I4CE
INSTITUTE FOR CLIMATE ECONOMICS
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# Beyond transparency: unlocking the full potential of green bonds

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CONTENTS

**I4CE – Institute for Climate Economics**

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## DISCLAIMER

# Executive summary

‘Green’ or ‘climate’ bonds are a new asset class that has received increasing attention over the past few years. It is often seen as a financial instrument that may help overcome the low-carbon investment challenge. This report explores the current and potential contribution of green bonds to the low-carbon transition and different ways to enhance it. The analysis begins by taking stock of the current status of the green bond market, identifying key roles that the market plays for different stakeholders and pin-pointing two key challenges to be addressed. The first challenge – namely the question of environmental integrity of green bonds – explores the stakes related to definitions and procedures and identifies possible approaches to deal with it. Next, the second challenge focuses on how, beyond increasing transparency, both market-driven and public support measures may help increase the tangible financial contribution of green bonds to the low-carbon transition. The report then concludes with a number of possible steps for policymakers and financial stakeholders to overcome the current limitations of green bonds.

## GREEN BONDS HELP TO IMPROVE THE TRANSPARENCY OF INFORMATION AND MATCH MARKET ACTORS

Currently, the green bond market unlocks a number of benefits by increasing the transparency of information available to investors on underlying assets and companies. Notably, green bonds can help investors implement their long-term climate strategies and enable responsible investors to have alternatives to broaden their delete portfolios. In turn, green bonds can help bond issuers communicate their sustainability strategies, create internal synergies between financial and sustainability departments, and expand and improve relationships of borrowers with debt providers. Finally, green bonds can support the implementation of national climate policies – through improved awareness and more efficient capital allocation, especially in the perspective of redirecting capital towards low-carbon and climate resilient projects (Table 1).

While these benefits alone may justify the existence of the green bond market, its tangible contribution to the low-carbon transition has so far been limited. Most notably, the green bond market does not appear to directly stimulate a net increase in green investments – or the financing and refinance of low-carbon projects – through a lower cost of capital. Moreover, the spontaneous bottom-up manner of the development of green bonds raises reputational and legal risks related to environmental integrity, which increasingly threaten the very survival of this nascent market. In order to realize its potential, the green bond market will therefore have to overcome two main challenges. First, it has to avoid implosion – due to the lack of investor confidence – by ensuring the environmental integrity of green bonds. Second, the impact of green bonds needs to be enhanced by growing the pipeline of underlying low-carbon projects and potentially bringing them tangible financial benefits.

## FIRST CHALLENGE: STRENGTHENING THE ENVIRONMENTAL INTEGRITY THROUGH THE STANDARDIZATION OF PROCEDURE AND CLARIFICATION OF EXPECTATIONS

The first challenge of environmental integrity is in fact twofold. First, there is a question of defining ‘greenness’, which ultimately depends on the objectives of the use of green bonds. At the very minimum, the market actors will need to explicitly lay out the objectives of standards in order to provide a clear definition of ‘greenness’. The lack of explicit and shared objectives for the green

**TABLE 1. CURRENT BENEFITS OF GREEN BONDS**

| Actor | Benefits |
|---|---|
| Issuers | • Helping issuers communicate the sustainability strategy<br>• Improving relationships with debt providers and broadening the ‘investor base’<br>• Creating internal synergies between financial and sustainability departments |
| Investors | • Helping investors to develop better-informed investment strategies<br>• Facilitating the smooth implementation of long-term climate strategies<br>• Helping responsible investors broaden their restricted investment portfolios |
| Policymakers | • Indirectly supporting the implementation of the low-carbon transition by better matching green issuers and investors |

bond market is a source of misunderstanding that could eventually harm the market through accusations of green-washing and potentially higher transaction costs. Governments could facilitate this process by clarifying investment priorities that are coherent with long-term climate and sustainable development strategies and/or endorsing standards that are aligned with them. While governments' intervention can help structuring the market, it is clear that a diversity of approaches and financial products are necessary to support the low-carbon transition. This may ultimately support continued heterogeneity in the green bond standards – without necessarily leading to a questioning of the environmental impact of underlying assets.

Second, there is a question of the reliability of information, which is linked to monitoring and evaluation procedures. While the market-driven approaches have already made significant progress in this area, more needs to be done to ensure the environmental integrity of green bonds. As a next step, the market actors could reinforce the monitoring and reporting procedures – e.g. through existing market-driven forums such as the Green Bond Principles. In instances where the market fails to do so, governments may step in to provide guidance or implement top-down regulations. However, it is important that proponents of the standards – both private and public – strike a balance between stringency of procedures and the resulting transaction costs.

Overall, the process of reinforcing the green bond market can be compared to the one occurring at the international level on climate change: the 2015 Paris Agreement brings common understanding of the objectives and definitions as well as common reporting processes leaving different actors – states, local authorities, civil society, etc. – to define the best strategies and actions adapted to their own circumstances. The same approach could be applied to the green bond market: common procedures and reporting frameworks under the Green Bond Principles could be coupled with market- and/or public-driven development of standards (Table 2).

### SECOND CHALLENGE: PROVIDING TANGIBLE BENEFITS TO INCREASE GREEN BONDS' IMPACT AND GROW THE PIPELINE OF PROJECTS

Concerning the second challenge of increasing the impact, the green bond market can help stimulate green investments by reducing the cost of capital for green projects. Evidence suggests that this does not currently occur in practice and thus limits the market contribution

**TABLE 2. POTENTIAL NEXT STEPS TO SAFEGUARD THE GREEN BOND MARKET**

| Challenge | Potential next steps |
|---|---|
| The 'expectation gap' regarding the definition of 'greenness' | **For the market players and/or governments:**<br>• Clearly lay out the objectives of different standards in order to define 'greenness'<br>**For governments:**<br>• Clarify investment areas compatible with – and potentially that are priority under – long-term national sustainable development pathways;<br>• Publicly endorse standards that are aligned with long-term decarbonization strategies |
| Transparency risk related to monitoring and evaluation procedures | **For market players and/or governments:**<br>• Further market convergence around the enhanced transparency frameworks;<br>• Reinforce the global efforts around standardizing practices – through Green Bond Principles for example – while keeping additional transaction costs in check<br>**For governments:**<br>• Support the issuance of green bonds by public institutions to expand the market and potentially prove the relevance of more complex green bonds;<br>• Create green bond labels aligned with long-term decarbonization pathways<br>• Mandate similar disclosure requirements for all asset-linked bonds |

to the 'repackaging' or labeling of bonds that would most likely have been issued and fully subscribed as traditional products. Overcoming this limitation could be achieved by furthering the access of smaller and riskier projects to the bond market through securitization instruments that have already begun to emerge. Moreover, it is hypothetically possible that the green bond market could support a process of decreasing the cost of debt for underlying projects through a 'green premium'. This can be achieved if a sufficiently large 'committed demand' from institutional investors develops over time, although this perspective remains largely theoretical due to fiduciary duty limitations.

In this light, governments may provide targeted public support schemes to reduce the cost of capital for those green bonds that finance priority areas in line with long-term climate and sustainability objectives. These measures may include various forms of subsidies, tax breaks, changes in prudential regulation and public guarantees. Implementing such measures will, however, require robust evaluation and reporting in order to avoid free-riding and to maximize the efficiency of public support. Moreover, governments will need to weigh the use of public funds to support green bonds against more conventional climate policies that could improve the economics and bankability of underlying projects such as, for example, renewable energy subsidies. Ultimately, green bond support priorities will depend on national circumstances and sustainable development priorities.

### THE STRINGENCY OF SELECTION OF GREEN BONDS ELIGIBLE FOR POTENTIAL PUBLIC SUPPORT WILL DEPEND ON THE NATIONAL POLICY OBJECTIVES

If national governments or other public entities decide to provide direct support for the green bond market, they will need to establish monitoring and evaluation procedures to better target this support and to avoid free-riding. Depending on the policy objectives, three levels of evaluation stringency can be distinguished:

- 'Coherence checks' that make sure that investment projects behind green bonds are aligned with the credible national climate and sustainable development strategies or more broadly, commonly-agreed decarbonization pathways.
- 'Average additionality' of the contribution of green bond issuance to national policy objectives through, for example, the development of positive lists of project types that are underrepresented or underfunded and therefore require additional support.
- 'Project-by-project' ex-ante evaluation of underlying activities and assets coupled with ex-post quantification of mitigation outcomes to maximize the 'environmental impact leverage' ratio per dollar of public support provided, e.g. the amount of GHG emissions reduced per dollar invested.

### A BROADER DIALOGUE AMONG PUBLIC AND PRIVATE MARKET ACTORS IS NECESSARY

While the priorities for next steps discussed above can be debated, one recommendation appears crystal-clear: whatever measures private and public actors decide to implement to safeguard and support the market, a broader dialogue between policymakers and market stakeholders is critical while barely existing today. Such a dialogue should aim to strengthen the green bond market by aligning it with long-term sustainable development priorities and unlocking its full potential to deliver environmental benefits and ensure the quality of the improved transparency. This report lays out some ideas on the way of framing current and forthcoming processes around green bonds and should thus be seen as a discussion paper that calls for feedback and reaction from all kinds of stakeholders.

# 1. Introduction



The Paris Agreement on climate change adopted by 196 parties at the 21st Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) – or COP21 – in December 2015, set a target of full decarbonization of the global economy by the end of the 21st century (Bultheel et al. 2015). Across studies, significant reorientation of existing investment flows combined with an overall increase in capital will therefore be needed for the transition to a low-carbon economy. For example, the International Energy Agency estimates that annual investments in low-carbon infrastructure will have to reach USD780 billion and USD2.3 trillion by 2020 and 2035 respectively (IEA 2014). At the same time, the total infrastructure investments requirements – both low- and high-carbon – are estimated at an average of USD6 trillion annually in the next 15 years, while the low-carbon infrastructure needs would increase them only by USD270 billion annually (The Global Commission on the Economy and Climate 2014). The main challenge for the financial sector will therefore be to shift existing investment flows from traditional carbon-intensive sectors towards the low-carbon economy.

