The Emergence of Sharing and Circular Economies Through the Implementation of Sustainable Development Goals

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Abstract. *The implementation of the Sustainable Development Goals is influenced by the possibility of simultaneously introducing the features of the circular and sharing economy into the coordinate system of the national economy. If the country's government supports the development of these economies, the Sustainable Development Goals will be quickly taken up for implementation by legal entities and individuals. The purpose of the article is to propose a basic model of the relationship between the Sustainable Development Goals and the sharing economy and the circular economy, to identify its characteristic features, and to present their ecological actualization. To achieve the specified goal, the work used methods of analysis and synthesis, grouping, generalization, comparison, tabular, and systemic methods, which allowed for a comprehensive study of existing scientific developments on the issues of sharing and circular economies, to solve the tasks set for scientists, and to outline the prospects for future research. The results obtained consist in substantiating and revealing the features of implementing the Sustainable Development Goals through the development of sharing and circular economies. It is indicated that the determinants of the development of these economies are: an increase not only in the number of people on the planet, but also in its density; the development of new generation information and communication technologies. The basic components of the sharing economy and the foundation on which the development of the circular economy is based are clarified. A basic model of the relationship between the Sustainable Development Goals and the sharing economy and the circular economy is presented. The authors conducted a comparative analysis of the features of the development of the circular and sharing economies, indicating that the goal of the development of the sharing economy is the ability to use goods without the right to own them. The practical value of the study lies in the fact that the authors expressed the opinion that the government should institutionally support the introduction of environmental technologies into production and encourage a resource-saving business policy that would develop on the basis of environmental certification. Scientists are of the opinion that it makes sense to support the development of digital entrepreneurship, the activities of which are based on the Sustainable Development Goals, namely: energy efficiency, environmental friendliness, accessibility, and innovation. It is worth cultivating thrift and smart consumption among the population.*

Keywords: *sustainable development, circular economy, sharing economy, environmental friendliness, limited resources, closed production cycle, waste-free production, "smart" consumption.*

JEL Classification: *E21, L69, L90, O13*

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1 Introduction

The emergence and further development of circular and sharing economies is possible with the unconditional unification of government officials, industrialists, and consumers in achieving the Sustainable Development Goals (SDG). At the same time, technical and technological achievements and the presence of breakthrough innovations for the development of high technologies and their application in industry are possible with the active, joint research work of inventors, scientists, and innovators. We are convinced that it is the above-mentioned groups of people who are the drivers that determine progress in achieving the SDG.

It is worth emphasizing that "the circular economy is a symbiosis of economic prosperity, environmental responsibility" (Vantage Research Group, 2024), and social justice for the benefit of today's population and future generations (Kirchherr et al., 2023). Thus, in a circular economy, electronic goods are subject to recovery. Packaging can be biodegradable or recyclable. Animal waste, in a circular economy, is used as natural fertilizer and can be processed into biogas for cooking, heating, and lighting (GLOBAL. Climate Promise, 2023). As for the sharing economy, it "represents a paradigm shift in resource consumption and ownership while promoting a promising path to a more cyclical and sustainable future" (Rathnayake et al., 2024).

The purpose of the article is to propose a basic model of the relationship between the SDG and the sharing economy and the circular economy, to identify its characteristic features, and to present their ecological actualization; to indicate the characteristic features of the implementation of the SDG through the functioning of the sharing and circular economies; to identify the basic components of the sharing economy and the foundation on which the development of the circular economy is based; to present a comparative analysis of the characteristic features of the development of the circular and sharing economies.

To achieve the goal of scientific research, a solid and reliable database is taken as the basis. A significant role belongs to theoretical and research developments presented in scientific publications in rated and cited journals, indexed in the Scopus database, which is distinguished by the high quality of scientific articles and openness. This provides our work with representative and relevant materials that cover a wide range of scientific works and the results of in-depth research in various fields of knowledge, containing well-founded concepts and hypotheses regarding the formation of new models of economies, such as sharing and circular, as well as effective tools for achieving sustainable development goals.

