that the center of the leading countries is located in the European Union. The key indices for assessing the level of greening are the Global Green Economy Index (GGEI), which measures the effectiveness of countries' green economies through expert assessment. The GGEI uses quantitative and qualitative indicators to measure each country's performance across four key dimensions: leadership and climate change, performance sectors,

markets and investment, and the environment. The GGEI Perceptual Survey then collects ratings from expert practitioners on these same four dimensions.

The GGEI was first launched in 2010 and is today the most widely used product of its kind internationally, used by politicians, international organizations, civil society and the private sector. Like many indices, the GGEI is used to benchmark performance, communicate areas for improvement, and show various stakeholders how they too can contribute to progress. The GGEI is also useful as a framework for creating customized sustainability measurement systems for a diverse range of stakeholders. GGEI is prepared by Dual Citizen LLC, a private consulting company in the USA (table 1).

Table 1

**Global Green Economy Index (GGEI), TOP-10 rating countries, 2014–2018 year
 (GGEI, 2014; GGEI, 2016; GGEI, 2018)**

Country	2014	place in the rating	2016	place in the rating	2018	place in the rating
Sweden	0,681	1	0,7761	1	0,7608	1
Switzerland	0,631	6	0,6763	4	0,7594	2
Iceland	0,626	9	0,6368	7	0,7129	3
Norway	0,659	2	0,6911	2	0,7031	4
Finland	0,629	8	0,6783	3	0,6997	5
Germany	0,636	4	0,6601	5	0,689	6
Denmark	0,632	5	0,6184	9	0,68	7
Taiwan	0,475	30	0,4837	47	0,6669	8
Austria	0,63	7	0,6523	6	0,6479	9
France	0,564	13	0,5676	13	0,6405	10

The driver countries of modern progress determine the trends of globalization and economic development, but their list does not always coincide with the leading countries in terms of greening. As mentioned earlier, one of the indicators of the level of environmental awareness in countries is the Green Development Index, which indicates the level of attention of the governments of the specified countries to the issue of environmental safety. Table 2 presents data on the TOP EU countries (table 2).

Table 2

Green growth index of the TOP-15 EU countries, 2019 (Acosta et. al, 2019)

Countries	Indicators of green growth				Green growth index		
	Efficient and sustainable use of resources	Protection of natural capital	Opportunities of the green economy	Social inclusive development	Points	Level	Place in the rating
1	2	3	4	5	6	7	8
Denmark	75.50	72.52	63.84	92.07	75.32	High	1
Sweden	75.79	77.26	57.96	93.70	75.09	High	2
Austria	71.57	79.56	52.27	91.92	72.32	High	3
Finland	67.36	72.25	58.86	92.23	71.69	High	4
Czech Republic	63.04	78.40	61.85	84.48	71.29	High	5
Italy	58.31	83.15	57.63	87.01	70.22	High	6
Germany	55.02	81.52	60.55	88.65	70.04	High	7
Estonia	62.02	69.31	59.12	86.66	68.50	High	8

Continuation of table 2

1	2	3	4	5	6	7	8
Latvia	72.05	74.43	49.40	81.87	68.24	High	9
Slovakia	61.57	83.35	49.51	82.21	67.60	High	10
Portugal	58.77	80.40	47.25	86.66	66.32	High	11
Belgium	46.51	75.74	55.88	90.34	64.94	High	12
Hungary	49.04	82.52	55.10	79.20	64.82	High	13
France	55.80	77.74	45.39	88.77	64.66	High	14
Croatia	64.05	81.37	44.29	74.94	64.49	High	15

The highest indicators and the highest positions are occupied by European countries, in particular, Denmark, Sweden, Austria and Finland lead the TOP rating, but the leader is determined separately for each region (table 3).

Table 3

Benchmarking the results of the Green Growth Index, 2019 (Acosta et. al, 2019)

Region	A leading country	Indicator
Asia	Singapore	58,43
America	Dominican Republic	55,1
Africa	Botswana	45,88
Oceania	New Zealand	52,17
Europe	Denmark	75,32

However, it is worth noting that the regional leaders are significantly behind the global leaders, although they have quite high indicators in their regions.

