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INSTITUTIONAL FEATURES OF THE FORMATION OF A GREEN ECOSYSTEM OF INTERNATIONAL FINANCE

ІНСТИТУЦІЙНІ ОСОБЛИВОСТІ СТАНОВЛЕННЯ ЗЕЛЕНОЇ ЕКОСИСТЕМИ МІЖНАРОДНИХ ФІНАНСІВ

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Abstract. *The purpose of the article is to determine the principles and specific features of building a green financial ecosystem that stimulates the development of circular business models in the context of promoting sustainable development. The new ecosystem of global finance is being formed - a system of responsible financing (ESG-finance), including a system of "green" finance, which is based on three risk factors - environmental, social and governance (ESG). Ecosystem of "green" financing was created to achieve the 17 sustainable development goals set out in the UN 2030 Agenda for Sustainable Development. As part of the new approach, UN member states are committed not only to begin implementing measures to green the economy, but also to support new methods of financing and overall "greening" of the financial system. The specificity of "green" investments is that the principal customer, guarantor and co-investor is the state, which bridges the gap between the individual interests of investors and the collective problems of society. ESG investing is an approach to investing that considers a broad range of environmental, social and governance factors and their impact (both positive and negative) on performance. The integration of ESG factors is used to enhance traditional financial analysis by identifying potential risks and opportunities beyond technical assessments. The implementation of the "green" concept requires the mobilization of public and private sources of financing and the development of "green" financial instruments that can provide the necessary flows of "green" investments. Green lending is part of this concept. It has a significant impact on the country's economy, developing its banking industry, making commercial banks important participants in the green model and more competitive in the global financial market. The popularization of the principles of the "green" economy has led to an increase in the demand for financial institutions capable of structuring and directing investments for environmental protection. Therefore, the formation of a portfolio of "green" loans, which provides for the financing of environmental projects and activities in the field of energy efficiency, renewable energy sources, environmentally friendly industry and other areas of activity that are related to environmental protection, is one of the tasks of banks in various countries. Among other initiatives for greening the financial system: Sustainable Stock Exchange Initiative, Financial Centers for Sustainability, Sustainable Insurance Forum, Sustainable Digital Finance Alliance. An important role in the formation of the "green" investment market is played by international institutions - international multilateral banks and various environmental and climate funds. Necessary measures to green the financial system include: development and support of specialized institutional investors ("Green" development banks, funds, evolutionary institutions); monetary and fiscal policy measures in the field of "green" finance (Preferential "green" loans; bonds); development and strengthening of "green" financial infrastructure (development of a low-carbon economy, rating system, "green" stock indices, non-profit databases and cost analysis systems, global network of institutional investors);*

development of "green" legal infrastructure (insurance, creditors' liability, mandatory requirement for disclosure of environmental information).

Key words: *sustainable development, circular economy, green transition, regulation, green financial system, financial instruments, green investment, green finance, EU, ESG*

Анотація. *Мета статті полягає у визначенні принципів та специфічних особливостей побудови зеленої фінансової екосистеми, що стимулює розвиток циркулярних бізнес-моделей в умовах сприяння сталому розвитку. Встановленоформування нової системи зелених фінансів або нової зеленої фінансової екосистеми. Зелені фінансові моделі включають: сталі фінанси; соціо-екологічні фінанси;зелені фінанси; кліматичні фінанси; низьковуглецеві фінанси; традиційні фінанси. Нова зелена фінансова екосистема передбачає інтеграцію принципів ESG-інвестування, що дозволяє залучати фінансові ресурси на реалізацію проєктів, спрямованих на: пом'якшення клімату, адаптацію до зміни клімату, захист біорізноманіття, раціональне використання та охорону водних і морських ресурсів, перехід до циркулярної економіки, уникнення відходів і переробку, уникнення та зменшення забруднення навколишнього середовища, захист здорових екосистем і стале землекористування; доступ до належного медичного обслуговування та запобігання епідеміям, дотримання визнаних трудових стандартів (без використання дитячої праці, примусової праці чи дискримінації), дотримання безпеки праці та охорони здоров'я, застосування однакових вимог до всіх учасників ланцюга поставок, інклюзивні проєкти тощо. Фінансовий сектор пропонує великий пул зелених інвестиційних продуктів, які відрізняються між собою за ступенем відповідності ESG-критерія. Відповідність ЦСР виступає альтернативним методологічним підходом до визначення зеленого сегменту фінансового ринку. Відзначено впровадження неуніфікованих між собою мінімальних стандартів сталості у фінансовому секторі, що впливає на процеси грінвошінга.*

