

# **Three Seas Economic Journal**

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# GREEN ECONOMY AS A GUARANTEE OF SUSTAINABLE DEVELOPMENT

Inna Tomashuk<sup>1</sup>

**Abstract.** *The purpose* of the article is to analyze current trends in the concept of sustainable development in the world economy, taking into account new trends in the "green" economy and "greening" of the international financial system, which is the basis of "green" investment. *Methodology.* The work uses general and special methods and techniques of cognition: methods of theoretical generalization, analysis, synthesis and grouping, logical-historical method, deduction and induction. The strategic priorities of formation of new "green" directions of economy and ecological transformation of economy of existing branches are analyzed. It is proposed to find ways of further development based on the preservation of natural potential, which is associated with numerous benefits for the international community and all nations in terms of food, energy and water security and climate change. The priority formations of the state policy on the basis of introduction of innovative ecologically safe technologies which will be able to provide sustainable development of a society in strategic perspective are defined. The current trends in the implementation of the concept of sustainable development in the world economy are analyzed, with special attention to new trends in the "green" economy and "greening" of the international financial system, which is the basis of "green" investment. *Results* indicate that the transformation of the economy in the direction of ecology has laid the foundations for the concept of sustainable development. The "green" economy is the basis for the implementation of the concept of sustainable development on the basis of more efficient resource and energy consumption, reduction of CO<sub>2</sub> emissions, reduction of harmful effects on the environment and development of a socially integrated society. *Practical implications.* "Greening" the economy requires "reformatting" current and future investments, additional costs beyond the usual approach. The UN Conference on Sustainable Development Rio + 20 in 2012 became a platform for the development of a "green" economy at the international level: the "green" economy has been officially recognized as an appropriate tool for promoting sustainable development. An obvious barrier to the development of "green" investment at the state level is the lack of quality of basic strategic documents on sustainable development and their practical effectiveness. In line with its commitments under the Paris Agreement and the Global Sustainable Development Goals (CSDs), international financial organizations, banking unions and institutions, as well as governments in most parts of the world, have begun to work actively for green finance. *Value/originality.* Green funding is seen today as funding for the "future": the need to combine funding and meeting the CSDs. The contribution of business to environmental issues involves the commitment to compensate for environmental damage due to economic activities.

**Key words:** green economy, sustainable development, competitiveness, efficiency, green investment, globalization, greening, modernization.

**JEL Classification:** Q50, E60, F60

## 1. Introduction

An urgent problem facing Ukraine is to substantiate the directions of increasing competitiveness in the field of "green economy", gaining a strong position in the international market. After all, ensuring the competitiveness of the economy is a priority of any state that cares about its place in the world market and its economic growth.

Since 2020, Ukraine has had the Law "On the Basic Principles of the State Environmental Policy of Ukraine until 2030", in which the country declared its commitment to sustainable development goals and the principles of "green economy", which provide for environmentally sustainable or environmentally balanced economic growth.

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The "green economy" is based on the principles of innovation, security for man and nature, rational and economical treatment of limited natural resources, is most acceptable for countries aiming at the transition to sustainable development, care for quality of life and future generations. At the same time, the country is not able to make the transition to sustainable development and the green economy alone – it requires the joint efforts of as many countries as possible and the establishment of effective international cooperation (Green economy as a factor in ensuring the competitiveness of the state, 2022).

The need for the evolution of Ukraine through sustainable development, green economic growth, combined with active social policy of the state, democratization of components of public life, requires the formation of a qualitatively new state and regional policy. The national economy needs to adapt to the requirements of competition, increase the efficiency and knowledge intensity of production, update environmental standards and implement environmental standards harmonized with international and European (Order of the Cabinet of Ministers of Ukraine "On approval of the Energy Strategy of Ukraine for the period up to 2035, 2017).

Sustainable consumption and production involves stimulating the efficiency of resource and energy use; formation of sustainable infrastructure; free access to basic social services; providing "green" and decent jobs and a better quality of life for all.

## **2. The transition of the national economy to a "green" model of development**

Modern processes of modernization of the national economy of Ukraine face the problems of limited resources and environmental pollution, which further negatively affect the factors of production. One of the ways to ensure the sustainable development of the national economy is the introduction of the so-called "green" economy, which helps reduce risks to the environment and resource conservation, as well as attract private, public and international investment. It is the green economy that stimulates green growth, which, according to the requirements of the Organization for Economic Cooperation and Development (OECD), is to identify cleaner sources of growth, development of new environmentally friendly industries, job creation and technology (The strategy of "green" growth OECD, 2021).

Today, Ukrainian companies are looking for new ways to achieve environmental cleanliness, opening new avenues in the green economy, which not only preserves the environment but also improves its competitiveness in foreign and domestic markets by modernizing the production process (Makovoz,

Perederiy, 2018). In Figure 1 presents a model of sustainable consumption and production.

One of the important tasks facing Ukraine is the transition of the national economy to a "green" model of development based on sustainable production and consumption, efficient use of material resources, as well as promoting business activities in the field of resource-efficient and environmentally friendly production (The strategy of "green" growth OECD, 2021).

