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Green Bonds – Ecosystem, Issuance Process and Case Studies

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SEB



Green Bonds – Ecosystem, Issuance Process and Case Studies

Chapter 1 The Green Bond Market Ecosystem

Chapter 2 Issuing a Green Bond

Chapter 3 Case Studies



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About the background of this publication

The publication was developed by GIZ and SEB within the framework of a Strategic Alliance (STA) on Green Bond Market Development in G20 Emerging Economies. The STA is a public-private-partnership that was established in April 2016 to support the development of prosperous and sustainable green bond markets in Brazil, China, India and Mexico. In order to promote environmental integrity and transparency in these markets, the STA offers various capacity-building activities including green bond symposia, technical workshops and tailored advisory support to key stakeholder groups, including policymakers and regulators, potential issuers, investors, underwriters and verifiers.

Through the develoPPP.de programme, the Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH works – on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) – with the private sector to support innovative projects in developing and emerging economies for sustainable development. As service provider with offices in over 130 countries, GIZ has – in over 50 years of experience in international cooperation for sustainable development – built strong regional and technical expertise and close working relationships with governments, industries and NGOs across the globe.

Skandinaviska Enskilda Banken AB (publ) (SEB) is a Swedish universal bank, which has developed the green bond concept for institutional investors in cooperation with the World Bank in 2007/08. SEB is one of the leading knowledge providers and thought leaders with regards to green bond product and overall market development.

The content of this booklet was initially written in the context of a comprehensive publication on Green Bond Markets that will be published by the People's Bank of China, the Green Finance Committee of the China Society for Finance and Banking and the Central University of Finance and Economics later in 2017.



Further information can be found on:

- > www.emergingmarketsdialogue.org
- > www.seb.se/greenbonds

Foreword

As a strong advocate of a progressive and effective international climate action architecture, the German Government welcomed the adoption of the Sustainable Development Goals and the Paris Agreement on Climate Change in 2015 by governments worldwide as landmark achievements in formulating a global response to tackle climate change and promote sustainable growth.


Besides public climate finance contributions, the mobilization of private capital plays a pivotal role in meeting the massive investment needs for the transition to a low-carbon, climate-resilient development path. Therefore, having been one of the most active partners of developing countries and emerging markets in the field of climate action, the German Government supports its partner countries not only in financing but also in designing and implementing enabling environments and instruments that facilitate channeling capital flows towards sustainable investments.

Among such market instruments, green bonds have emerged as an effective and innovative vehicle that provides long-term, large-scale financing solutions needed for the required investments in green assets and projects such as in renewable energies, energy efficiency, clean transportation, and adaptation measures. Beyond this direct impact as financing tool, green bonds moreover make an immensely important contribution to triggering a deeper change in the financial sector by promoting accountability and transparency through better environmental disclosure, evaluation methodologies and a pragmatic dialogue within and between institutions in the financial sector.



Natascha Beinker

Deputy Head of Division Cooperation with the Private Sector/Sustainable Economic Policy at the German Federal Ministry for Economic Cooperation and Development (BMZ). She is also Troika Co-Chair of the G20 Global Partnership for Financial Inclusion (GPFI) and Co-Chair for the GPFI SME Finance Sub-Group.



We hope this publication contributes, alongside our other efforts in this field, to further enhancing the knowledge and dialogue on green bonds and thereby fostering international cooperation for sustainable development at a broader scale.

We want to express a special thanks to SEB, GIZ's partner in the develoPPP.de-funded Strategic Alliance on Green Bond Market Development in G20 Emerging Economies, whose pioneering spirit, deep expertise and dedicated engagement for multilateral dialogue in green bond markets globally has been essential to the fruitfulness of the joint work and ambitions.

Sincerely,
Natascha Beinker



It is with great honor that Skandinaviska Enskilda Banken (SEB) has contributed to this important publication on addressing how the financial industry actively can contribute to greening the overall economy.

