

FEATURES OF GREEN BANKING DEVELOPMENT IN SUSTAINABLE ECONOMY FOR UKRAINE'S RECONSTRUCTION

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Features of Green Banking Development in Sustainable Economy for Ukraine's Reconstruction

The article substantiates the necessity to mobilize internal investment resources by channeling bank capital into the restoration of green financing and the development of sustainable green projects in Ukraine. The characteristics of financial instruments that contribute to the development of the green economy and can be implemented in green banking models are disclosed. Based on the analysis of the historical retrospective of the formation and activity of international organizations in the field of green financing, the perspective directions of the regulation of green banking in Ukraine are outlined, in particular, an assessment of the monetary and financial policy of the central banks of the leading countries of the world with regard to its impact on green investment is carried out. Further, an assessment of the current state of implementation of green financing projects by leading banks of Ukraine is carried out, which made it possible to determine the level of their orientation to the regulation of ESG risks and to identify the prospects of mobilizing private capital to invest in the green national growth. Taking into account the characteristics of the indicators of social and environmental corporate responsibility of Ukrainian banking, recommendations have been developed on the activation of banks' participation in green banking projects. This article can help regulators related to the achievement of ESG projects by using the sharing economy and green energy financing.

Keywords: sustainable economy, green finance, green banking, instruments of green financing, innovation banking policy, methods of green banking, banks' programs of green finance, ESG risks in banking.

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Слобода Л. Я., Дунас Н. В., Мисько Н. В. Особливості «зеленого банкінгу» в реконструкції економіки України на засадах сталого розвитку

У статті обґрунтовано необхідність активізації внутрішнього інвестиційного ресурсу шляхом спрямування банківського капіталу у відновлення «зеленого» фінансування та розвиток проектів сталого розвитку в Україні. Розкрито характеристики фінансових інструментів, що сприяють розвитку «зеленої» економіки та можуть бути реалізовані в моделях «зеленого» банкінгу. На основі аналізу історичної ретроспективи створення та діяльності міжнародних організацій у сфері «зеленого» фінансування окреслено пріоритетні напрями регулювання «зеленого банкінгу» в Україні, зокрема, проведено оцінку монетарної та фінансової політики центробанків провідних країн світу щодо її впливу на «зелене» інвестування. Проведено оцінку сучасного стану реалізації проектів «зеленого» фінансування провідними банками України, що дало змогу визначити рівень їхньої орієнтації на регулювання ESG-ризиків та окреслити перспективи мобілізації приватного капіталу для інвестування в «зелений» розвиток країни. На основі характеристики індикаторів соціальної та екологічної корпоративної відповідальності банків в Україні розроблено рекомендації щодо активізації участі банків у проектах «зеленого» банкінгу та мобілізації фінансових ресурсів для поствоєнного енергетичного відновлення України. Стаття може бути корисною регуляторам, пов'язаним із реалізацією проектів ESG на основі економіки спільного використання та фінансування зеленої енергетики.

Ключові слова: стала економіка, «зелене» фінансування, «зелений» банкінг, інструменти «зеленого» фінансування, методи «зеленого» банкінгу, банківські програми «зеленого» фінансування, ризики ESG у банківській діяльності.

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Introduction. The modern world community is experiencing periods of acute economic turbulence as a result of hostilities on the territories of both Ukraine and Israel, profound transformation of the market of energy, labor and financial resources, which prompts a review of social values, responsible use of natural resources, active investment in energy-saving social projects. These factors actualize compliance with the conception of sustainable economic development on a global scale. The first positions among the risks of world development are associated with global climate change and the deterioration of the natural environment.

Sustainable economic development of society provides an integrated combination of prioritization of economic and social needs with overdue restrictions on rational use and careful treatment of natural resources. An important element of sustainable economic development is sustainable financing, which involves the process of paying attention to environmental, social and *governance* considerations (in global practice ESG - Environmental, social and governance approach) in the process of forming investment decisions in the financial sector and increasing long-term investments in sustainable economic activity. Such businesses provide financial returns both in the short term and in the long term, with the formation of positive value for society and functioning within environmental constraints. Companies that are not able to solve the problems of environmental and social risks in their current state will become less resistant to modern challenges. Banks and financial corporations are called to be active participants in sustainable financing in order to continue to be successful conductors of financial resources for the needs of the national economy. An increasingly pronounced trend of banks' activity is the development, attraction and placement of capital for sustainable financing, which takes into account the consequences for the environment and the social sphere. The priority of green banking is recognized by central banks and financial regulators of the world's leading countries as a key factor in increasing the competitiveness of international financial institutions, in particular, national banking systems.

Formulation of the problem. Nowadays Ukraine defends its independence and the right to restore the national economy in accordance with the conception of sustainable economic development. Ukraine's energy sector is going through unprecedented challenges in modern history due to the full-scale Russian war of aggression, accompanied by massive targeted attacks on the power industry (generation, substations and networks), gas and oil production, transport infrastructure and oil refineries. Large-scale destruction of energy systems as a result of missile attacks necessitates the urgent need for post-war recovery of the energy sector, which must be integrated with the reconstruction of the national economy based on the criteria of sustainability, decarbonization and high energy efficiency. To achieve successful reconstruction, Ukraine must effectively mobilize internal potential and ensure external financial support. Investors from partner countries will find Ukraine attractive if it adopts a clear long-term decarbonization policy in accordance with the European Green Agreement, transparent and equal access to auctions for obtaining permits and licenses for the construction and operation of energy infrastructure. The mobilization of internal potential lies in the plane of strategic importance of using bank capital into restorative sectors of the economy, in particular through green financing. That is why the implementation of innovations aimed at joining the Green Course of the European Union (EU) in accordance with the implemented provisions of the Paris Agreement are relevant for Ukrainian banks. The activation of green banking is the key to successful integration into the European financial space and the possibility of post-war reconstruction of Ukraine on the basis of sustainable development.

