

GCPMED 2018
**International Scientific Conference "Global Challenges and
Prospects of the Modern Economic Development"**

**SUSTAINABLE FINANCE AS A WAY OF TRANSITION OF
COMPANIES TO GREEN ECONOMY**

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Abstract

The article is devoted to the study of the specifics of ensuring financial stability and investment attractiveness of European companies carrying out their financial and economic activities in the context of transition to a green economy. The topicality is caused by the need to improve the theoretical and methodological basis for developing practical recommendations for improving the management of companies funding in the transition to a green economy. The purpose of the study is to analyze the sources of funding available for such companies and to identify the areas for further development and effective use of green investment resources to ensure the investment attractiveness of companies in the context of sustainable development. Various instruments of state support and financial mechanisms for implementing budget financing used by European states to reduce the risks of investors are considered. The behavioral analysis of the subjects of the financial and trading sector and participants in the derivatives market trading has revealed the investors' increased attention to green stocks and bonds, which is confirmed by the positive dynamics of the demand for environmentally responsible investment. According to the results of the research, it was suggested that the need to integrate factors affecting the sustainability of the green economy should be taken into account since it is impossible to separately develop its individual elements or individual financial instruments.

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Keywords: Sustainable development, green economy, green finance, environmentally responsible investment, green stocks, green bonds.



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1. Introduction

The pace of development of the "green" economy in the EU countries is quite fast for many reasons. First, thanks to the formed institutional environment: countries have normatively established development goals in the industrial and energy sectors, numerous acts and regulations. Secondly, due to the investment factor: formed state and corporate institutions and instruments for financing "green" projects. Environmentally responsible investment, sustainable finance, "green" finance – these are different definitions of one process underlying the concept of "green" economic growth. "Green" finance is a link that allows ensuring the transition to a "green" economy.

In this article, "green finance" will be examined from two perspectives. Firstly, these are mechanisms of supporting the transition to a green economy of different industries and companies by various economic agents: bank lending, state guarantees, subsidies, budget financing of research and development in the field of green economy. Secondly, it is a financial-trading sector that includes derivatives market.

2. Problem Statement

Nowadays the development of methodological approaches to assessing the impact on financial security and the structure of financial sources of companies implementing the transition to a green economy is becoming particularly relevant. It is of vital importance to conduct a further study and improve the methods of ensuring financial stability and investment attractiveness of companies, including an assessment of their financial risks associated with the transition to a green economy (Bobylev, Mikhailova, & Kiryushin, 2014).

Separate conceptual and methodological provisions are debatable, which makes the expediency of their more detailed study. It is necessary to improve the theoretical and methodological base with the aim of working out practical recommendations for improving the efficiency of financial management of companies in the transition to a green economy. The issue of state support for the transition to a green economy, ensuring financial stability and investment attractiveness of companies working in this direction is especially acute.

3. Research Questions

Financial support for the transition to a "green" economy is primarily carried out through *state support*. The state is a unique economic agent that has the ability of serious influence on the process of transition to sustainable development. How can the state ensure the operation of this mechanism?

4. Purpose of the Study

Analysis of investment instruments and sources of financing for companies switching to a green economy.

5. Research Methods

5.1. The means of implementation of the state support

State support can be provided in the form of granting tax incentives or regulatory preferences to companies implementing "green" projects; by investing R&D in alternative development areas. For example, in Germany, a country in which renewable energy technologies are developing most rapidly among all European countries, the state budget for R&D accounts for 25% of the total government spending in the energy sector, which in fact makes a significant contribution to such a dynamic development of renewable energy sources in Germany (Patent-based technology, 2009). A number of regulatory measures and subsidies, including the Law on Renewable Energy (EEG) (Clearingstelle EEG|KWKG), with its specific technology of preferential tariffs for renewable energy, also played a role in making Germany the market leader in solar and wind energy.

Also, government support can be provided through targeted financial instruments such as government loans, equity investments and financial guarantees for green projects to reduce the risk of private investment in untested but promising "green" growth technologies that are unlikely to receive full funding from the private sector because of market, technological or scientific uncertainty. With the help of these tools, the EU reduces the risk to the private sector by encouraging private investment in the green economy.

Budgetary financing is another important element ensuring the transition to the sustainable (green) energy. The development of "green" energy, which is also called sustainable, can be implemented in two ways: reducing the energy intensity of production and the use of renewable energy sources (Silvestrov & Zinchenko, 2017). The state, being a direct participant in the process, does not intervene purposefully in any particular production and leaves the main role to the leading players in the RES market – private investors. Thanks to the responsive interaction of the state and private investors and the existence of certain mechanisms for their interaction, the return on investment becomes predictable.

