

İktisadi ve İdari Bilimlerde Akademik Arařtırmalar

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İktisadi ve İdari Bilimlerde Akademik Araştırmalar

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SOVEREIGN GREEN BONDS AS A NEW FINANCIAL INSTRUMENT IN CLIMATE FINANCE FOR TÜRKİYE¹

Durdane KÜÇÜKAYCAN²

1. INTRODUCTION

There are two important interconnected issues on which there has been almost an international consensus in recent years. The first is "there is warming in the climate system" and the second is "human influence is evident in the change on the climate system". Therefore, prudent and swift policy action is required to prevent climate change. At the international level, the connection of taxes has been undertaken by the United Nations Framework Convention on Climate Change (UNFCCC) and its appendix, the Kyoto Protocol, which set goals to keep the sizes of average global groups in a certain place. Finally, the Paris Climate Agreement, signed in 2015, is one of the most important concrete developments in the fight against climate change (Sartzetakis, 2021: 757).

While the Kyoto Protocol has been accepted as a 'green start' in reducing greenhouse gas emissions, the Paris Climate Agreement has become a 'new hope' for the future of all humanity and the planet globally. In order to keep the global temperature research at a certain limit, there is a certain upper limit for the greenhouse gas stock in the atmosphere. Various mouthwashes

¹ In the 10. International Atlas Congress On Social Sciences Humanities was presented as a paper by the author.

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were returned to the formation states, such as the Paris Climate Agreement, the prevention of CO₂ emissions, the limitation of fossil fuel use and the protection of carbon sink consumption. In 2021, Türkiye signed the Paris Climate Agreement as a party. In this context, Türkiye has committed to limiting the "zero emission" target for 2053, and to take measures to limit fossil fuel restrictions, turn to buyer energy sources, maintain CO₂ emissions until 2030 (Demir, 2022: 163). Türkiye's becoming a party to the Paris Climate Agreement is important for green transformation efforts in achieving the net zero emission target.

It is aimed to meet the increasing energy needs with the energy consuming the green transformation process in the world and to reduce the negative effects of the emergence of fossil fuels. Although renewable energy has positive attitudes for all humanity, the extent of energy use obtained is not at the intended level. The financial resources required for consuming energy investments with their high costs are quite insufficient. Turning to a variety of financing methods to continue to provide energy to continue to meet the necessary financing. It has an important place in the green ties between them.

Green bonds are a new financial investment tool in sustainable finance. The yield (revenue) from these bonds is allocated to low-carbon and climate-friendly enclosure (i.e. "green") financing. Government agencies, municipalities, baggage and supranational organizations are among the issuers of green bonds (Flammer, 2020: 95). For this purpose, it is aimed to reveal the emergence of green veins in the corridor of states in climate finance and to evaluate the usability of Sovereign Green Bonds as a new financial instrument for Türkiye to continue greening. In the study, the descriptive analysis method using the textures obtained based on the theoretical literature evaluation was used and a theoretical evaluation was made. Firstly, using green bonds in state economy and its dominance in climate

ventilation are emphasized. Finally, Sovereign Green Bonds as a new financial instrument in climate finance were explained and the usability of Sovereign Green Bonds was evaluated to ensure Türkiye's greening. In Türkiye studies are being carried out by the Ministry of Treasury and Finance to issue Sovereign Green Bonds in climate finance. The Treasury made the first green bond issuance in the international capital markets on April 5, 2023. In the event of a global fiscal recession, Sovereign Green Bond could contribute to closing the market-based financing gap for Türkiye.

2. GOVERNMENT BORROWING AND THE ROLE OF THE GOVERNMENT IN CLIMATE FINANCE

The state has undertaken; It makes use of public expenditures, taxes, borrowing and budget policies in order to realize the functions of economic stability, fairness in income distribution and efficiency in resource allocation. In connection with the services it has undertaken, it is required to limit public expenditures from time to time. Because today, it is seen that public revenues cannot meet public expenditures in both developing and developed countries. The problem of equivalence between public revenues and public expenditures in countries has brought up the question of how to provide financing for expenditures. All countries with public deficits have to choose between tax revenues, printing money and debt instruments in financing their budget deficits. In cases where it is not possible to cut public expenditures, increasing tax revenues may be seen as the best option. However, this choice of the state is a difficult option.

The perspective of taxpayers, who are the most important actors of the taxation process, on tax and tax burden; plays a

decisive role in obtaining the potential tax revenue of the state. The potential tax revenue level may not be reached by resorting to some legal methods such as deterrent penalties and strict control. At this stage, taxpayer psychology and taxpayer's perspective on tax come into play. If taxpayers' tax approach shows a positive picture, it becomes easier for states to collect taxes (Kurucan and Altıngöz Zarplı, 2022: 86). If the opposite situation is encountered, states will have to resort to various methods such as borrowing. Today, almost all states have alternatives such as increasing taxes, printing money, borrowing or reducing expenses to close their public deficits, but it is not always possible to reduce expenses or increase taxes from these alternatives due to the economic and social functions of the state, and printing money is kept in the background due to its inflationary consequences. For this reason, it is seen as the best alternative borrowing in modern societies (Eser and Birinci, 2014: 32).

