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***How do market players understand green bonds as different from infrastructure bonds? An analysis of the perceptions of players in the green bond market.***

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We would like to thank all the participants in the research study for their time and expert insights.

# Abstract

To investigate the difference between green bonds and infrastructure bonds, 15 market participants including issuers, investors and verifiers, were interviewed in the UK, USA, Canada, France, Sweden, Belgium and Australia. These interviewees represent 38.6% of the global labelled green bond market which currently has total outstanding issuance of USD65.9 Billion. These semi-structured interviews provided insights into their understanding of the green bond market and the decision-making processes to be involved in the green bond market.

The market participants referred to the governance structure and counterparty to differentiate between the two bond options, labelled green bonds and infrastructure bonds, instead of the projects being funded. The participants believed that verification in the form of the Green Bond Principles (GBP) provided commonality and definitional certainty to the market. However, they also acknowledged that as a self-labelling mechanism, the GBP relied on the reputational credibility of the issuer. Participants understood green bonds to definitely provide a positive environmental impact and were seeking measurability from these, thus limiting the green bond projects to climate-related infrastructure. They believed that the green bond market was viable in the medium term with growth expected from the corporate and municipal issuers. Market participants supported the development of project specific accreditation to mitigate risk, particularly for corporate issuers. They reported that labelled green bonds were priced in line with similar issues from the same issuers, and initial considerations around liquidity and scale were not seen as limitations.

This research looks at the attitudes of the labelled green bond market participants and seeks to revisit the findings of Wood and Grace (2011) in light of the significant growth of the labelled green bond market since their initial research.

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# Introduction

The green bond market, while still relatively small compared to the total outstanding bond universe, has experienced steady growth since its inception in 2007 (Kennedy & Corfee-Morlot, 2012). To date the labelled green bond market has a total global outstanding issuance of USD65.9 billion as of June 2015 (Olsen-Rong, House, Sonerud, & Kidney, 2015). Initially driven by Multilateral Develop or Supranational Banks such as the World Bank and the European Investment Bank, the recent market growth has been driven by corporate and municipal bond issuance (Kochetygova & Jauhari, 2014). The introduction of these issuers to the market, and the recent issuance at scale, has encouraged institutional investors – both with environmental, social and governance (ESG) investment mandates and without – to consider the green bond as way of addressing long term investment.

While the green bond concept itself is not unique, interest in “green-themed” bond-style finance has increased in the past 7 years, despite a lack of evidence supporting clear positive environmental outcomes attributable to this type of finance and clear definitions describing what a green project is.

Faced with these pressures, market participants have sought to define what a green bond is, while at the same time remaining open-minded to the actual types of impacts and types of projects labelled green bonds can support.

Given the maturity and the development of the market, a majority of academic research has addressed the potential of the market and the role of government and the governance of green bonds. Although this is intuitive as a way of defining green bonds as discrete to other types of bonds, this neglects the potential overlap with existing bonds structures. Industry research to date has noted that the broader global outstanding unlabelled ‘climate-themed’ bond universe totalled USD531.8 billion in June 2015, additionally USD65.9 billion was the global outstanding in labelled green bonds (Olsen-Rong et al., 2015). Of the total global outstanding issuance of USD597.7 billion for labelled and unlabelled green bonds, only USD30.5 billion total global outstanding issuance is not allocated to infrastructure projects (Olsen-Rong et al., 2015). The high representation of infrastructure projects in the labelled and unlabelled green bond market forms a basis of the study in understanding why market participants may seek labelling.

# Development of Hypothesis

As the labelled green bond market grows, the importance of understanding how it operates and in what ways are labelled green bonds ‘green’ becomes a critical consideration. For a bond to be labelled ‘green’, “the proceeds must be earmarked for qualifying green projects, reporting must be done on the use of proceeds, and ideally, independent verification of the claim must be secured” (Kidney, 2015, p.47). Within the literature there is definitional uncertainty in terms of how green bonds differ from infrastructure bonds[[1]](#footnote-1), and given the entirely self-regulated, self-labelled nature of the labelled green bond market, and the requirement for investors to uphold fiduciary responsibilities, there remains a tension in the credibility of the ‘green’ claims. To address the ‘greenness’ of green bonds requires understanding how the green bond market players – issuers, investors and accreditors – frame or justify their decision-making around green bonds, particularly as these players inform the definitional work in a self-regulated market. Further, as the market grows, this research seeks to understand what will need to occur to control the reputation of the market.

This research project therefore seeks to answer the following question:

*How do market players understand green bonds as different from infrastructure bonds?* with the associated sub-questions:

* *How do market players define labelled green bonds?*
* *How do market players justify their decision-making around labelled green bonds?*
* *What is the role of verification and certification in supporting the growth of the market?*
* *How successful has the labelled green bond market been to date, and what will be the future of green bonds as a discrete financial product?*

# Review of the Literature

## Categories of Green Bonds

In the market to date, there are three main categories of green bonds: ‘green bonds’ which are self-labelled under the Green Bond Principles, ‘climate bonds’ which are certified under the Climate Bonds Standards, with this scheme managed by Climate Bonds Initiative, and ‘climate-themed’ bonds which are neither labelled nor certified but which support climate-related projects (Kidney, 2015). The definitions of labelled green bonds, climate bonds and climate-themed bonds have been an iterative development. As climate-themed bonds are poorly defined, and only categorised by the Climate Bond Initiative, the literature around the green bond is only addressing the labelled green bond market. The parallel accreditation methods, being the World Bank’s Green Bond Principles (GBP) ("Green Bond Symposium," 2015) and the Climate Bond Initiative’s Climate Bonds Standards (CBS), both see green bonds as a financial instrument to address environmental challenges (Wieckowska, 2013).

## Verification process: Green Bond Principles (GBP)

The World Bank, in collaboration with major global investors and issuers, developed the Green Bond Principles (GBP), which developed a governance framework for issuing labelled green bonds, rather than specific technologies (Kidney, 2015). The World Bank acknowledges that “there is a diversity of opinion on the definition of Green Projects; therefore it is not the intent of the GBP to opine on the eligible Green Project categories” (Ceres, 2014). The GBP thus outline four governance components to labelled green bonds that they have determined will address environmental challenges and provide market integrity to the financial instrument. The four components stipulate the following:

1. That use of bond proceeds to provide finance to renewable energy generation, energy efficiency for the built environment, sustainable waste management, sustainable land use (including forestry and agriculture), biodiversity conservation, sustainable transportation or clean water.
2. That there is a process for project evaluation and selection that should consider the environmental impact of the project. The issuer is required to establish a well-defined process linking the project to the use of proceeds requirement.
3. That the proceeds of the bonds are moved into a sub-portfolio where investors can seek transparency on the use of capital.
4. Finally, GBP require that reporting be provided at least annually back to investors. This reporting can be any style from informal newsletters and updates through to formal financial statement style reporting. (World Bank Treasury, 2009)

To ensure rigour in the process listed above, GBP promote the use of third party assurance of the environment benefits of the project. While this is not a mandated requirement, a majority of issuers choose one these independent companies to provide a “second opinion” (see Figure 1).

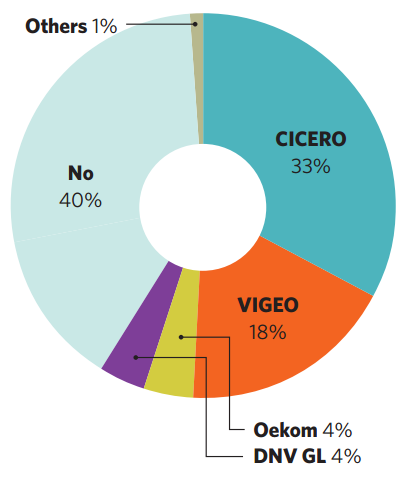


Figure 1: Percentage of second opinions

**Source:** Olsen-Rong et al., 2015

The GBP thus depends on the second opinion providers to determine the environmental integrity of the project. Therefore, Kochetygova and Jauhari (2014, p. 2) argue that “there is no established, mandatory criteria as to what constitutes ‘green’ or which shades of green meet the threshold”. The GBP guidelines have increased issuances and investor interest (Kochetygova & Jauhari, 2014).

## Certification process: Climate Bonds Standards (CBS)

The Climate Bonds Initiative (CBI) is a not-for profit established in 2009 with the mandate of facilitating the mobilisation of capital to green bond projects (Climate Bonds Initiative, 2014). They established the Climate Bonds Standard (CBS) parallel to the GBP framework to address concerns about “a risk of “greenwashing”, where bond proceeds are allocated to assets that have little or doubtful environmental value” (Olsen-Rong et al., 2015, p. 11).

The CBI developed a taxonomy of infrastructure-type projects that CBS certified bonds can fund (see Figure 2). The taxonomy focuses on either the upgrading of existing infrastructure or the establishment of new infrastructure. In developing the overall taxonomy, CBI sought to define a low-carbon economy and, from this, define which investments would support this economy. CBI has defined a low carbon economy as one that operates within a 2°C global average temperature increase from pre-industrial levels (Olsen-Rong et al., 2015). To further support the taxonomy, technology-specific standards have been released for solar, wind, low carbon buildings and low carbon transport. Thus an issuer can issue a Certified Climate Bond by engaging a third party verifier to liaise with the Climate Bond Initiative to issue a bond within the stipulated standards. CBI stipulates that no matter who issues the bond – corporate or government – the capital raised must follow the GBP framework (Olsen-Rong et al., 2015).