'Green' or 'climate' bonds are a new asset class that has received increasing attention over the past few years as a potentially attractive financial instrument to help overcome this low-carbon investment challenge. Currently, the green bond market unlocks a number of benefits – including easing the redirection of capital – by increasing the transparency of information available to investors on underlying assets and companies. While these benefits may already justify the existence of green bonds, their tangible contribution to the low-carbon transition has so far been marginal. Most notably, the green bond market does not currently appear to directly stimulate the increase of green investments – financing and refinancing of low-carbon projects – through a lower cost of capital or other improvement of financial terms. Moreover, the spontaneous bottom-up manner of the development of green bonds raises reputational and legal risks related to environmental integrity, which may threaten the very survival of this nascent market.

This report therefore aims at exploring the current challenges faced by green bonds as well as the approaches to overcome them and unlock the full potential of the green bond market to support sustainability objectives. To achieve this goal, the report proceeds in four steps.

First, it takes stock of the current status of the green bond market, identifies key roles that it plays for different stakeholders and pin-points two key challenges that have to be addressed.

Second, it tackles the issue of environmental integrity of green bonds, explores the stakes related to definitions and procedures and identifies approaches to deal with these issues.

Third, it explores how, beyond increasing transparency, both market-driven innovations and potential public support schemes may help increase the tangible financial contribution of green bonds to the low-carbon transition.

Finally, the report concludes with a number of recommendations aimed at informing systemic decision-making by policymakers and financial stakeholders to help them evaluate the options available to overcome the challenges ahead for green bonds.

Overall, this report aims at stimulating the debate on the future of the market and should therefore be seen as a discussion paper that calls for feedback and reaction from all kinds of stakeholders.

# 2. Current status and future challenges for green bonds

## KEY TAKEAWAYS FROM THIS SECTION

- The green bond market experienced **strong growth** in the past years coupled with a **diversification of issuers** and emergence of a **dedicated ecosystem** of actors. Green bonds, nevertheless, still account for a **fraction of the overall bond market**.
- For issuers, green bonds help **communicate green credentials**, create **internal synergies** between their financial and sustainability departments and **expand and improve relationships with debt providers** – including the **diversification of investor pool**.
- For investors, green bonds help **provide information** necessary to facilitate the implementation of their **long-term climate strategies** and may help responsible investors **broaden their portfolios**.
- For policymakers, green bonds may **support the implementation of national climate policies** through better awareness and help **promote sustainable development priorities**.
- Green bonds face two key challenges. First, green bonds need to **ensure environmental integrity** in order to mitigate reputational – or 'green-washing' – and legal risks that threaten the very survival of the market. Second, the **pipeline of climate-friendly projects** needs to be expanded, for example by **reducing the cost of capital**.

## A diverse and growing galaxy of green bonds in the larger bond universe

A bond is a debt instrument used to borrow the funds for a defined period of time usually at a fixed interest rate. The use of bonds and fixed-income financial products appears to have a significant potential to help fulfill low-carbon and climate resilient infrastructure investment needs. Principally, bonds allow market actors to raise large-scale upfront financing for projects with long-dated revenue streams (OECD 2015b). Green bonds are fixed-income securities whose proceeds are used exclusively to finance or re-finance environmentally sound projects. Green bonds can therefore be viewed as 'thematic' bonds – similar in principle to railway bonds issued in the 19th century – but dedicated to the low-carbon and climate resilient transition or other environmental objectives.

Today, the attention of the market has so far mainly focused on climate-related co-benefits – greenhouse gas (GHG) mitigation and adaptation to future climatic changes. However, green bonds could theoretically be used to support more varied environmental co-benefits.

From a financial perspective, green bonds are barely more complex than traditional bonds. Principally, they require additional information on the environmental impact of use of proceeds, rather than a new financial architecture. As tracking this co-benefit is relatively simple when linked to underlying physical assets or projects, green bonds often incorporate 'ring fencing' or means of tracking and reporting on the use of raised capital. Therefore, an integral part of a green bond is disclosure on the assets it will finance before issuance and tracking and reporting on the use of proceeds post-issuance. The information provided and the process required to document, report and communicate the environmental impacts bring several positive outputs for both green bond issuers and investors, as well as for the policymakers that are discussed below.

While there are several types of green bonds in terms of their financial architecture – namely earmarking of proceeds and debt recourse (Box 1) – they all share

### BOX 1. TYPES OF GREEN BONDS

Similar to traditional bonds, green bonds can be roughly divided into seven types:

- *Corporate bonds* or 'use of proceeds' bonds backed by a corporate's balance sheet.
- *Project bonds* that are backed by a single or multiple projects.
- *Asset-backed securities (ABS)* or bonds that are collateralized by a group of projects.
- *Covered bonds* with a recourse to both the issuer and a pool of underlying assets.
- *Supranational, sub-sovereign and agency (SSA)* bonds that are issued by the IFIs and various development agencies.
- *Municipal bonds* issued by municipal governments, regions or cities.
- *Financial sector bonds* issued by an institution to finance 'on-balance sheet lending'.

similar traits and challenges that are central to this report. The generic term 'green bond' is therefore used throughout the paper, unless the discussion focuses on specific bond types, such as asset-backed securities.

Despite its rapid growth, the green bond market still accounts for a tiny fraction of USD19 trillion annual bond issuance (OECD 2015b). Until now, the value of annual issuance of green bonds amounted to only tens of billions USD. The initial issuers were international financial institutions (IFIs), notably the European Investment Bank (EIB) and the World Bank Group (WBG), who issued their inaugural green bonds in 2007 and 2008 respectively. The market started to boom in 2013 with multibillion-worth green bonds issued by the International Finance Corporation (IFC), EDF, Toyota and Unilever among others – most of them heavily oversubscribed (The Economist 2014). Green bonds have thus been the fastest-growing new asset class with USD37 and USD42 billion issued in 2014 and 2015 respectively – up three and a half times from USD11 billion in 2013 (CBI 2015a).

To date, most green bonds have been issued in the OECD countries (CBI 2016a) even though a rapid expansion of the Chinese market can be observed in 2016 (CBI 2016b). This is not surprising given that the bond markets in general are most developed in these countries, with OECD countries having the largest share of responsible investors. HSBC forecasts the green bond issuance to be between USD55 and USD80 billion in 2016 (Cripps 2016). At the same time, as the market continues to structure itself, considerable diversification of issuers from MDBs to municipalities and private corporations can be observed (Figure 1).

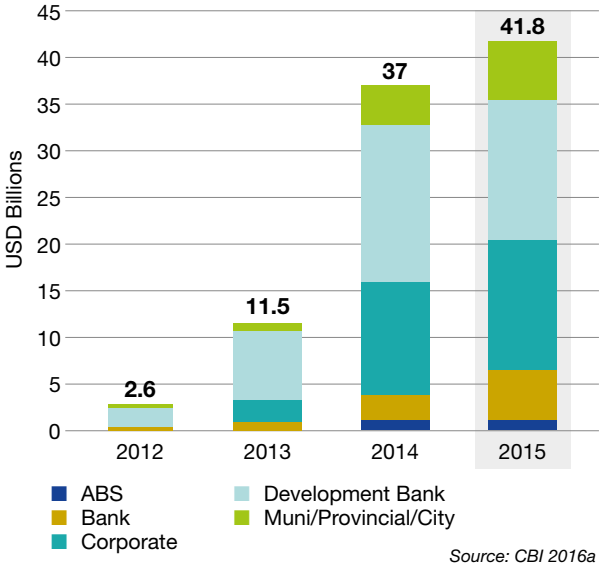
The green bond market has been growing rapidly as it managed to fit the expectations and needs of market players involved. Be it for the buyer or the issuer, green bonds provide interesting added value linked with the additional information and the uses it permits. The key benefits of green bonds are discussed below.

## Benefits of green bonds for issuers: external and internal synergies

### HELPING ISSUERS COMMUNICATE THEIR SUSTAINABILITY STRATEGY

The process leading up to the COP21 and the Paris Climate Agreement facilitated an unprecedented mobilization of public and private actors around the topic of climate change with dozens of multinational corporations making climate pledges along with the governments. Many institutions are now starting to act on these commitments and green bonds could prove

**FIGURE 1. GREEN BONDS ISSUANCE DIVERSIFICATION**




*Source: CBI 2016a*

to be a useful tool to fulfil pledges. For example, Apple issued its first USD1.5 billion green bond in February 2016. While this company does not have difficulties raising debt on capital markets, it has chosen to use the green bond label to communicate on green investments in renewable energy and energy efficiency that they are undertaking. Apple cited the Paris Climate Agreement as a principal reason to make this move (Reuters 2016). The green bond market thus appears to be identified by issuers as a way to communicate on their sustainability strategy and thus enhance their reputation.

### EXPANDING AND IMPROVING RELATIONSHIPS WITH DEBT PROVIDERS

The promotion of sustainability information can be aimed not only at clients, but also at investors in a process of strengthening relationships between issuers and debt providers. A direct consequence is thus the access of a given issuer to an extended pool of lenders. For example, the experience of the Ile de France region with its inaugural green bond – when new investors from Scandinavian countries were attracted by the green features of the bond – may serve to highlight this benefit. Diversifying the investor base is important for issuers from the financial risk management point of view, and was one of the key motivations for the Ile de France region to issue a green bond.

Moreover, due to the large size of the bond market, smaller 'green pure-play' companies as well as other non-regular issuers – such as, for example, the Dutch bank FMO or the Mexican bank Nafin – might not be

on every investor's radar. Issuing a green bond can be a way for these organizations to gain visibility, and thus attract more attention from investors. This is particularly relevant given that demand for green bonds is currently exceeding supply.

