Regional Aspects of Financing Sustainable Development Through the Prism of GSSS Bonds

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Abstract. *Implementing the concept of social responsibility at various levels has led to the growth of ESG investing, focusing on environmental, social and governance factors. Impact investing goes beyond ESG, focusing on the assessment of contributions to meeting the needs of society and protecting the environment. The UN's Sustainable Development Goals (SDGs) provide a framework for global action, bringing together the financial and organizational efforts of stakeholders. The economic aspects of implementing projects in sustainable development and social responsibility are represented by a wide list of financial instruments designed to ensure the accumulation of funds and their direction in relevant development directions. Green, Social, Sustainable and Sustainability-Linked Bonds (SLB) formed the so-called GSSS pool, which formed the basis for responsible investing. Global ESG assets are expected to exceed $40 trillion by 2030. USD. The European Union, thanks to strong institutional support, led the upward trend of active use of GSSS bonds and became the leader of developed markets. Green, social, sustainable and sustainable development bonds play an important role in financing the SDGs. The structure of GSSS is dominated by green bonds, which are associated with a high risk of climate change. Despite the difficulties, supranational institutions are driving responsible investment trends, focusing on the environmental component. Emerging markets, particularly in the Asia-Pacific region, are showing resilience in green bond issuance, with growth projected through 2027. A comparative analysis of placement and direction of loan funds was conducted in a geographical section, between issuers and developed, emerging and supranational markets. The use of proceeds from GSS bonds demonstrates the issuers' strategic interests: renewable energy, construction, and transport. A forecast of the emission of green bonds for the period up to 2027 in various market segments has been developed. Despite the different names and investment directions of GSSS bonds, they are a valuable tool both for achieving the goals of sustainable development and for the implementation of corporate social responsibility projects.*

Keywords: *social responsibility, sustainable development goals, green bonds, social bonds, sustainable bonds, impact investing, international organizations, issuers, developed markets, emerging markets*

JEL Classification: *F01, F21, F34, F64, O13, O19, Q01, Q56*

1 Introduction

In today's globalized world, the concept of social responsibility has become widespread due to the implementation by enterprises of the practices of accepting several obligations that go beyond their business interests. In essence, social responsibility is aimed at solving the growing challenges associated with human existence by balancing the needs of individuals, organizations and the environment, forming a sustainable and socially conscious future.

The implementation of socially responsible practices has led to the emergence of ESG investing (Environmental, Social, and Governance), which is aimed at improving the social and ecological consequences of economic activity while producing profit and playing an important role in achieving the goals of sustainable development. The principles of sustainable development have long been a solid basis for the development of national economies. At the same time, achieving the SDGs requires significant investment resources, the sources of which are international organizations, national budgets, and private funds.

The increased interest of investors in sustainable development contributed to the growth of investment funds that intend to invest in the implementation of sustainable development goals. Impact investing is not subject to a unified definition, but goes beyond pure ESG investing, offering positive and quantifiable contributions to the environment and/or society, and the increased focus on impact investing requires regulators and supervisors to define how impact investing can be achieved through financial instruments, and assess whether the exposure requirements are consistent with their respective investment strategies.

The United Nations' Sustainable Development Goals (SDGs) are part of the 2030 Agenda for Sustainable Development and provide a framework for "collective action by all developing and developing countries in a global partnership" to address global challenges, end with poverty, protect the Earth and build a more peaceful and prosperous society by 2030 (UN2023). SDG 4, adopted in 2015, includes 17 goals 5 with 160 targets and 248 indicators. 6 These goals cover various ESG themes (e.g. climate change, sustainable cities and communities) and are thus closely related to various themes commonly included in ESG investment language, making them attractive for issuers to convey their claims about their impact to investors, but also creates confusion about measuring the impact of advertised products.

Since the introduction of the 2030 Agenda and subsequent initiatives to engage corporations and capital markets to achieve the SDGs, considerable attention has been paid to the study of financial instruments that can meet the SDGs, corporate financing needs and investor interest in ESG investments.

The purpose of the study is to identify and forecast ESG trends and the impact of investing in achieving the goals of sustainable development through the issuance of GSSS bonds on the developing, emerging and supranational market. Investigating the interaction between various types of debt instruments, types of issuers, directions of use of loan funds, the article aims to summarize and develop the theory and applied aspects of the development of social responsibility, responsible investing to achieve the goals of sustainable development.

Official documents and statistical data, reports, and scientific articles serve as the methodological base of the research. To achieve the set goals, general scientific methods (induction, deduction, abstraction) are used – to specify the field of research; analysis, and synthesis – for the interpretation of the obtained indicators and their dynamics; formalization – to reflect the structure and main characteristics of the research subject; methods of collecting and summarizing information - for grouping and tabular presentation of material; forecasting – to determine trends in the development of individual segments of the GSSS bond market.

2 Literature review

The issues of implementing social responsibility in the activities of many companies and using financial instruments to attract investment funds for projects that have a significant impact on solving key tasks of stakeholders are widely covered in scientific publications. To solve the tasks of our research, publications aimed at researching the mechanisms of circulation and influence of the so-called target bonds: Social Impact Bond, green bonds, blue bonds, SDG bonds, etc., are of particular interest. Bina M. explores green and SDG bonds as a tool for attracting investments for the implementation of projects aimed at achieving the SDGs. Corporations are seeking tools that recognize the benefits of investment in specific initiatives and, more recently, strategies that deeply embed sustainable development, such as SDG-related sustainability, at the heart of corporate missions. As the author notes, SDG bonds, unlike green bonds, are more flexible, aimed at effective communication with stakeholders, they allow the corporation to obtain a tangible benefit from the adoption of the main long-term strategy related to the SDGs, etc. (Bina, 2019).