Borrowing is a fiscal policy tool that can provide the state's intervention in the economy, but it is also a financing tool used to meet public expenditures. The state borrows money and similar valuables from persons or institutions, which are financial resources in and outside the country, with a commitment to pay a certain additional provision to be paid in a certain term. In order to meet the government borrowing needs, it borrows from the market by issuing securities such as treasury bills and government bonds by spreading it over a short or long term. When classified according to the maturity of government-issued debt securities; Long-term debt securities are called bonds and short-term debt securities are called bonds. Government issuances with a maturity of less than one year are traded under the name of "Treasury Bills". The maturity of the Treasury bill can be 3-6-9 months. Government bonds, on the other hand, are debt securities with a maturity longer than one year, issued by the government as a

variable or fixed interest rate, coupon payment or discounted loan (Orkunoglu, 2010: 7).

Government bonds are one of the most important tools used by governments to meet their financing needs. In order to finance the sudden financing needs of countries, budget deficits and large infrastructure works, governments borrow by issuing bonds. Many countries in the world meet their financing needs through bond instruments from both the national and international markets. In this context, there are bond types traded in both national and international markets. Bonds can be up to 2, 5, 10 and 50 years in terms of maturity. In market analysis, it is evaluated with bond interest as an interest indicator (Yelghi and Yelghi, 2021: 108).

Generally, debt instruments are seen as an important source of financing because of the possibility of using tax revenues and the method of printing money on the society in countries that are not preferred economically, politically and politically (Kaya and Cadırcı, 2022: 131). The adoption of various welfare programs around the world has resulted in an ever-increasing need for public spending over the years due to natural disasters and financial crises. In Türkiye, there has been a decrease in tax revenues, especially during the COVID-19 process. With the decreasing tax revenues, the social expenditures of the state started to increase. Aid such as social assistance and unemployment advantages were distributed. Along with social aid activities, increases were observed in transfer expenditures (Altıngöz Zarplı and Goksu, 2021: 184).

In addition to all these reasons, the COVID-19 stimulus packages and the need to reach the Sustainable Development Goals by 2030 are putting extra pressure on government spending. However, the distorting effects of taxation and the concerns of many emerging and developing countries' economies

not being able to expand their tax bases limit the increase in government revenues. In this context, countries have begun to experience an increasing dependence on debt financing in order to close the income-expenditure gap. In addition, developing and developing countries, despite their reservations about the accumulation of public debt, resort to public debt with the expectation of stimulating economic growth (Augustine and Rafi, 2023: 1).

There are conflicting views on the effect of public debt on economic growth in the literature. While classical economists strongly opposed the accumulation of public debt, Keynesians supported deficit financing to increase aggregate demand. On the other hand, a neutral effect was predicted by Ricardo (Augustine and Rafi, 2023: 1). While the country's borrowing was an extraordinary financing tool according to classical economic thought, it has become an ordinary financing tool according to the modern finance view. As a result of rising expenditures by the government through borrowing, demand rises and increases production. Accordingly, as a result of bond issuance, it can also contribute to economic growth. In this context, there has been an increase in borrowings from both the domestic and foreign markets in many countries. However, it has been observed that there are very rapid increases in economic crises as a result of increased budget deficits with debt increases, principal and interest payments of debts that are due. Therefore, borrowing has an important role in shaping the economic activity of the country (Yelghi and Yelghi, 2021: 112).

Today, borrowing has an important part in shaping the economic activity of the country, and the extent to which the debt is used efficiently, effectively and economically should be shared with the public in a transparent manner within the framework of accountability. It has also revealed the need for more financing of states in order to combat climate change and achieve sustainable

development goals, which have been on the main agenda of recent years. Although the theoretical debates on government borrowing do not agree on a single point, it is important today to consider the environmental effects of the economic growth provided by the borrowed debt. Because the main agenda of the 21st century; the fight against climate change. States are expected to be the main actors of this struggle with their public policies.

At the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 27), which was held in Sharm El-Sheikh, Egypt, on 6-18 November 2022, when the increases in methane gas emissions are evaluated together with the leaks, it is seen that the current emission level is much higher than the reported emissions and that On the other hand, it is stated that 52 of 198 countries have not submitted emission reporting to the United Nations Framework Convention on Climate Change in the last 10 years. In addition, while investments in developing countries are at the level of 500 billion dollars, it has been argued that these countries need 2 trillion dollars annually until 2030 in the fight against the climate crisis. Today, the expectation from the states is to provide an economic growth and development that respects the environment. In previous conferences and in this most recent conference, there are commitments of governments to reduce greenhouse gas emissions and exit from fossil fuel use.