Financial mechanisms for implementing budgetary financing may vary: state tenders, government procurement, grants, subsidies, public-private partnerships, funds and others. To determine the minimum level of prices at which investors are ready to invest, in Germany there was a practice of holding auctions, which determine the level of investors' reward. An important role is played by state guarantees – at the time of investing the investor always has the confidence for what price he will be able to sell electricity produced at the expense of renewable energy for 20 years.

Another effective mechanism for implementing state support for the "green" economy is various EU funds. The EU countries receive the largest assistance from the European Regional Development Fund, the European Social Fund and the Cohesion Fund, which are financial instruments for the implementation of the European Union's regional policy (often referred to as cohesion policy). The cohesion policy is aimed at the balanced and sustainable development of European regions. EU members use the financial sources of funds to finance various programs (for example, on environment, transport, low-carbon energy). Within the budget for 2014-2020, the cohesion policy allocated € 351.8 billion, which is about one-third of the EU budget.

Another European state initiative to support sustainable development is the European Investment Plan (also called the Juncker Plan). The plan is aimed at enhancing investment processes in Europe. The

five-year EU investment plan in the amount of € 315 billion in the first year (2014-2015) affected all the target sectors, mobilizing 23% of investments in the energy sector, 6% in transport, 5% in the environment and resource efficiency.

More targeted state initiative to promote the transition to a low-carbon economy is the Private Finance for Energy Efficiency - PF4EE. It promotes private investment in energy efficiency projects from the provided credit on affordable terms by the European Investment Bank. The PF4EE tool protects the credit risk of the portfolio through a collateral (Risk sharing mechanism), along with long-term financing from the European Investment Bank (EIB loan for achieving energy efficiency) and expert support services. The EIB has already signed an initiative in the Czech Republic, Spain, France, Belgium, Italy, Portugal. The European Investment Bank is a leading participant of public-private partnership in the EU. The Bank invests heavily in RES, energy efficiency, transport, biodiversity protection and many other areas of sustainable development in EU member states, candidate countries and other parts of the pan-European region.

5.2. The implementation of the transition to a green economy in the EU

It should be noted that the EU supports the transition to sustainable development both within the Union and beyond. For example, the Green Growth Fund of Southeast Europe (GGF) is the first specialized fund for energy efficiency and renewable energy use in the regions of South-Eastern Europe and neighboring countries. Established by the European Investment Bank and KfW Entwicklungsbank, the Green Growth Fund is an innovative public-private partnership (PPP) designed to reduce energy consumption and CO₂ emissions (Analytical statement, 2016).

Created during the crisis, the GGF has become a powerful force in the field of "green" financing and continues to provide vital funds for projects and partners seeking to mitigate the effects of climate change and energy use. The GGF Fund provides refinancing to financial institutions to expand their participation in the energy efficiency and renewable energy sectors, as well as direct investments in non-financial institutions with projects in these areas. Thanks to investments in energy efficiency and renewable energy financed from the fund, the savings in the output of CO₂ are 331,000 tons per year and in the energy sector the saving is 1,276 GWh per year (Analytical statement, 2016).

Besides the pan-European funds supporting the transition to sustainable development, the funds of individual EU states also have a significant impact on this process. For example, the London Green Fund (LGF) was created to invest in projects that reduce the production of carbon dioxide. The Fund provides financing for investments directly in projects related to waste recycling, energy efficiency improvement, energy and social housing projects. As of December 31, 2015, the Fund has allocated more than £ 500 million for investment.

There is a mechanism of sectoral implementation of sustainable growth policy in the field of "green" finance, as well as in any other direction of the "green" economy of the European Union (Sousa & Aguiar-Conraria, 2015). For example, the Equator Principles (EP) are one of the options for sectoral implementation of policies aimed at curbing unsustainable growth. The EP are applicable for the banking sector of all countries for financing new large projects in all industries. As of 2018, they were adopted by 92 largest financial institutions from 37 countries, among which 39 organizations from 13 European

countries (Analytical statement, 2018). Organizations that have undertaken the EP provide project financing and project-targeted loans only in the case of compliance with the requirements of the EP.

The EP voluntarily took over by financial institutions as a starting point for internal corporate social and environmental policies are a viable and well-functioning mechanism for achieving sustainable development. The EP affect the development of all sectors of the economy, but especially their impact is noticeable in the areas of thermal power, ferrous and non-ferrous metallurgy, cement and lime production, as these industries are sectors with a high intensity of greenhouse gas emissions.

