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GREEN ECONOMY AND SUSTAINABLE DEVELOPMENT

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Formulation of the problem. In modern conditions, global environmental challenges, such as climate change, depletion of natural resources and environmental pollution, have jeopardized the possibility of stable economic growth and social well-being of future generations. The traditional linear model of the economy, based on the principles of "extract, use, dispose of waste", has exhausted itself. This necessitates a critical analysis of existing approaches and the search for new development paradigms, among which the concept of a green economy occupies a central place. *The purpose of the article* is to systematize theoretical approaches to defining the essence of a green economy, a comprehensive assessment of its role as a catalyst for sustainable development, as well as an analysis of the effectiveness of key instruments and mechanisms for its implementation at the national and regional levels. *The object of the study* is the socio-economic relations that arise in the process of transforming the traditional economic system towards a green economy and sustainable development. The subject of the study is the theoretical and methodological foundations, economic instruments, mechanisms of state regulation and institutional conditions that ensure the transition to a green economy. *Research methods:* To achieve the research goal, a complex of general scientific and special methods was used, including: system analysis (to study the relationships between the components of the green economy); comparative analysis (to assess international experience); statistical methods and correlation-regression analysis (to identify relationships between economic and environmental indicators); abstract-logical method (to formulate theoretical generalizations and conclusions). *The main hypothesis of the study.* It is assumed that the transition to a green economy is not only an imperative of environmental safety, but also a powerful driver of long-term economic growth based on innovation, energy efficiency and the creation of new "green" jobs. The effectiveness of this transition depends on the synergy between clear state policy, private investment and civil society activity. *Presentation of the main material.* The article examines the evolution of the concept of a green economy in the context of the sustainable development paradigm. The key tools for its implementation are analyzed: economic (pollution taxes, green procurement system, emissions trading), regulatory (environmental standards and regulation) and informational (eco-labeling). Successful cases of EU countries in stimulating renewable energy and the circular economy are considered using specific examples. Special attention is paid to the analysis of barriers to the "greening" of the Ukrainian economy and ways to overcome them are proposed. Originality and practical significance. *The originality of the work* lies in the comprehensive approach to assessing the transformational potential of the green economy, which combines macroeconomic analysis with an assessment of the effectiveness of specific mechanisms. The practical significance of the results obtained lies in the development of scientifically based recommendations for state authorities on the formation of an effective policy to stimulate "green" investments, modernize infrastructure and ensure environmental education of the population. The materials of the article can be used in the educational process. *Conclusions and prospects for further research.* It has been proven that the green economy is the basis for achieving sustainable development goals, as it provides synergy between environmental sustainability, economic efficiency and social justice. Integrated approaches that combine fiscal instruments, innovation incentives and international cooperation have been identified as the most effective. Prospects for further research lie in the quantitative assessment of socio-economic effects from the implementation of specific "green" projects, as well as in the study of the adaptation of cir-

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cular economy mechanisms for key sectors of the national economy.

Keywords:

green economy, sustainable development, circular economy, greening, "green" investments, state regulation, ecological modernization.

