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Conditions for the development of the green bond market development

Introduction

The advancing degradation of the ecosystem and the occurring climate changes demand decisive actions to be taken by citizens, aimed at levelling the results of the lack of balance between the natural environment and business operations. People can reduce the risk of climate change through mitigation or adaptation or a combination of these two factors (Kane, Shogren, 2000). The ecological problems are increasingly reflected in the concepts of economic science, namely corporate social responsibility and socially responsible investing. It should be underlined that a certain amount of capital is necessary to improve the condition of the environment and it is the capital market that allows to gather large financial resources. Consequently, ecological instruments of the market are created to finance environmental investments.

This work is devoted to green bonds, which are a specific group of securities, namely ecological debt instruments. Even though the mechanism of using securities for the financing of eco-investments emerged a long time ago, green bonds have only been offered on the capital market for a decade.

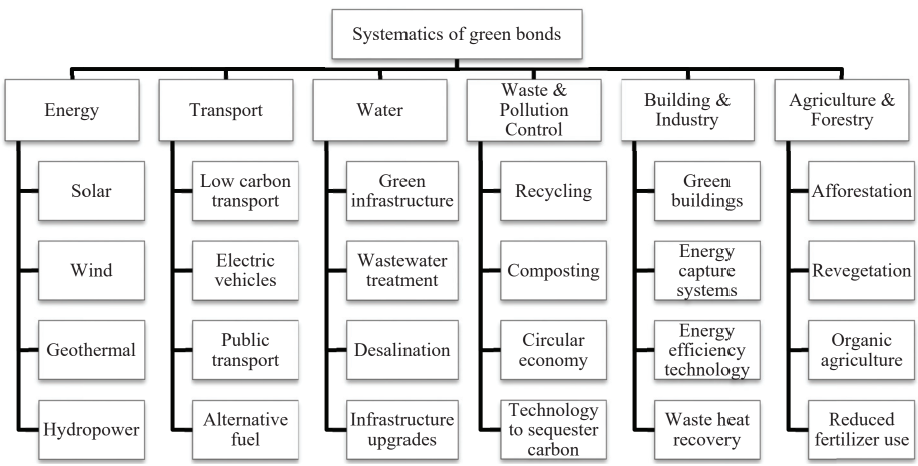
The article is aimed at identifying the conditions for the development of a global environmental bonds market, specifically factors stimulating and inhibiting the process. It appears appropriate to attempt systematising the barriers and determinants for the evolution of this segment, as the ecological debt market has not yet been fully utilised. The article has a review character and the following research methods were used in order to achieve the desired objective: analysis of subject literature and data analysis from the green bonds market, a case study, a descriptive and an inductive method. The paper opens with the characteristics of green bonds, followed by an analysis of the key stimulants and destimulants to the development of environmental bonds.

1. Characteristics of green bonds

Bonds are securities in which the issuers declare to be the bondholders' debtors and bind themselves to effect a certain provision towards their obligation. Green bonds are one of the debentures. It is a term used in relation to fixed income securities, financing pro-environmental investments with funds raised from the issuance. They are mostly projects contributing to the development of a low-emission economy and resistant to climate changes (Kaminker, Stewart, 2012). It should be highlighted that in the literature, green bonds are often referred to as environmental or climate bonds. A certain incoherence in the naming should be noted, however, as climate bonds are one of the green bonds, not their equivalents. Climate bonds concentrate only on investments connected with buffering or adjusting to climate change. It should not be overlooked that the notion of climate change is very broad. Therefore, while analysing the subjects related to green bonds and climate bonds investments, a strong cohesion can be observed. In this connection these terms are very often used interchangeably in literature, which is not perceived as a mistake (Morel, 2012).

Next to be presented are the types of investments financing green bonds. The Climate Bonds Initiative (CBI), an international non-profit organisation analysing and promoting this segment of debt instruments, presents very broad sector-specific guidelines for future issuers of environmental bonds. The categories qualifying an undertaking for the issuance of green bonds are presented in the diagram below.

Diagram 1.
Selected taxonomy of green bonds



Source: the author's elaboration based on: Climate Bonds Initiative (2018a). Retrieved May 5, 2018, from: http://www.climatebonds.net/standards/taxonomy.