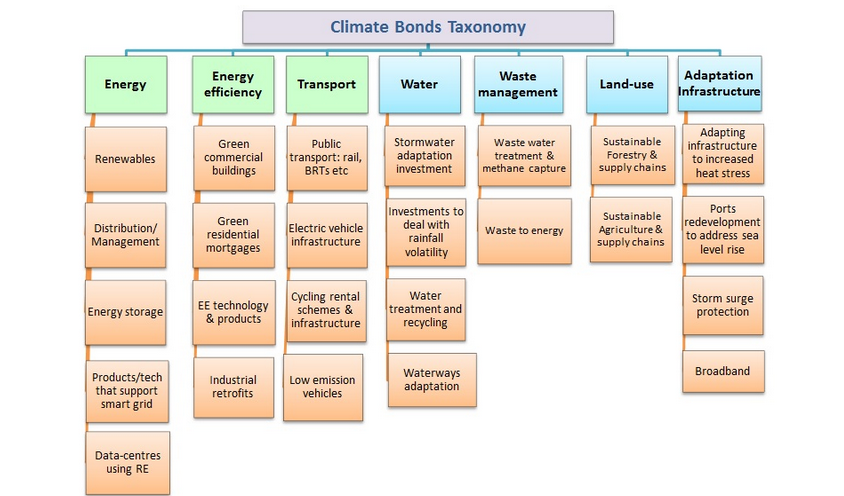


Figure 2: Climate Bonds Taxonomy

**Source:** Climate Bonds Initiative, 2014

## The role of private sector money for public good

Successive theorists argue that the green bond market has the potential to facilitate significant private sector investment into renewable energy and ‘green’ infrastructure projects as well as address other environmental concerns such as biodiversity loss (Aguiar, 2013; Damerow, Kidney, & Clenaghan, 2012; Kennedy & Corfee-Morlot, 2012; Kochetygova & Jauhari, 2014; Mathews & Kidney, 2012). Mathews and Kidney (2012), citing Brenenkap and Pattillo (2010), argue that the capital required for environmentally sustainable development is beyond the current scope of public funds, and thus it is beneficial to harness the capital of the debt market through green bonds, which will also allow for long-term capital investment. To support this argument, they contend that the capital cost required to transition the global economy to low-carbon and climate resilient infrastructure, notably renewable energy and low-carbon transport and buildings, is expected to be USD1 trillion annually until 2050 as modelled by International Energy Agency (IEA) (Mathews & Kidney, 2012). This figure is also cited in Damerow et al. (2012), Kidney (2015) and Wieckowska (2013).

The outstanding global bond market was estimated at USD 95 trillion in 2012 (Kennedy & Corfee-Morlot, 2012) with institutional investors estimated to manage USD 71 trillion of assets (Inderst, Kaminker, & Stewart, 2012, p. 8). Kidney, 2015 notes that institutional investors are “interested in putting their capital to work in climate related investments” subject to “[competitive] risk and yield profiles” (Kidney, 2015, p. 46). Furthermore, the structure of a green bond delivering steady income returns over a longer term aligns with the fixed income investment manager’s conservative investment requirement (Mathews & Kidney, 2012, p. 342).

Mathews and Kidney (2012) argue that there is a similarity between the uses of bonds historically, and the contemporary uses proposed for green bonds. Bond markets have been used as a form of capital raising for governments and corporates alike since Renaissance Italy (Mathews & Kidney, 2012). The bond market grew to accommodate issuers from the private sector, such as major institutional banks that provide financial security from their balance sheets. The bond market has evolved to become a means of accessing capital from the private sector for both governments and private companies (Dominguez Ordonez, Uzsoki, & Thinley Dorji, 2015). Bonds have also been used historically by governments to target economic development in particular geographic areas or to prioritise projects that are considered important, such as the Industrial Development Bonds (IDBs) which were developed to stimulate investment into areas such as Florida and Alabama (Mathews & Kidney, 2012). Mathews and Kidney (2012) argue that IDBs represent a working model that can be applied to the green bond market.

Similarly, private sector funds have been sought to fund infrastructure projects with a public-private partnership (PPP) structure. Research has been conducted linking the role of capital markets to green PPPs to finance large scale infrastructure projects (Dominguez Ordonez et al., 2015). The research noted that PPPs still rely heavily on bank lending and due to recent changes to bank leverage ratios (Basel III framework), and increased appetite for investors to invest into labelled green bonds, labelled green bonds are “an alternative way to finance green public-private partnerships by engaging capital markets” (Dominguez Ordonez et al., 2015, p. 2).

## Definitional uncertainty with green bonds

There is ambiguity around what constitutes a labelled green bond. In much of the literature, labelled green bonds are defined by their mechanics, that is, the use of proceeds towards ‘green projects’ and governance (Inderst et al., 2012; Wood & Grace, 2011). However, what constitutes a ‘green’ project is not so clearly defined. Caldecott (2011) claims that labelled green bonds, as a discrete investment class, are ill-defined and the ‘green’ overlay can equally apply to well-established bond classes such as project finance, corporate bonds and municipal bonds. Caldecott (2011) goes on to state that despite these bond options, “green infrastructure bonds are likely to be the most widely applicable and scalable” as they are well understood by market participants. Likewise, Inderst et al. (2012, p. 25), define green bonds as “fixed-income securities issued (by governments, multi-national banks or corporations) in order to raise the necessary capital for a project which contributes to a low carbon, climate resilient economy”. They contend that investors into labelled green bonds are not concerned with the exact standard of what is ‘green’. A lack of definitional certainty may have a detrimental effect on investment into green bonds (Kennedy & Corfee-Morlot, 2012).

There is a deeper tension in the definition of ‘green’ as a term in itself. Inderst et al. (2012) contend that the underlying definition of ‘green’is subjective, and can be broad, driven by ethical considerations, or very technical, driven by scientific discourses. McGrail (2011, pp. 124-125) defines an “expanding spectrum of environmental beliefs” from ‘dark green religion’ (“nature worship”); to ‘dark green’ which sees environmentalism through a paradigm of an urgent need to reduce consumption and become more directly connected to natural systems; to ‘light green’ which sees ecology and technological modernity as compatible; to ‘bright green’ which is about “harnessing innovation, capitalism, and emerging technologies”. CICERO (Clapp, 2015, p. 1), a think tank at the University of Oslo, used the same ‘shades of green’ terminology to assess labelled green bonds as second opinion provider, however, their definitions are based on a project’s ability to contribute to “a low-carbon society”. Therefore not only is there definitional ambiguity around what makes a labelled green bond, there is also subjectivity implicit in the term ‘green’, meaning that assessments of the ‘greenness’ of the bond are dependent on the definition of green being used.

## Validity of verification and certification

There is debate around the objectives behind accreditation and certification for addressing environmental and social challenges. The governance of labelled green bonds is not controlled by a central governing body, rather, as with similar environmental and social mandated products such as Fairtrade and Forest Stewardship Council, it is self-regulated by market participants. This self-verification process may pose questions around the legitimacy of that verification. Taylor (2005, p. 129) argues that as microeconomic tools such as green bonds rely on transparency to overcome information asymmetry, certification and labelling are credible market-based instruments. However, Loureiro and Lotade (2005) used surveys to explore whether fair trade certification “open new value-based markets”. Loureiro and Lotade (2005) noted that it was difficult to determine causal effect in whether it was thket demanding ethical products and manufacturers responding accordingly, or whether it was producers seizing on an opportunity to provide a point of difference in the market. However, the development of labelled green bonds was more clearly a result of market demand for ESG-related products (Wood & Grace, 2011). Inderst et al. (2012) also noted that while there is a preference for investing into sustainable, long-term assets, it is unlikely that there will be a premium applied to the *green* label in terms of green bonds.

The CBS were established to address the regulatory gap with the GBP framework in identification and verification of projects (Olsen-Rong et al., 2015). Roberts (2013) reviews the broader case for voluntary standards, certification and labelling, noting that these standards are established by groups seeking to address the market failure of information asymmetry for a particular social condition as a result of a regulatory gap. Roberts (2013, p. 124) argues that certification “solves knowledge problems, overcomes collective-action problems and lowers transaction costs”. Roberts (2013) notes that certification schemes, due to their structure, are limited in their influence to those involved in the certification scheme and the schemes are only as valuable as the monitoring and enforcement of them in the case of indiscretions. CBS accreditation seek to provide these elements, particularly in addressing ‘knowledge problems’ or “investor concerns on the credibility of Green labelling” (Fowler, 2015).

The literature at present suggests that standardisation of verification through GBP and accreditation through CBS processes for labelled green bonds will provide comfort to investors (Bartels, Holland, & Metzgen, 2015; Inderst et al., 2012; Kennedy & Corfee-Morlot, 2012; Kidney, 2015; Kochetygova & Jauhari, 2014; Wieckowska, 2013; Wood & Grace, 2011). They contend this would open the potential for a significantly larger market, mainly non-ESG mandated institutional investors. However, the CBS accreditation process has been criticised for restricting ‘green bonds’ to certain technologies, and therefore delimiting what is ‘green’ (Inderst et al., 2012).Inderst et al. (2012) argue that there is a two-fold risk in applying a single definition for green bond: either in an effort to agree on commonalities and consensus the definition becomes too broad and is rendered meaningless, or the definition is too tight and restricts the capital flow opportunities. They suggest instead the need for competition amongst standards, in much the same way as organic food has numerous standards, to ensure the full breadth of knowledge is available.