Analysis of recent research and publications. The study of the theoretical and applied principles of the functioning of the innovation policy of banks, in particular in the field of green banking, shows the diversity and multifaceted approaches of scientists and practical economists in determining its essence.

The fundamental foundations of the development of green financing are laid in the scientific works of the follow-

ing foreign scientists: M. Hankarchuk, L. Eyurad, B. Kliments, P. Martin, R. Martinez-Oviedo, F. Medda, D. Mozear, D. Stremikene, V. Sella, O. Rodil-Marzabala, J. Pittman, Y. Hang, D. Harris, A. Wayne, and others. A significant contribution to the development of green innovations in the banking sector was made by such domestic scientists and practical experts as: I. Alekseev, L. Bench, A. Blyzniuk, V. Bulavynets, I. Haidutskyi, V. Dyma, I. Petrenko, T. Livoshko, K. Markevych, O. Muzychenko, V. Rublyk, I. Saidak and others. Their developments relate to the principles of the innovative banking policy, tools and methods of stimulating the growth of the “green” economy in Ukraine, “green” lending, environmental investments, etc. In their vast majority, modern scientists evaluated and analyzed the innovative policy of banks in the aspect of the ecological component as the main trend of the European “green” transition.

Noting the significant value of scientific and applied developments regarding the implementation of green financing, we emphasize that today there is an urgent need to overcome the challenges associated with military aggression against Ukraine and ways to restore the post-war energy sector on the basis of green financing through the channeling of bank capital into sustainable projects. Therefore, directions for researching the peculiarities of green banking functioning in developed countries of the world, in particular through the introduction of innovative banking products and forms of financing energy-saving projects, as well as the orientation of monetary and regulatory policies of central banks to support green financing, are therefore important for the reconstruction of Ukraine in accordance with the vector of sustainable economic development.

The aim of the article is to substantiate the features, methods and tools of the development of green banking in the leading countries of the world, which can be effective for mobilizing the internal financial potential of restoring the national economy of Ukraine on the basis of sustainable economic development.

The main outline of the research material. The relevance of the green economy is irreplaceable and recognized by the world community. The developed countries of the world have evolved national strategic goals and environmental policies in various sectors of the economy and social development [1].

Green investment is defined as a new paradigm of economic growth that combines environmental and financial sustainability aimed at supporting sectors of the economy suitable for “greening”. Green investments are understood as entrepreneurial capital, namely: material, intellectual, raw materials, basic means of production and technologies, which are directed to the construction of an object or the production of goods or services with the aim of further positive impact on the natural environment with the simultaneous restoration or by maintaining the level of natural capital [2].

Projects aimed at the development of renewable energy, effective waste management, wastewater treatment, implementation of energy-saving measures, implementation of “green” technologies, and other projects aimed at reducing greenhouse gas emissions, mitigating climate change and increasing the efficiency of use of natural resources become priorities for financing. [1; 2; 3].

One of the key criteria for the implementation of the conception of sustainable economic development is ensuring the mobilization of financial resources at the national and local levels and promoting the attraction of investments to expand the plan of measures to enhance energy efficiency, increase the share of energy produced from renewable energy sources in the overall structure of the State's energy consumption, the creation and implementation of an internal system trading quotas for greenhouse gas emissions and defining a special body for these issues; creating and ensuring the functioning of the system of monitoring, reporting and verification of greenhouse gas emissions; introduction of market and non-market mechanisms aimed at reducing anthropogenic emissions or increasing the absorption of greenhouse gases [3, 4].

The formation of a strategy for the development of green finance involves the development of an appropriate regulatory and legal framework at the State level, the standardization of rules and procedures for sustainable financing, the formation of an institutional basis and appropriate infrastructure, taking into account international standards for the use of the Green Climate Fund investments, the introduction of effective green financial instruments [5; 6; 7].

In Ukraine, green financing instruments are currently only being formed and can be effective in attracting green investments and redistributing bank capital for environmental purposes. Their effective implementation depends on the methods of financial forecasting, planning and control, regulation with the use of incentives and sanctions, as well as innovative methods - credit, insurance and investment relations, both tax and budget [8].

Experts distinguish the following categories of green financing instruments [9]:

- direct financing instruments (loans, grants, shares);
- instruments that do not involve direct financing, but can transfer knowledge and reduce risks (guarantees and technical assistance);
- instruments used to attract additional resources by transferring loans, bonds and funds to green projects.

The characteristics of each of the green financial instruments with their strengths and weaknesses are given in the table 1.

The modern methodology of the green financing system is formed at all levels: global, interregional, and national and is oriented towards achieving the goals of sustainable economic development on a global scale. According to the definition of the UN commission, sustainable (environmentally safe) development must meet the current needs of society without endangering the needs of future generations. The implementation of such a model of society's existence is possible only if the environmental protection policy is followed, which includes the preservation, assessment and restoration of the planet's biodiversity and those ecosystem services that it provides to the EU, the course of which is followed by Ukraine, planning to achieve the set goal by 2050. An integral element of sustainable development is the economic component, the definition of financial instruments for the formation of environmental policy as an important element of the stability of the national economy. The transition to a model of sustainable economic development led

