



ALTERNATIVES FOR FINANCING OF MUNICIPAL INVESTMENTS - GREEN BONDS

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Abstract: *The perspective of global climate change emerges as a significant political, economic, financial and social issue. Scientific researches show that the accumulated carbon dioxide (CO₂), released by the industry and agriculture, together with the contribution of man-made greenhouse gases leads to a rise in the temperature of the earth's surface. Traditional sources of financing capital expenditure, such as own revenues and bank financing have proved to be extremely insufficient. At the same time, not only traditional municipal needs, such as costs for street, road, bridge, school construction etc., but also the need of investments related to climate change have been on the rise. The purpose of this article is to examine and analyze alternatives for financing climate change-related municipal investments. The subject of the research is green bonds and the so-called Subnational Pooled Financing Mechanisms, which have already gained popularity in Western Europe but are not yet well known in Eastern Europe. The positive aspects and opportunities that the green bond market reveals as well as the barriers to this type of financing are assessed and an analysis of the practice of bond financing in Europe is made.*

Keywords: *municipal investments, climate change, green bonds, green investments, Eastern Europe, debt, pooled financing mechanism.*

JEL Classification: *G150, G230*

1. INTRODUCTION

Local and regional authorities to oppose the climate change are looking for additional sources of funding beyond the traditional ones from the state budget and loans from the banking sector. The capital market, by mobilizing financial resources, is an appropriate source to finance investment projects to mitigate climate change, as well as for adaptation. Green bonds as a debt instrument are less popular in Bulgaria, but in countries with developed capital markets, municipalities use them as an option to finance public assets related to reducing the negative impacts of climate change. According to expert researches, over the next 15 years

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investments on a global scale, amounting to USD 6-7 trillion will be needed annually, in order to meet the demand for environmentally-friendly investments in sectors such as ecological recultivation, energy efficiency, clean energy, carbon-free transport, green infrastructure and to ensure a global transition to an environmentally sustainable and low carbon economy.

Economic development is directly dependent on the effects of climate change on a global scale, and the additional negative effects of climate change are compounded by a number of factors: industrialization, accelerated urbanization, increase in carbon emissions as a result of human intervention in environmental and natural pollution.

1.1 Green Bonds – A Financial Option Against the Impacts of Climate Change

The European Environment Agency's 2017 report assesses the economic losses caused by climate change in Europe at around EUR 400 billion over the period 1980-2013. On an average annual basis, economic losses are about EUR 13.7 billion since 2000, economic losses for EU could be about EUR 190 billion per year, net loss of welfare could reach 1.8% of current GDP by the end of the century. The annual cost of damage caused by river floods is expected to be EUR 20 billion by 2020 and EUR 46 billion by 2050³.

The increasing concern of climate change deepens the need to fund policies and measures to adapt and mitigate the impacts of climate change as quickly as possible. Adaptation and mitigation are components of social, economic and environmental sustainability. Mitigating the impacts of climate change means reducing greenhouse gas emissions from all sectors of the economy and from our daily lives. For this purpose, various energy efficiency measures for switching to low-carbon fuels etc. are being implemented. Adaptation is the process of taking action to adapt to climate change that has already occurred.

In order to keep the global temperature, rise below 2° C (or even 1.5° C) and to adapt to the effects of climate change, a change in global development models is needed with a view to moving towards a more sustainable economy.

In recent years, well-established international organizations have been working to mobilize financial resources by expanding the green bond market. Some of these organizations are G20 Green Finance Study Group, Climate Bond Initiative,

³ European Environment Agency "Climate change, impacts and vulnerability in Europe 2016", Report No 1/2017

Green Finance Committee, UN⁴ UN-Habitat⁵. The use of green bond issues is also recommended by organizations such as OECD, The European Commission, The Global Commission on the Economy and Climate, The Brookings Institution etc. According to a report by The Global Commission on the Economy and Climate, “Financial innovations, including green bonds, risk-sharing instruments and products, which align the risk profile of low-carbon assets with the needs of investors, can reduce financing costs, potentially by up to 20% for low-carbon electricity” (The Global Commission on the Economy and Climate, 2014, p.9)

Due to growing interest in green investments and their funding sources, the European Commission has set up an expert group to develop standards for categorizing the green bond issues. By the end of 2019, the first unified standards will have to be presented, and this will lead to a further expansion of the market for this type of debt instruments. In this respect, the rise of the green bond market has been analyzed in the past few years, focusing on the key barriers that prevent some countries in Europe from using them as a source of climate financing.

