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SIGNIFICANCE OF GREEN BONDS ON CONTEMPORARY FINANCIAL MARKET

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Abstract

Since the onset of the global financial crisis at the end of 2008 green projects are becoming increasingly important, and green economy is becoming more and more interesting as an area of research for numerous authors. In this regard, the paper will analyze green bonds that represent an integral part of green finances, i.e. a significant instrument of green economy and a useful mean in fighting climate changes. These securities mostly represent non-taxable financial instruments and have high credit rating, which is why they are very attractive to investors. Green bonds attract more and more attention in the largest world economies, i.e. in China and USA as the major emitters of greenhouse gases. However, they also have a notable role on the markets of some other countries, i.e. France, Germany, Norway, Sweden, Denmark, Finland, India, and South Africa. Green bonds can be of a great significance for the Republic of Serbia, as well. The Republic of Serbia has adopted, in the process of joining the European Union in early 2020, a Negotiating position for the Chapter 27, i.e. the chapter related to environment and climate changes.

Key words: green economy, environment, climate changes, green bonds, standards.

УЛОГА И ЗНАЧАЈ ЗЕЛЕНИХ ОБВЕЗНИЦА НА САВРЕМЕНОМ ФИНАНСИЈСКОМ ТРЖИШТУ

Апстракт

Од настанка глобалне финансијске кризе крајем 2008. године, зелени пројекти имају све већи значај, а зелена економија постаје све интересантнија област истраживања бројних аутора. С тим у вези, у раду ће бити анализиране зелене обвезнице, које представљају интегрални део зелених финансија, односно значајни инструмент зелене економије и корисно средство у борби против климатских промена. Ове хартије од вредности углавном представљају неопорезиве финансијске инструменте и имају висок кредитни рејтинг, па су веома привлачне за инвеститоре. Зелене обвезнице привлаче све већу пажњу у највећим светским економијама, односно Кини и

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САД као највећим емитерима гасова са ефектом стаклене баште. Међутим, оне имају запажену улогу и на тржиштима неких других земаља, нпр. Француске, Немачке, Норвешке, Шведске, Данске, Финске, Индије и Јужне Африке. Такође, зелене обвезнице могу бити од великог значаја и за Републику Србију. Република Србија је у процесу приступања Европској унији почетком 2020. године усвојила Преговарачку позицију за Поглавље 27, односно поглавље које се односи на животну средину и климатске промене.

Кључне речи: зелена економија, животна средина, климатске промене, зелене обвезнице, стандарди.

INTRODUCTION

Green bonds represent an integral part of green finances which, in relation to the traditional finances, place more importance on the relationship between human survival and environmental protection (Xiaoguang Zhou & Yadi Cui, 2019). Green bonds are mostly defined as securities with fixed yield (fixed – income securities). They represent a debt financial instrument issued for the purpose of financing environmental projects (Laskowska, 2017, p. 71). Although the idea of using securities in financing environmental projects is very old, green bonds represent a young financial instrument. However, they have become part of a dynamic environmental trend in the capital market in a relatively short time and represent a very attractive instrument for investors (Laskowska, 2017, p. 70). Green bonds follow tax incentive policies, i.e. green bonds mostly represent non-taxable securities and have high investment rating (Echo Kaixi Wang, 2018, p. 471). Also, green bonds offer to the investors the opportunity to participate in financing environmental projects that mitigate harmful impact of climate changes or adjust to them, improve renewable energy sources and energy efficiency, enable more efficient traffic with reduced pollution, provide clean/drinking water or resolve numerous environmental and other problems (Scott M. Stringer, 2014, p. 2).

Financing green investments by means of green bonds issuance has numerous advantages compared to alternative ways and the following are the most important. First, green bonds can contribute to supporting sustainable development of financial markets since they secure transparency of assets. Second, green bonds facilitate long-term investments and can reduce the mismatch of maturity term between the long-term time horizons of the issuers and short-term interests of the investors for investments: issuers can issue long-term bonds, while the investors have a chance to sell their bonds in any moment. Third, green bonds positively influence the reputation of issuers. Fourth, green bonds can attract a larger and more diverse group of investors (Berensmann, Dafe, & Lindenberg, 2017). However, although there are numerous advantages the explosive growth of green bonds market can be obstructed if the security of green bonds assets is not institutionalized. (Talbot, 2017, p. 129). In the

absence of compulsory regulations and standards related to the green bonds, the issuers may use the collected assets for other purposes, i.e. in the same manner as regular bonds. In this regard, at the international level the principles that represent guidelines for the development of green bonds market are defined. Also, pursuant to these guidelines at national level numerous standards and regulations related to this segment of financial market have been defined.

