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Opportunities and Risks of Developing a Green Economy

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ABSTRACT

The relevance of the topic is due, firstly, to the importance of sustainable development as a priority task of the world community, and secondly, the green economy is an important tool for achieving it. **The purpose** of this research article is to identify the opportunities and risks of developing a green economy within the framework of sustainable development. **Methods:** the study was carried out using up-to-date data and sources, as well as a theoretical analysis of the basic principles and methodological approaches to the green economy. **Scientific novelty:** Summarizing the modern conceptual developments of the paradigm of the green economy, the author's definition of this scientific category is proposed, which contributes to a more accurate understanding of the concept of the green economy. The main features and principles of the green economy are given. **The results of the study:** The article substantiates the directions of development of modern forms of green economy, taking into account which priority instruments of green financing are identified. The author analyzes the total volume of green financing in the world and provides a rating of countries according to the GGEI index. The article systematizes the opportunities and risks of developing a green economy. **Practical significance:** results and conclusions of the article can be useful both for the scientific community and for decision-makers at the level of States and international organizations that strive for sustainable development and environmental protection.

Keywords: sustainable development; green economy; green finance; economic system; economic models; opportunities; risks

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INTRODUCTION

The experience of the twentieth and early twenty-first centuries clearly points to serious problems associated with the unsustainable use of non-renewable resources and environmental pollution, which are of a global nature and have a negative impact on economic development, as well as on the health and well-being of the population. The concept of sustainable development has become a key tool to address these challenges in order to meet the needs of the current generation without compromising the rights of the next generation. This means that economic development should be carried out in harmony with nature and the environment. A green economy seeks to reduce the negative impact of human activity on the environment, it is based on the efficient use of renewable resources, the application of environmentally friendly technologies and the promotion of the concept of circular economy approach, where waste and emissions are minimised and resources are recycled and reused.

Currently, the concept of green economy as a basis for sustainable development policy is widely reflected in the research discourse, in the context of various political [1, 2] and socio-economic [3] aspects of this phenomenon. Foreign studies [4–6] discuss such issues as the development of innovative technologies, the efficiency of renewable energy sources, the role of the state in the development of a green economy, etc. The Russian scientists are also actively studying such issues [7–11], paying attention to the peculiarities of green economy development in our conditions and its impact on the social sphere and living standards of the population.

International organisations are developing strategies to stimulate green investment and technological innovation.

Recognising the green economy as a key instrument reflects global public readiness for a paradigm shift in economic development.

However, this requires additional investment, overcoming resistance from fossil-dependent industries and changing consumer habits, which requires broad public consensus and global co-operation to ensure a sustainable future for the planet.

BASIC PRINCIPLES AND METHODOLOGICAL APPROACHES OF GREEN ECONOMY

Green economy has become an important trend in both science and policy, mainly because of the increasing environmental problems and the need for sustainable development. It seeks to reconcile the needs of humanity with environmental protection and to ensure the stability of the economic system on a long-term basis [12].

One of the first attempts to formulate the ideas underlying the green economy was the study by D. Meadows [13], in which the author warned humanity against excessive consumption and spending of limited natural resources, as it would lead to environmental disaster and limit the possibilities of long-term economic growth. D. Meadows called for a transition to a model that would take into account the limited resources and the need to preserve them for future generations.

However, the term “green economy” was officially introduced into the scientific context in 1989 in the report of D. Pierce “Green Economy Plan” (Green Economy Report) [14], in which this scientific category was first defined as an economy that seeks to ensure sustainability and well-being of mankind, as well as the preservation of the natural environment and resources for future generations. In this regard, a new approach to the assessment of economic activity was

Table 1

Scientific approaches to the “green economy” category

Approach	Characteristics
Sustainable development and environmental protection	To ensure economic growth and prosperity, taking into account the need to preserve natural resources and the environment for future generations
Resource efficiency and renewable energy	Reducing dependence on fossil fuels and increasing the share of renewable sources: solar, wind and hydro energy
“Recircular” economy and waste management	Instead of a linear “production-consumption-disposal” model, a cyclical model is proposed where waste becomes secondary resources
Green technology and innovation	Developing new technologies that help reduce environmental impact and improve resource efficiency
Social justice and participation	Taking into account the interests, needs and ensuring equal opportunities for all members of society to participate in green initiatives

Source: compiled by the author.