As green investments may be contextually defined rather than absolute (Della Croce, Kaminker, & Stewart, 2011; Inderst et al., 2012), there is also a tension as what may be ‘green’ in one case may not be ‘green’ in another. Kochetygova and Jauhari (2014, p. 2) found that “there is inadequate information on the actual “greenness” of projects, making it difficult to determine whether the environmental impact will be actually realized”. Further to this, Wood and Grace (2011) noted that these considerations “seemed not have had a significant effect on the market to date” (Wood and Grace, 2011, p.4).

## Do green bonds address additionality?

To assess the legitimacy of labelled green bonds, potential claims of ‘greenwashing’ need to be explored, including in terms of additionality. Market commentators have noted that “if the green bond market cannot show that it is helping to channel fresh finance into projects that help solve environmental problems, it will be wide open to damaging claims of greenwashing” (Cripps, 2015, p. 1). Another way of explaining this is in terms of additionality. The principle of additionality mandates that projects invested into would not have been implemented without a particular scheme, in this case green bonds, and are therefore additional to ‘business as usual’ (Michaelowa & Purohit, 2006). Brown, Bird, and Schalatek (2010) argue that if a particular action is already planned then it is not additional. The concept of additionality within climate finance was included in cap-and-trade carbon policies. The additionality requirement was that projects would not be able to occur without the support of the income available from cap-and-trade policies. Despite the clear objective of additionality, research conducted on the Clean Development Mechanism (CDM) projects as defined by the Kyoto Protocol indicates that it is difficult to prove. In a quantitative study of 19 of the 52 successfully registered Indian CDM projects, Michaelowa and Purohit (2006) concluded that there remains a lack of transparency to effectively interrogate the additionality of the projects and an over-reliance on information presented by project proponents resulting in situations where project developers have obfuscated the attractiveness of the projects. Unlike CDM cap-and-trade carbon policies, labelled green bonds do not require additionality testing. Cripps argues that if labelled green bonds do not demonstrate additionality, it is harder to demonstrate that they differ from infrastructure bonds (Cripps, 2015).

## Prior Research

In a discussion paper, Wood and Grace (2011) interviewed twelve investors and issuers globally to determine investor interest in green bonds. They found that overall attitudes towards green bonds were positive, and that investors saw real potential for growth in the sector, with green bonds both satisfying latent demand for ethical mandated fixed income portfolio and providing an opportunity for intuitional investors to include environmentally focused investments without compromising their portfolio mandates. The discussion paper noted that at the time of writing the green bond market “community” was small and the issuers – notably the World Bank and European Investment Bank – were considered highly reputable with environmental capabilities (Wood & Grace, 2011, p. 3). The report also acknowledged that “the field is facing, and will surely continue to face” challenges around standards as barriers to expansion and development of a robust definition of green (Wood & Grace, 2011).

Nyberg and Wright (2012) conducted qualitative research into the justifications used by corporations and managers for their corporate environmental activities. Using a discourse analysis methodology, they analysed the justifications using Boltanski and Thevenot’s (2006) Justification Theory matrix. They found that, in a hierarchy of ‘worth’, the ‘market’ order – which frames ‘worth’ as competitiveness and increased shareholder value and profit – is the “lodestar”, but that there do exist corporate environmental activities which were evaluated on additional, broader social orders of ‘worth’ (Nyberg & Wright, 2012, p. 1834). That is, they found corporations and managers framed environmentally sustainable development and initiatives as a ‘win-win’ scenario but ultimately preference ‘market’-based justifications - profit and return to investors – above ‘green’ or environmental-based justifications. However, Boltanski and Thevenot’s (2006) matrix understood ‘green’ justifications to mean ecological and biodiversity considerations, which align more with McGrail’s ‘light green’ category.

To date, much of the literature around green bonds has been exploring its potential as a market, and the market fundamentals needed to finance the transition to a low-carbon economy. An assumption in the literature on green bonds is that the labelled green bond market is inherently attractive to investors, and that investors will prioritise these investments. Further, there is an assumption that accreditation will provide greater market certainty and therefore will move the product to the mainstream (Bartels, Holland, & Metzgen, 2015; Inderst et al., 2012; Kennedy & Corfee-Morlot, 2012; Kidney, 2015; Kochetygova & Jauhari, 2014; Wieckowska, 2013; Wood & Grace, 2011). However, accreditation will also provide a discrete boundary to labelled green bonds – potentially marginalising them as a product (Inderst et al., 2012). This project seeks to explore these assumptions made about the market by conducting research with green bond market players, including issuers, accreditors and investors.

There has previously been limited field research into the decision processes of investors and issuers within the labelled green bond market. Up until recently the market has not been large enough to provide that field data. As the market matures, inherent tensions around definitions and accreditation surface. This research seeks to understand the nature of the difference, if it exists, between green bonds and infrastructure bonds.

# Labelled Green Bond Market Information

Over the period 2011-2014, the labelled green bond market has grown at a 50%+ compound annual growth rate, with the total annual issuance reaching in $36.6 billion 2014, an increase from $11 billion in 2013 and less than $5 billion in 2012 (Kochetygova & Jauhari, 2014) (see Figure 3).

Figure 3: Total Labelled Green Bond Issuance

**Source:** Data provided by Climate Bonds Initiative, 2015

Despite the strong growth, labelled green bond issuance accounts to a small part of the broader institutional investment market, whose global assets are currently estimated to be USD 71 trillion (Inderst, Kaminker, & Stewart, 2012, p. 8). Initially driven by supranational development banks, such as The World Bank and EIB, issuing labelled green bonds, the market has since expanded to include issuers such as municipal and corporate entities (Kochetygova & Jauhari, 2014, p. 1) (seeFigure 4). Furthermore, issuance of labelled green bonds has expanded to include a variety of currencies (see Figure 5).

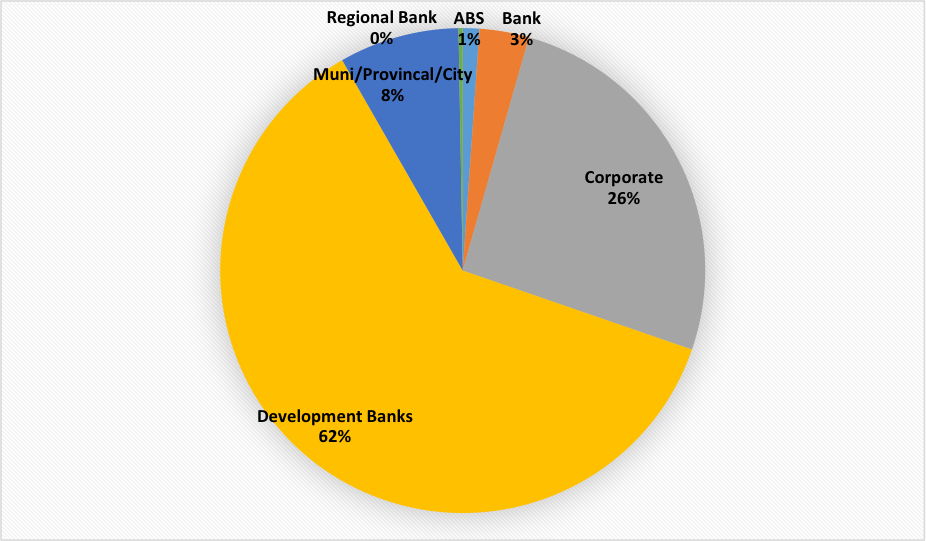


Figure 4: Labelled green bond issuers

**Source:** Olsen-Rong et al., 2015

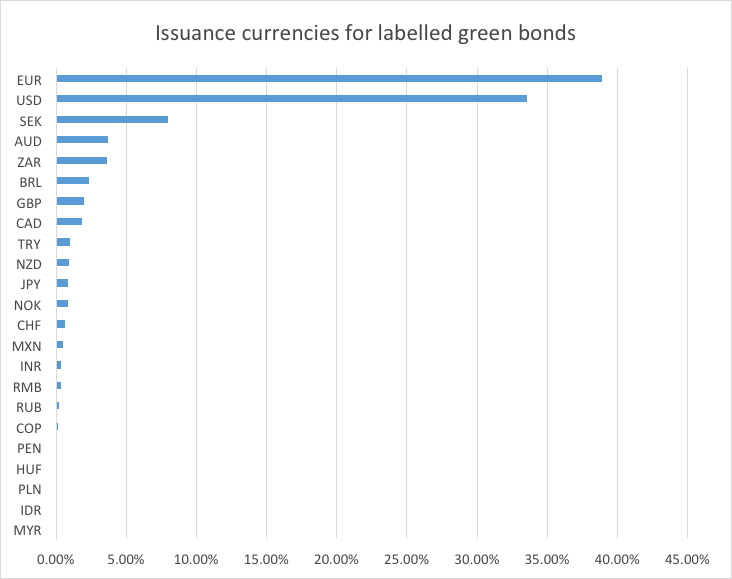


Figure 5: Issuance currencies for labelled green bonds

**Source:** Olsen-Rong et al., 2015

To date the projects that make up a majority of the labelled green bond universe are renewable energy generation (38.3%), sustainable buildings (27.5%) and sustainable transport (10.2%) (see Figure 6) (Wieckowska, 2013, p. 160) indicating a focus on technologies. 75% of labelled green bond issuance matures between 2-10 years despite these investments typically needing longer term financing and the suitability of green bonds to facilitate this longer term finance (Kochetygova & Jauhari, 2014) (see Figure 7).