ЗЕЛЕНА ЕКОНОМІКА ТА СТАЛІЙ РОЗВИТОК

Постановка проблеми. У сучасних умовах глобальні екологічні виклики, такі як зміна клімату, виснаження природних ресурсів та забруднення навколишнього середовища, поставили під загрозу можливість стабільного економічного зростання та соціального благополуччя майбутніх поколінь. Традиційна лінійна модель економіки, заснована на принципах «видобути, використати, утилізувати відходи», вичерпала себе. Це обумовлює необхідність критичного аналізу існуючих підходів та пошуку нових парадигм розвитку, серед яких центральне місце займає концепція зеленої економіки. *Метою статті* є систематизація теоретичних підходів до визначення сутності зеленої економіки, комплексна оцінка її роль як каталізатора сталого розвитку, а також аналіз ефективності ключових інструментів та механізмів її впровадження на національному та регіональному рівнях. *Об'єктом дослідження* є суспільно-економічні відносини, що виникають у процесі трансформації традиційної економічної системи в напрямку зеленої економіки та сталого розвитку. Предметом дослідження виступають теоретико-методологічні засади, економічні інструменти, механізми державного регулювання та інституційні умови, що забезпечують перехід до зеленої економіки. *Методи дослідження:* Для досягнення мети дослідження використано комплекс загальнонаукових і спеціальних методів, включаючи: системний аналіз (для вивчення взаємозв'язків між компонентами зеленої економіки); порівняльний аналіз (для оцінки міжнародного досвіду); статистичні методи та кореляційно-регресійний аналіз (для виявлення взаємозв'язків між економічними та екологічними показниками); абстрактно-логічний метод (для формулювання теоретичних узагальнень і висновків). *Основна гіпотеза дослідження.* Припускається, що перехід до зеленої економіки є не лише імперативом екологічної безпеки, але й могутнім драйвером довгострокового економічного зростання, що базується на інноваціях, енергоефективності та створенні нових «зелених» робочих місць. Ефективність цього переходу залежить від синергії між чіткою державною політикою, приватними інвестиціями та активністю громадянського суспільства. *Виклад основного матеріалу.* У статті досліджено еволюцію концепції зеленої економіки в контексті парадигми сталого розвитку. Проаналізовано ключові інструменти її реалізації: економічні (податки на забруднення, система «зелених» закупівель, торгівля квотами на викиди), нормативно-правові (екологічні стандарти та нормування) та інформаційні (екологічне маркування). На конкретних прикладах розглянуто успішні кейси країн ЄС щодо стимулювання відновлюваної енергетики та циркулярної економіки. Окрему увагу приділено аналізу бар'єрів на шляху «озеленення» економіки України та пропонуються шляхи їх подолання. *Оригінальність та практична значущість.* Оригінальність роботи полягає в комплексному підході до оцінки трансформаційного потенціалу зеленої економіки, що поєднує макроекономічний аналіз з оцінкою ефективності конкретних механізмів. Практична значущість отриманих результатів полягає в розробці науково обґрунтованих рекомендацій для органів державної влади щодо формування ефективної політики стимулювання «зелених» інвестицій, модернізації інфраструктури та забезпечення екологічної освіти населення. Матеріали статті можуть бути використані у навчальному процесі. *Висновки та перспективи подальших досліджень.* Доведено, що зелена економіка є основою для досягнення цілей сталого розвитку, оскільки забезпечує синергію між екологічною стійкістю, економічною ефективністю та соціальною справедливістю. Найефективнішими визначено інтегровані підходи, що поєднують фінансові інструменти, інноваційні стимули та міжнародне співробітництво. Перспективи подальших досліджень полягають у кількісній оцінці соціально-економічних ефектів від впровадження конкретних «зелених» проєктів, а також у дослідженні адаптації механізмів циркулярної економіки для ключових галузей національного господарства.

Ключові слова:

зелена економіка, сталий розвиток, циркулярна економіка, екологізація, «зелені» інвестиції, державне регулювання, екологічна модернізація.

Formulation of the problem. The problems our civilization is currently facing are leading to large-scale changes in all areas of society. In particular, we can talk about global climate change, loss of biodiversity, economic and social tension.

Overexploitation of natural resources and rising pollution are gradually crossing planetary boundaries. The damage to economies and societies caused by environmental degradation can offset the gains from development and poverty reduction. A green economy offers the oppor-





tunity to create adequate employment and improve social inclusion. Economic growth, job creation and income depend on natural capital and systems. A green economy should be characterized by better jobs, reduced poverty and increased social inclusion. The international growth model is unsustainable from an ecological, economic and social perspective. The increasing accumulation of greenhouse gases in the atmosphere is associated with high economic costs. Extreme weather events due to climate change lead to significant negative economic costs for society.