Ключові слова: *сталий розвиток, циркулярна економіка, зелений перехід, регулювання, зелена фінансова система, фінансові інструменти, зелені інвестиції, зелені фінанси, ЄС, ESG*

Introduction. In a global context, the process of greening is considered as a key element of the sustainable development strategy. The involvement of an increasing number of countries in this process leads to the formation of global agreements that not only require from each country party to the agreement an official declaration of a policy for the transition to a green economy, but also practical confirmation of these intentions by real actions in the field of greening industrial production and the use of natural resources. resources, implementation of circular business models.

At the intersection of two spheres of human activity - financial and environmental - a new ecosystem of global finance is being formed - a system of responsible financing (ESG-finance), including a system of "green" finance, which is based on three risk factors - environmental, social and governance (ESG). Ecosystem of "green" financing was created to achieve the 17 sustainable development goals set out in the UN 2030 Agenda for Sustainable Development. As part of the new approach, UN member states are committed not only to begin implementing measures to green the economy, but also to support new methods of financing and overall "greening" of the financial system. These factors must be taken into account, on the one hand, by companies and organizations of all forms of ownership that attract investments for their development, and on the other hand, by institutional investors and financing organizations in credit policies and investment strategies. Along with traditional financial instruments, instruments for responsible project financing have entered the financial market. This is due to the global development of the process of socially responsible investment, in which the requirements of investors are associated not only with a certain rate of return, but also with the compliance of the investment object with environmental, social and ethical criteria. If at first "green" investments were financed mainly by multilateral financial institutions, today the generally accepted position is that each country should develop its own strategy for financing sustainable development. Moreover, this strategy should take into account all sources of financial resources (public and private, domestic and international). To attract these funds, not only well-thought-out government policy will help, but also innovative financing mechanisms, including representatives of private business. The public sector plays a significant role in attracting investment, which can reduce the risk of non-return on projects, thus increasing their attractiveness for private investors. Public funds are raised through financial institutions, government funds and green investment banks. Public financial institutions are directing a certain amount of their resources to expand private capital in green investments. A separate financial instrument is the so-called “climate” funds. They are needed to cover the costs of climate change mitigation and adaptation. The specificity of “green” investments, as the experience of developed countries shows, is that the principal customer, guarantor and co-investor is the state, which bridges the gap between the individual interests of investors and the collective problems of society. ESG investing is an approach to investing that considers a broad range of environmental, social and governance factors and their impact (both positive and negative) on performance. The integration of ESG factors is used to enhance traditional financial analysis by identifying potential risks and opportunities beyond technical assessments. Despite the presence of a social component, the main goal of ESG assessment remains financial indicators. By 2025, ESG funds will have more assets under management than other funds. At the same time, the market share of ESG funds will increase to 57% in 2025 compared to the current 15%. By taking ESG factors into account, issuers can increase shareholder value, for example by properly managing risk, anticipating regulatory actions or entering new markets, while contributing to the sustainable development of the society in which they operate. Moreover, these factors can have a strong impact on reputation and brand, which are becoming an increasingly important component of a company's value.

The purpose of the article is to determine the principles and specific features of building a green financial ecosystem that stimulates the development of circular business models in the context of promoting sustainable development.