In general, we can determine that in the European Union there are norms regarding the conclusion of environmental agreements, their formats and standards on an international scale, in particular, such provisions are written in the Lisbon Treaty. In addition, in developed countries there are a significant number of approaches to environmental protection that cover all aspects of environmentally conscious consumption. General programs covering a significant part of issues related to environmental protection include: 7 program of actions of the European Union regarding the environment; strategies for the transition to a competitive low-carbon economy (until 2050) (European Commission, 2011). In addition to policies and programs of general direction in the European Union, there are separate programs that focus on certain aspects of greening economic activity. These include: Corporate social responsibility (CSR) strategies within the framework of Directive 2014/95/EU regulating the activities of companies (European Union, 2014b; European Commission, 2017a); Environmental Management and Audit Scheme (EMAS), which regulates environmental labeling and standards, in particular EU Regulation 2017/150520 regulates the information placed in EMAS appendices regarding the ISO14001 standard (What is EMAS?, 2016); the eco-labeling system includes not only standardization of production quality (European Union, 2009b); Directives of the European Union, which regulate the energy efficiency of various devices and construction in general (European Union, 2010), energy labeling (European Union, 2017; European Union, 2009a); directives on public procurement (2014) define and regulate public procurement according to the Single European Act (European Union, 2014a); standards for the use of chemicals, regulation of their production, etc. (REACH) (Understanding REACH, 2020); standards regarding chemical pollution also concern the issue of packaging and labeling of chemical and hazardous substances, which is generally regulated within the framework of EC No. 1272/2008 (Globally..., 2018); The “Europe 2020” strategy has separately identified 7 key initiatives, among

which is the “Europe with efficient use of resources” initiative (European Commission, 2010), as well as “Pathways to Europe’s energy efficiency”; Action plan for the transition of the economy to a closed cycle (European Commission, 2015); Directive 86/278/EEC is aimed at protecting soils from sludge, etc. (European Union, 1986); Directive 96/59/EC regulates the control of disposal of polychlorinated biphenyls and polychlorinated terphenyls, the key task of this Directive is the complete rejection of the use of these substances (European Union, 1996), Directive 2011/65/EU is aimed at limiting the use of certain items in the production of electronics and electronic or electrical products (European Union, 2011); Land Use and Natural Capital Directives, Biodiversity Strategy 2020, Action Plan for People, Nature and the Economy (2017) (European Commission, 2017), The EU strategy for forest protection (European Commission, 2013) etc.

In general, it should be noted that different countries of the European Union, adhering to the same standards and guided by the same Directives, implement different approaches to greening economic activity. The most conscious environmental standards are implemented by the countries of Northern Europe, in particular Sweden, which focuses on green growth and among the plans defines an efficient energy supply characterized by a low level of greenhouse gas emissions, the key tools are defined as informational, regulatory and market, which are aimed at ensuring the implementation of a balanced policy of economic growth, smart economy, multifaceted development. At the same time, Sweden also defines opportunities for community participation in environmental project management, for example, Directive No. 2003/4/EC and Directive No. 1367/2006 define opportunities for public access to environmental project management and environmental information, in addition, the Aarhus Convention on Access to Information defines opportunities for public participation in environmental justice, which corresponds to the concept of Smart City 3.0.

It is worth noting that a similar attitude towards environmental projects is characteristic of all the countries of Northern Europe (Norway, Finland, Denmark, Sweden and Iceland), within which the Nordic Eco label functions, as a voluntary environmental label, in accordance with the level of impact of products and goods on the environment, taking into account all stages of the life cycle and use of the product (The official ecolabel..., 2018).

The countries of North-Western Europe adhere to a similar policy, so Germany has put the concept of sustainable development as the basis of its national development strategy (Federal Government, 2002). Germany's overall national strategy is based on fair distribution of resources between generations, social cohesion, responsibility (including on an international scale) and quality of life. In general, a comprehensive approach to the formation of economic activity is based on the principles of reasonable management and includes economic indicators of activity, principles of environmental protection and social responsibility. In Germany, special institutions have been created for this purpose, in particular the Council for Sustainable Development, the Parliamentary Advisory Council. In accordance with this, an ecological tax reform was implemented, in the framework of which there is a gradual increase in taxes on fossil fuels and energy resources (Kohlhaas, 2005). Implementation of the strategy for the development of Austrian environmental policy takes place at the level of Ministries, Departments and municipalities. In general, the Conference of Regional Ministers for the Environment, the Austrian Committee for Sustainable Development and the National Committee on Climate Change are functioning (Nachmany et al., 2015). In Austria the policy of sustainable development is implemented within the framework of two key strategies aimed at the integration of the policy of environmental thrift and the policy of sustainable economic development. Among these key strategies are the National Strategy for Sustainable Development adopted in 2002 and the Austrian Strategy for Sustainable Development adopted