The sources of data for the scientific article are the reporting materials of the European Parliament and the United Nations, which include information on the development of circular and sharing economies, energy saving, and resource conservation principles in countries around the world. This allows for a qualitative comparative analysis of countries and regions regarding their environmental orientation and to identify factors for the rapid achievement of the SDG. The presented materials of the European Parliament and the United Nations provide an idea of the actual state of affairs in the field of energy saving and environmental care, allowing for purposeful and methodically substantiated research.

The scientific work used various methods, in particular the visualization method, to present the basic components of the sharing economy and the foundation on which the development of the circular economy is based, as well as to demonstrate the model of the relationship between the SDG and the sharing economy and the circular economy. The comparison method helped to present the characteristic features of the development of the circular and sharing economies. The methods of analysis, synthesis, induction, and deduction were used to present the SDG through the development of the sharing and circular economies.

2 Literature review

The names of O. Alhawari, U. Awan, M. Bhutta (2021), U. Dulleck, P. Rojanakit (2022), K. Hartley, J. Kirchherr (2023), S. Golubka (2021), K. Kraus, N. Kraus (2023), M. Koc (2024), V. Osetskyi (2021), J. Ochoa, R. Rameezdeen, L. Statsenko, S. Sandhu (2024), etc. are associated with the study of general aspects of the formation and development of the circular economy and the sharing economy and the world practice of their implementation. At the same time, a significant number of urgent issues to be resolved, namely: the model of formation and development of ecological production, economical and smart consumption, tools and basic components of the implementation of the SDG through the prism of the sharing economy and the closed-loop economy, require additional study and disclosure. In particular, there is no clear understanding of the differences between these economies and the importance of their role in the rapid implementation of the SDG.

Foreign scientists A. Yousaf, A. Rashid and M. Koc (2024) studied the results of excessive resource consumption, emphasizing the need for sustainable innovations in the construction industry

and the possibility of integrating alkali-activated material and 3DP through the prism of the circular economy. Researchers J. Kirchherr, N. Yang, F. Schulze-Spuntrup, M. Heerink and K. Hartley (2023) devoted their research to the study of publications that reveal the content of the circular economy through the prism of improving the quality of supply chains, sustainable development and environmental sustainability, in order to form a relevant concept of the development of the circular economy for the next 5 years on the basis of this knowledge.

Studying the features of the development of the sharing economy, foreign scientists note that "the sharing economy is considered a modern business mechanism, while in traditional business models, there is a lack of constructive business foundations for the enterprise" of the sharing economy (Rojanakit, Torres de Oliveira, & Dulleck, 2022). We consider the research on the sharing economy by I. Rathnayake, J. Ochoa, N. Gu, R. Rameezdeen, L. Statsenko and S. Sandhu (2024) to be valuable. Scientists presented key aspects of the development of this economy through the adaptation of its concept to various industries and sectors of the economy.

A team of Ukrainian researchers N. Kraus, K. Kraus, S. Golubka (2021), V. Osetskyi (2021), O. Marchenko (2023), in their research revealed the content of the functioning of the sharing economy with the participation of digital platforms and analysed the formation of the sharing market as a basis for the formation of a "reputation" economy and overcoming the environmental problems of humanity.

3 The model of the connection of the SDG with the sharing and circular economy

In the long term, the EU plans to build a circular and climate-neutral economy by 2050. To this end, the EU has implemented a number of new measures in recent years to reduce waste and make products more environmentally friendly. New and updated legislation has addressed eco-design of packaging, green cleaning, the right to repair, smart waste management, and waste-free production with limited resources (European Parliament, 2023).

The leader in the progressive development of the circular economy in the world is the United Kingdom. The second and third places are occupied by China and the United States. The fourth, fifth, and sixth places, in terms of the implementation of closed and waste-free production in innovative and digital enterprises, are occupied by Germany, Denmark, and Sweden, respectively (Vantage Research Group, 2024). The gap between all these countries in terms of indicators is insignificant. The reason for this is the institutional and legal component of the obligation to conduct ecological business in most countries.

In these countries, the circular economy is built on the principles of reducing total use and recycling. According to experts, it is expected that by 2030 this economy will reach $4.5 trillion in financial terms. The circular economy is aimed at the most efficient and "smart" use of resources and minimizing production waste (Vantage Research Group, 2024).