This expansion of the investor base is also curial for issuers targeting socially responsible investment (SRI) funds. Indeed, issuers that do not pass the screening tests used by SRI funds face a restricted investor base. By issuing green bonds, such companies may be able to attract SRI funds to finance the part of their activity that passes the screening, such as in the case of traditional energy companies diversifying their business to invest in renewable energy.

From the issuers' perspective, this improved and expanded relationship with investors has a long-term benefit of stabilizing and expanding the base of investors – thus helping them ensure that they will be able to fully-subscribe their issuances at an attractive rate. While this benefit may not necessarily materialize in the short-term or in unproblematic periods, it can become particularly useful when market conditions deteriorate or when organizations' ability to borrow is restricted. For example, the green bond issued by the State of Massachusetts in 2013 was 30% oversubscribed, while the regular bond was undersubscribed (KPMG 2015). At some point, a larger base of investors may also lead to a greater ability to reach long term lenders and thus have access to longer maturities (McCrone 2014).

### CREATING INTERNAL SYNERGIES BETWEEN FINANCIAL AND SUSTAINABILITY DEPARTMENTS

The green bond issuance process – including disclosure on the management of proceeds and evaluation of the environmental impacts of investment projects – may help build stronger sustainability awareness within the issuing organization and reinforce ties between financial and sustainability departments (KPMG 2015). This is particularly important given what has been termed as a 'historical lack of climate change awareness' among the financial executives and the often-marginal role of sustainability departments in large corporations (Kolev et al. 2012). For example, the Ile de France region has indicated the positive experience with the green bond issuance process in terms of raising sustainability awareness within the departments involved.

Green bonds may thus be seen as a tool to improve the capacity of teams beyond the sustainability department on environmental, social and governance (ESG) issues. In this respect, the preparation and organization of the issuance of green bonds can be compared to other certification processes similar to, for example, ISO certification. These processes help build internal capacity on a particular topic within an organization, streamline its sustainability strategy and demonstrate the organization's robustness to handle such processes.

## Benefits of green bonds for investors: better information for impact investments

### HELPING INVESTORS TO DEVELOP BETTER-INFORMED INVESTMENT STRATEGIES

From an investor's standpoint, the additional information on the impact of their funds and the use of proceeds is an added value in itself compared with the baseline scenario of investing in classical bonds. This additional information can be used to better inform investment strategies and risk assessment, but also to better understand issuers' environments and strategies. As such, by improving transparency and information availability, green bonds can help enhance the communication between issuers and lenders regarding the impacts of their investments.

For an investor, getting the additional value from green bonds requires that they have and can process the additional information on environmental impacts and the use of proceeds. This, in turn, implies an interest to do so and potentially increased transaction cost compared to purchasing traditional bonds. Nevertheless, even investors that do not mobilize resources to analyze this additional information can reap the benefits of green bonds. Indeed, a 'no-regret' strategy for them would simply be to prioritize the purchase of green bonds issued by those market actors that they already purchase traditional bonds from. Given that green bonds have the same financial characteristics as classical plain 'vanilla' bonds plus enhanced information, investors would capture that information – even if not its full value – without additional transaction costs. Standards and certification can help investors to decrease their transaction costs. However, full standardization may prevent them from proactively increasing their expertise and awareness.

From a system-wide perspective the green bond issuance process – that involves closer interaction between issuers and investors – may help build stronger sustainability awareness and capacity in the financial sector. This in turn, could help develop and enable the basis for an improved understanding and integration of climate-related issues in the financial decision-making process. In that perspective, it can support the necessary evolution of the financial culture, as described by the UNEP Inquiry

program (UNEP 2015). Therefore, green bonds could help investors strengthen their ability to seize investment opportunities linked to the low-carbon transition.

### FACILITATING THE IMPLEMENTATION OF INVESTORS' LONG-TERM CLIMATE STRATEGIES

Institutional investors with long-term outlook such as pension funds and insurance companies are increasingly willing to invest in the low-carbon transition in order to offset long-term climate-related risks associated with their current investment portfolios (Novethic 2015). These risks include among other 'carbon risks' linked to climate regulations and the resulting risks of 'stranded assets'. They may also be willing to invest in climate-friendly assets to respond to political pressure from their stakeholders and to maintain a strong public image. Fulfilling both objectives – i.e. diversification of climate-related risks and political engagement – requires information about the environmental impacts of investment products.

Green bonds can provide a part of the necessary information, helping match increasingly numerous responsible investors with environmentally friendly projects and companies. Labeling bonds as 'green' can therefore be used as a discovery tool that "reduces friction in the investment process" (CBI 2015b). Thus, green bonds, as an asset class, through its associated impact assessment and labeling, provide useful information to assist these actors in understanding how they can reorient their investments from 'brown' to 'green'.

As the green bond market expands, more and more investors willing to seize new opportunities will be drawn to the market. Consequently, the imitation effect as well as competition between investors could create market incentives for increased capacities and understanding of the issues related to the low-carbon transition.

### HELPING RESPONSIBLE INVESTORS BROADEN THEIR RESTRICTED INVESTMENT PORTFOLIOS

SRI funds or individual responsible investors apply various screening methods to invest only into companies that act in a socially accepTable way while excluding 'irresponsible' ones from their portfolios. These investors therefore have to face the challenge of a 'restricted investment base' (Heinkel, Kraus, and Zechner 2001). This means that SRI funds cannot fully diversify their portfolio – as opposed to the mainstream investors – since only a limited number of companies meet their screening standards.

Green bonds may partially help offset this limitation by isolating specific investment in a given company. For example, if an energy company that has historically focused on fossil fuels – and would therefore be outside the scope of certain SRI portfolios – decides to diversify its operations and develop renewable energy projects, it could issue a green bond to finance such diversification. SRI funds will know that the proceeds from the green bond would be used to finance a project aligned with their screening criteria, and would thus be able to invest in the bond, even though it is issued by a company that would normally not pass their screening. Green bonds could thus help SRI funds diversify their limited investment portfolio.

This benefit, however, disappears if an SRI fund's investment strategy requires having the broader issuer's strategy fully aligned with green objectives. For instance, that would be the case for investment strategies aiming at mitigating the exposure to the risks of devalued or stranded assets linked to the implementation of climate or other environmental policies.

## Systemic benefits of green bonds: facilitating climate policies

### INDIRECTLY SUPPORTING THE IMPLEMENTATION OF LOW-CARBON TRANSITIONS

On the top of individual benefits that issuers and investors can take from the green bond market, there are some systemic benefits. As discussed above, green bonds can bridge knowledge and capacity gaps on ESG issues, and thus overcome informational barriers linked to green investments. As the green bond market can improve the match between investors' expectations and available investment opportunities, it likely supports an improved, if marginally, capital allocation – i.e. avoiding overlooked green investments due to the lack of observed opportunities. Moreover, by improving the knowledge of underlying investments, green bonds can help both improve investment decisions and better link securities with tangible investments.

At the same time, green bonds alone are not the silver bullet solution that can stimulate the low-carbon transition in the absence of other policies that improve the economics of low-carbon projects. Policymakers may thus integrate green bonds into their broader climate policies, keeping in mind that addressing only the financial sector is insufficient if economic and industrial policies fail to incentivize the development of green projects and to ensure that they provide necessary returns for investors. In this light, policymakers may

employ a holistic approach tackling the whole financial value chain from supply to demand of capital through the matching process (Morel et al. 2015).

### CONDITIONS ON THE SIZE AND QUALITY OF THE MARKET TO MAKE IT MEANINGFUL

Some observers expect that the mobilization of the financial sector on climate change issues could have a 'pulling' effect where an increase in the supply of capital for 'green' would stimulate the demand for capital – in other words, increased development of projects. It is however, unlikely, that this would occur unless the green bond market becomes sufficiently large. Indeed, the 'matching' effect of green bonds would reach its full potential when the market is mature enough to manage the implementation of all investors' green investment strategies and complete a missing link in the financial value chain: from savings and institutional investors to projects. Supporting the development of the green bond market without degrading its fundamentals (e.g. by breaking traceability between securities and tangible investments or reducing the availability of reliable information and reporting), is thus an impactful opportunity for policymakers to reduce potential friction accompanying the low-carbon transition. In that perspective, public and private stakeholders could support this process by answering the following questions and acting accordingly:

- How can the current principal added value of the green bond market – i.e. better information and transparency – be reinforced and ensured?
- Can the green bond market become sustainable and contribute to climate change objectives in a meaningful way only by providing an informational benefit that is not necessarily of high value to mainstream investors?
- How can green bonds' added value be expanded?

Answering such questions requires launching a broad dialogue between public and private stakeholders. Governments and regulators seem to be in good position to push this dialogue forward.

## Two challenges for green bonds: ensuring environmental integrity and boosting impact

The previous sections have explained in detail the upsides of the green bond market from issuers', investors' and policymakers' perspectives. However, at the same time there have been growing concerns over the environmental integrity of green bonds and the risks of 'green-washing'.

Many stakeholders posit that the green bond market has the potential to play a crucial role in the low-carbon transition by unlocking new and redirecting existing investment flows – particularly from institutional investors – towards the green economy. However, to do so at the necessary scale and to have a substantial impact on financing the low-carbon transition, it appears that that green bonds will need to go beyond the 'informational' added value to providing tangible financial benefits for issuers and buyers – for example through better financial conditions compared to regular bonds.

Moreover, investment needs to fulfill the low-carbon transition may stem from various sectors, be of various sizes and managed by various actors. So far, the green bond market – and more broadly the financial system – has not fully adapted to this diversity. Rather, the majority of green bonds are issued by large actors that do not typically have troubles raising funds on the regular bond market: almost all of the principal issuers are institutions with high credit ratings, long history of issuing bonds, and with generally strong capacity to raise capital at competitive rates. Green bonds are therefore often criticized for being just a 'repackaging' of traditional bonds not bringing additional net benefits apart from information. Since bonds are often used as a refinancing tool, there is equally a question of how the freed-up capital is re-invested.

