

PRINCIPLES OF THE "GREEN" ECONOMY IN RUSSIA: CURRENT STATE, COMPARING WITH WORLD EXPERIENCE, CHALLENGES AND PROSPECTS

Ivan Tolkachev

Plekhanov Russian University of Economics – Russia
<https://orcid.org/0000-0002-5884-3663>
tolkachev.ivan.1955@yandex.ru

Alexander Kotov

Plekhanov Russian University of Economics – Russia
<https://orcid.org/0000-0002-6201-9482>
ak1pm@yandex.ru

Denis Perepelitsa

Plekhanov Russian University of Economics – Russia
<https://orcid.org/0000-0003-1678-1342>
perepelitsa.dg@rea.ru

Elmira Asyaeva

Plekhanov Russian University of Economics – Russia
<https://orcid.org/0000-0002-2358-8922>
mira13031987@mail.ru

Natalia Chelukhina

Plekhanov Russian University of Economics – Russia
<https://orcid.org/0000-0002-0945-7408>
tchelukhina.nf@rea.ru

Nikita Zavyalov

B1 Consult Limited Liability Company – Russia
<https://orcid.org/0000-0003-3204-4035>
zav-nik@yandex.ru

ABSTRACT

Background: The concept of sustainable development plays an essential role in the functioning of the modern world economy. An important component of this concept is the implementation and financing of "green" and socially-oriented projects. In Russia, this direction is only at the initial stage of its formation, therefore it is important to study it and find ways to accelerate its development. **Objective:** The purpose of the research is to analyze the current state of sustainable development projects financing in Russia, to identify its features and future prospects, as well as to find the most effective ways for its development. **Methods:** To accomplish this task, the article analyzes the dynamics of changes and key trends in the global and Russian sustainability financial markets. Their comparative analysis is carried out, the main similarities and differences are highlighted. **Results:** Attention is paid to both industry and subtypes distribution. The theoretical basis of the sustainable development market formation is also considered, its impact on the ESG agenda in Russia is assessed. In the final part, forecasts are made for the possible development of the international and Russian ESG markets. The most effective ways of evolving the sustainable development concept in Russia are identified. Particular attention is paid to the DeFi technologies introduction possibility to simplify and improve financing mechanisms and the implementation of "green" and socially-oriented projects.

Keywords: Investments; Green economy; ESG; Sustainable development; Russian financial market; Bonds.



PRINCÍPIOS DA ECONOMIA "VERDE" NA RÚSSIA: SITUAÇÃO ATUAL, COMPARAÇÃO COM A EXPERIÊNCIA MUNDIAL, DESAFIOS E PERSPECTIVAS

RESUMO

Antecedentes: O conceito de desenvolvimento sustentável desempenha um papel essencial no funcionamento da economia mundial moderna. Um componente importante desse conceito é a implementação e o financiamento de projetos "verdes" e voltados para a sociedade. Na Rússia, essa direção está apenas no estágio inicial de sua formação, portanto, é importante estudá-la e encontrar maneiras de acelerar seu desenvolvimento.

Objetivo: O objetivo da pesquisa é analisar o estado atual do financiamento de projetos de desenvolvimento sustentável na Rússia, identificar suas características e perspectivas futuras, bem como encontrar as formas mais eficazes para seu desenvolvimento.

Métodos: Para realizar essa tarefa, o artigo analisa a dinâmica das mudanças e as principais tendências nos mercados financeiros de sustentabilidade globais e russos. Sua análise comparativa é realizada e as principais semelhanças e diferenças são destacadas.

Resultados: É dada atenção tanto à distribuição por setor quanto por subtipos. A base teórica da formação do mercado de desenvolvimento sustentável também é considerada, e seu impacto sobre a agenda ESG na Rússia é avaliado. Na parte final, são feitas previsões sobre o possível desenvolvimento dos mercados internacionais e russos de ESG. São identificadas as formas mais eficazes de desenvolver o conceito de desenvolvimento sustentável na Rússia. É dada especial atenção à possibilidade de introdução das tecnologias DeFi para simplificar e melhorar os mecanismos de financiamento e a implementação de projetos "verdes" e socialmente orientados.

Palavras-chave: Investimentos; Economia verde; ESG; Desenvolvimento sustentável; Mercado financeiro russo; Títulos.

1 INTRODUCTION

At the present stage of the world economy and international finance development, a certain number of new trends and directions emerge (Seifullaeva et al., 2022). One of these is "green" financing.

"Green" financing is a part of the concept of sustainable development, which implies such use of resources and economic development that will ensure progress in science and technology, human potential, provide a high standard of living for the population, protect nature and the environment, which, in turn, will increase the potential for growth in the quality of life in the future. Investments in the framework of "green" financing are directed to projects involving the efficient resources usage that do not harm the environment, as well as projects whose main goal is to improve the environmental situation and mitigate the consequences of harm caused due to the careless use of natural resources (Ospangaliyev et al., 2022).

Given the significant increase in the relevance of this area in finance, it is receiving



increasing attention in foreign and Russian studies (Glebova et al., 2022). The results of such studies are the identification of key "green" and social investments, the formation of principles, strengths and weaknesses, as well as key areas within which the entire economy should develop in order to achieve the sustainable development criteria.

The advantage of the sustainable development is the achievement of higher results in the long term, environmental safety, social justice, economic efficiency and the high quality of life.

In world practice, "green" financing as a phenomenon has been actively developing over the past twenty years. Having formed in 2007, the "green" bonds market quickly attracted investors and became an important component of the modern financial market (Niyazbekova et al., 2021).

At the global level, there is a significant increase in the issues volumes of financial instruments related to the concept of sustainable development (Frydrych, 2021). The number of companies implementing "green" projects is gradually increasing, attracted by the opportunity to improve their image and the chance to attract new investors (Semenova & Semenov, 2022). As investments in the "green" economy grow, its elements are beginning to be implemented by developing countries (Banga, 2019).

In Russian practice, this issue has been actively discussed since 2016. In 2018, the ESG rating of Russian companies began to be calculated, and the first issue of "green" securities that meet international criteria occurred.

The active implementation of sustainable development elements has occurred in a number of central and north-western regions (Shkiperova et al., 2019). At the present time in Russia there has been a partial transition to the application of "green" finance principles. However, the task of creating conditions for their further advancement still remains (Alieva & Altunina, 2021).