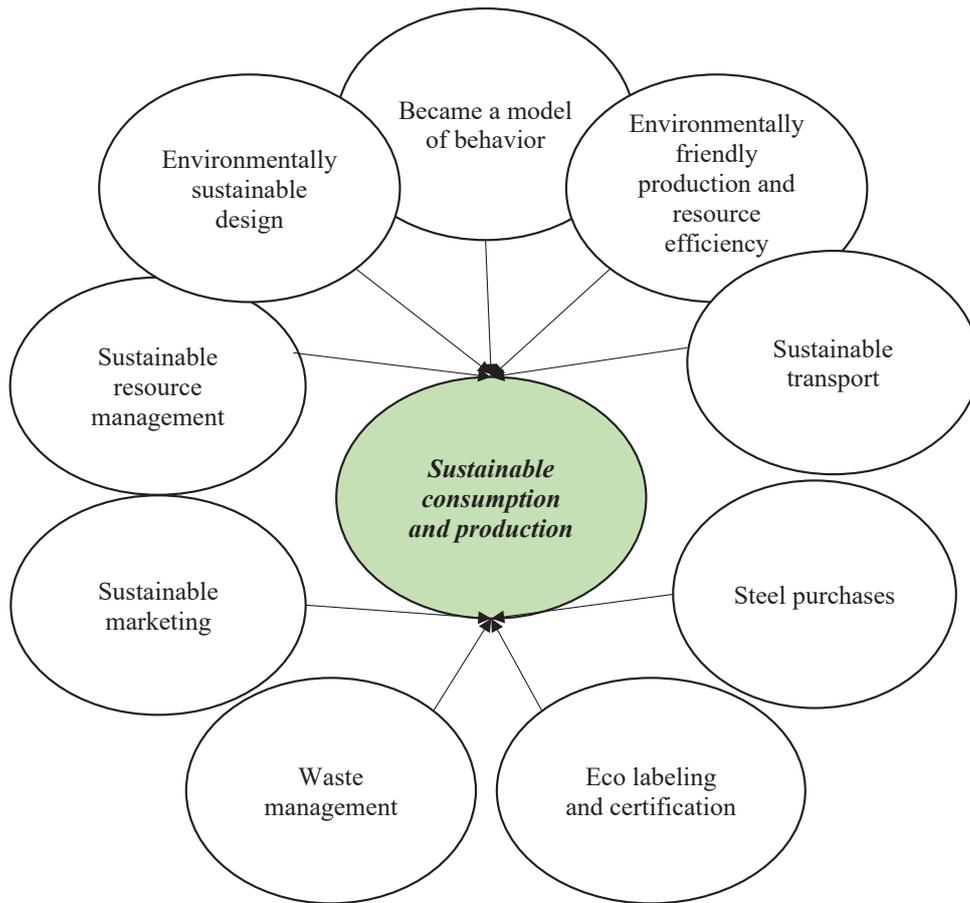
The concept of a green economy invites governments, businesses and citizens to move towards balanced development paths, including promoting investment in natural capital (increasing the share of protected areas, strengthening forest protection, etc.), solving energy problems and providing clean food, focusing on land use and land use planning, optimal allocation of limited resources and improved resource management. The model of "green economy" provides a harmonious combination of economic needs of society with the need for constant recovery and preservation of the environment (Green economy as a factor in ensuring the competitiveness of the state, 2022; Tomashuk, 2019).

The course for greening the economy, which is guided by the European Union, is based on the principles of the concept of sustainable development. Accordingly, the scale of measures for cooperation between the EU and Ukraine in the field of environmental protection and greening of our economy is outlined by the desire to minimize environmental externalities for the full existence of future generations.

The transition to such an economy can be ensured by annual investments of 2% of world GDP (approximately \$ 1.3 billion) during 2012–2050. The simulation showed that the scenario of "green" investment will provide for 5-10 years higher annual growth rates than investment in conventional development. Greening the economy is a way to eradicate poverty. There is a direct link between the eradication of poverty and the sound management of natural resources and ecosystems, as the poor benefit directly from increasing natural capital. Implementation of the model of "green" economy involves increasing the role of the state and intergovernmental bodies in economic regulation, creating conditions for business development based on new environmental standards and technologies for cleaner production, greening of industrial sectors.

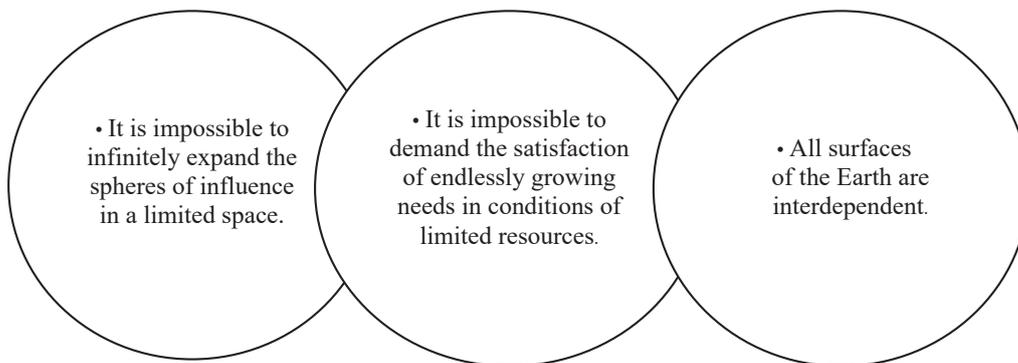
## **3. The main tools and structure of the "green economy"**

In the conditions of resource and energy dependence of Ukraine, which is formed by the situation when environmentally harmful technologies are used in obsolete energy inefficient enterprises, it is the gradual



**Figure 1. Model of sustainable consumption and production**

Source: formed according to the results of the study



**Figure 2. Axioms of the theory of "green economy"**

Source: formed according to the results of the study

replacement of "brown" industrial economy with new "green" as a strategic priority gives a chance to ensure national security in the coming decades ("Green" economy, 2022). The theory of green economy is based on 3 axioms (Figure 2).

A wide range of tools is proposed for the introduction of the "green economy" (Figure 3).

At the regional level, the problems of Ukraine's "green economy" are solved through the implemen-

tation of international economic cooperation projects, especially in the framework of the Association Agreement with the EU. European countries, respectively, are the largest partners in regional "green" development (Green economy as a factor in ensuring the competitiveness of the state, 2022). In Figure 4 presents the structure of the "green" economy.

In the conditions of modern development of production there is a necessity to overcome or at

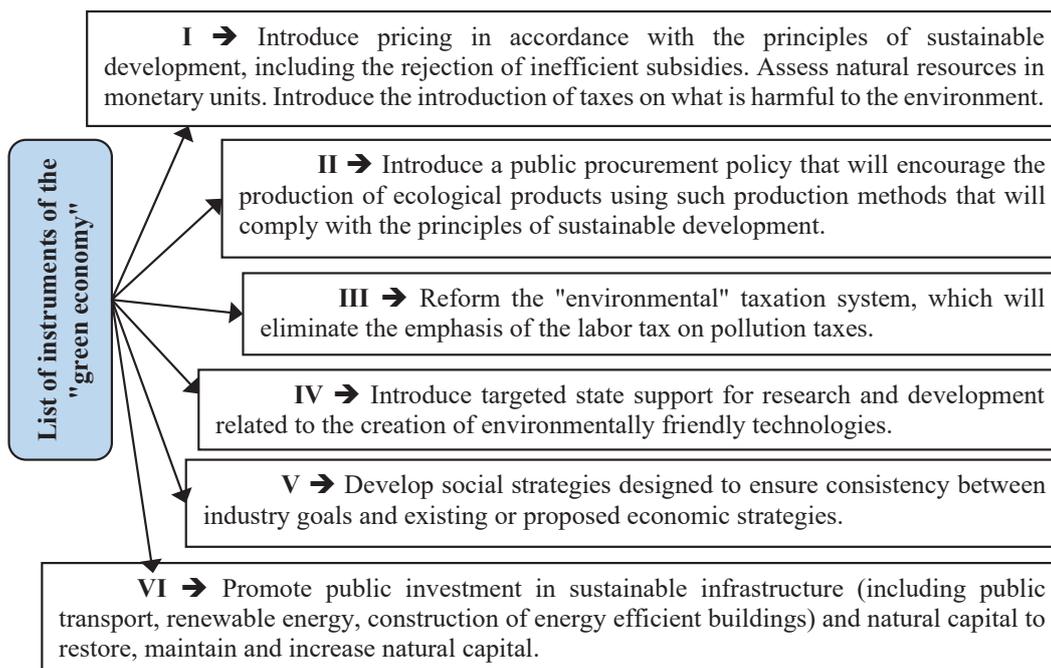


Figure 3. The main tools of the "green economy"