Governments can make direct expenditures as fiscal policy in order to fulfill their promises in the fight against climate change. They can also use other financial instruments, including taxation and market instruments such as carbon markets. However, it is stated that all these financial instruments may not be sufficient to fulfill the country commitments expressed as Nationally Determined Contributions (NDCs) (Millar et al., 2017: 745). For this reason, much stronger measures should be taken to reduce greenhouse gas emissions compared to the National

Contribution Statements. It is also argued that after 2030 “...compellingly intense and rapid emission reductions” will be required. Even if it is possible to implement the necessary fiscal policies, the costs to be encountered in realizing all these may increase the problems of equality between generations and hinder the current economic growth. In this context, it is argued that financing current climate change mitigation actions with debt may be a fairer solution. Because at least a certain part of debt payments will be made by taxing future generations, which can contribute to reducing inequality between generations (Sartzetakis, 2021: 758).

3. SOVEREIGN GREEN BONDS IN CLIMATE FINANCE

Renewable technologies are known to generally exhibit higher fixed upfront costs compared to fossil fuel investments, especially in developing countries. New technologies are initially run at a lower production scale and are often expensive in terms of installation costs. But according to the latest trends, the global costs of green technology and renewable energy are decreasing and tend to be cheaper than the cost of fossil fuel posterity. This price drop is due to economies of scale, endless renewable energy supply, as well as public policy support aimed at reducing credit risk for the implementation of these technologies (Braga et al., 2021: 3).

Financing of climate change mitigation and adaptation policies has become an important problem in climate negotiations. Emissions trading schemes and carbon tax policies are widely discussed as viable climate change mitigation strategies, where the revenue generated can then be used for adaptation efforts. In most current models, the burden of enforcing mitigation and adaptation policies falls on current

posterities. Because current posterities will have to pay for carbon reduction, while future posterities will enjoy the benefits for free. Therefore, in the implementation of the financing of climate policies, a Pareto improvement strategy for both current and future posterities should be represented, and burden sharing should be done between times. Green bonds can provide sufficient financing for these investments by sharing the cost between present and future posterities (Braga et al., 2021: 2).

One of the sights for using bonds to finance climate change mitigation is that at least some of the required investment must be paid by future posterities so that the current posterities does not bear the full burden of mitigating climate change. Debt financing has historically been used to finance large-scale projects such as infrastructure development, and the repayment of loans has spanned several posterities. Climate change is by definition an intergenerational trouble, as greenhouse gases are long-lived and their effects will be felt long after emissions have occurred. The issues of intergenerational justice and equity have been brought up in a number of researchs.

The main focus in the financing of climate change is the creation of an intergenerational externality and the fact that the current generation imposes high costs on future posterities. However, there is another side of the coin at this focal point. It should be noted that future posterities will reap the benefits of costly measures undertaken by the present generation to mitigate climate change. This situation raises a number of interesting questions that need to be answered: Should the current posterity choose to slow current growth based on cheap fossil fuel energy, for example, by imposing heavy carbon taxes, in order to switch to a low carbon economy that aims to minimize the harms of climate change to future generations? And if the answer is affirmative, can the current parochial political system (given that governments are elected every four years) provide the necessary

policies? Can we find a way to fairly distribute the costs and advantages incurred across posterities to mitigate the negative effects of climate change? (Sartzetakis, 2021: 759-760).

Transitioning to a low-carbon economy requires big investments in low-carbon and climate-resilient options in critical sectors such as energy and transportation. According to the International Energy Agency (IEA), investment in green infrastructure is projected to increase annually by an estimated 2% of world GDP to achieve decarbonisation fast enough to meet the Paris Agreement targets. If a significant part of this investment is financed with public resources, it creates a great tension between the need for consolidation and the need to increase investments after the high deficits during the COVID-19 pandemic (Darvas and Wolff, 2022: 3). Although there is increasing interest from private investors, it will not be enough to mobilize the necessary amounts from bank loans or private debt and equity resources. Considering that the largest part of the required investment is needed for infrastructure projects characterized by high up-front capital costs that can only be recovered over a long period of time, it is clear that the use of bonds will be mandatory in financing these projects.

At this time when a major refurbishment of existing infrastructure is expected today, the key challenge is to take steps to ensure that investment capital is reallocated from the high-carbon options currently in use to the low-carbon options. The main problem here is; while low-carbon investments may provide great social benefits over time, they involve higher risks with lower returns, at least in the early stages of market development. Low-carbon infrastructure investments required for economies of scale over time are unlikely to be met by private markets without public intervention, due to the high costs that must be incurred. Although banks and corporate finance have been and will continue to be an important resource, it is clear that they cannot

meet the very high needs and amounts for large investments. As a result, bond markets can play a very important role in closing the gap and providing the necessary financing for low-carbon development (Sartzetakis, 2021: 764).

Green bonds were created as a new debt financing product designed to promote sustainability and support green initiatives in the financial sector. Municipalities, government and international organizations have started using these tools to accelerate the transition to a climate resilient economy. Despite the difficulties in the early years, green bonds have made significant progress over the past few years. Today, large sums of money are allocated to these funds to finance both promising green projects with a good social impact (Akhtaruzzaman et al., 2022: 1).