In early 2020, the Republic of Serbia adopted the Negotiating position for the Chapter 27 in the process of joining the European Union (Negotiating group 27). This chapter is related to the environment and climate changes and represents the most extensive and demanding chapter in the stated process. An important prerequisite for opening Chapter 27 was the establishment of the Green fund, which was established in 2016, four years after the Fund for the protection of environment stopped working (it functioned in the period between 2009-2012). Also, in May 2017, the Republic of Serbia adopted the so-called Paris Agreement (Ministry for environmental protection, the Republic of Serbia, 2017). The Paris Agreement aims to reduce greenhouse gas emissions to the level that will limit the temperature growth at global level under 2^{o}C. Having in mind that the implementation of the projects in the field of environmental protection, the use of renewable energy sources, mitigation of climate changes, etc. demands engaging larger amounts of assets, the analysis of green bonds as one of the ways to finance these projects has great theoretical and practical significance.

CONCEPT AND CHARACTERISTICS OF GREEN BONDS

Based on numerous criteria that can be used for defining green projects, a large number of various definitions of green bonds have emerged. In the literature, Green bonds are most often defined as "environmental bonds" (Kaminker & Steward, 2012, p. 34). In this regard, green bonds represent the bonds directed to financing investments related to environmental benefit or they are directed at the reduction of sensitivity to environmental changes. The main areas of using green bonds are renewable energy sources, energy efficiency, clean traffic and management of water and waste (Laskowska, 2017, p. 71). Also, according to Josué Banga (2019, p.18) green bonds are the bonds, the assets of which are used for financing environmental projects such as projects related to renewable resources, water efficiency and energy efficiency, bioenergetics and traffic with low carbon content. However, a broader definition of green bonds also includes the bonds known as "climate bonds" (Climate Brief N°14). In this regard, green bonds are used for financing environmental projects, but also the projects in the field of mitigating climate changes (Talbot, 2017, p. 130). According to Trompeter Luke (2017)

green bonds are used for financing projects related to the prevention of climate changes, preservation of biodiversity, reduction of pollution, improvement of renewable energy sources, development of clean traffic and clean water. A very broad definition of green bonds was provided by Chiang (2017, p. 7) according to which green bonds represent the issuance of debt financial instruments of the public and private sectors and multilateral institutions by which climate and other environmental projects are financed (Chiang, 2017, p. 7). So, it can be said that green bonds are standard (traditional) bonds, but with one essential difference. With standard bonds, the investors cannot decide on how to use the funds from bonds (Thiam Hee Ng, Jacqueline Yujia Tao, 2016, p. 6; Laskowska, 2017, 70). On the other hand, green bonds are offered to the investors on the market as "green" so the funds thus collected must be used to finance environmental projects.

Green bonds represent fixed income securities used for financing concrete projects that are in favor of ecology and climate (Nassiry, 2018). Also, according to Ehlers & Packer (2017) and Laskowska (2017) green bonds are fixed income securities by which projects contributing to the improvement of natural environment are financed and refinanced. These securities are especially convenient for financing investments in sustainable infrastructure because they represent financial instruments that offer the investors stable and long-term return of investment (Nassiry, 2018). The maturity term of green bonds in the period from 2014 to 2016 ranged between seven and eight years, but later this term was extended (Ehlers & Packer, 2017). In order to encourage issuers of these securities, green bonds are tax free and have high credit rating (Trompeter Luke, 2017; Ehlers & Packer, 2017). Also, based on the analysis that encompasses the period 2014-2017 it has been established that the issuers of green bonds borrow at lower margin (spread-u) compared to traditional bonds (Ehlers & Packer, 2017).

Green bonds make up a small part of the global bond market (fixed income market). According to S&P Global, green bonds represent only 1.4% of total fixed-income market (S&P Global 2017). However, although green bonds have a small share in total bond market they attract more and more attention because thousands of billions of dollars of capital from the public and private sectors will be needed to meet goals of reducing emissions of harmful gases. Green bonds attract numerous investors devoted to using the assets from bonds for the purpose harmonized with Environmental Social Governance (ESG) purposes (Echo Kaixi Wang, 2018, p. 472). Until the onset of the global financial crisis at the end of 2008, green bonds were a concept in which investors were not interested much since traditional investors considered environmental projects risky and unprofitable (Josué Banga, 2019, p.18, Abou Arrage, J. & Abdel Hady, S. 2019, p. 12). However, interest of the investors in green