Also, at the current stage, there is a development and creation of methods for evaluating companies and securities issued by them for compliance with the criteria of "green" finance. Concepts for the creation of this direction in the Russian market are being developed. Special attention is paid to municipal projects focused on environmental protection, minimization of the harm caused by anthropogenic factors, and the renewable energy sources usage.

A number of large Russian companies, such as Sberbank and Russian Railways, issue bonds within the framework of "green" finance. Gradually, the number of issues is growing, they are conducted by a larger number of issuers. Most of the issues occur



on the Moscow Stock Exchange (2023), for which a special evaluation and classification system for such debt securities has been created. Moreover, a list of special benefits for companies operating within this framework is being developed (Kotov et al., 2022).

All of this suggests that this direction is gradually developing in the Russian economy. However, here this direction has not yet managed to strengthen sufficiently, and for its further growth it is necessary to find the main prospects and identify ways of further development.

Thus, the Russian economy has a long way to go for a gradual transition to the concept of sustainable development, and in order to accelerate it, it is necessary to identify steps that must be taken both by the state and by companies.

2 METHODS

One of the main numerical indicators characterizing the state of the sustainable development is the volumes of issued sustainability bonds. It is important to take into account the dynamics of this indicator, the distribution between various subtypes, as well as the industry structure.

In order to analyze the prospects, the dynamics of changes in the sustainability bonds market at the global and Russian levels were considered, and further prospects for the development of this market were evaluated (Climate Bonds Initiative, 2023; INFRAGREEN – Expert-analytical platform, 2023; Investment Company "FINAM", 2023).

The fillage of the market with such instruments was considered, taking into account current economic and political factors, and the opportunities for new issuers to enter the market were evaluated.

The analysis of the main scientific studies of theoretical and practical concepts of sustainable development was also carried out. The most frequently highlighted elements of the concept, positive and negative features, as well as the main ways of implementing sustainable development in the current economic realities were considered.

Synthesis and analysis methods were used. Classification and systematization of information, induction, comparison, as well as predictive and graphical methods were also applied.

Data on the international and Russian sustainability-linked debt market was used as



an empirical basis of the study.

3 RESULTS

Firstly, the main components of the concept of sustainable development at the present stage were identified.

The whole concept of sustainable development consists of 3 main elements: sustainable and effective economic development, responsibility and respect for the environment ("green" economy), ensuring social progress and improving the quality of life.

The main, most often highlighted, principles in each of these groups are:

1. Economic
 - a. The principle of innovation and improvement of the scientific and technological base
 - b. The principle of increasing the resource usage efficiency
 - c. The principle of cooperation through the exchange of scientific and technical knowledge and developments
 - d. The principle of inefficient production and consumption models elimination
2. Ecological
 - a. The principle of the negative impact on nature minimization
 - b. The principle of responsibility for the environment condition
 - c. The principle of the most environmentally friendly production models application
 - d. The principle of climate change control
 - e. The principle of ensuring environmental safety
 - f. The principle of predictive models application as the way to prevent possible environmental damage
3. Social
 - a. The principle of participation in solving social problems
 - b. The principle of focus on life quality improvement
 - c. The principle of poverty eradication
 - d. The principle of creating favorable conditions for self-fulfillment and self-development increase
 - e. The principle of social inequality eradication

"Green" financing is located at the intersection of environmental and economic directions, with a greater focus on the first of them. Nevertheless, it also partially affects



social principles.

It should also be considered which areas are usually highlighted in each of the above categories.

In the economic aspect, attention is most often paid to corporate governance and operational efficiency. At the same time, such elements as the stability of the composition and independence of the company's board, the company's development strategy, the level and completeness of information disclosure are considered. Special attention is paid to risk management.

In the environmental aspect, a wide range of factors are considered. They may vary depending on country, regional and industry specifics. However, the greatest attention is paid to greenhouse gas emissions, waste generation and wastewater discharges. Conservation of biodiversity and countering climate change are also important issues.

The social factors consider the level of social responsibility within the corporate framework, municipal and state policy. At the corporation level injuries, working conditions and remuneration, staff turnover, gender composition are considered. At the country and municipal level, various demographic indicators, the quality of health care and education, and social security of the population are distinguished.

Overall, sustainable development is based on the creation of such economic model that will ensure confident long-term growth and minimize possible harm caused by anthropogenic factors (Pankova, 2020).

It is also necessary to consider which levels of the sustainable development concept exist, as well as what is allocated at each of them.

The concept of sustainable development consists of four levels. These levels are: conceptual, regulatory, project and control.

At the conceptual level, the main models of the economy organization are located based on the principles of the sustainable development, together with the basic rules and objectives. Two concepts are most often highlighted: stakeholder capitalism and neo-communitarianism.

Stakeholder capitalism is an economic concept based on a market economy model, which, however, has a number of significant differences. The key difference between stakeholder capitalism and other models of market economy is that instead of competition, this concept involves cooperation.

The main principle of stakeholder capitalism is the cooperation of stakeholders, which leads to long-term sustainable economic growth. In this concept, the idea of personal gain is replaced by the idea of achieving socially significant results.



Another concept of sustainable development is neocommunitarianism. This concept considers companies as constituent elements of society. Proceeding from this, the goal of organizations should be not so much their own benefit as individual subjects, but the benefit of the whole society, which leads to the benefit of its individual constituent elements.

Thus, neocommunitarianism presupposes the alignment of companies towards achieving social well-being, and the main goals are to improve the quality of humanity life and the environmental situation improve, which will allow to achieve higher benefits in the long term.

In general, all the concepts of sustainable development are close to each other, since they are based on common principles.

The regulatory level of sustainable development is a set of all regulatory legal acts that establishes requirements for companies and states necessary for the development of the global community within the framework of this concept.

Here there are three types of legal documents:

- international;
- individual countries;
- individual corporations.

International standards are the norms of the sustainable development concept adopted by several countries. The main ones are the norms of the UN sustainable development concept.

The second group includes laws regulating the activities of companies in individual countries; the most common laws here are the norms of labor relations and environmental safety.

The last group consists of internal companies documents, including provisions on social and environmental responsibility, as well as other documents related to the concept of sustainable development.

The next level of the sustainable development concept includes various projects developed taking into account the key principles of this concept.

There are two main types of such projects. The first of them is the projects of private organizations aimed at preserving and protecting the environment, or at any social projects. Usually, "green" or "social" bonds are issued to finance them.

The second type is government projects within the framework of the principles of sustainable development. They may have different ways of financing, including those similar to private projects.



The control level includes three components: rating agencies, ratings and standards within the framework of ESG.