3.1.Green Bonds

Green bonds are a financial innovation that enables institutional investors such as pension funds, insurance companies, mutual funds and government wealth funds to make sustainable investments. Green bonds are a fixed-income security in which the issuer commits to use the bond proceeds only for planet-friendly 'green' projects. Green bonds, or green-label bonds, can be issued as corporate or project-specific bonds. It can also be given by financial institutions such as banks, non-banking financial institutions (NBFCs) or microfinance institutions that aim to provide loans for 'green' projects. This innovative tool emerges as a potential alternative financing option for 'green' projects, due to the assurance provided by the issuer regarding the use of revenues, which are also approved as a result of an independent agency's reviews (Prakash and Sethi, 2011: 726).

In terms of increasing the liquidity of infrastructure assets, green bonds can encourage institutional investors to invest more in sustainable infrastructure. Unlike traditional financial

instruments, green bonds are also important in that they are sustainable-oriented and support the Climate Action (Goal 13) goals, which is among the 17 Social Development Goals of the United Nations Development Program. Because during the transition to a more viable and sustainable economy, green finance may be necessary to promote green nature, low carbon emissions, energy efficiency and ecological sustainability friendly practices. Green bonds can facilitate sustainability in a number of ways. These reveal the need for greater transparency regarding the financing of unsustainable economic activities, as well as reducing investors' concerns about climate policy and risks posed by unsustainable business practices (Akhtaruzzaman et al., 2022: 2). Today, there are four different types of green bonds: Standard Green Themed Bonds, Green Income Bonds, Green Project Bonds, Green Asset Backed Securities and Mortgage-Covered Bonds (ICMA, 2021: 9).

Table 1. Green Bond Types

Standard Green Use of Proceeds Bond	It includes liabilities with similar characteristics as standard bonds.
Green Revenue Bond	It is the type of bond where the risks in the bond are tied to the mortgaged cash flows and the proceeds are used to sustain green projects.
Green Project Bond	Bonds containing one or more green projects in which investors directly bear the risk of the project.
Secured Green Bond	Bonds backed by securities, such as asset-backed securities, secured by green projects, whose repayment depends on the cash flow from the assets.

Source: Simsek and Tunali, 2022: 27.

In addition to the classification in the table above, green bonds also differ in terms of the source from which they are provided. Green bonds can be issued by private companies, municipalities, government agencies and supranational institutions. In this context, green bonds will increase financing for 'green' projects by consolidating capital from multiple

channels such as government, private sector and bilateral or multilateral institutional investors. Green bonds can be issued to finance 'green' projects of any organization aiming to transition to a low carbon model. For example, if an automaker wants to expand its production into electric vehicles, capital can be raised through a green bond backed by the low-carbon portion of its assets (Prakash and Sethi, 2011: 726).

The first green bond was issued by the European Investment Bank (EIB) in 2007 to finance renewable energy and energy efficiency projects. Since then, green bonds have become increasingly popular. Although the total issuance of green bonds was below 1 billion dollars in 2008, it increased to 143 billion dollars in 2018 (Flammer, 2020: 95). Despite all this upward momentum, the market scale of the green bond market is still small. As of September 2020, the total amount of green bonds outstanding is 996 billion dollars, which constitutes only 0.4% of the international bond market. Although still in its infancy, the green bond market is growing rapidly with the increase in active issuers (Doronzo et al., 2021: 7). It is expected to grow even more. The total market value of green bonds reached \$1.1 trillion at the end of the third quarter of 2021. Green bond issuance has increased significantly since 2007, when the European Union first issued green bonds. Poland was the first country to issue “Sovereign Green Bonds” in December 2016, followed by France in January 2017. Fannie Mae, one of the government agencies of the United States of America (USA), issued \$24.9 billion in green mortgage-backed securities in 2017. In June 2017, Malaysia launched the world's first green Islamic bond, the “Green Sukuk³”, to finance climate resilient growth (Tang and Zhang,

³ Green sukuk, which appeals to investors who want to invest within the scope of Islamic finance, is a very different type of financial product in terms of its structure, although it has similarities with green bonds issued to combat climate change by financing sustainable and green-themed projects in accordance with green standards such as green bonds.

2020: 3). Since the first Sovereign Green Bond issuance by the Polish Government in 2016, the government green bond market has been growing rapidly worldwide (Dell'Atti, Di Tommaso and Pacelli, 2022: 505).

In the 2021 report published by the Climate Bond Initiative (CBI), it was estimated that the annual green bond investment would reach \$1 trillion by 2023 (Baretto, 2021). Although there is a decline in environmental, social and governance-themed borrowing activities in 2023 with the effect of tightening in credit conditions after bank bankruptcies in the USA and Europe, in the Financial Stability Report published by the Central Bank of the Republic of Türkiye in May 2023, as of the first quarter of 2023, sustainability has been determined. It has been stated that the amount of themed bonds and loans has increased to approximately 5.1 trillion dollars and this rate corresponds to approximately 5.5 percent of the total financing on a global basis (CBRT, 2023: 5). Although the green bond market lost momentum due to increased financing costs as a result of the tightening monetary policy implementations since the second half of 2022, it exceeded expectations.