in 2010. The first of these strategies focuses on the integration of the principles of sustainable development into the national policy, 20 goals have been identified as key, covering various aspects of the quality of life, the formation of competitiveness, the preservation of the environment, and international responsibility. The Sustainable Development Strategy of 2010 is aimed at forming a common basis for the formation of policies at various levels of governance and economic activity (both at the national and sub-national levels - from the federal government, communities, regions to municipalities or provinces) (The Austrian..., 2017). Close to Austria is Denmark in terms of the key concept of development, which in general can claim global leadership in the process of transformation and greening of the economy. Key agreements in this regard are the Energy Agreement (2018), the Danish Climate Act (2020), and the Danish Climate Agreement for Energy and Industry (2020).

In general, we can note that the developed countries of the world are forming a purposeful policy of sustainable development, which is focused on the synergistic participation of all subjects of economic activity and their active cooperation, which would generally make it possible to adhere to the key principles of greening and socialization. As we can see, the developed countries of the world are guided by a significant number of documents that regulate and standardize the activities of companies, households, individuals and the state in general. Ecological values become decisive in political, economic, public, and social activities. They are increasingly taken into account when making investments, production activities, when forming consumer demand, general environmentally oriented consciousness and consumer behavior. An important tool for the promotion of greening is the newest technologies that create the necessary opportunities and tools for this.

Conclusions. The green economy as part of the implementation of the smart economy today requires state support and the formation of balanced approaches to the greening of economic activity at various levels. The formation of such a policy involves taking into account the peculiarities of management at different levels: at the level of the state, locality and individual enterprise. Such decisions can provide for implementation in the political plane, form a certain investment climate, which can contribute to the interest of each of the participants of economic activities in compliance with environmental standards or principles of economic activities in the most environmentally friendly world. Each country chooses measures, mechanisms and tools in accordance with its characteristics and needs, taking into account the realities of the functioning of both localities and enterprises. A vertical structure of environmentalization of an economic activity is being formed within the framework of the key tasks of the formation of a smart society. The developed countries of the world implement quite successful practices of greening economic activity at various levels of management, in particular at the level of state policy, determining the specifics of implementing the experience of greening the functioning of localities and enterprises. Adaptation of development plans for the ecological component of economic activity to the specifics of each subject of economic activity requires the development of general implementation plans as a priority, since specific measures must be implemented within the framework of key trends and problems of global development.

Бібліографічний список

- Лук'яненко, Д. та Кальченко, Т., 2008. Стратегії глобального управління. *Міжнародна економічна політика*, 1–2(8–9). Available from: <http://journals.uran.ua/jiep/article/view/27496/24678>.
- Махлуп, Ф., 1966. Производство и распространение знаний в США. Москва : Прогресс.
- Солдатов, С. А., 2015. «Smart sity» – город будущего. *Современные технологии автоматизации*, 2, с. 24–35.

- Acosta, L. A., Hartman, K., Mamiit, R. J., Puyo, N. M. and Anastasia O., 2019. Summary Report: Green Growth Index Concept, Methods and Application. Available at: <http://greengrowthindex.gggi.org/wp-content/uploads/2019/12/Green-Growth-Index-Summary-Report_20191216.pdf>
- Bell, D., 1973. *The coming of post-industrial society: A venture of social forecasting*. N.Y.: Basic Books.
- European Commission, 2010. *Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth*. COM(2010) 2020 final. Available at: <<https://sdgs.un.org/partnerships/europe-2020-strategy-smart-sustainable-and-inclusive-growth>>
- European Commission, 2011. *A Roadmap for moving to a competitive low carbon economy in 2050*; COM(2011) 112 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Brussels, Belgium. Available at: <<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:en:PDF>>
- European Commission, 2013. *A new EU Forest Strategy: for forests and the forest-based sector*. COM/2013/0659 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52013DC0659>>
- European Commission, 2015. *Closing the loop - An EU action plan for the Circular Economy*; COM(2015) 614 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Brussels, Belgium. Available at: <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614>>
- European Commission, 2017. *An Action Plan for nature, people and the economy*. COM(2017) 198 final. Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Brussels, Belgium. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A198%3AFIN>>
- European Commission, 2017a. *Guidelines on non-financial reporting (methodology for reporting non-financial information)*; Communication from the Commission. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017XC0705%2801%29>>
- European Union, 1986. Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31986L0278>
- European Union, 1996. Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls. Available at: <<https://eurlex.europa.eu/legal-content/GA/TXT/?uri=CELEX:31996L0059>>
- European Union, 2009a. Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products. Available at: <<https://eur-lex.europa.eu/eli/dir/2009/125/oj>>
- European Union, 2009b. Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel (Text with EEA relevance). Available at: <<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32010R0066>>
- European Union, 2010. Environment, consumers and health protection [online]. Available at: <<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32010R0066>>