In the world practice, there are many agencies engaged in rating within the framework of ESG. Here can be highlighted: Sustainalytics ESG Risk Rating, Thompson Reuters ESG Scores, S&P Global Scores, Bloomberg ESG Disclosure Scores, MSCI ESG Rating. In Russia, the ESG rating is carried out by Expert RA and AK & M, also conducted by the rating agency RADEX Europe.

The creation of infrastructure for the transition to a sustainable economy is impossible without a sufficient level of financing of "green" projects. For this reason, an important component of ESG development is the issue of specialized financial instruments, based on the indicators of which it is possible to judge the development of this direction (Zimmerman et al., 2019).

Next, statistical indicators characterizing the securities market related to the concept of sustainable development were considered (Statista – The Statistics Portal, 2023).

To begin with, the dynamics of sustainability bond market issues was considered (Figure 1). It can be noted that over a long period there was a trend towards an increase in the volumes of emissions. So, in just 2 years (2020 and 2021), the volumes has increased more than 4 times.

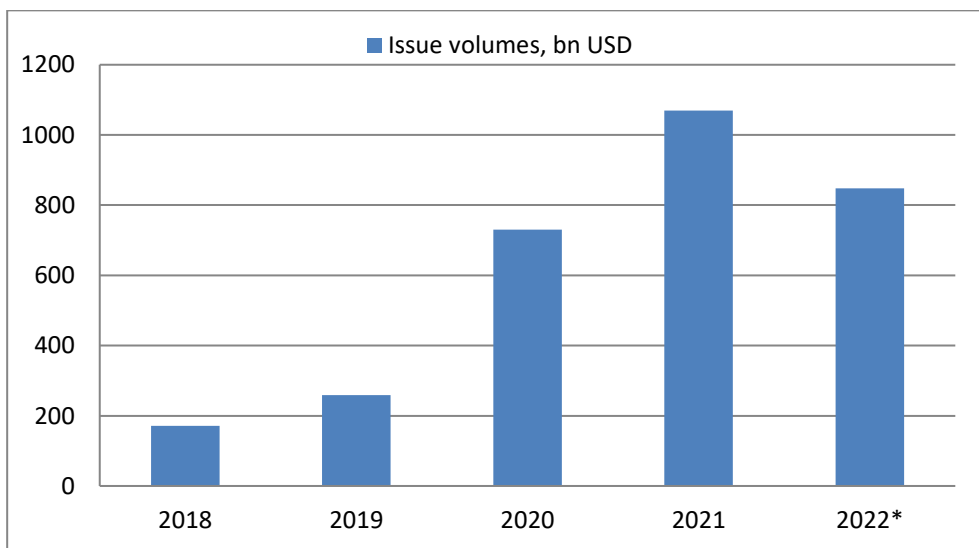


Figure 1. The global sustainability bonds market dynamics

It is worth noting that the pandemic that occurred in the time interval under consideration did not have a significant negative effect on this market. In a sense, it even became a factor that accelerated the development of the ESG agenda (Streimikiene & Kaftan, 2021).



In 2022 (the calculation of 2022 was made on the basis of actual data for the first three quarters and forecast for the fourth) the situation, on the contrary, turned out to be much worse. There was a drop in the volume of issuance of sustainability bonds.

This drop was due to several factors. The first factor is a significant increase in political tensions around the world, which has led to an increase of risks and risk expectations. The consequence of this was a decline in both demand and the issuance of non-standard debt instruments. The next factor related to the previous one is the increase in prices for energy resources and electricity, which was observed for a significant period of 2022. The third factor is the relative oversaturation of the market caused by a sharp increase of volumes in 2021 and 2020.

The most likely forecast for the further development of the global sustainability debt market is a gradual return to the results of 2021 with further growth. However, in the current conditions, the growth rate will not be as high as at the previous stage.

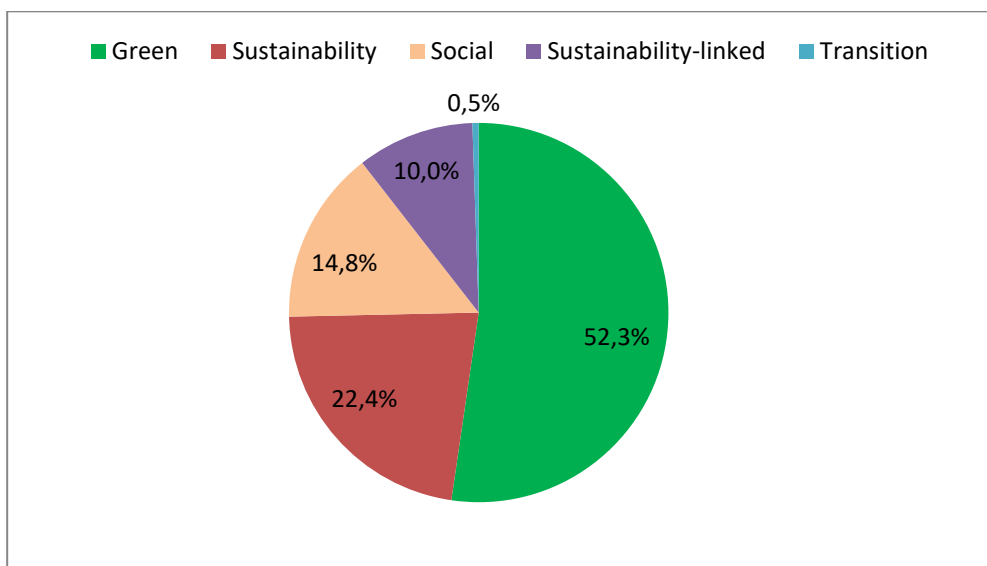


Figure 2. Structure of sustainability bonds issues in the 1st – 3rd quarters of 2022

Next, the structure of sustainability bonds market was considered (Figure 2). It can be noted here that the largest share of issues (more than half of the total volumes) falls on green bonds. Thus, it can be argued that environmental projects are the dominant component in sustainable development. The smallest share is occupied by transitional bonds, which occupy less than 1% of total volumes.

The change in the structure of issues was also analyzed (Figure 3). There are several obvious trends to be noticed here. First of all, the share of social bonds is significantly reduced. Compared to 2020, their share has decreased by about two and

a half times. The share of green bonds, on the contrary, has increased. In addition, the share of bonds related to sustainable development facilities, which were practically absent in 2020, has significantly increased.