The green bond market is thus facing two main challenges. The first one is to avoid implosion by ensuring environmental integrity of the market. In other words, it means mitigating the risk of the perception of green-washing and communication backslashes. It is understood that, without any intervention – driven by the private or public sector depending on the issue – this risk increases with the size and diversity of the market. The second challenge is to enhance the environmental impact of green bonds by growing the pipeline of underlying low-carbon projects and potentially bringing them tangible financial benefits. The following sections of the report will look at these two challenges in detail and identify different measures that both private and public actors can employ to overcome them.

# 3. First challenge: protecting the environmental integrity of green bonds



## KEY TAKEAWAYS FROM THIS SECTION

- Currently there is a **variety of approaches to ensure environmental integrity** and so far there has been **no consensus on common definitions and standards**. The **lack of an explicit and common objective** for the green bond market is at times a source of **misunderstanding among actors** that could eventually harm the market.
- Further growth of the green bond market in size and sectoral scope increases **reputational or 'green-washing' and legal risks** threatening the market survival.
- The market may converge naturally around **common and enhanced definition and transparency** framework. The **'greenness' definition** will, however, only be possible if standards that define their objectives explicitly emerge.
- A delicate **balance between stringency and transaction costs** has to be found with regards to the evaluation of mitigation outcomes and ex-post reporting.
- Governments can help link the green bond market with **investment projects coherent with long-term low-carbon and climate resilient strategies**. Governments can also **support existing or create new green bond labels** if the market fails to do so.

The debate around the environmental integrity of green bonds and securing the informational benefits of the market is twofold. First, there is a fundamental question about the purpose of green bonds. While market stakeholders seem to agree upon the green benefit output, there is no precise, explicit and commonly shared objective for the green bond market and a number of potentially contradictory strategies appear to be in use. Second, there is a more technical question regarding the structure of green bonds, i.e. what kind of information is provided and how, which in turn has an impact on transaction costs for both issuers and buyers.

## An 'expectation gap' regarding the objectives and contribution of the green bond market

Expectations among investors regarding the purpose of green bonds may vary. Some may be willing to invest in green bonds to hedge their risks against green policies, some may be willing to invest in green bonds that finance only new additional projects, while some may be willing to maximize the green impact of every dollar invested. The difference in the perception of objectives of the green bond market may lead to a variety of green bond definitions. However, there may not be a silver-bullet strategy and the resulting diversity may in fact be a way to implement holistic approaches at the systemic level. Therefore addressing the risk of green-washing and environmental integrity more broadly requires making the role of green bonds as explicit as possible either by market actors or by governments.

### FURTHER GROWTH IN SIZE AND SECTORAL SCOPE INCREASES REPUTATIONAL AND LEGAL RISKS THREATENING THE SURVIVAL OF THE MARKET

Flexibility and freedom to define green bonds may have been important not to impose unnecessary constrains on issuers at an early stage of market development. However, as the green bond market grows, the question of common definitions has become more pressing. Indeed, the currently unregulated market is *"exposed to a major risk, namely what would happen if an issuer blatantly violated its 'green' commitments?"* (Claquin 2015) – in other words, the risk of 'green-washing'. Although so far market stakeholders have managed to avoid large-scale scandals or revelations regarding unjustified or improper green credentials of bonds, there are first signs of this risk materializing.

The issues stem from an 'expectation gap' – or misunderstanding – about the role that green bonds should play. Depending on these expectations – e.g. supporting only new green activities, helping identify or label existing green activities, supporting only the 'greenest' issuers, aiding investors to consciously support the low-carbon transition, having broader sustainability excellence, etc. – the use of a green bond to fund the underlying assets may be seen as green or as green-washing.

For example, there has been strong criticism from some environmental NGOs of the EUR2.5 billion green bond issued in 2014 by GDF Suez (now Engie) aimed at financing renewable energy projects (Petitjean 2014). Indeed, some NGOs pointed to the fact that proceeds would be used to finance a large hydro power project in Brazil with environmental concerns. Moreover, there was no legal constraint or 'ring fencing' on the issuer not to use the green bond proceeds to finance controversial nuclear power as a low-carbon energy source (Friends of the Earth 2015). The GDF Suez bond attracted further attention when it received the Pinocchio du Climat prize that is awarded every year by the NGO Friends of the Earth for the worst green-washing practices. This experience shows that the lack of explicit frameworks and standards to refer to creates space for controversies among actors.

More broadly, there are several possible dimensions of green-washing (KPMG 2015), notably:

- Proceeds are used to fund activities that are not considered green;
- Core business activities are seen as unsustainable;
- Use of proceeds are not tracked properly and not reported in a transparent manner;
- There is insufficient evidence that projects have contributed to better environment

Besides the reputational risk there is the so-called 'green default' – or litigation – risk. While there have been no such cases until now, responsible investors may theoretically seek reparations from issuers if the green credentials of the latter prove to be false. Indeed, if an investor is lured into buying a bond due to its green credentials, and then they are not fulfilled, this can constitute a legal case of misguiding the customer using false information. The London-based Green Finance Initiative group has already assembled a team of lawyers to deal with potential litigation linked to green bonds, which demonstrates that this risk is perceived as real by the market (Hirtenstein 2016).

What is at stake with these criticisms is the clarification of investors' expectations towards green bonds, their ability to process the data and the tradeoff between potential communication benefits and risks. Moreover, this tradeoff has to be managed by issuers since promoting some green activities tends to attract attention to the broader green and sustainability credentials of the institutions.

Overall, as the market grows in size and in sectoral coverage it will be more and more difficult to mitigate the systematic risk of 'green-washing' on the market without the alignment of definitions and explicit reference to standards and/or top-down frameworks. These issues cannot be tackled solely by transparency frameworks and good practices, but rather by making explicit what objectives the green bonds may fulfill or not.

### CURRENT INITIATIVES ALREADY SHOW DIFFERENT APPROACHES AND 'PHILOSOPHY' TO ASSESS THE 'GREENNESS'

The issue of defining what is green was raised by the market early on. For example, Climate Bonds Initiative (CBI), a London-based NGO dedicated to promoting green bonds, launched the first version of its Climate Bonds Standard (CBS) in 2011. The CBS provides taxonomy of eligible assets for green bonds, disclosure and reporting criteria, and promotes the use of labelling through certification on the market. It is the first – and so far the only – prescriptive green bond standard that has seen significant market uptake.

Moreover, key market players have recognized the risks discussed above and therefore are pushing for more alignment in definitions and the development of standards. For example, last year Ceres – with a coalition of major investors – published a statement of investor expectations for the green bond market. According to the statement *"the undersigned investors consider consistency in standards and procedures helpful to the development of a robust Green Bond market and view adherence to the GBP to be an essential step in this direction"* (Ceres 2015). Nevertheless, as demonstrated by the large variety of existing green bond methodologies and definitions, as well as controversies around some specific green bonds, the market is still far from converging on the definition of what 'green' is.

Indeed, in the last years, the market observed a multiplication of initiatives aiming at assessing the green eligibility. For example, some second opinion providers have developed their own assessment frameworks. These include CICERO, the Global Infrastructure Basel (GIB) Foundation, Sustainalytics, Trucost, the Climate Bonds Initiative, and UN Principles for Responsible Investment (PRI). For example, the Norwegian think-tank CICERO evaluates green bonds according to its 'shades of green' approach, whereby bonds are ranked as 'dark, medium and light' green depending on their alignment with the low-carbon transition. It is worth noting that some bonds that are qualified as green by a number of second opinion providers may not be eligible for the CBS label and vice versa. There is thus no common definition of what exactly constitutes a 'green' bond (Guez et al. 2014).

The growing demand for and supply of green bonds also led to the emergence of the first green bond benchmark indices in 2014. This was an important milestone for the market, as many institutional investors only invest in 'benchmark-eligible' financial products (OECD 2015b). At the end of 2015 there were four such green bond indices:

- Bank of America Merrill Lynch Green Bond Index;
- Barclays MSCI Green Bond Index;
- S&P Green Bond Index and Green Project Bond Index;
- Solactive Green Bond Index.

As in the case of second opinion providers, there is no complete overlap among these indices. For example, the green bond issued by Unilever to finance energy efficiency improvements in its factories in 2014 is included in Solactive index, but excluded from Barclays MSCI index. One of the explanations of this exclusion was that deeming such bonds as eligible *"could open the door for less credible companies to label 'business as usual' bonds as green in the future"* (Environmental Finance 2015). More generally, the Barclays MSCI index excludes large hydro power and corporate energy efficiency from the list of eligible projects, while other indices may consider those sectors as green (KPMG 2015).

Further market developments came in spring 2016 when both Moody's and S&P launched their own green bonds impact ratings, which are separate from the credit ratings. Moody's approach offers five grades ranging from GB1 (excellent) to GB5 (poor). Similarly, the S&P rating offers three levels of green bond classification (A, B, C) in addition to a provisional (P) classification that is contingent on further information disclosures.

## Closing the 'expectation gap' by setting up green reference frameworks

### MARKET-DRIVEN OR PUBLICLY-DRIVEN STANDARDS CAN HELP ALIGN EXPECTATIONS AND IMPROVE COMMON UNDERSTANDING OF GREEN BONDS

The diversity of green bonds shows that different standards may give an implicit definition of 'green'. To be widely accepted, these standards must be perceived as legitimate while not leading to excessively high due diligence costs. This legitimacy could be built on the existing wide stakeholder engagement process – such as in the case of the CBS – or on the legitimacy of a specific institution on green credentials – such as some second opinion providers, for example. In that respect, environmental NGOs could set up criteria and reference frameworks that define what activities could be eligible for green bond financing in their perspective. It is probable that such frameworks would refer to these NGOs' broader agendas such as WWF's One Planet Living Principles (WWF 2016) or decarbonization pathways perceived as 'fair' by other NGOs.