It is worth noting that the SDG are the key directions for progressive ecological and smart development of countries that were adopted at the UN Summit on Sustainable Development for the period from 2015 to 2030. They include 17 Global Goals, which are accompanied by 169 targets. The official document (resolution) of the UN General Assembly "Transforming our world: the 2030 Agenda for Sustainable Development", dated September 25, 2015, announces a new action plan. Its goal is to put the world on a trajectory of new sustainable and viable development (United Nations, 2024), based on the principles of environmental friendliness, innovation, quality, accessibility, thrift, equality, "smart" consumption, justice, and partnership.

The SDG can be achieved at an accelerated pace through the establishment and development of two types of economies – circular and sharing. Their relationship is presented in Fig. 1 and 2.

The sharing economy is an economy of "high availability of resources and opportunities, which includes the availability of these resources and opportunities at a latent stage (sharing) and is built on connections between people (the Internet)" (Rojanakit, Torres de Oliveira, & Dulleck, 2022). The circular economy is a "dual-loop regenerative system that focuses on the efficient and effective use of resources in the ecosystem, which contributes to the optimization of environmental and economic efficiency. The dual initiatives of the closed-loop economy allow companies to increase the environmental efficiency of resources, as well as the efficiency of resource use. This economy has tangible financial, economic, and operational benefits" (Alhawari et al., 2021).

At the micro level of the circular economy, "machine learning and artificial intelligence can be applied to correlate the relationships between the structure of the enterprise economy and the properties of the production process for defect prediction, microstructure modeling, and optimization of the properties of composite structures" of a closed production cycle (Yousaf, Rashid, & Koc, 2024).

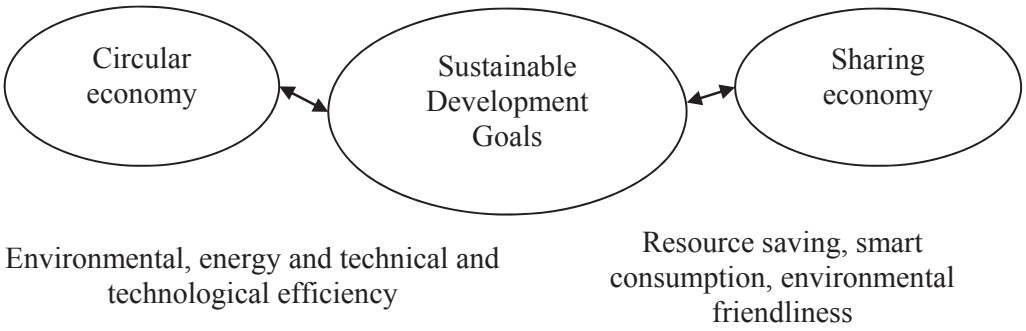

Figure 1 Basic model of the relationship between the SDG and the sharing economy and the circular economy

