

## Financing a sustainable recovery with green bonds \*

### Headlines

- Since its debut in 2007, the global green bond market has been growing fast, on the back of sustained investor demand favoured by the transparency on project-level information that uniquely characterizes green securities.
- Evidence on the reduction of firm-level carbon emissions suggests that green bonds are a credible signal of firms' climate-related engagement, particularly when they are issued to finance new investment projects (rather than to refinance existing ones).
- The green bond label per se is not enough to raise funding at a lower cost, given also the extra-cost associated to the issuance of green bonds.
- Further standardization of market practices, so far largely grounded on market-based voluntary process guidelines, is considered an essential element to enhance comparability and credibility on the green bond market, and to minimize the risk of greenwashing.
- Europe's leading role in green bond issuances is expected to consolidate after the European Commission has set a target of raising funds through green bonds to provide financial support to Member States towards a green and sustainable medium-term recovery.

bonds are legally not different from conventional fixed income securities. In the absence of a universally accepted classification and reference framework, the green bond market currently relies on private governance regimes. Market practice is largely informed by the Green Bond Principles (GBP), a set of market-based voluntary process guidelines introduced in 2014 that put forward standardized procedures to encourage transparency and disclosure.<sup>1</sup> The GBP focus on a few main areas, namely the use of proceeds, the process for project evaluation and selection, the management of proceeds, and reporting, not only on the periodic use of proceeds but also, possibly, on the environmental impact of the financed projects. The GBP also encourage independent external review, which commonly involves a wide range of services from environmental consultancy to audits on use of proceeds.

**Transparency and disclosure have been identified as important determinants of the success of the green bond market.** The focus on green use of proceeds, tracking, impact reporting and external reviews that uniquely characterizes green bonds grants a degree of transparency unmatched in traditional bond markets, driven instead by overall company and credit metrics.

**On the back of sustained market growth, green bonds are considered one of the most promising instruments of sustainable finance.**<sup>2</sup> After its debut in 2007, when the European Investment Bank (EIB) issued the first green securities, the market has been growing steadfastly. Yearly worldwide issuances have increased from €6.5 billion in 2013 to €72 billion in 2016, to reach €185 bn in 2019.

**Green bonds are debt instruments issued to finance investment projects that are meant to have positive environmental or climate effects.** Except for the focus on the 'use of proceeds', green

<sup>1</sup> International Capital Market Association (ICMA), [Green Bond Principles - Voluntary Process Guidelines for Issuing Green Bonds](#) (2018 update).

<sup>2</sup> See, e.g., Flammer, C., Green Bonds Benefit Companies, Investors, and the Planet, [Harvard Business Review](#), 2018/11.

\* Serena Fatica, JRC, Directorate for Growth and Innovation, Finance and Economy Unit, 2020.

The author would like to thank, without implications, Clemens Domnick and two referees for their comments.

**Green bonds have been characterized by a strong focus on climate change mitigation.** In a large sample of 1,105 green bonds issued worldwide by the corporate sector over the period 2007-2019, three contracts out of four (amounting to 80% of the funds raised) are issued for projects with the purpose of climate change mitigation, either fully or partially, i.e. in combination with projects pursuing also other environmental objectives. These are linked to climate change adaptation, circular economy and waste recycling, pollution prevention and control.

## Green bonds and carbon emissions

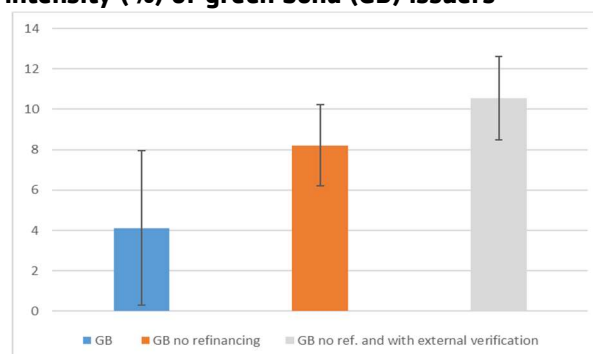
**The analysis of the impacts of green bonds in terms of issuers' environmental performance and engagement is hampered by important data limitations.** While one would ideally need detailed information on the environmental impacts of the investment projects for which the bond proceeds are earmarked, this information is seldom disclosed on a regular basis. In particular, impact reporting is not mandatory in any guidelines, although considered as a best practice.<sup>3</sup>

A new JRC study ([Fatica and Panzica, 2020](#)) takes an alternative route, and, using matched bond-issuer data, tests whether green bond issues by non-financial global corporations are associated with a reduction in firm-level carbon emissions, relative to total assets. The econometric analysis shows that, compared to conventional bond issuers with similar financial characteristics and environmental ratings, green issuers display a decrease in the carbon intensity of their assets after borrowing on the green bond market.<sup>4</sup> Remarkably, the decrease in emissions is more pronounced and significant when the analysis excludes green bonds issued for refinancing existing projects. This is consistent with an increase in the volume of climate friendly activities due to new investment projects financed with green bonds. Moreover, the study finds a larger reduction in emissions for green bonds that have external review, suggesting that the willingness to incur the costs of external review is a strong signal of companies' commitment towards the environment (Figure 1).

