

N. Prokopenko¹

¹Kharkiv National Automobile and Highway University <https://orcid.org/0000-0002-2783-2777>

PROSPECTS FOR SMPLEMENTING A SUSTAINABLE DEVELOPMENT POLICY FOR UKRAINE'S "GREEN" ECONOMY

Abstract. In today's socio-economic climate, the environmental dimension of development is becoming one of the key factors in ensuring the stability of economic systems and enhancing the competitiveness of nations. The intensification of global climate issues, the growing anthropogenic impact on the environment, the depletion of natural resources and the need to implement the Sustainable Development Goals are driving an active transition towards the principles of a 'green' economy. The experience of European Union countries, which are implementing a comprehensive policy of environmental modernisation aimed at improving resource efficiency, reducing greenhouse gas emissions, developing a circular economy and establishing environmentally oriented models of economic growth, is of particular relevance. The article examines the main directions of strategic development of the 'green' economy in EU countries, identifies the key mechanisms of environmental transformation, and substantiates their importance for ensuring sustainable development in the current context.

Keywords: 'green' economy, sustainable development, strategic development, circular economy, environmental transformation.

On the one hand, economic development has led to a significant improvement in the standard of living and quality of life for the population; however, at the same time, it has given rise to large-scale environmental problems linked to the overuse of natural resources, environmental pollution and an increased anthropogenic impact on ecosystems. In this context, the concept of sustainable development has gained global traction, as most countries seek to combine economic growth with the preservation of the natural environment and ecological balance.

The concept of a 'green' economy is viewed as a modern organisational and economic model aimed at enhancing public welfare, ensuring social justice and minimising the negative impact of economic activity on the environment. In the broadest sense, the 'green' economy is interpreted as a low-carbon, resource-efficient and socially oriented economic system. It has emerged as a practical extension of the concept of sustainable development and emphasises the need to green the global economy and ensure its long-term sustainability [1].

The key components of the 'green' economy concept are:

1. channelling state support and private investment towards the development of environmentally safe technologies, innovative industries and projects aimed at reducing carbon emissions and lowering levels of environmental pollution;

2. the formation of new sectors of the 'green' economy and the creation of 'green' jobs based on the use of resource-saving and energy-efficient technologies, advanced waste processing and alternative energy sources. More rational use of resources helps to reduce the cost of eco-friendly products, increase production profitability and create the socio-economic conditions necessary for reducing poverty;

3. improving energy efficiency, which reduces the use of fossil fuels, cuts greenhouse gas emissions and creates the conditions for the restoration of natural resources;

4. improving resource efficiency, which helps to reduce waste volumes and levels of environmental pollution, ensures the long-term functioning of environmentally oriented sectors of the economy, the conservation of biodiversity and the development of local nature management.

Since 2010, the Global Green Economy Index has been calculated worldwide; it is used to assess the level of environmental transformation in countries. Its structure covers several key dimensions [2]:

1. leadership and climate policy, including the activities of state institutions, international engagement and the effectiveness of measures to combat climate change;
2. the efficiency of specific economic sectors, in particular construction, transport, energy and tourism;
3. markets and investment, which characterise the scale of funding for renewable energy, the development of clean technologies and support for 'green' investment;
4. the state of the environment and natural capital, covering issues of agriculture, fisheries, forest resources, air and water quality, as well as the conservation of biodiversity.

The current development of the global economy is taking place against a backdrop of growing environmental, social and institutional challenges, which calls for a rethinking of traditional approaches to economic growth and resource use. In such conditions, the concept of sustainable development is gradually becoming the leading model for organising economic activity, aimed at ensuring the long-term stability of socio-ecological-economic systems.

In European Union countries, the development of the 'green' economy is being achieved through a combination of environmental priorities with technological modernisation and the digital transformation of the economy. Strengthened climate policy, a focus on achieving carbon neutrality, the spread of circular economy principles and the digitalisation of production processes are shaping a new architecture for sustainable development. It is based on the triad of 'green' economic development, which comprises institutional and regulatory, technological and digital, and market and behavioural dimensions.