Source: (Green economy, 2022)

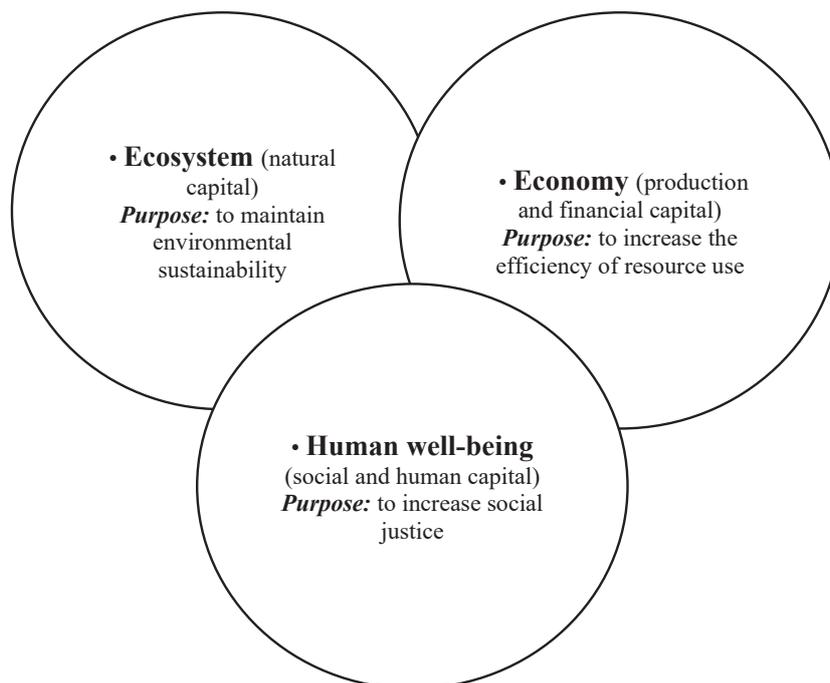


Figure 4. The structure of the "green" economy

Source: formed according to the results of the study

least partially minimize the revealed contradictions between the level of technological process and the means supporting ecological safety of human life.

On the way to sustainable development of production it is necessary to find innovative ways to ensure economic growth and at the same

time improve the environmental performance of production processes and products. The role of the state in this process is to create the most favorable conditions for the development of environmentally friendly business (Law of Ukraine, 2019).

#### 4. Sustainable development goals as the basis of a "green" economy

Key global initiatives – the 2030 Agenda for Sustainable Development, the Sustainable Development Goals and the Paris Agreement – demonstrate efforts to find a global consensus on strengthening the importance of the environmental factor in international organizations, institutional investors and TNCs, and global politics. The manifestation of this effort was the increasingly pronounced transition of countries to a "green" economy. The Human Development Index is one of the components of a green economy. In the Table 1 presents a list of countries on the human development index. Ukraine ranks 74th, although it has improved by 14 points over the past year.

The "green" economy is a new trend that is seen as an important area of structural reform and aims to raise awareness of the real environmental, energy and socio-economic situation of the world by identifying ideological options for better understanding the dilemma "of economic growth vs environmental protection" and finding optimal ways and more effective tools to solve the problems faced by society. The goal of the green economy is to ensure, in line with the Global Sustainable Development Goals (SDGs), a shift towards sustainable production and consumption while integrating environmental issues into the decision-making process.

It is obvious that achieving progress is the result of accumulating and investing considerable finances and investments. In this regard, the international financial system needs not only stronger regulation to ensure stability, but also a deeper transformation in order to be able to finance economically sustainable, "green" growth. And today, thanks to the consolidation of efforts of state and supranational authorities, as well as international business and financial institutions to

build an effective mechanism of "green" funding, practical steps have been taken in this direction.

Ukraine, which has joined the Sustainable Development Goals (SDGs) (Table 2) and the Paris Agreement, has managed to "declare" its commitment to the new trend. Although progress is not very noticeable, through the introduction of financial instruments to support the "green" economy, the country has begun to take steps towards "green" growth: promote renewable energy, implement energy efficiency measures, promote clean technologies in industry and agriculture. develop "green" construction (Green investments in sustainable development: world experience and Ukrainian context, 2019).

The main goal of the concept of "green" economy is to achieve significant progress in the relationship "ecology", as a "pillar" of the concept of sustainable development and proposals to governments to move to sustainable development, which includes promoting investment in natural capital, solving energy problems and providing the population with ecologically clean food, paying attention to land use and optimal resource management, transition to more efficient, environmentally and resource-saving technologies aimed at reducing pollutant emissions, stopping resource depletion, mitigating the effects of climate change (Green investments in sustainable development: world experience and Ukrainian context, 2019; Baldynyuk, Tomashuk, 2021). In the Table 3 presents information on the main communication "platforms" of the "green" economy in the world.

At the international level, for example, one of the first was the Declaration of G20 Business Leaders on Green Growth (during the 2012 B20 Summit in Los Cabos, Mexico), which proposed a number of measures. In the Table 4 presents information on the priority measures of the Declaration on Green Growth.