1.2 Green Bonds – A Debt Instrument for Support of Investments in Climate and Environment

Green bonds are a type of climate bonds. They are a debt instrument for funding green projects oriented towards generating environmental benefits from mitigating the impacts of climate change. Green bonds are considered an innovative tool that allows new opportunities to accumulate private capital for financing green projects. Investors and politicians understand their importance for fulfilling their engagement to the 2015 Paris Agreement and for businesses to apply models that are environmentally and naturally friendly. Green bonds are seen by businesses and local authorities as an opportunity to achieve a good return on investment in environmental protection projects and countering climate change. There is no universal definition of green bonds, but considering the funding objectives, the green bond is defined as a fixed income financial instrument, a financial instrument for raising capital to finance green projects (OECD 2017; ICMA 2017)⁶, (Mercer 2015) green bonds’ refers to bonds whose proceeds are used to finance environmentally- friendly projects.⁷

⁴ <https://www.un.org/press/en/2015/dsgsm874.doc.htm>

⁵ UN-Habitat, Urbanization and development: emerging Futures, World Cities report 2016

⁶ OECD. 2017. Mobilising Bond Markets for a Low-Carbon Transition, Green Finance and Investment. Paris: EOCED Publishing. <http://doi.org/10.1787/9789264272323-en>. ICMA. 2017.

Typical of the green bond is that it induces co-operation between investors and issuers aiming to increase green investment (Kidney & Oliver, 2014)⁸. Fixed-income institutional investors are the main market players who, being aware of the sustainability of cash flows from investment, recognize green bonds as "an element of the risky diversification of their portfolios"⁹

The main difference between standard bond issues and green issues is the commitment that funds would be used to finance and refinance green projects, assets and business activities. Green bonds can be issued by both public and private entities. As with standard bonds, green bond issues represent borrowed funds over a period, and investors/ creditors receive a coupon with a fixed or variable rate of return. Green bonds can be structured as asset-backed securities, linked to certain green infrastructure projects, but currently they are most often issued for raising capital allocated to a portfolio of green projects.

Globally, the most widely accepted standards are the Green Bond Principles, a set of voluntary guidelines developed by key market players agreed by the International Capital Management Association (ICMA), and the Climate Bond Standard, which also includes sector-specific criteria, developed by scientific experts under the leadership of the Climate Bond Initiative (CBI). The standards for green bonds are designed to measure the effects of this type of specific investment through quantitative and qualitative indicators (ICMA, 2014)¹⁰. The Climate Bond Initiative and the International Capital Management Association (ICMA) recognize the following areas as green projects: a) mitigation of climate

The Green Bond Principles 2017: Voluntary Process Guidelines for Issuing Green Bonds. Annual Report. Switzerland. <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/-GreenBondsBrochure-JUNE2017.pdf>.

⁷ Mercer. 2015. Investing in Times of Climate Change. Mercer Report. New York. <https://files.zotero.net/19506020670/mercer-climate-change-report-2015.pdf>.

⁸ Sean Kidney and Padraig Oliver Greening China's Financial Markets Growing a Green Bonds Market in China: Reducing costs and increasing capacity for green investment while promoting greater transparency and stability in financial markets, The International Institute for Sustainable Development, February 2014 /

https://www.climatebonds.net/files/files/growing_green_bonds_en.pdf

⁹ Josué Banga (2018): The green bond market: a potential source of climate finance for developing countries, Journal of Sustainable Finance & Investment link to this article: <https://doi.org/10.1080/20430795.2018.1498617>

¹⁰ ICMA. (2014). Green Bond Principles – Voluntary Process Guidelines for issuing Green Bonds. ICMA

change impact and adaptation b) protection of natural resources, c) conservation of biodiversity and d) prevention and control of environmental pollution¹¹.

At European Union level, negotiations are underway with respect to the criteria for bonds falling within the scope of green issues, such as standards and regulations on the green bond market regarding the issuer's legitimacy. "Green Bonds" include not only financial obligations (for example, payment of core capital at a given maturity, regular coupon/interest payments, etc.), but they also include environmental benefits that are claimed as targets by the green bond issuer. For these bonds, both the creditworthiness of the issuers and the green element in the issue are essential. Bonds provide returns for the investor, but they also demonstrate to the public how to preserve, restore and improve the environmental characteristics throughout the life cycle of funded investments.

Climate Bond Initiative's¹² Climate Bond Taxonomy identifies as green objects investment projects for achieving a low-carbon economy. Expanding the funding of these objects through bond issues definitely mitigates and limits climate change. In this respect, through green bonds, investments in the field of clean energy production, transport, energy efficiency, water management, waste management and pollution control, conservation of natural resources, incl. land use, agro-culture and forestry, information technology and communication, etc. can be financed.

Green investments aim to limit the impacts of climate change. The forecast for global investments in climate change and environmental protection for the next 15 years is about USD 6-7 trillion. Part of the investments are related in particular to transformation of the energy system, protection of ecosystems and guaranteeing sustainable use of water (G20 Green Finance Study Group).

There is, however, a big difference between current investment flows and capital needs. Green bonds are one of several financial instruments that could be used to finance these sustainable transitions. Green bonds are especially suitable for projects with long-term investment horizons, high capital costs and guaranteed revenue streams, such as renewable energy infrastructures.