3.2.Sovereign Green Bonds

According to the Sixth Evaluation Report (2022) of the Intergovernmental Panel on Climate Change's (IPCC⁴), an agency of the United Nations, they made recommendations to policy makers regarding the coming years with their predictions about global warming and climate hazards. According to the report, urgent actions are needed to limit global warming and reduce the risks to ecosystem and people with sudden climate changes. Significant investments are required to mitigate climate

⁴ The IPCC produces comprehensive Assessment Reports on the state of scientific, technical and socio-economic information on climate change, its impacts and future risks, and options for reducing the rate at which climate change is occurring.

change. The report highlights the need to increase resources to address climate change in both developed and developing countries over the coming years. In this context, financial instruments such as green bonds can play a major role in paving the way for investment in green projects (Azhgaliyeva and Kapsalyamova, 2023: 1). The International Capital Market Association (ICMA) defines green bonds as a type of bond in which the proceeds or an equivalent amount will be used, in whole or in part, to finance or refinance new and/or existing eligible green projects.

A green bond is a fixed income security used to finance eco-sustainable projects with environmental advantages. It is an explicit commitment that the issuer uses the collected funds only to finance or refinance green projects (Doronzo, Siracusa and Antonelli, 2021: 7). With this commitment, green bonds are also important in that they make it possible to finance the transition to a low-carbon economy and spread the cost of tackling climate change to many generations. Bond instruments are fixed-income securities that provide investors with fixed interest payments until maturity, depending on the type of loan terms, in addition to the principal amount invested in an institution or project. Just like conventional bonds, investors lend their money to the government. In turn, green bonds provide investors with fixed interest and returns. Green bonds are more attractive to investors for two main reasons;

- Investors and society as a whole have become more conscious of the environmental impact of their investment choices. In this context, the demand for investment alternatives that not only provide high financial returns but also provide positive environmental results has increased.
- Institutional investors started to prefer to include green bonds in their investment portfolios in order to raise their

Environmental, Social and Governance (ESG) ratings (Yucel, 2023).

The formation process of green bonds dates back to 2007 with the first issuances from supranational institutions. However, the market has actually sprouted after the launch of ICMA's "Green Bond Principles"⁵ in 2014. Summarized the Green Bond Principles by ICMA (2021). The Principles are a combination of voluntary frameworks created with a mission and vision to support the role of global debt capital markets in financing environmental and social sustainability development. In addition, these principles promote market integrity by outlining best practices for bond issuances that serve social and/or environmental purposes, with global guidelines and recommendations that support transparency and disclosure. In this context, the "Green Bond Principles" have been established taking into account the ongoing developments in understanding of environmental phenomena and consequences, by seeking the opinions of other parties and current opinions. In addition, these principles provide complementary definitions, standards and taxonomies used to determine the environmental sustainability of projects where necessary, providing high-level categories for appropriate "Green Projects". There are four important requirements (components to be done) for compliance with these principles of ICMA (ICMA, 2021: 1-3):

Table 2. The Four Core Components for Alignment With the Green Bond Principles Are

1. Use of Proceeds (Use of revenues)	Green bond proceeds are differentiated from other bonds only by investing in green projects such as climate change mitigation (prevention) and adaptation and conservation of natural resources.
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⁵ Green Bond Principles; The Social Bond Principles are published under the Sustainable Bond Guidelines and the Sustainability-Linked Bond Principles and Principles.

2. Process for Project Evaluation and Selection (Project evaluation and selection)	The environmental sustainability objectives of the appropriate Green Project should be clearly communicated to investors by the issuer. In addition, in this process, it is recommended to conduct an examination by external expert organizations in order to make the project evaluation credible.
3. Management of Proceeds (Management of revenues)	It is important to monitor the proceeds of the green bonds from the moment they are received to the realization of the project, as they must be used for specific purposes. Project revenues and returns of investors are subject to tracking and monitoring to ensure full transparency.
4. Reporting	Through reporting, issuers should have up-to-date information on projects financed using revenues from green bonds and their expected environmental impacts. To ensure transparency, all project parameters should be reported annually in an accurate, complete and standardized manner.

Source: Azhgaliyeva and Kapsalyamova, 2023: 1.

In addition to the four main components above, ICMA (2021: 4-5) does not limit the appropriate “Green Project” categories to a list, but categorizes them as follows: renewable energy, energy efficiency, pollution prevention and control, living natural resources and environmental use of land use, sustainable management, conservation of terrestrial and aquatic biodiversity, clean transportation, sustainable water and wastewater management, adaptation to climate change, products adapted to the circular economy, production technologies and processes and/or certified eco-efficient products and green buildings. For example, within the scope of energy efficiency; new and renovated buildings, energy storage, central heating, smart grids, devices and products can be included in the project. In this context, green bonds are debt instruments in which the issuer explicitly commits to use the proceeds to finance alternative energy, including research and development support to overcome technological challenges, increase energy efficiency, increase water efficiency and sustainability, and reduce waste and pollution control (Alharbi et al. , 2023: 4).