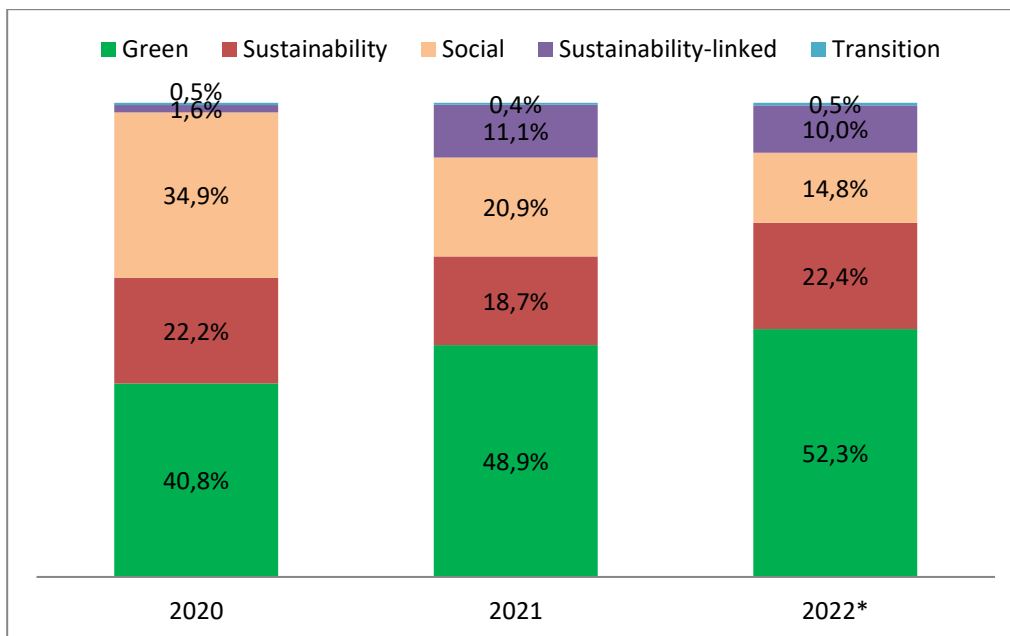


Figure 3. The dynamics of changes in the sustainability bond issues structure

Special attention should be paid to the growth dynamics of certain types of sustainability bonds. Figure 4 shows the dynamics of the three most significant categories.

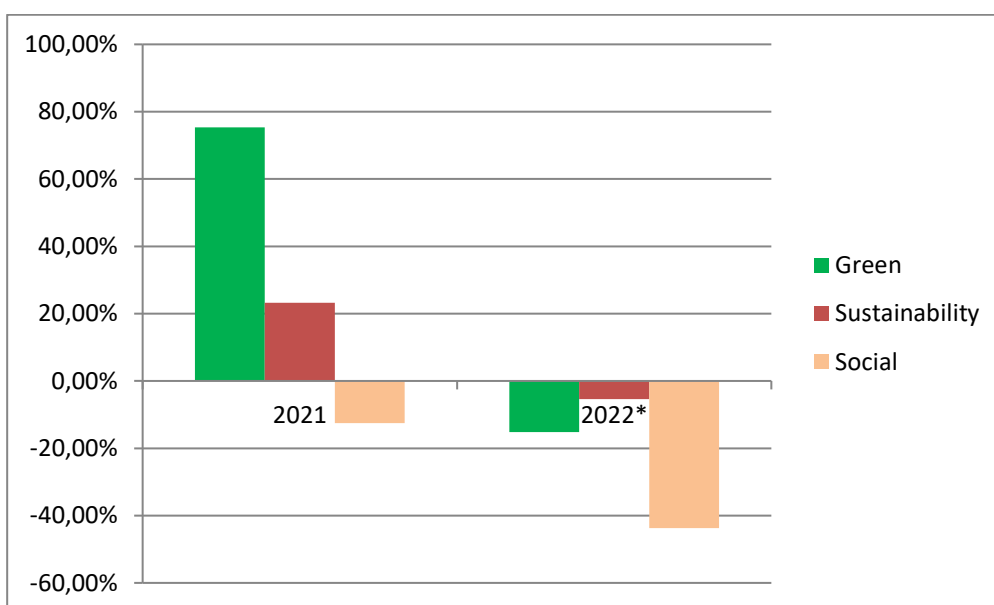


Figure 4. The growth rate of the issues volumes by the sustainability bonds subtype

It can be noted that in 2021 there was a sharp jump in the growth of green bond issues. At the same time, the volume of social bonds issuance decreased. In general, most of the increase in 2021 was due to green bonds.

In 2022, the volume of bond issues of all types decreased. The largest decline again occurred in social bonds, whose volumes decreased by more than 40%.

The correspondence between the actual volumes of issues in 2022 and the projected volumes was analyzed. It is worth noting that initially a significant increase in volumes was expected in 2022 with an excess of 1.3 trillion USD. At the same time, most of the growth should have been due to green bonds.

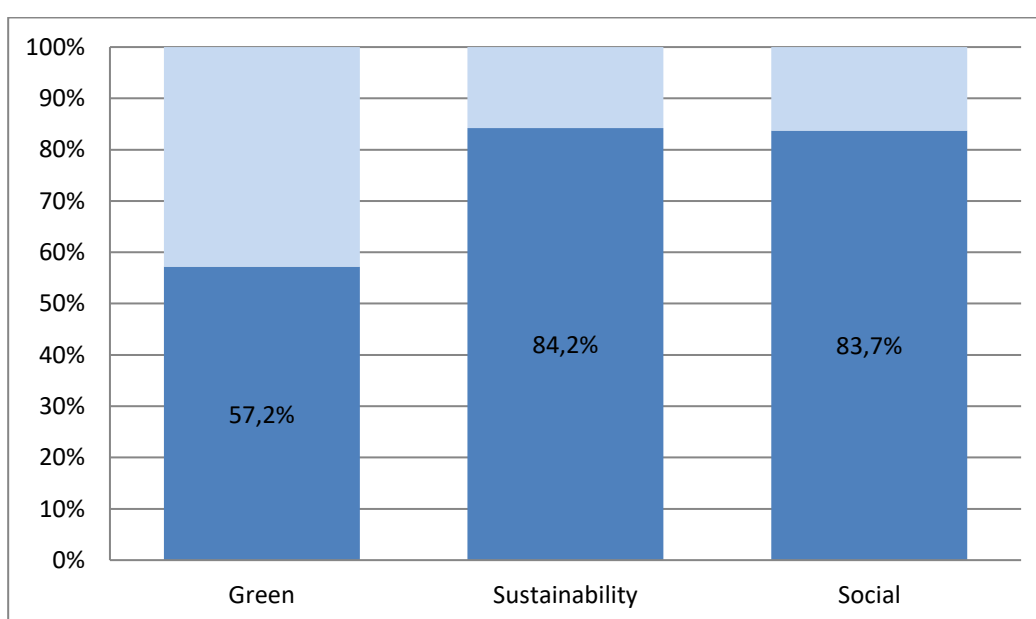


Figure 5. The fulfillment of the sustainability bonds issues volumes forecast in 2022

Figure 5 allows to conclude that the actual volumes were significantly lower than predicted. At the same time, despite the fact that green bonds did not show such a strong decline as social bonds, it is they who have the lowest fulfillment of the forecast, since it was due to their growth that the main expansion of the market was expected.