We would like to highlight that most of the contribution we provided is a product of reflections from work done in collaboration with our partners. In particular, Heike Reichelt and her colleagues at the World Bank capital market unit created an engine to financially support the Sustainable Development Goals.

We would also like to express our gratitude to GIZ and to Dr. Ma Jun of the PBOC Research Bureau, who both, in their own ways, have played an important global role in enabling green growth and coordination and thereby established a foundation for the work that we do.

Finally, it is important to mention that Christopher Kaminker, who has acted as our author for this piece, recently joined SEB from the OECD and thereby also had an opportunity to include some insights from his tenure at the OECD in the following chapters.

We hope our contribution will provide you with value.

Sincerely
Christopher Flensburg



Christopher Flensburg
Head, Climate and
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Introduction

Green Bonds – An Introduction

Green bonds have emerged as an innovative financial instrument over the last decade that have been highlighted by international public and private sector leaders as a promising vehicle for financing projects and activities with environmental benefits, and more generally, facilitating the shift to a low-carbon, climate-resilient and resource-efficient global economy. This booklet aims to serve as a practical guide to new and prospective issuers of green bonds and to promote the continued growth of green and sustainable finance globally.

The appeal of green bonds derives in many parts from their simplicity regarding structure, key elements and procedure that define the corner pillars of this type of debt security, while permitting a clear and transparent transfer of information from issuers to the investors regarding the use of proceeds and their environmental characteristics. The issuance process is in many ways similar to regular bond issuance, as green bonds are subject to the same overarching regulation and requirements concerning, for instance, the legal framework and corresponding documentation, as well as financial disclosure. When issuing a green bond, the issuer is, however, expected to incorporate a Green Bond Framework that provides additional disclosure and procedures geared at reassuring investors, for instance, on the green use of proceeds, which are described below alongside the standard steps of issuing a bond.*

* See ICMA (2016), Green Bond Principles; SEB (2016), The Green Bond Framework, available at http://www.emergingmarketsdialogue.org/dms/giz-emd/events/event18/presentations/3_Mats_Olausson_MX_GB.pdf?z=1481015925043.





Chapter 1

The Green Bond Market Ecosystem

Green bonds have emerged as an innovative financial instrument over the last decade that have been highlighted by international public and private sector leaders as a promising vehicle for financing projects and activities with environmental benefits, and more generally, facilitating the shift to a low-carbon, climate-resilient and resource-efficient global economy. This booklet aims to serve as a practical guide to new and prospective issuers of green bonds and to promote the continued growth of green and sustainable finance globally.

I. Regulation

> International guidelines – the Green Bond Principles (GBP)¹


The Green Bond Principles (GBP) are a set of voluntary guidelines aimed at promoting transparency and disclosure for green bonds. The GBP have achieved broad market acceptance and legitimacy, as well as growing official recognition by policymakers and regulators. The Principles were first drafted in early 2014 and updated in March 2015, June 2016 and June 2017. As of June 2017, 135 green bond issuers, underwriters and investors have become members of the GBP and in excess of 110 organizations are observers. By extension, this community is also referred to as the GBP and brings together the majority of participants and stakeholders in the green bond market.

The GBP are coordinated by an Executive Committee of 24 members constituting a representative group of key issuers, investors and underwriters that oversee the annual update of the GBP. The International Capital Market Association (ICMA) acts as Secretary to the GBP advising on governance and other matters, as well as providing organizational support. The importance of the GBP's membership, as well as its dedicated governance structure and organization, explain its market legitimacy and growing recognition by the official sector.

The GBP define green bonds as any type of bond instruments where the proceeds will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible green projects. They follow four principles which can be summarized as follows:

1. Use of Proceeds (which should be appropriately described in the legal documentation for the security and include designated green project categories).
2. Process for Project Evaluation and Selection (outlining the issuer's decision-making process in determining the eligibility of green projects, including environmental risk assessment criteria and external standards that have been applied, as well as by putting this information in the context of the issuer's overarching sustainability objectives and strategy).