Literature review. The scientific concept of sustainable finance has been actively developing for only a few years, while the evolution of sustainable finance has been traced in practice since at least the early 2000s *(Dovgal, O., Borko, T., Miroshkina, N., Surina, H., & Konoplianyk, D.,2024).* The evolution of sustainable funding was marked by four “waves” that occurred in the early 2000s, the middle of the first decade of the 20th century, 2012 and 2015. Initially, sustainable finance was more associated with reputational risk management, which drew public attention to ethical financial behavior (*Huamao, X., & Fengqi, W., 2007).* At the next stage, the focus shifted to business risk management, taking into account environmental, social and governance factors *(Friede, G., Busch, T., and Bassen, A., 2015).* The third stage of the concept formation was marked by interest in finding investment opportunities that correspond to the concept of sustainability, which led to the formation of a market for sustainable financial services *(Verheyden, T., Eccles, R.G., and Feiner, A., 2016).* In the fourth stage, this market entered the institutionalization phase. The concept of sustainable finance, in turn, includes a number of interrelated concepts (*Khan, M., Serafeim, G., and Yoon, A., 2015).* In its broadest sense, sustainable finance is embedded in a functional concept, which includes an institutional concept that has an instrumental cross-section (*Melnyk, T., Reznikova, N., & Ivashchenko, O., 2020).*). In the modern interpretation, “sustainable financial system” includes a number of aspects, for example, socio-economic, environmental and managerial, which must be in close interaction and not cause damage to each other. Perhaps this is why the terms “climate finance”, “sustainable finance”, “green finance” (*Chala, V., Orlovs'ka, Y., Kvaktun, O., Vovk, M., 2017*) are used interchangeably, although this is not entirely correct. Historically, the concept of climate finance was the first to come into widespread use. This was due to the worsening problem of greenhouse gas emissions and the need to adapt to climate change. Green finance most often refers to investments that finance projects that provide environmental benefits in the broad context of environmental sustainability (*Reznikova, N., & Grod, M., 2023)*. In turn, “sustainable finance” broadly defined as any form of financial product or service provided by financial intermediaries that contributes to positive environmental and socio-economic goals, while contributing to the goals of the Paris Climate Agreement and the SDGs (*Jaeger C. C., Schütze, F., Fürst, S., Mangalagiu, D., Meißner, F., Mielke, J., Steudle, G..and Wolf, S. (2015).* In particular, global sustainability challenges such as climate change or poverty cannot be solved without responsible financing *(Acsinte,S., Verbeek, A., 2015).*

Main results of the research. The implementation of the “green” concept requires the mobilization of public and private sources of financing and the development of “green” financial instruments that can provide the necessary flows of “green” investments. Green lending is part of this concept. It has a significant impact on the country's economy, developing its banking industry, making commercial banks important participants in the green model and more competitive in the global financial market. The popularization of the principles of the “green” economy has led to an increase in the demand for financial institutions capable of structuring and directing investments for environmental protection. Therefore, the formation of a portfolio of “green” loans, which provides for the financing of environmental projects and activities in the field of energy efficiency, renewable energy sources, environmentally friendly industry and other areas of activity that are related to environmental protection, is one of the tasks of banks in various countries. In particular, more than 120 banks in approximately 40 countries now follow the Equator Principles, the financial industry benchmark for identifying, assessing and managing social and environmental risks associated with the project financing process. The Principles are a voluntary initiative that encourages companies to consider environmental, social and corporate governance (ESG) issues as part of their investment decision-making process, with the goal of aligning the company's agenda with societal expectations. European financial companies are among the leaders in green investing that is in line with the Equator Principles. One of the leading organizations introducing the principles of sustainable development into the daily activities of companies is the international Association for Responsible Investment PRI (Principles for Responsible Investment), operating with the support of the UN (UN PRI). The association was created in 2006 after several major institutional investors from 12 countries developed six core Principles for Responsible Investment with the goal of minimizing the risks of long-term investing by incorporating ESG factors into investment strategies.