Deschryver P., Mariz F., researching the green bond market concluded that its size remains small compared to the problems it is supposed to solve and to the general market of traditional bonds. Researchers consider the reasons for this situation to be: a lack of harmonized global standards; risks of greenwashing; perception of higher costs for issuers; lack of offer of green bonds for investors; and the general emergence of the market (Deschryver & Mariz, 2020).

Research by Rizzello A. and Kabli A. is devoted to financing sustainable development and financial sector tools for sustainability. In particular, the authors conducted a comparative analysis between Social Impact Bond (SIB)s and Sustainable Development Goals (SDGs) Bond. The results show that SIBs are fully consistent with the SDG-based financial partnership structures derived from the literature, and their architecture demonstrates a high degree of investment readiness for the SDGs (Rizzello & Kabli, 2020).

A group of researchers makes the case for the implementation of an ownership strategy as a governance mechanism for collective action and responsible ownership in order to implement the UN Sustainable Development Goals (SDGs) and environmental, social and governance (ESG) frameworks. The application of this strategy strengthens the process of achieving SDGs and ESG, including through the issuance of green bonds (Jonsdottir &Sigurjonsson, 2021).

Sustainable development bonds finance a combination of social and environmental bonds, with the principles of sustainable development bonds, the principles of social bonds and the principles of environmental bonds playing an important role in promoting the sustainable bond market (Kumar, 2022).

3 Financial aspects of achieving the SDGs

According to the latest ESG report from Bloomberg Intelligence, global ESG assets exceeded US$30 trillion in 2022 and are on track to surpass the US$40 trillion mark by 2030. In 2030, Europe will remain the largest in terms of ESG assets with more than USD 18 trillion (Bloomberg Intelligence, February 08, 2024).

On a global scale, it is necessary to attract at least 67 trillion for the next 15 years. USD per year during the implementation of the Paris climate agreement to keep the average temperature increase at the level of 1.5–2%. At the same time, the global debt market and the global fixed income market amount to more than 100 trillion USD. Therefore, the only way in which it is possible to attract the multibillion-dollar investments needed to keep the average temperature from rising is to mobilize the private sector to invest in green development (Chapter Zero Ukraine & Caucasus, November 22, 2022).

Financial products related to ESG and SDG are presented on international markets. As evidenced by the data presented in the diagram, the greatest attention in the period 2010–2021 was paid to the implementation of projects aimed at achieving SDG 3, the middle interval is occupied by investments aimed at achieving SDG 16,8,2,11,7,9,4. Even less investment was directed to achieving SDGs 6 and 1. And very little for SDGs 17, 15, 5, 13 and others (Figure 1).

The level of financing of sustainable development projects depends on the priorities and budget expenditures of specific states, as well as on the type of bonds. In order to activate the international investment market in sustainable development projects, it is important to guarantee the liquidity and transparency of projects to attract institutional and private investors. In the area of SDG-aligned fixed income investments, there are a variety of opportunities that can be financed through the bond market. The list of instruments (Green, Social, Sustainable + Sustainability-Linked Bonds (SLB)) was collectively called GSS+ or GSSS.

As the chart shows, the lion's share of the funds allocated to finance the SDGs in developing countries was directed to the fight against poverty, namely 22%. Decent Work and Economic Growth 16%, Quality Education 11%, Reduced Inequalities 10% and others are followed by the amount of funding (Figure2).

The total amount of GSS bonds registered at the end of 2023 amounted to 4.4 trillion USD. Of these, green bonds account for 63.76%, social and sustainability bonds account for 18.7% and 17.54%, respectively. The bond issue of the SLB group in 2023 amounted to USD 21.4, which is 83% more. Since sufficient statistics have not been developed in this segment, for the purposes of this study we abstract from this type of financial instrument.

A comparative analysis based on Table 1 gives an idea of the geographical distribution of bonds of different types. Europe maintains leadership, albeit to varying degrees depending on the type of bond. In the segment of green bonds, Europe accounts for 50%, in the segment of social bonds – 37.7% and sustainable bonds – 24.4%. In the segment of permanent bonds, the positions of Europe and the Asia-Pacific region are almost equal. This trend continued in 2023 and the share of green bonds was already 64%. In addition, according to Bloomberg, for the second year in a row, global banks received more profit from underwriting bonds and providing loans for environmental projects than from financing oil and gas and coal activities. If, according to 2022 data, the world's largest creditors received a total of about $3 billion in commissions from the accumulation of debts on deals that have the status of environmental, then they earned $2.7 billion on deals from fossil fuel operations (Quinson, 2024).