Analysis of recent research and publications. The issue of transition to a green economy as a basis for sustainable development is central to the current scientific debate. Recent research focuses on critically analyzing the progress made since the adoption of the UN Sustainable Development Goals (SDGs) [1], as well as identifying barriers and mechanisms to accelerate this transition.

A significant body of publications is devoted to assessing the relationship between environmental and economic indicators. For example, the study by Halkos and Gkampoura [2] based on the analysis of data on EU countries proves that there is a U-shaped relationship between the level of economic development and carbon footprint [3], which confirms the relevance of the concept of a green economy for achieving decarbonization goals. Similar conclusions are contained in the work of UNEP [4], which emphasizes that, despite the growth in the volume of "green" finance, total investments in renewable energy and energy efficiency are significantly lower than those required to implement the Paris Agreement.

An important direction of current research is the study of specific tools and mechanisms. OECD [3] thoroughly analyses the effectiveness of fiscal instruments such as carbon taxes and emissions trading schemes (ETS), demonstrating their role in redirecting investment towards low-carbon technologies. The authors stress the importance of social support [6] for such reforms to mitigate their impact on vulnerable groups. In the business context, the World Economic Forum [7] highlights the circular economy as a key driver of not only environmental but also competitive advantage, providing examples of innovative business models of companies from different sectors.

Scholars pay particular attention to regional specificities and developing countries. Bal-

salobre-Lorente et al. [1] examine the specifics of the transition economies of Central and Eastern Europe, pointing to structural barriers such as dependence on coal power and lack of institutional capacity. For the Ukrainian context, the study by Shevchuk and Krasnosilska [5] is key, as it not only analyzes the current state, but also proposes conceptual principles for rebuilding the Ukrainian economy on the principles of the EU's "green" course, which is extremely relevant in modern conditions.

At the same time, there are significant gaps in research. Most macroeconomic level works do not take into account the micro level - the motivation and behavior of individual households in making "green" decisions. In addition, the effectiveness of integrating ESG (Environmental, Social, Governance) principles into the corporate governance system in countries with transition economies, in particular in Ukraine, has not been sufficiently studied. The issue of quantifying the multiplier effect of "green" investments on the creation of new jobs and the development of regions also remains open.

Thus, despite the significant volume of scientific work, there remains a need for further comprehensive research that combines macro- and micro-approaches, as well as the development of specific mechanisms for adapting international experience to the national conditions of countries such as Ukraine, taking into account the challenges of war and post-war times.

The purpose of the article is to systematize theoretical approaches to defining the essence of a green economy, a comprehensive assessment of its role as a catalyst for sustainable development, as well as an analysis of the effectiveness of key instruments and mechanisms for its implementation at the national and regional levels.

Presentation of the main research results. Today, as governments seek effective ways for their countries to overcome interrelated crises within the constraints of our planet, the green economy (in its various forms) is often seen as a tool that can be used to catalyse national policy-making and international cooperation and promote sustainable development. Several years ago, the concept gained increased international attention as one of the themes of the 2012 UN Conference on Sustainable Development (Rio+20). Governments agreed to consider the green economy as an important tool for achieving sustainable development, which is distinguished by its inclusive nature and the promotion of economic

growth, employment and the eradication of poverty, while ensuring the normal functioning of the planet's ecosystems.

The decline of fossil fuels and climate change are clarifying energy security patterns. The links between energy consumption and production are changing socio-economic processes, invariably linked to CO₂ emissions. Reducing our dependence on carbohydrates requires deeper structural changes in the economy. The transition from fossil fuel to non-fossil fuel energy systems has supported energy demand. Both developed and developing countries are looking for ways to accelerate the transition to greener energy systems. Institutional and political determinants create the conditions for behavioral change for sustainability. Economic recovery is necessary to address the risk of international environmental degradation [5; 6].