The institutional and regulatory component defines the system of rules, incentive mechanisms and tools for implementing environmental policy. The technological and digital strand reflects the role of innovative technologies and digital solutions in modernising production, managing resources and reducing the environmental impact. The market and behavioural component characterises the transformation of consumption patterns, the raising of public environmental awareness and the development of corporate social responsibility as key factors in the successful 'green' transformation of the economy.

The first component of the triad – institutional and regulatory development – forms the basic foundations of 'green' transformation, defining a system of rules, incentives and mechanisms for achieving environmental goals in the context of the digital economy. In European Union countries, the implementation of this approach is ensured through a set of regulatory and legal documents, among which the European Green Deal [3], the 'Fit for 55' legislative package [4], the Sustainable Investment Taxonomy and the CSRD Directive [5] are of key importance. These documents form the basis for integrating environmental principles into financial, production and management activities, and also set standards for transparency and corporate environmental responsibility.

The effectiveness of the institutional component is clearly demonstrated by the experience of Germany, where a gradual phase-out of coal-fired power generation has been enshrined in law and the German Sustainable Development Strategy [6] is being implemented, ensuring that digital and environmental priorities in public policy are aligned. At the same time, Denmark serves as an example of the successful combination of regulatory frameworks and technological development, as its programmes supporting wind energy and digital energy planning have become a model for the integration of regulatory and technological tools.

A logical continuation of the development of the regulatory environment is the second element of the triad – technological and digital modernisation. It is innovative technologies that ensure the practical implementation of 'green' economy strategies, contributing to increased energy efficiency in production, the automation of management processes and a reduction in the environmental footprint. The use of artificial intelligence, the Internet of Things, smart grids, digital twins of production systems and predictive models of climate risks makes it possible to optimise resource use and minimise negative impacts on the environment.

A prime example of technological modernisation is Sweden, where the introduction of digital urban energy management systems and the development of electric vehicle infrastructure ensure the efficient use of resources and a reduction in emissions [7]. The Netherlands, for its part, actively uses digital platforms to manage water resources and agro-industrial flows, which helps reduce losses in agriculture and increases the infrastructure's adaptability to climate change.

The third component of the triad is market and behavioural transformations, which determine the readiness of society and business to implement environmentally oriented solutions. In EU countries, particularly in Germany and Sweden, there is a steady increase in demand for products with a low carbon footprint, which encourages businesses to develop eco-branding and use digital tools to assess the environmental performance of goods. Such trends are consistent with pan-European changes in consumer behaviour and the growing environmental awareness of the population.

The most common examples of environmentally conscious behaviour among the public include reducing consumption, changing eating habits and limiting travel. When evaluating products, consumers are paying increasing attention to production methods, recyclability, the environmental friendliness of packaging and the product's impact on natural resources. As a result, it is consumers' behavioural preferences that are driving additional market demand for 'green' products and stimulating the development of digital tools to verify the environmental sustainability of goods and services.

The transition to a 'green' economy and the implementation of sustainable technological transformations are now among the key priorities of global development, as they aim to reduce the negative impact of economic activity on the environment and ensure long-term economic stability. The effective implementation of such changes requires a comprehensive approach covering the technological, economic, political and social aspects of development. Of particular importance is the dissemination of environmentally safe technologies, in particular carbon-free energy solutions, improving energy efficiency and implementing the principles of the circular economy. At the same time, technological progress alone does not guarantee the success of the 'green' transition, as structural changes are also necessary, involving the improvement of the institutional environment, the adaptation of market mechanisms, and the promotion of sustainable models of behaviour in business and society.