Banks that have accepted the EP actively participate in projects that take into account that principles. For example, one of the largest banking companies in Spain, Banco Bilbao Vizcaya Argentaria (BBVA), implemented 18 projects in 2016 alone, taking into account the EP, 4 of which are related to mining and 6 to the field of thermal energy. For comparison, the British Barclays Bank, which was one of the developers of the EP, in 2015 implemented 10 projects. The French bank Crédit Agricole has implemented 37 projects, 14 of which relate to infrastructure, 14 to the energy sector, 7 to mining and metallurgy (Analytical statement, 2018).

From another point of view, "green" finance can be considered as a financial and trade sector, which includes derivatives market. In this market, there are various investors who can perform such operations for "green" investing, like buying shares in "green" companies, investing in exchange traded funds (ETF), buying green bonds, trading in "carbon" financial instruments (Jahel & Gesine, 2018).

Against the backdrop of ongoing trends in the growing awareness of society of the need to harmonize their development with the development of the environment, investors, whether institutional investors or private, are increasingly guided by the principles of environmentally and socially responsible investment in their investment decisions. Shares of leading "green" companies are traded on major stock exchanges. These include start-ups as well as traditional "heavyweights" in the market, expanding the range of their environmentally friendly products.

The definition of the concept of "green" shares has ambiguous interpretation as individual ideas about the "green" investment for different investors are different. For some the acquisition of shares of the company with reliable environmental methods of doing business and the best social and environmental performance indicators but not engaged in sustainable development (for example, an oil company) will be a "green" investment, because the company takes all precautions to prevent any direct damage to the environment as a result of daily drilling operations on oil wells. Others may object to buying shares of such a company as an object of "green" investment, since burning fossil fuels is a major factor in global warming. For them "green" investment will be expressed in the purchase of shares of companies that correspond to their personal definition of "green" (Global Trends in Renewable Energy Investment, 2016).

Investors make investment decisions based on their own considerations, for example, by choosing an investment strategy for large and well-known companies such as Tesla, First Solar, SunPower or on the contrary the strategy of investing in less known but in their opinion no less promising (Global Trends in Renewable Energy Investment, 2016). Others in the choice of investment objects are guided by high dividends, low volatility and other factors. In any case investors believe that the effectiveness of investing in "green" shares is similar and in some cases higher compared with the papers of traditional producers.

A big contribution to the development of the market of "green" shares is made by institutional investors: in Europe this indicator in 2015 was \$ 1.1 billion. In 2014, this figure was equal to 2.8 billion dollars. Such a high figure was achieved partly due to the contribution of some of the largest participants – the German insurance company Allianz (one of the most active direct investors) that invested in wind energy projects in Austria and Sweden and also due to a large purchase of the Swedish pension fund AMF 49% of the shares of an offshore wind farm in the UK waters "150MW Ormonde" for 237 million pounds sterling (Global Trends in Renewable Energy Investment, 2016).

Another form of "green" finance is ETF – exchange-traded funds securities of which are traded on the stock exchange. Exchange index funds track various stock indices thereafter the dynamics of the value of exchange index funds is a reflection of the dynamics of the index. Commodity investment funds can track the value of gold, silver, oil, gas, alternative energy and so on. Green ETFs can specialize in both securities of a certain region (for example, American) and cover the market globally.

Guggenheim Solar ETF (TAN) which monitors the Mac Global Solar Energy Index invests in all the securities that make up the index (in proportion to their weight in the index) refers to funds with global coverage specializing in alternative energy. In terms of geographical scope the fund consists of 51% of securities of American companies, 38% of Chinese securities, 11% of European securities (including Germany, Norway, Switzerland). Dividend income as of March 2018 was 1,81%.

Another fund of this kind is VanEck Vectors Global Alternative Energy ETF (GEX). The fund tracks Ardor Global Alternative Energy Index. The focus here is on companies that specialize in alternative energy. The company's portfolio includes small and medium-sized companies as well as foreign companies. The yield of GEX was 1.29% as of March 2018 (GEX - VanEck Vct Glb Shs).