Table 1

Characteristics of financial instruments of the green economy

Financial instrument	Characteristic
<i>Bank lending</i>	
Green mortgage loans	Customers are offered lower interest rates for purchasing energy-efficient homes and/or investing in modernization, energy-efficient measures
Loans for energy modernization of houses	Cooperation of banks with technology manufacturers and environmental organizations motivates households to install the latest energy-saving systems that use renewable energy sources at a lower rate
Green loans on construction	Priority lending is provided to construction companies that use energy-saving and resource-saving technologies
Green car loans	Low interest loans encourage customers to buy cars with high economic and environmental efficiency
Green banking cards	Credit card holders agree to make donations to environmental NGOs within 0.5% of the transfer
<i>Asset management</i>	
Green fiscal funds	By purchasing shares of a "green" fund or investing money in a "green" bank, citizens are exempt from paying capital gains tax and receive a discount on income tax
Green fiscal funds	By purchasing shares of a "green" fund or investing money in a "green" bank, citizens are exempt from paying capital tax and receive a discount on income tax
Green fiscal funds	By purchasing shares of a "green" fund or investing money in a "green" bank, citizens are exempt from paying capital gains tax and income tax
Green investment funds	Investment funds accumulate investment resources and direct their funds to finance green projects and companies
Carbon funds	The Carbon Fund receives money from investors to purchase CO ₂ emission reduction credits from existing projects or invest in new projects that generate a stream of CO ₂ emission reduction credits
<i>Insurance</i>	
Green insurance	Insurance products according to ecological features. Insurance takes into account clean technology and types of emissions
Carbon insurance	De-risking abatement transactions, evaluating low-carbon projects and regulating the price of carbon credits
<i>Corporate and investment green banking</i>	
Green financing	Creation of service departments or pools to finance large-scale renewable energy projects
Green securitization	Various methods of securitization are used in the field of nature management
Venture capital and private investments	Emphasis on environmental aspects by financing companies through the capital market. Banks help companies that supply environmental goods and services with IPOs, create an investment base for environmental projects through specialized private capital management divisions
Green indices	Banks develop indices that take into account future environmental opportunities and threats (energy efficiency index)
Carbon products	Thanks to the EU Emissions Trading Scheme (EU ETS), more than 12.000 European industrial sites have come under carbon limits
Green and climate bonds	A debt instrument for financing green projects. Consideration of permissible emission limits and environmental thresholds for the creation of certified green bonds

Source: compiled by the authors based on the study [5; 10; 11]

to the formation of macro-indicators for evaluating the success of each individual country. However, the transition to a green economy requires significant investments and reformatting of the financial system in the direction of greening. The Directive 2004/35/EC of the European Parliament and the Council "On environmental responsibility for the prevention and elimination of the consequences of damage to the environment" dated April 21, 2004 [5] became an important document regarding the consideration of creditable banking products and their

compliance with sustainable development, in particular in the aspect of compliance with global sustainable development goals (Fig. 1).

National green strategies are formed taking into account national interests, features of countries' economies and specific methodological support. Thus, the green financing ecosystem includes the following components:

- green policy and responsible actions of the entity in the market;

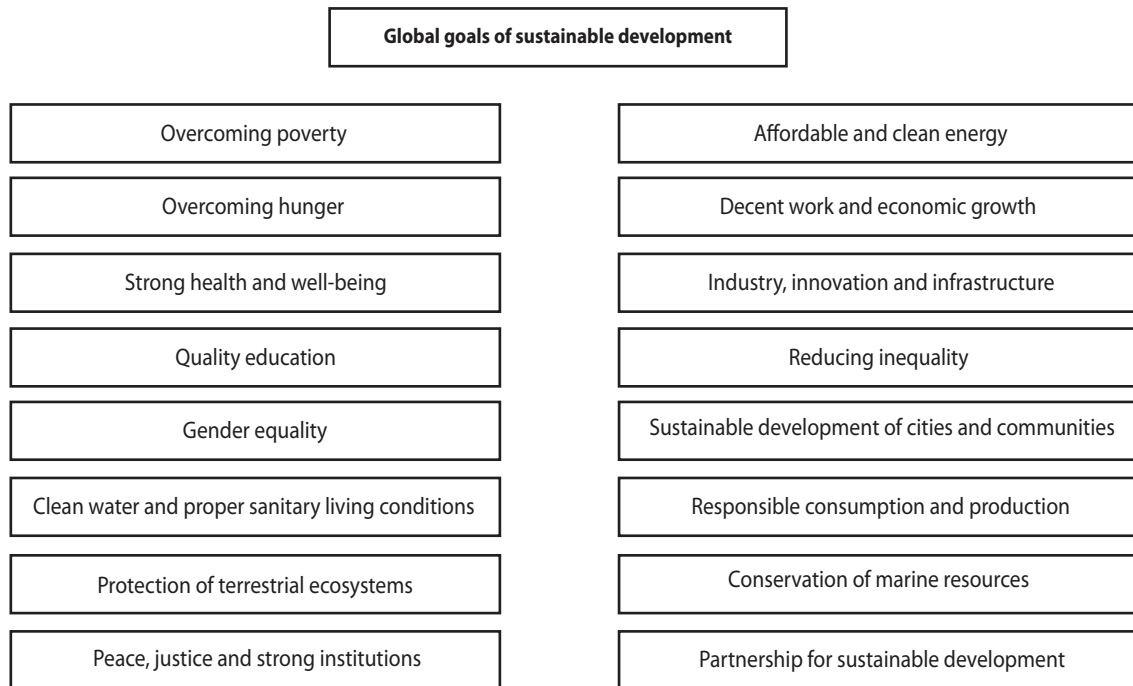


Fig. 1. Global goals of sustainable development

Source: compiled by the authors based on the data [1; 8; 11]

- green certification of the project or business;
- confirmation of the subject's creditworthiness, sustainability of its activity in the field of green financing;
- verification of green financial instruments for their compliance with recognized principles and criteria at the international level;
- registration in national and/or international registers.