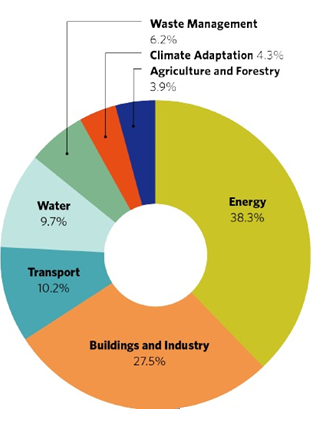


Figure 6: Labelled green bond universe projects

**Source:** Olsen-Rong et al., 2015

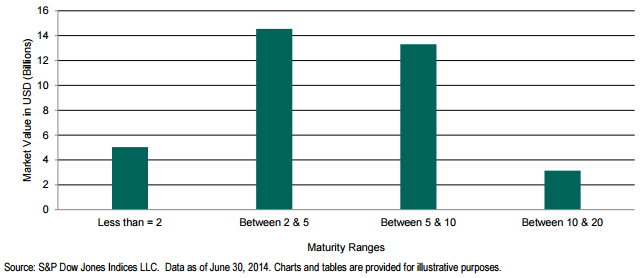


Figure 7: Average tenor of green bonds

**Source:** Kochetygova & Jauhari, 2014

See Appendix 1 for Green Bond Data Table April – September 2015. This table shows yields for a selection of bonds raised for the period April – September 2015. The table illustrates the diversity in issuer, size, tenor, yield and the use of proceeds of the green bond market.

# Methodology and Methods

## Research methodology

This research project was designed to understand the perceptions of those involved in the green bond market and their decision-making processes. Quantitative research had already been conducted through regular market updates. A qualitative methodology was used in this study to investigate participants’ perceptions and decisions about their involvement in the green bond market. As the green bond market is a self-regulated, self-labelled market, and as understandings of ‘green’ are subjective, it was important to explore as deeply as possible participants’ understandings of green bonds and to allow possible differences in understandings and definitions to emerge. In order to obtain an accurate image of the participants’ experiences and perceptions, semi-structured interviews were used.

## Data Collections Methods

The data was obtained from semi-structured interviews conducted in April to June 2015. In all, 17 interviewees across 14 organisations in 15 separate interviews participated in the research, with the focus of the questions related to their participation in the global labelled green bond market. Participants were recruited through a snowballing method, where at the conclusion of each interview the interviewer would ask for suggestions of further interviewees. Participants were selected based on their participation in the labelled green bond market.

A cross section of the labelled green bond market was captured in this sample, including green bond issuers (6), underwriters (2), investors (5), investor groups (1) and industry research organisations (1). The issuers included corporate (1), banks (1), municipal government (1), state government (1) and supranational development banks (2). Investors included mainstream fixed income portfolio managers and Socially Responsible Investors (SRI). The interviewees’ organisations were located in Melbourne (1), London (1), Washington DC (1), New York (1), Sydney (5), Toronto (1), Paris (2), Gothenburg (1), Stockholm (1) and Luxembourg (1). 12 of the 17 respondents were male and all respondents had at least an undergraduate degree and held senior organisational positions including senior portfolio managers, directors and investor relations managers. Collectively the issuing organisations represented USD 25.47 billion of the total cumulative global green bond issuance of USD $65.9 billion or 38.6% as at June 2015.

Each interview lasted between 40-60 minutes and, with the permission of each interviewee, all but two were recorded and fully transcribed. Two interviews were not recorded, but notes were taken. One interview was conducted by providing interview questions via email for response. Care was taken to limit the subjectivity of the researcher by ensuring that transcripts accurately captured the interviewee’s perceptions by having interviewees review their transcripts. Ethical considerations of confidentiality were met by de-identifying all data collected. The interviews established the existing process for investing into, or the issuing of, typical bonds and sought comparisons to green bonds. Open-ended questions followed, encouraging the interviewee to reflect on their experience in the green bond market and to provide personal and organisational perceptions of green bonds. (See Appendix 3.)

A majority of the interviewees viewed climate change as a high personal and professional priority. For some of the interviews, data gathered was supplemented with green bond term sheets and press releases as well as organisational strategy documents and slide decks as provided by the interviewees.

## Analytic Processes and Tools

Four main themes emerged out of the literature regarding green bond markets: how the green bond field was viewed, including liquidity and the role of institutional investors; definitional work around green bonds; how accreditation was used by market participants; and the credibility of green bonds. Interview questions were organised to interrogate those themes. Response data was coded using NVIVO, with the researcher identifying themes in relation to the research questions, allowing other significant themes to also emerge, which became categories. Under these categories, sub-categories of responses were coded.

# Summary of Results

In this section, the significant themes that emerged from the analysis of the interviews are discussed. The themes are presented and discussed under these headings: definition, role of accreditation, rationale, additionality, market fundamentals, and future of the markets.

## Definition of green bonds

During the interviews, four main categories of response to the question around the definition of a green bond emerged: GBP governance (9 out of 15 respondents), transparency (4 out of 15 respondents), environmental projects (4 out of 15 respondents), and climate projects (3 out of 15 respondents). Among those who used the GBP governance framework to define a green bond was an issuer who explained:

“The market currently relies on the Green Bond definition embedded in the Green Bond Principles (GBP) - voluntary process guidelines published by a representative group of issuers (with EIB as a member of the Executive Committee), investors and intermediaries, with the support of the International Capital Market Association (ICMA).”

Although most respondents had defined green bonds according to their governance, such as the GBP guidelines or transparency around use of proceeds, some respondents talked about the environmental outcomes of green bonds in their definitions. Others spoke discretely about climate projects rather than more diverse understandings of green projects. A supranational issuer explained their approach:

“That’s a list of the types of projects that we consider to be eligible. And it includes mitigation projects, like renewable energy, waste management, energy efficiency in buildings, in transportation and also adaptation - certain types of projects that help countries adapt to the effects of climate change and build resilience. So our green bonds criteria, or definition, is a list of examples of the types of projects that we would select.”

In response to the question, “is there a difference between a green bond and an infrastructure bond?”, 9 out of 15 interviewees addressed the question by noting that the main difference was the recourse of the investor to the issuer. They looked at the mechanics of the two types of bonds, noting that green bonds were normally issued from the balance sheet company of the issuers, rather than what would typically happen in an infrastructure or project bond situation, where a special purpose vehicle would be created. One respondent explained:

“There are so many different *types* of bonds. So if an infrastructure bond is being used to actually fund a project then I would say you have some project risk through the bond. Whereas with a green bond – use of proceeds green bond the project risk is really – I think there is no project risk. Things are a little bit different.”

Others who were interviewed saw green bonds as conceptually the same as infrastructure bonds, on the basis of the types of projects that the funds raised were supporting. As one respondent commented:

“Absolutely. I think if a solar project came along to us and they wanted us to provide them with financing, we would look at it from an infrastructure perspective, therefore understanding the underlying drivers and the cash flows and the like. And so, I suspect if NAB is looking into providing…financing through green bonds to some of the wind farms and others, the way they would look at those investments would be very much similar to the way they would look at it for an infrastructure project. So I think we’d do the same.”

## Rationale behind decision

When responding to the question about the rationale behind their decision to issue or invest in a green bond, interviewees either justified their decision on financial reasons, or on the environmental grounds.

Market

Those respondents who noted the financial benefits in making their decision felt that there was no financial difference between a green bond and an infrastructure bond in terms of returns and credit rating of the counter party. These respondents all noted that financial performance was superior to environmental outcomes when considering a green bond. As one investor described:

“In a sense, we always say we are a finance-based investor, which basically means that any investment it has to stack up financially first, before we look at anything else. And I think the impact of the investment itself is sort of an overlay of what we think is a sound financial investment. So the same applies to the green bond that, if we really think it’s a bad investment financially we wouldn’t invest in it.”

From an issuer’s perspective, some respondents noted the attraction of issuing a green bond was to diversify their investor base, to include investors who had not previously bought a bond issued by them. This was particularly important for larger, more frequent issuers of bonds. A representative comment would be:

“The second point was to diversify investor base, and that was the first time… we are one of the largest corporate issuers globally, investor diversification is a real issue for us, and we need to be able to keep issuing at good conditions and so we can’t afford to undermine our financing conditions because a part of the credit investors, some investors have reached the limit of exposure to [us] so we need to be able to reach out to a wider range of investors, and that was a success in that regard.”

Environmentally driven

There were some respondents (3 out of 15) who emphasised the environmental outcomes of green bonds in describing their rationale for participating in the green bond market. One respondent explained that they were participating in a green bond issuance “just because we were supportive of the environmental objectives”, though this was qualified by the secondary reason that it was “fairly priced for an investment grade green bond”.

## Role of accreditation

Green Bond Principles

The recurring theme that emerged from the data was that respondents felt that the Green Bond Principles (GBP) provided a framework and encouraged transparency, creating a consistency that was understood by both investors and issuers but didn’t provide any guidance on the types of projects that should be included as ‘green’. A number of the interviewees were from organisations that had an input into writing of the GBPs. Comments included:

“I think that’s the way that we look at it, it’s helpful for us to screen out opportunities that we haven’t done enough of these bonds to do a review of the ultimate underlying projects that end up being invested in and see how that would measure the impact, the actual impact and therefore make a conclusion whether this is achieving what it is supposed to. But I think it helps us to achieve the environmental objectives more likely than if it was just a normal bond.”