- European Union, 2011. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0065&qid=1605463666049>>
- European Union, 2014a. Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32014L0023>; Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/. Available at: <https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0024>
- European Union, 2014b. Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?qid=1568651553866&uri=CELEX:32014L0095>>
- European Union, 2017. Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/. Available at: <<https://eur-lex.europa.eu/eli/reg/2017/1369/oj>>
- Federal Government, 2002. Perspectives for Germany. Our Strategy for Sustainable Development. Available at: <https://www.bundesregierung.de/breg-en/issues/sustainability/the-strategy-214722>
- Global Green Economy Index (GGEI), 2014. Measuring National Performance in the Green Economy. 4th Edition. October 2014. Available at: <<https://sdgs.un.org/sites/default/files/publications/1678GGEI-Report2014.pdf>>
- Global Green Economy Index (GGEI), 2016. Measuring National Performance in the Green Economy. 5th Edition. September 2016. Available at: <<https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=2372&menu=1515>>
- Global Green Economy Index (GGEI), 2018. Measuring National Performance in the Green Economy. Available at: <<https://dualcitizeninc.com/global-green-economy-index/>>
- Globally Harmonized System of Classification and Labelling of Chemicals, 2018 *UNECE* [Website]. Available at: <https://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html>
- Greenfield, A., 2013 *Against the Smart city*. Available at: <<https://urbanomnibus.net/2013/10/against-thsmart-city/>>.
- Held, D., McGrew, A., Goldblatt, D., & Perraton, J., 1999. *Global transformations*. Oxford. Polity Press.
- Heylin, M., 2006. Globalization of science rolls on. *Chemical and Engineering News*, 84(48), pp. 26–31. Available at: <<https://doi.org/10.1021/cen-v084n048.p026>>.
- Kellner, D., 2002. Theorizing globalization. *Sociological Theory*, 20(3), pp. 285–305. Available at: <<https://doi.org/10.1111/0735-2751.00165>>.
- Kohlhaas, M., 2005. Gesamtwirtschaftliche Effekte der ökologischen Steuerreform, *Band II der Quantifizierung der Effekte der Ökologischen Steuerreform auf Umwelt, Beschäftigung und Innovation*. Berlin: Deutsches Institut für Wirtschaftsforschung. Available at: <<https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2961.pdf>>
- Marciniak, K. and Owoc, M. L., 2013. Applying knowledge grid models in smart city concepts. In: Yiğitcanlar Tan, Bulu Melih (eds.): *Proceedings of the 6th Knowledge Cities World Summit, KCWS 2013*, 2013, Istanbul, Lookus Scientific, pp. 238–244.

- Nachmany, M., Fankhauser, S., Davidová, J., Kingsmill, N., Landesman, T., Roppongi, H., Schleifer, P., Setzer, J., Sharman A., Singleton, C. S., Sundaresan, J. and Townshend, T., 2015. Climate Change Legislation in Austria: An excerpt from the 2015 global climate legislation study a review of climate change legislation in 99 countries. Grantham Research Institute on Climate Change and the Environment, GLOBE International. Available at: <<https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/AUSTRIA.pdf>>
- Novotny, R., Kuchta, R., & Kadlec, J., 2014. Smart City Concept, Applications and Services. *Journal of Telecommunications System & Management*, 3(2). Available at: <<https://doi.org/10.4172/2167-0919.1000117>>
- The Austrian Strategy for Sustainable Development, 2017. In: Federal Ministry of Agriculture, Forestry, Environment and Water Management. Available at: <https://sdgtoolkit.org/wp-content/uploads/2017/02/The-Austrian-Strategy-for-Sustainable-Development_en.pdf>
- The official ecolabel of the Nordic countries, 2018. *Nordic Ecolabelling*. Website. Available at: <<https://www.nordic-ecolabel.org/nordic-swan-ecolabel/>>
- Understanding REACH, 2020. *European Chemicals Agency (ECHA)*. [Website]. Available at: <<https://echa.europa.eu/regulations/reach/understanding-reach>>
- What is EMAS? *The EU Eco-Management and Audit Scheme (EMAS)*. Website. Available at: <https://ec.europa.eu/environment/emas/index_en.htm>