Growth is a critical determinant of poverty reduction and improved social indicators. The links between economic and social support for sustainable development are generally positive. Economic growth generates environmental degradation. Much of this is caused by market failures and wasteful policies. The production of goods is largely characterized by market collapse. Opportunities for rapid income growth through green growth schemes arise from market failures [3].

The transition to a greener economy offers significant opportunities to create decent employment and improve social inclusion, and involves changing patterns of employment and income distribution. Growing and interconnected environmental stresses can have important negative consequences for economic growth and social improvements. Ecosystem support and biodiversity are rarely used as market indicators in business decisions. The combustion of fossil fuels and biomass accounts for the predominance of greenhouse gas emissions. High-income countries are the most significant emitters of greenhouse gases per capita. Low-carbon growth policies must be adopted in developed and developing countries. There is an inherent trade-off between the goals of economic action and environmental sustainability. The costs of externalities due to policy inaction are significant. Extreme weather events can have severe consequences for the economy and society.

Climate change is real and the causal relationship with increasing greenhouse gas emissions is now clearly established [7]. Globally, the ten hottest years on record have occurred since

1991, and temperatures have increased by about 0.6°C over the past century (IPCC reports). During the same period, global sea levels have risen by about 20 cm, partly due to melting mountain ice and partly due to thermal expansion of the oceans. Scientific research shows that over the past two centuries, human activity has increased the concentration of greenhouse gases in the atmosphere to levels above pre-industrial levels. Only the increase in greenhouse gas emissions and the concentration of aerosols in the atmosphere can explain the upward trend in temperature over the past 100 years (IPCC reports).

Recent climate change is the result of human actions, especially the burning of fossil fuels and changes in land use. Development activities increase atmospheric concentrations of greenhouse gases (GHGs) – mainly carbon dioxide, methane and nitrous oxide. GHGs accumulate in the upper atmosphere and act as a gas roof that filters out the sun's long-wave radiation, which causes temperatures to rise. They also trigger and accelerate other forms of climate disruption. It depends on a complex interaction of many factors, including population growth, economic growth and consumption patterns. The effects are not uniform. Changes vary from one place to another. There are different weather effects: some regions experience intense rainfall, others a longer dry period, and a few regions experience both.

As a result of ongoing global warming, millions of people around the world face the risk of floods, droughts and debilitating diseases such as malaria, dengue fever, swine flu, encephalitis, etc. Poor people in underdeveloped countries are likely to be the most vulnerable in terms of health and livelihoods. Social impacts also vary and depend on the level of development. Within the same society, there are different social impacts: heat stress affects older people more than younger people.

Around the world and in every country, it is usually the poor who are most at risk, and in developing countries those who depend most on a healthy natural environment for survival, such as ethnic tribes, fishing communities and pastoralists. There is still a good chance to mitigate the negative impacts of climate change by stabilizing atmospheric carbon dioxide concentrations at relatively lower levels, which may be an achievable goal.

Taking action to combat climate change can provide a higher standard of living and also create economic opportunities in terms of job



creation or employment. We need to explore all ways to reduce the concentration of carbon dioxide in the atmosphere, such as sequestration, fusion, fuel cells, renewable energy, etc.

Conclusions and prospects for further research. By applying new conceptual and methodological approaches, this study advances the study of the rate of green capital accumulation, the harmful environmental impacts of agriculture, the environmental consequences of economic growth, and the design and implementation of policies that promote green and sustainable development. This includes the need to mitigate global warming by reducing harmful greenhouse gas (GHG) emissions and to develop methods for managing sustainable development and green growth. A thorough understanding of the green economy in the context of sustainable development and poverty eradication, the market pressures that support the fossil fuel economy, and the proactive nature of the green economy is needed. This article aims to fill a gap in the current literature by examining the implications of a greener economy for labor markets, the political economy of development mechanisms, and the roles of countries and markets in the transition to a green economy. Although some important findings have been made regarding the emergence of sustainable patterns in agriculture, the complexity of ecosystem behavior, and the international implications of the greening of the world economy, much remains unknown and requires further empirical research.

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