Thus, it is interesting to make a connection with current initiatives regarding ESG reporting for financial institutions. These include the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), but also all the portfolios' carbon footprint disclosure and mitigation processes such as the Montreal Pledge or the Portfolio Decarbonization Coalition. Indeed, several frameworks and methodologies are being developed to better assess the alignment of portfolios with climate-related objectives. 'Science based targets', 2° Investing Initiative's 'Sustainable Energy Investment Metrics', Carbone 4's 'Carbon Impact Analytics' or ADEME's 'Assessing low-Carbon Transition' are the examples of such initiatives that show the dynamism of the process. Issues addressed by these initiatives overlap with the ones that must be addressed to define whether a bond is green or not. Therefore, there may be synergies and coordination between such processes to develop commonly accepted green reference frameworks.

While strategies to support the low-carbon transition may diverge – for example the question whether an investor will only support transition 'winners' or also help 'old' industries that have a strategy to become green – it is probably utopic to expect one commonly agreed standard on the 'green' characteristics of bonds. This diversity, however, may enable the market to better address the multiplicity of approaches and solutions. Moreover, if managed carefully, standards and certifications are a way to decrease transaction costs, which is important for the green bond market survival.

Overall, this process can be compared to the one occurring at the international level on broader climate change policy: the Paris Agreement brings common understanding of the objectives and definitions as well as common reporting processes leaving different actors – states, local authorities, civil society, etc. – the responsibility to define the most appropriate strategies and actions. The same approach can be applied to the green bond market: common definitions and reporting frameworks under the GBP can be coupled with market--driven development of standards – potentially supported by public actors.

### CLARIFYING OBJECTIVES TO HELP IDENTIFY 'NATIONAL GREEN STRATEGY-COMPATIBLE' INVESTMENT PROJECTS FOR GREEN BONDS

The public sector could support the process of defining 'green' by clarifying the long-term low-carbon evolutions they wish and expect. The Paris Climate Agreement includes Nationally Determined Contributions (NDCs) and *"mid-century, long-term low greenhouse gas emission development strategies"* in which governments should outline their low-carbon development paths. The NDCs that have to be ratcheted-up every five years may thus help define the kinds of investments that are in line with the national low-carbon transition trajectories and hence be automatically eligible to be called 'green'. This is often complemented by broader national decarbonization or resiliency strategies such as the French National Low-Carbon Strategy (SNBC) or the EU-level Energy-Climate Package.

Governments could therefore provide a clear framework to help investors assess which investments are compatible with expected long-term low-carbon pathways. Referring to such framework would enable investors to better assess their contribution to low-carbon priorities but also help better assess the 'transition' or 'carbon' risk. This type of initiative would not necessarily address directly the green bond market, but would definitely ease its structuring as a long-term direction would be set and made explicit. At the same time, it does not prevent investors from being more ambitious than the governments with their own screening. Aligning green bonds with national strategies may nevertheless prove to be cumbersome for those issuers that use them to finance or re-finance projects in multiple countries.

### GOVERNMENTS CAN SUPPORT THE ESTABLISHMENT OF GREEN BOND GUIDELINES AND STANDARDS

As seen above, the development of green standards to which investors and issuers will be able to refer to is critical for the structuring of the market. If such standards do not emerge only with market forces, positive externalities brought by the market could justify some public support to help such standards emerge.

Governments could for example introduce their own or endorse existing labels for green bonds. Such labels would include activities that governments perceive as worth being promoted in the long-run. Indeed, even without tangible incentives, these labels would bring additional communicational benefits to eligible green bonds. In that sense, they would go one step further than the 'compatibility' frameworks discussed earlier, since they could be more restrictive to only include 'best' activities. With a relatively low cost for governments, it would be a way to create a win-win situation with green bonds market players: governments bring their reliability and enhanced reputation while investors and project developers would support the implementation of public policies.

Some governments – particularly in Asia – are already employing this approach. For example, the People's Bank of China Green Finance Committee has published the Green Projects Catalogue (GPC), which establishes rules to evaluate assets and projects and ensure their eligibility for green bond financing. Similarly, the Securities and Exchange Board of India has published guidelines including the rules for third-party verification by independent auditors for green bonds.

Other examples of such publicly driven labels – even if not necessarily targeting the green bonds market – include the French SRI label, and the Energy and Ecological Transition for Climate Label (TEEC) as well as the ongoing project to harmonize eco-labels at the European Union level. Such soft regulatory guidance can support the development of financial markets, as demonstrated by the example of the Eurobond derivative market, which took off only after the publication of Credit Derivatives Definitions by ISDA in 1999 (O'Malley 2015).

## Aligning procedures and transparency frameworks to build trust in the market

### THE GREEN BOND PRINCIPLES COULD BECOME A VEHICLE TO HARMONIZE PROCEDURES AND REPORTING FRAMEWORKS

Up until now, the green bond market has been developing in a voluntary bottom-up manner with no mandatory top-down regulations. Moreover, there have been no commonly accepted transparency frameworks and the issuers were free to label their bonds as 'green' and define their own procedures at their own discretion. In the absence of regulations, several ongoing initiatives have emerged to attempt to create an industry-led overarching framework of principles and guidelines aimed at fostering greater transparency for both issuers and investors. The Green Bond Principles (GBP) appears to be the most consensual initiative focusing on transparency procedures (Box 2).

While there has been significant progress regarding procedures, overall the green bond market seems to have focused on the ex-ante review of green credentials

**BOX 2. THE GREEN BOND PRINCIPLES**

- **The Green Bond Principles (GBP)** were launched in 2014 by Citi, JP Morgan, Credit Agricole and Bank of America Merrill Lynch, and are now managed by the International Capital Markets Association (ICMA). While the majority of outstanding green bonds claim alignment with GBPs, these guidelines focus on the process regarding the management and reporting of use of proceeds and evaluation procedures, rather than giving a definition of 'greenness'. The latest update of GBP in March 2015 emphasized the importance of assurance of green credentials and annual reporting.

by sustainability consulting firms and rating agencies rather than on the ex-post measuring, reporting and verification (MRV) of the use of proceeds and environmental impacts involving third-party auditors. Moreover, there have been no common methodologies for the ex-post quantification of environmental impacts of green bonds. Finally, making second opinion reviews public remains at the discretion of issuers, as is the regular ex-post impact reporting on the use of proceeds and environmental impacts of underlying projects.

While these issues are yet to be addressed in a harmonized manner, best practices start to emerge. Notably, issuers of bonds focused on renewable energy are increasingly incorporating life-cycle analysis to understand the full environmental impact of their projects, while projects in the construction sector include energy efficiency targets and building certifications. The World Bank has been leading the market in terms of detailed impact reporting early on (Clapp et al. 2016). Other IFIs and development agencies followed with a proposal for a Harmonized Framework for Green Bond Impact Reporting that was jointly launched by ADB, AFD, AfDB, EBRD, EIB, FMO, IBRD, IDB, IFC, KFW, and NIB in late 2015.

## HARMONIZING DISCLOSURE REQUIREMENTS FOR ALL BONDS

One of the potential obstacles to the development of the green bond market is additional transaction costs related to the collection of information, second opinion reviews and reporting. Currently, the green bond issuers absorb these additional costs so that the rates remain similar to those of conventional bonds. From a pure cost perspective, green bond issuers are thus disadvantaged compared to traditional ones, who do not have to provide this additional transparency. It is thus a critical challenge for the green bond market to keep the incentives – i.e. an accepTable cost-benefit balance – for issuers to keep robust procedures and reporting.

Such reporting practices could become less costly if they became standardized. It would limit the transaction costs – especially in the long run when issuers would be organized to fulfill these procedures – as well as the risks not to fulfill market expectations. Such standardization could be 'imposed' by the market based on commonly agreed procedures. In that perspective, the place that the GBP have today seems to make them the most appropriate vehicle for such evolution of the market.

Another way to encourage more green bond issuance by mitigating their additional costs would be to level the playing field by making disclosure of information regarding the use of proceeds mandatory for all bonds (CBI 2015c). While this option may seem highly ambitious at this stage, the public sector may use it in the future as an opportunity to promote best practices within the general bond market.

## DEVELOPING GUIDELINES THAT ENHANCE GOOD PRACTICES WHILE MITIGATING TRANSACTION COSTS

The standardization of practices would concern reporting and transparency regarding the information on the use of proceeds and annual reporting. These standardized practices can act as a common basis on which green compliance frameworks discussed earlier could be built. The design of transparency framework and MRV practices will have critical impact on transaction costs. Without other incentives than the ones linked to better information discussed in the previous section, the process of standardization should pay a central attention to the transaction costs these procedures imply.

The experience with carbon pricing mechanisms, such as for example carbon crediting schemes, demonstrates that there is a trade-off between transaction costs and monitoring stringency, which, if not managed carefully, may become a barrier for the implementation of investment projects (Shishlov and Bellassen 2015). Similarly, green bond transparency procedures will have to keep these transaction costs in check in order not to disincentives potential issuers to use such vehicle.