Table 2

The main features and principles of the green economy

Directions	The main features	Principles
Social	Increasing the welfare of society, improving the quality of life of the population	<ol style="list-style-type: none"> 1. Providing employment, developing green industries and creating green jobs. 2. Improving governance and employment, including public participation in the planning process; increasing accountability in decision-making. 3. Ensure equity, fairness and justice between countries and across generations. 4. Improving the quality of life: reducing poverty, increasing prosperity, social security, access to universal benefits for the population
Economic	Economic growth, ensuring sustainable and efficient use of resources	<ol style="list-style-type: none"> 1. Development of environmentally friendly technologies. 2. Creation of effective mechanisms of economic management to achieve environmental sustainability and economic growth. 3. Development of innovative forms and methods of economic management for sustainable development. 4. Improving the efficiency of resource utilisation and reducing emissions of harmful substances. 5. Stimulating green investments and developing green finance. 6. Taking into account the cost of the environment and natural resources in economic calculations
Environmental	Risk reduction, protection and safeguarding of the environment, biodiversity and ecosystem services	<ol style="list-style-type: none"> 1. Conservation and protection of natural resources. 2. Reducing harmful impacts on the environment and reducing emissions of harmful substances. 3. Development and implementation of environmentally friendly technologies. 4. Raising public awareness of environmental problems. 5. Promotion of environmental awareness and responsibility among the population. 6. International co-operation to solve global environmental problems

Source: compiled by the author.



Table 3

Features of various models of ecological and economic systems

Model	Features and characteristics	Boundaries
Circular economy (closed-loop economy)	Waste and resources are reused and recycled into new products. The basic idea is to minimise waste and maximise the use of existing resources	Determined by the opportunities and conditions in which these technologies can be implemented
Low-carbon economy	Shift from fossil fuels to renewable sources (solar and wind power) to reduce greenhouse gas emissions and limit climate change	Related to the introduction of new technologies and infrastructure to reduce emissions and improve energy efficiency
Bioeconomy	Utilisation of biological resources to create new products, technologies, and services. Biological processes and biodiversity are taken into account, as well as sectors related to the use of biological resources: agriculture, forestry, fisheries, etc.	Determined by the availability of biological resources and the possibility of their sustainable use
Blue economy	Creating new technologies and infrastructure to conserve marine biodiversity; reducing emissions to the oceans and improving the efficiency of marine resource utilisation. It is an alternative to conventional industrial processes, shifting the focus from fossil-based resources to simpler and greener technologies that help protect the global ecosystem and create new jobs	Related to the use of marine resources and environmental constraints of marine ecosystems
Green growth economy	Creating a sustainable economy in which economic growth does not lead to environmental degradation – they are not opposites but can be achieved simultaneously	Determined by opportunities for economic growth while respecting environmental and social requirements

Source: compiled by the author.

proposed, taking into account not only the traditional indicators of economic growth, but also the impact on the environment, as well as the cost of loss of natural resources and environmental services.

Subsequently, ideas on green economy were developed and disseminated in the 1991 and 1994 World Reports prepared by the UN Commission on Environment and Development,¹ which emphasised the importance of the relationship between the economy and the environment and the need to adopt new approaches to production and consumption that take into account the

protection of nature and resources (Table 1).

In general, all these approaches aim to create an economy that is sustainable, environmentally friendly and socially responsible – a system that takes into account not only economic performance, but also social and environmental aspects.

Thus, in a green economy, economic growth and human well-being are achieved within the framework of respect for nature and its limited resources. The harmonious coexistence of economy, society and nature is based on the principles of balance, environmental sustainability, and social justice.

Summarising modern conceptual developments of the scientific paradigm

¹ UN Department of Economic and Social Affairs (UNDESA), A Guidebook to the Green Economy: Issue 1, 2012, 60 p.

Table 4

Directions of development of modern forms of green economy

Green economy				
Low-carbon economy	Bioeconomy	Green growth economy	Circular economy	Blue economy
Efficient utilisation of energy resources				
Widespread utilisation of renewable energy sources				
Minimising greenhouse gas emissions through more efficient use of energy resources and renewable energy sources	Sustainable development of agriculture and biotechnology	Extending the life cycle of used resources (products) to improve environmental sustainability and social well-being		
	Efficient utilisation of waste materials			

Source: compiled by the author.