Ukraine has set a course for the transition of the national economy to a “green” model of development based on sustainable production and consumption, efficient use of resources, and promotion of business activities in a way that is resource- and energy-efficient, environmentally safe production. Related activation of the State policy began in 2014. In 2015, the “National Energy Efficiency Action Plan for the period until 2020” was adopted, in 2017 the “Energy Strategy of Ukraine for the period until 2035” and in 2018 the “Low-Carbon Development Strategy until 2050” were approved [4; 12; 13]. Such legislative actions necessitate the financing of the development of ecologically oriented technologies and projects as the basis of economic growth and require an ecologically oriented financial sector with a wide range of financial instruments. Green finance is aimed specifically at strengthening the greening of business and investment processes, the purpose of which is to mitigate environmental damage from anthropogenic activities and the consequences of climate change or targeted financing to support green growth [5; 10].

As a result, one of the modern directions of the financial policy of the leading countries of the world is the transition to green banking, which is achieved by the development of innovative bank policies.

The innovative policy of banks is aimed at achieving sustainability in all areas of financial institutions. The element of sustainable financing becomes the driver of “green” changes in the banking sector. Since 2015, sustainable financing has gained significant momentum, and today it is one of the main banking sectors in the world. In 2017, at the summit of the G20 countries, the topics of international standardization of green financing practices, transparency of financial information on environmental risks, support for the development of the global market of green investments, and support for the countries developing with the formation of policies and practices of environmentally sustainable development were relevant. It was during this period that Ukraine began its first steps in creating national roadmaps of green financing, taking into account the peculiarities of the country's economic development.

The last decade has been marked by the agile activity of international organizations, voluntary associations of the banking and financial sectors, which take care of issues of sustainable development and the powerful development of documents, action plans, standards, recommendations, principles, analytical reports and mechanisms for their implementation. Broad political discussions revolve around the issue of increasing green investments, analysis and development of practical recommendations for financing significant green economy projects [14; 15].

An analysis of the historical retrospective of the creation and functioning of international organizations, whose activities are related to the development and implementation of the legal framework of sustainable financing, shows the significant attention of the world community to the problems of green financing (table 2).

Table 2

Regulatory documents of international organizations regarding green financing

Name of the organization	The year of creation	Developed documents
European Commission	1950	EU Sustainable Finance Action Plan, 2019
OECD – Centre on Green Finance and Investment	1972	The polluter-pays principle (1972)
LMA – Loan Market Association	1996	GLP – Green Loan Principles, 2018
ASEAN - Asia Pacific Loan Market Association	1999	ASEAN Green Bond Standards, 2018 ASEAN SUS, 2018
PRI – Principles for Responsible Investment	2006	Principles for Responsible Investment, 2006 The ESG in Credit Risk and Ratings Initiative, 2016
ISO – International Organization for Standardization	1946	ISO 14090 Adaptation to climate change. Principles, requirements and guidelines, 2019
CBI – Climate Bonds Initiative	2011	Climate Bonds Standard and Certification Scheme, 2011
SBN – Sustainable Banking Network	2012	Creating Green Bond Markets Report – SBN, 2018
SBFN - Global Progress Report of the Sustainable Banking and Finance Network	2012	Sustainable banking network. Global progress report, 2018, 2020
ICMA - International Capital Market Association	2014	Green Bonds Principles — GBP, 2016; Harmonized Framework for Impact Reporting, 2019
TCFD - Task Force on Climate-related Financial Disclosures	2015	Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
NGFS Network of Central Banks and Supervisors for Greening the Financial System	2017	A Call For Action, 2019
TEG - Technical Expert Group on Sustainable Finance	2018	Action Plan on Financing Sustainable Growth, 2018 Report on EU Greenbond Standard, 2019

Source: created on the basis of [5; 11; 16; 17; 18; 19]

The expansion of the range of activities of international organizations in the field of green financing indicates the growing scale of global investment to regulate climate risks. Thus, according to experts, the world will need at least \$67 trillion per year for the next 15 years to implement the Paris climate agreement - to keep the increase in average temperature at the level of 2°C (ideally - 1.5°C). At the same time, the global debt market and the global fixed income market amount to more than \$100 trillion. Therefore, the only way in which it is possible to attract multi-billion-dollar investments every year, according to Friso de Jong, director of the Green Financing System at the European Bank for Reconstruction and Development (EBRD), which is necessary to keep the average temperature from rising, is to mobilize the private sector to invest in green development [20].

The carried out analysis of information sources shows that green banking in the financial policy of Ukraine has significant achievements, at the same time, it lags significantly in its development compared to similar markets of foreign countries. Banks are gradually becoming active participants in green financing projects. For the most part, domestic banks receive resources for financing green projects from the EBRD. Recognizing the importance of better access to loans and trade

financing, the EBRD provided €357 million to seven credit institutions of Ukraine - Ukrgasbank, Raiffeisen Bank, Ukreximbank, OTP Bank, ProCredit Bank, Crédit Agricole and Bank "Lviv". The bank increased lending to small and medium-sized enterprises through partner banks within the framework of the EBRD-EU4Business credit line, which is accompanied by EU investment incentives [21]. For comparison, the value of green financing of one of the largest US banks, Morgan Stanley, reached \$130 billion in 2020, followed by the financing of the "green initiative" of J.P. Morgan Chases in the amount of \$55 billion [22].

In the international regulatory space, the issue of stimulating the development of green banking is also growing rapidly. The Network of Central Banks and Supervisors for the Greening of the Financial System (NGFS) unites the financial regulatory authorities of 46 countries on 5 continents as members and observers. Analytical reports (Sustainable banking network. Global progress report, 2018, 2020) developed by the Sustainable Banking and Finance Network (SBFN - Global Progress Report of the Sustainable Banking and Finance Network, 2012) bring together financial regulators and banking associations from developing countries, and aim to popularize green banking through the regulatory aspect.

