# THE ROLE OF MANDATORY OBLIGATIONS IN FINANCING THE TRANSFORMATION OF THE EUROPEAN ENERGY SECTOR

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***Abstract:*** *The transition to a low-carbon, resource-efficient economy implies multiple environmental benefits. Financial stability is threatened by the consequences of climate change that can lead to major economic losses in case of droughts or floods, soil erosion. The financial system has an important role to play in tackling the impact of climate change by securing funding for green investment. The current level of investment is not enough to promote an environmentally sustainable economy and to combat climate change and depletion of resources. To achieve the objectives of the European Union, the Paris Agreement requires additional investment of € 180 billion, so more private capital flows need to be directed towards sustainable investment. In this context, the objective of the research is to determine the level and trends of financing through green bonds of the capital requirement for transforming the European energy sector into a sector that uses renewable energy to produce energy.*

***Key words:*** *climate change, green investment, sustainable economy, green bonds, european energy system.*

***Classification JEL****: Q56, E22.*

## 1. Introduction

A major risk for millions of people around the world is climate change, mainly caused by global warming. The frequency and severity of weather phenomena affects the wealth of companies and companies, as phenomena such as heat waves, droughts, floods, storms are expected to grow.

Attenuating global warming requires rapid, profound and unprecedented changes in all sectors of the economy.

Efforts to bring savings back on a sustainable path have increased due to concerns about the impact of environmental degradation and climate change on economic, social and financial systems.

Adaptation of national economies to sustainable development objectives and the achievement of the Paris Agreement are major achievements in order to formulate a global response to stimulate sustainable growth and tackle climate change.

To achieve the 2° C objective set by the Paris Climate Agreement, considerable investment is needed.

The private and public sectors also face a growing need to adapt to the challenges and consequences of environmental degradation and the impact of climate change, while trying to capitalize on business and development opportunities.

Green Bonds are financial instruments designed to help mitigate the impact of climate change. They are also a means by which companies engage in profound transformation by financing their green assets.

Thus, they are used to attract capital to finance the transition to a low-carbon economy.

Since the launch of the first green bonds in 2007/2008, issues have risen at a rapid pace, diversifying both issuers, products and currencies.

## 2. Define the concept of green bonds

Green bonds are traditional bonds but attracted capital is used exclusively to finance eligible green projects.

This definition includes climate change and focuses on investments related to mitigation or adaptation.

Green bonds, in addition to traditional bonds, are subject to a monitoring system to determine whether they have actually produced the expected environmental outcomes. The use of green bonds allows the issuer, compared to traditional bonds, to attract institutional investors.

These bonds have a maturity of three to ten years and usually offer a fixed rate of return.

Issuers are rated for credit ratings, which, in the case of institutional investors, is usually high - AAA. This keeps the cost of credits for projects supported by green bonds low.

Green bonds are seen as an innovative financial instrument being promoted by international public and private sector leaders to fund green-energy projects and activities and to facilitate the transition to a low-carbon and efficient economy view of the use of resources.

Green bonds also offer high transparency to investors about:

- the attracted funds and their destinations, respectively the financing of projects or activities considered green;
- the selected projects have to benefit the environment;
- the issuer's commitment to make public the information on the use of funds and the environmental benefits throughout the life of the bond or projects.

There is currently a high demand for green bonds from investors concerned with the impact of investment on the environment.

**3. The principles of green bonds**

An important development in the history of the green bond market was the establishment of their principles in early 2014.

Bonds to be in the green category must comply with a set of basic principles, which are voluntary guidelines issued by different international bodies and updated annually after consultation with stakeholders (issuers, investors or investment banks). They encourage transparency and market development without imposing excessively high criteria.

The four components of the Green Bond Principles are:

1. Use of revenue: the most important aspect of green bonds. Thus, it has to be made clear how the capital attracted by the bonds in the documents accompanying the issue will be invested, and the revenues should be used to finance projects with environmental benefits.

2. The project evaluation and selection process - the decision-making process concerning the eligibility of projects is clearly presented.

3. Income management: the income earned on green bonds must be kept separately. It should also be sufficiently transparent to allow auditors to check the tracking and allocation of funds.