The European Union has adopted a pan-European Economic Recovery Plan, which provides € 400 billion

Table 1

#### List of countries according to the human development index

Place in 2019 (report in 2020)	Difference with previous period (place)	Country	Human Development Index (HDI)	Difference with previous period (HDI)
1	-	Norway	0,957	+0,003
2	+1	Ireland	0,955	+0,013
2	-	Switzerland	0,955	+0,009
6	-2	Germany	0,947	+0,008
13	+2	United Kingdom	0,932	+0,012
16	-2	Canada	0,929	+0,007
52	-3	Russia	0,824	-
53	-3	Belarus	0,823	+0,006
61	+9	Georgia	0,812	+0,026
74	+14	Ukraine	0,779	+0,029
90	+17	Moldova	0,750	+0,039
116	-	Egypt	0,707	+0,007

Source: (List of countries according to the human development index, 2022)

Table 2

**Sustainable development goals**

N <sup>o</sup>	The name of the goal
1	Overcoming poverty in all its forms and everywhere;
2	Overcoming hunger, achieving food security, improving nutrition and promoting sustainable agricultural development;
3	Ensuring a healthy lifestyle and promoting well-being for all at any age;
4	Providing comprehensive and fair quality education and encouraging lifelong learning opportunities for all;
5	Ensuring gender equality, empowerment of all women and girls;
6	Ensuring the availability and rational use of water resources and sanitation for all;
7	Ensuring access to low-cost, reliable, sustainable and modern energy sources for all;
8	Promoting progressive, inclusive and sustainable economic growth, full and productive employment and decent work for all;
9	Creating sustainable infrastructure, promoting inclusive and sustainable industrialization and innovation;
10	Reduction of inequality within and between countries;
11	Ensuring openness, security, sustainability and environmental sustainability of cities and towns;
12	Ensuring the transition to rational models of consumption and production;
13	Take urgent action to combat climate change and its consequences;
14	Preservation and rational use of oceans, seas and marine resources in the interests of sustainable development;
15	Protection, restoration of land ecosystems and promotion of their rational use, rational forest use, combating desertification, stopping and reversing the process of land degradation and stopping the process of biodiversity loss;
16	Promoting a peaceful and open society for sustainable development, ensuring access to justice for all and creating effective, accountable and participatory institutions at all levels;
17	Strengthening the means of implementation and intensification of work within the framework of the Global Partnership for Sustainable Development.

Source: (Global Sustainable Development Goals 2016–2030, 2021)

Table 3

**The main communication "platforms" of the "green" economy**

N <sup>o</sup>	Platform name	Platform description
1	Global Green Growth Institute (GGGI)	An intergovernmental organization headquartered in Seoul, established at the Rio + 20 summit to promote green growth. The tasks of the Institute are: implementation of national plans for "green" growth and dissemination of research results. The institute operates mainly in low-income economies and developing countries, and focuses on sectors such as energy, water management, land use.
2	Green Growth Knowledge Platform (GGKP)	An initiative of various international organizations (GGGI, UNEP, OECD and WB), established in January 2012, exchanges policy recommendations, best practices, tools and data needed to support the transition to a green economy. One of the few initiatives that for the first time brought together large international institutions with different goals and objectives in order to accelerate the development and dissemination of knowledge about the "green" economy.
3	Green Economy Coalition	The world's largest stakeholder network in the green economy, established in 2009. Its main participants are intergovernmental organizations, business, trade unions, research institutes and non-governmental organizations. According to the Coalition members, economic, social and environmental crises are interrelated and can be resolved through a global transition to a green and fair economy.
4	Global Green Growth Forum.	
5	Environment and Security Initiative.	
6	Seoul Initiative Network on Green Growth.	
7	Green Growth Cities.	
8	Green Growth Group.	
9	Green Growth Initiative.	

Source: (Green investments in sustainable development: world experience and Ukrainian context, 2019)

in aid to increase purchasing power, boost economic growth and create jobs. The economic recovery plan envisages the adoption of a number of environmentally-oriented measures, in particular to combat climate change, energy efficiency, clean technologies, increase environmentally-oriented professional knowledge and support environmentally-oriented products (Gritsyuk, Vasilenko, 2014). In Figure 5 presents the priorities of the low-carbon economy roadmap.

Along with the countries' adoption of green growth strategies, the assessment of the implementation of actions and tasks set out in these documents remains an issue. A balanced framework for a green economy needs to be complemented by a comprehensive and appropriate framework for measuring progress. Today, the "greenness" of the economy is considered mainly at the qualitative level, and so far no unified system of its measurement and evaluation has been developed.

Table 4

**Priority actions of the Declaration on Green Growth**

Nº	The name of the event	The main characteristics of the event
1	Free trade in "green" goods and services.	Initiate the liberalization of trade in energy goods and services in order to eliminate tariffs, local content requirements and other non-tariff barriers, and coordinate technical standards. This will provide positive incentives for the development and expansion of the use of goods and services from clean energy sources, helping to reduce GHG emissions and ensure energy security.
2	Reliable pricing for carbon emissions.	Ensure a high and sufficiently stable carbon price to change investment interests, which will increase incentives to invest in environmentally sustainable technologies.
3	Cessation and reorientation of inefficient subsidies for fossil fuels.	Development of national plans for phasing out inefficient subsidies for fossil fuels and redirecting some of these subsidies to ensure access to energy for the poorest and other public investment priorities in "green" infrastructure.
4	Introduction of low-carbon innovations.	Use the proceeds of carbon pricing to increase support for research, development, demonstration and deployment of low-carbon technologies by joining international efforts.
5	Make considerable efforts in terms of public funding to create conditions for the mobilization of private investment.	

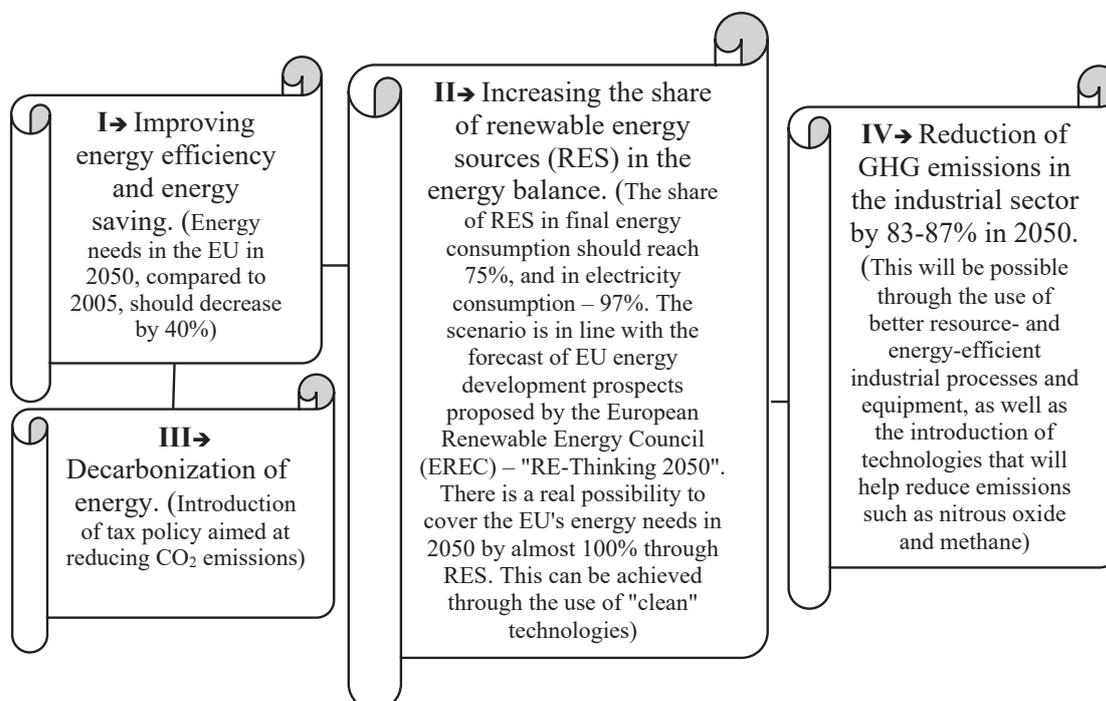
Source: (Green investments in sustainable development: world experience and Ukrainian context, 2019)