It is worth underlining that green bonds are no different from their classic equivalents. The intention of green bonds is, above all, a fixed income, just like in standard debt instruments. However, there is one restriction – the aim of issuance has to be closely related to typically pro-environmental investments. Green investments are burdened with significant financial risk connected with the uncertainty of the expected results and difficulties in raising the capital. In this regard, green bonds are often offered in a secured (repayment is guaranteed by the issuer) or guaranteed form (redemption is guaranteed by another entity, not the issuer, usually via securitisation). Other ways to minimise the risk embedded in the construction of a green bond is by issuing a hybrid bond (an instrument combining the features of equity and a loan, offering the issuers high flexibility of financing conditions) and a revenue bond (the repayment is from the whole or a part of the profit from the investment financed through the issue) (Marszałek, Daszyńska-Żygadło, 2016).

There is a variety of environmental bonds and seven types of green bonds can be distinguished – by the issuer type and the structure (Table 1).

Table 1.
Types of green bonds

Green bond type	Description
corporate bond	a debt instrument issued by a corporate entity
project bond	a debt repayment of which is based on the cash flow of single or multiple investment projects
asset-backed security (ABS) bond	a bond secured by one or a larger number of particular projects – usually providing recourse only to the assets
municipal bond	a bond issued by municipal authorities of a region or a city
sovereign bond	a debt security issued by the government of a country
supranational, sub-sovereign and agency (SSA) bond	bonds issued by international financial institutions, such as the European Investment Bank or the World Bank
financial sector bond	a corporate bond issued by a financial institution specifically in order to raise capital for providing loans aimed at "green" activities

Source: the author's elaboration based on: Caldecott (2010), 2; OECD. Bloomberg Philanthropies (2015), 12; own observations.

It should also be noted that a number of bondholder types can be differentiated. Bonds can be purchased by individuals and companies as well as institutional investors (such as insurance companies, pension funds, hedge funds, state funds and asset managers). While analysing the green bonds market it must be stated that the main green bond investors are institutional investors, for example the AXA insurance company, the Japanese group Nikko, and the investment management companies Blackrock, Calvert and State Street (Brzozowska, 2017).

2. Factors stimulating the development of the global green bonds market

For the purpose of accurate analysis of conditions for the development of the environmental bonds segment, a division by the following factors was introduced: an allies policy on green bonds among international financial institutions, green financial market development, raising investors' awareness of environmentally responsible investment and the image benefits for green bonds issuers.

2.1. Pro-environmental policy of international financial institutions

The green bonds segment can be discussed owing to the issuances of international development banks, such as the European Investment Bank (EIB) and the World Bank. It should be highlighted, however, that the seeds of green bonds were sown before the year 2000. The first bond issuers were the specialist public banks Deutsche Ausgleichsbank, Kreditanstal fuer Wiederaufbau and Oesterreichische Kommunalkredit AG. Modern environmental bonds mainly achieve the objectives of the climate-changes-resistant economy, previously inexistent in the green bonds policy (Dziawgo, 1997).

The first widely recognised environmental bonds appeared in 2007. This was exactly when the European Union began the fulfilment of the strategy related to climate change. The aim of the EIB was to mobilise the representatives of the capital markets to finance green investments. Green bonds became the solution to the problem. In July 2007 the European Investment Bank issued Climate Awareness Bonds – the world's first environmental bonds. The example of the EIB was followed by the World Bank, which issued the green debt for the first time in 2008. That same year the World Bank also published a report *Development and Climate Change: A Strategic Framework for the World Bank Group*, with the aim of stimulating the activity of public and private sectors within the struggle with climate change and promoting the use of renewable energy. Green bonds became an essential tool for the World Bank in the fulfilment of its objectives. It should also be noted that the activity of the EIB and the World Bank as green issuers increases every year. Their contribution into the segment as issuers (EIB – 19 billion EUR, the World Bank – 10.1 billion USD), underwriters and decision-makers, provided access to pro-environmental debt instruments for investors from all over the world. Moreover, when creating the standard or specific bonds structures (for example the green sukuk), various issuers benefit from the banks' aid (Trompeter, 2017). What should also be mentioned is that the World Bank and the EIB are planning to remain international green bonds allies.

What is more, new institutions are being founded with the aim to support environmental protection and sustainable development. For example the Green

Investment Bank (GIB)[1] formed by the British government was established to provide innovative financial solutions, encouraging the private sector to invest in a green economy, especially renewable energy and energy efficiency (OECD, 2017).

2.2. Expansion of the products offered on the green financial market

One of the reasons for the development of the green debt market is the constant expansion of the product range for green bonds and other products connected with the ecological capital market. As a consequence, more and more interesting environmental bonds can be observed on the debt instruments market.