Table 5

Green financing tools

Tools	Description
Green stocks	Shares of companies that are engaged in environmentally responsible business and/or have a sustainability strategy. Investors may purchase such stocks to support companies that are committed to sustainability and environmental stewardship
Green bonds	Bonds, the proceeds of which are used to finance environmental projects. Investors purchasing them can be assured that the money will be used to support projects that help reduce their carbon footprints
Green loans	Loans designed to finance environmental projects. Lenders screen a project for compliance with certain environmental criteria and issue a loan to the borrower to implement the project
Green funds	Investment funds in which money is invested to support environmental projects. Such funds can be both public and private
Green grants	Financial support provided for environmental projects and research. Usually do not require repayment
Green insurance	Insurance products designed to cover risks associated with environmental projects: insurance against floods, natural disasters, etc.
Financing of energy efficiency projects	Can be implemented through green loans, where borrowers receive additional preferences, e.g., lower interest rates due to the use of energy efficient technologies
Targeted investments in socio-environmental projects	Investments aimed at solving social and environmental problems in various spheres: healthcare, education, ecology, etc.
Investments in green technologies	Investments in the development and implementation of environmentally friendly technologies such as renewable energy, electric vehicles, environmentally friendly materials, etc.

Source: compiled by the author.

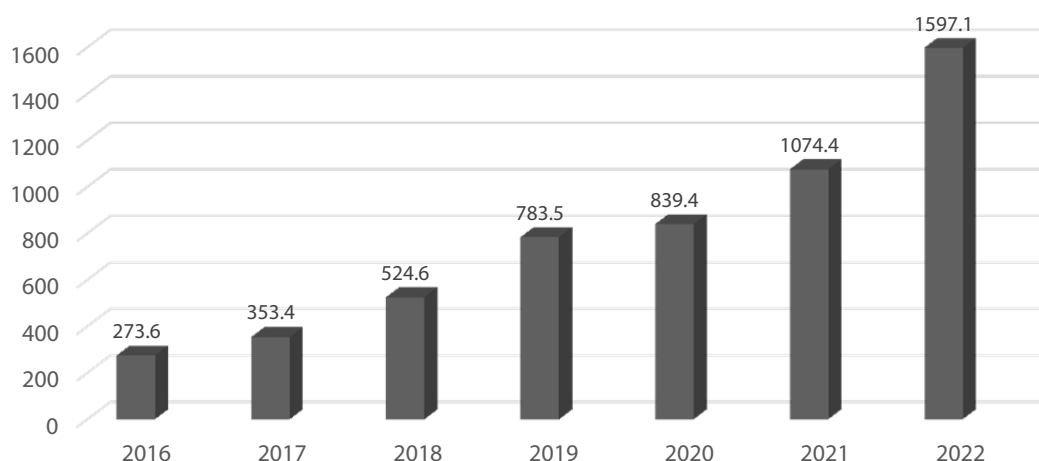


Fig. 1. The total volume of green financing in the world, billion dollars

Source: compiled by the author based on data from Green Finance Impact Report 2022. URL: <https://www.macquarie.com/assets/macq/impact/esg/policies/2022-annual-green-impact-report.pdf>