“information disclosure and transparency in that regard is very important and that’s one of the things that is promoted under the Green Bond Principles, is to be as transparent as possible, and the type of investment that you are going to finance, how you are going to manage the money, how you are going to report on the dispersion of the proceeds.”

However, some market participants felt that the GBPs were open too much to interpretation and applied too liberally. One investor articulated these concerns:

“I would say there are probably four types of weakness. But one of them is where we think that it’s really where the Green Bond Principles have been interpreted too loosely, and the issuer has got a second party opinion to say ‘this issue is broadly in line with Green Bond Principles’. It happened once before with an issuer, about two to three months ago, and we are very disappointed to see it because the company we considered was quite a green company. But they came with a bond that was not linked to any project and there was no annual reporting at all. So for us that was not a green bond, it certainly wasn’t eligible for investment as a green bond for us, and we considered it to be the market a pure play, so that company only really did, had green activity, so it was green in that sense, but the bond issue wasn’t a green bond because it wasn’t linked to any project and any reporting. But we were disappointed because one of the second party opinion providers did actually produce an opinion on this bond, and said it was a green bond, so we were disappointed in that.”

Similar views were expressed by another issuer, who also reinforced the open interpretation of the GBP as a non-regulatory framework:

“Whereas the Green Bond Principles is ‘voluntary’ in inverted commas, process guidelines, so there is no black and white minimum benchmark you have to, you must do in order to verify, against the Green Bond Principles you could so, oh I’ll invest in coal and just state it theoretically that that would be eligible for verification under the Green Bond Principles.”

The role of an independent review in the GBP process was highlighted in many of the responses. Many respondents said that without the independent review they would not be as comfortable with the green bond issue. One issuer explained:

“We would not be as comfortable if it did not have a second opinion, and we would probably default to our view of the issuer, in terms of their environmental track record and commitment to environmental sustainability.”

Others, however, felt that the independent review was an opinion on the framework of the green bond, and that investors, particularly less sophisticated retail investors, might place too much emphasis on these reviews. As one respondent noted:

“Well I think when you understand what it is – it’s an opinion on your green bond framework, nothing more, nothing less, so we’re pretty realistic on what that is. Whether investors give that more weight than it deserves is kind of hard to say. I think it’s used in the market place people seem to rely on at least someone.”

Many of the respondents (11 out of 15 interviewees) emphasised transparency, in terms of auditing use of proceeds, as important to negate claims of ‘greenwashing’. ‘Greenwashing’ was explained by one respondent as, “an issuer raises money for something that they say is green…you find out later that they didn’t use it for something that is really green, or what they said they would use it for”. The solution to this was transparency: “as long as the issuer is transparent on what they will be using the funds for, and you can trust the governance of the issuer to use it for the intended purposes, that shouldn’t be too much of a risk”. Some respondents noted their own internal expertise to assess the environmental credentials of the investment, as one investor described it, “to peel back the onion to see what you are investing in.”

Certification

Certification through the Climate Bond Initiative‘s Climate Bond Standard (CBS) is a recent innovation within the green bond market, and this might explain why not many respondents (3 out of 15) referred to it in the interviews. Respondents noted that certification had high applicability to corporate issuers in addressing risk mitigation and also played a role in the wider application of the market. One investor explained:

“But do I think the certification piece overall is a good thing? I think it just gives people something to point to, and you will find it will make it easier for the marginal investor, who doesn’t have all the resources to do the analysis themselves, to get involved.”

Awareness raising

Finally, two of the 15 respondents noted that accreditation forced internal collaboration within the company, between the finance and sustainability departments as well as developing positive engagement with external stakeholders.

## Green bond weakness: Additionality

Interviewees were not directly asked about additionality in the interviews, but it emerged as an important theme in their responses. Respondents noted that, unlike an emissions trading scheme which mandates an additionality requirement, green bonds are silent on additionality. In reviewing the data from the interviews, three situations were presented when projects were funded through a green bond that was already approved, which would not meet the standard additionality criteria. One situation involved projects that had been pre-approved, and the green bond was being used for revenue generation. Another situation involved the recycling of capital for existing, funded green projects. The third situation was where funds were being raised for eligible projects that were identified but not funded. Comments included:

“Yes, we had a pipeline of projects. I think we would not have been willing to go to market taking commitment towards investors that we were going to allocate the money towards very specific type of projects without having some reasonable level of comfort that we would be able to deliver on that commitment. Hence we had a sufficient pipeline of those types of projects to be financed. This raises the question of additionality, whether those projects would have been financed or not in the absence of that green bond, they would have financed them with another bond, there is no question about that. And we are not trying to pretend otherwise.”

“Our approach to date which is continuing at the moment, any deal we do is intended to be certified under Climate Bond Standard. So in order for that to happen, we need to make sure, we’re a commercial bank, we need to have sufficient assets either in the pipeline or on our balance sheet already that we can re-finance or ring-fence or link to a green bond in order to bring new deals to market.”

## Market Fundamentals

Investment process

The investors in the sample group noted that the process to invest into a green bond did not differ from that of investing into a regular bond. 6 out of 15 interviewees noted that credit rating was fundamental to an investment in a green bond. They would not invest in a green bond, regardless of whether it was green or not, if the credit rating was poor.

Investors noted that financial metrics of the issuer, namely the credit rating, as well as the yield and term of the green bond was treated in exactly the same way as a regular bond. There was also an acknowledgement that the issuing does not follow standard market practice. As one investor noted, for them to participate in the market, it required “reverse inquiries” where they approached an issuer and then the investor would “cornerstone” the issue and “build a book around” them:

“Ideally, these things would be issued every day of the week and we could pick a little bit of each. However the reality is that the green bond market in Australia is still in its infancy, so issuance is a little bit slow off the mark.”

Issuing process

There was also divergence in opinions from an issuer’s perspective on how closely aligned green bonds were to regular bonds. Some noted that the process of issuing a green bond was more onerous. As one issuer explained:

“We tend to come to the market fairly regularly. We use what they call a bought deal format where we price transactions fairly quickly and we offload the issue to the dealer group immediately after we price the deal. So from conception to actual pricing in the domestic market in can take 10 minutes sometimes.... Green bonds are not like that at all; they were the exact opposite... I would say the advance work was several fold more than a regular bond issue, maybe 100 times more work.”

Others who were interviewed downplayed the extra requirements:

In terms of the financial instrument that we issued there is absolutely no difference between the green bond and the plain vanilla bond that we issue under our EMTN program, the EMTN stands for European Medium Term Notes, so that’s the standard program to issue relatively easily and frequently as needs arise to issue bonds in euros or even pounds sterling. So, that’s really, from financial instruments standpoint something which is very standard. The specificity of the bonds, of the green bonds, is the use of proceeds section and it’s the commitment taken by EDF to ringfence the proceeds upon receipt of the issuance, to allocate that to a dedicated, tagged and specific portfolio of treasury assets.

Pricing

In 10 out of the 15 interviews, respondents noted the issue around whether a green bond should be priced differently to an infrastructure bond. Investors noted that there was no additional price benefit because it was a green bond, therefore they could not offer a premium because a bond was labelled a green bond. Instead, the pricing came through the standard financial due diligence process of the counter-party. As one investor explained:

“you get some people commenting that these things should price tighter to regular issuance by the same issuer. You can make an argument for that, but we can’t invest into it, if that happens then we are out.”

There was also acknowledgement from the issuers that the cost and time involved in the additional work of bringing a green bond to market was borne by them.

Liquidity

Respondents noted that while there was a current lack of trading in the market this did not represent illiquidity concerns. Respondents highlighted that the ultimate liquidity of the bond was influenced by the liquidity of the issuer. Further, the issuers in the sample group noted that notwithstanding minor trading directly after issuance, the market had not experienced high volumes of trading because investors had a buy-and-hold strategy thus misrepresenting the illiquidity in the market. One underwriter explained:

“So liquidity is one of those things that everybody talks about and suggests they always want in any financial product, but in reality they don’t always want it and they don’t always get it and they’re willing to buy it even though there’s no liquidity in it…. I don’t see domestically at the moment many of these investors looking at green bonds for the purposes of liquidity. I think you have more investors willing to buy it knowing there isn’t much liquidity in this paper, but I am happy that I am getting returns over and above the financial elements, I’m highly likely to hold this to maturity anyway, in which case I don’t need any liquidity.”

9 of the 15 participants discussed over-subscription rates, particularly of corporate green bonds, in their interviews as indicative of market demand, and suggested that this indicated a future liquid secondary market. One issuer explained his feelings about over-subscription rates:

“You’re not investing in a green bond from company X because the green bond is three times over-subscribed, you’re investing in it because you’re comfortable where the proceeds are being deployed, and you’re comfortable with the credit of the issuer. What the over-subscription does is give you comfort that there will be secondary liquidity, because there’s more willing buyers than there are issuers of the bond, and that’s always been a question people have had, a concern people have had, that these green bonds, are they really a liquid asset class, will they hold up in a secondary market, and the over-subscription goes a long way toward saying, yes they will, they will trade in line – if not better – with a vanilla deal issued by the same corporate because of the level of interest, and what we’re finding is that investors tend to hold these bonds and they’re not as actively traded as a vanilla line by issuers.”