The decision to focus on government green bonds is based on several reasons: First, governments are exposed to environmental risks both by directly dealing with the consequences of natural disasters and indirectly by providing incentives for green and renewable energy. Governments have started to deal with environmental risks by issuing green bonds. In 2018, there was a significant increase in countries' green bond issuance as an important sign in the fight against environmental problems. In addition, the impact of climate change on the world economy is still at the top of the agenda around the world. In this context, the possibility of having green financial instruments promoted by sovereign institutions may be the right incentives for other organizations such as financial institutions and companies to invest and promote green productive capital. Therefore, examining incentives by countries in response to the growing awareness of the impact of climate change on the world economy can help governments and regulators promote green finance by allowing climate-related risks to be mitigated (Dell'Atti et al., 2022: 506).

3.3.Differences Differentiating Sovereign Green Bonds from Other Government Bonds

Green bonds refer to debt securities issued to increase the capital allocated for green projects. However, this definition varies depending on what constitutes green projects. For example, the Green Bond Principles, established in 2014 and maintained by ICMA, set out the guidelines and categories of green projects (ICMA, 2021). The Climate Bonds Standards, built on the Green Bond Principles by the Climate Bonds Initiative (CBI), provide an industry-specific definition of "green" and are used by the CBI for certification of green bonds (Sakai et al., 2022: 2).

Green bond funds allow individual investors to bring an environmental advantage to their bond investments. They are

intended to have a positive environmental advantages, such as preventing pollution. Unlike a conventional bond, Sovereign Green Bonds are only used to finance projects with environmental advantages. Proceeds from green bonds must be certified by third parties who must verify that they finance projects that provide environmental advantages. Therefore, for first-time green bond issuers, the process of issuing green bonds can be cumbersome with administrative and compliance costs (Ballouk et al., 2023: 2). This may cost more than current or standard government bonds. However, when considering the environmental advantages to be obtained in the long term, it should not be forgotten that it creates a positive externality.

One of the arguments for using bonds to finance climate change mitigation is that at least some of the required investment must be paid by future posterities so that the current posterity does not bear the full burden of mitigating climate change. Debt financing has historically been used to finance large-scale projects such as infrastructure, and the repayment of loans has spanned several posterities. Climate change is by definition an intergenerational problem, as greenhouse gases are long-lived and their effects will be felt long after emissions have occurred. The issues of intergenerational justice and equity have been brought up in a number of studies. It mainly focuses on the fact that climate change creates an intergenerational externality and the current posterity imposes high costs on future posterities (Maltais and Nykvist, 2020: 1). The necessity of obtaining external evaluation services from internationally accredited institutions before and after the issuance of green debt instruments creates a cost increase compared to standard government bonds, but also causes the bond issuance process to be prolonged.

In traditional capital markets, environmentally focused bonds have been used in recent years is gaining importance.

Green proceeds from its bonds are pre-empted for low-carbon development export to support some projects that meet the specified criteria is being done. These bonds are very well received by environmentally conscious investors. Transparency is very important for Sovereign Green Bonds. Which of the eligible green projects category of the project to be financed in a transparent manner to the investor by determining environmental sustainability targets should be explained. The inclusion of an external observer in the project evaluation and selection process makes the process more contributes to its transparency.

4. GREEN BOND MARKET AND SOVEREIGN GREEN BOND IN TÜRKİYE

Within the scope of the transition planning to a low-carbon economy, according to the European Union's growth strategy called the European Green Consensus, it is aimed that Europe will become the world's first carbon-neutral continent by zeroing net greenhouse gas emissions by 2050. Within the scope of the European Green Agreement, the main industry, trade and financing fields, public institutions and T.R. Studies are carried out to manage transition risks under the coordination of the Ministry of Commerce (CBRT, 2021: 15).

In 2021, the Ministry of Commerce published the Green Deal Action Plan, which is a roadmap for the development of sustainable finance. The Presidency's Strategy and Budget Department and the Ministry of Treasury and Finance announced the Economic Reform Action Plan, whose main objective is to promote green finance activities. One of the most important developments of 2021 is the establishment of the Financial Sustainability Working Group, which includes the Banking Regulation and Supervision Agency (BRSA), CBRT and Commercial banks, under the leadership of the Ministry of

Treasury and Finance. In the same year, the Green Debt Instrument and Lease Certificate Guide was published in order to set a standard for green debt instruments, which obliges external evaluation services to be obtained from internationally accredited institutions before and after the issuance of green debt instruments.

The firsts regarding the green bond issuance in Türkiye's sustainable finance journey are listed below;

- ✓ Development and Industry Bank of Türkiye became the first Turkish bank to issue green and sustainable bonds worth 300 million dollars in international markets in 2016.
- ✓ Garanti BBVA's 5-year maturity and \$50 million new generation green bond issuance is the first transaction to be made in Türkiye.
- ✓ The first green public offering was offered to the public in 2021 by Galata Wind Enerji A.Ş. under the leadership of Garanti BBWA Yatırım.
- ✓ Arçelik became the first real sector actor in Türkiye to issue green bonds with 350 million Euros (Simsek and Tunali, 2022: 37).