Green bond issuance dominates both emerging markets (EM) and developed markets (AM), accounting for 73% and 68% of total issuance,

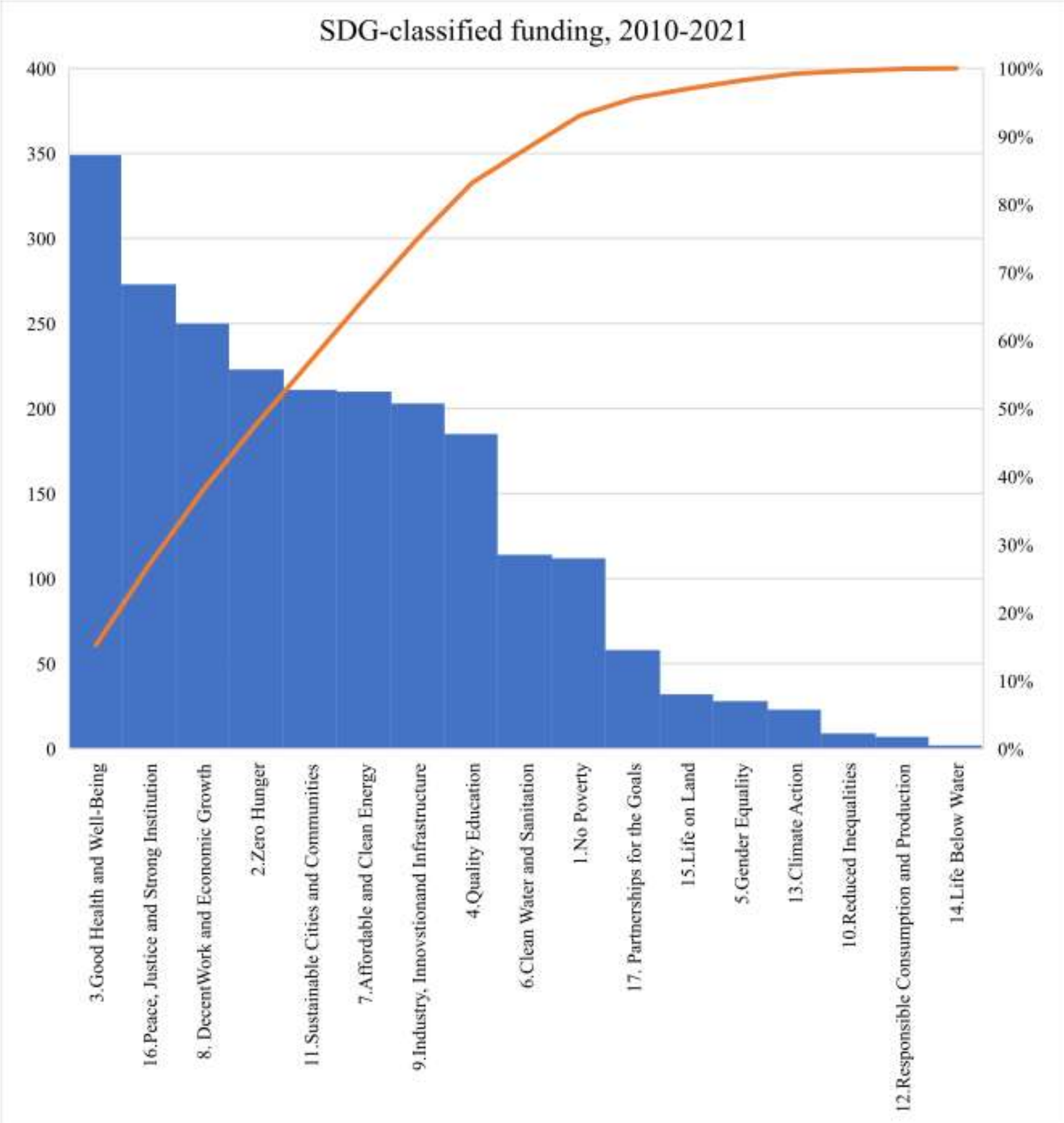

Figure 1 SDG-classified funding, 2010–2021, bln of 2020 USD

Source: Burgess et all (2023)

respectively. The International Energy Agency (IEA) estimates that annual investment in low-carbon energy needs to increase more than fivefold between 2022 and 2030. However, the ratio was just 0.7 to 1 at the end of 2022, little changed from the previous year, according to the latest BNEF data (Bloomberg NEF, 2024).

Europe also leads the segment of developed bond markets. Although in the fixed segment it is being overtaken by bonds of supranational institutions. By issuer type, financial and non-financial corporations are leading in the green bond segment, Government-Backed Entity in the social segment. And in the permanent bond segment, the largest issuers are development banks. The distribution by type of issuer gives an understanding of the policy of each of them in relation to the target accumulation of funds through borrowing.

