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Green financing for environmental protection and sustainable economic growth – a comparison of Indonesia and Serbia

Abstract: The term “green financing” denotes a new area of finance that has application in the process of integration of environmental protection and economic profit. This term encompasses wide ranges of environmentally friendly technologies, projects and industries, as well as verification of the viability of concepts for balancing ecological depreciation in the process of assimilation of carbon in the atmosphere. Essentially, green financing is part of the green carbon issue because it connects the financial industry, environmental improvement and economic growth, which is essential for long-term sustainable development. As this is an innovative concept, the paper pays special attention to the development of market mechanisms and policy formulation for green financing. By revealing the internal contradictions between green financing and environmental protection in achieving ecological balance and sustainable economic growth, the paper proposes some options for the mobilization of private capital for green investments that can be applied in Serbia. The paper also compares two countries, Indonesia and Serbia, with regard to the green financing sector. The authors highlight differences between the economies of Indonesia, as a representative of ASEAN, and Serbia, demonstrating that Indonesia is far ahead of Serbia in terms of the concepts of green financing and sustainable development.

Keywords: green financing, market mechanism, development policy, sustainable economic growth, Serbia, Indonesia

Introduction

In today's environment, there is mounting scientific evidence of global warming that have a significant impact on the economy, society and markets, on the global level. Some natural disasters are just sad remind of the drastic effects of human activity on climate and impact of climate change on the economy. Only in 2010, Moscow was hit by a heat wave that has caused the cost of 1% of Russian GDP. Meanwhile, during the same month, one-fifth of Pakistan was overwhelmed with the amount of damage up to 5% of its GDP. A year later, a huge industrial zone in Thailand (with the production activities of some of the largest industrial facilities of the Japan Group) is flooded with total damage to 10% of its GDP. In the US, the National Authority for oceanic and atmospheric water (Noaa) said that in comparison to 1980., the number of extreme weather events has doubled (up to now 11 events per year), while the average paid of claims exceeded one billion dollars, over the last five years.

Considering the fact that these are not the only disasters in the world, there is bigger awareness that the current climate change, threatens the basic elements of human life, such as access to water, food production, health and land use and the environment. The fact is that there is growing evidence that climate change and environmental risks have important implications for the financial stability of countries in the world [European Banking Federation, 2017].

Green financing is a concept that combines the power of finance and operations with power of the environmental behavior. This is big area which includes individual and business consumers, producers, investors and financial lenders. Depending of the number of participants, green financing can be expressed in different ways. On the one hand it may be due to financial incentives or it may be the desire to save the planet. On the other hand, it may be a combination these two. Unlike traditional financial activities, green financing more have emphasis and the benefits industry protection, paying more attention to environmental protection.

Therefore, green financial system refers to a set of policies, institutional arrangements and financial infrastructure through lending, private equity, bonds, insurance and other financial services and instruments, such as emissions trading, directs funding towards environmentally friendly projects and activities [Wang a and Zhia, 2016].

Studying the relevant literature it can be seen that there is lack of detailed studies on green financing. Based on that fact, the aim of this paper is to highlight the importance of implementation of green financing in the area of environmental risks. Because that this area is unexplored enough in Serbian country, the paper first defines the term and indicates of the most important component of green financing. In desires to give some answers for urgent climate and environmental challenges, authors of the paper pays special at-

tention to the green finance market and financial products that could control the emission of pollution.

Considering the fact that climate change is a real picture of the whole planet, it is necessary for mankind to create appropriate development policy of green financing. In order to prevent further climate change and to achieve sustainable economic development, the paper gives some options that may be the way for development of a financial system in Serbia.

Literature Review

While the term “green finance” is increasingly used globally, it does not have a universally agreed definition. The G20 Green Finance Study Group in 2016 described green finance as the “financing of investments that provide environmental benefits in the broader context of environmentally sustainable development”. It includes definitions at the level of financial instruments (green indices or green bonds), subsectors of the financial market (green insurance or green banking), definitions used by international organizations (OECD), as well as national and international definitions (G20) (Figure 1) [Lindenberg, April 2014].

Figure 1. Green finance comprises



Source: Lindenberg, April 2014.