However, green bonds could provide capital for other urgent environmental projects, related to, for example, sustainable water management, low-carbon transport, or ecosystems conservation. This type of bonds could provide the

¹¹ https://www.climatebonds.net/files/reports/policy_taxonomy_briefing_conference.pdf

¹² <https://www.climatebonds.net/files/files/CBI-Taxonomy-Sep18.pdf>

significant capital needed for these environmental transitions, provided that the market is more inclusive and growing. (G20 Green Finance Study Group).

Green bonds can be issued in the form of different types of bond issues. Table 1 shows the green bond issues and a brief characteristic for each type.

Table 1. Categorization of green bonds

Type	Purpose of funding	Collateral security	Example
General obligation bond	Designed for green projects	The full income base of the issuer is used for collateral; the default credit rating is used.	The city of Johannesburg issued 143 million general bonds in June 2014. The issue is for 10 years and uses the city's standard credit BBB rating.
Revenue obligation bonds	Designed for green projects	The issuer's revenue streams, such as income from taxes and fees, are used to pay for the issue costs	Arizona State University issued revenue green bonds for USD 182.6 million in April 2015. The issue is secured by the university's revenue, including revenue from education fees.
Project bonds	They are issued for specific green projects	The collateral security is only the assets created by the project and the revenue from the project	There is still no example of such an issue
Securitized Bonds	Either designed for green projects, or directly in subordinate green projects	The collateral security is a group of financial assets	The central government of Hawaii issues a bond issue of USD 150 million in November 2014. The collateral security on the issue is charges from the operation of green infrastructure, including charges from electric bills.

Source: Adapted from Climate Bonds Initiatives

Benefits and disadvantages

Green bonds are characterized by a number of benefits for both investors and issuers. First of all, green bonds provide an additional source of investment finance. Considering the growing need for green projects, bonds are an appropriate financial

instrument. Against the backdrop of huge investment needs, traditional sources of debt financing will not be enough. There is a need to introduce new sources of funding that can use a wider investment base, including institutional investors such as pension funds, insurance companies and state investment funds. Developing infrastructure as an asset class will require a pipeline of sustainable infrastructure projects and a better understanding of their risk/return profiles. Achieving this will allow for an expansion of debt financing vehicles such as green bonds tied to sustainable infrastructure projects. For instance, green bonds backed by a suite of sustainable infrastructure projects diversify risk and can be tailored to meet the needs of institutional investors. This underlies the need to develop appropriate financing vehicles for institutional investors, particularly debt instruments such as bonds. Such instruments should also be of the same duration as the underlying infrastructure to avoid reinvestment risk (Bhattacharya, A. 2016, p.94).

On the second place, we can put the long-term character of green issues and the possibility to “match” the maturities to the nature of the projects. Compared to the loans provided by banks, green bonds’ maturity can last much longer, reaching more than 20 years in some places.

Next, under certain conditions, green bonds may have a more attractive price than standard bonds. In case of an increased investor interest and due to the targeted spending of the funds, the average coupon achieved can be attractive to prospective lenders.

The green bond market attracts investors committed to the cause of environmental protection, who often overwrite issues. For investors, financing in green bonds, due to the targeted spending of the funds, builds a sustainable positive reputation, and investors often take leadership positions in capital markets. This type of investment is seen as evidence of a sustainable investor strategy. In some countries, investors in green bonds benefit from tax deductions.

Funding and green bond issuance allows the diversification of the portfolio of both the issuer and investors.

Last but not least, thanks to green bonds, local authorities create and maintain a sustainable and green infrastructure in line with climate change.

Of course, along with the benefits, there are certain risks and obstacles to the development and rapid growth of the green bond market. The barriers to the implementation of green bonds in Central and Eastern Europe (CEE) are presented.

One of the main disadvantages of green bonds is considered to be the problem with the so-called labeling (determining whether the issue is really green or not). Practice shows that bond issues include those that are green, but are not

announced as green, and self-identified green issues, for which it is difficult to assess whether they certainly contain a green element. The transaction costs of acquiring a green label certificate, of studying the issuer's creditworthiness, the impact of the investment turns out to be an obstacle for issuers (small and medium-sized municipalities, as well as small and medium-sized enterprises from intensive carbon emissions).

A major reason for the development of green bond segments in CEE is the lower liquidity of capital markets and the undeveloped environment for issuing green bond issues compared to that of Europe's leading industrial and market economies. In this regard, the visit of experts from the Climate Bond Initiative, Global Fund for Cities Development, Fonds Mondial pour le Développement des Villes and Kommuniinvest in the countries of Eastern Europe, including Bulgaria and Romania, in order to explore local capital markets and to familiarize local and central authorities with the benefits and good practices of funding investments in green and eco-infrastructure. Capital market financing is an alternative to providing additional resources on a market basis, as in these countries there is a strong dependence of local authorities on EU grants. Another obstacle to green bond financing in Eastern Europe is the low creditworthiness of local authorities. Therefore, as an alternative to development of the capital market, it is proposed to create a Pooled financing mechanism.¹³

Another disadvantage for market development is determined to be the lack of uniform standards. As we have already pointed out, due to the importance of green infrastructure and the lack of sufficient funding, the European Commission has set itself the target to have unified standards for green financial instruments by the end of 2019. This will lead to mitigation of risks such as loss of reputation if the essence of the green bond is disputed and limited opportunities for lawful implementation of green integrity etc.