Indices

6 of the 15 respondents discussed the role that green bond indices, such as Barclay’s, Bank of America Merlyn Lynch and Standard and Poors, played in the green bond market. The investors who were interviewed were all institutional investors, and they noted that green bond indices would be good for a retail investor, but not necessarily influence their decisions as an institutional investor as they had the in-house ESG capabilities to assess the green bonds. The issuers who were interviewed had issued their bonds prior to the establishment of indices, but they noted that they would have issued within the green bond index if practicable. As one issuer noted:

“Some of these indices were being created and they weren’t actually in existence when our bond launched so we wanted to make sure that if it did actually come into being that the bond would qualify. So, it wasn’t a specific goal of ours. We wanted to be best actors, so one this was one of the options that we want to be left open to us.”

## Green bond market future

Respondents were each asked about their opinions of the future of the green bond market. 6 out of 15 interviewees identified the applications of the instrument for particular types of issuers, notably corporate bonds and municipal bonds. Many of the investors noted the dominance of the supranational development banks in issuing green bonds to date and most respondents noted the growth in corporate issuance of green bonds. Two of the respondents also noted the applicability of the green bond instrument to municipal applications and identified this area as a potential growth sector. Some respondents noted that as corporate issuers enter the green bond market they would bring liquidity to the market, though one respondent qualified this by stating the issuances would have to reach ‘scale’ ($500 million). 7 out of 15 identified project types, such as renewable energy and mass transit projects. Others noted that the purpose behind the green bond, and the future of green bonds, involved educating the market to integrate Environmental and Social Governance considerations into bond portfolios, which was typically an investor attitude. The respondents saw the future of the market required development of the green bond instrument so that it was a robust, scaleable instrument that was appealing to mainstream investors yet didn’t compromise environmental outcomes. Comments included:

“We think this is an interesting instrument that we would like, we would like it to be part of our financing toolbox some might say, in the future. So we are very much interested in making those instruments robust, credible, and in that market to grow it forward.”

# Discussion

## Limitations

A limitation with this research was the relatively small sample size. The findings and subsequent theoretical argument was based on 15 in-depth interviews with Chief Financial Officers (issuers), senior portfolio managers, heads of debt and capital market divisions (investors) and senior under-writers all integrated into the green bond market. The qualitative nature of the study means that the findings are not generalisable, and the method by which interviewees were selected may present a positive bias in the responses. That said, the sample group of the interviewees represents 41% of the global green market total issuance as at 31st December 2014.

Secondly, while the organisations in the research study were highly committed to the green bond market and thus were willing to accept additional costs and time required for green bond due diligence, other organisations may show less engagement. As the interviewees were identified through a snowballing technique, there may also be an inherent selection bias towards those participants who share similar, and likely positive, attitudes towards green bonds.

## How do market players understand green bonds as different from infrastructure bonds?

The data collected in this study indicates that market participants see green bonds as an asset class discrete from infrastructure bonds. Participants acknowledged that, to date, there was conceptually an overlap between green bonds and infrastructure bonds when considering the assets funded by green bonds, with most market participants acknowledging the strong representation of renewable energy, energy efficiency buildings, mass transit infrastructure and water infrastructure. However, they believed that the governance and counter-party risk marked green bonds as different from infrastructure bonds and a few market participants also suggested that green bonds have the potential to fund green projects rather than just climate mitigation and adaption infrastructure projects. Market participants’ perceptions of the market, the added layers of complexity with issuing and investing into green bonds, and the functioning of the market warrant further discussion here.

## How do market participants define green bonds?

Emerging from the data was the ambiguity in definition of a green bond which supports the research by Inderst et al. (2012) and Wood and Grace (2011). The respondents noted that contrary to existing types of bonds, which are typically defined by the type of issuer and/or the style of coupon payment, green bonds can be issued by a breadth of organisations. The data noted that for market participants to further understand and define green bonds there was reliance on the GBPs framework and the CBS despite acknowledging the weaknesses within the verification process. Emergent in the data was the inter-changeability of the term ‘green’ with the term ‘climate’ which may represent this definitional ambiguity. This inter-changeability may also reflect how market participants view the product and typically associate it with renewable energy, energy efficiency, transport and water infrastructure as these have clear flows of finance. The data set responses to the types of projects that were defined as ‘green’ positions the respondents within a ‘Bright Green’ category, which focuses on achieving sustainability through “aligning economic incentives and ecological imperatives” with a focus on new technologies (McGrail, 2011, p. 125).

Many respondents highlighted the governance requirements of the GBPs as an attempt to define green bonds, and relied on the independent review of the green bond framework of the issuer. Investors highlighted use of proceeds as a key requirement when considering a green bond. Overlapping the governance of green bonds was the acknowledgment that green bonds were defined by providing capital to green projects. Issuers deferred the actual definition of green projects to investors and how the green bond may align with existing the portfolio mandates and risk appetite.

The understandings of ‘green’, from the participants in this study, were revealed to be contextually bounded. As one respondent noted, “I think for example from a French investor’s perspective they consider nuclear as green, you certainly wouldn’t get that perspective from a Japanese investor.” Further, some respondents noted that what is defined as ‘green’ could change depending on future advances in green technologies:

“So it’s a moving beast, if you like, so there may be 8-star buildings in the future in which case the benchmark is going to go up.”

## What is the role of verification and certification in supporting the growth of the market?

Emerging from the data was the overlap between the verification process and how the market defined green bonds. The interviews reinforced (Inderst et al., 2012) discussion of the non-linear process that green bonds have gone through to be defined. As noted in the literature review, the GBPs were developed in an iterative process and were not formally developed until 2014 despite the first green bond being issued in 2007. The Principles were developed by market participants and are entirely self-regulated and self-labelled and were primarily developed to educate future market participants. This was reinforced through the interviews as participants perceived the role of the GBPs to be more about educating issuers rather than necessarily establishing a standard for investors. The interviews revealed the collegiality that existed within the green bond market participants to date, which may inform the self-regulatory nature of the GBP. Green bond market participants noted that, due to the GBP’s openness to interpretation, there was reliance on the reputation of the issuer in making an investment decision. Flexibility was shown in how much to weight the GBPs depending upon the issuer.

Green bond market participants’ responses aligned with the research (Kennedy & Corfee-Morlot, 2012; Kochetygova & Jauhari, 2014; Mathews & Kidney, 2012; Wieckowska, 2013) in that they saw the role of verification as important and the verification process as legitimate. However, the variety of issuers and projects that can be included into a green bond resulted in the GBPs being applied as a ‘first check’ requirement with further research required internally. Respondents saw the GBPs as needing tightening around aspects such as reporting, and they noted that the GBPs are used in collaboration with internal Environmental, Social and Governance (ESG) research.

The accreditation from CBS was seen as more beneficial to a retail investor. Emerging from the data was a tension between innovation and opening up the market to new projects and technologies, and rigour in policing the credibility of green bonds, and thus addressing ‘greenwashing’ concerns. There have so far been no examples of non-compliance, such as issuers raising money through a green bond that didn’t result in a green project. Issuers to this point have been highly reputable international organisations and banks, so respondents noted that there may in the future be a case of non-compliance as the issuer base becomes broader. Having said that, some interviewees emphasised that non-compliance can be mitigated within the CBS framework.

## How do green bond market participants justify their decision making around green bonds?

Some respondents foregrounded personal beliefs about ecology and the environment in their interviews, with references to protecting the Great Barrier Reef and discussions relating to negative consequences for humanity from climate change, such as the increase in natural disaster frequency. However, the majority of market participants in this study justified their involvement with green bonds in market or commercial terms, which aligns with the research by Nyberg and Wright (2012). As with their study of corporations and managers’ justifications for corporate environmental activities, emerging from the data in this study was an emphasis on ‘market’-based, or financial outcomes, as a rationale for participating in the green bond market for investors and issuers. Investors noted that green bonds provided similar financial terms to regular bonds, and issuers highlighted the benefits of a diversified investor base as a result of green bond issuance. The data revealed that some investors with established Environmental, Social and Governance (ESG) investment mandates viewed green bonds as providing an environmentally focused product that can be integrated into existing portfolio management, supporting the findings of Wood and Grace (2011). Issuers were keen to attract ESG investors to diversify their investor base. Having said this, Wood and Grace (2011) claim that green bonds satisfy latent demand for ESG-style investment, but these interviews showed that Wood and Grace (2011) may have overstated the reliance of fixed income managers on green bonds as there are other bond-style products that ESG investors could invest into. Non-ESG mandated funds identified green bonds as an opportunity to achieve ESG outcomes within their portfolio without the requirement to make changes to the mandate of the portfolio. This raises questions of ‘greenwashing’, as portfolio managers that are not strategically aligned to green or climate investing may purchase green bonds as a priority to seek marketing benefits.

To date a lot of the investments have been in the ‘bright green’ spectrum, but a few of the participants in the green bond market expressed a strong interest in ‘darker green’ ecological projects, such as an Urban Forest Strategy or protecting the Great Barrier Reef, given the right financing structure. For example, in the situation of the Great Barrier Reef, should the counterparty be a government body then investors could make those commercially prudent financial decisions based on the counterparty of the bond. This is a fundamental difference between green bonds and infrastructure bonds, as these respondents noted the flexibility of the green bond to be applied to these type of ecological projects where infrastructure bonds could not be applied. While there is interest in the market for the ‘darker green’ projects, there is no evidence in the market to date that issuers have come to the market with these projects.

There was some evidence of differences in the justifications for green bonds given by market participants from European markets compared to those from Australian and North American markets. There was a partial trend where European market participants saw fulfilling environmental responsibilities as interrelated with their work with green bonds, and interviewees from Australia and North America saw green bonds as an economic ‘win win’ scenario.