Source: author's scientific vision

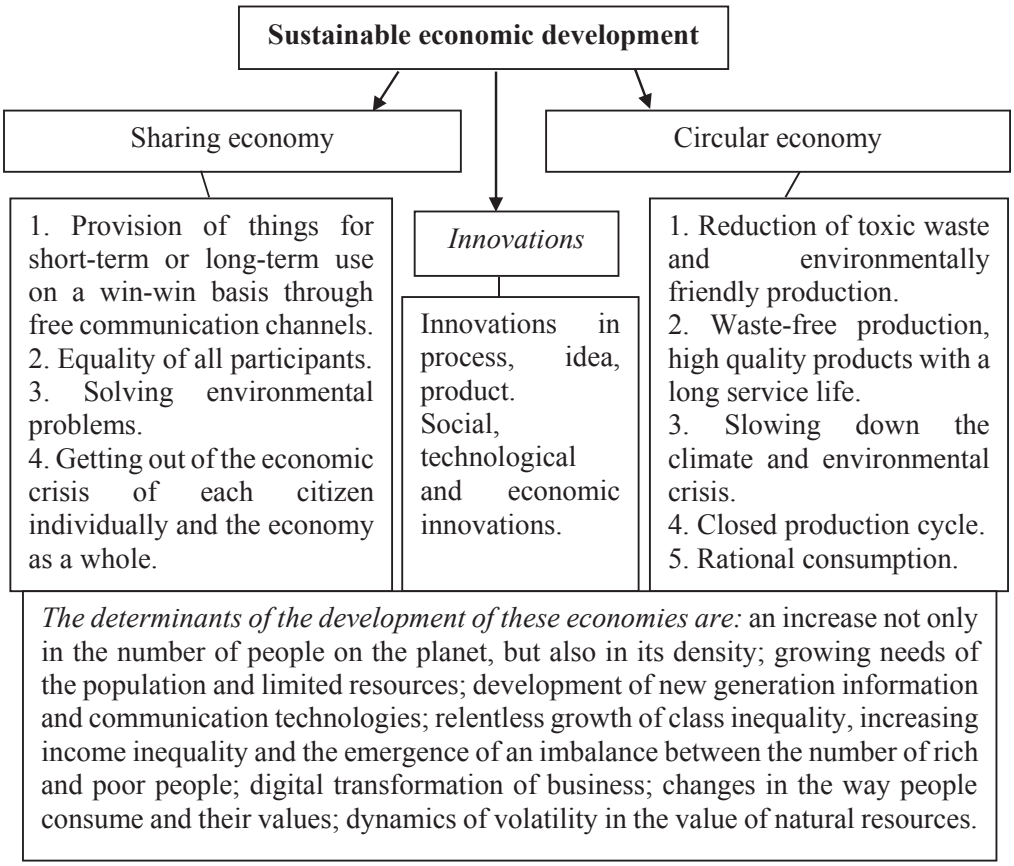

Figure 2 Realization of SDG through the development of sharing and circular economies

Source: author's scientific vision

By implementing a circular economy through the expansion of digital infrastructure and technological modernization to provide clean energy and thus contribute to environmental protection, SDG 7 "Affordable and clean energy" can be realized. Using the achievements of technological progress, in order to develop the energy efficiency of industries and invest in innovation, there is chance to accelerate the emergence of the sharing economy and achieve the implementation of the 9th SDG "Industry, Innovation, and Infrastructure" (United Nations, 2024). The economy works is demonstrated by real examples of global corporations: Facebook, the world's largest media company that doesn't create content; Uber, the world's largest taxi company that does not own vehicles; Alibaba, the most expensive retailer that does not own inventory; and Airbnb, the world's largest provider of housing, but does not own real estate (Rojanakit, Torres de Oliveira, & Dulleck, 2022).

4 Components of the sharing economy and the basis for the development of the circular economy

Currently, Industry 4.0 programs are under development to improve the recycling, recovery and reuse of products after the end of their life cycle. Industry 4.0 tools have the potential to improve general circularity issues by providing access to data in real time (Alhawari et al., 2021). The basic components of the sharing economy and the foundation on which the development of the circular economy is based are presented in Fig. 3.

The SDG 12 "Responsible Consumption and Production" is being implemented at an accelerated pace thanks to the key principles of the circular economy, in particular, it is about the full disposal of toxic waste and the introduction of rational consumption, the formation of efficient smart production and innovative digital supply chains, and the transition to resource efficiency (United Nations, 2024).