1 See ICMA (2017); OECD/ICMA/CBI/GFC (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG.

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3. Management of Proceeds (with the net proceeds of green bonds being credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer).
 4. Reporting (on the use of proceeds, the amounts allocated, the temporary investment of unallocated proceeds, and expected/actual environmental impacts).

The GBP also recommend that issuers use external reviews to confirm their alignment with the key features of green bonds. External review providers include specialized consultancies, accountancy firms, ESG analysts and academic organizations.

Concerning the definition of green, the GBP explicitly list several broad categories of potential eligible green projects aiming to address key areas of concern such as climate change, natural resources depletion, loss of biodiversity and/or pollution control. Updated in June 2017, these broad categories are:

1. renewable energy (including production, transmission, appliances and products);
2. energy efficiency (such as in new and refurbished buildings, energy storage, district heating, smart grids, appliances and products);
3. pollution prevention and control (including waste water treatment, reduction of air emissions, greenhouse gas control, soil remediation, waste prevention, waste reduction, recycling and energy/emission-efficient waste to energy, value added products from waste and remanufacturing, and associated environmental monitoring);
4. environmentally sustainable management of living natural resources and land use (including environmentally sustainable agriculture; environmentally sustainable animal husbandry; climate smart farm inputs such as biological crop protection or drip-irrigation; environmentally sustainable fishery and aquaculture; environmentally sustainable forestry including afforestation or reforestation, and preservation or restoration of natural landscapes);
5. terrestrial and aquatic biodiversity conservation, (including the protection of coastal, marine and watershed environments);

- 
6. clean transportation (such as electric, hybrid, public, rail, non-motorized, multi-modal transportation, infrastructure for clean energy vehicles and reduction of harmful emissions);
 7. sustainable water and wastewater management (including sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training and other forms of flooding mitigation);
 8. climate change adaptation (including information support systems, such as climate observation and early warning systems);
 9. eco-efficient and/or circular economy adapted products, production technologies and processes (such as development and introduction of environmentally friendlier products, with an eco-label or environmental certification, resource-efficient packaging and distribution);
 10. green buildings which meet regional, national or internationally recognized standards or certifications.

The GBP state that they will not provide detailed guidance on what is green, leaving this to either investors themselves or to other parties with special expertise. The GBP acknowledge a number of additional and complementary categories and sets of criteria defining eligible green projects in existence in the market and provide examples through links listed in the GBP Resource Centre. The Resource Centre also provides recommended templates framing issuer alignment with the GBP, the content of external reviews, the Green Bond database and FAQ.²

² ICMA (2017), GBP Resource Centre.

> National regulation³

Governments have supported the development of standards, guidelines and definitions for green bonds. In such jurisdictions, where green bond markets are regulated by national authorities, issuers need to ensure compliance with the eligible project and asset categories.


In 2015, the Peoples' Bank of China (PBC, China's central bank) released the first country-specific green bond issuance guidelines along with a taxonomy in the form of a *Green Bond Endorsed Project Catalogue (or the Catalogue)* to guide financial sector issuance on green bonds in China. The *Catalogue* specifies six categories with 31 sub-categories.⁴ China's corporate green bond market is regulated by the National Development and Reform Commission (NDRC), which provided guidelines that are in line with PBC's *Catalogue* but focus on a list of twelve priority areas. Listed companies are regulated by the China Securities Regulatory Commission (CSRC), which excludes high emissions or energy usage corporates from the issuance of green bonds.

The Chinese regulatory bodies are currently undertaking efforts to harmonize the national standard definition of greenness. Moreover, PBC and the European Investment Bank published a White Paper to explore the need for a standard-neutral taxonomy for the environmental use of proceeds. Another innovation by the Chinese regulators are the (provisional) *Green Bond Assessment and Verification Guidelines* which impose regulatory requirements for verifiers, concerning qualifications and credentials, verification methods, and reporting requirements.