Unlike financial statements used for investment analysis, public ESG reporting is not audited, which creates additional incentives for companies to try to accommodate the rating methodology and present the company in a good light. The emergence of greenwashing is a consequence of narrowing investment opportunities for companies that do not implement circular and sustainable business models *(Cheba, K., & Bąk, I., 2021)*. Capital owners (insurance companies, endowments, etc.) include ESG factors in the sustainable development strategy, take them into account when choosing potential counterparties (capital management companies), set restrictions on the conditions for using capital (compliance with ESG principles, reporting, etc.). Wealth management companies (asset management companies, investment managers) analyze ESG risks before investing, focus on developing the skills of their employees in the field of responsible investing, and set key performance indicators for managers regarding responsible investment portfolios. Stock exchanges establish ESG factors as reporting requirements for companies, regulate requirements for the allocation of assets (including ESG-oriented securities), and monitor ESG incidents of companies. Portfolio companies (attracting investments for business development) strive to operate in accordance with ESG principles, publish information on compliance with ESG principles to participate in ratings, and report to investors and stock exchanges on ESG risk management.

The Central Banks and Supervisors Network for Greening the Financial System was created at the Paris Summit "One Planet Summit" in December 2017 with the aim of promoting the implementation of measures necessary to achieve the goals of the Paris Agreement, as well as to exchange experience and information about environmental practices, promote the development of environmental management and management of risks associated with climate change, capital mobilization to support the transition to a sustainable economy. The processes of institutionalization of the green financial ecosystem are accompanied by the introduction of a number of international initiatives, the implementation of whose goals involves the use of supranational levers of influence. Among them we include: Coalition of Finance Ministers for Climate Action (CFMCA) intends to help countries mobilize and align the financial resources needed to implement their national climate action plans; Santiago Action Plan (under the CFMCA) intends to accelerate national climate action (e.g. green budgeting), financial sector policies (e.g. transparency and disclosure of climate-related financial risks, risks to financial stability); EU Action Plan on Financing Sustainable Growth has 3 main objectives: 1) reorient capital flows towards sustainable investment for sustainable and inclusive growth; 2) manage financial risks stemming from climate change, environmental degrading and social issues, and 3) foster transparency and long-termism in financial and economic activity; International Platform on Sustainable Finance (IPSF) will deepen international cooperation and coordination on approaches and initiatives for the capital markets (such as taxonomies, disclosures, standards and labels); Central Banks and Supervisors Network for Greening the Financial System (NGFS) purpose is to help strengthen the global response required to meet the goals of the Paris Agreement *(NGFS, 2019)*; G20 Sustainable Finance Study Group aims to identify institutional and market barriers to green finance, and based on country experiences, develop options on how to enhance the ability of the financial system to mobilize private capital for green investment; International Network for Financial Centers for Sustainability (FC4S) enables financial centres to exchange experience, drive convergence, and take action on shared priorities to accelerate the expansion of green and sustainable finance; Centre of Green Finance and Investment (CGFI) catalyzes and supports the transition to a green, low-emissions and climate-resilient economy; Green Bond Transparency Platform; Financial Stability Board (FSB) – Task Force on Climate-related Financial Disclosures (TCFD); Sustainable Banking Network (SBN); Institute of International Finance (IIF): Sustainable Finance Working Group (SFWG) promotes capital markets solutions that support the development and growth of green finance; UNEP FI Principles for Responsible Banking (PRB) provide the framework for a sustainable banking system; Sustainable Stock Exchanges (SSE) initiative's mission is to provide a global platform for exploring how exchanges, in collaboration with investors, companies (issuers), regulators, policymakers and relevant international organizations, can enhance performance on ESG issues and encourage sustainable investment, including the financing of the UN Sustainable Development Goals; Global Alliance for Banking on Values (GABV) is an independent network of banks using finance to deliver sustainable economic, social and environmental development; Sustainable Insurance Forum (SIF) aims to strengthen insurance supervisors' and regulators' understanding of, and responses to sustainability challenges and opportunities for the business of insurance, focusing on environmental issues such as climate change; International Organization of Securities Commission (IOSCO) develops, implements and promotes adherence to internationally recognized standards for securities regulation; International Capital Market Association (ICMA) (The Green Bond Principles / The Social Bond Principles / The Sustainable Bond Guideline) provides services and assistance to participants in the international capital and securities markets *((ICMA, 2020)*; CPI Lab network accelerates well-designed financial instruments that intend to unlock billions for investments in energy efficiency, renewable energy, sustainable transport, climate smart agriculture; CDP (former Carbon Disclosure Project) is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts *(GIZ, 2020; ICMA, 2020; Park, H., Kim, J., 2020).*

An important role in the formation of the "green" investment market is played by international institutions - international multilateral banks and various environmental and climate funds. However, the effectiveness of using their resources largely depends on the effectiveness of national government policies, the quality of the national institutional environment, and the social responsibility of business.