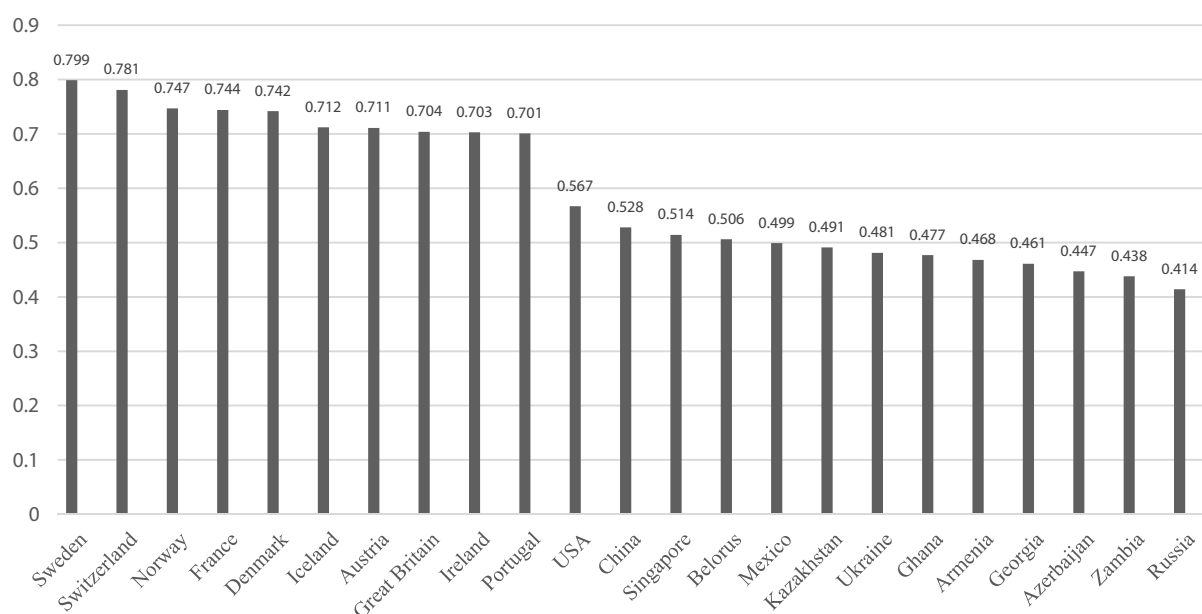


Fig. 2. Ranking of countries according to the GGEI index in 2022

Source: compiled by the author based on data from the Global Green Finance Development Index 2022. URL: <https://composite-indicators.jrc.ec.europa.eu/explorer/explorer/indices/ggei/global-green-economy-index>

of green economy [15–18], it is necessary to acknowledge that this category needs further clarification. The author proposes the following definition:

“Green economy — is an economic system aimed at achieving environmental

sustainability and improving the quality of life of people, based on the use of environmentally friendly and energy-efficient technologies, products and services and the principles of environmental responsibility in business and public life. It

Table 6

Opportunities and risks of green economy development

Opportunities	Effect
Economic growth	Creating new jobs, stimulating innovation, and developing new industries
Energy independence	Reducing dependence on oil and gas
Reduction of greenhouse gas emissions	Helping to combat climate change and related problems
Reduced resource utilisation	Reduce environmental impact and save resources
New markets and investments	Creating new markets for environmentally friendly goods and services, attracting investment in innovative projects
Risks	Effect
Financial risks	Significant investments that may not always pay off quickly
Technological limitations	Some technologies and innovations may not yet be ready for large-scale implementation
Social consequences	Negative impact on certain sectors of the economy and employment, requiring social support
Unequal competition	Due to different access to technology between developed and developing countries, conflicts may arise when regulations are tightened, which can exacerbate economic stagnation in developing countries.
Dependence on resources	In some cases, new problems may arise with rare or scarce resources

Source: compiled by the author.

stimulates innovation, ensures interaction between government, business and society, and aims to achieve economic growth without harming the environment”.

The main features and principles of a green economy include the following aspects (Table 2).

Thus, a green economy seeks to use resources sustainably and reduce negative environmental impact. At the same time, its goal is not to limit (or even reduce) economic growth (as previously stated by proponents of sustainable development ideas), but rather to restructure the economy in such a way as to “fit” it within the natural capabilities of the planet [19, 20].

In this regard, there is an active formation of different models of ecological-economic

systems: circular economy or closed-loop economy, green growth economy, bioeconomy, low-carbon economy, blue economy; hybrid types, e.g., circular bioeconomy and others. [21] (Table 3).

Each of these ecological-economic systems models has its own unique emphases and focuses on certain aspects of sustainable development, but in general they all aim to create a more sustainable and environmentally responsible economy that recognises and accounts for the impact of human activity on the environment and takes active measures to reduce negative impacts on nature (Table 4).

Some of the models discussed — the circular economy, the low-carbon economy, and the green growth economy — are

already widespread in various countries (Netherlands, Finland, Sweden, France, Japan, China). Others — such as the bioeconomy and the blue economy — are at an earlier stage of development but have great potential to create new opportunities for sustainable development (e.g., in the EU countries, India, Brazil). One of the key factors for the successful implementation of these models is co-operation between government, business, and population.

However, building a green economy is impossible without an effective system of green finance, which involves providing financial support to projects and initiatives that promote the transition to more environmentally friendly and sustainable ways of production and consumption of resources.

Taking into account the key directions of development of modern forms of green economy there are: environmentally friendly investment, low-carbon finance, circularity finance, targeted social finance (impact finance), responsible finance (ESG-finance) [22–24]. Green finance instruments that help to stimulate environmental investments and orient financial markets towards sustainable development are given in *Table 5*.

Green finance instruments are actively developing. In 2022, its volume globally significantly exceeded \$ 1 trillion (*Fig. 1*). This trend reflects the growing global environmental awareness and responsibility and allows reorienting financial flows towards a sustainable future.

Overall, green finance plays an important role by enabling investment in projects and initiatives that promote conservation, reduce greenhouse gas emissions and contribute to sustainable development at the global level.