4. Reporting: Issuers need to provide information on projects that have been funded by greenhouse issue funds.

The Green Bonds principle explicitly mentions several broad categories of potentially eligible green projects addressing key areas such as climate change, natural resource depletion, biodiversity loss and / or pollution control.

Updated in June 2017, these broad categories are:

1. renewable energy;
2. energy efficiency (such as new and refurbished buildings, energy storage, centralized heating, smart grids);
3. pollution prevention and control (including emission reduction, waste water treatment, greenhouse gas emission control, waste prevention, soil remediation);

4. environmentally sustainable management of natural resources and land use (including environmentally sustainable agriculture, sustainable forestry, eg afforestation or reforestation, and preservation or restoration of natural landscapes);

5. conservation of terrestrial and aquatic biodiversity (including coastal, marine and hydrographic environment protection);

6. clean transport (eg electric, hybrid, public, rail, non-motorized, low energy consumption and low emissions);

7. Sustainable water and wastewater management (including clean water infrastructure, waste water treatment, sustainable urban drainage systems and other forms of flood mitigation);

8. adaptation to climate change (including the development of information transmission systems, such as climate observation and early warning systems);

9. Products, technologies and production processes geared to the eco-efficient and / or circular economy (such as the development and introduction of green products, eco-labeling or eco-certification, resource-efficient packaging and distribution);

10. green buildings complying with recognized standards or certifications.

With the help of the Green Bond Principles, eligible projects (eg renewable energy, energy efficiency) are identified, but they do not provide criteria for assessing the environmental benefits of the project.

In this context, the main international agencies have implemented best practices among issuers. Thus, they have established internal processes for environmental assessment of projects and have adopted high standards of environmental benefit reporting. For example, the European Investment Bank's green paper 2015 reports provide details on the projects financed and their impact on greenhouse gas emissions.

Several development banks propose a framework for reporting the impact of renewable energy projects and energy efficiency.

However, this reporting is difficult to implement in the corporate sector due to administrative costs.

**4. Evolution of green bonds**

At global level, green bonds are the most advanced form of funding for environmentally-friendly projects.

The first green bonds were launched in 2007 by the European Investment Bank, and the first private sector companies started issuing green bonds starting in 2013. Later, in 2016, the first green-house bond issue launched by Poland , followed by other countries in Europe (France, Belgium, Ireland) or the world (Fiji, Nigeria).

The market for these green financial products started in 2007, and in 2013 it was 13 billion dollars, demonstrating how quickly it responds to the need for a transition to sustainable technologies.

The market started to grow in 2014 with green corporate bonds, but the biggest increase occurred in 2017.

It has continued to grow as a result of the rapid development of new green markets, overlapping with continued and global political impetus to tackle climate change.

Europe remains the strongest and most developed market for green bonds.