According to the International Finance Corporation (IFC), green investments of banking capital should reach \$23 trillion by 2030 [23]. Stimulating methods of achieving this goal for the G20 group of countries are the orientation of monetary and regulatory policies of central banks towards green

financing. Thus, the system of indicators of regulation by central banks of green banking, developed by Positive Money and Green Central Banking, evaluates and ranks the full range of environmental policies and initiatives adopted by the central banks of the G20 countries (table 3).

Table 3

The countries of the G20 Group classified according to the level of orientation of monetary and financial policy towards green financing

Ranking (previous position)	Country	Research in the field of green finance (up to 10)	Monetary policy (up to 50)	Financial policy (up to 50)	Leadership in the group (up to 20)	Aggregate score (up to 130)	Position (from A+ to F)
1 (1)	France	10	12	31	17	70 (52)	B-
2 (6)	Italy	10	12	31	8	61 (45)	C+
3 (7)	Germany	10	12	30	8	60 (44)	C+
4 (4)	EU	10	12	28	8	58 (47)	C
5 (5)	Great Britain	10	10	27	9	56 (46)	C
6 (2)	Brazil	10	18	18	7	53 (46)	C
7 (9)	China	10	12	31	0	53 (51)	C
8 (9)	Japan	10	6	14	5	53 (50)	C
9 (8)	Indonesia	10	1	14	5	35 (25)	D+
10 (14)	Canada	10	2	14	2	30 (26)	D+
11 (11)	Mexico	10	4	4	5	28 (15)	D
12 (10)	India	10	0	10	1	23 (17)	D
13 (11)	South Korea	10	1	6	2	21 (18)	D
14 (16)	Russia	8	0	8	2	19 (17)	D-
15 (13)	Australia	10	0	4	3	18 (12)	D-
16 (14)	USA	10	0	6	0	17 (16)	D-
17 (14)	Turkey	10	0	2	2	14 (4)	D-
18 (17)	South Africa	10	0	2	1	13 (10)	D-
19 (19)	Argentina	6	0	0	0	6 (0)	F
20 (19)	Saudi Arabia	10	0	0	0	0 (0)	F

Source: created by the authors based on the data [24]

The results of the analysis, which is based on a review of the literature, expert consultations and bilateral interaction with the heads of central banks and supervisory bodies, will show that [24-25]:

- 1) the central banks of the G20 countries are making gradual progress in the regulatory stimulation of green banking, and for the first time France was the first among them with a C ranking;
- 2) France is followed by Italy, Germany and the European Central Bank (ECB), reflecting the ECB's commitment to limit the amount of carbon assets that financial institutions can use as collateral when borrowing;
- 3) as part of regulatory policy, the ECB has committed to decarbonize its own assets by matching its corporate bonds to 1.5°C global warming, and has suggested it may introduce a green lending scheme to support environmental activities;

- 4) China's green banking ranking dropped from first in 2021 to sixth in 2023 due to ineffective domestic credit guidelines for companies promoting coal mining;
- 5) Brazil's ranking deteriorated from second to sixth place due to the central bank's relatively slow progress in meeting official commitments to promote green banking;
- 6) The USA is also losing its leadership position, despite the commitment of the Federal Reserve to conduct an analysis of climate scenarios in 2023;
- 7) Switzerland was not assessed because it is not a member of the G20 group of countries, although the Financial Market Supervisory Authority introduced mandatory disclosure of risks related to green finance and piloted climate scenario analyzes at two banks.

Consequently, regulators and central banks in today's environment recognize the urgent need to apply instruments to manage climate risks, with extensive scenario analysis examin-

ing how banks are exposed to these risks. Most G20 regulators have implemented climate risk assessment in the supervision of financial institutions. The National Bank of Ukraine (NBU) is particularly implementing the gradual implementation of ESG principles in the work of the country's financial sector, studying the experience of European banks' transition to sustainable financing and greening of the financial system. Environmental, social and *governance* aspects (ESG) were included in the main principles of the NBU's monetary policy for 2022, and for the period until 2025, the project of the Policy of the NBU on the Development of Sustainable Financing was presented [26].

Thus, Ukraine joined the Global Progress Report of the Sustainable Banking and Finance Network (SBFN) in 2020 and undertook to start creating a sustainable, environmentally-oriented financial system, to introduce green initiatives to counter climate changes. Membership in the organization of financial sector regulators and banking associations of developing countries striving for sustainable financing is voluntary. The organization is part of the private sector department of the World Bank Group, and receives from the IFC technical support, exchange of practical experience in implementing ESG sustainability standards, consulting of the private sector on the introduction of sustainable financing innovations [11].

According to the report of the Sustainable Banking and Finance Network for 2020-2021, Ukraine is one of the 25 countries in the world that ensures the transparency of its ESG initiatives and has taken significant steps to prepare the implementation of the policy on sustainable financing, namely, for the first time, the National Bank of Ukraine has:

- included environmental, social and *governance* aspects (ESG) in the main principles of the monetary and credit policy of the NBU for 2022;
- identified the development of sustainable finance as one of the key Strategic goals until 2025;
- prepared the draft Policy of the NBU on the development of sustainable financing.

Therefore, the development of sustainable financing is recognized as an important task of the National Bank of Ukraine (NBU), in particular, the consideration of climate change and the principles of green financing and the implementation of environmental, social, and *governance* aspects (ESG) in the monetary policy [26].

In general, Ukraine is characterized by following the European course of development of green investments, partially, their directing in the energy sector of the national economy. As a result of the need to overcome a large-scale gap in investments to restore the energy structure of Ukraine, the value of both the activation of internal reserves through green banking and the attraction of external investments is increasing. Thus, according to government officials, the necessary \$2-3 billion may appear after making changes to the regulation of the electricity market regarding balancing services to ensure the return of investments [27]. Nuclear (13.8 GW) and large hydroelectric (6.3 GW) power generating assets will remain relevant to the future of the sustainable energy sector and depend on investment in maintenance, modernization and possible expansion over the next 20 years. To succeed in these sectors, the Ukrai-

nian authorities must adopt legislative and regulatory changes that will allow domestic and foreign stakeholders to attract about \$30 billion for large and medium-sized projects.