As already indicated, seven types of environmental bonds can be distinguished, depending upon the structure and the issuer. The classification will most likely grow because work on the construction of green bonds continues. Until recently, sovereign environmental bonds were inexistent. It should be highlighted here that the world's first sovereign green bonds issuance was conducted on December, 2016 by Poland, becoming the progenitor in this field. Poland's Ministry of Finance was the first to realise the potential of green debt instruments, anticipating the rest of the world, for example France, which issued sovereign environmental bonds in January, 2017 (Gouvernement de la République française, 2017). Subsequent countries issuing sovereign green bonds included Fiji, Nigeria, Belgium and Indonesia (International Capital Market Association 2018). Green bonds can leave a lasting mark on countries' strategies, as proved by the Republic of Poland. In the beginning of 2018 Poland made another issue of the 'green debt' (Poland's Ministry of Finance, 2018).

The green sukuk is worth a mention when making reference to the unconventional construction of green bonds. A traditional sukuk is an Islamic investment certificate (based on the rules of Shari'ah) resembling bonds. A green sukuk combines the positive features of green bonds and the attractive qualities of Islamic finances. The first green sukuk was issued in August, 2012 by French companies Legendre Patrimoine and Anouar Hassoune Conseil under the name of "Orasis[2] Green Sukuk" (Alam, Duygun, Turk-Ariss, 2016). Moreover, issuers of both traditional and unconventional bonds can obtain help from international development banks. The green sukuk issued on July 27th, 2017 by Tadau Energy Sdn Bhd with the help from the World Bank raised funds of up to 250 million MYR (59 million USD). The capital obtained financed the solar power plant in Sabah, Malesia (World Bank Treasury, 2017).

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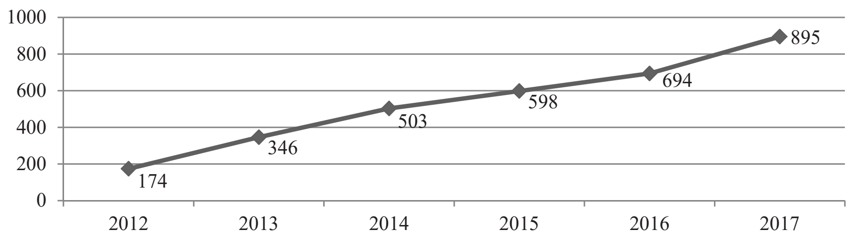
[1] As from August 18th, 2017 the UK Green Investment Bank became part of the Macquarie Group Limited.

[2] "Orasis" is a Greek word meaning a vision and "Orasis Green Sukuk" can literally be translated as visionary green sukuk.

It should also be noted that expanding the green bonds market product range influences the capital market's development. Namely, in March, 2014 the world's first pro-environmental bonds index – the Solactive Green Bond Index Series – was created, followed promptly by the S&P Green Bond Index, Barclays MSCI Green Bond Index, the China Bond China Green Bond Index and the Bank of America Merrill Lynch Green Bond Index. The above mentioned stock indices not only function as benchmarks for green bond investments, but also form the basis for the construction of other financial products such as exchange-traded funds – ETF (for example the Lyxor Green Bond UCITS ETF and the VanEck Vectors Green Bond ETF) or exchange-traded products – ETP. Such a market infrastructure promotes investing in the market of debt securities (International Capital Market Association, 2017b).

Significantly, the expansion of the product range in the green bonds market influences the dynamics of their development. Figure 1 presents the evolution of the green bonds segment in terms of the green debt value during 2012–2017.

Figure 1.
The value of the green bonds market in years 2012–2017 (bn USD)



Source: the author's elaboration based on: Climate Bonds Initiative (2018b). Retrieved May 7, 2018, from: http://www.climatebonds.net/market.

A few remarks are worth making when analysing the figure. Most importantly it can be observed that the total value of green bonds located in the financial market is continuously growing every year. The greatest absolute change – an increase by 201 billion USD – took place in 2017. The CBI estimated the global worth of green bonds at 895 billion USA by the end of year 2017. What is more, the segment of environmental bonds has also recorded growth in a number of issues. In 2012 the number slightly exceeded 1,000, while in 2017 it was as high as 3,494 (Climate Bonds Initiative, 2017a).