One of the most important components of the emerging global market is the emerging "green" banking system, in which a multi-level "network" of financial intermediaries is gradually emerging, including, on the one hand, global, regional and national "green" banks and development banks, on the other hand, separate eco-finance units and "green" development banks established within the framework of already existing commercial banks.

Necessary measures to green the financial system include:

1. Development and support of specialized institutional investors ("Green" development banks, funds, evolutionary institutions);

2. Monetary and fiscal policy measures in the field of "green" finance (Preferential "green" loans; bonds);

3. Development and strengthening of "green" financial infrastructure (development of a low-carbon economy, rating system, "green" stock indices, non-profit databases and cost analysis systems, global network of institutional investors).

4. Development of "green" legal infrastructure (insurance, creditors' liability, mandatory requirement for disclosure of environmental information).

Fundamental structural changes in the global financial system are decisively determined by long-term trends in macroeconomic dynamics. Among them, in recent decades, environmental and climate objectives, or the "green" factor, have become increasingly important *(Fazey, I., Moug, P., Allen, S., Beckmann, K., Blackwood, D., Bonaventura, M., & Wolstenholme, R., 2018).* According to a narrow interpretation, "green" finance is understood as a set of financial products and services, the development, production and use of which are aimed at reducing environmental and climate risks of development. Therefore, by “circular” finance we mean a set of financial products and services, the development, production and use of which are aimed at introducing circular business models and reducing the resource footprint of companies.

The second significant green financing instrument is the green bond. According to the definition of C-bonds, a “green” bond is considered to be one that satisfies four requirements: the capital raised must be directed to the implementation of “green” projects, investments must be assessed for compliance with environmental principles, funds raised by the issuer are of exclusively targeted nature, and information about their expenditure is transparent, the balance of funds from the bond issue is published annually *(Szopik-Depczyńska, K., Cheba, K., Bąk, I., Stajniak, M., Simboli, A., & Ioppolo, G., 2018).*

“Green” financing includes expenses, primarily investments from public and private sources in the development and implementation of projects and programs in the field of, firstly, rational (balanced) environmental management, including maintaining the sustainability of the production of ecosystem services (for example, water resources management, soil protection , biodiversity conservation); secondly, the production of environmental goods and services (for example, the production of environmentally friendly equipment and technologies, waste management, oil spill response, development of environmental tourism); thirdly, the development of low-carbon technologies and the reduction of greenhouse gas emissions and/or adaptation (increasing resilience) to climate change and its consequences (for example, increasing energy efficiency, breeding and using drought-resistant varieties of crops, developing the use of new materials to protect buildings from bad weather) . The last component is designated by experts as “climate finance” and is essentially allocated to a separate category.

"Green" banks are specialized institutions that are part of the local financial infrastructure, and are primarily focused on supporting clean energy projects in local markets through the use of public and private capital in order to increase low-carbon investments and increase the degree of use of clean energy in the market. Banks can supplement or increase their capabilities by focusing on "green" projects, in-depth technical assistance to projects, developing a portfolio of potential projects and innovative use of capital. Green banks are designed to maximize overall investment by using limited public funds to attract much larger private investments to finance green projects. In a broader sense, "green" banks include alternative financial institutions that invest in environmental protection, rational use of resources, support of agriculture and producers of organic products, and also ensure a high degree of transparency of financial transactions and social responsibility towards clients and own employees. The greening of the financial system is facilitated by the introduction of ideas of sustainable digital financing, which is the attraction of financing together with the connection to the process of related institutions and the market in order to maximize the technological effect of ecosystems using such tools as: platforms for mobile payments, crowdfunding, lending, arrays finance-related data, artificial intelligence, machine (robot) learning, blockchain technology, digital tokens and the Internet of Things. "Green" banking is implemented as: (1) a bank management mechanism aimed at reducing environmental damage and costs as a result of banks' current operational activities; (2) the mechanism of providing monetary credit resources for the stimulation of environmental projects, the production of "green" technologies, ecological goods and services, or for the development of environmental protection activities *(Tara, K., Singh, S., & Kumar, R., 2015).*