¹³ PFMs can be constructed in many different ways. As a first step a group of cities can coordinate their borrowing activities and exchange best practises. This can include using similar procurement processes in relation to banks and other creditors. There are cases when neighbouring local authorities have agreed on a joint head of finance to further coordinate the financial questions. PFMs can be constructed in many different ways. As a first step, a group of cities can coordinate their lending activities and share best practices. This may include the use of similar procurement procedures for banks and other creditors. There are cases where neighbouring local authorities have agreed on a joint finance manager to further coordinate financial matters. For more information, see: Andresson L. [online] <https://www.maproductions.se/wpcontent/2015/03/What-the-World-Needs-Now%E2%80%A6-is-Local-Infrastructure-Investments-Challenges-and-Solutions-with-a-Focus-on-Finance.pdf> [accessed 26.03.2019]

Additional barriers to market development are the lack of bankable green projects. The public sector needs to develop a set of public investment projects that generate future revenue and ones for the benefit of society.

Last but not least, the problem of using green bond issues may be the low creditworthiness of the municipalities. The way to achieve good creditworthiness goes through good financial management, including the implementation of fully functional budgeting, accounting, reporting and auditing practices. There should also be prerequisites for a good planning of future revenue not only from own sources but also from transfers received from the central government (Andersson M. L., Kalcheva D., 2018).

Green bonds as a fixed-income debt instrument attract institutional investors and they become an asset for diversification of the portfolio.

2. DEVELOPMENT OF THE GREEN BOND MARKET

Countering climate change is essential to preserving the well-being of humanity on the planet, as well as achieving sustainable and inclusive economic growth globally. In this regard, different funding approaches are used – grant financing, bank financing and capital market financing. In 2017, the value of climate bond issues to invest in low-carbon economy projects is worth USD 674 billion, the total amount of the issued debt reaches USD 900 billion¹⁴. Areas of investment with climate bonds in Europe are in transport (59%) and energy (21%). The debt in green bonds is USD 221 billion. Most of the climate bonds are in euro, dollars and Chinese yuan respectively in the transport, energy and eco-innovation sector. i.e. green bonds are denominated in internationally recognized convertible currencies other than that of the issuer's country, i.e. green bonds have the potential to become global and raise capital from international financial centers and markets.

Over the next 20 years, EUR 180 billion a year will be needed to meet the EU's "Europe 2030" targets to cover the needs of energy efficiency investments and to reduce harmful emissions in transport, the needs of those being bigger in Central and Eastern Europe.

The green bond market as a segment of the climate bond market originated in 2007-2008, and is associated with the first issues of the so-called Multilateral Development Banks. Over the period 2007-2012, sovereign sub-national agencies,

¹⁴ Green bond growth data is from reports of the Climate Bond Initiative
https://www.climatebonds.net/files/files/CBI-SotM_2017-Bonds&ClimateChange.pdf

municipal development funds, and institutions such as the World Bank, the International Monetary Fund, the European Investment Bank are gradually being included in the green bonds market. With growing market appetite, diversification of issuers and investors is increasing. In 2013-2014 the involvement of the private sector in the issuance of bonds labeled as climate increases. Green bond issues reached USD 165.5 billion in 2017¹⁵ In Europe, 145 companies have issued green bonds, which is one third of the world's total. The issuers are 48 companies in the energy sector, 35 financial institutions, 23 real estate companies, 17 local authorities, capital markets on which green bonds are actively traded are the United Kingdom, Germany and France. About 70% of the green bonds issues in Europe have a term of ten years or less: 28% have a term up to 5 years and 41% between 5 and 10 years. – debt (5-10 years to limitless). By contrast, financial institutions have mostly issued bonds with a shorter term (up to 5 years). Worldwide, top markets for 2018 to issue green bonds are USA with USD 34 billion (20% market share), China with USD 31 billion (18% market share), France with USD 14 billion (8% market share), Germany with USD 7.6 billion (5% market share), the Netherlands with USD 7.6 billion (4% market share).¹⁶

A major factor in accelerating the dynamics of green bonds issuance is that businesses are treating investment as “social and environmental value rather than as a financial asset”. (Schoenmaker 2017)¹⁷. Investors in carbon intensive sectors are aware of the need to apply technologies to limit climate change and protect the environment and nature from harmful emissions.