References

- Acosta, L. A., Hartman, K., Mamiit, R. J., Puyo, N. M. and Anastasia O., 2019. Summary Report: Green Growth Index Concept, Methods and Application. Available at: <http://greengrowthindex.gggi.org/wp-content/uploads/2019/12/Green-Growth-Index-Summary-Report_20191216.pdf>
- Bell, D., 1973. *The coming of post-industrial society: A venture of social forecasting*. N.Y.: Basic Books.
- European Commission, 2010. *Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth*. COM(2010) 2020 final. Available at: <<https://sdgs.un.org/partnerships/europe-2020-strategy-smart-sustainable-and-inclusive-growth>>
- European Commission, 2011. *A Roadmap for moving to a competitive low carbon economy in 2050*; COM(2011) 112 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Brussels, Belgium. Available at: <<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:en:PDF>>
- European Commission, 2013. *A new EU Forest Strategy: for forests and the forest-based sector*. COM/2013/0659 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52013DC0659>>
- European Commission, 2015. *Closing the loop - An EU action plan for the Circular Economy*; COM(2015) 614 final; Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions. Brussels, Belgium. Available at: <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614>>
- European Commission, 2017. *An Action Plan for nature, people and the economy*. COM(2017) 198 final. Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the

- Regions. Brussels, Belgium. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A198%3AFIN>>
- European Commission, 2017a. *Guidelines on non-financial reporting (methodology for reporting non-financial information)*; Communication from the Commission. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017XC0705%2801%29>>
- European Union, 1986. Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31986L0278>
- European Union, 1996. Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls. Available at: <<https://eurlex.europa.eu/legal-content/GA/TXT/?uri=CELEX:31996L0059>>
- European Union, 2009a. Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products. Available at: <<https://eur-lex.europa.eu/eli/dir/2009/125/oj>>
- European Union, 2009b. Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel (Text with EEA relevance). Available at: <<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32010R0066>>
- European Union, 2010. Environment, consumers and health protection [online]. Available at: <<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32010R0066>>
- European Union, 2011. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0065&qid=1605463666049>>
- European Union, 2014a. Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32014L0023>; Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/. Available at: <https://eurlex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0024>
- European Union, 2014b. Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups. Available at: <<https://eurlex.europa.eu/legal-content/EN/TXT/?qid=1568651553866&uri=CELEX:32014L0095>>
- European Union, 2017. Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/. Available at: <<https://eur-lex.europa.eu/eli/reg/2017/1369/oj>>
- Federal Government, 2002. Perspectives for Germany. Our Strategy for Sustainable Development. Available at: <<https://www.bundesregierung.de/breg-en/issues/sustainability/the-strategy-214722>>
- Global Green Economy Index (GGEI), 2014. Measuring National Performance in the Green Economy. 4th Edition. October 2014. Available at: <<https://sdgs.un.org/sites/default/files/publications/1678GGEI-Report2014.pdf>>
- Global Green Economy Index (GGEI), 2016. Measuring National Performance in the Green Economy. 5th Edition. September 2016. Available at: <<https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=2372&menu=1515>>