In terms of geography, Europe, represented by the European Union, is in the first position, which is approaching half of the world's bond issue and

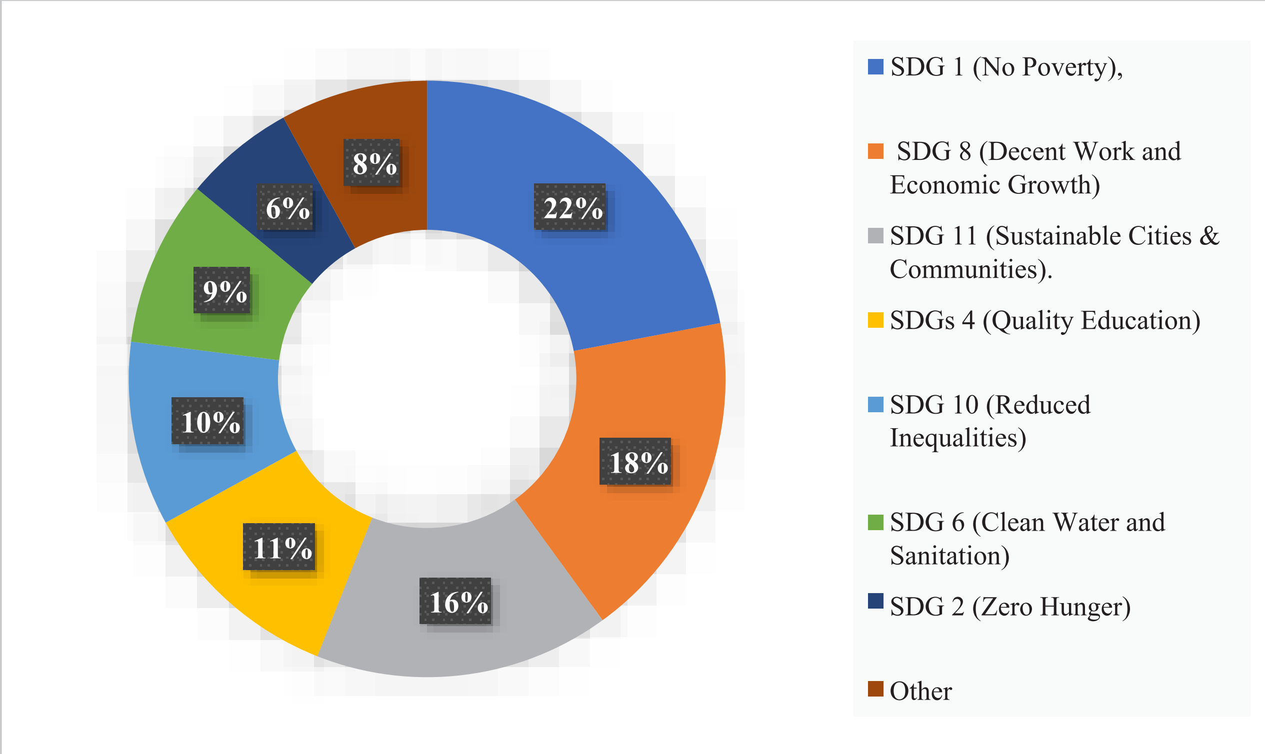

Figure 2 Allocations of net proceeds from sustainable financing instruments by developing country, 2021–2022

Source: Citi, December 2023

Table 1 GSS BONDS PROFILE (based on cumulative data for 2014–2023)

		Green	Social	Sustainability
Region	Europe	50,0	37,7	24,4
	Asia-Pacific	26,1	26,4	23,0
	North America	18,4	13,0	12,3
	Supranational	3,6	17,0	29,5
Market	Developed	67,5	51,8	41,2
	Emerging	27,2	27,4	21,4
	Supranational	5,3	20,8	37,4
Issuer Type	Financial Corporate	27	18	15
	Non-Financial Corporate	26	6	14
	Government-Backed Entity	17	56	8
	Sovereign	13	3	8
	Development Bank	11	7	42
	Local Government	3	7	11
Total, bln USD	4384,9	2795,8	821,0	768,1
%	100,0	63,76	18,70	17,54

Source: compiled by the authors based on data from the Climate Bonds Initiative

currently its share is 46%. Latin America increased the volume of emission by 49%. In North America, the volume of bonds continued to decline in 2023 from 139 to 110 billion USD, which is only 4% of the total volume of issuance (Fig. 3). Moody's expects bond volumes in the US to continue to fall, as there is uncertainty about climate policy in connection with the upcoming US elections.

The Asia-Pacific region is second only to Europe in terms of green bond issuance in 2023, contributing one-third of the total issuance ($189.4 billion), of which China accounts for 44%.

According to Statista, during 2023, China issued the largest number of green bonds in the world. Green bonds issued in China amounted to almost 85 billion USD. Germany came in second