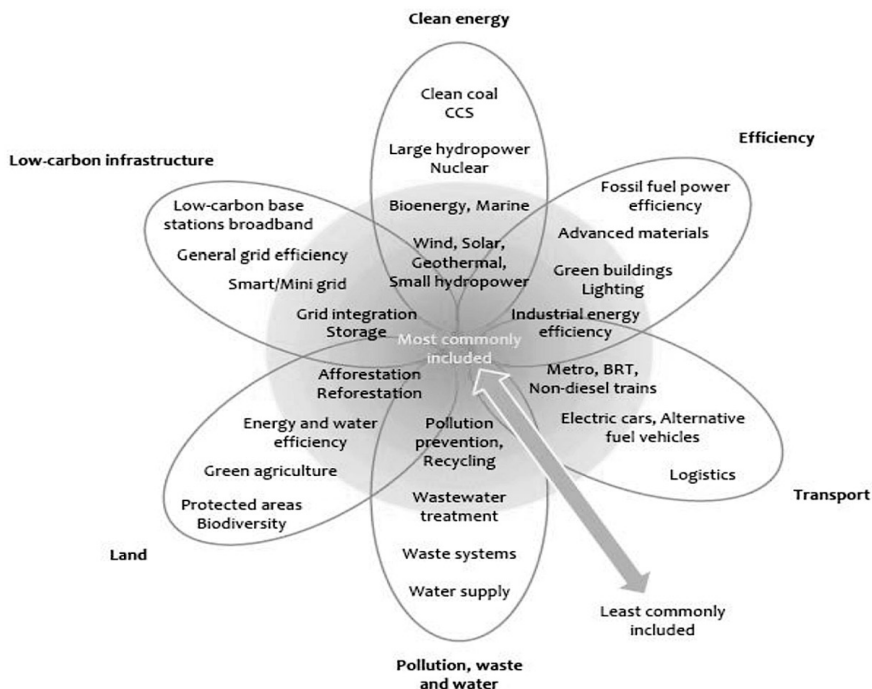
Since today, there is no a precise and commonly accepted definition of green finance for two reasons. At one side, many publications do not try to define the term, and on the other, the definitions that are proposed are vary

significantly. Among the few definitions that can be found in the literature there are some that authors of the paper propose (following):

Höhne, Khosla, Fekete, Gilbert (2012): “Green finance is a broad term that can refer to financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy. Green finance includes climate finance but is not limited to it. It also refers to a wider range of “other environmental objectives, for example industrial pollution control, water sanitation, or biodiversity protection” [Höhne at al., 2012].

Zadek and Flynn (2013): “Green finance is often used interchangeably with green investment. However, in practice, green finance is a wider lens including more than investments as defined by Bloomberg New Energy Finance and others. Most important is that it includes operational costs of green investments not included under the definition of green investment. Most obviously, it would include costs such as project preparation and land acquisition costs, both of which are not just significant but can pose distinct financing challenges” [Zadek and Flynn, 2013]. Although the absence of a universal definition creates methodological challenges, the mapping of existing definitions has highlighted a broad convergence of definitions, as it is illustrated in Figure 2.

Figure 2. Components of Green Finance definitions



Source: United Nations Environment Program (UN Environment), 2017.

Green Financial System – Market Green Financial Mechanisms

Recent years, on the global level there is wide public recognition that the global financial system should actively contribute to system of sustainable development. In accordance with volume and urgency of the needs of financing sustainable development, in recent years, the concept of green finance has become more pronounced all over the world. In order to solve the urgent environmental problems, such as climate changing, private sector has the key role in solving of problems, while at the same time the green financial sector helps in transferring of financial flows in green investments. Considering that fact, the market of green finance includes market-based mechanisms, but also the financial products that can control the emission of pollution. One of the most important mechanisms is emissions trading.

Emissions trading are a market-based approach for controlling the pollution, such as the amount of greenhouse gases emitted to the atmosphere. Market-based schemes can be generally organized in two ways: first – cap & trade system and second, baseline & trade system. The difference between those two lays in setting emission restrictions and in the way of distributing emission permits. In cap and trade system, competent authorities set the estimate emission restriction for all emitters within the trading system. Based on this estimate restriction, the set is restrictive for each company, in particular. In baseline & trade system, equal restrictions are set for all companies. Although cap & trade emission trading system is thought to be more efficient compared with baseline & trade system, there are still some flows and limitations. To be more precise, problems are in unsettled and unpredictable prices of permits (possible solution could be “transaction-in-advance” (forward)), high administrative and legal costs, distribution of emission permits and finally, possibility of corruption. The major disadvantage of cap & trade system is in the fact that the company’s real emission estimation of taxes in gas emission (Tax system) would improve ecology results. Basic difference between cap & trade emission trading system and tax system is that when setting the emission limits (cap), the quantity is also setting, while permits prices and penalties are variable [Djordjevic at al., 2015].

However, the successful establishment of emissions trading system depends on certain conditions. First, it needs to be a sufficient number of participants on the market both for buying and selling. Without a sufficient number of participants, the price of permits will not show the true state of supply and demand. The second condition is low transaction costs of permits trading. Otherwise, neither sellers nor buyers can find interest in trading. Third, for the trade system to work properly there must be a strong regulatory system for issuing emissions permits and, in general, from the system of emissions monitoring, verification of emission reductions and tracking emissions register (Emissions Trading) [Stojanovic at al., 2015]. A lot of studies are concerned

with green finance market's effect and their influence on environment. First of all, green finance market is credit of intermediary of environmental protection's capital movement. In accordance with that, green finance market can improve productivity. Through financial institutions handling monetary funds, currency funds movement promotes commodities trading, according to the market demands. Finally, green finance market is one of the most important levers in regarding to macroeconomic regulation and control. Namely, capital supply can adjust social total demand, so that through the financial leverage effect, green finance market can adjust the size, speed and structure of economic development [Wang and Zhia, 2016]. Examples of various types of green finance instruments and services provided by the financial sector, including financial mechanisms, financial products and structural support and services, are shown in Table 1.