5.3. Sources of green funding

In addition to ETF green investment funds associated with clean energy, funds associated with the low carbon footprint of the product are actively developing and becoming popular. They are much more diversified by sector than the ETF in the field of renewable energy as they include shares from different sectors the largest proportion of which are financial companies. These include, for example, iShares MSCI ACWI Low Carbon Target ETF whose performance in 2014 reduced the carbon footprint by 76% and the potential release of CO₂ fell by 93%. The iShares MSCI ACWI Fund Low Carbon Target ETF brings a dividend yield of 1.82%. Another example of a fund from "green" area is the SPDR MSCI ACWI Low Carbon Target ETF, which also has the objective of impacting on reducing CO₂ emissions. As of March 2018, the LOWC yield was 1.92%.

Unlike mutual funds, ETFs are traded as ordinary shares on the stock exchange, have higher daily liquidity and lower fees than stocks of mutual funds, which makes them an attractive alternative for individual investors. The purchase of ETF is an easier option for implementing green investing since the investor's purchased asset reflects the state of the entire sector selected by the investor. Another advantage of buying ETS is the possibility of risk diversification through the purchase of a whole basket of securities included in the relevant index. Given the small weight of European countries in exchange investment funds and the growing dynamics of demand for environmentally responsible investment, the European Union has a great growth potential towards the sustainable development of "green" finance.

Another tool of green investment is "green" bonds. A "green" or climatic bond is a debt security issued for the purpose of investing in projects related to environmental protection (Rubtsov et al, 2016). Investing in "green" bonds for some investors may be preferable to other instruments for a number of reasons: fixed bonds offer a fixed yield at a fixed time. As a rule these are more predictable and less risky investments. This higher predictability of cash flows makes bonds a good alternative to more risky and volatile elements of the investment portfolio.

Currently, green bonds primarily finance renewable energy projects (45.8% of the world in 2015), energy efficiency (19.6%), transport with a low carbon content (13.4%), sustainable water (9.3%) and waste and pollution management (5.6%). Thus "green" bonds are one of the important instruments for financing the achievement of the goals of the EU Energy Union "Clean Energy for All Europeans".

At present, the demand for "green" bonds is very significant, since the yield on them is not much different from conventional bonds (World Bank, 2015). Investors begin to perceive "green" bonds as "gold" bonds which are vital for the future of climate financing and at the same time dynamically developing and yielding income. The new listing first developed by the European Investment Bank in 2007 is a sign of the rapid growth of the "green" bonds. Since then the EIB has issued "green" bonds worth almost 13 trillion euros, becoming the largest player in this market.

Since the emergence of the market of "green" bonds in 2007 when its volume amounted to 440 million US dollars by 2010 this figure was 4 trillion USD, and in 2014 – 37 trillion (World Bank, 2015). In general it can be answered that the market of "green" bonds is still at the stage of its development, its scale is growing dynamically, as is the variety of the offered bonds. The greater the diversity the higher the potential for the development of the "green" bond market, the greater the opportunities for private capital to ensure the transition to sustainable development of countries.

The main issuers of "green" bonds are the World Bank and the International Finance Corporation (IFC). By 2015 the World Bank issued "green bonds" of 8.5 billion dollars, and the IFC – 3.7 billion dollars (Rubtsov et al, 2016). It is important to note that the European Union which is behind in the field of ETF from the US is an undoubted leader in the market of "green" bonds. And this means that Europe has great opportunities to raise funds for innovative projects in the field of energy efficiency, renewable energy sources and environmental protection in general.

An important direction of environmental protection is the fight against the greenhouse effect. There are several methods to combat greenhouse gases - tax, market and mixed. The tax method is a system of paying special carbon taxes, the market method is the distribution of tradable rights to release CO₂ and its equivalents, mixed – is combination of the two previous ones.

5.4. Carbon dioxide as a source of additional financial resources

Carbon emissions trading is a way of implementing "green" investment, one of the most important and most dynamically developing in "green" finance. Financial instruments of the carbon exchange market are the rights to release one ton of CO₂ and its equivalents, distributed or obtained as a result of any of the reduction, capture or absorption mechanisms that have passed quality control in accordance with the rules of this trading system and admitted to trading as well as their derivatives tools. The volume

of world trade in carbon units in 2014 amounted to 32 billion dollars, and in 2015 amounted to 34 billion dollars (Kossoy et al, 2015).