Despite the additional work required to issue a green bond, corporate and government issuers spoke about the positive engagement they achieved with their stakeholders during the promotion of the green bond issuance. They noted the dialogue with investors was positive and it provided the opportunity to engage with new investors as well as communicate the organisation’s green credentials. As well as the commercial outcomes of a project, this marketing and communications rationale may be an additional if immeasurable benefit.

## How successful has the labelled green bond market been to date, and what will be the future of green bonds as a discrete financial product in the future?

Market participants viewed green bonds as successful in providing dedicated capital for environmental projects. Market participants were unable to reflect on the metrics of the environmental outcomes, though this may reflect one limitation of the study in that interviewees were finance specialists and thus their focus is on the returns of the investment.

Emergent from the data set was the acknowledgement of the criticism that green bonds do not address additionality. The discussion of additionality and the merits of its inclusion were informed by the ethical mandate of the investor and particularly their sense of urgency in addressing climate change. Others noted that green bonds are a private sector response to financing environmental projects and additionality was better applied when considering the use of public funds. The respondents highlighted the fact that the development of a green bond market was not necessarily about bringing more green projects to market, but rather providing a pool of capital for governments and companies to access.

Participants felt that the green bond market, while still in its infancy, had shown indications of stable future growth. Key considerations identified in the earlier literature, notably a lack of definitions and accreditation, have been recently developed and market participants have been receptive to these developments. This had led to a clearer understanding of green bonds and has also led to the development of indices. The respondents indicated that the indices were yet to have an impact on the market though did indicate that indices provided markets with improved price discovery and liquidity. Recent green bond indices have established minimum issuance size which may influence issuers and improve liquidity. As well as establishing minimum issuance size, some indices were also establishing ‘green’ criteria for inclusion into the index. Respondents noted that these criteria may influence how green bonds are defined. Questions raised in the literature regarding a potential lack of liquidity was not supported by the sample group, who indicated that liquidity of green bonds is likely to mirror the liquidity of the investments bonds issued by the organisation.

The respondents expressed confidence that the green bond market would continue to grow, albeit at a slower rate than has been witnessed over the 2007 – 2014 period. The sample group indicated that this growth was likely to come from the corporate market and municipal market, particularly in the United States, as the structure of the finance and the types of assets they support aligns with labelled green bonds. Investors also noted that corporate issuers provided scale issuance in a variety of currencies that will provide confidence for institutional investors to invest in to the market. The research indicates that total outstanding global issuance for a market to attract institutional investors typically needs to be between USD200 billion to USD300 billion. At the time of writing, the total outstanding labelled green bond market is approximately USD95 billion (Kennedy & Corfee-Morlot, 2012, p. 50). This suggests it must continue to grow before it reaches a point where it will be attractive to institutional investors.

While corporate issuance was identified as a growth area in the green bond market, questions around credibility and ‘greenwashing’ remain, and the need for additional tightening of accreditation was identified as a risk mitigation strategy for both the issuer and investors.

# Conclusion and Further Research

The key finding from green bond participant interviews was that green bond market participants did understand green bonds to be different to infrastructure bonds, even though currently there is an over-representation of infrastructure-style projects being invested into. Participants saw there was a difference from a governance and mechanics perspective, and a few of the respondents identified that green bonds will be able to fund more ecologically-driven projects that an infrastructure bond could not fund.

It is apparent from these interviews that market participants view financial considerations as senior to environmental considerations when deciding on an investment. This preferences ‘bright green’ projects (McGrail, 2011) which show evidence of solid cash flows, and raises fundamental questions as to the criticism of the lack of additionality of projects. It is apparent from the interviews that another benefit of issuing, and investing into, a green bond was the resultant awareness raising of the instrument as well as increased awareness of the environmental outcomes it was seeking to achieve.

The interviews highlighted the reliance of market participants on external verification to define a green bond; the importance of the perceived environmental integrity of the issuer; the expectation of further in-house ESG research, and the existence of standard bond market fundamentals to integrate these into existing bond portfolios. A key finding specific to issuers who participated in this research was the investor diversification green bonds provided and the positive engagement with stakeholders. These findings are consistent and extend the findings of Wood and Grace (2011).

Another key finding from the interviews is that market participants felt that due to the structure of green bonds the key fundamentals of the market such as liquidity and price discovery were not barriers to activity in the market. Participants interviewed were bullish on the future of the green bond market. However, the current GBPs still required additional ESG research to be completed, meaning that green bonds are still very much a bespoke project by project investment decision making, making it a challenge to get the market to scale as institutional investors are unlikely to adopt such bond products.

Perhaps the most challenging aspect still facing the market is how to address the tension between top-down accreditation as proposed by the Climate Bonds Institute which addresses concerns from risk adverse organisations but can also lead to the homogenisation of the product, and the clear articulation of what, or how, a green bond is defined within the GBPs for non-current green bond market participants. A finding from the interviews was that this institutionalisation process would position the market for growth, notably from corporate issuers and institutional investors. Continued growth will put some pressure on the fundamental tension identified in the research around the self-labelling of green bonds through the GBPs and future participation of less-reputable organisations than those currently participating in the market.

As the labelled green bond market continues to grow and mature, further research opportunities will arise. This study presents opportunities for further research focusing on how market participants view the role of green bonds within a geo-spatial context. In particular, comparing the use of green bonds in the developing world, to address sustainable development challenges, to that of the developed world, to address the ethical challenges of climate change.

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# Appendix 1: Labelled Green Bond Data April – September 2015