In the Financial Stability Report published by the CBRT in May 2021, with the Public Disclosure Platform (PDP) disclosures and data obtained from commercial banks, the mentioned bond issuance dates, amounts and maturity are given in the table below.

Table 3. Sustainability and Environmental Bond Issues in the Banking Sector in Türkiye

Issue date	Amount	Maturity	Types
18.05.2016	300 \$	5 year	Environmental Bonds
28.03.2017	300 \$	10 year	Sustainability-Linked Bond
30.06.2017	150 ₺	5 year	Environmental Bonds
21.08.2019	50 \$	10 year	Environmental Bonds
20.12.2019	50 \$	5 year	Environmental Bonds

21.01.2020	50 \$	5 year	Environmental Bonds
05.08.2020	50 \$	5 year	Environmental Bonds
08.12.2020	750 \$	5 year	Sustainability Bond
14.01.2021	350\$	5 year	Sustainability Bond
28.01.2021	600\$	5 year	Sustainability Bond

Source: Central Bank of the Republic of Türkiye May 2021 Financial Stability Report.

In the Financial Stability Report published by the CBRT in May 2021; Environmental bonds are defined as bonds issued to finance investments that advantage the environment in areas such as infrastructure, energy and transportation. In addition, it is seen in the report that the amount of environmental/sustainable bonds issued by the banking sector has gradually increased and reached a total of USD 2.7 billion since 2016 (CBRT, 2021: 16). As a reflection of climate change, which quickly settled on the global financial agenda with the onset of the COVID-19 pandemic, environmental financing activities accelerated. Environmental-friendly bond issuances, which have been increasing rapidly as of 2020, decrease due to increasing interest rates and market volatility, as well as the energy problems created by the Russia-Ukraine conflict for Europe, similar to other bond issuances. Similar evaluations were included in the Financial Stability Report published by the CBRT in November 2022, and it was stated that the Russia-Ukraine conflict increased energy supply problems and caused a decrease in environmental financing activities for climate change (CBRT, 2022: 7). In the last Financial Stability Report published in May 2023, it was emphasized that the sustainability-themed bond issuance and bank loans, which increased rapidly under the leadership of developed countries with the COVID-19 epidemic, recorded significant growth, but the green bond market lost momentum due to increased financing costs as a result of tightening monetary policy implementations.

4.1.Sovereign Green Bond Studies in Türkiye

While the French government was the first state to announce that it would issue green bonds by including green bonds in its budget in fiscal 2017, Poland was the first country to issue green bonds in order to increase its renewable energy production capacity and use it in clean transportation technologies. In Türkiye, the green bond issuance was made for the first time in 2016 by the Turkish Industrial and Development Bank. The Industrial and Development Bank of Türkiye, under the coordination of seven banks, issued green bonds with a maturity of five years and amounting to 300 million dollars abroad (Kandır and Yakar, 2017: 87-88).

In Türkiye, in parallel with the developments in the world, towards sustainable development and green transformation. policies are developed and implemented. On November 12, 2021, the “Sustainable Finance Framework Document” was prepared and shared with the public by the Ministry of Treasury and Finance, which will form the basis for borrowing transactions that can be carried out in the international “ESG (Environmental, Social and Governance) bond market. This framework document is intended to be used in green, social or sustainable bond or lease certificate type borrowing transactions to be carried out by the Ministry in international capital markets. It also confirms that the prepared framework document is reliable, effective and in line with ICMA 2021 Sustainability Bond Principles, ICMA 2021 Green Bond Principles, ICMA 2021 Social Bond Principles, Loan Market Association-LMA 2021 Green Credit Principles and LMA 2021 Social Credit Principles. The “Second-Party Opinion” document, which has been approved, was obtained from the international evaluation company Sustainalytics.

In the 2022-2024 Medium Term Program, it was stated that within the scope of green transformation policies, green bond

and sukuk issuances will be encouraged by preparing a guide in line with international standards in order to finance environmentally sensitive investments. In this context, in order to collect financial resources needed by new business ideas and venture companies in 2022, the procedures and principles regarding debt-based crowdfunding were determined and the crowdfunding legislation was combined in a single Communiqué. In addition, the Green Debt Instrument, Sustainable Debt Instrument, Green Lease Certificate and Sustainable Lease Certificate Guide were published with the aim of carrying out the issuance of green and sustainable debt instruments in compliance with the best practices and standards in international financial markets (Strategy and Budget Department, 2022: 13).