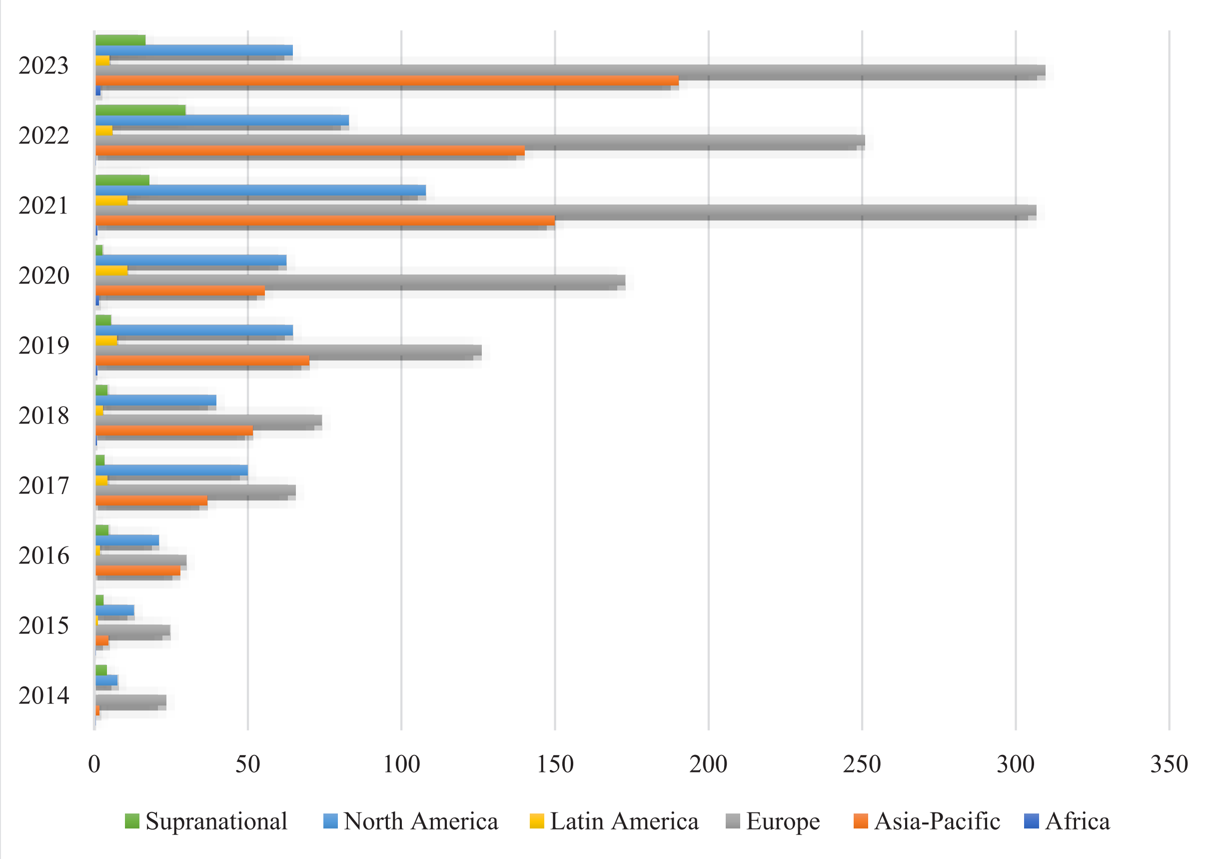

Figure 3 Geographical distribution of the issue of GSS bonds in 2023

Source: compiled by the authors based on data from the Climate Bonds Initiative

in the rating with issued green bonds in the amount of USD 68 billion. The US was third in the ranking and the first European country in the list, issuing USD 60 billion worth of green bonds in 2023.

The use of proceeds from GSS bonds demonstrates the issuers' strategic interests. Thus, the diagram shows the systematic growth of investments in energy, buildings and transport, which together account for 75% of the volume of green debt. However, in comparison with 2022, this volume has slightly decreased. The largest decrease occurred in the "Buildings" category, from 25% in 2022 to 18% in 2023 (Figure 4). Among other categories that are gaining weight, it is worth noting land use, which is relevant among Latin American issuers.

In 2023, non-financial corporate issuers issued 692 financial environmental instruments in the form of bonds worth USD 171.8 billion or 29% of the global market. The leaders are closely followed by financial corporations with a 28% share, among which the Chinese banks Industrial Bank Co., Bank of China and Industrial and Commercial Bank of China can be singled out (Figure5).

As mentioned above, among issuers of permanent bonds, a significant share is accounted for by development banks, namely 42%. Among the issuers of this group, it is worth highlighting the World Bank group, which implements its mission, operations and resources to solve the scale of development problems. The data in Figure 6 demonstrate the structure of the directions for the use of funds accumulated as a result of the issue of Sustainable Development Bonds. A strong focus is placed on issues that affect the Group's ability to achieve its goals, including climate change, pandemics, insecurity, conflict and violence, including poverty, shared prosperity, inequality and global challenges.

Since 2008, USD 19.5 billion has been allocated to 126 projects in 35 countries, and USD 12.3 billion has been disbursed over the past period.

The main directions of the accumulated income due to the placement of green bonds are directed by the World Bank Group to the development of renewable energy, increasing energy efficiency, ecological transport, etc. (Figure 7).