2.3. Investors' growing interest in the topic of ESG

Investors' interest in the class of green instruments of the capital market, including green bonds, is growing. Pro-environmental securities fulfil the objectives of socially responsible investment, understood as an investment process incorporating the financial aims of market participants with their concern about the environment, society and corporate governance (ESG factors – Environmental, Social, Governance) (Laskowska, 2017). In the case of exclusively environmental decisions being made, the first criterion is met – Environmental. Activities included in the concept of this factor either encourage the investor's to the idea of locating assets or discourage Them from the process. Examples of the environmental aspects and their assessment are presented in Table 2.

Table 2.
Environmental factors of ESG

Positive assessment	Negative assessment
renewable energy	coal-power engineering
environmental certificates	water and energy use
natural environment management	ecosystem pollution
waste treatment	greenhouse gasses emission
ground reclamation	overusing chemical crop protection products

Source: the author's elaboration based on: Żurawska, Modlibowska (2011), 22–26.

An important stimulus connected with the increasing ecological awareness of investors is education – through the promotion of socially responsible attitudes, respecting ESG factors. Owing to the omnipresent education, a certain part of today's investors is becoming more aware of the threats caused by the unbridled economic expansion. The market participants realise that the overexploitation of limited natural resources decreases the chance of fulfilling the needs of future generations. In this respect, negative environmental practices will be rejected (for example coal-power engineering, chemical crop protection products) and replaced with the positive aspects, such as using renewable energy sources and holding environmental certificates (Table 2). Green bonds are to help in this process, as they indicate issuers who abide by the pro-environmental ESG factors. A large number of investors treats environmental protection and shaping the correct pro-ecological behaviour as an ecological duty (Laskowska, 2018).

To prove the increased interest of investors in sustainable projects it should be noted that very often the demand towards green bonds greatly exceeds the volume supplied. Multiple green bond oversubscriptions show that investors prefer green investment opportunities as long as they meet their financial requirements (Table 3).

Table 3.
Case studies of selected oversubscribed green bonds

Issuer name	EDF	Unibail Rodamco	Xingjiang Goldwind	Poland's Ministry of Finance
Issue date	November, 2013	April, 2015	July, 2015	December, 2016
Tenure (in years)	7.5	10	3	5
Currency	EUR	EUR	USD	EUR
Issue value (m)	1,400	500	300	750
Volume subscribed	2,800	3,000	1,400	1,500
Oversubscribed	2x	6x	4.67x	2x
Type of green bond	corporate bond	corporate bond	corporate bond	sovereign bond
Use of proceeds	solar and wind energy	green buildings	wind energy	low carbon transport and energy, afforestation

Source: the author's elaboration based on: Schneeweiß (2015), 14–15; Poland's Ministry of Finance (2017), 6.

2.4. Reputational advantages for green bonds issuers

It cannot be excluded that a significant reason why certain entities are engaged in ecology is improving their image. This trend consisting in using the marketing advantages of the environmental label of securities to reinforce the reputation of an institution is worth being followed. Reputation is a non-material asset of the entity, connected with obtaining clients and their loyalty, hiring reliable employees and reviving the productivity. Consequently, the perception greatly influences the company's profitability and finally – its worth. Moreover, convergence in the bondholders' beliefs and the issuer's aims results in building long-term relations, as well as becoming a trustworthy market participant in the eyes of the clients, media and the community (L. Dziawgo, D. Dziawgo, 2010).

Furthermore, the increase in the issuers' interest in ESG factors is related with the global trend related to environmentally responsible activities. Protection of the natural environment is fashionable, thus there are numerous advantages resulting from the functioning of the green financial market. More and more issuers see the importance of a product's ecological features. Besides, ESG factors described previously are also used in the financial analysis of a company. When utilised successfully, they can have an impact on the assessment of the assets and investment risk management (Czerwonka, 2013).

The issue of environmentally responsible securities enhances the perception of an institution and presents it as a socially engaged entity. However, not everyone is convinced by the pro-environmental image of financial market. There is a certain concern among investors that at least some issuers are only interested in green bonds because ecology is nowadays a very popular topic. The question of the reasons for pro-environmental instruments on the debt market being created will remain controversial for the public (Szpringer, 2009).

3. Factors hindering the development of the global green bonds market

This chapter's objective is to identify the barriers for the development of green bonds. Among the key factors hampering the issue of environmental bonds are: the superficiality of the green bonds policy (greenwashing) and the relatively high costs of confirming the trustworthiness of the "green bond" status. Another impediment is a country's idleness in the field of environmental policy.