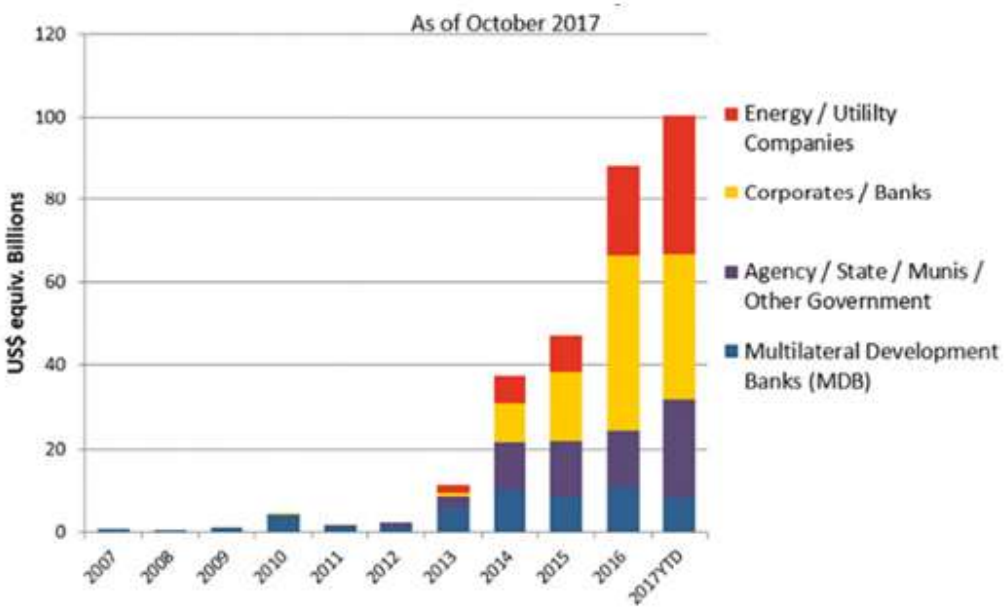


**Chart no. 1 The evolution of the green bond market**

Source: Environmental Finance, 2018. *The green bond evolution. MSCI, Bloomberg, Barclays*. [online] Available at: <https://www.environmental-finance.com/content/the-green-bond-hub/the-green-bond-evolution.html> [Accessed 2 March 2019].

**5. The green bond market in Europe**

The European Union supports the transition to a low-carbon economy, a resource-efficient economy, and is also at the forefront of efforts to build a financial system that supports sustainable growth.

The Paris agreement also includes a commitment to channel financial flows to sustainable development.

The financial sector plays a key role in achieving these objectives. It may:

- reorient the capital towards sustainable investment;
- financing growth in a sustainable long-term manner;
- contribute to the transition to low carbon, climate-resilient economies.

The European Investment Bank was the first to issue green bonds in 2007 and was labeled Green Bond for Climate Awareness. In 2012, the Île-de-France region issued the first municipal green bond; in 2013 the Swedish property company Vasakronan issued the first green corporate bond; and in 2016, in Poland, the first sovereign fund issued green bonds.

Today, Europe is the largest eco-bond market.

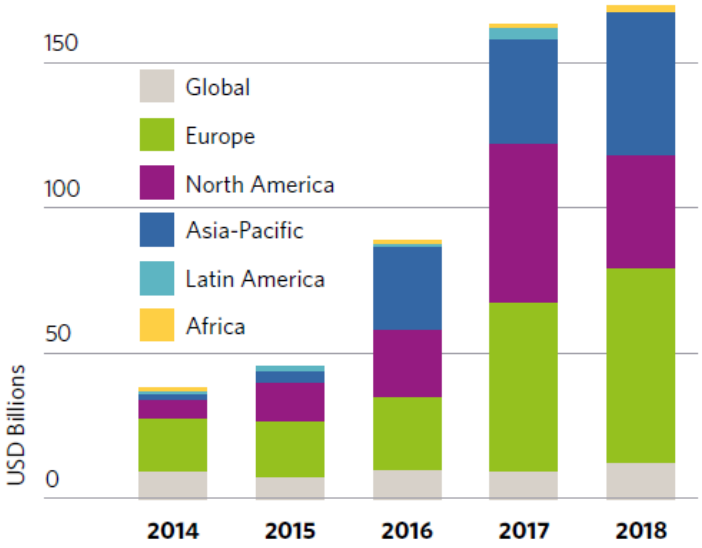


**Chart no. 2 The global greenback market**

Source: Climate Bond Initiative, 2018. *Green bonds: The state of the market 2018*. [pdf] Available at: <https://www.climatebonds.net/files/reports/cbi_gbm_final_032019_web.pdf> [Accessed 2 March 2019].

Since 2018, 145 European entities have issued green bonds, which is one third of the total. Issued bonds vary in format, maturity and transaction size, which signifies the diversity of the European green-house bond market.

The main green-house issuers in Europe are grouped into the following categories:

1. Private entities
2. Government authorities
3. Commercial banks
4. Sovereign funds
5. Development banks

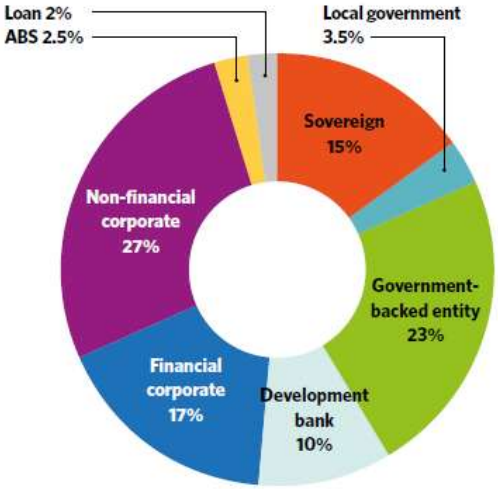


**Chart no. 3 Categories of issuers in Europe**

Source: Climate Bond Initiative, 2019. *Green Bonds – a key tool for financial centre competitiveness: Lessons from Europe*. [pdf] Available at: <https://www.climatebonds.net/files/reports/cbi-financial_centres_03d.pdf> [Accessed 2 March 2019].