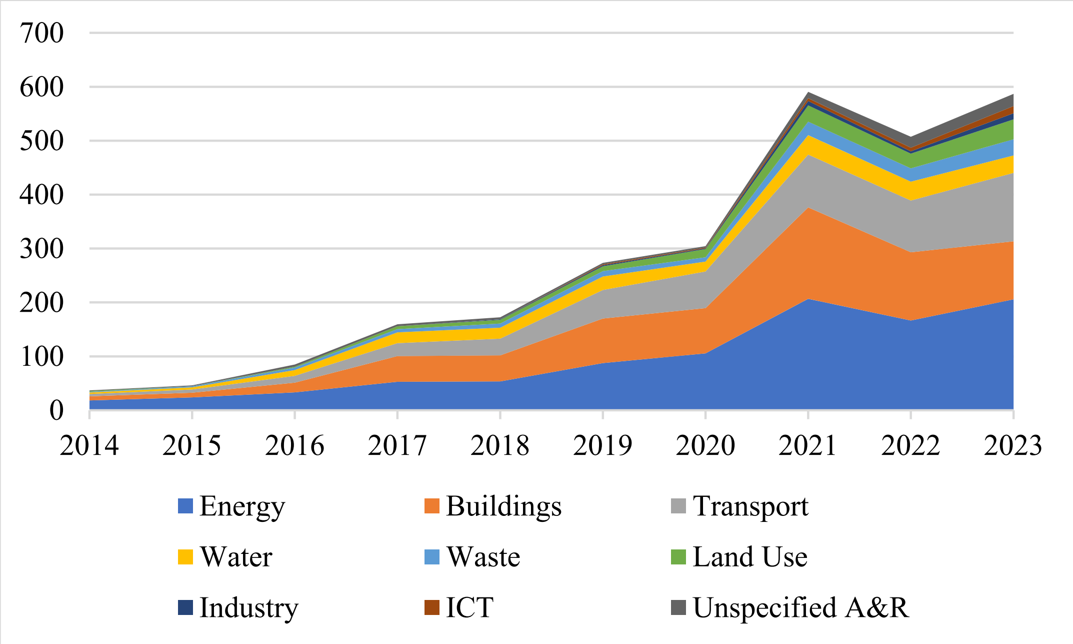

Figure 4 Directions for use of proceeds from GSS bonds

Source: compiled by the authors based on data from the Climate Bonds Initiative

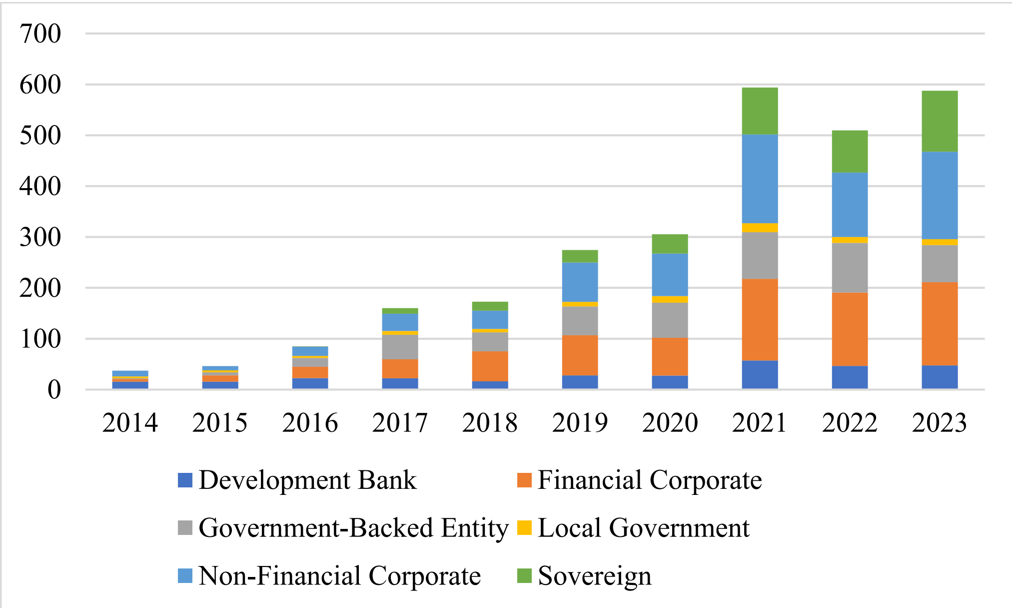

Figure 5 The structure of the green loan market depending on the type of issuer

Source: Compiled by the authors based on data from the Climate Bonds Initiative

4 Forecasting the dynamics of issues of debt instruments

Supranational institutions continue to set trends in responsible investment. Despite some decline in the volume of green bond issuance, caused by Russia's military aggression against Ukraine in 2022–2023, the existing international policy and the potential of responsible investment gives reason to predict the recovery of the trend and the strengthening of the influence of supranational institutions on the implementation of impact investments in various sectors of the economy, and primarily in renewable sources, since the introduction of sanctions against Russia requires a radical and urgent review of the strategy for the development of alternative energy sources in a short period of time. As the forecasting results show, positive growth of green emissions is planned already in 2024 (Figure 8).