The huge share of trading operations with carbon credits is realized in the form of derivatives (futures, forwards, options and swaps), which are subject to the rules for the control of EU financial markets (Official Journal of the European Union, 2015). The new EU Directive on the Markets in Financial Instruments Directive (MiFID2) is applied from January 1, 2017 (European Parliament, 2014). As of August 31, 2015, 39 national and 23 subnational jurisdictions include tax and market mechanisms for managing carbon emissions. Together these instruments affected 7 Gt of CO₂e, i.e. about 12% of the world's annual output of CO₂. These figures indicate significant progress: the number of instruments for regulating greenhouse gas emissions has increased by 90% since 2012 (Kossoy et al, 2015). In the markets of different countries several types of traded carbon units are represented, differing depending on the reduction mechanism, the trading system, etc. Directive 2014/65/EU identifies three emission instruments traded on the European market: the EU quota, the certified emission reduction unit and the emission reduction unit.

At present, the institutionalization of carbon emissions trade has not been completed. But there are several similar regional trading systems (ETS - Emission Trading System) with different carbon units in status. The most important market is the European Union Emissions Trading System with the main stock exchanges: the European Climate Exchange (ECX), the European Energy Exchange (EEX), and others.

The EU ETS was founded in 2005 and is currently the main tool for implementing the EU strategy for cost-effective reduction of CO₂ and other greenhouse gas emissions. This system is not only the world's first carbon market, but it remains the largest, covering more than three-quarters of carbon credits traded on carbon markets (Official Journal of the European Union, 2015). ETS operates on the principle of limiting industrial emissions ("cap and trade").

The limit is set for a specific volume of total pollution by greenhouse gases which can be released by factories and other industrial enterprises. The main result of the system's operation is that this total amount of pollution decreases every year. Thus, in the third trading phase of the EU ETS (2013-2020) the annual decline is 1.74% compared to 2010 (the so-called linear reduction ratio). In the fourth trading phase (2021 - 2030) a limit on emissions of 2.2% per year was determined. It is expected that by 2020 emissions from the sectors covered by the EU ETS will be 21% lower than in 2005. By 2030, a 43% reduction is projected (Official Journal of the European Union, 2015).

The volume of national income extracted from the auction sale of quotas within the emissions trading system and from carbon taxes amounted to \$ 15 billion (Kossoy et al, 2015). The revenues received by the world community are used in various directions, for example, to reduce the tax burden in the country, provide additional social support to the population, finance projects that reduce the release of CO₂.

The part of future ETS revenues in the period after 2020 is planned to be spent on financing the Energy System Modernization Fund and the Low-Carbon Innovation Fund (Cover Note from General Secretariat of the Council of Delegations to Delegations, 2014). Revenue from the Swiss tax is returned to the residents of the state in the form of reduced social payments and to the corporate sector through reduced contributions to the social insurance fund (Switzerland Federal Office of the Environment, 2017).

The market method seems to be more effective, as the trade in surplus rights gives investors the opportunity to profit from the sale of unused emission rights, stimulates the manufacturing sector to re-equip enterprises and modernize production methods in order to save costs. The profit opportunity is an effective incentive for business entities to invest in technological re-equipment and other measures to increase energy efficiency. Without the use of a market approach, such measures as mandatory emission controls would remain directives from above, i.e. coercion from which the economic actors involved in the process of emission reductions at different levels would quickly find ways of leaving.

6. Findings

The attitude of the public is ambiguous: on the one hand, business is interested in gaining incentives for development; on the other hand, the green movement is against issuing free quotas for large polluters of the environment obtaining free carbon credits. Despite the lack of an unambiguously positive attitude towards carbon instruments many countries are developing in the field of "green" finance within the framework of emissions trading systems, realizing the prospects for introducing carbon exchange trading mechanisms and developing their trading platforms.

The role of environmental and climate factors in the modernization of the global economies in the context of the challenges presented by the new industrial revolution is enormous (Porfiryev, 2018). The current need for the transition to a low-carbon economy and sustainable development requires a policy that is secured by sufficient funding. Experts assessed the necessary amount of funding and concluded that the funding gap cannot be covered only on the basis of public sources, and that additional funding is needed to achieve the transition. "Green" finance can play a significant role in its provision.

7. Conclusion

The principles of the sectoral implementation of sustainable development, examined in the article on examples of green industry, energy and finance, demonstrate that the process of transition to sustainable development has not only been launched but has also been successfully functioning, with time, only improving in various directions – institutional, scientific and technical etc. It should be mentioned that in addition to the economic sectors examined there are others in which the process of transition to sustainable development is also fundamental and systematic: green construction, green agriculture and biotechnology, along with related sciences such as bioeconomics – an economy based on the systematic use of biotechnology (Bobylev et al., 2014). All these industries claim to be the key factors for achieving the transition to sustainable development and require further study.

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