Next, let's move on to the industry structure.

Figure 6 shows the distribution of issue volumes by industry. First of all, it is worth noting a fairly stable dynamics, in which there are almost no significant changes.

The largest shares are occupied by energy, construction and transport companies. Together they hold more than 80% of all volumes. Of the remaining, water companies also have a significant share.

It can be said that the type of industry is directly related to the participation of

corporations in the sustainable development. The most active role is played by those who, on the one hand, have significant risks associated with possible harm to the environment, on the other – have the opportunity to switch to a more environmentally friendly business model. Factors such as the transition to renewable resources, the active use of green energy, and the use of electric transport play a significant role here (Tatibekova et al., 2022).

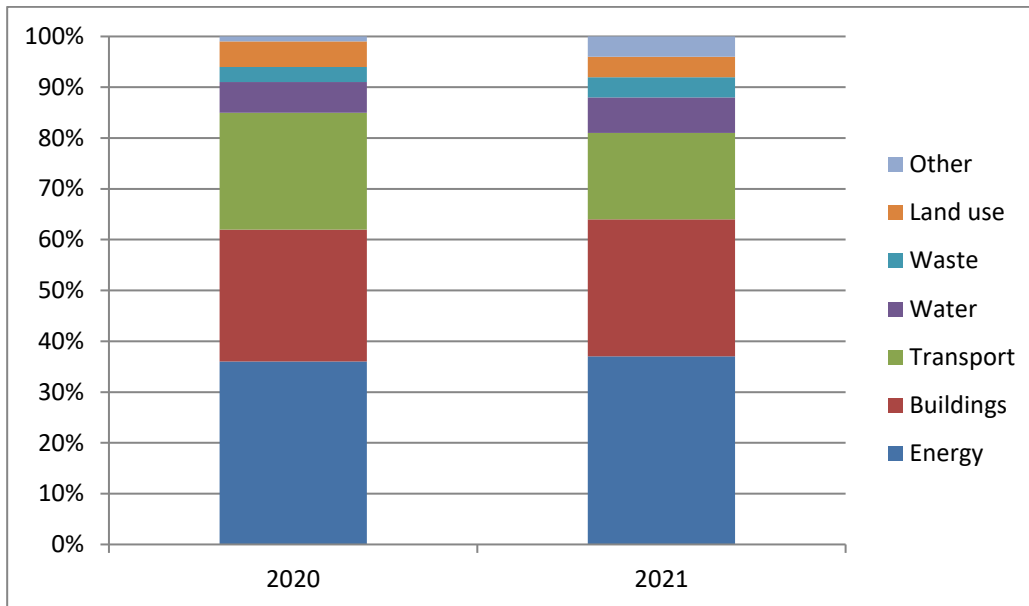


Figure 6. Sectoral structure of the sustainability bonds issue

Thus, in 2022, there was a certain decline in the global sustainability debt market caused by political and economic factors. Nevertheless, although this led to a temporary drawdown, this segment of the financial market still has prospects for further growth.

Then, the Russian market of sustainable development was analyzed, its features were highlighted, and a comparative analysis with global trends was made.

First, the dynamics of issues of sustainability bonds was considered.

According to the Figure 7, it is easy to see that in the interval from 2018 to 2021 in Russia there was an active growth in the volume of sustainability bonds issuance. This trend largely corresponds to the global one (Figure 1). However, it is worth noting that prior to this period, these instruments were almost completely absent on the Russian market, so here we should talk not so much about growth as about the emergence of the market for these securities in Russia.

As in the case of the global market, there was also a decrease in volumes in 2022. However, at the moment, due to the lack of access to foreign investment and higher



risks, the growth prospects look much less significant than those of the global market. Nevertheless, there are certain opportunities to recover to the level of 2021 with moderate further growth due to domestic financing.

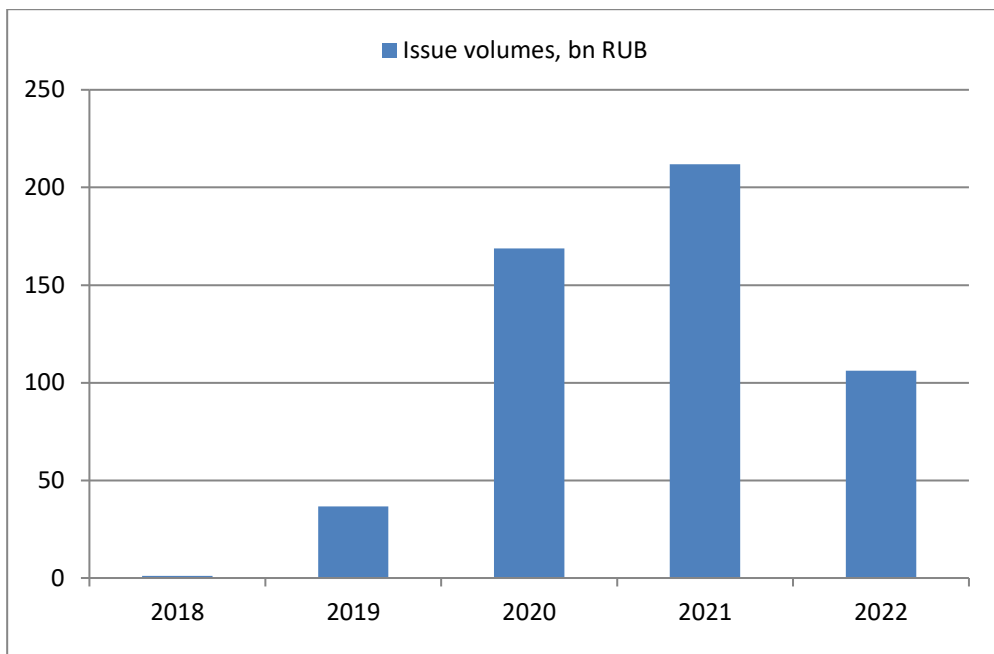


Figure 7. The Russian sustainability bonds market dynamics

Next, the structure of sustainability bonds was considered.