The private sector is now a contributing factor mainly to green financing, ie 27%. This sector has gradually replaced, to a large extent, the development and investment banks that have taken a place behind the growth of private entities.

The private sector was motivated to take green funding seriously because of the political pressure to monitor climate risks and respond to the need to build a low-carbon economy.

Also, corporate issuers are on a growing trend, as they are generally more receptive to changes in investor preferences and can drive their capital more quickly and efficiently.

The 2018 beneficiary sectors of green investment in Europe are as follows:

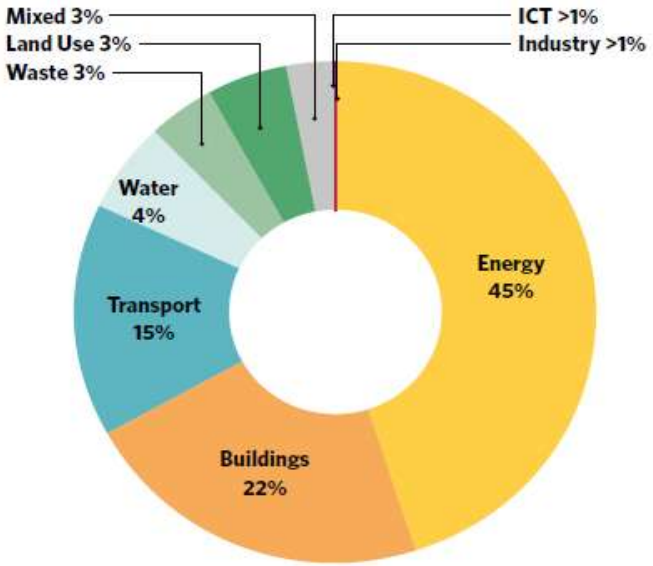


**Chart no. 4 Sectors receiving green investment**

Source: Climate Bond Initiative, 2019. *Green Bonds – a key tool for financial centre competitiveness: Lessons from Europe*. [pdf] Available at: <https://www.climatebonds.net/files/reports/cbi-financial_centres_03d.pdf> [Accessed 2 March 2019].

The main beneficiaries of environmentally sustainable investment are low-carbon technologies in the energy, buildings and transport sectors, reflecting the importance of reducing pollution in these sectors in the fight against climate change.

Thus, energy remains the main sector for greenhouse gas spreading, although its share has started to shrink in recent years, while the amounts directed towards the construction and transport sectors have increased.

Approximately 70% of European green paper bonds have a maturity of ten years or less.

The largest energy companies in Europe are EDF, Enel, Engie, Iberdrola.

Denmark Ørsted has completely renounced fossil fuels to offshore winds mainly from renewable sources. The other companies are in the transition period, and green bonds are a source of dedicated funding for doing so.

TenneT Holdings (Netherlands), NTE (Norway), Fingrid (Finland) and Latvenergo (Latvia) are the next segment of energy issuers, which transports renewable energy to the grid and improves its efficiency.

The newest issuer is Landsvirkjun, Iceland's energy company, which produces geothermal and hydraulic energy.

These are new categories of green bonds for Europe.

The sector also includes German wind turbine producers Nordex, the Certified Climate Bonds Issuer, and Senvion as well as Nordic urban heating companies.

France is currently the largest green-house bond market in Europe, followed by Germany, the Netherlands and Sweden. The green market of French bonds practices one of the highest levels of transparency.