Due to the lack of measurability, it is impossible to say clearly which country's economy is more or less "green". Without effective measurement, it is extremely difficult to assess policy effectiveness, identify and measure the potentially transformative role of the green economy concept or the level of achievement of sustainable development goals (SDGs).

Today there are a number of systems for evaluating and measuring the practical implementation of the concept of "green" economy. Thus, in 2009 the international organization GRESB (Global Real Estate

Sustainability Benchmark) published the first system of assessments of sustainable development and compliance with ESG principles. GRESB methodology allows monitoring of infrastructure projects, including energy, electricity transmission, sewerage, transport, social infrastructure, telecommunications. When calculating the GRESB rating, it relies on management quality indicators, information disclosure policies, risk profile, performance of the operating company, etc.

Other evaluation systems include the United Nations 'System of Environmental-Economic Accounting



**Figure 5. Priorities of the low-carbon economy roadmap**

Source: (A 100% Renewable Energy Vision for the European Union. European Renewable Energy Council, 2010)

(SEEA) [22], which has become a global attempt to establish harmonized accounting standards that measure the financial commitment of the economy to the environment. This system was adopted as an international standard by the UN Statistical Commission at its 43rd session in March 2012 and created as a conceptual framework for understanding the interaction between the economy and the environment; Wealth Accounting and Valuation of Ecosystem Services (WAVES) Global Partnership. Its activities are aimed at developing internationally agreed methods of accounting for natural capital and ecosystem services, assisting countries in reporting and including it in policy development; The Organization for Economic Co-operation and Development (OECD) has identified a number of Green Growth Indicators [23], which are divided into four main groups: environmental and resource productivity, natural asset base, environmental quality of life, economic opportunities and policies reaction.

### 5. New green agreement for European countries and SWOT analysis of the concept of "green" economy

In the summer of 2019, the new President of the EC Ursula von der Leyen presented a program proposal for the restructuring of the EU, entitled "The Green New Deal for Europe" (The Green New Deal). The program combined three "pillars": Green Public

Work; The Environmental Union; Environmental Justice Commission. One of the main tenets of the Agreement is to respond to the climate crisis, which must be "alive and dynamic".

*Green public works* – an investment program designed to transform Europe and pursue the concept of environmental justice (aims to achieve the decarbonisation of the European economy, reduce biodiversity loss and provide decent jobs on the continent). The program will be financed by "green" bonds issued by the European Investment Bank (EIB). Funding will be provided to private companies that will be able to achieve social and environmental goals: reorient production to recycling and repair, extend the product life cycle and reduce the working week. As well as those companies in which workers are appointed to higher positions, and part of their profits are transferred to a fund that pays dividends to employees and generates additional resources for a fair transition.

*Union for the Environment* – a package of legal acts that bring EU policy in line with science and consolidate the principles of sustainability and solidarity in European law. The Union offers a credible and comprehensive package of documents for European policy restructuring, based on climate change and environmental degradation, with a view to making Europe a world leader in "green" transition. In particular, a legal framework is being developed to ensure the sustainability and elimination of environmentally destructive methods in Europe and

Table 5  
SWOT analysis of the concept of "green" economy

Strengths	Weak sides
Promotion of the concept at the international level.	No internationally established definition of a "green" economy.
Positive impact on environmental, economic and social transformations.	Systems for measuring the size of the "green" economy remain unclear and uncertain.
Comprehensive approach that promotes cross-sectoral integration.	Introduction of the concept and its effectiveness at the global level largely depends on the potential of individual territories, regions and countries, which is not always sufficient.
Use of local / regional practices and knowledge.	Lack of a clear understanding of the possibilities of obtaining financial benefits from the transition to a "green" economy.
Promoting stakeholder involvement and empowering local communities.	Lack of understanding of losses for existing business models, jobs and existing economic entities operating in the "brown" economy.
Opportunities	Threats
Focusing on climate change and sustainable development.	Lack or insufficient public and private funding for appropriate development and adaptation measures.
Opening new business opportunities.	Challenges regarding changes in consumer and production regimes and lifestyles that are commonplace.
Promoting energy independence, as well as food security and water security.	Involvement of the interests of those who represent the interests of companies operating in sectors of the "brown" economy. The transition to a green economy may result in the loss of jobs and income for those working in the brown economy.
Reducing poverty, promoting equitable distribution of wealth and social justice.	
Increasing the resilience of society to internal and external threats / shocks.	
Creation of skilled jobs.	

Source: (Green investments in sustainable development: world experience and Ukrainian context, 2019; Honcharuk, Tomashuk, 2019)

across all supply chains that link European structures with production processes outside it.

Under the Sustainable Development Legislation package, the Union is calling for a radical overhaul of EU energy policy, one of which is the refusal to provide subsidies for fossil fuels (both direct and indirect). At the same time, the sectors that generate the most emissions should be taxed, and the income generated should be used to address the daily lives of Europeans.

*Commission for Environmental Justice* – an independent body that will research, monitor and advise EU policymakers on environmental justice. Called to implement the prescribed "systemic changes" and is the first international body whose task is to ensure a fair "green" transition.

The Commission will develop and apply its dimensions of international justice in several key areas, including migration. The Commission will develop the first comprehensive database on environmental migration and advise the EU authorities on the recognition of climate refugees and their asylum rights (Green investments in sustainable development: world experience and Ukrainian context, 2019).

General conclusions from the concept of "green" economy can be outlined in the SWOT analysis (Table 5).

The theory of sustainable development can be traced in the World Happiness Rating (Figure 6). The authors of this project believe that the research will be able to help government leaders, politicians and public figures to better respond to the needs and expectations of their citizens in order to improve the well-being and sustainable development.