<sup>3</sup> An increasing number of issuers provide investors with impact reporting, either on a project-by-project basis or on a portfolio basis. To ease comparability of quantitative impacts, guidance on key impact metrics for several project types and sectors is available from different sources, including market participants.

<sup>4</sup> The study is based on a sample comprising 92 green bond issuers and 919 conventional bond issuers in the corporate sector (excluding financial services).

**Figure 1: Average reduction in direct carbon intensity (%) of green bond (GB) issuers**



Note: average reduction, with 95% confidence interval, is calculated with respect to comparable non green bond issuers.  
Source: own calculations on Dealogic DCM data

While causality cannot be claimed, also because green bonds account for a limited share of companies' total borrowing and, thus, investment capacity, the findings suggest that green bonds are a credible signal of firms' climate-related engagement. As such, the evidence is not consistent with the 'greenwashing' argument.

## Is there a 'greenium'?

**In the wake of the rapid market growth, there has been growing interest in understanding how the financial market prices green bonds.** In particular, the question is whether there is a premium, i.e. an additional spread paid by green bonds compared to equivalent conventional bonds ('greenium'). The evidence on the existence and the direction of a 'greenium' is mixed.

In tackling this issue, a recent JRC study ([Fatica, Panzica and Rancan, 2019](#)) suggests that the lack of consensus on the 'greenium' may depend on heterogeneity across types of issuer. Indeed, the study finds a negative premium for green bonds that are issued by supranational institutions and non-financial corporates.<sup>5</sup> In other words, for these issuers, the green label is associated with lower yields compared to conventional bonds. By contrast, green securities issued by financial institutions are not priced differently from conventional bonds, all other factors equal. One possible reason behind such heterogeneity is that financial institutions are less clearly able to signal their environmental attitudes, as bond funding is arguably used to finance green loans.

While the negative premium is consistent with strong demand by sustainability-concerned investors, the results suggest that the green bond label per se is not

<sup>5</sup> The study uses a large sample of 271,312 bonds, of which 1,397 green, issued worldwide in the 2007-2018 period.

enough to raise funding at a lower cost. This is most likely due to the difficulties for investors to disentangle issuers with a genuine commitment to environmentally friendly projects from those engaging in mere 'greenwashing'.

This argument is corroborated by the finding that, when a negative greenium exists, it is larger for bonds with external review and for those issued by repeat issuers, i.e. issuers that tap the green bond market more than once. Indeed, if external review acts as a signaling device for bonds that actually have environmental or climate-related benefits, expectedly reviewed bonds sell at a premium compared not only to conventional bonds but also to non-reviewed green securities. Likewise, arguably, issuers placing more than one green bond can build a reputation for green commitment over time. At the same time, through repeat issuances, investors can gather more information on the borrowers and, thus, rely on improved capacity to screen them. The reduced information asymmetry would be behind their willingness to get a lower remuneration.

The fact that some green bonds pay a lower yield compared to similar conventional bonds implies a lower cost of financing on green issuances, all other things being equal. **The negative premium acts as a market incentive to green issuances, but entails the risk of companies engaging in greenwashing to attract sustainability-concerned investors and benefit from lower cost of debt.** It is not clear to what extent the risk is mitigated by the additional costs that green issuers incur, e.g. for reporting or external review. At any rate, further standardization of market practices with more stringent requirements and incentives for external review could help alleviate concerns about greenwashing.