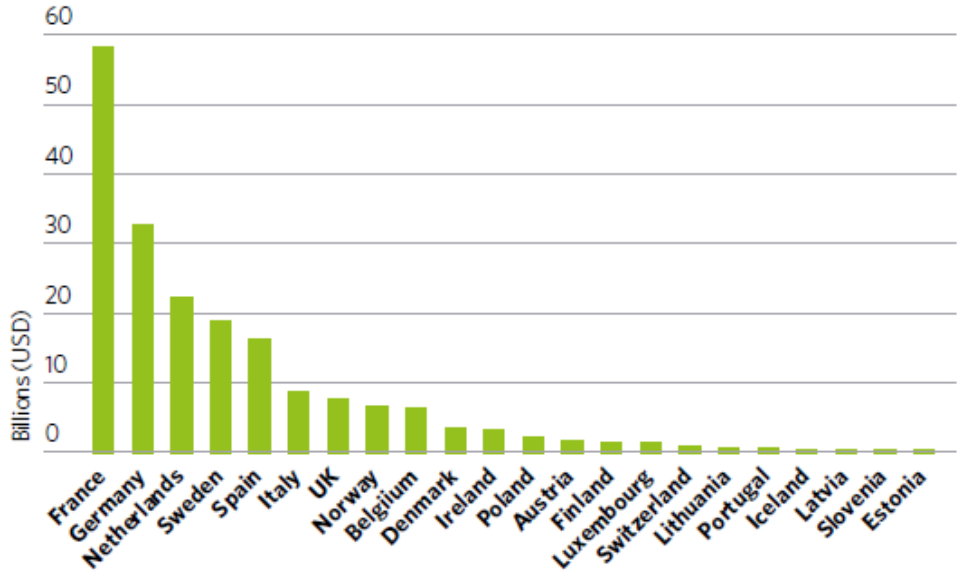


**Chart no. 5 Country Ranking on Green Bond Issues**

Source: Climate Bond Initiative, 2019. *Green Bonds – a key tool for financial centre competitiveness: Lessons from Europe*. [pdf] Available at: <https://www.climatebonds.net/files/reports/cbi-financial_centres_03d.pdf> [Accessed 2 March 2019].

In order to boost the financing of the transition to a low-carbon economy and to achieve the environmental objectives under international agreements, the European Commission has set up a High Level Expert Group on Sustainable Finance to provide guidance on the direction of capital flows public and private to sustainable investments, identifying measures that financial institutions should take to protect financial stability from environmental risks and implement these policies on a pan-European scale.

The said group released two reports in July 2017 and January 2018.

In developing countries, private sector financing is essential for the transition to low carbon and climate resilient economies. The European Commission, the governments of the developing countries and the financial authorities are developing roadmaps and implementing measures on mobilizing sustainable funding for inclusive and resource-efficient economic growth.

## 6. Conclusions

Investors are becoming more aware and attracted by the investment opportunities offered by areas such as clean transport, energy efficiency, renewable energy, forestry and adaptation to climate change.

Governments and financial supervisors recognize the importance of sustainable funding for meeting the objectives of Agenda 2030 and the Paris Agreement and for achieving financial stability.

A key challenge is to harmonize the measurement and reporting of greenhouse investment impacts on the environment.

For the bond market to thrive, investors need a definition of green bonds and a classification of investments considered green. In addition, reporting standards are needed so that investors and other stakeholders can easily access and compare green debt information.

In order to develop and grow the green bonds market, the European Commission has set up a Sustainable Finance Expert Group to assist in drafting a legislative initiative on:

- a classification system - the so-called taxonomy - to determine whether an economic activity is environmentally sustainable;
- a European standard on green bonds;
- benchmarks for low carbon investment strategies; and
- guidelines for improving the corporate disclosure of climate information.

Despite the potential of the green bonds market and the optimistic figures reported so far, it is only a part of the total market and is also well below the financing needs and financing opportunities of the green economy.

At the same time, the green-house market is a growing market. In addition, green bond issues are also expected from the big polluters, such as steel factories, mining operations, and so on.

European greenback issuers have always allocated a substantial share of revenues to the energy sector. However, in recent years, the global Energy share has fallen as the amounts have been redirected to construction and transport, although the energy sector still needs funding.

Europe has led the development of the green bonds market, encouraging global engagement. The sample of potential green bond issuers extends across the European taxonomy sectors, demonstrating that the region is still far from reaching its full potential.

Thus, a political impetus is expected to lead to the evolution and improvement of the market, such as the adoption of a tax on the EU's green assets in 2019, as part of the Commission's Sustainable Financing Action Plan.

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