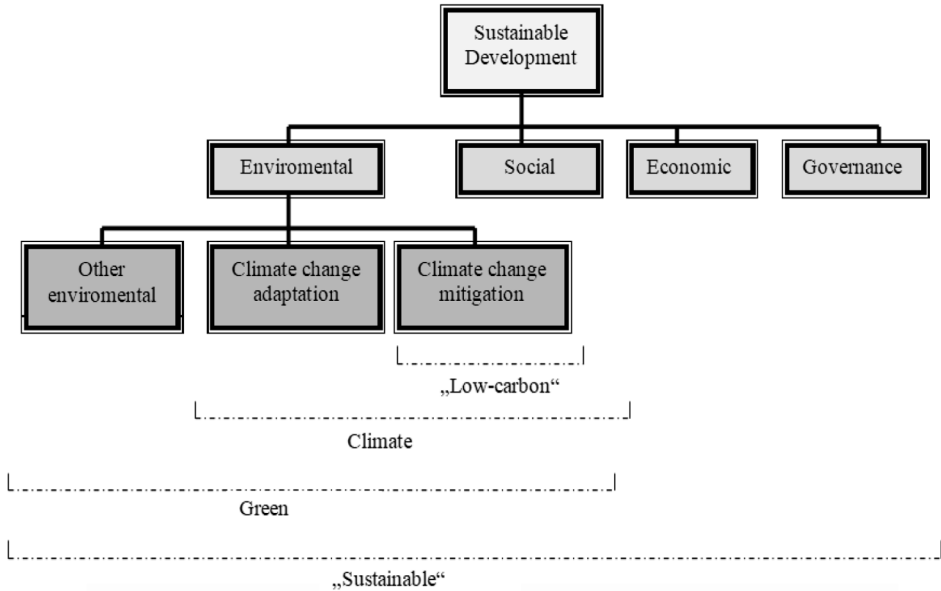
Table 1. Examples of green finance and instruments

Financial solutions	Instruments
Risk mitigation and credit enhancement	Subordination, Guarantees, Loss Reserves
Enabling transactions (scale)	Warehousing, Securitization, Leasing
Aggregation, collaboration agent	ESCOs, local banks
Financial products	Instrument
Traditional banking products	Loan, equity
Green finance	Green Bonds, Green funds
Co-investment	Public & institutional investors, private funds
Structural market support	Instrument
Market making	Intermediation of environmental products (carbon credits, emission allowances, RECs)
Transparency	Uphold disclosure rules for asset classes and green banking, investor disclosure requirements, act as a repository on disclosure rules
Regulation	Support national regulatory mechanisms for green finance, act as a conduit to international green capital markets
Standards	Uphold standards for Green Bonds, Social and Environmental risk management, GHG reduct

Source: Ministry of Economic Affairs and Employment of Finland, 2017.

Based on the fact that green investments, as the basic form of the green funding, are mapping in relation to the goals of sustainable development, there are certain contraindications between the environment protection and green financing, shown in Figure 3.

Figure 3. Green and Sustainable finance



Source: United Nations Environment Program, 2016.

In accordance to overcome the conflict between the green finance and environmental protection, first of all it is necessary developing policy implementation for finding corresponding temporal structure projects. In order to change the time structure of the project, the relevant entities can be able to issue financial products, such as products of secularization funds. Finally, policies of sustainable development should improve the market activity through development of green finance and Eco-finances, creating gas emissions trading market and other markets, which are related to environmental protection. It should have the direct impact in increasing the liquidity of green investments and other related investments.

However, environmental protection is a long-term process. Whether it is direct investment in environmentally “friendly projects” or investment in “green industries”, that require a relatively long investment cycle. In practice, some infrastructure construction projects often do not have money in the early stages of investment, and the recycling requirement are limiting the ability to “absorb” the funds for relevant projects.

Green Finance Policies

Green financing is a positive step in the transition of the global economy towards sustainability. As a form of financing, it is implemented through the public financing, private green investments and public policies that support

green initiatives. To encourage investment that provide environmental benefits, the basic tasks of green financing is in the internalization of environmental externalities and in reducing the perception of risk. Main factors that have impact to development of green financing, are the banks, institutional investors and international financial institutions, as well as central banks and financial regulation. To support the “greening” of the financial system, the actors implement various development policies, but also various regulatory measures.

The most important regulatory measures include: requirements for lending priorities, financing below market rates through subsidies, interest rates or the possibility of refinancing. Besides the fact that the assessment of actual needs funding for green investments are vary considerably between different sources, it requires a large amount of private capital. To increase the flow of private capital for green investments, first of all, it is necessary to create a conducive environment that facilitates green financing.

That includes: business environment, laws rules and investment regime. Also, it is necessary that the application of certain rules and standards will be in the promotion of development funds for the financing of green financing. This implies that the voluntary principles and guidelines for green financing should be implemented and regularly monitored.

However, when the voluntary guidelines are not enough, they must be supplemented by financial and regulatory incentives. Finally, for positive effects of everything mentioned, it is essential that actors of financial, environmental and regulatory policies establish better mutual coordination [Berensmann and Lindenberg, 2016].