One of the main objectives of the 2023-2025 Medium-Term Program, which has been prepared recently by the Strategy and Budget Presidency, is that green transformation will be given importance in all areas of the economy and in all sectors during the program, taking into account the multifaceted effects of climate change in the environmental, social and economic fields and within the framework of development priorities. Strategy and Budget Presidency, 2022: 15). The issuance, which will start at the end of January 2023 for the first time by the Ministry of Treasury and Finance, is planned to be made in the first quarter of 2023. On April 5, 2023, the Ministry of Treasury and Finance carried out the first green bond issuance in the international capital markets.

Within the framework of the 2023 foreign financing program, Bank of America, ING, J.P. on April 5, 2023 for a green bond issuance with a maturity of 2030 in USD. Authorized by Morgan and Standard Chartered. The said issue was concluded on the same day and the issue amount was 2.5 billion Dollars. This bond is the Treasury's first ESG bond issued in international capital markets.

Table 4. Bond Issues in International Capital Markets in 2023

Issue date	Currency type	Amount	Due Date	Coupon Rate (%)	Price (%)	Return to Investor (%)
19.01.2023	USD Dolar	2,75 Billion	19.01.2033	9,375	97,638	9,750
14.03.2023	USD Dolar	2,25 Billion	14.03.2029	9,375	99,438	9,500
13.04.2023	USD Dolar	2,50 Billion	13.07.2030	9,125	99,117	9,300

Source: Ministry of Treasury and Finance April 2023 Press Release.

According to the data shared with the public by the Ministry of Treasury and Finance as of April 6, 2023, the coupon rate of the green bond, which will expire on July 13, 2030, is 9.125% and the return rate to the investor is 9.30%. It was shared with the public by the Ministry of Treasury and Finance that the demand for the issuance was received by approximately 200 investors and more than 3 times the issuance amount. In addition, it was stated that 31% of the bond investors are from the UK, 19% from Türkiye, 18% from the USA, 16% from the Middle East, 15% from Other Europe and 1% from other countries. As seen in Table 4, the cost incurred by the treasury in the auctions in January and March 2023 is 9.375%, while the interest cost of the green bond is 9.125%. In this context, it is seen that the Treasury incurs less costs and has more inflows into its coffers compared to the government bond issuances carried out in January and March 2023.

5. CONCLUSION AND EVALUATIONS

As the world population continues to increase and global warming increases with climate change, environmental protection policies are required to leave a livable world to future generations due to the decreasing natural resources against all these increases. Governments are trying to fulfill the promises of the Paris Climate

Agreement by using fiscal policy instruments, including direct expenditures as well as market instruments such as taxation and carbon markets. However, it has been discussed in the recent literature that these fiscal policy tools may not be sufficient to fulfill the commitments of the Agreement, and most importantly, that much stronger steps should be taken compared to the Agreement to which it is a party. In addition, the costs of financial instruments such as financial incentives or carbon tax carry the risk of hindering current economic growth by increasing the problems of equality between generations. Traditional (general) bonds can be used to support any legal project, but proceeds from green bonds can only be used to support initiatives that mitigate climate change, conserve natural resources or preserve biodiversity. In this respect, it is important for states to use green bonds in climate finance, which has long-term consequences.

Government debt financing has historically been used to finance large-scale projects such as infrastructure, and the repayment of loans has spanned several generations. One of the main arguments for using bonds to finance climate change mitigation is; that at least some of the necessary investment must be paid for by future generations so that the present generation does not bear the full burden of mitigating climate change. In this respect, it is important for states to use green bonds in climate finance, which has long-term consequences. The market size of the green bond market is still small, but it is developing rapidly. Poland was the first country to issue “Sovereign Green Bonds” in December 2016, followed by France in January 2017. The use of Sovereign Green Bonds in climate finance plays an important role in eliminating the financing deficiency of the states.

In Türkiye, which became a party by signing the Paris Climate Agreement in 2021, studies are being carried out by the Ministry of Treasury and Finance to issue Sovereign Green Bonds in climate finance. In the 2022-2024 Medium Term Program, it

was stated that within the scope of green transformation policies, green bond and sukuk issuances will be encouraged by preparing a guide in line with international standards in order to finance environmentally sensitive investments. The issuance, which will start at the end of January 2023 for the first time by the Ministry of Treasury and Finance, is planned to be made in the first quarter of 2023. The financing provided through the green bond issuance is aimed to be used for the financing/refinancing of green projects that meet the eligibility criteria.

The Ministry of Treasury and Finance carried out the first green bond issuance in the international capital markets on April 5, 2023. As a developing country, Türkiye's treasury has incurred less costs with Sovereign Green Bonds compared to traditional government bonds, and more money has been entered into its coffers. In the global recession environment, Sovereign Green Bonds can contribute to addressing the market-based financing gap for Türkiye. These environmental protection policies are also very important in terms of ensuring a sustainable growth in Türkiye. It is a very new financial system that has started to develop in the world in recent years and is also quite new for Türkiye. In order to take advantage of the opportunities offered by the Sovereign Green Bonds, which are the product, for Türkiye, a successful first export was realized by taking the necessary steps. In the next process, first of all, standardization for green projects, reporting, increasing the green project capacity of public institutions and increasing green finance awareness and literacy issues such as these can be highlighted in this context.

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