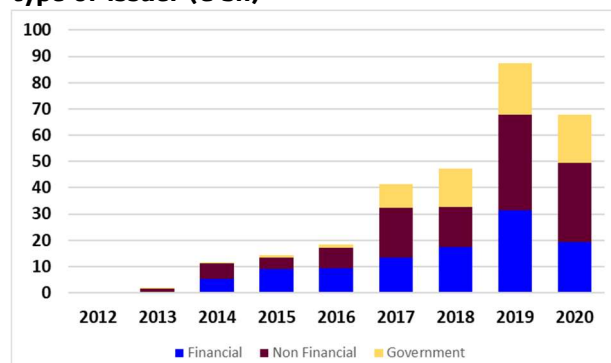
## Green bonds in the EU

**Europe has become a world leader in the issuance of green bonds.** Volumes issued as from 2013 by companies and national and sub-national governments in the EU27 have reached €289 billion (Figure 2), while green bond volumes of non-European issuers are around €313 bn, of which €116 bn from Chinese issuers.<sup>6</sup> Among European issuers, non-financial corporations have issued roughly €120 bn (41% of the total), while financial institutions and governmental issuers €106 bn and €64 bn, respectively. While the

<sup>6</sup> The figures do not include issuances by supranational institutions, such as the European Investment Bank, the European Bank for Reconstruction and Development, the International Finance Corporation and the regional development banks part of the World Bank Group.

market is very dynamic, it represents only 1.2% of the overall EU bond market.

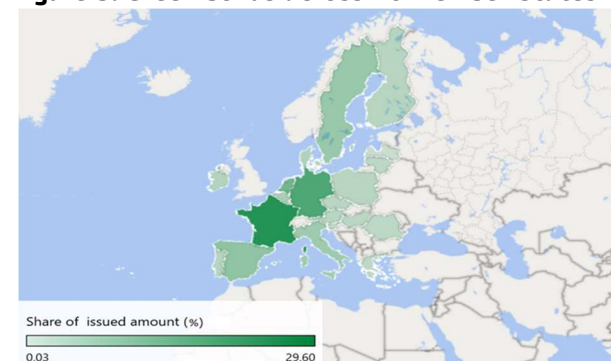
**Figure 2. European issuance of green bonds, by type of issuer (€ bn)**



Source: own calculations based on Dealogic DCM data. Last observation: 14 September 2020.

The share of the national green markets over the EU aggregate reflects the size of the economies but also the overall development of national debt capital markets. Issuers in France and Germany alone account for half of the market in terms of volumes issued as from 2013. Both countries have also issued sovereign green bonds, which represent a considerable share of the market, as they are normally very large.

**Figure 3: Green bonds across EU Member States**



Source: own calculations on Dealogic DCM data

## Conclusions

A relatively new market practice in corporate finance, green bonds are considered one of the most promising instruments to channel funds to environment and climate-related activities. Through their focus on project-level information about green use of proceeds, tracking, impact reporting and external reviews, green bonds provide bond investors with an unprecedented degree of transparency. On the back of strong investor demand, the market has been growing constantly since its debut in 2007. It is, however, still a small fraction of the overall bond market.

While the market-based Green Bond Principles introduced in 2014 have granted some standardization in market practices, the absence of a unique reference framework is still identified as one of the main barriers to the further development of the green bond market. Against this background, the European Commission is proposing an EU Green Bond Standard (EU GBS), inspired by market best practices, which aims to enhance the transparency, comparability and credibility of the green bond market for both borrowers and investors. This is achieved also thanks to an explicit alignment of the EU GBS with the EU Taxonomy for classifying environmentally sustainable activities.

Green bonds can play an increasingly important role in scaling up financing of private and public investment for the low carbon transition and broader environmental action in the context of the post-pandemic recovery. The European Commission has set a target of raising through green bonds 30% of the €750 billion that will be borrowed under Next Generation EU, the instrument put forward to provide financial support towards a green and sustainable medium-term recovery across European economies.<sup>7</sup> Such large-scale EU green bond issuance is expected to help respond to the growing base of sustainability-concerned investors and is likely to act as a stimulus for private sector issuances.

## References

Fatica, S., Panzica, R. and Rancan, M., 2019. [The pricing of green bonds: are financial institutions special?](#), JRC Working Papers in Economics and Finance, 2019/7, doi:10.2760/496913, JRC116157.

Fatica, S., and Panzica, R., 2020. [Green Bonds as a tool against climate change?](#), JRC Working Papers in Economics and Finance, 2020/10, doi:10.2760/24092, JRC121894.

This policy brief summarises the main results from research activities conceived and developed by the JRC in the context of the scientific support provided to the [EU Technical Expert Group \(TEG\) on Sustainable Finance](#) – workstream for the development of an [EU Green Bond Standard \(GBS\)](#).

Contact: [serena.fatica@ec.europa.eu](mailto:serena.fatica@ec.europa.eu)

<sup>7</sup> [State of the Union Address by the European Commission President von der Leyen at the European Parliament Plenary](#), 16 September 2020.