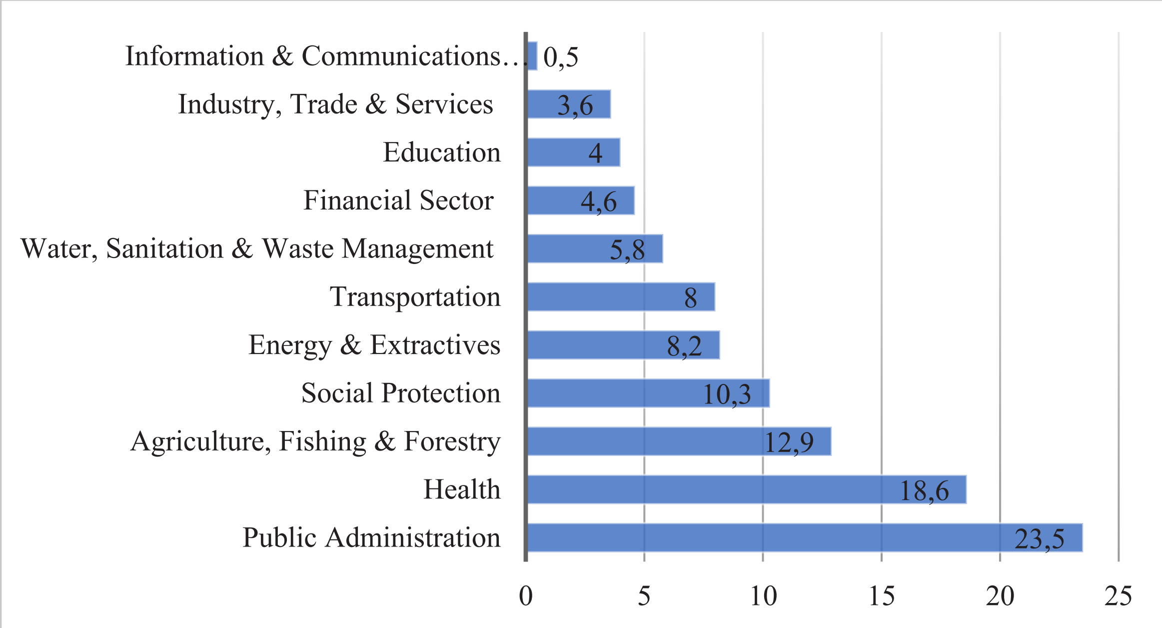

Figure 6 Cumulative Commitments of World Bank Group the Sustainable Development Bonds by Sector, %

Source: World Bank, 2023

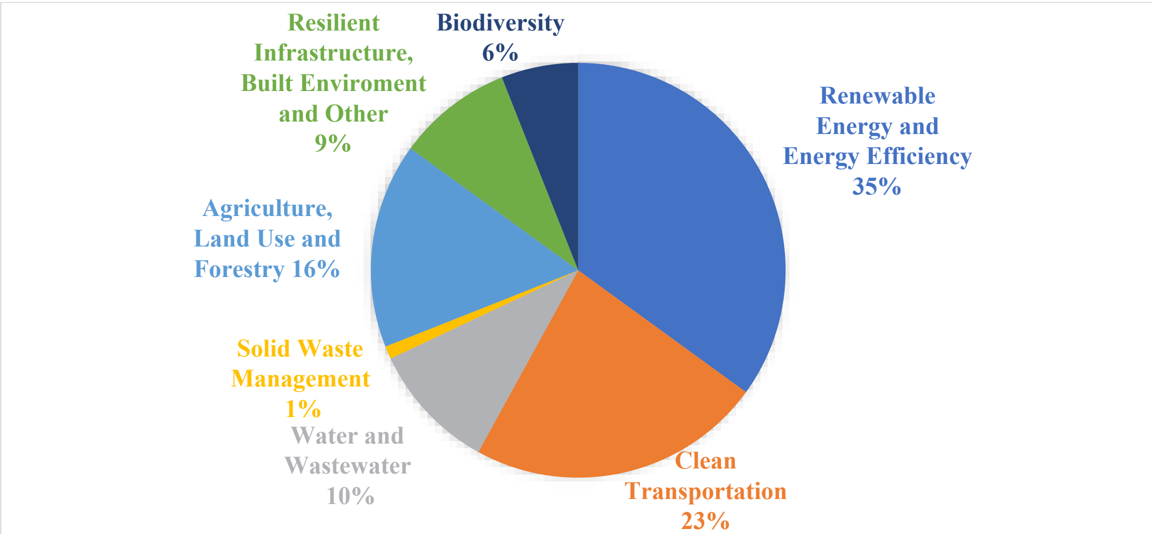

Figure 7 Cumulative Commitments of World Bank Group the Green Bonds by Sector, %

Source: World Bank, 2023

Every year, more and more investors are guided by the principles of responsible investing, taking into account environmental, social and management issues, sustainable development goals, etc. Existing trends that have developed and will influence investment decisions in the future.

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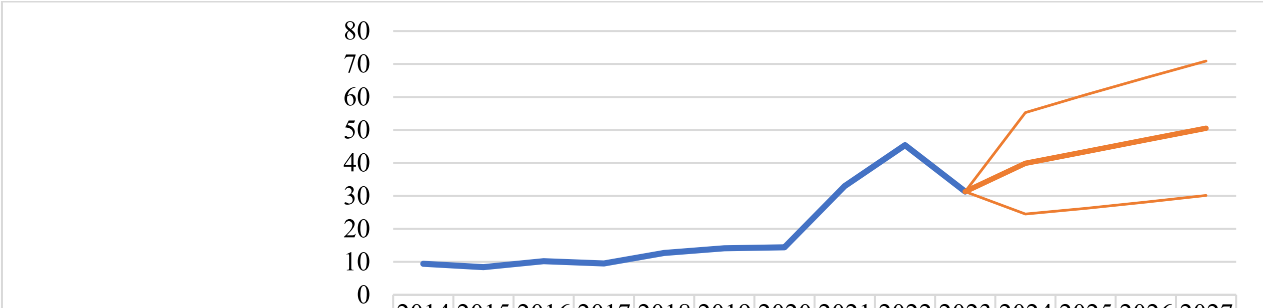
Many countries at the government level aim to achieve net zero emissions by 2050 by investing in the latest technologies. Responsible private business is trying to follow these goals by simultaneously signing the UN Global Compact and using existing tools, such as attracting green credits or issuing GSSS bonds. Impact investing is becoming a general trend that benefits both the environment and investors, dictating their terms and valuing contributions. The issue of green bonds by developed countries somewhat follows the trend of supranational institutions with a difference of one year. The fall in volumes happened here earlier. Since developed countries are the main investors of international development banks, we could observe the same trend above in the segment of supranational green bonds with a falling point in 2023 (Figure 9).