To measure the extent to which different countries are engaged in green and climate-resilient development, the Global Green Economy Index (GGEI) has been developed at

the international level to compare countries, taking into account indicators such as:

- Leadership and climate change — climate change policy, regulation of greenhouse gas emissions, utilisation of renewable energy sources, etc.
- Efficiency sectors — energy saving, resource efficiency, pollution reduction, etc.;
- Markets and investments — volume of investments in green projects, availability of financing for green enterprises, degree of development of green markets, etc.;
- Environment — the country's results and achievements in terms of air and water quality, protection of natural resources, biodiversity, etc.;

The ranking of countries according to the GGEI index in 2022 is shown in *Fig. 2*.

According to this rating Sweden is ranked No. 1, reflecting its outstanding efforts in developing a green economy and climate-resilient approach. The USA is ranked relatively low. This can be attributed to various factors such as political decisions, government priorities, lack of certain environmental measures and restrictions, as well as opportunities for innovation and development of green technologies. Russia lags behind Belarus, Kazakhstan, Armenia, Georgia, and Azerbaijan in the green economy. This indicates the need for additional efforts, and successful practices applied in countries with high green economy indices can become valuable experience and a source of incentives to support sustainable development in Russia.

PROBLEMS AND PERSPECTIVES OF GREEN ECONOMY DEVELOPMENT

The development of a green economy is an important and promising area with various opportunities. However, it also involves certain risks (*Table 6*).

In order to successfully develop a green economy, countries need to consider risks

and develop appropriate coping strategies. Recognising and addressing these risks will help avoid unforeseen problems and ensure more effective implementation of green policies and measures.

Creating conditions to stimulate innovation, investment and partnership between government, business and society is also a key factor in the successful implementation of the green economy, allowing for the pooling of efforts and resources to develop and implement effective green projects and strategies.

The lack of a clear and systematic methodology can make it difficult to understand and implement the green economy. There is a point of view of the expert community [25–29] that there are certain gaps in the formation of a theoretical and methodological platform for the transformation of the economy to sustainable development, including:

- lack of common standards and definitions, without which a variety of approaches and interpretations can arise, which can lead to ambiguity and lack of clarity in the development of policies and strategies;
- lack of integrated approaches, the absence of which will contribute to poor coordination and coherence between different sectors and stakeholders;
- lack of reliable data and measurements, which will make it difficult to assess the progress and impact of green policies;
- the need to address all dimensions of sustainability: economic growth, social well-being and environmental conservation, which requires harmonised and standardised indicators that can capture the complex and multidimensional nature of a green economy;
- debate about the possibility and extent of decoupling economic growth from environmental degradation (critics

argue that the pursuit of continued economic growth within the planet's limited environmental constraints can lead to unsustainable resource consumption and negative environmental impacts, even with renewable energy sources);

- distributional impacts, where it is important to consider the potential social and economic inequalities that may arise (including the risk of job losses in traditional sectors and the uneven distribution of costs and benefits between different groups and regions);

- technological optimism and trade-offs that need to be critically evaluated (e.g., production and utilisation of renewable energy technologies may have consequences such as waste generation or land use conflicts);

- social aspects: it is important that the green economy framework adequately addresses social concerns and does not exacerbate existing inequalities;

- political and institutional challenges that require co-operation and co-ordination between governments, business, civil society and international organisations..

To address these gaps, it is necessary to closely study modern experience in the field of green transformation, to develop and systematise methodological approaches and principles of green finance and social investment adapted to modern realities, as well as to integrate the green economy into the system of state and corporate governance.

Thus, active, and constructive work by all stakeholders is required. Governments can create legislative frameworks and economic incentives for environmentally friendly technologies and investments, as well as provide conditions for the development of environmental infrastructure. Business industry can contribute by developing and introducing new technologies, reducing



its ecological footprint, and ensuring sustainable production. Coordinated efforts of society should be aimed at financial, organisational, and ideological support for a green economy; environmentally responsible consumption; implementation of global projects promoting the development of a closed-cycle economy, new green energy, creation of a system of fiscal incentives for the transition to environmentally friendly technologies, as well as increasing environmental literacy of all segments of the population.

CONCLUSIONS

1. The transition to a green economy is a complex but necessary process to achieve sustainable development and preserve the environment for future generations.

2. Successful implementation of a green economy requires an integrated approach,

risk consideration and active co-operation between governments, business, and the public.

3. The prospects for a green economy are bright and encouraging, but further research and innovation are needed.

4. The development of a green economy requires strategic plans and broad co-operation of all actors in society.

Thus, analysing and solving theoretical and methodological problems in the field of green economy is critical for its effective development and successful implementation within the framework of sustainable development. The development and application of appropriate approaches will allow to define strategic directions, outline goals and priorities, think through effective measures to accelerate the implementation of the green economy and create a sustainable, environmentally friendly future.

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