In order to achieve the efficiency and liquidity of investments to reduce harmful carbon emissions and build assets to adapt to climate change, structured finance instruments are created, i.e. Securitized Green Bonds (ABS). The issuance of securitized bonds occupies 6% of the securities market. According to the The Organization for Economic Cooperation and Development (OECD) annual issuance of securitized green bonds could reach EUR 280-380 billion by 2035¹⁸.

¹⁵ Bloomberg

¹⁶ GREEN BONDS THE STATE OF THE MARKET 2018 CBI https://www.climatebonds.net/files/reports/cbi_gbm_final_032019_web_0.pdf

¹⁷ Schoenmaker, D. 2017. Investing for the Common Good: A Sustainable Finance Framework. BRUEGEL. <http://bruegel.org/2017/07/investing-for-the-common-good-a-sustainable-finance-framework/>

¹⁸ https://www.climatebonds.net/files/reports/cbi_gbm_final_032019_web_0.pdf

The securitization can be defined as the creation of a synthetic product¹⁹ secured by cash flows (loans, leasing of electric cars, renewable energy sources used in low-carbon industries, green infrastructure and green systems). An advantage of securitization is its multiplier effect due to the release of capital for creditors, which can be used for green projects and credits for existing assets. Securitization is suitable for debt financing, as it transforms a set of illiquid assets into marketable financial instruments.

Gradually, this type of debt instrument is becoming popular in North America and in the Pacific. From the newly emerging financial markets after 2016 the Chinese market has gained ground as the largest, the green bond issue is 70% of the issues of newly emerging financial markets for 2018.²⁰

In Europe, the market is steadily developing, with the most significant increase in issues being reported in 2015 and in 2018. The green bonds market in Europe is most successful in France, the Netherlands and Sweden. A key prerequisite for this is the substantial financial autonomy of local authorities and the high creditworthiness. In two of the countries, the Pool Financing Mechanism has been successfully implemented, which in turn implies the attraction of a larger number of issuers among municipalities.

Pool Financing Mechanism operates in different forms, but the most characteristic of Western Europe is the so-called Local Government Funding Agency²¹. Based on the so-called Club deal local authorities unite in the Agency and "go out" on the capital market, issuing municipal bond issues. The agency provides a guarantee to investors. The guarantee is used as collateral if the local authorities fail to repay their debt. The creation of such an institution could extend access to low interest loans for local authorities. The state and all the municipalities that want to can participate in the construction and ownership of the agency. By issuing bond issues, substantial funds can be provided to finance local authority's capital projects. Each municipality declares the financial means that are necessary and with which it would participate in the issuance of the bond issue.

From the studied practice, it was found that mainly the local authorities are involved as investors in the agency, and in rare cases with minimal state

¹⁹ CBI "Green Securitisation Unlocking finance for small-scale low carbon projects"
https://www.climatebonds.net/files/reports/green_securitisation_cbi_conference_final.pdf

²⁰ https://www.climatebonds.net/files/reports/cbi_gbm_final_032019_web_0.pdf

²¹ See more at <https://www.maproductions.se/wp-content/2015/03/Local-Government-Finance-in-Europe-Trends-to-Create-Local-Government-Funding-Agencies.pdf>

participation. Turnover capital for financing of municipalities is raised on the capital markets by issuing bond issues, including green bonds. In this case, the bondholder is the very company behind which all its shareholders are “standing” with all their income power. The unification of municipalities significantly increases the overall creditworthiness of local authorities and makes them a more reliable borrower.

With the funds received, municipalities can carry out various investment projects. In the case of the construction of investment sites, the reimbursement will not burden the municipal budget, but will be in line with the revenue generated by the newly built infrastructure. This instrument strengthens the creditworthiness of small and medium-sized municipalities that will have greater access to credit resources in a union. Sweden is one of the countries where the Agency for Local Government Financing is successfully used to develop the green bond market.

Poland issues green bonds worth EUR 2 billion for energy efficiency projects, and for the energy efficiency of residential buildings, the Lithuanian government issues sovereign green bonds. With regard to the issuance of green bonds, government structures and municipalities have a leading role with around 40% of the global green certificates issued and around 27% of corporate structures in the energy sector. Municipalities are among the major issuers of green bond issues related to carbon emissions reduction.

As we have already noted, green bonds finance a wide range of investments in the field of climate change and environmental protection. Figure 1 shows the distribution of green bonds in accordance with the objectives they serve worldwide.