bonds has grown significantly recently, which is in accordance with the growing fight against climate change. In this regard, the representatives of almost 200 countries at the end of 2015 reached the agreement in Paris on the objectives of climate changes (so-called Paris Agreement) (Chiang, 2017, p. 5). The representatives of developed countries agreed to invest at least USD 100 billion annually into the projects related to the fight against climate changes, which aims to reduce greenhouse gas emissions to the level that will limit the temperature growth at global level under 2°C. After that, the demand for socially responsible investments of institutional and other investors has grown significantly. High demand for green bonds facilitates their sale in the primary market, but also makes difficult their purchase in the secondary market. In this regard, mostly a small supply of green bonds in the secondary market enables investors to sell them at higher prices compared to conventional bonds. (Echo Kaixi Wang, 2018, p. 472). In this regard, stock exchanges represent important actors in the development of the green bond market, because they can provide the liquidity of this market. Also, stock exchanges have a great role in providing regulated and transparent markets that trade green bonds (Berensmann, 2017; Laskowska, 2017, p. 75). In this regard, some developed world stock exchanges have created listings of green bonds (Table 1).

Table 1. Stock Exchanges that have launched a dedicated green bond or sustainable bond section.

Name of Stock Exchange	Type of Dedicated Section	Launch Date
Oslo Stock Exchange	Green bonds	January 2015
Stockholm Stock Exchange	Sustainable Bonds	June 2015
London Stock Exchange	Green bonds	July 2015
Shanghai Stock Exchange	Green bonds	March 2016
Mexico Stock Exchange	Green bonds	August 2016
Luxembourg Stock Exchange	Luxembourg Green Exchange	September 2016
Borsa Italiana	Green and Social Bonds	March 2017
Taipei Stock Exchange	Green bonds	May 2017
Johanesburg Stock Exchange	Green bonds	October 2017
Japan Exchange Group	Green and Social Bonds	January 2018
Vienna Exchange	Green and Social Bonds	March 2018
Nasdaq Helsinki	Sustainable Bonds	May 2018
Nasdaq Copenhagen	Sustainable Bonds	May 2018
Nasdaq Baltic	Sustainable Bonds	Maj 2018
The International Stock Exchange	Green bonds	November 2018
Frankfurt Stock Exchange	Green bonds	November 2018
Moscow Exchange	Sustainable Bonds	August 2019
Euronext	Green bonds	November 2019

Source: https://www.climatebonds.net/green-bond-segments-stock-exchanges

To date, several stock indexes of green bonds have been created, of which the most famous are Solactive Green Bond Index Series (the first index of this type in the world), S&P Green Bond Index and ChinaBond China Climate-Aligned Bond Index. Based on index of green bonds in practice, financial products were created, i.e. ETFs (e.g. Lyxor Green Bond UCITS ETF) and structural products. Such market structure stimulates investments and increases liquidity of the green bond market (Laskowska, 2017, p. 75).

Index providers may give a significant support to the standardization of green bonds by including or excluding issuers from their indices pursuant to certain rules. In this way Index providers of green bonds certify and constantly monitor green bond issues. Important indices of green bonds have been published by Barclays MSCI, Bank of America Merrill Lynch, S&P and Solactive (Berensmann, 2017).

THE PROCESS OF STANDARDIZATION OF GREEN BONDS

One of the important limitations of further development of the green bond market is insufficient level of transparency (Ludvigsen, 2015). As a response to the increasing concern regarding transparency of green bonds, International Capital Markets Association ICMA published in 2014 with other with other major investment banks Green Bond Principles (GBPs) (Green Bond how to unlock their full potential?; Talbot, 2017, p. 137). Since then GBPs have been updated twice (last time in 2017) (Echo Kaixi Wang, 2018, p. 475). The release of Green Bond Principles (GBPs), which encompasses a consortium of more than 200 financial and non-financial institutions, solidified the emergence of green bonds (Josué Banga, 2019, p.19). GBPs have a key role in providing basic principles because most of other standards are based on them (Urlik Ross, 2015; Berensmann, 2017). GBPs represent "voluntary process guidelines" that describe the general criteria which most certification programs adhere to (Ehlers & Packer, 2017), i.e. GBPs represent a set of voluntary guidelines on the process and management that put emphasis on transparency and openness as means of maintaining integrity of market (Nassiry, 2018, p. 2). These principles provide the future issuers with guidelines on: the use of assets for environmentally sustainable activities, the process of determining the eligibility of projects, managing assets in a transparent way that can be traced and checked and the annual reporting on the use of assets (Ehlers & Packer, 2017). Hence, according to GBPs for a bond to be green it must meet the conditions related to the use of funds, it must pass the process of evaluation and election of projects, there must be a system of managing assets from bonds and it must be harmonized with the conditions of reporting (Echo Kaixi Wang, 2018, p. 476). In this regard, GBPs have four main components related to green