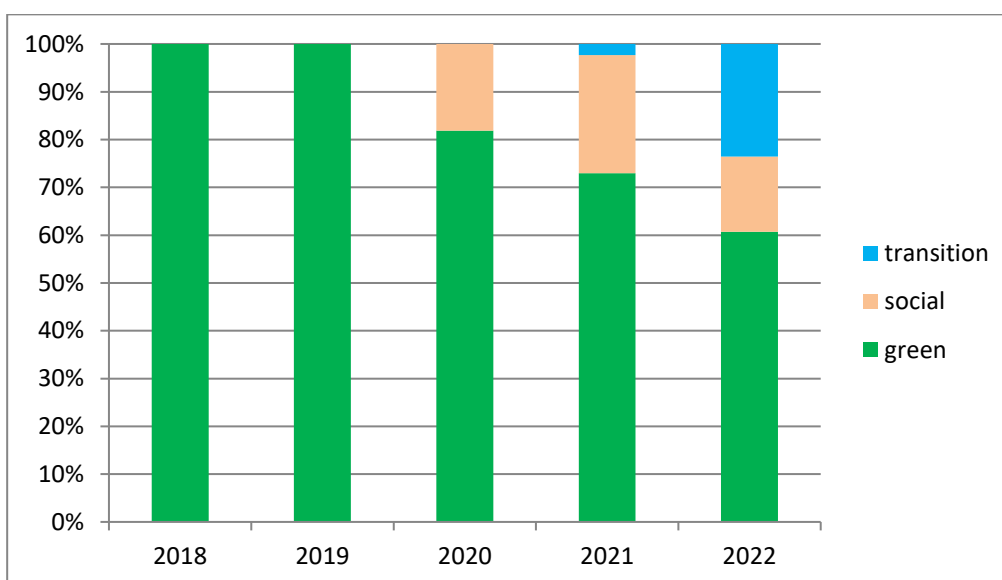


Figure 8. The dynamics of changes in the sustainability bond issues structure in Russia

It can be seen (Figure 8) that the first sustainability bonds issued were green bonds. In 2020 the first issue of social bonds took place, in 2021 – transition ones. However,

it is green bonds that make up the majority of the market, although their share is gradually decreasing.

Overall, the predominance of green bonds is similar to global practice (Nurgaliyeva et al. 2022), however, due to the weak development of this market in Russia, it is difficult to judge the compliance or differences in the structure.

Next, let's move on to the industry structure (Figure 9). There is a significant advantage in the direction of transport companies, which account for more than half of the total volumes. A significant share of bonds issued by municipalities is also allocated. Financial, development and energy companies also have significant shares, but they significantly lose out to the leading industry.

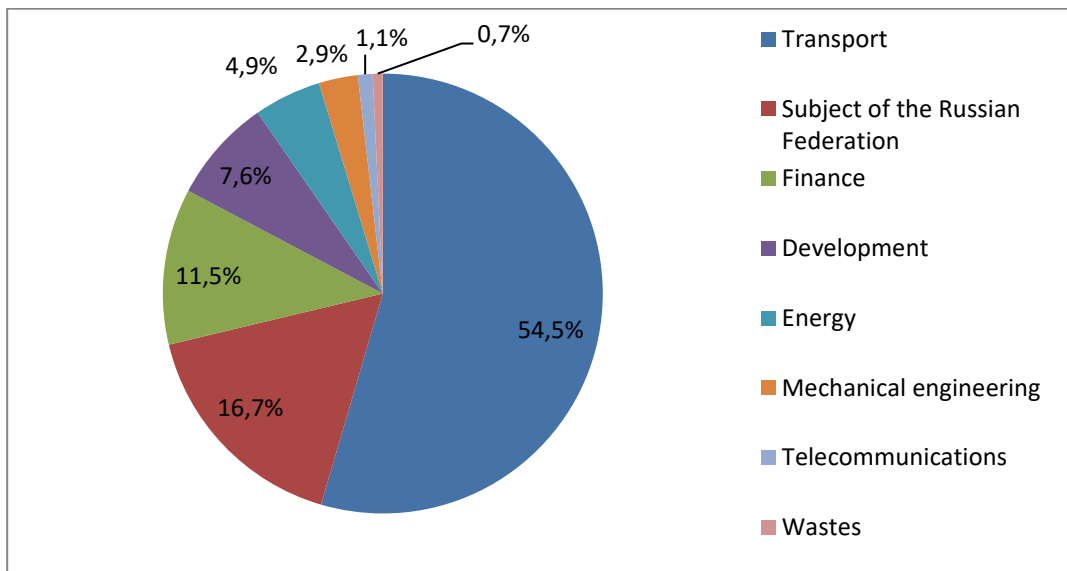


Figure 9. Sectoral structure of the sustainability bonds in Russia

Comparing Russian issuers with the global industry structure, one can notice both similarities and differences. Energy and construction, which occupy leading positions in the global context, are less pronounced among Russian issuers. Another leader is transport, which occupies an undisputed first place in the structure of Russian issuers. Another difference is the high proportion of financial companies.

Let's move on to Figure 10.

It is worth noting here that Russian companies prefer to issue this type of instruments on the exchange market, over-the-counter placement accounts for less than 1%. The main place of issue is the Moscow Stock Exchange, which, however, does not cancel the placement on foreign sites. However, in the current conditions, such an option will be unpromising, which is why we should expect the placement of almost all new issues

on the Moscow Stock Exchange.