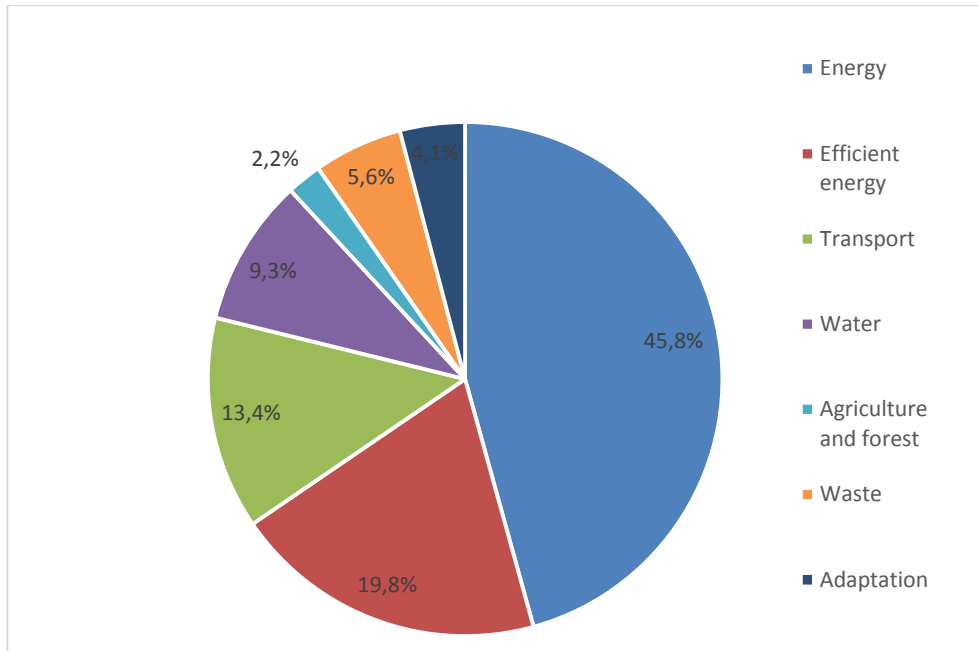


Figure 1. Target spending of green bond proceeds

Source: Presentation of Initiative Climate bonds, Green City Bonds, Web seminar: Pooled Green Bond Financing for Municipalities Webinar, 17th December 2018

The data presented in Figure 1 shows that funding for investment in the transport and water sectors, followed by energy efficiency and green buildings, is predominant. Municipalities finance environmentally-friendly and low-emission transport and energy efficiency of buildings.

A more substantial interest in this article is the development of the green bond market in Europe. Green bonds have begun to become popular in Europe since early 2010. Thanks to the Climate Bond Initiative, the benefits of this type of funding are spread among investors and issuers from Western European countries.

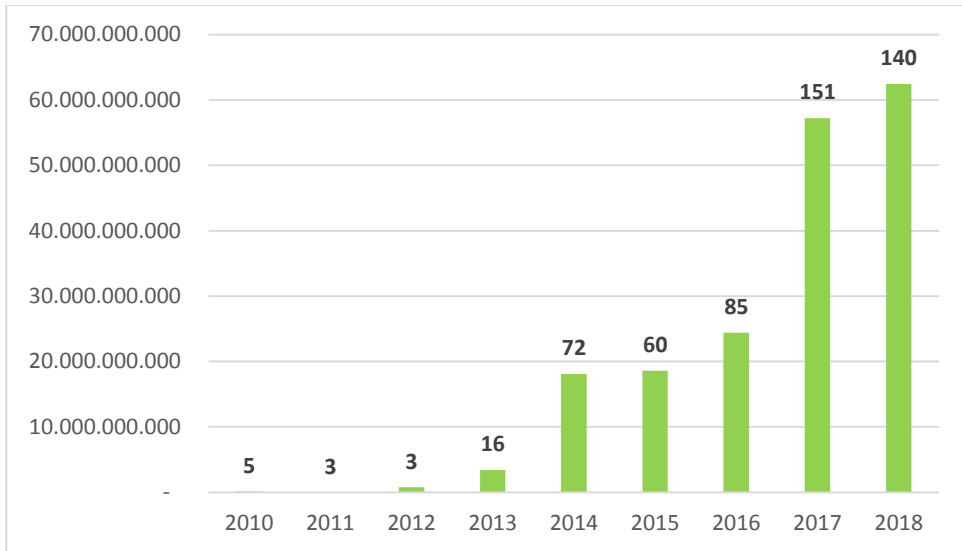


Figure 2. Green bond issues in Europe for 2010-2018
(total amount in US dollars and number)

Source: Climate Bond Initiative

In Europe, the first green bond issues were in 2010, they were issued in Norway, and the total amount was USD 150.7 million. Gradually over the years, both the total amount of emissions and the number and countries are rising. Towards the end of November 2018, over 20 countries (Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and the United Kingdom) have issued green bond issues. The total value of the issues is USD 185 billion and covers a total of 535 issues. The green market reports the most significant development in the countries of France, the Netherlands and Sweden, 2016 and 2017 being considered two of the most successful years for the green bond market in these countries.