# 4. Second challenge: enhancing the financial benefits of green bonds

## KEY TAKEAWAYS FROM THIS SECTION

- There is a potential **contradiction between scaling-up the green bond market** and **ensuring that green bonds provide tangible financial benefits** for issuers to develop new and additional projects with demonstrable environmental benefits.
- So far, green bonds have **not directly stimulated green investments** by **lowering the cost of capital**. However, growing **'committed' demand for green bonds** could hypothetically result in **better borrowing conditions** in the future.
- The cost of capital can be decreased by **bringing smaller projects to the bond market** through **asset aggregation, notably securitization**. This process can be accompanied by **credit enhancement** strategies, for example, **guarantees** provided by international financial institutions.
- **Public support schemes could reduce the cost of capital** through green bonds, but have to be **weighed against other climate policies**. Public support priorities will ultimately **depend on national circumstances** and the relevance of targeting the financial sector, as opposed to improving the economics of low-carbon projects.
- The stringency of selection of green bonds eligible for public support **depends on the policy objective**. Mainstream policies with climate co-benefit may rely on an **ex-ante 'coherence check'**, while adding a more explicit climate objective will lead to **more stringent selection** and may pave the way for **ex-post reporting and quantification of mitigation outcomes** achieved by green bonds.

## A 'coherence' gap between scaling up of the green bond market and ensuring its tangible contribution

Available information of green bond issuance today suggests that most of existing green bonds and their underlying projects were likely to have occurred whether the bond issued to finance them was labeled as 'green' or not. Green bonds thus appear to play a 'supporting' or secondary role in financing the low-carbon transition – but do not necessarily stimulate increased net investment as most issuers would have had access to financing in any case (high credit ratings, reputation, strong economic model of underlying assets or projects, etc.).

If green bonds are aimed at stimulating additional investments in the low-carbon transition, they would need to go beyond their current information benefits and help reduce the cost of capital for underlying projects. As low-carbon and climate resilient infrastructure investment are capital intensive, the cost of capital for initial investment is critical for their development. For example, the share of cost of capital in the total cost of renewable electricity generation is estimated as high as 50-70% (OECD 2015c). Even small changes in the cost of capital – whether during initial investment and construction or later during the refinancing – could play a significant role in facilitating project development and increasing overall investment levels in the low-carbon transition.

There may, however, be a natural contradiction between scaling up the green bond market and using it to reduce the cost of capital. On one hand, scaling-up green bonds – that still account for only a tiny fraction of the bonds universe – and transforming it from a niche product into a broader financial instrument requires that the risk-return profile of green bonds stays comparable to that of traditional bonds. Institutional investors – pension funds and insurance companies are not yet ready to pay a 'green premium'. On the other hand, in order to make a tangible difference for the underlying low-carbon projects – and thus stimulate the pipeline of low-carbon projects – green bonds will have to reduce the cost of capital or enable smaller issuers to raise funds through this market. There is thus a potential contradiction between scaling-up the green bonds market and ensuring that green bonds provide tangible financial benefits for issuers to develop new and additional projects with demonstrable environmental benefits.

This misalignment of investors' and borrowers' interests and expectations may lead to a 'coherence gap' in the financial value chain. If green bonds are seen as a tool to stimulate investments in the low-carbon transition, market actors and policymakers will need to assess whether this gap is worth being bridged.

## To date, green bonds have not directly stimulated green investments by lowering the cost of capital

To date, there has been little evidence that green bonds attract new financing beyond what would have been available through traditional bonds (CICERO and CPI 2015). Indeed, in terms of financial conditions for issuers it appears that green bonds are identical to traditional bonds (OECD 2015b). The available research on the financial performance of green bonds compared to traditional bonds remains limited and inconclusive. So far, there is thus no clear evidence that green bonds reduce the cost of capital for low-carbon projects or organizations.

The lack of the initial 'green premium' for issuers discussed above can be seemingly easily explained. Indeed, in the absence of a specific mandate to give advantage to green bonds, accepting a lower interest rate compared with traditional bonds with the same financial characteristics is not compatible with fiduciary duty and more broadly with mainstream investors' interest. It would even go against some arguments that promote SRI as not negatively impacting the performance (RBC GAM 2012). Therefore, in a mature but still niche green bond market – i.e. in the absence of an excessively high disequilibrium between demand and supply – market forces will tend to bring green bonds interest rates to the level of traditional bonds.

### GROWING 'COMMITTED' DEMAND FOR GREEN BONDS COULD ULTIMATELY RESULT IN BETTER BORROWING CONDITIONS

While currently there is little evidence of better financial conditions of green bonds for issuers compared to regular bonds, increasing demand from ESG/SRI investors has the potential to lead to lower costs of capital for them in the future (KPMG 2015). Indeed, the growing demand for green investment products could potentially lead to better conditions for issuers, but that would imply that investors demonstrate a clear commitment – voluntary or mandatory – to climate-friendly investments. Thus, investors would need to be ready to make their green objectives strong enough to imply discrimination between green and non-green assets.

Thus, if the share of SRI funds – or, more precisely, investors that discriminate green and non-green assets – on the market becomes significantly high, this may be reflected in pricing for green bonds, theoretically reducing the borrowing costs. If such a green premium could appear temporarily in a non-mature market with lack of green assets, it would not necessarily appear on the primary market and thus not impact issuers. In order for this to happen, discrimination implemented by investors would have to be strong enough to imply paying a green premium – i.e. to reduce the return for a given risk profile – and would be large enough to cover the whole green bond primary market – provided that these investors are directly reachable when the issuance is occurring.

For now, the share of discriminating investors as well as the level of stringency of their green obligations seem far from being sufficient, leaving the perspective of a permanent green premium theoretical. Nevertheless, the market is currently witnessing the first steps in this direction, as institutional investors – such as for example the Swedish pension fund AP2 that decided to allocate 1% of their portfolio to green bonds – make green commitments. Furthermore, a coalition of investors managing a combined USD10 trillion of assets issued a joint statement at COP21 to demonstrate their support to the green bond market (The Paris Green Bonds Statement 2015). Indeed, sustainable, responsible and impact investments have been growing rapidly in the aftermath of the financial crisis. In the US alone, investors that incorporate in their strategy some form of ESG screening had USD6.57 trillion of assets under management as of 2014, a Figure that has doubled since 2010 and almost tripled since 2005 (US SIF Foundation 2015). These assets thus now account for every sixth dollar under professional management in the US.

The expansion of green investment policies and the race for greener assets could also lead some investors to expand their investment perimeter. For example, the European stock exchange Euronext decided to expand the investment portfolio for their 'LC100 Europe' index to increase the weight and number of 'pure green players'. Thus the original perimeter of eligible companies composed of the 300 largest European free-float market cap has been expanded to select green 'pure players' from among the 1,000 European largest free-float market cap (Euronext 2016).

## Decreasing the cost of capital by bringing projects to the bond market through asset aggregation

Another way to reduce the cost of capital for green projects would be to enable access of smaller and riskier projects to the bond market. Low-carbon and climate resilient transition – as well as more broadly sustainability-oriented projects – is not necessarily targeted by institutions that traditionally issue bonds. In many instances this may be related to issues of size, as a large share of the necessary low-carbon projects concerns households or SMEs and is thus financed through the traditional banking system – where it exists.

Enabling these projects to access the green bond markets would thus be an opportunity for the market to both better fit with the economies' needs and to stimulate the expansion of the market. Moreover, bringing smaller projects to the bond market is also an opportunity to pool individual risks, thus mitigating the aggregate risk and further decreasing the cost of capital. From the project developer perspective, it is the opportunity to have access to a source of low-cost capital that makes pursuing a bond issuance attractive.

If pooling risks through securitization is one of the options, several experiences – notably based on asset-backed securities – have been developed. For example, in late 2015, the Green Climate Fund approved the first batch of projects (GCF 2015) – among others providing USD217 million to back energy efficiency green asset-backed securities issued to the Mexican bond market by the Inter-American Development Bank. This program has the objective to develop both energy efficiency operations and the capital markets in the Latin America and the Caribbean region.

Another interesting example of using asset-backed securities to enable smaller issuers to access the bond market is Solar City, the largest installer of residential solar panels in the US, that also included a crowd-funding aspect to its bonds for small-scale investors starting at USD1,000. While for the moment the examples of green bonds enabling the financing of smaller projects are limited, such market innovations begin to pave the way for a wider use of this instrument to back pools of small-scale projects that normally do not have access to bond financing.

This process – and more broadly the strategy to expand the green bond market – can be accompanied by credit enhancement strategies. For example, public financial institutions may provide guarantees – or any other financial structure decreasing financial risks for other investors – to such green bonds pooling projects. This approach is advantageous compared to providing individual guarantees to every project, which would lead to very high – and probably discouraging – transaction costs (Claquin 2015). In the example above, the credit enhancement for the Inter-American Development Banks's energy efficiency project is provided through guarantees from the Clean Technology Fund in the amount of USD19 million (IDB 2015).

Green bonds could thus ease the access to the bond market for small or risky projects, thus decreasing their cost of capital even if investors were not willing to modify their risk/return expectations. This process can occur even in the absence of the green bond market and therefore may develop even if the green bond market faces difficulties. In that perspective, it relies more on 'bonds' rather than on 'green'. Nevertheless, the momentum created by the development of the green bond market can definitely support such processes.

## Public support schemes could reduce the cost of capital through green bonds, but have to be weighed against other policies

Historically, the focus of public intervention has been either on direct regulations – e.g. fuel standards – or improving the economics of climate friendly projects – e.g. through climate policies such as carbon pricing and renewable energy subsidies. At the same time, the role of the financial sector was seen as a facilitative one that does not require intervention as long as the economic fundamentals of the low carbon transition are in place. Yet, targeted public interventions in the financial sector may help speed up the reallocation of capital towards the low-carbon economy. While the green bond market may overcome the existing challenges discussed earlier by itself, public support can help achieve this faster, for example, by enhancing financial benefits of green bonds. The basis and rationale behind such public intervention will necessarily have an impact on the types of interventions as well as the implementing entities – e.g. ministries, national agencies, central banks, etc.