Based on the fact that development of environment industry, requires large capital and long term return on investment, it is essential that each country has own unique way of financing. However, mobilizing capital for green investments is limited by various microeconomic challenges. The most important challenges are problems in the internalization of environmental externalities, information asymmetry, inadequate analytical capacity and lack of clarity in the definition of “green“. All mentioned, leads to the so-called “bottleneck“ in the development of green financing. Nowadays, there is a mismatch between the maturity of long-term green investments and the relatively short time horizons, savers and investors, which is even more important.

Financial and environmental policies on the global level are often not in coordination. More interesting is the fact that many governments give incomplete information about promoting of the green transition. According to this, the relevant policy of green financing in conjunction with reforms and innovative financial resources can ease overcome “bottleneck“. Policies of green financing include two aspects [Shuo, 2013]:

- reform and innovation of existing financial resources, researching the types of fiscal policy and a feasible way to raise money for green financing development;

- ❑ reform of the existing management policy fiscal revenues and distribution, efficiency and direction of fiscal funds use.

Based on the above-mentioned policy aspects in green financing, there are following factors as the key options for the mobilization of private capital for green investments [G20 Green Finance Study Group, 2016]:

- ❑ providing strategic and policy frameworks;
- ❑ promotion of voluntary principles for green finance;
- ❑ expansion platform for capacity building of knowledge-based, such as a network of sustainable banking operations;
- ❑ development of the local markets of green bonds;
- ❑ international cooperation in order to facilitate cross-border investments in green bonds;
- ❑ new methodologies relating to risk analysis and environmental management in the financial sector;
- ❑ measurement of green financial activities and their impact on the economy.

Besides the fact that good practices in one country may not be suitable in another, the mentioned elements have largest part of the Green financing environment.

Empirical Analysis of green financing of ASEAN association – Indonesia and Serbia

In this section of papers, authors Ilic and Stojanovic will try to make analysis of Indonesian and Serbian green financing. The reasons for that, authors Ilic and Stojanovic find in similar economic situations of both countries in some earlier period of time. However, Indonesia's economy is incredibly developed, as well as the economic situation in the country. Nowadays Indonesia is one of the most developed economies of the world. Unfortunately, Serbia is still the country which try to make economic growth and to rich economic sustainability. Hoping that the situation in Serbia has improved, the authors offer a modest contribution compared finance and economic development of Indonesia, with the desire to adopt good practice in Serbia.

Green financing in Indonesia and ASEAN countries

The Republic of Indonesia is unique, sovereign state, mainly located in Southeast Asia, with some parts of the territory in Oceania. Indonesia is the fourth country in the world by size of its population, after the People's Republic of China, India and the United States, with consumption that has a greater share in the economy, unlike many other countries in Asia. Indonesia is char-

acterized by mixed economy in which the government, but also the private sector plays a significant role. In Southeast Asia, this country is the one of the largest economy and also a member of the G20. Over time, the structure of the Indonesian economy has changed. Historically, in the fifties and sixties years of the XX century, it was the most rural states.

In the process of industrialization and urbanization which are accelerated in the 1980s, the government's seen fall in oil prices as an opportunity for diversification of petroleum products and their exports. In the 21st century, Indonesia has been a leader in the trade surplus in 2016, with total exports and imports expressed in US \$ 140 billion and US \$ 132 billion, respectively. The main products that Indonesia exported include palm oil and coal briquettes, the jewelers, car and vehicle parts, tires and copper ore that make most other exports. Indonesian mainly imports are crude oil, telephones, computers, wheat. The country's main export markets are China, the United States, Japan, Singapore and India, while its main import partners are China, Singapore, Japan, Thailand and Malaysia. Indonesia is one of the countries of ASEAN Association (Association of Southeast Asian Nations -Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam). ASEAN is one of the world's largest economies with collective GDP of over US\$2.5 trillion. Its successful development over the coming decades will bring benefits to hundreds of millions of the region's citizens. Such development must, however, be sustainable. ASEAN economy is characterized by Small and Medium-sized Enterprise (SMEs). Indonesia, as Malaysia, Thailand, Philippines and Singapore has economy where SMEs contribute between 30% and 60% of the countries' GDP, while employing between 60% and 90% of the workforce. Despite the large number of small and medium in ASEAN, all enterprises could be grouped into three categories.

Companies divisions were based on the green investment funds and the categories are:

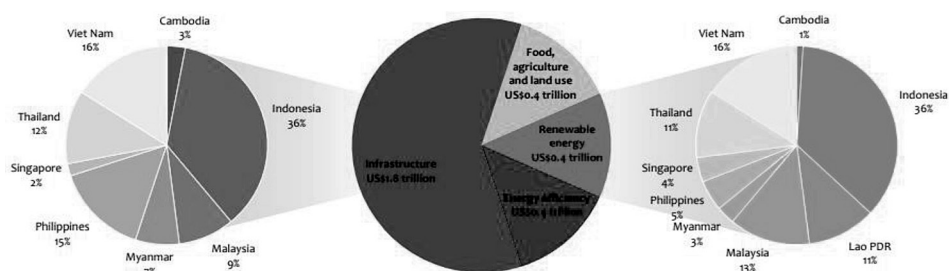
1. Conventional SMEs wishing to improve their environmental impacts through investments in energy efficiency.
2. SMEs that want to expand own sales of green products and services that can be associated with green investments in the areas of renewable energy or agriculture.
3. Small farms, which play a key role in many aspects of agriculture, for example in the production of palm oil in many ASEAN countries.