3.1. Greenwashing – the superficiality of green bonds policy

Issuing green bonds is a measure countries, regions, companies or banks take to obtain large loans on the international capital markets. It is accepted in principle that funds from the issue of the green debt must be used to finance pro-environmental undertakings. As a matter of fact every entity has the right to raise funds through green bonds, provided it is able to convince potential bondholders it is justified. The building of a bypass or highway may be explained as "green" if the purpose is reducing road congestion. Taking into account the common greenwashing, bondholders can be doubtful about the actual use of the invested funds and their impact on the improvement of the natural environment. Greenwashing is the practice of presenting a product or service as more environment-friendly than it actually is. The frequent misleading of the interested parties takes place as a result of untrue information as to the environmental performance of a certain product being spread. Four types of greenwashing can be distinguished relating to products, processes, symbols and structures. Green bonds refer to product greenwashing (a single environmental bond) and structural greenwashing (large structures becoming environmentally friendly, namely the entire green bonds market) (Lippert, 2011).

The issue of the superficiality of green bonds policy as hindering the green debt market's development has at the same time become a stimulus to work on the authenticity of the instrument. The need for the verification of the genuineness of the green bonds market was spotted by the International Capital Market Association (ICMA), which in 2014 formed Green Bond Principles (GBP). GBP are voluntary guidelines relating to transparency, openness and reporting, contributing to the promotion of green bond segment cohesion. The principle consists of four components: use of proceeds, assessment and selection of projects, income management and reporting. The objective of GBP is easier access to information for bondholders, whereas the issuers are provided with information on how to create a reliable and trustworthy green bond. Obeying Green Bond Principles by issuers greatly enhances their credibility with the public and assures protection against scandals (International Capital Market Association, 2017a).

Based on the *Post Issuance Reporting in the Green Bond Market* report, it has to be stated that issuers treat the standards expressed in GBP very seriously, despite that they are not mandatory. The research was conducted on 146 issuers and 191 bonds issued up to April 1st, 2016, with a total value of 66 billion USD. Nearly 80% issuers disclosed to the public reports on the use of proceeds from issues. Moreover, GBP recommend to audit the reports concerning the green bonds issued. Studies show that 39% of green bonds are presently audited. The outcomes presented prove the "greenness" of the idea of green bonds undergoes permanent verification by both the regulating bodies and issuers (Climate Bonds Initiative, 2017b).

It has to be noted, however, that GBP are insufficient in the eradication of greenwashing from the green bonds market. The Green Bonds Principles only recognise several broad categories qualifying to the issue of green bonds, broad enough for even controversial projects to be qualified as pro-environmental. Another contentious point is that ascertaining the issuer's credibility is irrelevant for GBP, only the particular environmental bond itself. It should be important for the participants of the financial market whether an issuer complies with sustainable development strategies. Namely, for example, works on terminating investments in problematic areas and develops activities in favourable sectors. The issuance of green bonds should constitute a part of the strategy, not just an attempt to improve the issuer's image (Schneeweiß, 2015). One should also remember that an issuer does not have to strive to certify their green bonds.

3.2. High costs and difficulties of certifying green bonds

From the perspective of a majority of environmentally responsible issuers, the factor hindering the development of the green debt market comes with the difficulties and relatively high costs of fulfilling the requirements regarding the credibility of green bonds. The verification of the "green bond" status, as well as monitoring the use of the proceeds obtained by issuers from the pro-environmental issue is conducted by third-parties (i.e. audit institutions or specialized research agencies). Examples of such verifying bodies are: CICERO, Sustainanalytics, Oekom and Vigeo Eiris. These entities are characterised by independence of judgement regarding the green bonds framework. First of all, they assess how green the green bonds actually are (rated from "dark green" to "brown"). On that basis they indicate the issues which should be awarded a special certificate in the form of a "green bond" label (International Capital Market Association, 2018).

It is important to note that many potential issuers are still unfamiliar with the verification process. On some capital markets the cost of evaluation by a specialized external verifying body varies from 10 thousand up to 100 thousand USD. Such high amounts may constitute a barrier for small issuers. Moreover, they bemoan the high costs of management and meeting the requirements regarding information disclosure (Organisation for Economic Co-operation and Development, International Capital Market Association, Climate Bonds Initiative, Green Finance Committee, 2016).