An analysis of current academic research indicates that significant attention is being paid to the interplay between the digital and 'green' economies. On the one hand, digitalisation acts as a key catalyst for environmental modernisation and the optimisation of resource-intensive processes; on the other, it creates new challenges linked to rising energy consumption and the accumulation of electronic waste. In this context, research into the interdependencies between the institutional, technological and behavioural factors of the 'green' economy's development—which form the basis of its current development triad—takes on particular significance.

Academic works on the development of the 'green' economy in European Union countries and Ukraine increasingly emphasise the role of digital transformations in environmental modernisation processes. A significant proportion of research focuses on a comparative analysis of institutional models, structural changes and the relationship between the level of digitalisation and the achievement of the Sustainable Development Goals. The results confirm that the digital economy has a direct impact on countries' environmental indicators, and that the integration of digital tools into the mechanisms for implementing 'green' policies is a prerequisite for enhancing the effectiveness of sustainable development.

I. Maksimova and V. Kurilyak [8] have made a significant contribution to research in this area, analysing the interplay between digitalisation and decarbonisation across sectors within the EU economy. The authors argue that the implementation of digital solutions in manufacturing and logistics processes helps to reduce emissions, improve energy efficiency and modernise industrial enterprises. These findings are consistent with the EIT Digital analytical report [9], which systematises the potential of digital technologies for achieving the 'green' transition, in particular

through the use of artificial intelligence, blockchain technologies, digital twins and energy management platforms.

The Ukrainian context of digital and ‘green’ transformation warrants special attention, as it has its own specific characteristics, particularly in the context of post-war reconstruction. In the current circumstances, it is crucial for Ukraine to integrate digital solutions into the processes of economic and infrastructure reconstruction, as well as to harness the potential for the rapid implementation of environmentally efficient technologies. This creates the conditions for the formation of a new model of economic development, focused on combining the principles of digitalisation, environmental safety and resource efficiency.

Despite a substantial body of academic literature, the issue of aligning digital and ‘green’ strategies within a single comprehensive model—one that simultaneously takes into account institutional and regulatory factors, technological and digital capabilities, and behavioural transformations in society and business—remains under-researched. Furthermore, there is a need for empirical research aimed at assessing the synergy between these components in various EU countries and identifying the most effective mechanisms for transitioning to a ‘green’ economy, in which digital technologies and platforms are one of the key drivers of strategic development. This is particularly relevant for countries with economies in transition, notably Ukraine, which is undergoing profound socio-economic changes.

References

1. Kasztelan A. Green growth, green economy and sustainable development: terminological and relational discourse. *Prague Economic Papers*. 2020. Vol. 26, №. 4. P. 487–499.
2. Global Green Economy Index. DualCitizen. URL: <https://dualcitizeninc.com/global-green-economy-index/>
3. The European Green Deal. European Commission. URL: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-greendeal_en
4. Fit for 55. European Council. URL: <https://www.consilium.europa.eu/en/policies/fit-for-55/>
5. Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU as regards corporate sustainability reporting (Text with EEA relevance). *EUR-Lex*. Access to European Union law. URL: <https://eurlex.europa.eu/eli/dir/2022/2464/oj/eng>
6. Digital Strategy 2025. Bundesministerium für Wirtschaft und Energie. URL: <https://www.bundeswirtschaftsministerium.de/Redaktion/EN/Publikationen/digitalestrategie-2025.html>
7. Report for Sweden on climate policies and measures and on projections. URL: <https://www.naturvardsverket.se/496ff2/contentassets/cafl4fb0008a41d29b9d51228f874fc b/report-for-sweden-march-2023.pdf>
8. Maksymova I., Kurilyak V. Digitalization and decarbonization: Aspects of synergy in the EU industries. *Economy and Society*. 2024. No. 67. DOI: <https://doi.org/10.32782/2524-0072/2024-67-157>
9. Digital technologies and the green economy. Makers & Shapers. URL: https://28digital.eu/fileadmin/2022/ecosystem/publications/EIT-Digital_Report_DigitalTechnologies-and-the-Green-Economy.pdf