The study is being conducted by The Earth Institute Research Center at Columbia University under the auspices of the United Nations as part of the UN Sustainable Development Solutions Network's global initiative to showcase the achievements of countries and regions in terms of their ability to provide their residents with a happy life.

The ranking appeared at a time when international organizations in comparative studies of the achievements of countries began to pay more attention to the intangible component, the development of views, which is important for further development and affects indicators related to human development, environment (sustainable development theory) etc. In this ranking, Ukraine ranks 110th among 149 countries.

The main idea of the ranking of world countries on the level of happiness of the population was to understand that the focus of international comparative research on economic indicators such as gross domestic product per capita and others does not provide an objective picture of their well-being, change and sustainable development.

## 6. Formation of the financial system in the conditions of sustainable development

The world community has recognized that sustainable development "should be a priority on the agenda of international cooperation". It is generally accepted to understand balanced development as a harmonious combination of economic, social and environmental components of development. Only achieving a balance between them will provide an opportunity to move to a social development that

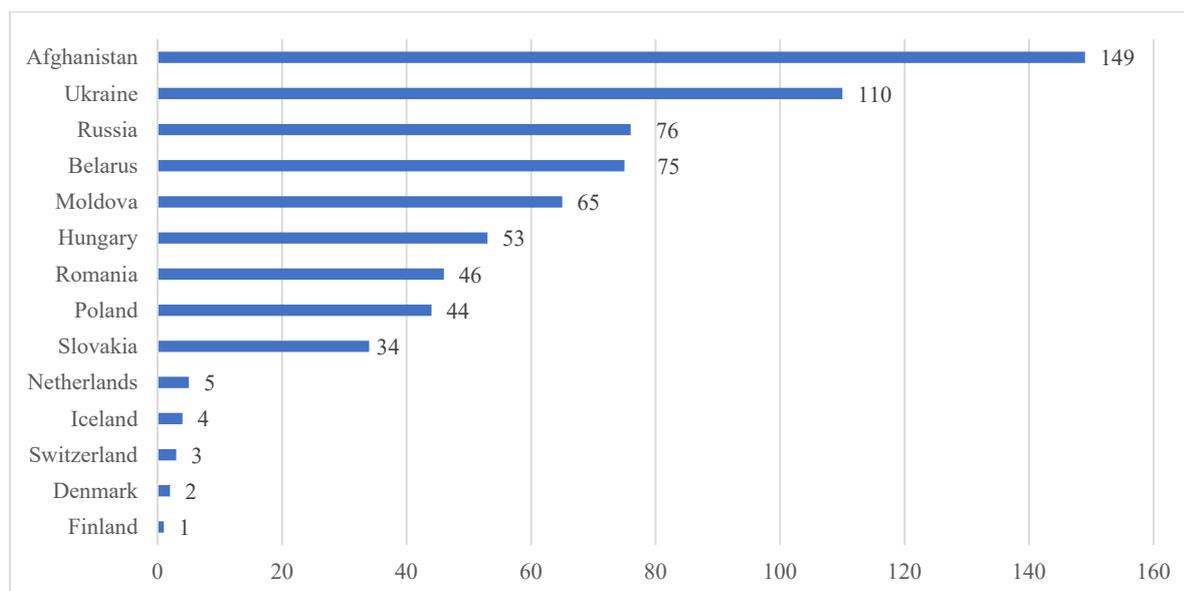
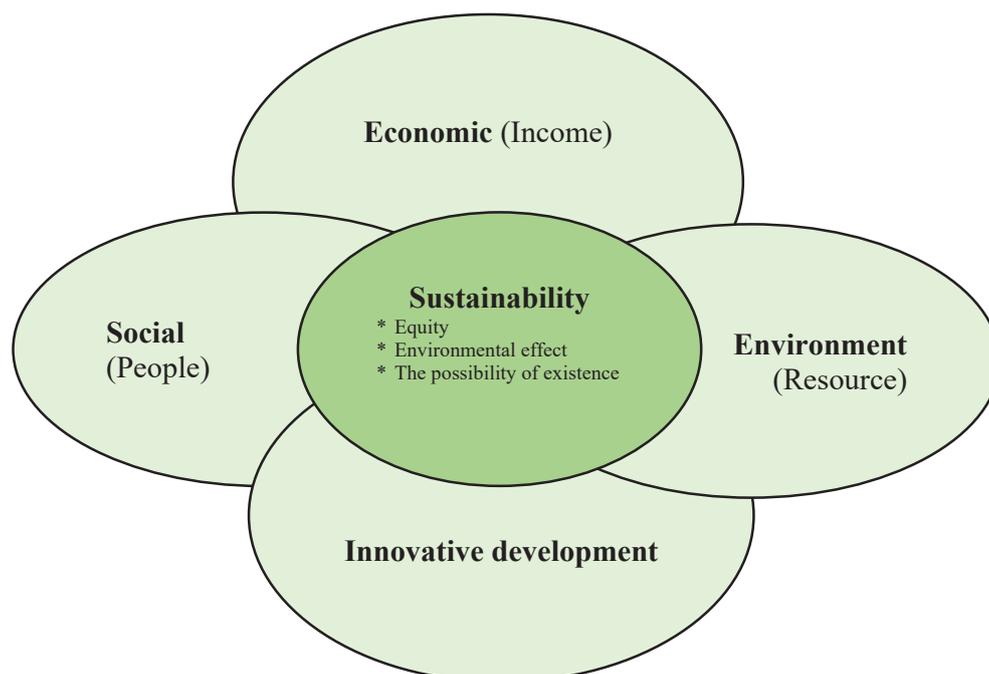


Figure 6. The place of some countries in the World Happiness Rating for 2018–2021 (World Happiness Report 2021)

Source: (World Happiness Report 2021)



**Figure 7. Aspects of sustainable development of production**

*Source: formed according to the results of the study*

will not deplete natural and human resources, and therefore will be able to last long enough (What is sustainable development, 2022; Tomashuk, 2020). In Figure 7 presents the main aspects of sustainable development of production.

Sustainable development is one of the main goals of Ukraine's economic policy in the near future, and finance is the main source of achieving this goal. The task of the financial system in the context of sustainable development is to "serve" sectors of the real economy and provide a wide range of financial services to households and can be developed as follows:

- the transition of the real sector of the economy to sustainable development creates requirements for the financial system, which is manifested in large-scale mobilization of capital with an emphasis on social and environmental factors;
- the existing financial system shapes environmental and social outcomes in the real economy through political and regulatory measures.