Based on current policies and debate, such interventions by the public sector are driven by national contexts. For example, some emerging countries face challenges regarding the attraction of international capital, the development of capital markets as well as the development of resilient infrastructures. Therefore,

these countries can use the green bond markets – as opposed to brown bonds – as a way to address these challenges without jeopardizing their low-carbon development strategies. In that case, the development of the green bond market in itself would not necessarily be the main objective of the policy, but would rather be used as a vehicle to implement broader economic and financial policies. Such policies would rely on financial regulation or central banks as it is currently the case in China or India, for example.

While not fully comparable, the same debate occurred on non-conventional monetary policies and how they could kill two birds with one stone: fulfilling their primary goal of economic stimulus and giving impetus to green investment (Ferron and Morel 2014). In this respect, green bonds can be integrated in non-conventional monetary policies, such as quantitative easing (QE). Such policy could integrate a 'coherence check' regarding climate objectives in order to avoid financing lock-ins – or stranded assets – and green bonds can in turn serve as tool for this check. This 'light' version of green monetary policies might thus only consist in excluding activities not compatible with low-carbon development pathways, such as fossil-based power generation. While not supporting green activities directly, they would nevertheless have a positive impact on them and thus on green bonds.

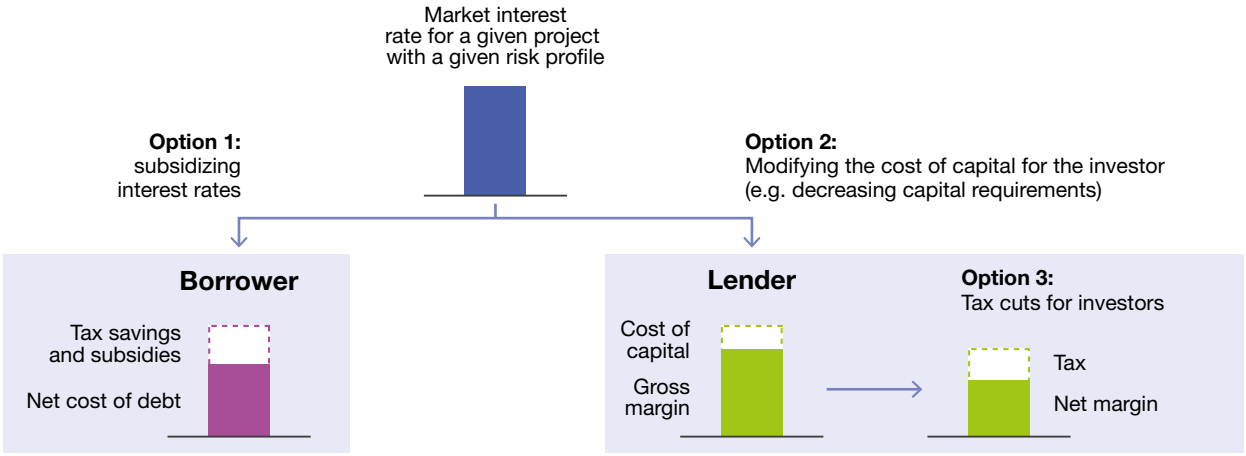
Moreover, policymakers may decide to support the green bond market as a primary goal. As discussed earlier, green bonds bring several benefits such as closing awareness and information gaps and smoothening the implementation of green policies. While it is difficult to price those positive externalities exactly, there is room for public intervention willing to support such developments (Espagne, 2016). As highlighted by the UNEP Inquiry Report, addressing cultural and knowledge barriers is critical while policy options remain rare (UNEP 2015). Finally, the governments may be willing to boost the net impact of green bonds in terms of reducing the cost of capital.

## DIRECT PUBLIC SUPPORT SCHEMES CAN MODIFY DIFFERENT ELEMENTS OF THE COST OF CAPITAL

As discussed earlier, there is a natural misalignment of goals between bonds' issuers and investors. Borrowers will strive to minimize their net cost of capital while lenders will aim to maximize their net margin. This natural tension offers several policy opportunities to impact one or the other for given market conditions. Figure 2 illustrates how policy intervention focusing on green bonds could help close the misalignment gap.

**Option 1** focuses on the borrower and could occur, for example, through a public financial institution providing concessional debt to green projects using capital raised by a green bonds issuance. Options 2 and 3 focus on the investor side and thus may modify the market rate of green bonds depending on whether these policies will simply increase investors' net margin or their appetite for lower market rates.

**FIGURE 2. POLICY OPTIONS TO DECREASE THE NET COST OF CAPITAL FOR THE BORROWER OF A GIVEN PROJECT WITH A GIVEN RISK PROFILE**




*Note: Borrower's objective is to minimize its net cost of capital while lender's objective is to maximize his net margin. Options 2 and 3 will tend to decrease the market interest rate (with the condition that the difference does not only increase the net margin of the lender) while option 1 does not modify the market interest rate.*

*Source: I4CE – Institute for Climate Economics*

**Option 2** can be implemented for example by decreasing capital requirements when an investor buys a green bond. That solution can take several forms depending on whether it implies a change to the risk of bonds – e.g. by considering green bonds as a collateral for refinancing to the central bank – or if it implies a change in prudential rules – e.g. making an exception in Basel III and Solvency II rules.

**Option 3** is to relax fiscal constraints for investors buying green bonds.

All these policy options are already being implemented within the general bond market. Notably, some governments already allow the issuance of tax-exempt bonds, e.g. infrastructure bonds in Brazil or municipal bonds in the US. These tax exemptions could be further refined to target only green investments coherent with countries' long-term low-carbon development strategies.

### PUBLIC SUPPORT PRIORITIES FOR GREEN BONDS WILL DEPEND ON NATIONAL CIRCUMSTANCES

Notwithstanding the evaluation of pros and cons of the policy options discussed above, there is one common challenge to all public interventions aiming at decreasing the cost of capital through green bonds. The challenge is to be able to robustly define what is eligible for the public support and what is not. It does not mean that governments have to define what is green or not but rather what activities need to be supported by a public policy scheme in respect to policy objectives and whether markets already allow for these investments to happen or not.

The governments willing to provide direct support for the green bond market will thus need to manage the tradeoff between robustness and optimization on one end and the ability of market players to meet requirements, on the other. Even more importantly, the governments will need to weigh spending public funds to support green bonds against conventional climate policies that improve the economics of underlying green projects.

In this light, governments can use the green bond market to provide targeted support to selected sectors in line with their national priorities, especially those for which private finance may be lacking. For example, such sectors as public transport, agriculture and forestry are traditionally underrepresented in the private climate finance landscape. In France, an analysis of domestic financial flows supporting climate action highlighted that public transport is mainly financed by the public sector while investment for agriculture and forestry remained low (Hainaut, Morel, and Cochran 2015). Governments could provide public support for green bonds used to finance projects in these sectors to close the gap. Conversely, emerging economies require fundamental development of the bond markets. To this end, public support for the bond market development can be specifically tailored to prioritize green infrastructure investments early on.

## The stringency of selection of green bonds eligible for public support will depend on the policy objectives

If national governments or other public entities decide to provide direct support for the green bond market, they will need to establish monitoring and evaluation procedures to better target this support and avoid free-riding. Depending on the policy objectives, three levels of evaluation stringency can be distinguished and are discussed below.

### MAINSTREAM POLICIES WITH CLIMATE CO-BENEFIT CAN RELY ONLY ON AN EX-ANTE 'COHERENCE CHECK'

Policy makers, central banks or public financial institutions may decide to implement 'mainstream' economic or financial policies that eventually provide tangible benefits to green bonds. In this case, 'green' would be a co-benefit or a secondary goal of such a policy, which could be the expression of a will to 'align' all policies with climate objectives (OECD 2015a).

In this case the role of the government is to provide a 'coherence check' that ensures that the projects underlying green bonds are in line with long-term sustainable development strategies. This can be done, for example, by publishing a positive list of types of projects in different sectors that are eligible for a green label endorsed by the state. Such intervention would be barely directive as the range of eligible activities could be very large. However, the link with green bonds would be more indirect as green bonds would naturally be eligible and ready to comply with reporting requirements.

### A MORE EXPLICIT GREEN GOAL WILL LEAD TO MORE STRINGENT SELECTION AND MAY PAVE THE WAY FOR EX-POST REPORTING

When a public intervention specifically aims at the positive green impact, ensuring the efficient use of public resources will require more precise selection of eligible investments and robust assessment of the environmental integrity of green bonds. Most probably, in that case governments will not support all green bonds, but rather select their own priority areas. For example, governments may be willing to

provide targeted support to underrepresented or underfunded activities that contribute to their long-term development goals. In this case the state has to ensure a minimum level of 'additionality' of its policy in order to avoid wasting public resources due to free-riding. This minimum level could take the form of an 'on average' additionality rather than project-by-project additionality demonstration.

As discussed earlier, the regulator will have to strike a balance between the additional monitoring and reporting costs and achieving the accepTable level of assurance of environmental integrity of its policy. However, as soon as the public support brings financial benefits to green bond issuers, the transaction cost constraint is mitigated. The public actor could therefore take that opportunity to promote best – even if probably more expensive – practices.

For example, ex-post reporting of the achieved mitigation outcomes may be useful to make sure that the public support reaches its goals. It does not necessarily need to take the form of precisely quantified emissions reductions, but at the very least it has to verify that the underlying green projects that receive support through green bonds are actually implemented. While ex-post reporting of mitigation outcomes is so far rare, some institutions begin to integrate it in their strategy. For example KfW was one of the first issuers to publish a report on the impacts of their green bond in terms of GHG emissions reduced, the amount of energy saved and the number of jobs created (KfW 2015). Other organizations, including private sector issuers and development banks are gradually joining this trend of reporting on the amount of avoided GHG emissions from their portfolios.

In a similar spirit, some governments may be willing to issue sovereign green bonds with proceeds earmarked for national climate policies or international climate finance contributions (see Box 3).