- Global Green Economy Index (GGEI), 2018. Measuring National Performance in the Green Economy. Available at: <<https://dualcitizeninc.com/global-green-economy-index/>>
- Globally Harmonized System of Classification and Labelling of Chemicals, 2018 *UNECE* [Website]. Available at: <https://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html>
- Greenfield, A., 2013 *Against the Smart city*. Available at: <<https://urbanomnibus.net/2013/10/against-thsmart-city/>>
- Held, D., McGrew, A., Goldblatt, D., & Perraton, J., 1999. *Global transformations*. Oxford. Polity Press.
- Heylin, M., 2006. Globalization of science rolls on. *Chemical and Engineering News*, 84(48), pp. 26–31. Available at: <<https://doi.org/10.1021/cen-v084n048.p026>>.
- Kellner, D., 2002. Theorizing globalization. *Sociological Theory*, 20(3), pp. 285–305. Available at: <<https://doi.org/10.1111/0735-2751.00165>>.
- Kohlhaas, M., 2005. Gesamtwirtschaftliche Effekte der ökologischen Steuerreform, *Band II der Quantifizierung der Effekte der Ökologischen Steuerreform auf Umwelt, Beschäftigung und Innovation*. Berlin: Deutsches Institut für Wirtschaftsforschung. Available at: <<https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/2961.pdf>>
- Lukianenko D. ta Kalchenko T., 2008. Stratehii hlobalnoho upravlinnia [Global governance strategies]. *Mizhnarodna ekonomichna polityka*. 1–2(8–9). Available from: <<http://journals.uran.ua/jiep/article/view/27496/24678>> (in Ukrainian).
- Makhlup, F., 1966. Proyzvodstvo y rasprostraneniye znanyi v SShA [Production and dissemination of knowledge in the United States]. Moskva : Prohress (in Russian).
- Marciniak, K. and Owoc, M. L., 2013. Applying knowledge grid models in smart city concepts. In: Yiğitcanlar Tan, Bulu Melih (eds.): Proceedings of the 6th Knowledge Cities World Summit, KCWS 2013, 2013, Istanbul, Lookus Scientific, pp. 238–244.
- Nachmany, M. et al., 2015. Climate Change Legislation in Austria: An excerpt from the 2015 global climate legislation study a review of climate change legislation in 99 countries. Grantham Research Institute on Climate Change and the Environment, GLOBE International. Available at: <<https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/AUSTRIA.pdf>>
- Novotny, R., Kuchta, R., & Kadlec, J., 2014. Smart City Concept, Applications and Services. *Journal of Telecommunications System & Management*, 3(2). Available at: <<https://doi.org/10.4172/2167-0919.1000117>>
- Soldatov, S. A., 2015. «Smart sity» – horod budushcheho [«Smart sity» – city of the future]. *Sovremennyye tekhnolohyy avtomatyzatsyy*, 2, pp. 24–35 (in Russian).
- The Austrian Strategy for Sustainable Development, 2017. In: Federal Ministry of Agriculture, Forestry, Environment and Water Management. Available at: <https://sdgtoolkit.org/wp-content/uploads/2017/02/The-Austrian-Strategy-for-Sustainable-Development_en.pdf>
- The official ecolabel of the Nordic countries, 2018. *Nordic Ecolabelling*. Website. Available at: <<https://www.nordic-ecolabel.org/nordic-swan-ecolabel/>>
- Understanding REACH, 2020. *European Chemicals Agency (ECHA)*. [Website]. Available at: <<https://echa.europa.eu/regulations/reach/understanding-reach>>
- What is EMAS? *The EU Eco-Management and Audit Scheme (EMAS)*. Website. Available at: <https://ec.europa.eu/environment/emas/index_en.htm>

Стаття надійшла до редакції 17.05.2022

Л. Цимбал
І. Унінець

ЕКОЛОГІЗАЦІЯ ЯК ТРЕНД СТАНОВЛЕННЯ РОЗУМНОЇ ЕКОНОМІКИ

У статті обґрунтовується необхідність розуміння сутності зеленої економіки як екосистеми, в якій збалансовано процеси економічного, соціального, екологічного та політичного розвитку. Це проявляється у реалізації важливих глобальних подій, політичних рішень на різних рівнях, посиленні аналітичної діяльності. Зелена економіка включає три основні концепції: низьковуглецевий, ресурсозберігаючий та соціально інклюзивний розвиток. У зеленій економіці зростання зайнятості та доходів підтримується державними та приватними інвестиціями в інфраструктуру та активи, які зменшують викиди вуглецю та забруднення, підвищують ефективність використання енергії та ресурсів, а також запобігають втраті біорізноманіття. У міжнародній аналітиці поширені різноманітні індекси та показники для вимірювання розвитку зеленої економіки. До основних індексів вимірювання екологізації економіки належать соціальні параметри, соціальна інклюзивність та екологізація. Індекс зеленого зростання вимірює ефективність урядів у досягненні цілей сталого розвитку (ефективне використання ресурсів, захист природних ресурсів, можливості реалізації екологічних ініціатив та соціальна інтеграція). Індекс прогресу зеленої економіки (GEP) ЮНЕП не залишається незмінним і постійно вдосконалюється та наповнюється новим вмістом для вимірювання прогресу в досягненні інклюзивної зеленої економіки. Індекс прогресу зеленої економіки є ключовим інструментом для політиків, аналітиків та інших зацікавлених сторін у розумінні прогресу зеленої економіки.

Ключові слова: глобалізація, зелена економіка, зелене зростання, інклюзивна зелена економіка, індекс зеленого зростання, індекс прогресу зеленої економіки.