The formation of the financial system in terms of sustainable development must go through a number of stages: gradual introduction of sustainable financing, active development of financial products / services and instruments, formation of special institutions that are sustainable (including funds and banks), institutionalization of the process the activities of financial institutions should be built in line with the Global Sustainable Development Goals (SDGs), renewal of financial management and organizational strategy, change of financial culture (Markevych,

2022). In the Table 6 presents the main ways to update the financial system of sustainable development. The financial system needs to change gradually: in the way relevant regulations and documents are adopted, and the private sector defines its responsibilities and obligations.

Changing the financial system will require the development and adoption of a strategy for financing sustainable development, which should take into account all possible sources of funding – from public and private to domestic and international. In Figure 8 shows the impact of sustainable development on the interaction of the financial system and the real economy.

The strategy of sustainable financing must be consistent with the main pillars of social justice: investing in human capital and promoting employment. At the same time, at the legislative level it is necessary to define the categorical apparatus and provide an interpretation of "sustainable finance" in order to avoid ideological, methodological, regulatory and economic contradictions.

## 7. Findings

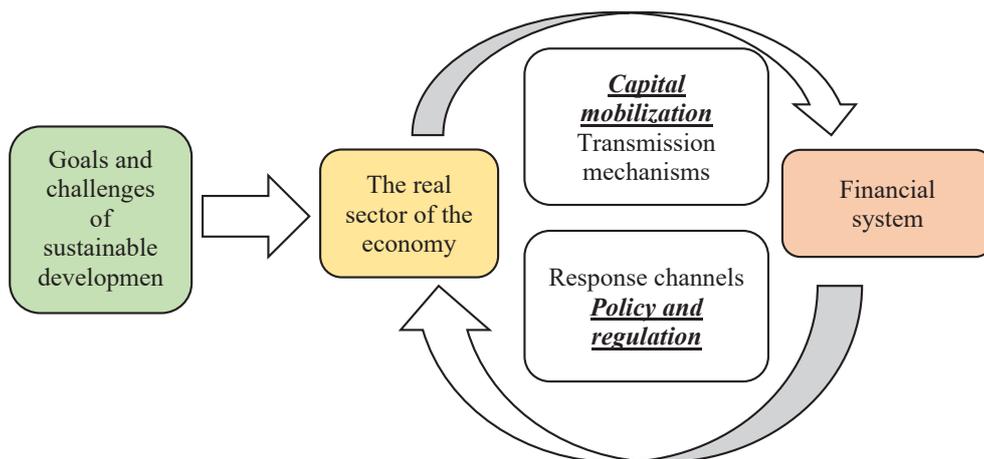
Global environmental challenges have posed new challenges and challenges to society in reducing the negative impact on the environment. The tasks are solved by implementing projects that help reduce carbon emissions. Today, such projects require the use of the latest forms of capital raising. Active introduction and use of innovations in financial technologies will be necessary in the near future.

Table 6

**Ways to update the financial system of sustainable development**

№	Name	Characteristic
I	Inclusion of the Sustainable Development Goals (SDGs) by 2030 in the strategy of reforming national financial systems and development strategy	It is a question of unification of national features and new practices of financial regulation, development of the basic tools of "green" financing, maintenance of cooperation of the public and private finances. <i>(In 2016, about 10 countries had national plans for sustainable finance. By 2020, the goal was to develop 50 national and / or regional roadmaps, create major financial centers that will be key in shaping new global finance standards).</i>
II	Use of new financial technologies (fintech) to finance sustainable development <i>(Technology will play a more important role in the comprehensive transformation of finance and will affect the ability of finance to "serve" the needs of sustainable development. This will require the integration of technical aspects into national strategies aimed at aligning the development of the financial market with the expected results of sustainability:)</i>	Expanding access to sustainable financing for low-income communities, micro-enterprises and small and medium-sized enterprises (SMEs).  Strengthen the mobilization of domestic savings for long-term sustainability-oriented investments. (It is proposed to create an international coalition of leading fintech participants, which will facilitate the development of codes, standards and rules, as well as policy incentives to better align fintech development with sustainable development).
III	Active use of the potential of public finances in the areas:	Budget financing and subsidies.  Assistance in creating new environmentally responsible financial institutions and markets.  Promoting relevant regulatory rules and practices. In particular, to strengthen the role of public finances, it is necessary to assess the effects of certain fiscal incentives, namely "unjustified subsidies" (perverse subsidies) and identify fiscally neutral tax incentives that will help achieve "green" goals of the real economy. <i>(It is advisable to assess the role of public finance in the formation and growth of major "green" and sustainable financial markets (for example, the market of "green" bonds). Among other things, identifying ways in which innovative rules and practices adopted by public finance institutions for sustainable development can be communicated and adopted by private financial institutions).</i>
IV	Awareness raising and capacity building in the system <i>(Raising awareness and capacity building through market and political institutions is critical. Ensuring the involvement of policy makers and regulators in the imperatives and risks associated with such plans, as well as the public, which is a "driver" of change. It needs:)</i>	Awareness raising through intergovernmental platforms such as the G20 and G7, as well as international organizations and various specialized financial institutions.  Empower professionals in international finance, as well as policymakers and regulators, to make sustainability a core part of the skills and behaviors that shape the overall financial culture.  Raising public awareness of sustainable development through shared approaches to improving financial literacy and education.
V	Incorporate the principles of sustainable development into existing methods, tools and standards of global financial reform.	The most effective step would be to establish a common approach to such actions (including international organizations such as the IMF and the World Bank).  It is necessary to cooperate primarily with standard-setting organizations, as well as to integrate with existing methodologies for assessing systemic risks. <i>(Financial standards should support and reflect the alignment of the financial system with sustainable development (especially performance standards). This alignment can be achieved by avoiding a "one size fits all" approach by: reviewing the implications for sustainable development – both positive and negative – of existing standards and processes; developing guidelines for studying compliance with sustainable development factors for existing standards and processes; assessing the impact of new work on financial standards and processes for sustainable development).</i>

Source: (Green investments in sustainable development: world experience and Ukrainian context, 2019; Kovalchuk, 2020)



**Figure 8. The impact of sustainable development on the interaction of the financial system and the real economy**

Source: formed according to the results of the study

Modern digital technologies can facilitate financial and investment transactions and encourage investors to invest in the development of the future, encouraging society to be responsible for challenges and threats to the environment.

For foreign investors, Ukraine is attractive for several essential factors of economic development in general and doing business in particular. *First*, Ukraine is a large market for the development and sale of technological innovations that can be made easily accessible to consumers. *Secondly*, Ukraine still has scientific and intellectual potential, which, given the creation of a proper labor market, can dynamically implement digital technologies in various sectors

of the economy, including low-carbon production. *Third*, the Ukrainian energy market is currently undergoing a phase of renewal along with the search for alternative energy sources and their interaction with information technology.