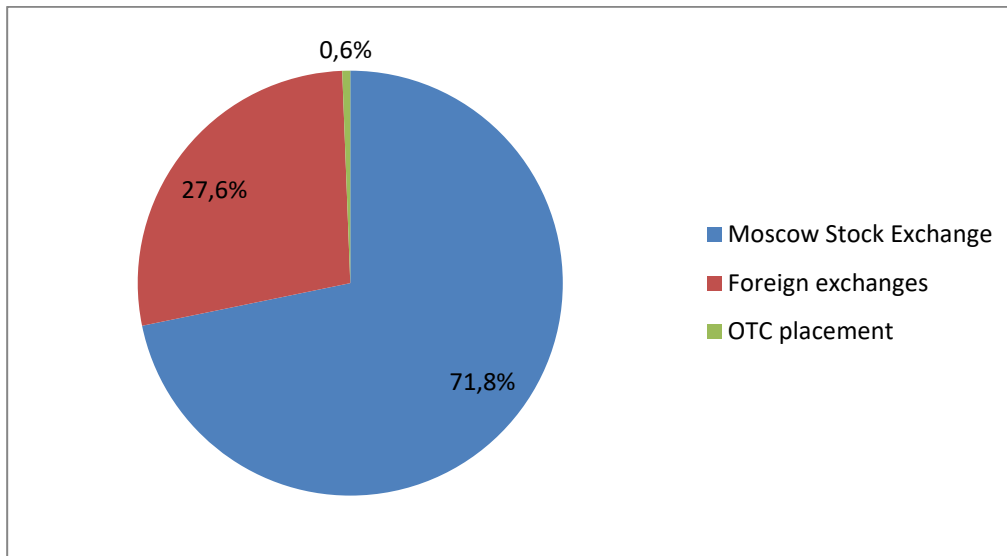


Figure 10. The exchange structure of the sustainability bonds issue by Russian issuers

Next, the share of the sustainability bonds issuance volumes by Russian issuers in the global market was analyzed.

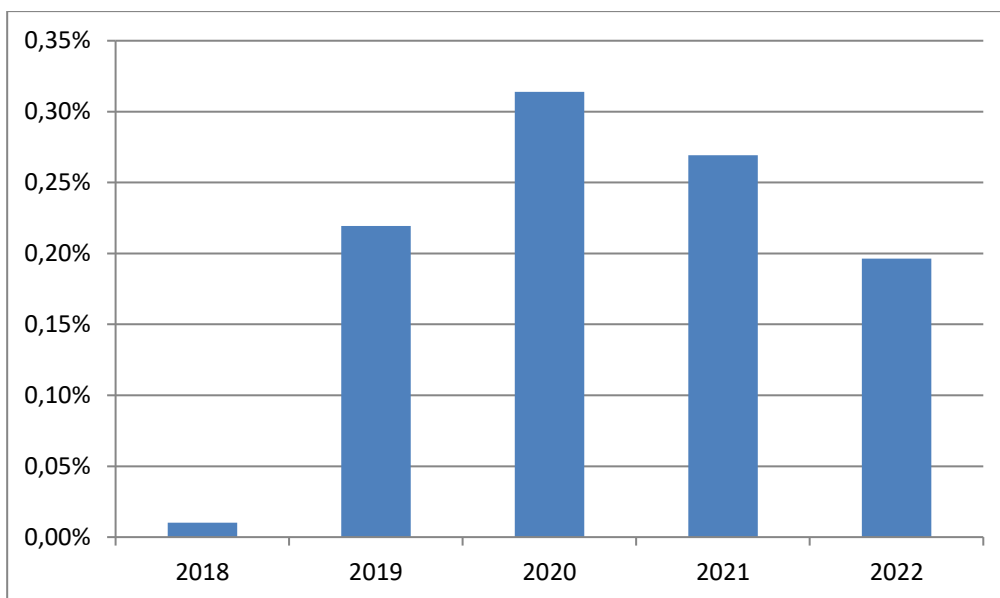


Figure 11. The sustainability bonds issuance volumes by Russian issuers share in the global market

It can be noted that after several major issues in 2019, the share practically did not change. Based on this, we can say that the dynamics of the Russian sustainability debt market largely coincides with the global one.

It is also worth noting a rather low share of the Russian market. On the one hand, this indicates a low level of development of this financial segment in the Russian

economy, on the other hand, the potential for future growth.

Overall, assessing the structure and dynamics of the Russian and global sustainability bonds markets, several conclusions can be drawn.

First of all, we should note the obvious upward trend that began in 2018 to 2019. It is worth noting here that the increase in emissions was accompanied by an increase in interest in such projects not only from individual investors and issuers, but also from major corporations and many states. Therefore, it can be argued that this direction has significant prospects in the long term.

However, it is impossible not to notice the decline that occurred in 2022. It was caused by a wide range of political and economic factors, which also led to an increase in the volatility of all financial markets, increased risk levels, fluctuations in energy and electricity prices. Together with a certain temporary glut of the market, this led to a decline in the volume of new issues of sustainability bonds. Nevertheless, these factors are not capable of leading to a long-term decline in this direction, which is why there will be a gradual increase in volumes and a transition to the concept of sustainable development of more companies.

Considering the structure of the bonds issued, we can note a significant predominance of green bonds in the total volume of all sustainability market. In addition, their share continues to grow. This corresponds to the direction of the ESG agenda, where the fundamental elements are green energy projects with the transition to the use of renewable energy sources. We can say that the share of green bonds will continue to grow further.

The industry structure also corresponds to a similar statement. The main shares are held by energy, construction and transport companies. At the same time, this structure is much more stable and practically does not change over time.

The Russian market of sustainability bonds largely corresponds to the global one. It has a similar structure, which differs only slightly due to local features. The direction of its movement in the last 5 years also coincided. However, it is worth noting that it began to form much later and is currently at the initial stage of its development. Its volume is quite small and amounts to less than half a percent of the global one. In addition, such issues were carried out by a fairly small number of issuers.

We can say that in the long term, the Russian bond market has significant growth opportunities. However, the current situation significantly limits them in the next few years. The main negative factors here are the lack of access to most foreign investments, the decline in the development of the national economy and the increase



of risk levels. Together, all this can slow down the development of this market.

Nevertheless, it cannot be said that in the coming years, sustainable development and the ESG agenda in Russia have no prospects. The development of green finance is also possible in such conditions at the expense of internal funds and resources. However, this will require a more comprehensive approach and the creation of strategies for the development of this area in Russia.

Thus, it is advisable to analyze which innovations will accelerate the development of the green economy in Russia, taking into account the current economic conditions.

One of the ways to accelerate the development of the market of "green" financial instruments in Russia is the implementation of a targeted approach. This approach involves monitoring the development of ESG based on setting specific sustainable development goals and evaluating their implementation. This approach has a positive assessment in the world practice (Biermann et al., 2017). As an example of the effectiveness of a goal-oriented approach, we can consider the model of reducing emissions in the UK (Shahbaz et al., 2020).