3.3. A country's idleness in the field of environmental policy

Another barrier to the green bonds market development is a country's idleness in the field of pro-environmental policy. For example, Poland has long had a problem complying with the norms of the European Commission, regarding recycling and the reduction of CO_2 emissions, whereas the United States of America have withdrawn from the Paris climate accord, obliging the USA to reduce the emission greenhouse gases (Forbes, 2017).

As the natural resources are limited, the air, water and land polluted, the introduction of a pro-environmental policy appears to be a country's obligation. In practice the situation is varied. The impulse encouraging countries to implement a pro-ecological strategy is usually the pressure from their surroundings and legal regulations, not from a moral duty towards the natural environment. The European Commission favours projects taking into account the principles of sustainable development and ecology. The approach was expressed in a number of publications, for example *the Opinion of European Economic and Social Committee on Socially Responsible Financial Products*, and *Europe 2020*. Likewise, the Group of Twenty (G20) supports the development of a climate change resilient economy.

The first step governments should take to expand the green bonds market is public education. Federal and state governments may play a key role in raising investors' ecological awareness, including the topic of environmental bonds. It should be born in mind that the capital market significantly lacks knowledge regarding the green debt. A country may undertake various actions aimed at the promotion of the green bonds' potential, starting from encouraging public agencies to take an interest in the field to organising conferences and preparing various forms of spreading information related to the green debt. State governments can support environmental bonds by establishing programs to combine green projects from various agencies into single offerings large enough to be liquid and index eligible, thereby attracting institutional buyers. Additionally, in order to limit the freedom of issue, governments may formulate national standards and definitions for green bonds (Chiang, 2017).

Importantly, despite the unfavourable atmosphere caused by some countries' idleness, more and more positive examples of policies contributing to the development of green bonds can be observed. Namely, founding the previously described Green Investment Bank and the world's first sovereign green bonds issue conducted by Poland – a country which, among other countries, is definitely not a leader in ecology. Furthermore, India and Brazil published guidelines to regulate the issue of local green bonds (Federal Ministry of Economic Cooperation and Development, 2017). On that basis it can be concluded that sustainable developments is slowly becoming a priority and, consequently, green bonds have very promising development prospects.

Conclusions

The growing importance of ecology is reflected on the international financial market in the form of green bonds. Despite the green debt being one of the most recent segments of the capital market, its very dynamic expansion can be observed year by year.

Several stimuli to the development of this market can be identified when analysing the participants, history, realities and predictions relating to the functioning of the green debt instruments. Among the determinants one can distinguish the active pro-environmental attitude of global international financial institutions (mainly the large scale engagement of international development banks acting as issuers), the expansion of green market product range (continuously broadening the offer of environmental bonds by introducing new types and creating financial instruments based on the construction of environmental bonds), the growing interest of investors in green ESG issues and the image benefits for issuers. The development of the green bonds market can also be stimulated by social and business pressure, legislation and the work still required on the green bonds credibility.

Certain deficiencies in the market can still be observed as the global segment of the green debt develops. Among the factors hindering the expansion of green bonds there are for example the superficiality of environmental bonds policy (greenwashing), the relatively high costs of confirming the "green bond" status (certification), the insufficient knowledge on pro-environmental investments (mainly the lack of public education on ecology and finance) and regulatory uncertainty. However, the lack of fixed and transparent norms defining green bonds appears to be the greatest barrier to the evolution of green debt instruments.

To sum up, intensifying the stimuli and minimising the barriers to the development of the green debt will certainly lead to an increase in the number of green bonds and issuers, as well as in the value of issue placed on this market. The green bonds market is recognized as promising and its further expansion is anticipated.

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Conditions for the development of the green bond market development

Summary

The advancing degradation of the ecosystem and the occurring climate changes demand decisive action to be taken by citizens, aimed at levelling the results of the lack of balance between the natural environment and business operations. The growing importance of ecology is reflected on the international financial market in the form of green bonds. This article is devoted to green bonds which are a specific group of securities, namely ecological debt instruments. Despite the green debt being one of the most recent segments of the capital market, its very dynamic expansion can be observed year by year. The article is aimed at identifying the conditions for the development of the global environmental bonds market, specifically the factors stimulating and inhibiting the process. The article is a review in character and the following research methods were used in order to achieve the desired objective: analysis of subject literature and data analysis from the green bonds market, a case study, a descriptive and an inductive method.

Key words: green bonds, environmental bonds, green debt securities, green financial market