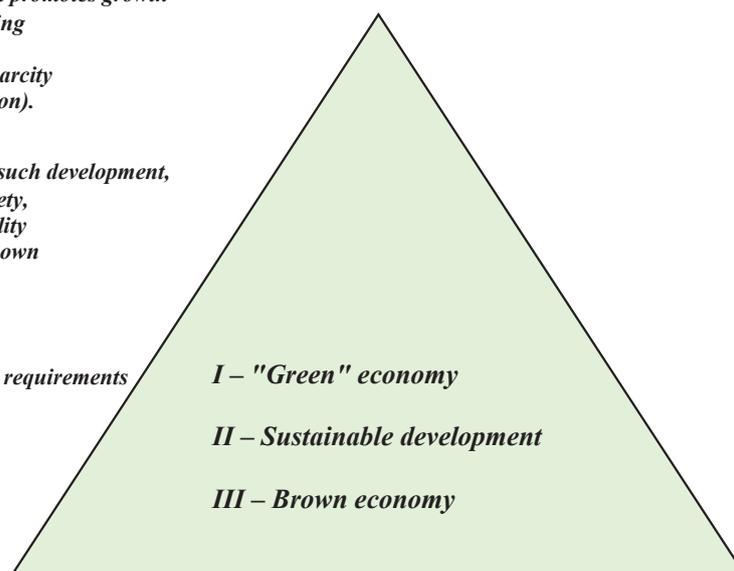
In order to improve the dynamics of attracting investment to Ukraine to accelerate the development of "green" technologies, it is advisable to implement specific proposals (Table 7).

For an effective transition to a green economy, the country must have an effective policy framework in place to develop and implement strategies for developing a green economy based on an integrated and integrated approach, covering all spheres of public life.

**I** → *A green economy is an economy that promotes growth human well-being and social strengthening justice while substantial reducing risks to the environment and scarcity environmental resources (UNEP definition).*

**II** → *Sustainable development is such development, which meets today's needs of society, without compromising the possibility future generations to satisfy their own needs (UNEP Commission).*

**III** → *Brown economy – Economic Growth without regard to environmental requirements safety, depletion criteria available natural resources and pollution environment.*



**Figure 9. Definition of concepts of social development**

Source: (Galushkina, Musina, Potapenko 2017)

Table 7

**Proposals to accelerate the development of "green" technologies in Ukraine**

№	Offer	Essence
1	Take urgent measures to preserve the scientific and intellectual potential of Ukraine, reduce the rate of its labor emigration with the involvement of leading foreign experts in digital technologies.	To do this, it is necessary to increase funding for educational and research institutions to ensure decent living standards for scientists and educators. Even with a slightly lower level of remuneration and working conditions than in the countries of emigration, it is possible to preserve the intellectual and labor potential in Ukraine, thus slowing down the process of "brain drain". At the same time, it is necessary to expand the capacity of the intellectual labor market by increasing the number of international investment projects in the environment.
2	Create a transparent energy market that will allow the development of healthy competition to gradually balance energy prices with market methods.	Creating a free market will increase the demand for new financial technologies in calculations, information exchange, cost optimization and more. Thus, the gradual elimination of obstacles and the consolidation of clear legislation on the development of "green" energy in Ukraine will create the basis for the active use of blockchain technologies, Internet platforms, mobile applications and data automation.
3	Develop, taking into account the domestic realities of the Internet platform for the creation of innovative financial technologies and gradually implement them in environmental projects, periodically making appropriate changes to legislation.	By improving the mechanisms of legal relations in the information field, it is possible not only to increase the intensity of financial infusions into Ukraine from abroad, but also to direct them to those "green" projects that need the greatest financial support.
4	Review current fundraising policies.	Radically review the current policy of raising funds by issuing domestic government bonds (IGLBs) (terms of payment, interest rates, maturities, etc.) and strategically direct investment flows from portfolio to foreign direct investment with a significant share of "green" in the structure of the latter.
5	Develop a system of state guarantees for investment in "green" projects, along with the impossibility of selling real investment objects and limiting the outflow of capital abroad in the short term (up to one year).	On the one hand, state guarantees will help increase the confidence of foreign investors in conducting "green" business in Ukraine, and on the other – will be an alternative tool to protect investment in advanced sectors of the real economy. At the same time, the state should help ensure that in the conditions of short-term market imbalances (for example, price volatility, currency fluctuations, temporary legislative restrictions) the National Bank of Ukraine (NBU) does not sell real assets and withdraw capital from the country using the latest financial technologies.

Source: formed according to the results of the study

In the era of globalization transformations, the economy has become the dominant driving force of society, and security issues – the basis for determining the directions of state policy of social development. An important feature of the "green" economy is the attitude to maintain a variety of systems in which "green" criteria act as a filter to test the system for fairness and sustainability. At the same time, each such system has something to offer the world. The concept is aimed at improving global governance through a system of democratic institutions to achieve sustainable development and realization of human rights and dignity around the world (Galushkina, Musina, Potapenko, 2017; Kaletnik, Lutkovskaya, 2022). In Figure 9 defines the concepts of social development.

The strategic goal of the industrial complex of Ukraine in the period 2021–2030 provides for an evolutionary transition to sustainable development in the post-industrial world society based on the preservation and safety of human living space, industrial activities at the lowest cost through high efficient use of material and intellectual potential.

## 8. Conclusions

The transformation of the economy in the direction of ecology has laid the foundations for the concept of sustainable development. The dynamics of global CO<sub>2</sub> emissions show that the world economy has reached a critical level of carbon saturation. Successful implementation of the concept of "green" economy, aimed at achieving the global goals of sustainable development (SDGs), can be achieved through the mobilization of financial resources with a focus on the transition to an environmentally responsible resource-efficient, low-carbon economy that supports progress in social development.

The mobilization of financial resources for investment and innovation activities in the field of environmental protection is currently carried out due to the increase in banking institution's operational activities to stimulate the implementation of "green" projects on the basis of environmentally and socially responsible financing. The investment attractiveness of sustainable development is quite high, the actual investment in a developed "green" economy remains

extremely insufficient: actual investment in this area (even in the renewable energy sector, which is the largest recipient of such investment) is much less than objective needs. The introduction of effective mechanisms for "green" investment involves the integration of environmental and social elements in the processes of analysis, evaluation

and decision-making of economic and financial decisions.

The role of the state in the issue of ecology is key, because it is she who forms and implements environmental policy, the main task of which is to stabilize and improve the ecological condition of territories.

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