In addition, a systematic approach is needed, including many methods and principles of "green" finance for the formation of a developed ESG ecosystem in Russia (Yakovlev et al., 2017).

To ensure stable growth of the sustainability debt market, it is also necessary to introduce special reporting standards for companies issuing such instruments, which will make the market more transparent and allow the attraction of new investors (Deschryver & de Mariz, 2020).

Also, when developing ESG in Russia, it is necessary to rely on the world experience of classifying such projects. The growth of "green" financing around the world leads to a partial blurring of the concept of sustainable development. Therefore, it is necessary to create special systems of criteria aimed at separating projects really aimed at sustainable development from those that are only being implemented as such (Migliorelli, 2021).

The need for state support for "green" projects and the introduction of benefits for companies following the principles of ESG also should not be forgotten (Semenova et al., 2020).

An important role in the development of ESG is assigned to financial organizations. Researchers have repeatedly noted that it is a competent policy in this regard on the part of banks that allows accelerating the development of the ESG agenda (Bedendo et al., 2022; Shor et al., 2022). However, it is necessary to consider ways of organizing



financing of such projects by other ways.

One of the actively developing areas in finance in the current time period is decentralized finance. Further, their features were considered, as well as ways of using them in the concept of a green economy.

Decentralized finance (DeFi) is a new direction in the development of the financial system, which has been actively developing and being implemented in recent years. The decentralized model of financial organization differs from the classical one in the absence of financial intermediaries and centralized institutions.

The main features of decentralized finance are:

- the lack of centralized storage (assets are distributed among participants);
- the self-management;
- the blockchain technologies application;
- the composability;
- the versatility;
- the absence of third parties in operations.

A decentralized financial organization system has its own strengths and weaknesses. The advantages are:

- low transaction costs due to the lack of professional intermediaries;
- the full control over your own assets;
- the absence of risks associated with unreliability of intermediaries;
- the high speed of operations;
- the distribution of control between individual participants.

The disadvantages include:

- the presence of a number of system vulnerabilities;
- the need to introduce new systems and technologies;
- the lack of the ability to control and account for the operations of the system participants;
- difficulties with the rollback of transactions and dispute settlement.

Many ways of introducing a model of decentralized finance and its adaptation for use in various sectors of the economy are being considered. At the same time, many of them assume only partial use of individual elements of the decentralized model without its full integration into the financial system organization. Taking into account the above, we will consider ways to integrate decentralized finance in order to use them to accelerate the development of a sustainable development system.



There are several paths to introduce and use decentralized finance technologies in the "green" economy.

The first of them is to use decentralized finance to control the targeted spending of funds raised with the help of "green" financial instruments.

This will solve the problem that periodically arises when issuing sustainability bonds. Not in all cases, companies purposefully use the funds raised this way. This leads to the subsequent zeroing of the green status of these bonds and the cancellation of benefits received through their issuance. Nevertheless, such a procedure leads to possible losses on the part of investors and negatively affects the entire green financing program. Because of this, its resolution or reduction of its probability will significantly help to promote the ESG agenda.

This can be implemented in two main ways. The first of them involves the creation of special virtual wallets, funds from which can be used only for the implementation of certain projects. The disadvantage of this method, however, is a significant limitation of the possibility of using the funds received, which may reduce the project effectiveness.

The second one is the creation of the most transparent system based on a decentralized model, in which all the green funds movements will be visible. This way is devoid of the drawback of the first, but there is still a certain probability of misuse of the funds received.

An additional positive aspect in both cases is the use of a decentralized system, which removes a number of financial intermediaries that exist otherwise. It can reduce additional costs and increase the efficiency.

The second path of implementation is direct financing using a system of decentralized finance. In this case, a separate system with elements of decentralized finance will not be created, but a decentralized model will be used for financing.

The results will be almost similar to the second way of integration of the previous model, since additional intermediaries will disappear again. However, such a model will leave risks of misuse of funds, which cannot be called a positive aspect. Nevertheless, the use of this path will make it possible to create an alternative market for securities, which may allow attracting additional funding for green projects.

The last path of DeFi implementation into the green economy is the creation of special green tokens in order to finance projects within the framework of the sustainable development. They will be issued and used taking into account special green projects.



Thus, there are a number of ways to use DeFi within the framework of the green economy, and their competent application will allow this it to develop actively even in the current conditions.

4 DISCUSSION AND CONCLUSIONS

Thus, the sustainable development concept is an important direction of the modern world economy. In the last decade, a large number of projects have been carried out within its framework, and significant volumes of securities have been issued. At the same time, the concept itself continues to improve, various directions are developing within it. Nevertheless, all researchers agree on the three basic components of this concept (environmental, social, economic), taking into account which its development takes place.

This concept has several levels on which its various constituent elements are located. In most cases conceptual, regulatory, project and control levels are distinguished. For the economy to function according to this concept, a combination of elements from all its levels is necessary.

It should be noted that over the past five years there has been a strong leap in the introduction of its elements into the world economy. This is clearly reflected in the growth of the sustainability debt issues volumes. At the same time, the main emphasis in most of the projects implemented within the framework of the concept is on green energy and environmental protection.

In 2022, there was a certain decline in the growth of the ESG instruments market, caused by an increase in political tensions, increased risks and volatility, as well as an increase in energy prices. All this temporarily suspended a number of sustainability projects, reduced the volume of issues, scared off some investors.

However, the recession that occurred only temporarily halted the growth of the sustainability market. In the long-term range, we should still expect an active expansion of this direction with an increase in market volumes, as well as in the number of issuers.

In Russia, this concept is just beginning its course of development. At the same time, although the volume of the sustainability bonds in Russia is low, it, however, largely follows global trends and has a similar structural and sectoral picture. Its volumes are currently quite small, but, as in the case of the world, there are trends towards growth in the long term. However, it should be borne in mind that the current situation has had a much stronger impact on the Russian market. The outflow of most of the foreign



investments and high volatility, together with an increase in risk levels, had a significant impact on the development of green economy in Russia.

In the current conditions, further growth is possible only at the expense of domestic investment, which significantly limits growth, but still leaves opportunities for it. Also, the problem is that for many companies, participation in the concept of sustainable development was caused by improving their image to attract foreign investors. At the moment, this factor does not play a role, therefore, more attention should be paid to the creation of a strategy for the sustainable financing system within the framework of national projects, and classification systems and benefits for companies participating in sustainable development programs.

Special attention should be paid to the use of promising areas, such as DeFi, which will contribute to the green finance development in Russia.

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