Palm oil producers are very important for Indonesia because, as already mentioned; palm oil is the main exported product of Indonesia. Figure 4 provides an overview of the general features of each sector of green economy. Further detail on each subsector investment opportunity then follows, including typical barriers and examples of relevant transactions [Bromund, 2014].

Figure 4 presents that Indonesia has 36% opportunities of green investment in infrastructure but also 36% of green investment in renewable energy.

Based on the research of Indonesian researchers Volz, Böhnke, Eidt, Knierim, Richert and Roeber, Indonesian financial sector will have to play a pivotal role in channeling the required resources to finance the green transformation. There is only limited knowledge about the potential demand for green finance from Indonesian companies. To fill these knowledge gaps, Indonesian analysts investigate the first, bottlenecks of banks and companies to provide and invest green finance and the second, research about policies and instruments that could help enhance of green investments [Volz et al., 2015].

Figure 4. ASEAN Green Investment Opportunities by Country (in US\$ billion)



Source: Green finance opportunities in ASEAN.

To get a comprehensive understanding of the bottlenecks for green financing and investment and to be able to devise adequate policies and instruments to remove them, analysts Volz and colleagues research three levels of analysis: policy level, banking level and the corporate level. Volz and colleagues analyzed the current regulatory and policy framework and conducted qualitative interviews with representatives of relevant ministries as well as numerous experts from business associations, international organizations, development agencies, academia and non-governmental organizations (NGOs). At the financial and corporate levels, Volz and colleagues conducted comprehensive surveys in the banking and corporate sectors, respectively. All surveys and interviews were carried out in Indonesia in 2013. In order to develop the respective questionnaires, [Annex VI – in English and Annex VII], Volz and colleagues identified the following working hypotheses based on theoretical considerations and the Indonesian country context:

1. Lack of economic incentive: Banks do not regard green credit lines as an attractive business opportunity.
2. Lack of capacity: Banks lack the capacity to assess environmental risk in general and the risks of green investments in particular.
3. Risk perceptions: Banks regard investment credits for renewable energy facilities or energy efficiency as particularly risky.

Authors Volz and colleagues undoubtedly contributed to the study of Indonesian banks and companies to find the reasons why they don't decide

to invest money in green projects. According to the document entitled Green finance opportunities in ASEAN, the possibilities for green financing projects in Indonesia and other countries of ASEAN association are located in the following key Sectors [United Nations Environment Program and DBS, 2017]:

1. Renewable energy.
2. Energy efficiency.
3. Infrastructure.
4. Food, agriculture and land use.

Renewable energy (RE) projects tend to experience uncertain project development and are vulnerable to changes in regulatory framework. Proximity to existing power transmission and distribution grids and resilient power purchase agreement are critical considerations in assessing RE projects viability. Characterized by high upfront capital costs and low ongoing operating costs; some public financing may be required where development of technology is nascent. Debt refinancing opportunities exist when operating revenue and cost are more predictable. Off-grid RE projects continue to show increased feasibility and bankability. Insurance companies can play dual roles – to hedge revenue risk and to provide private financing.

Project characteristics, financing considerations and barriers of Energy efficiency (EE) are: Regulatory policies and financial incentives in encouraging the adoption of minimum energy performance standards across the building, industry and transportation sectors will be critical in driving EE progress. Aggregation of small-scale projects will be the key to attract large-scale financing.

Infrastructure projects tend to be financed via public-private partnership given the complexity with uncertain project development and approval processes. The usually steady and long-term income stream with low correlation to the return on other investment could make it an attractive investment option, if currency risk is managed. National contexts and asset ownership structures differ considerably. Indonesia has established successful public-private partnership arrangements.

Many smallholders face challenges linked to land tenure, lack of collateral and exposure to a wide range of risks, including weather risk. This results in low visibility over payback profiles. Government grants, crowd funding and micro financing are possible financing means. A global emerging trend is the engagement of large food producers to lead in financing sustainable agriculture and food production practices via their stakeholders in the food supply chain ASEAN is seeing increased investment in agricultural technology. Products such as sensors to help farmers to detect abnormalities, better water management and also knowledge sharing platforms for farmers, supply chain and e-market management [G20 Green Finance Study Group, 2016].

Based on the mentioned facts, recommendations for Indonesian banks were to dare for investment in green financing sectors, which would return the money after a certain period of time. Although the initial investment in

green projects is high (for example investment in technique of using renewable energy resources), maintenance of this plants and their use in time is more feasible, because the cost of maintenance are lower. The time during which the green investment starts to return funds, can be a period for which the bank will take a minimum interest on the money invested in green projects.