An analysis of the prospects for the development of the sector shows that by the end of 2021, the renewable energy sector of Ukraine was approaching 10 GW of installed capacity, with 7.5 GW of solar, 1.7 GW of wind, bio- and small hydro-power plants, and investments amounted to about \$12 billion. Despite the current minimal access to the capacities of renewable energy sources in the temporarily occupied territories and the low payment for green electricity produced, this sector is the most promising from the point of view of development, as it is available to small and medium-sized private investors, territorial communities, energy associations [27].

According to experts, the Ukrainian reconstruction plan has upgraded its renewables commitment to make it to 45% of its energy mix by 2032, and the country now aims to build as much as 30 gigawatts (GW) of solar, hydro, and wind capacity by 2030, with the prospect of exporting part of that renewable power and producing "green hydrogen" for export [28].

With the beginning of the military aggression of the Russian Federation against Ukraine in 2022, large-scale destruction of civilian and critical infrastructure was caused. From the first months, the focus shifted to further post-war recovery. In July 2022, a conference on the reconstruction of Ukraine was held in the Swiss city of Lugano (Switzerland). Among the main directions of environmental investments in Ukraine, green financing is highlighted in the following directions [29]:

- localization of production of RES equipment (wind towers, transformers, cables, electrolyzers, batteries);
- recovery of hydrogen and nuclear energy;
- increasing the production of biofuel (bioethanol, biodiesel, biomethane, biomass) from agricultural products, residues and waste;
- implementation of the national system of trading quotas for greenhouse gas emissions and improvement of the system of monitoring, reporting and verification of greenhouse gas emissions;
- recovery of wild nature of Ukraine.

The developments of a legal framework based on EU standards and the partial implementation of some of them make it possible to plan the step-by-step implementation of the roadmap for the post-war recovery of Ukraine. Serious international obligations regarding climate and energy policy appeared in the country after the signing of the Paris Agreement (2015) and its ratification (July 14, 2016). Based on these positions, the formation of the Conception of the green energy transition of Ukraine by 2050 is due to a significant transformation of approaches to the development of energy in the world in the context of a new green energy transition with special attention to the problems of combating climate change, and ensuring sustainable economic development [30].

Table 4 lists the key regulatory and legal documents designed to accelerate the green energy transition of Ukraine and secure the fulfillment of obligations regarding the green modernization of the economy and measures to combat climate change and its consequences.

The European Green Deal has developed a roadmap for Europe's sustainable green transition to a climate-neutral con-

Regulatory and legal acts of Ukraine to stimulate the development of sustainable financing

Category and name of the document	
Strategies and conceptions	Low-carbon development strategy of Ukraine until 2050
	On the approval of the National Transport Strategy of Ukraine for the period up to 2030: Decree of the Cabinet of Ministers of Ukraine, dated 30.05.2018 No. 430-p
	On the approval of the National Waste Management Strategy in Ukraine until 2030: Order of the Cabinet of Ministers of Ukraine, dated November 8, 2017 No. 820-p
	On the approval of the Energy Strategy of Ukraine for the period until 2035 "Safety, energy efficiency, competitiveness": Decree of the Cabinet of Ministers of Ukraine, dated August 18, 2017 No. 605-p
	On the approval of the Strategy for Environmental Security and Adaptation to Climate Change for the Period Until 2030: Decree of the Cabinet of Ministers of Ukraine, of October 20, 2021 No. 1363-p
	The conception of implementation of the State policy in the field of climate change for the period until 2030: Decree of the Cabinet of Ministers of Ukraine, dated December 7, 2016 No. 932-p
Laws of Ukraine	On the Basic principles (strategy) of the State environmental policy of Ukraine for the period up to 2030, dated February 28, 2019 No. 2697-VIII
	On the principles of monitoring, reporting and verification of greenhouse gas emissions, dated 12.12.2019 No. 377-IX
	On the basic principles and requirements for organic production, circulation and labeling of organic products, dated July 10, 2018 No. 2496-VIII
	On the strategic environmental assessment, of March 20, 2018 No. 2354-VIII
	On environmental impact assessment, dated 05/23/2017 No. 2059-VIII
	On the environmental audit, dated 06/24/2004 No. 1862-IV
	On energy saving, dated July 1, 1994 No. 74/94-BP
	On energy efficiency of buildings: Law of Ukraine dated 01.12.2020 No. 2118-VIII.
	On the protection of the natural environment, dated June 25, 1991 No. 1264-XII
	On alternative energy sources, dated February 20, 2003 No. 555-IV
	On the management of radioactive waste, dated 30.06.1995 No. 255/95-BP
	About the Energy Efficiency Fund, dated June 8, 2017 No. 2095-VIII
	Stimulation of renewable energy in Ukraine with the help of a "green" tariff
Programs and national action plans	Program to promote the green modernization of the Ukrainian economy Economic development with new technologies
	On the National Energy Efficiency Action Plan for the period up to 2020: Decree of the Cabinet of Ministers of Ukraine, dated November 25, 2015 No. 1228-p
	On the approval of the plan of measures for the implementation of the Conception of implementation of the State policy in the field of climate change for the period up to 2030: Decree of the Cabinet of Ministers of Ukraine, dated 06.12.2017 No. 878-p
	On the Sustainable Development Goals of Ukraine for the period up to 2030: Decree of the President of Ukraine, dated September 30, 2019 No. 722

Source: created by the authors based on [12; 29; 28, 30; 31]

tinent by 2050 to ensure funding for climate goals, in line with the Paris Agreement that replaced the Kyoto Protocol [4]. The European Green Deal has developed a roadmap for Europe's sustainable green transition to a climate-neutral continent by 2050 to ensure funding for climate goals, in line with the Paris Agreement that replaced the Kyoto Protocol [4]. Its implementation is aimed at the implementation of a set of measures that determine EU policy in the areas of combating climate change, preserving biological diversity, energy conservation, rational consumption of natural resources, innovative industrial policy and trade. According to preliminary estimates, about \$93 trillion will be allocated to the implementation of green projects

in the world by 2030. At the same time, the methods of financing innovations in the field of green modernization should take into account the opportunities and investment climate of each individual country.