bonds, and those are: use of proceeds, process for project evaluation and selection, management of proceeds, and reporting (Scott M. Stringer, 2014, p.4; Talbot, 2017, p. 138; Nassiry, 2018, p. 2). The first component forms the basis of green bonds. There are a few categories of green projects with clear benefits for the sustainability of environment. These are the projects related to renewable energy sources, efficient waste management, "clean" traffic and mitigation of climate changes. The purpose of the "use of proceed" component is for the issuer to state clearly in the process of bond issuance pertaining to the use of funds. The separation of this component helps to quantify the value of the environmental utility of the project and promotes transparency and accountability of the issuer. Within the second component the issuer should describe in detail the procedure used during qualifying the project as "green". Also, the issuer should present the goals of environmental sustainability of the project. This component emphasizes the role of GBPs in increasing the transparency of green bond markets and allows the external insight into the procedure of evaluation and selection of the project. Within the component "management of proceeds" the issuer is demanded to pay a certain amount of assets onto a sub-account. According to GBPs the issuers should use this sub-account from time to time in order to monitor the use of the proceeds from green bonds and the realization of predetermined goals of environmental sustainability. The information related to this sub-account must be available to the investors in order to provide a high level of transparency. Also, GBPs encourage the use of auditing services and similar third parties in order to verify the internal way of monitoring and allocation of assets arising from green bonds. The fourth component of GBPs is related to the reporting demand. This demand obliges the issuers of green bond to make an annual report with available and updated data on using proceed. According to the data of Climate Bonds Initiative, almost 80% of issuers make public the report on using assets raised by the sale of green bonds. The highest level of publicity is available with green bonds, the issuers of which are countries, state banks, and commercial banks. (Climate Bonds Initiative, 2017b, pp. 2–8).

According to GBPs, there are nine broad categories that meet the conditions of environmental projects: renewable energy sources, energy efficiency, prevention and control of pollution, environmentally sustainable management of living natural resources and use of land, preservation of biodiversity on land and in water, clean traffic, sustainable management of water and waste waters, adaptation to climate changes, environmentally efficient product and/or a product adjusted to circular economy and environmental structures satisfying certification standards at regional, national and international levels (Echo Kaixi Wang, 2018, p. 476).

GBPs are not the only set of standards related to green bonds. Climate Bonds Initiative promotes the growth of the green bond market

through introduction of Climate Bonds Standard and Certification Scheme (CBSCS) (Talbot, 2017, p. 142; Echo Kaixi Wang, 2018, p. 477). CBSCS encompasses the previously defined GBPs, but further expands these guidelines. In this regard, CBSCS defines several different standards specific for the given sector of which each has been developed in such way to secure consistently respecting the principle that the growth of global temperature must be less than 2°C (Nassiry, 2018, p. 2). The current version of CBSCS covers the projects dealing with wind energy, solar energy, geothermal energy, structures with low carbon issuance and with fast bus transportation systems. Also, CBSCS states several standards related to traffic with low carbon issuance, bioenergetics and water management. Each of these standards states various criteria the issuers must meet in order to have their climate bonds certified (Talbot, 2017, p. 143). However, the use of CBSCS has one big limitation, and that is that it does not order obligatory permanent monitoring and verification (Ehlers & Packer, 2017).

The issuers of green bonds mostly cannot secure full transparency of the investment that is offered so that a large number of third persons provides the second opinion and certifies the use of assets from issuances. The investors appreciate these opinions because they know that independent advisors (consulting firms) such as CICERO, Vigeo Eiris, SUSTAINALYTICS, OEKOM, etc. do not have interest in the realization of green bond issuances (Urlik Ross, 2015; Nassiry, 2018, p. 6). In addition to the stated consulting agencies, famous rating agencies, such as Moody's and S&P, have since 2016 started to perform the evaluation of green bonds. In early 2016, Moody's introduced a standardized access to the evaluation of green bonds – the services of Green Bond Assessment (GBA) and research – independently from credit rating whereby the estimation is based on five factors: (1) organization (qualification and management), (2) use of assets, (3) openness regarding the use of assets, (4) management of assets, and (5) permanent reporting and openness (Nassiry, 2018, p. 5). Also, the agency for credit rating Standard & Poor's proposed in 2016 a tool for the evaluation of green bonds with the aim of "giving a second opinion and the relative score of the environmental impact on capital market instruments aimed at financing environmentally useful projects." According to S&P, environmental evaluation does not represent credit rating and does not take into account credit quality or factor when establishing credit rating. Environmental evaluation is based on three scores – transparency score, management score and damage mitigation score (environmental impact), or the adaptation score (resilience level) (Nassiry, 2018, p. 5). Following the example of Moody's and S&P, later a third large rating agency, Fitch Ratings, joined these activities.