As a good practice and progress in green financing, it should be noted the fact that the investments in agricultural technology reached a record of US\$25 billion globally in 2015. Early-stage funding reached US\$3 billion globally, up from US\$900 million in 2013 and US\$400 million in 2010. Indonesia is on this way, too. Indonesian Financial Services Authority (OJK) defined the term of green financing as: “comprehensive support from the financial service industry to achieve sustainable development resulted from a harmonious relationship between economic, social and environmental interests. The Financial Services Authority (OJK) announced in February 2017 that it will launch a framework and regulation for green bond issuance in Indonesia in 2017 [ASEAN Center for Energy (ACE) 2015]. OJK has also issued voluntary financing guidelines for renewable energy, energy efficiency, organic farming and palm oil.

Example of Export credit agencies providing business financing insurance in Indonesia is Hasang Hydroelectric Power Project that scheduled for completion in 2019. It will consist of three 13 MW generators. The US\$211 million project included a limited recourse loan commitment of US\$147 billion via commercial financing (including the Korea Development Bank) and overseas business financing insurance worth US\$141 million by the Korea Trade Insurance Corp (K-sure), an export credit agency.

Green financing in Serbia

The term of green financing in Serbia, first appeared about 10 years ago, but it never became mainstream. Data of the previous green investments is not easy to find, but it is estimated that in Serbia is placed green loan about 200 and 300 million Euros. This financing is mostly initiated by the credit lines from international financial institutions in Serbia [Kalkan, 2018].

In the near future an increasing number of banks in Serbia don't see a business opportunity in the form of green finance. Because of the fact that Serbia open chapters in the negotiations with the EU to be a part of it, the Chapter 27 that concern the administration of environmental protection is coming soon. Estimates are that it will take some time for Serbia to adjust laws and regulations, but also it will need the financial resources. Besides the large government investment in environmental protection, many companies and households will have to adjust their activities and habits with demanding regulations, for which they will need “green” money. It should be noted that Serbia supported this type of projects, and one example of that policy

is establishment of a budgetary fund for the promotion of energy efficiency. Budget Fund for the promotion of energy efficiency is provided by the Law on the efficient use of energy.

Budget Fund was started in 2014, and the money of funds is intended for projects of increasing energy efficiency in the public sector, as well as in citizen's projects and private sector. Budget Fund was established for an indefinite period of time, in accordance with the law regulating with the budget system of Serbia. Budgetary fund managed by the Ministry of Mining and Energy. Money for financing of Budget Fund shall be provided in two ways, the first way is from the appropriations in the budget of the Republic of Serbia for the current year; and the second way is through donations and loans. Users of Budget Fund are obliged to use the money from funds in the manner and time that are defined in the agreement of using. Budget Fund has twice published public calls for finance projects in the field of energy efficiency, first time in 2014 and the second time in 2016. In 2014, the application is submitted by 89 municipalities.

The subject of the public call in 2016 was funding projects to improve energy efficiency in local governments that implement measures in accordance with the regulation on the establishment of the program financing activities and measures of improving energy efficiency in 2016. Total available grants that were awarded in the call was about 125 million dinars (Serbian money; convert in Euros, about 1.0411.666), and the right for application had also local municipalities. In that year, 43 applications that were received by the local municipalities, are reviewed and evaluated by the Commission for the selection, control and monitoring of the implementation of approved projects from the Budget Fund in a manner to improve the energy efficiency of the Republic of Serbia [Serbian Chamber of Commerce, 2016]. As a form of green financing in Serbia, it should also be mentioned the funds from the European Union and from the region for the financing of energy efficiency and renewable energy sources. Those funds include [Center for Management of the Projects of Serbian Chamber of Commerce, 2016]:

- ❑ WEBSEFF (Western Balkans Sustainable Energy Financing Facility) – a line of credit intended for the exploitation of sustainable energy sources for the Western Balkans, provided by the European Bank for Reconstruction and Development (EBRD), which is marketed through local banks and intended for investments and private industrial companies whose projects result in an acceptable and sustainable use of energy by implementing energy efficiency and renewable energy sources, as well as measures of EE and RES in the building for commercial purposes.
- ❑ EBRD (European Bank for Reconstruction and Development) is helping Serbia in the production of energy from renewable sources by providing loans electrical industry in Serbia for reconstruction of existing and construction of new mini hydro power plants and the production of energy from other renewable sources, during some period of time.