“Green” loans are provided by banks in accordance with the developed and approved credit policy. The Bank can provide in its credit policy “green” loan products with conditions attractive to borrowers (including the type of loan, term, interest rate and amount), thereby stimulating the creation and development of environmentally friendly and energy-saving industries and enterprises, influencing changes in the structure of social production, ratio of "dirty" or "brown" enterprises to "green" enterprises, promoting green growth. At the same time, banks can “punish” enterprises that violate norms and laws on environmental protection or energy conservation by stopping lending, refusing to lend to projects without a positive environmental effect, thus controlling the acceptance of environmental risks by borrowers. Green credit policies can be developed and implemented not only by responsible banks, but also by the state. The state’s “green” credit policy defines strategic sectors, priority sectors (for example, energy saving, renewable energy sources, clean technologies), for the implementation of projects in which "green" loans should be provided by both commercial banks and development banks. In addition to "green" loans, "green" financial instruments of "green" Development Banks and responsible banks rightfully include climate and "green" bonds, which are debt securities from which the proceeds are used to finance environmental and climate projects. Banks can finance new and refinance existing environmental projects using funds raised by securitizing assets into green bonds and then issuing green bonds to third-party investors.

The main contribution to green investment, including renewable energy and other low-carbon projects, comes from direct bank loans, which account for about 2/3 of debt and about half of total financing (the contribution of institutional investors is about 14% and 11%, respectively). The share of banks in debt financing of investment projects in the region under consideration already exceeds 60%. In the long term (2036–2040), thanks to the diversification of funding sources and the development of the market for low-carbon technologies, including renewable energy sources, the share of banks may decrease to 33%. At the same time, the share of the above-mentioned innovative financial instruments (green bonds, ABS, etc.) is likely to approximately double (to 23%) *(Buchner, B., Naran, B., Padmanabhi, R., Stout, S., Strinati, C., Wignarajah, D., Miao, G., Connolly, J. and Marini, N., 2023).*

Conclusions. In the long term, green trends will increase their impact on the restructuring of the global economy and finance. These processes will be based on the following circumstances: the formation of a new technological structure based on nano-, bio- and information and communication technologies; reduction of environmental and climate risks under the influence of new technologies and economic growth in general (this result is envisaged and supported by the obligations of the parties to the 2015 Paris Climate Agreement). In each specific case, "green" finance can focus on primarily solving current (prevention of pollution and restoration of violations) or future tasks (introduction of clean technologies). With this approach, "green" finance ensures the current and future safe existence of society. Despite the youth of the concept itself, its essence is constantly modified: new natural and economic conditions, tools and institutions arise, the understanding of the capabilities and limits of the environment changes, new tasks and priorities appear - and, as a result, the scenarios for their development are updated and the operating conditions are reassessed and implementation of financing. The solution to the listed problems can be attributed to the first rule of the development and purpose of "green" finance. To perform its functions, "green" finance uses special mechanisms that allow it to combine efforts and achieve a cumulative result. "Green" finance follows the rules of systems, which are based on the characteristics of their superposition as a derivative of the scale of activity and the number of communications. And the higher the complexity, the more dangers and risks arise. An addition to the rule of operation of these systems is the presence of a network environment and network interaction - the results of investments in one area affect development in other places and / or time zones. "Green" financing has special functions and properties, and over time, their understanding and development comes more and more. Thus, systematic studies of the repeated errors in estimates and forecasts used by financiers in practice, and how these errors can indicate mental processes that precede them, have led to new discoveries. In particular, scientists and practitioners have advanced in understanding the patterns of global natural disasters, which has allowed financiers to arrange not only their insurance, but also the financing of measures that reduce the likelihood of their occurrence. The significance of environmental financial innovations lies in the fact that they do not so much change the methods of manipulating money and risks as they rebuild the mechanism for the economic development of natural assets.

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