In addition to international standards, there are standards (informal regulations and guidelines) adopted at the national level that are related to

green bonds, for example in China, India, Brasil, and France (Berensmann, 2017; Echo Kaixi Wang, 2018, p. 477). In China, green finances make up a significant part of national strategy (Yao Wang & Ricco Zhang). In September 2016 The People's Bank of China (PBC) published, together with the minister of finance and environmental protection, National commission for development and reforms (NCDR) and the commissions for banking, insurance, and securities, the Guidelines for the establishment of the system of green finances (Nassiry, 2018, p.14). On the other hand, in the USA the regulations on issuance of green bonds exist only in form of non-binding international guidelines (Echo Kaixi Wang, 2018). In this regard, in order to intensify the development of green bonds in future it is necessary to harmonize the existing international and national standards. Harmonized standards increase the transparency of bond "greenness" and help the investors to make a clear difference between green and non-green bonds (Berensmann, 2017). Also, harmonized standards reduce the risk of "greenwashing" and that is the risk that the assets from green bonds are not used for financing environmental projects. Greenwashing is mostly defined as false and insincere concern for the environment (Ludvigsen, 2015). This manipulation occurs when the issuer promotes environmental projects in order to raise assets on the market of green bonds, and in fact it does business that is harmful for the environment. In this regard, greenwashing can have a very negative impact on the trust of investors in green bonds and in such way thwart the development of this market (Talbot, 2017, p. 129; Josué Banga, 2019, p. 27).

TYPES AND CATEGORIES OF GREEN BONDS

Bearing in mind that there is no universal definition of green bonds, it is very hard to make a unique classification of green bonds. Apart from that, having in mind that there is a large number of green projects that can be financed by green bonds, the criteria for division of green bonds can be very diverse. In Table 2, six sectors were displayed within which the green projects were stated, i.e. areas that can be financed by green bonds. Based on stated areas general systematization of green bonds has been done.

Similar to the systematization presented in Table 2, World Bank and International Finance Corporation published their criteria for project qualification with the emphasis on climate changes. World Bank has financed projects of clear energy sources like solar and wind power plants, as well as the projects of mitigating damage such as protection from floods, while International Finance Corporation has financed projects of renewable energy sources and energy efficiency (Scott M. Stringer, 2014, p.2). In this regard, it can be said that significant support to the development of global market of green bonds is provided by "supranational"

banks for development (Scott M. Stringer, 2014, p.3). For example, World Bank has financed, by means of green bond issuance, the projects of solar and hydro power plants in China, projects of geothermal energy in Indonesia, projects of energy efficient lighting in Mexico, sustainable railway transportation in Brazil, ecological buses in the Philippines, water treatment plants in the Dominican Republic, development of solutions for solid waste in Morocco, organic cultivation in Armenia, innovative agricultural studies in Peru and plans of infrastructure resistant to climate changes (Trompeter, 2017).

Table 2. Systematization of green bonds

Energetics	Traffic	Water management	Control of waste and pollution	Construction and industry	Agriculture and forestry
Solar energy, wind energy, bioenergetics, geothermal energy, hydro-energetics, energy of waves, tides	Traffic with low carbon issuance, electric vehicles, public transportation, water traffic, alternative fuels	Green infrastructure, treatment of waste waters, desalination, improvement of infrastructure	Recycling, production of organic fertilizer, circular economy, technology for carbon sequestration	Environmental structures, systems for energy intake, energy efficient technology, projects of efficient technology, recovery of waste heat	Afforestation, revegetation, organic agriculture, reduced use of fertilizers, efficiency of intensive agriculture, land remediation

Source: Laskowska, 2017, p. 72

However, in addition to supranational development banks, other issuers are increasingly appearing in the green bond market. In this regard, according to the type of issuer and the structure seven types of green bonds can be distinguished: (OECD & Bloomberg Philanthropies, 2015, p. 12)

- corporate bond,
- project bond,
- asset-backed security,
- municipal bond,
- sovereign bond,
- supranational bond,
- financial sector bond.