- ❑ European Bank for Reconstruction and Development (EBRD) has launched a scheme of green innovation vouchers in Serbia to accelerate the process of innovation in small and medium-sized enterprises (SMEs), in the area of resource efficiency and also enhance their cooperation with research and development organizations (RDO). Cooperation with the RDO will enable SMEs to develop new products, services or processes, to improve existing, and thus increase their competitiveness and reduce their environmental impact.
- ❑ WBIF (Western Balkans Investment Framework) is an initiative of the European Commission and partner international financial institutions (European Investment Bank, the European Bank for Reconstruction and Development and the Development Bank of the Council of Europe and the KfW Bank) that support socio-economic development and the accession of the Western Balkan Europe by investing in energy efficiency. WBIF forms as common fund for grants and common fund for credit and the goal is the priority for the region projects to integrate and coordinate the various sources of funds, primarily with credits by grants.
- ❑ GEF (Global Environmental Facility) unites 183 countries in partnership with international institutions, civil society organizations and the private sector due to the global ecology issues with supporting national sustainable development initiatives. This independent organization that funded projects related to climate change, persistent organic pollutants and the other similar projects is important for Serbia to support the development of biomass.
- ❑ KfW (Kreditanstalt für Wiederaufbau) is one of the largest foreign banks, which in cooperation with Serbian banks providing soft loans. Republic of Serbia approves loans for the financing of agriculture, energy efficiency, renewable energy and municipal infrastructure.
- ❑ IFC (International Finance Corporation) – as a member of the World Bank Group, is the largest global institution that is focused exclusively on the private sector in developing countries. Support of these corporations contributes to companies and financial institutions of developing countries to create jobs, improve corporate governance in environmental performance, and on that ways help their community. Investing in poor countries, advising companies in their private sector, and managing various funds, the one of the main tasks of IFC is to eliminate extreme poverty by the end of 2030.
- ❑ IPA (Instrument for Pre-Accession) – provide financial and technical assistance to candidate countries and potential candidates for accession to the European Union. The funds committed from IPA funds for the period 2014-2020 is about to 11.7 bl neur. The funds are intended for political and economic reforms to facilitate business in the EU market. The Fund is committed to a market economy, building

and strengthening institutions; cross-border co-operation with their neighbors to regional development, which includes load, environment, and competition; human resource development; rural development. In the last three years Serbia has received about 525 million Euros from the IPA funds to finance specific projects which help Serbia to join the European Union.

- GGF (Green for Growth Fund) was established in 2009 as a public-private partnership of the German Development Bank (KfW) and the European Investment Bank (EIB), with the financial assistance of the European Commission, the European Bank for Reconstruction and Development (EBRD) and the German Federal Ministry for Reconstruction and development. Its field of action is to encourage energy efficiency and use of renewable energy sources. In cooperation with the company “Intesa Leasing” Belgrade Fund has provided funds about 5 million Euros for financing projects in the field of energy efficiency, with the goal of saving 20% of energy. Through financial leasing, this money companies and farmers in Serbia will be able to use to improve inefficient equipment, optimization of production processes and to replacement of agricultural machinery.

There are also credit lines of banks in Serbia that finance renewable energy and energy efficiency. The banks that provide these lines are: Intesa Bank, Erste Bank, Procredit Bank Unicredit Bank. Intesa Bank together with the European Bank for Reconstruction and Development (EBRD) has provided credit line of 10 million Euros to finance projects to improve energy efficiency and renewable energy private companies, public utilities and local governments. A special advantage of this credit line is a grant in the amount of 5-15% of the amount of loans that borrowers receive after an investment. The maximum repayment period is 5 years.

Intesa Bank has an available line of credit from the German Development Bank (KfW) on sum of 20 million Euros to improve energy efficiency, intended for both private individuals and small and medium-sized enterprises. The benefits of this credit line are reflected in the fact that loans are approved with a favorable fixed interest rate on the repayment period up to 8 years. Intesa Bank, together with the fund “The Green for Growth Fund” (GGF), has developed a line of credit to support improvements of energy efficiency (Harrisons, 2017).

Erste Bank together with the KfW Bank provided a credit line of 10 million Euros for the financing of energy efficiency in industry and households in Serbia, through loans with fixed interest rates and with longer repayment period. The Bank also conducted a study, which has found more than 100 locations that are suitable for the construction of “green” power plant of up to 1 MW, and supports and encourages individuals’ associations, small and medium enterprises in the development of innovative ideas, based on the principles of sustainable development and organized a competition for the best “green” ideas.

ProCredit Bank is a development-oriented bank that offers complete banking services of the highest quality to individuals and businesses offering a special favorable loans for investment in improving energy efficiency, thanks to the credit line and the KfW own funds. ProCredit Bank has two EE credit lines for projects that achieve a minimum of 20% energy savings and a credit line with EU grants. UniCredit bank has a credit line for energy efficiency and cost-effectiveness; more precisely in the offer of domestic (Dinar) and foreign currency (EUR) consumer credit for individual's credit line that intended to ensure quality REHAU PVC joinery in the renovation of living space which leads to savings in the consumption of electricity [Balkan green energy news, 2017].

Incentives for use of renewable energy in Serbia are given within the IPARD II program. IPARD II is monetary instrument for pre-accession assistance in the field of rural development for the programming period 2014 to 2020. Instrument for Pre-Accession Assistance in Rural Development provides investment supported by the EU in sum of 175 million Euros, intended to strengthen the competitiveness of the manufacturing sector and food processing. This support will contribute to a gradual adjustment to EU standards in the areas of hygiene, food safety, veterinary and environmental protection, as well as the diversification of the rural economy. This is the first of this type of assistance that is designed to direct users, i.e. agricultural producers – legal entities and individuals [IPARD II Program EU, 2017].