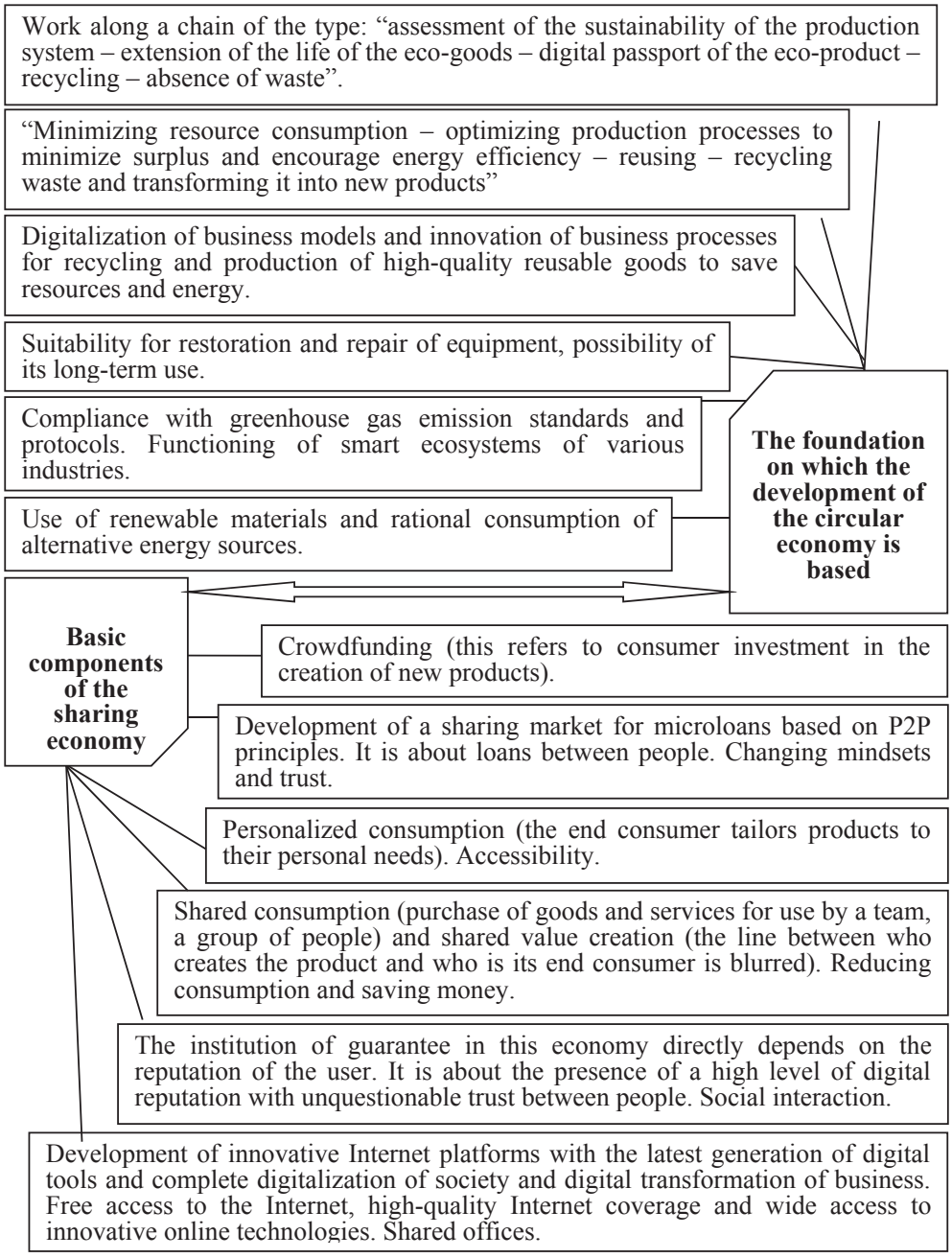

Figure 3 Basic components of the sharing economy and the foundation on which the development of the circular economy is based

Source: compiled based on sources (Yousaf, Rashid, & Koc, 2024; Kirchherr et al., 2023; Rojanakit, Torres de Oliveira, & Dulleck, 2022; Osetskyi, Kraus, & Kraus, 2021) and own observations

As of 2024, the annual global production of plastic is 430 million metric tons, of which almost 90% is not recyclable or reusable. According to the United Nations Environment Program, by 2040, the impact on the environment can be reduced if companies implement a policy of digital and innovative changes in production and use the latest environmentally friendly technologies. At the global level, since 2022, there have been ongoing negotiations between groups of countries to conclude agreements in mid-2025 on partial operational changes in the stage of the plastic value chain by companies, namely from primary plastic polymers to waste management. Currently, the volume of plastic packaging is about 40% of the total volume of plastic waste (Vantage Research Group, 2024).

5 Comparison of the characteristics of the development of the circular and sharing economy

Circular economy approaches can be used in the textile and construction sectors at different stages of the product life cycle, including design, production, distribution, and disposal. There are initiatives in the textile and fashion industries that use regenerative agriculture to produce organic cotton and natural fibres. In practice, using natural dyes provides better quality and safer clothing for the health of consumers and the environment. By producing higher-quality clothing, it is obvious that it can last longer and be repaired or recycled. In construction, circular solutions include reducing the use of primary materials, reusing existing materials in circulation, or replacing carbon-

Table 1 Comparison of the characteristics of the development of the circular and sharing economy