Hence, green bonds are a very flexible financial instrument. Flexibility of green bonds is reflected in the demands of issuers, possible types of issuances and conditions of issuances. In this regard, it is important to note that almost every organization can meet the conditions for issuance of green bonds (Thiam Hee Ng, Jacqueline Yujia Tao, 2016, p. 6). Also, it should be kept in mind that environmental investments are subject to financial risks related to uncertainty of expected effects and possible dif-

ficulties in raising capital. In this regard, green bonds are often offered in insured or guaranteed form, as well as previous and hybrid bonds (Marszałek & Daszyńska-Żygadło, 2016, p. 947).

Based on the defined relation between the issuers and investors, but also the repayment method, four main types of green bonds can be distinguished, and these are:

- *Green Use of Proceeds Bonds*, with which the issuers raise capital and repay interest to the investors during a certain period with funds from the investment project. Credit rating for bonds for the use of assets is the same for the issuer and the given bond;
- *Green Use of Proceeds Revenue Bonds*, means the repayment to investors through guaranteed revenue flows, such as fees, charges and taxes;
- *Green Project Bonds*, finance the projects in which the investor is directly exposed to project risk and has no right of recourse to the issuer;
- *Green Securitized Bonds* finance the projects and use basic financial instrument such as collateral. These financial instruments are usually the source of the first repayment to the bond holders (Trompeter, 2017; Talbot, 2017, p. 140; Josué Banga, 2019, p. 22).

In addition to stated types, it is very important to note that there are also two categories of green bonds, and these are: green labeled bonds and green unlabeled bonds. The funds of green labeled bonds are used for financing green assets and the issuers label them as green. On the other hand, green unlabeled bonds finance environmental projects and promote the economy with low carbon issuance, but the issuers did not label them as "green" (Echo Kaixi Wang, 2018, p. 471). In other words, green labeled bonds represent the bonds placed onto the market as green bonds, while the sphere of green unlabeled bonds is reduced to the bonds used for environmental projects, but they are not placed onto the market as green bonds (Thiam Hee Ng, Jacqueline Yujia Tao, 2016, p. 6).

DEVELOPMENT OF GREEN BONDS AT GLOBAL FINANCIAL MARKET

Green bonds are increasingly popular fixed income securities, through which capital is raised for projects that have a positive impact on the environment. European Investment Bank (EIB) is the first institutions that issued in 2007 a green bond in the amount of USD 1 million in order to finance renewable energy projects around the world. A year later, World Bank (WB) issued the second green bond for financing projects of mitigating climate changes. Since then, the activities of these two multi-

lateral developmental institutions as the issuers of green bonds were growing from year to year (Trompeter, 2017, pp. 4–5; Echo Kaixi Wang, 2018, p. 474).

Together with EIB and WB, the Nordic region is considered a pioneer in issuance of green bonds. Scandinavian Enskilda Banken (SEB) together with WB developed in 2008 a concept of green bonds as a response to the demand of investors for introduction of investments related to climate changes. Since then the issuers from the Nordic region occupy a significant place in the issuance of green bonds, especially at the local level (Nassiry, 2018, p.1). Among leading issuers of green bonds in this region are the city of Gothenburg, Kommuninvest (Sweden), Kommunalbanken (Norway), Kommunekredit (Denmark), and MuniFin (Finland) (Nassiry, 2018, p. 6). In 2013, the city of Gothenburg became the first city and the first Nordic issuer that issued a green bond in amount of 500 million SEK (USD 77 million USD), of which the funds were used for financing projects of public transportation, water management, energetic, and waste management (Nassiry, 2018, p. 8).

Poland's initial bond issue made it the first country in the world to raise green-labeled debt (Nassiry, 2018). It was followed by France, which issued €7bn of green bonds in January 2017, and Fiji, which became the first emerging market to launch a green bond in October with a $50m deal (Kate Allen, Financial Times, 2018).