### MAXIMIZING THE 'ENVIRONMENTAL LEVERAGE' RATIO REQUIRES QUANTIFICATION OF CLIMATE BENEFITS

An upgraded version of public intervention could aim at maximizing its impact. As such, the governments should then be able to identify green bonds where a given public support will lead to the highest impact. Such improved version of public intervention targeting green bonds would necessarily result in more complex procedures but could, at the same time, pull the whole market towards better practices.

For example, the most elaborate – yet potentially the most beneficial – approach to monitoring and evaluation of green bonds would be ex-post quantification of mitigation outcomes similar to that of the Clean Development Mechanism (CDM). Such approach

### BOX 3. OPPORTUNITIES FOR GREEN SOVEREIGN BONDS

Like other economic actors, governments could issue green bonds. For example, a government could issue a bond and use the proceeds to contribute to the Green Climate Fund (CBI 2015c). Similar to corporate issuance, sovereign green bond issuance can also help highlight a country's commitment to climate action and create synergies between the treasury, the ministry of finance and the ministry of environment. In a sense, it would also be a way for governments to increase the credibility of their objectives. Indeed, they would be linked with tangible policies and reporting on the use of proceeds. Some countries, such as France, are currently evaluating the possibility of issuing sovereign green bonds. The effects of such issuances are thus yet to be seen.

More broadly, the more government is constrained by its commitments made under the issuance of such bonds, the more its credibility about 'sustainability' will increase. In a theoretical perspective, structured green sovereign bond could even both help investors to hedge against a 'no climate-policy risk' and countries to be awarded for implementing climate policies that they pledged.*

While not being a necessary evolution of the market, the issuance of green sovereign bonds could be a way to expand the green bonds' market share, although tangible benefits would rather be related to the underlying policies and procedures implied by such issuances.

** For example, if a country links the issuance of the green bond with raising carbon prices, one could imagine a floating interest rate decreasing when carbon prices increase – illustrating a higher capacity to reimburse the debt as the state's revenues increase. For investors, such tool would hedge a too-high exposure to green assets that would rely on ambitious green policies. In that case, the use of proceeds could imply all public interventions that ease the transition such as the fight against fuel poverty or the reconversion of emissive sectors. Even though this is purely theoretical, it is worth noting that, in 2008, one of the first green bonds issued by the World Bank had a floating interest rate linked with the price of carbon credits (Reuters 2008).*

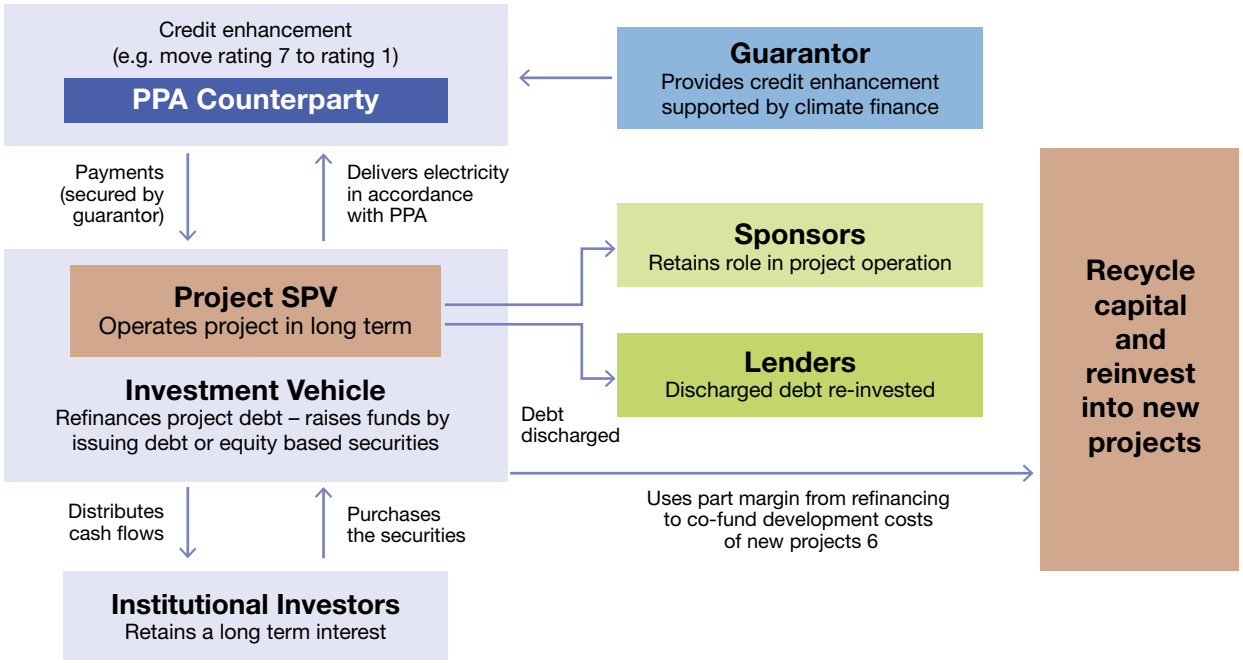
would probably make sense at a later stage of market development when the investors and policymakers will be willing to go beyond the existing benefits of green bonds. A certification system similar to that of the CDM can bring two tangible benefits to the green bond market.

Firstly, it can help identify more precisely those projects that may need support though a project-by-project 'additionality' test. This would in turn foster the attraction of new net investments in the low-carbon transition. Secondly, quantifying mitigation outcomes can help identify the projects with the highest 'environmental leverage' ratio, e.g. the amount of GHG emissions reduced per dollar invested. This in turn can help maximize the efficiency of public support and the quantified impact achieved by the investors in such green bonds. In that perspective and notwithstanding the issue of carbon credits, the CDM is a large source of commonly agreed methodologies certified by the UNFCCC to account for GHG emission reductions (Shishlov 2015).

In fact, the UNFCCC is currently working together with Climate Mundial on a concept of 'Paris Green Bonds' that would rely on the existing CDM infrastructure – sub-sector baseline and monitoring methodologies, a pool of accredited auditors, a registry, etc. – to provide a framework for quantification of green bond impacts as well as demonstrating the additionality of the underlying projects. Ultimately, this approach is aimed at refinancing existing CDM project and re-investing the discharged debt into new projects (Figure 3).

Implementing demanding – and thus more expensive – approaches to select and monitor eligible assets would be aimed at optimizing public support for green bonds. At the same time, in order to remain advantageous for underlying green projects, the benefits brought by the public policy should outweigh the additional costs related to increased eligibility and monitoring requirements. In other words, 'project-by-project' additionality tests can only be viable with conditional lower borrowing costs.

**FIGURE 3. PARIS CLIMATE BOND CONCEPT**




*Source: Climate Mundial (2016)*

# 5. Conclusions and next steps



This report provided an overview of opportunities and challenges faced by the green bond market and discussed various approaches to unlock its full potential. As demonstrated in Section 2, the green bond market already provides a number of benefits thanks to the increased availability of more transparent information. These benefits accrue to issuers and investors, as well as the general public interest (Table 1, page 4).

Despite its rapid growth in the past few years, the green bonds market is now facing two major challenges. The first challenge – discussed in Section 3 of this report – is to avoid market implosion by ensuring environmental integrity of green bonds. This challenge itself is twofold. First, there is a question of defining 'greenness', which ultimately depends on the objectives of green bonds. The diversity of approaches and financial products necessary to support the low-carbon transition may ultimately result in heterogeneity in the green bond standards. Second, there is a question of reliability of information, which is liked to monitoring and evaluation – or transparency – procedures. While the market-driven approaches have already made significant progress in both areas, more needs to be done to ensure the environmental integrity of green bonds. In instances where the market fails to resolve these issues, governments may step in to provide guidance or implement top-down regulations (Table 2, page 5).

The second challenge – discussed in Section 4 of this report – is to enhance the environmental impact of green bonds by growing the pipeline of underlying low-carbon projects, for example by bringing them tangible financial benefits. To date, the green bond market does not appear to have directly stimulated a net increase in green investments – financing and refinancing of low-carbon projects – through a lower cost of capital. While it is hypothetically possible that the green bond market will develop a 'green premium' if sufficiently large 'committed demand' from institutional investors develops over time, this perspective remains largely theoretical due to current fiduciary duty limitations.

In this light, the governments may decide to provide targeted public support – for example, through tax incentives, credit enhancement or capital requirements– to those green bonds that finance priority areas in line with climate and sustainability objectives. Such support will nevertheless have to be weighed against more conventional climate policies that improve the economics of low-carbon projects. In this light, depending on the public intervention's objective and ambition, three levels of eligibility and monitoring requirements can be distinguished (Table 3). Indeed, the more ambitious a public support for green bonds is, the more stringent requirements should be put in place. In any case, new substantial benefits provided by public support would enable implementing more stringent – and costly – requirements for eligibility and monitoring (Table 3).

While the priorities for next steps discussed above can be debated, one recommendation appears crystal-clear. Whatever measures private and public actors decide to implement to safeguard and support the market, a broader dialogue between policymakers and market stakeholders is critical while barely existing today. Such dialogue should aim to strengthen the green bond market by aligning it with long-term sustainable development priorities and unlocking its full potential to deliver tangible impact and ensure the quality of the improved transparency.

**TABLE 3. THREE LEVELS OF REQUIREMENTS DEPENDING ON PUBLIC INTERVENTIONS' OBJECTIVES**

| Policy goal | Requirements for eligibility and monitoring |
|---|---|
| Ensuring that a given economic or financial policy is aligned with the sustainable development strategy | Coherence check through a positive list of eligible activities or a black-list of excluded activities |
| Supporting green bonds that finance underrepresented or underfunded activities | 'Average additionality' through identification of sectors that require public support and ex-post reporting on mitigation outcomes |
| Maximizing the 'environmental leverage' of green bonds and ensuring individual additionality | Project-by-project additionality demonstration and ex-post quantification of mitigation outcomes |

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