	Circular economy	Sharing economy
The purpose and goal of formation	1. Waste minimization. Efficient use of resources. 2. Overcoming the climate crisis. 3. Long-term use of goods, materials, equipment. 4. A renewable and generative system that imitates the cycles of nature. 5. Smart management of waste-free production.	1. Use goods without the right to own them. 2. Formation of ecological thinking of Society 5.0 and rational and intelligent use of available resources and things.
Characteristic signs and features	1. Reuse. 2. Re-processing and processing of materials and raw materials. 3. Smart logistics and green trade. 4. Waste prevention and recycling where available. 5. Use of renewable energy sources and low-energy digital technologies.	1. Provides additional income. 2. Saving money, for example, saving on gasoline, no costs for car storage, insurance and maintenance. 3. The institution of reputation. 4. Strengthening social ties through the institution of trust. 5. Pursuing common interests and solving environmental problems. 6. Optimizing the use of resources.
Spheres and directions	Agricultural sector, light and heavy industry. Energy sector in terms of solar, wind and hydropower. Implementation of comprehensive waste reduction programs and their recycling in production.	Travel and sharing (through rental) of vehicles, equipment, clothing and parking spaces; staffing; finance; video and music streaming; online service for finding tutors and repairmen.
Tools for further development and support	1. Tax incentives for enterprises that process secondary raw materials during product production. 2. Implementation of program documents (Strategy for Low-Carbon Development of Ukraine until 2050; Strategy for State Environmental Policy of Ukraine for the period until 2030; National Waste Management Plan until 2030).	1. State-level regulation of the activities of all participants in the sharing economy. 2. High-quality and working mechanisms for tracking cash flows for the purpose of taxation of participants in the sharing economy. 3. Organization of conditions for proper official employment and good working conditions.

Source: compiled based on sources (Alhawari et al., 2021; Rathnayake et al., 2024; Kraus, Kraus, & Marchenko, 2023; Kraus, Kraus, & Golubka, 2021) and own conclusions

intensive materials with regenerative alternatives such as wood (GLOBAL. Climate Promise, 2023). A comparison of the characteristics of the development of the circular and sharing economies in terms of development goals and objectives, characteristics and features of operation, areas, and areas of application is presented in Table 1.

Scientists currently identify 3 main parties to the sharing economy: the resource provider, the digital platform consortium, and the resource consumer, i.e., stakeholders. To be more specific, we are talking about state and local authorities, insurance companies, technology providers, social media and network companies, parties, payment service providers, product manufacturers and suppliers, human rights organizations, politicians and political activists, educators, researchers, entrepreneurs, competitors, citizens, investors, courier service providers, advertising, and media agencies (Rathnayake et al., 2024).

The transition to a comprehensive circular economy can increase competitiveness, stimulate innovation, promote economic growth, and create jobs (700 thousand jobs in the EU alone by 2030) (European Parliament, 2023). In addition, it is the circular economy, or as it is also called the closed-loop economy, that produces a growing public awareness of the need to reduce environmental impact. This economy opens up new opportunities in value chains based on optimizing resource use, reducing waste, and using the latest generation of digital tools. It is expected that the emergence of a circular economy has every chance of being in different sectors of the economy. This is due to the fact that new technological solutions allow for more recycling and reuse (Vantage Research Group, 2024).

6 Conclusions

The implementation of the SDG is influenced by the possibility of simultaneously implementing the features of the circular and sharing economy in the coordinate system of the national economy. The quality of the functioning of these economies is determined by a number of factors. In particular, we are talking about organizational and regulatory, institutional, technical and technological, research, socio-behavioural and cultural, demographic, financial, and economic, and environmental factors. Health care, the actual quality of goods and services, and the level of safety and protection play a significant role in this process.

The government should support the institutional implementation of environmental technologies in production. Encourage a resource-saving business policy that would develop on the basis of environmental certification. It makes sense to support the development of digital entrepreneurship, the activities of which are based on the SDGs: energy efficiency, environmental friendliness, accessibility, and innovation. It is worth cultivating thrift and smart consumption among the population.

Further scientific research should be devoted to developing a mechanism for government support for business entities that pursue a policy of resource reuse, waste-free production, production of environmentally friendly products, and a closed production cycle. It makes sense to investigate the impact of digital transformation on accelerating the development of circular and sharing economies and the quality of digital management, resource efficiency, and "smart" consumption.

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