China, as the largest producer of greenhouse gases in the world, is a very active participant in the market of green bonds (Echo Kaixi Wang, 2018, p. 478). China has formally created the market of green bonds in late 2015, and since then the quantity and value of green bonds has been significantly increased in the observed area. From 2016 to 2018, the number of issued green bonds in China shows the trend of linear growth (Xiaoguang Zhou & Yadi Cui, 2019). Also, this type of debt financial instrument has continued the growth trend in the observed area during 2019. By the end of the first half of 2019 China issued 908 green bonds. More than two-thirds of Chinese green bonds were issued in interbank markets, and the rest of green bonds were issued on the Shanghai or Shenzhen Stock Exchange. The example of China has empirically proven that the issuance of green bonds in the long run can have a positive impact on attracting investors to invest in the shares of these companies, because the issuance of green bonds also contributes to the improvement of its financial performances. The number of green bonds issued on the Shenzhen Stock Exchange is far less than the number of bonds issued on the Shanghai Stock Exchange (Xiaoguang Zhou & Yadi Cui, 2019). China Railway Corporation is one of the largest issuers of green bonds in the world. In 2017, this company had outstanding green bonds in the value of USD 222 billion, and they were issued for financing the development of high-speed railway network 22.000 km long (Laskowska, 2017, p. 78).

Hence, the market of green bonds has sharply risen in Europe and Asia, but also in the USA as the second largest producer of greenhouse gases in the world (Echo Kaixi Wang, 2018, p. 480). However, less than one-tenth of one percent of all outstanding bonds in the USA makes green bonds, which is, for example, much under the percentage present in Western Europe, China, India, and South Africa (Chiang, 2017, p. 5). The USA entered the market of green bonds in 2013 when Massachusetts issued municipal green bonds in the amount of USD 100 million (KPMG, 2015). The assets from these bonds were intended for the improvement of water quality, increase of energy efficiency, and solving pollution (Scott M. Stringer, 2014, p.3). After that, in November 2013, the Bank of America announced the sale of its first green bonds in order to finance fight against climate changes, the reduction of demand for natural resources and improvement of economic solutions with lower carbon issuance. The issuance in amount of USD 500 million was issued by the Bank of America within ten-year environmental initiative worth USD 50 million (Scott M. Stringer, 2014, p.3). So far, the largest issue of corporate green bonds in the observed area was realized by Apple, Inc. (Echo Kaixi Wang, 2018, p. 480). In 2019, Fannie Mae issued the first Green Mortgage Backed Securities (MBS) in amount of USD 22.9 billion, which is also the largest issue of green bonds in the world in that year (it represents 9% of the value of green bonds issued in 2019).

Observed globally, there is an accelerated growth of the green bond market. After the first issuances by EIB and WB, numerous public and private institutions began to issue green bonds (Josué Banga, 2019, p.18). According to the database of Climate Bonds Initiative, non-profit organizations with the seat in London that promotes investments in economy with low carbon dioxide emissions, the total number of issued green bonds grew from one in 2007 to 1788 issued green bonds in 2019 issued by 496 issuers (Climate Bonds Initiative, 2019).

Accelerated development of the green bond market followed the adoption of Green Bond Principle's in 2014. Total annual value of green bond issuances grew from USD 3 billion in 2012 and USD 11 billion to USD 81 billion in 2016 (Nassiry, 2018, p.1). Also, during 2017, a great growth of this market has been achieved, green bonds in the amount of USD 155.5 billion were issued (Echo Kaixi Wang, 2018, p. 473; Nassiry, 2018, p.1) (Climate Bonds Initiative, 2017c). Significant growth of the green bond market also followed in 2018 and 2019. During 2019 green bonds and green loans were issued in amount of USD 257.7 billion (around 95% of this amount are green bonds), which is a new record of the green bond market and represents the increase of 51% compared to 2018 when this market was worth USD 170.6 billion (Climate Bonds Initiative, 2019). The USA, China, and France make up 44% of the green bond market issued during 2019 (Climate Bonds Initiative, 2019). How-

ever, around 45% of total green bond turnover during 2019 was realized on European market, while the share of Asia-Pacific and North American markets was 25% and 23%, respectively.

CONCLUSION

Since the onset of the global financial crisis at the end of 2008, the issues of sustainable development have become increasingly important, and investors' interest in green projects increased significantly. However, a more intensive development of green bonds was not possible before defining more precise standards related to this segment of financial market. At the global level, there are two sets of standards related to the valuation of green bonds and provide guidelines for the issuance of these securities, as follows: Green Bond Principle's (GBPs) and Climate Bonds Standard and Certification Scheme (CBSCS). Pursuant to the stated standards, in many countries, the regulations at the national level related to the green bond market were defined. However, the existing regulations in most nations are adopted on a voluntary basis and represent non-binding guidelines for the development of green bond market. This can be problematic since an issuer may sell green unlabeled bonds in order to use special privileges and tax reliefs of such bond, and then perform greenwashing with bonds in the way that it will invest the assets for the purposes that are not in favor of environmental protection. In this regard, the lack of basic and final rules and definitions of green bonds slows down the development of this market to a significant extent.