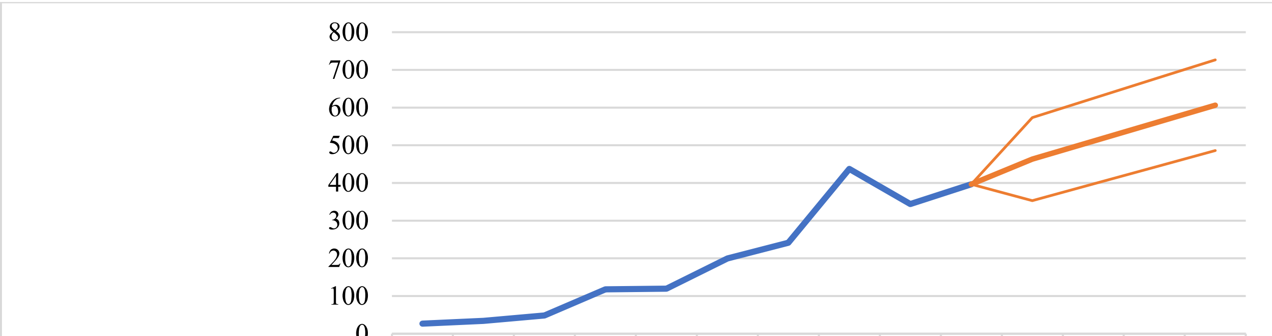
Emerging markets have proven to be more resistant to global shocks, so some decline in the



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Supranational	9,4	8,4	10,2	9,5	12,7	14,1	14,4	33	45,4	31				
Forecast (Supranational)										31	40	43	47	51
Low probability binding (Supranational)										31	25	26	28	30
High probability binding (Supranational)										31	55	61	66	71

Figure 8 Forecast of supranational green bonds issue volumes

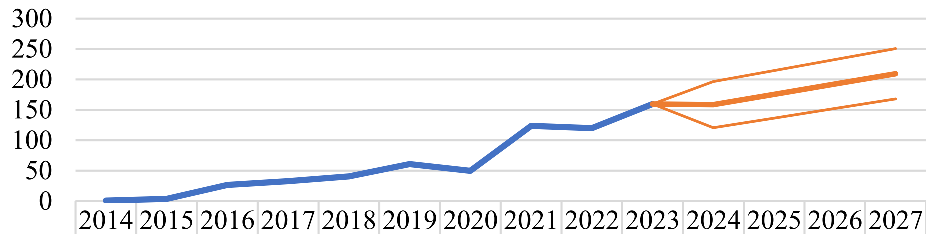
Source: compiled by the authors based on data from the Climate Bonds Initiative



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Developed	26,8	34,3	48,6	117,8	119,6	199,8	241,3	437,3	344,2	397				
Forecast (Developed)										397	463	511	559	606
Low probability binding (Developed)										397	353	397	442	486
High probability binding (Developed)										397	574	625	676	727

Figure 9 Forecast of green bond issuance volumes in developed markets

Source: compiled by the authors based on data from the Climate Bonds Initiative



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Emerging	0,8	3,7	26,5	32,8	40,5	60,7	49,7	123,6	120	160				
Forecast (Emerging)										160	159	175	192	209
Low Probability Binding (Emerging)										160	121	136	152	168
High Probability Binding (Emerging)										160	196	215	233	251

Emerging Forecast (Emerging)
Low Probability Binding (Emerging) High Probability Binding (Emerging)

Figure 10 Forecast of green bond issue volume in emerging markets

Source: Compiled by the authors based on data from the Climate Bonds Initiative

volume of green bond issuance can be observed in this segment during the pandemic, which is related to the situation in China, which is also the largest issuer of not only green, but also social and sustainable bonds According to the forecast data, their planned growth is expected for the period until 2027, which is also connected with the involvement of new developing countries (Figure 10). The Asia-Pacific region is the largest emerging market for green, social and sustainable bond issuance. The region is leading the way in regulation and guidance, notably through the ASEAN Environmental Bond Standards, Social Bond Standards and Sustainable Development Bond Standards.

4 Conclusion

Widening the use of GSSS financial instruments contributes to the effective financing of the most ambitious projects aimed at achieving the SDGs. Debt instruments allow the distribution of investment resources between representatives of different countries and institutions, uniting them for the joint implementation of responsible projects. Despite certain complications caused by military aggression in Ukraine, developed and supranational markets are striving for stabilization and increasing investment potential. The powerful influence of supranational institutions makes it possible to spread the experience of responsible investment to the most remote locations in the world.

Emerging markets are less responsive to global challenges and are heading towards resource accumulation. China is playing an important role in building GSSS bond markets, which is an adequate response to the problems related to carbon dioxide emissions.

Integration processes in the implementation of impact investment projects

help identify existing risks and manage them, determine long-term development prospects, increase production and personnel potential, improve mutual understanding with consumers, promote transparency and improve the quality of reporting, initiate positive changes, etc.

Future research will develop strategic aspects of Ukraine's involvement in GSSS markets for effective post-war recovery.

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