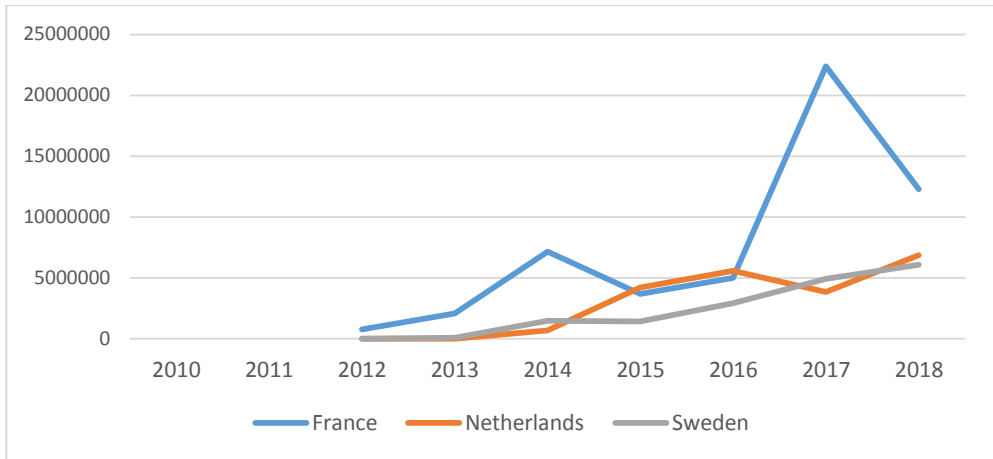


Figure 3. Countries with the most significant residual debt on green bond issues for the period 2010-2018 (in US dollars)

Source: Climate Bond Initiative

In Sweden, green bonds are used as a traditional source for financing municipal investment needs of environmentally-friendly investments. Typical examples of successful projects in Sweden are: financing of regional trains, construction of gas pipelines, construction of new neighborhoods with green buildings, rehabilitation and energy efficiency of schools, wind farms, renovation of water purification installations, etc.

In recent years, residual debt on green bond issues has been rising, which is evidence of successful market development and strong appetite from investors.

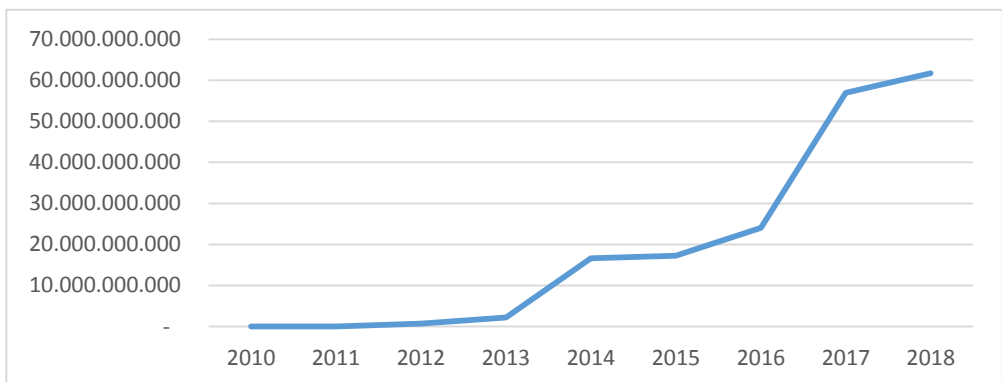


Figure 4. Residual debt of green bond issues for the period 2010 – November 2018 (in US Dollars)

Source: Climate Bond Initiative

Figure 4 shows the expansive development of the green bond market. In 2010, and 2011, the residual debt on green issues is zero, which means that the first issued green bonds are short-term, with a repayment term of only a few months. With the development of the market, the issue maturity also increases. In Sweden, for example, green bond issue maturity ranges between 3 and 25 years.

The Local Finance Agency Kommuninvest has a major role to play in the development of the green bond market in Sweden. The Agency combines the capital needs of almost all local governments in the country and therefore represents them on the capital market, including on the green bond market. The funding from green bonds in Sweden is mainly used for investments in green buildings (52%), renewable sources (33%) and investments in the water sector (13%) (Kommuninvest). Such a group financing practice (pool financing) has been successfully applied in Denmark, Norway, Finland, France and the Netherlands.

Structuring specialized agencies to finance local authorities is a good practice that aims to provide the necessary capital for targeted environmental and climate projects. A bond issue is large-scale investments. In general, local government funding agencies are financial institutions that provide access to the capital markets to municipalities, a group of municipalities and regional public entities. They also provide funding for small green projects and support investments in small municipalities that are not sufficiently creditworthy. It should be noted, however, that many green projects are carried out by small and medium-sized municipalities, especially in rural and less-developed areas with low creditworthiness. Green bonds are a good debt instrument but are better suited to large-scale projects, so setting up a financing agency can provide interest in investing and be a good management approach to investing in smaller projects.