Pursuant to the accelerated growth of green bond market, as a support to the process of standardizing these securities, stock exchanges from all parts of the world since 2015 have started to create separate listings for green bonds (e.g. London Stock Exchange, Frankfurt Stock Exchange, Euronext, Shanghai Stock Exchange, Japan Exchange Group, Johanesburg Stock Exchange and dr.). Also, some of these stock exchanges have created indices related to these debt instruments. Since 2016, famous world rating agencies S&P and Moody's (later Fitch Ratings also) became involved in the valuation of green bonds, too.

Observed at the global level, the market of green bonds is most developed in the USA, China, and France. However, the USA and China are by far the biggest polluters of the environment, i.e. emitters of greenhouse gases. Pursuant to the Paris agreement from 2015 the most developed countries of the world obliged themselves to a fight against climate changes, i.e. to reduction of the emissions of greenhouse gases to a level that will limit the temperature growth at global level under 2^{o}C. The Republic of Serbia ratified this agreement in May 2017. Also, in early 2020, the Republic of Serbia has adopted the Negotiation position for the Chapter 27, the chapter related to environment and climate changes in the pro-

cess of joining the European Union. In this regard, green bonds can be of a great significance as one of the ways of financing green projects in the observed area.

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УЛОГА И ЗНАЧАЈ ЗЕЛЕНИХ ОБВЕЗНИЦА НА САВРЕМЕНОМ ФИНАНСИЈСКОМ ТРЖИШТУ

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Резиме

Од настанка глобалне финансијске кризе крајем 2008. године, питања одрживог развоја постала су све значајнија, а инвеститори све заинтересованији за зелене пројекте. Међутим, интензивнији развој зелених обвезница није био могућ пре дефинисања прецизнијих стандарда који се односе на овај сегмент финансијског тржишта. На глобалном нивоу постоје два скупа стандарда који се односе на вредновање зелених обвезница и представљају смернице за емитовање ових хартија од вредности, а то су: Green Bond Principle's (GBPs) и Climate Bonds Standard and Certification Scheme (CBSCS). У складу са наведеним стандардима, у многим земљама су на националном нивоу дефинисани прописи који се односе на тржиште зелених обвезница. Међутим, постојећи прописи се код већине нација доносе на добровољној бази и представљају необавезне смернице за развој тржишта зелених обвезница. То може бити проблематично, пошто неки емитент може продати зелене обвезнице да би искористио посебне повластице и пореске олакшице таквих обвезница, а затим извршити еко-манипулацију (greenwashing) тако што ће средства инвестирати у сврхе које не иду у корист заштити животне средине. С тим у вези, недостатак основних и правоснажних правила и дефиниција зелених обвезница у значајној мери успорава развој овог тржишта.

У складу са убрзаним растом тржишта зелених обвезница, а као подршка процесу стандардизације ових хартија од вредности, берзе из свих делова света су од 2015. године почеле да креирају посебне листинге за зелене обвезнице (нпр. London Stock Exchange, Frankfurt Stock Exchange, Euronext, Shanghai Stock Exchange, Japan Exchange Group, Johanesburg Stock Exchange и др.). Такође, неке од ових берзи су осмислиле и индексе који се односе на ове дужничке инструменте. Од 2016. године, и познате светске рејтинг-агенције S&P и Moody's (касније и Fitch Ratings) укључиле су се у послове вредновања зелених обвезница.

Посматрано на глобалном нивоу, тржиште зелених обвезница је најразвијеније у САД, Кини и Француској. Међутим, САД и Кина су убедљиво и највећи загађивачи животне средине, односно емитери гасова са ефектом стаклене баште. У складу са Споразумом из Париза из 2015. године, најразвијеније земље света су се обавезале на борбу против климатских промена, односно на смањење емисија гасова са ефектом стаклене баште на ниво који ће ограничити раст температуре на глобалном нивоу испод 2oC. Република Србија је ратификовала овај споразум маја 2017. године. Такође, Република Србија је у процесу приступања Европској унији почетком 2020. године усвојила Преговарачку позицију за Поглавље 27, поглавље које се односи на животну средину и климатске промене. С тим у вези, зелене обвезнице могу бити од великог значаја као један од начина финансирања зелених пројеката на посматраном подручју.