| **Issuer** | **Size (USD Millions)** | **Tenor (yrs)** | **Coupon** | **Issued** | **Use of proceeds** | **Lead underwriter** | **2nd Opinion** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| IFC | 0.86 | 3 | 9% | September | Renewable energy and energy efficiency | Credit Agricole CIB | Cicero |
| Renew Power | 68 | 17.5 | 9.75% | September | Renewable | IDFC | No |
| Hindustan Power | 58 | 10 | 10.05% | September | Renewable | IDFC | No |
| LM Wind Power | 56 | 5 | undisclosed | September | Renewable | Nordea | DNV GL |
| IFC | 1.166 | 5 | 1.00% | September | Renewable energy and energy efficiency | INCAP | Cicero |
| Nordic Investment Bank | 563.7 | 7 | 0.38% | September | Renewable energy and energy efficiency | Bank of America Merrill Lynch, Crédit Agricole CIB, HSBC | Cicero |
| CLP Wind Farms | 90.6 | 3 to 5 | 9.15% | September | Fund wind projects in India | Standard Chartered Bank, IDFC, HSBC | No |
| Uppsalahem AB | 59.4 | 5 | Quarterly STIBOR + 70bps | September | Energy efficient buildings | SEB | Cicero |
| Stångåstaden AB | 59.3 | 5 | Quarterly STIBOR + 70bps | September | Energy efficient buildings | SEB | Cicero |
| NWB | 1126.3 | 10 | 1.00% | September | Waterway management, flood protection, sanitation and dredging of waterbeds | Bank of America Merrill Lynch, Barclays, HSBC, SEB | Cicero |
| European Investment Bank | 686.94 | 8 | 0.50% | August | Renewable energy and energy efficiency | Bank of America Merrill Lynch, BNP Paribas, Crédit Agricole CIB, HSBC | oekom |
| Vasakronan | 18.3144 | 3 | Quarterly STIBOR + 75bps | August | Energy efficiency | Nordea | Cicero |
| IFC | 49.455 | 5 | 6.45 | August | Finance loans for green projects | JP Morgan | Cicero |
| Board of Governors of the Colorado State University System | 42.125 | 8 to 18 | 5 | August | Partially fund the construction of energy efficient building | Morgan Stanley | No |
| TerraForm Global | 810 | 7 | 9.75 | August | Renewables | Bank of America Merrill Lynch, Barclays, Citigroup, Deutsche Bank, Goldman Sachs, JP Morgan, Morgan Stanley | No |
| The Central Puget Sound Regional Transit Authority | 792.84 | 3 to 35 | 4.00% - 5.00% | August | Public transport and energy efficiency | JP Morgan | No |
| The Central Puget Sound Regional Transit Authority | 75 | 30 | SIFMA Index Rate + 70bps | August | Public transport and energy efficiency | JP Morgan | No |
| The Central Puget Sound Regional Transit Authority | 75 | 30 | SIFMA Index Rate + 70bps | August | Public transport and energy efficiency | JP Morgan | No |
| kfW | 781 | 5 | 1.625 | July | Renewables | Barclays, HSBC, RBS | Cicero |
| Rhode Island | 56.275 | 2 to 29 | 2.00% - 5.00% | July | Water pollution abatement projects | Morgan Stanley, Oppenheimer & Co., Bank of America Merrill Lynch, TD Securities, Roosevelt & Cross Inc. | No |
| Telus | 173 | 10 | 3.4 | July | Partially fund the construction of energy efficient buildings | Royal Bank of Canada | No |
| Goldwind | 300 | 3 | 2.5 | July | Renewables | Societe Generale, Deutsche Bank, Bank of China | No |
| New York State EFC | 80.52 | 1 to 30 | 2.00% - 5.00% | July | Fund new water projects | Citigroup, Loop Capital Markets | No |
| New York State EFC | 31.37 | 1 to15 | 0.50% - 3.82% | July | Fund new water projects | Citigroup, Loop Capital Markets | No |
| New York State EFC | 367.455 | 1 to 22 | 2.00% - 5.00% | July | Fund new water projects | Citigroup, Loop Capital Markets | No |
| TerraForm Power | 300 | 10 | 6.125 | July | Renewables | Bank of America Merrill Lynch, Barclays, Citigroup, Goldman Sachs, Macquarie Bank, Morgan Stanley | No |
| Virginia College Building Authority | 65.815 | 4 to 30 | 2.84% - 5.20% | July | Partially fund the construction of an energy efficient building | Morgan Stanley | No |
| Fastighets AB Forvaltaren | 23.58 | 5 | Quarterly STIBOR + 68bps | July | New/refurbishment building projects | Handelsbanken | Cicero |
| City of Gothenburg | 128 | 6 | 1.455 | June | To invest in projects that adhere to Gothenburg's green bond framework | SEB | Cicero |
| EBRD | 1.092 | 3 | 8.5 | June | Renewable energy and energy efficiency | Crédit Agricole CIB | Cicero |
| IBRD | 4.1 | 5 | 5.6 | June | Renewable energy and energy efficiency | Crédit Suisse | Cicero |
| Morgan Stanely | 500 | 3 | 2.2 | June | Renewable energy and energy efficiency |  |  |
| IBRD | 4 | 5 | 5.6 | June | Renewable energy and energy efficiency |  |  |
| SolarCity | 10 | 3 | 2.65 | June | Renewable energy |  |  |
| SolarCity | 10 | 5 | 3.6 | June | Renewable energy |  |  |
| SolarCity | 10 | 10 | 4.7 | June | Renewable energy |  |  |
| SolarCity | 5 | 15 | 5.45 | June | Renewable energy |  |  |
| ABN AMRPO | 557 | 5 | 0.75 | June | Energy efficiency real estae and renewable energy |  |  |
| Nelja Energia | 55 | 6 | 6.554 | June | Renewable energy |  |  |
| TenneT | 550 | 6 | 0.875 | June | Transmission and distribution infrastructure for off-shore wind |  |  |
| TenneT | 550 | 12 | 1.75 | June | Transmission and distribution infrastructure for off-shore wind |  |  |
| ANZ Bank | 464 | 5 | 3.25 | June | To finance loans for 'green' projects |  |  |
| BRF | 557 | 7 | 2.75 | May | Energy efficiency , emission reduction, renewable energy, water management, sustainable and efficient packaging, sustainable forest management and raw materials use reduction | | |
| SolarCity | 10 | 3 | 2.65 | May | Renewable energy |  |  |
| EBRD | 17.2 | 4 | 6.91 | May | Renewable energy and energy efficiency |  |  |
| Stockholm | 180 | 6 | 1 | May | Sustainable public transport, sustainable buildings and waste and water management | | |
| Stockholm | 36 | 6 | 0.099 | May | Sustainable public transport, sustainable buildings and waste and water management | | |
| SolarCity | 10 | 3 | 2.65 | May | Renewable Energy |  |  |
| SolarCity | 10 | 5 | 3.6 | May | Renewable Energy |  |  |
| SolarCity | 10 | 10 | 4.7 | May | Renewable Energy |  |  |
| SolarCity | 10 | 15 | 5.45 | May | Renewable Energy |  |  |
| Fortum | 120 | 6 | 0.509 | May | Renewable Energy |  |  |
| Fortum | 180 | 7 | 1.75 | May | Renewable Energy |  |  |
| IBRD | 16.9 | 10 | 5.25 | May | Renewable energy and energy efficiency |  |  |
| SolarCity | 3 | 1 | 1.6 | May | Renewable Energy |  |  |
| SolarCity | 10 | 3 | 2.65 | May | Renewable Energy |  |  |
| SolarCity | 10 | 5 | 3.6 | May | Renewable Energy |  |  |
| SolarCity | 10 | 10 | 4.7 | May | Renewable Energy |  |  |
| SolarCity | 10 | 15 | 5.45 | May | Renewable Energy |  |  |
| Bank of America Merill Lynch | 600 | 10 | 1.95 | May | Renewable energy and energy efficiency |  |  |
| IBRD | 80 | 10 | 1.95 | May | Renewable energy and energy efficiency |  |  |
| Rikshem | 42 | 3 | 0.25 | May | Energy efficient buildings |  |  |
| Rikshem | 42 | 3 | Qrtly STIBOR + 60bps | May | Energy efficient buildings |  |  |
| IFC | 0.84 | 10 | 1.5 | May | Renewable energy and energy efficiency |  |  |
| Credit Agricole | 4.8 | 3 | 6.06 | May | Financing of green portfolio |  |  |
| IBRD | 3 | 5 | 5.2 | May | Low-carbon projects and 'climate resilient growth' |  |  |
| Senvion (Rapid Holding) | 445 | 5 | 6.625 | April | Acquisition of manufacturing company Senvion Wind |  |  |
| IBRD | 3 | 5 | 5.2 | April | Low-carbon projects and 'climate resilient growth' |  |  |
| EBRD | 2.3 | 2 | 9.05 | April | Renewable energy and energy efficiency |  |  |
| State of Connecticut | 250 | 1 to 20 | 2.00% to 5.00% | April | Water projects |  |  |
| Transport of London | 598 | 10 | 2.125 | April | Public and low-carbon transport |  |  |
| Region lle de France | 539 | 12 | 0.0625 | April | Public transport and energy efficiency |  |  |
| Nordic Investment Bank | 120 | 5 | 0.155 | April | Renewable energy, energy efficiency, 'green' transport and wastewater treatment | |  |
| FMO | 534 | 7 | 0.125 | April | Renewable energy and microfinance |  |  |
| UnIbail Rodamco | 527 | 10 | 1 | April | Energy efficient buildings |  |  |
| EBRD | 20.4 | 4 | 6.88 | April | Energy efficiency, renewable energy, water and waste management and public transport | | |
| SolarCity | 3 | 1 | 1.6 | April | Renewable energy |  |  |
| SolarCity | 10 | 3 | 2.65 | April | Renewable energy |  |  |
| SolarCity | 10 | 5 | 3.6 | April | Renewable energy |  |  |
| SolarCity | 10 | 10 | 4.7 | April | Renewable energy |  |  |
| SolarCity | 10 | 15 | 5.45 | April | Renewable energy |  |  |
| IFC | 0.65 | 5 | 1 | April | Renewable energy and energy efficiency |  |  |
| IFC | 11.36 | 5 | 1 | April | Renewable energy and energy efficiency |  |  |
| Boston University | 158.15 | 29 and 30 | 4.030 to 4.25 | April | Energy efficient buildings |  |  |
| European Investment Bank | 747 | 5 | 2.25 | April | Renewable energy and energy efficiency |  |  |
| Berlin Hyp | 543 | 7 | 0.0125 | April | Financing of green commercial real estate |  |  |

# Appendix 2: Interview questions

**Interview questions:**

1. How do you refine your investment universe?
2. What is your process for investing into assets?
3. How are new investment products analysed? What’s the process?
4. Which metrics do you use?
5. Have you ever bought or issued a green bond?
6. What is stopping you from investing into green bonds?
7. How would you define a green bond?
8. What is your rationale behind your decision to buy/issue/not buy/not issue a green bond? Are green bonds something you would consider?
9. In your opinion, how does a green bond differ from an infrastructure bond?
10. Have you ever bought infrastructure bonds from an issuer who has also issued green bonds? How do they compare?
11. How does the investment of large institutional portfolio managers in the green market impact on your own investment decisions?
12. Are you reluctant to purchase a green bond because of the current lack of a deep and liquid secondary market?
13. Have you seen an increase in clients seeking green products?
14. There has been a lot of media attention on green bonds. Is the financial sector interested only in the finance side of green bonds, or are they also interested in the green side of it?
15. There are the extra requirements to secure green accreditation, does this help you in your decision making process?
16. In your opinion, what is the value of accreditation for green bonds?
17. How legitimate do you see the accreditation process as being?
18. Is the connection between environmental considerations and dollars invested becoming a consideration in your investment process? How do you measure this?
19. Accreditor: How does a green bond differ from a typical infrastructure bond?
20. Accreditor: Are there cases whereby green investments have not led to stated green outcomes?
21. Accreditor: How does accreditation make green bonds more attractive to the mainstream investment community?
22. Accreditor: This process doesn’t have a governing body. How do you plan on protecting the legitimacy of the accreditation?

# Appendix 3: Table of Findings

**Summary of response categories to major themes emerging**

|  |  |  |
| --- | --- | --- |
| **Theme Emerging** | **Response categories** | **No. of sources coded** |
| Role of accreditation | * Transparency * Internal benefits * Independent review * Green Bond Principles * Certification | 11  2  11  12  3 |
| Rationale behind decision | * Finance * Environmental | 7  3 |
| Market fundamentals | * Pricing * Liquidity * Instrument * Indexes * Green Bond Principles * ESG Analysis * Credit Rating | 10  11  10  6  2  9  6 |
| Difference to infrastructure bonds | * Yes * No | 9  5 |
| Definition of green bond | * Transparency * Green Bond Principle Governance * Environmental Projects * Climate Change | 4  9  4  3 |
| Additionality | * Pre-approved projects * Price premium * Unfunded projects * Capital recycling | 1  1  3  2 |
| Green bond market future | * Sub-market type * Project type * Awareness raising | 6  7  9 |

1. The definition of infrastructure bonds that this paper uses is one where bonds are issued to fund public infrastructure projects including transportation, utilities, communication and renewable energy (Inderst, 2010). [↑](#footnote-ref-1)