3. CLIMATE CHANGE IN BULGARIA.

THE NEED FOR GREEN BONDS IN BULGARIA AND ROMANIA

Over the last decades the frequency of extreme meteorological and climatic phenomena in Bulgaria has increased. For example, the frequency of thunderstorms and hailstorms has increased in recent years, compared to the period 1961-1990. Bulgaria is located in one of the regions that are particularly vulnerable to climate change (temperature rise and intense rainfall).

The Climate Change Researches of the National Institute of Meteorology and Hydrology at the Bulgarian Academy of Sciences (NIMH-BAS) envisages an increase in the annual air temperature in Bulgaria from 0.7° C to 1.8° C by 2020.

Higher temperatures are expected in 2050 and 2080, with predicted increases between 1.6° C and 3.1° C and between 2.9° C and 4.1° C respectively²². According to estimates by the European Environment Agency for the period 1980-2013, economic losses from adverse climatic events for Bulgaria amount to EUR 1.2 billion (value of the euro in 2013), the average economic loss of EUR 150 per capita. According to the World Bank's assessment of the macroeconomic dynamics for Bulgaria, in case of unapplied actions to adapt to climate change, cumulative loss of growth of gross domestic product by 2050 is between 1% and 3.5%²³.

Coping with the climate impacts by the majority of Bulgarian municipalities is hampered by a shortage of financial resources. Therefore, private funding and capital market financing is important to cover the scarcity of investment for environmental protection and ecosystem balance.

Investments on a local level in Bulgaria and Romania are funded as a priority by European Union grants. Restricted own revenues and targeted grants leave a wide range of investment needs to local authorities without funding. Eurostat figures show that, after the end of the first programming period in Bulgaria and Romania, the share of public investment in GDP is down from 4.5% (2015) to 0.9% (2016) in Bulgaria, while in Romania there is a decline from 2.9 % (2015) to 1.3% (2017)²⁴. This data unambiguously shows the importance of European grants to both countries. European funding, however, has its own negatives – it does not cover all local authorities and does not cover the most necessary needs of municipalities. Substantial investment needs remain without the necessary funding. Bulgarian municipalities, regardless of the need to invest in green and eco projects, do not use debt financing due to low own revenues, substantial dependence on government subsidies, legislative constraints (the Public Finance Act limits annual debt payments to 15% of the average annual own revenue and the total equalization subsidy for the last three years). Adding the maximum maturity of loans traditionally approved by banks (10 years), small and medium-sized municipalities have access to relatively low investment credits. An increase in the credit ability can be sought through the discontinuation of the fiscal decentralization process and the expansion of the municipalities' revenue base.

²² National Report on the State and Protection of the Environment in Bulgaria, based on data from the National Institute of Meteorology and Hydrology, 2016.

²³ National Strategy and Action Plan for Adaptation to Climate Change, Annex 11: Macroeconomic Impacts of Climate Change – Analysis

²⁴ <https://ec.europa.eu/eurostat/data/database>

This, however, is related to structural reforms that require time. However, climate change issues are already on the agenda, and urgent alternatives need to be sought for dealing with them. One such alternative is to set up an agency for financing of local authorities and to combine such a structure with the development of the capital market and the green bonds market, not only in Bulgaria, but also in Central and Eastern Europe.

The creation of an Agency allows coverage of part of the identified investment gap in the climate and the environment sector. Another possibility is to use the potential of the Bulgarian Development Bank, which could provide adequate financing and private and public investment in low-carbon production and adaptable and climate-resilient technical infrastructure.

4. CONCLUSIONS

In conclusion, we can summarize that in recent years an innovative debt instrument – green bonds – has entered the capital market in Europe smoothly but steadily. The needs for environmental investments on a local and central level are indisputable, and so is the lack of sufficient funding. Debt financing with green bonds finds a broad application in mitigating the effects of climate change and less so in adaptation. As a specific instrument of capital markets, a higher satisfaction of investment needs is achieved and a sound basis for the transition to a more environmentally sustainable and low-carbon economy is laid. Green bonds are already a proven financial tool to implement climate change mitigation measures, mainly to finance low-carbon production and transport. Group funding through the creation of a specialized agency, based on the example of Sweden, the Netherlands, France and other countries, is an effective way of pooling financial resources and supporting local authorities to finance green infrastructure projects to protect ecosystems in combating climate change. This structural funding approach is suitable for municipalities that are not sufficiently creditworthy and facilitates their access to debt financing. When it comes to profitability, green bonds are close to conventional bonds, a driving factor for their development is the level of information and awareness of the need to limit and adapt to climate change on the part of investors and politicians and other stakeholders. The review of the application of green bonds in Europe has shown that countries with less liquid and developed capital markets do not apply this investment option yet. Experience shows that the state participates in the implementation of the funding as a guarantor of green bonds, and creates conditions (legislative and economic) for the issuance

of green bonds in order to achieve sustainable economic, social and environmental development. The importance of green bonds is also reinforced by the European Commission's initiative to issue uniform standards and regulations for green capital markets as well as Climate Bond Initiative and FMVD in Bulgaria and Romania.

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