The course of the green financing policy in the banking system of Ukraine dates back to 2014-2015, when individual financial institutions initiated an ecologically oriented development vector and began the phased implementation of the "Green banking" strategy focused on sectors of the economy that had the potential for sustainable development. Such innovations made it possible to attract international investments to banks and sign credit agreements aimed at supporting proj-

ects in the field of sustainable energy and energy efficiency, and created a strong foundation for the further development of the green course of banks. The implementation of the international experience of the principles of responsible investment in the field of green banking in Ukraine was intensified in 2020 on the basis of the implementation of the basic standards of international financial reporting and regulation of financial institutions. The strategy for the development of the financial sector until 2025 does not include a plan for the transition to sustainable resources, except for the introduction of green bonds for the development of infrastructure. The disclosure of information by enterprises about the environmental aspects of their work through the publication of non-financial reporting [16] is of a recommendatory nature.

With the beginning of the war, the plans regarding the green course of Ukraine and green financing changed significantly. The green post-war recovery of the country, in addition to the recovery of infrastructural and residential facilities, industrial production, aims to achieve the European goal of climate neutrality. The European Green Course sets goals for Ukraine to take into account ESG risks in the regulation of financial services. The development of technical standards for the regulation of ESG risks is aimed at achieving sustainable economic activity with the definition of six key goals: mitigation and adaptation to climate change, sustainable use and protection of water and marine resources, transition to a circular economy, prevention of emissions of harmful substances, protection and restoration of biological diversity and ecological systems.

An integral element of the transparency of green banking is the preparation of an internal and special reporting system for ESG risks. This is due to the fact that ESG effects can have distant consequences and manifest themselves much later than effects from other types of risks. Since 2017, the publi-

cation of non-financial statements has been mandatory for socially significant companies. It includes three main aspects: environmental, social, and personnel; ensuring human rights; counteraction to corruption and bribery. ESG factors are defined as accounting for the impact of investments on the ecological environment and social sphere of the territory within the boundaries of which the project is to be implemented, as well as an assessment of the corporate management policy of the recipient of the investment for compliance with the principles of social justice, environmental friendliness and ethics.

In accordance with international standards, the comprehensive ESG risk management system of banks should include decisions regarding:

- identification of ESG risks (their taxonomy, compilation of risk catalog, risk management strategies);
- integration of risks into the existing socioeconomic architecture of the country;
- selection of risk assessment tools;
- participation in reporting and forecasting preparation processes;
- consideration of ESG factors in capital investment planning.

The application of ESG principles in the financial policy of Ukrainian banks is due to social changes, regulatory aspects of the NBU and active support of international organizations for financing green investments by domestic banks.

Table 5 presents the international financial organizations with which JSC "UkrGasbank" cooperates in terms of green banking.

The carried out analysis shows that for Ukrainian banks the most relevant instruments of green financing are the following:

- energy modernization of residential and industrial premises;

Table 5

Implementation of the green banking strategy on the example of JSC "UkrGasbank"

Year	Name of the organization	Form and subject of cooperation
2014 2015	Support for the financing of "clean" loans aimed at the implementation of renewable energy facilities	Formation of the business model of a "green" bank.
2018	Northern Environmental Financial Corporation	Signing of a loan agreement regarding a joint program to support the implementation of renewable energy projects in Ukraine
2018	Carbon Pricing Leadership Coalition (CPLC).	The bank has the opportunity to promote the development of green financing.
2019	A financial initiative of the United Nations Environment Programme	The principles of responsible banking of the UN, aimed at creating a financial sector for sustainable development
2019	Partnership with a global network Private Financing Advisory Network (PFAN)	Provision of free expert support for green energy projects, in particular assistance in the preparation of documentation for attracting financing to projects.
2019	UN Environment Financial Initiative (UNEP FI).	Joined the Principles of Responsible Banking, the purpose of which is to support sustainable development in the financial sector.
2019	Coalition of leaders in carbon pricing: Carbon Pricing Leadership Coalition (CPLC)	In May 2018, UKRGASBANK became the first Ukrainian member of the Coalition of Leaders in Carbon Pricing (CPLC)
2019	European Bank for Reconstruction and Development (EBRD)	Joined the Trade Facilitation Program (TFP) as Issuing Bank and Confirming Bank.

Source: created by the authors based on the study [23; 30; 33].

- transition to alternative sources of energy supply (installation of solar stations for own consumption);
- lending of ecological transport (electric cars and public electric transport);
- resource-efficient projects (conservation of natural resources).

Modern banking business is more and more actively involved in sustainable development programs. It is ESG principles that determine the efforts of banks in each of these directions for the sake of sustainable development. ESG components include environmental, social, and *governance* factors that measure the sustainability and ethical impact of investments on business development. Requirements for companies that are importers of products to the EU are determined by the presence of indexes: ecological - E (the impact of the company on the natural ecosystem); social – S (satisfaction of customer needs regarding products and services); *governance* – G (effective reward policy and prevention of negative practices of fraud

and bribery). Recently, there have been discussions about attaching “green certificates” to products entering the EU countries. Such a certificate is evidence that the enterprise uses energy from renewable energy sources or generates its own green energy. Today there are more than 600 different ESG ratings: international; regional, and industry-related, which help investors identify ESG risks and predict their impact on financial performance. The ratings are based on the analysis of the 20 most significant ESG factors and the calculation of about 250 indicators [35].