Conclusions

Implementation of the agreement of climate change requires the transformation of the world economies as well as the enormous effort of the financial sector and its stakeholders on the global level. Unfortunately, the current world financial system does not provide the necessary finance. The main reasons for this are the external costs, for example, of carbon emissions that are not adequate with the market price. Because of the fact that in most countries, including Serbia, the main sources of energy are fossil fuels, investing in renewable energy and energy efficiency is unsatisfactory. To solve these problems, it is necessary to align the price of carbon through the elimination of fossil fuel subsidies and to introduce emissions trading system or carbon tax. However, to prevent climate change, the proposed measures require the development of appropriate financial system. Serbia is very slow in green financing. As mentioned in the previous chapter, there are some movements in this field, especially from the funds, banks and mentioned credit lines, but it is still not enough. Indonesia is on the better position than Serbia. That is because it is the country with high and sustainable economy and it is easier for Indonesia to think about “green elements” such as green economy and green financing. Serbia is still in the process of transition, trying to represent itself in a better way. Serbia is try-

ing to prove that its people suffered a lot from the period of the dissolution of Yugoslavia (previous country on the Balkan Peninsula that consisted of six republics, including Serbia) and to change the negative opinions that prevail in the world, because of turbulent relations with its closest neighbors. Republic of Serbia that is located in the politically unstable ground of Balkans, is trying to negotiate and peacefully resolve a political situation concerning Kosovo that is historically very important for the country. After all mentioned, to summarize this paper it can be said that the term of Green financing globally includes the following three aspects. The first involves the funding of public and private green investment in environmental goods and services such as water management and biodiversity protection, compensation for environmental damage such as measures to increase energy efficiency. Second, green financing covers the financing of public policies, including operating costs that encourage environmental projects mitigation or adaptation of environmental initiatives, e.g. Feed-in tariffs for renewable energy. Finally, as a component of the financial system, green financing deals with green investments, such as the Green Climate Fund i.e. green investments, green bonds that are structured in green funds. Based on the mentioned facts, we can conclude that green finance is covering several areas: banking, bond market, institutional investors, risk analysis and measuring progress in sustainable economic development. At the end, comparing the two economies, the economy of Indonesia and Serbia, the authors make the following conclusions related to green financing:

- ❑ Indonesia is already on the path of sustainable development and green investment, as it can be seen from the data of the Financial Services Authority (OJK). Although Indonesia had a similar economic situation as Serbia in previous years, Indonesia's economic and business developed much faster than Serbian, which may be a result of accession to the ASEAN group. When Indonesia rose up its economic situation it had begun to invest in the implementation of its sustainable development and green financing.
- ❑ Serbia, unfortunately, still leads its battle and struggling to be accepted by the European Union and other countries of the world. Serbia is a country that needs help in terms of foreign investment, but also in the supporting of its desire to become a member of European Union. Serbia is in the process of transition for more than 10 years. Efforts for the last few years to attract more foreign capital into the country will be realized in the next, coming years. There is still a hope that the cooperation between Serbia and China, and investing of Chinese companies in the Serbian economy, will contribute to better economic situation of the country in the near future. It is necessary, as soon as it possible for Serbia, to be accepted as a member of the European Union. It would mean reaching a common European market and reaching many advantages for business organizations within the country.

- Only when Serbia solve its problems with the European Union, overcome its regional disparities and attract foreign capital, it will be able to direct its forces toward implementing the concept of sustainable development and green financing.

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Wpływ środowiska i zrównoważonego rozwoju gospodarczego na politykę zielonego finansowania (*green financing*) na przykładzie Serbii i Indonezji

Streszczenie: Określenie „Zielone finansowanie” (*green financing*) to nowy obszar finansowania, który ma zastosowanie w procesie integracji ochrony środowiska i zysku ekonomicznego. Termin ten obejmuje szeroki zakres technologii przyjaznych dla środowiska, realizacji projektów, przemysłu. Zasadniczo zielone finansowanie (*green financing*) jest częścią zielonego węgla, ponieważ łączy branżę finansową, poprawę stanu środowiska oraz wzrost gospodarczy, który jest niezbędny dla długoterminowego zrównoważonego rozwoju. Ponieważ jest to innowacyjna koncepcja, w artykule zwrócono szczególną uwagę na rozwój mechanizmów rynkowych i formułowania polityki zielonego finansowania. Odsłaniając wewnętrzne sprzeczności między zielonym finansowaniem i ochroną środowiska, w osiągnięciu równowagi ekologicznej i zrównoważonego wzrostu gospodarczego, w artykule zaproponowano kilka opcji dla mobilizacji kapitału prywatnego do zielonych inwestycji (na przykładzie Serbii). Porównano również dwa kraje Indonezję i Serbię w sektorze zielonego finansowania. Autorzy badań wskazują na różnice między wskazanymi krajami oraz dysproporcją Indonezji w stosunku Serbii w realizacji koncepcji zielonego finansowania i zrównoważonego rozwoju.

Słowa kluczowe: zielone finansowanie (*green financing*), mechanizm rynkowy, polityka rozwoju, wzrost gospodarczy, Serbia, Indonezja

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