Currently, Ukrainian banks are actively engaged in the implementation of ESG practices in their activities, in particular, they use a number of indicators of social and environmental corporate responsibility in their investment policy for the implementation of green projects. Thus, the analysis of the open non-financial reporting of the five largest banks of Ukraine according to these criteria showed a high level of implementation of ESG management standards (Table 6).

Table 6

Characteristics of indicators of social and environmental corporate responsibility of banks in Ukraine

Indicators	Banks				
	Ukrasbank	Ukrsibbank	PUMB	OTP Bank	Crédit Agricole
1. Formulations of the bank's mission and strategy, taking into account the principles of social and environmental responsibility	+	+	+	+	+
2. Availability of information on social and environmental responsibility on the bank's website	+	+	+	+	+
3. Availability of non-financial reporting (on corporate social and environmental responsibility)	+	+	+	+	+
4. Availability of information on social and environmental responsibility in the bank's reports	+	+	+	+	+
5. Sponsorship information and charity	+	+	+	+	+
6. Information on the impact of financed projects on the environment	+	+	-	+	-
7. Social responsibility of personnel (code of corporate ethics)	+	+	+	+	+
8. Information on financing energy saving programs	+	+	+	+	+
9. Implementation of eco-enlightenment	+	+	-	+	+
10. Adherence to equatorial principles	+	+	-	-	+
11. Transition to "green banking"	+	+	+	-	+
12. ISO 14001 certification	-	-	-	-	-

Note: ("+" – presence, "-" – absence).

Source: created on the basis of public information resources of banks, [31; 33; 35]

Practical experience shows that JSC “Ukrasbank” started implementing ESG management standards in 2015, distinguishing itself as a pioneer of green banking in Eastern Europe. Since 2017, the bank's management has introduced a system for assessing environmental and social risks of projects. Since 2018, it has been publishing sustainability reports annually according to the methodology of the global reporting initiative GRI and is developing a policy of environmental and social responsibility.

Each of the banks implements its development strategy within the framework of cooperation with the International Finance Corporation (IFC) and attracts funds from the European Investment Bank on the terms of financing projects with compliance with environmental standards, which became an incentive for the implementation of ESG standards in lending projects for small and medium-sized businesses.

The ESG approach became the basis of Ukrsibbank JSC's decisions. In 2021, thanks to the Priceless Planet Coalition

initiative of the Mastercard payment corporation, the bank attracted more than a million customers and contributed to the counteractions against climate change through daily NFC payments from Mastercard. The experience of JSC "PUMB" bank was positively implemented in 2021 through the risk management policy, which allowed the bank to become a leader among Ukrainian companies according to the transparency index. Thus, according to ESG indicators, the average level of information disclosure for social aspects was 26.4%, for environmental aspects: 36.6%, for corporate governance indicators: 27.7% [34]. PJSC "OTP Bank" defined the procedure for managing ESG risks in lending to corporate clients and the foreign OTP banking group in Ukraine, which made it possible to introduce a new approach to identifying the impact of ESG risks on financial losses. Also, in 2022, the bank's management introduced reporting on ESG risks and included them in the collateral assessment methodology in 2023. In 2021, JSC "Crédit Agricole Bank" presented the AIR strategy, one of the elements of which is the implementation of customer evaluation according to ESG criteria [36]. The bank also offers active support for customer's transition to renewable energy sources, and plans to reach a level of 10% in the share of green financing in the corporate business loan portfolio. No less ambitious is the omnical model of relations in the "bank-client" system, the goal of which is to switch to mobile bank applications and expand their functionality for individuals and legal entities. The bank plans to reduce its direct carbon footprint by 25%, become a recognized participant in the transformation of the energy sector in Ukraine, and develop social responsibility within the framework of the *We Care* program [36].

Therefore, the integration of ESG principles in the sphere of social and environmental corporate responsibility of banks in Ukraine is not only an effective way to strengthen their competitive positions in international financial markets, but also indicates their active participation in green financing projects. To improve the situation, it is advisable to take into account progressive international experience in the development of ESG project financing and to adapt foreign practices in accordance with modern challenges and realities of the national economy of Ukraine. We consider it expedient to focus our efforts on conducting educational activities, engaging corporate experts and independent consultants, developing online programs to strengthen the financial literacy of the population in order to counteract the consequences of climate change, and to make efforts to gradually implement the policy of sustainable financing for the period until 2025 from the central bank.

Conclusions and proposals. Therefore, Ukraine should prepare the required conditions for the effective use of internal potential and support from external partners for the restoration of green energy based on a clear long-term commitment to the implementation of the European Green Agreement. At the government level, the key indicators of Ukraine's progress are the integrated energy and climate plan until 2030, the decarbonization strategy until 2050, changes to regulations to ensure equal access of all interested parties to the domestic energy market and export infrastructure, investment protection, including special guarantee mechanisms, as well as the expected long-term roadmap of economic development and abolition of sub-

sidized prices for certain groups of consumers. In order to increase the resource potential of green financing, it is necessary to intensify the work of banks in the direction of implementing green banking projects and adequate regulation of ESG risks in the activities of financial institutions, to expand the range of tools and methods of green financing, in particular, due to the improvement of monetary and financial policy at the level of the National Bank of Ukraine. As a result, the conditions of a green recovery will be created for the effective usage of internal potential and support from external partners for the recovery of green energy based on a clear long-term commitment to the implementation of the European Green Agreement. Thus, our country will be able to successfully integrate into the European community through the development of renewable energy and energy efficiency, and the citizens of Ukraine will improve their standard of living, well-being, and a stable future.

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