Other regulatory bodies that introduced national green bond guidelines include India, Indonesia, Japan and Morocco. The ASEAN Capital Markets Forum (ACMF) developed

3 OECD/ICMA/CBI/GFC (2016), *Green Bonds: Country Experiences, Barriers and Options*, input report prepared for G20 GFSG.

4 The categories comprise: (i) energy-saving, (ii) pollution prevention and control, (iii) resource conservation and recycling, (iv) clean transportation, (v) clean energy, (vi) ecological protection and adaptation to climate change. Some regional variations exist currently in markets where governments have regulated the green bond market. For instance, the guidelines for China's corporate domestic green bond market set by National Development and Reform Commission (NDRC) are in line with the PBoC's *Catalogue*, but include nuclear energy as an additional, eligible category. For more details, see chapter 2.



an ASEAN Green Bond Standard (GBS) that aims to provide more specific guidance on how the GBP are to be applied across Southeast Asia in order for green bonds to be labelled as ASEAN Green Bonds. In its *Action Plan for Financing Sustainable Growth*, the European Commission proposed a voluntary European green bond standard that shall support the EU's climate and sustainable development agenda.

As part of the French *Energy Transition Bill and National Low-Carbon Strategy* (SNBC), an *Energy Transition for Climate* label that is consistent with the GBP will help identify investment funds that are investing in the green economy. A methodology for project selection under the Dutch *Green Funds Scheme* also exists.

In several countries and regions, industry-led initiatives established national or regional guidelines, e.g. in Brazil, Mexico und Peru that are widely in line with the GBP.⁵

> International regulatory attention to green bond market development and growth

Regulators have also convened internationally, under the 2016 G20 Chinese Presidency, to examine and provide official recognition of the need to grow international and domestic green bond markets. These efforts culminated in a statement made by Leaders in September 2016. The *G20 Green Finance Synthesis Report*⁶, which was welcomed in the Leaders' Statement at Hangzhou, outlined voluntary options to enhance the ability of the financial system to mobilize private capital for green investment developed by the *Green Finance Study Group* (GFSG). The Leaders' Statement contains language referring to green bonds in paragraph 21: "*We believe efforts could be made to... provide clear strategic policy signals and frameworks, promote voluntary principles for green finance, support the development of local green bond markets and promote international collaboration to facilitate cross-border investment in green bonds*".⁷

5 FEBRABAN/CEBDS (2016), *Guide to Issuing Green Bonds in Brazil*. Climate Finance Advisory Group (CCFC) (2018), *Green Bond Principles MX*.

6 G20 Green Finance Study Group (2016), *Green Finance Synthesis Report 2016*.

7 G20 Leaders' Communique at the Hangzhou Summit (2016).

II. Issuers

Since the initiation of the green bond market in 2007/08, issuance has increased rapidly, with a growing number of issuer types, products and currencies diversifying the market. This chapter will take a closer look at the supply side of green bond markets focusing on the most relevant issuers as well as the drivers and barriers green bond issuers face.

> Why issue a green bond?


Globally, both the private and public sector experience a growing need to adapt to the challenges and risks imposed by environmental degradation and climate change impacts, while also seeking ways to harness business and development opportunities that solving these challenges will create. There are physical risks (e.g. caused by extreme weather events), regulatory and policy shifts (stemming for instance from actions in support of the Paris Agreement), changing consumer behavior and potential reputational risks, energy transition risk related to technological evolution and disruptions, among others. These factors are increasingly reducing expected future profits of carbon- and resource-intensive assets and business activities. Implications for financing conditions of exposed companies and institutions can be considerable as credit ratings increasingly account for environmental, social and governance (ESG) risks.⁸

At the same time, sustainable investments and business opportunities (e.g. in infrastructure) become more attractive for governments and businesses alike as low-carbon energy sources and energy efficient technologies become more cost-competitive.⁹

The financing needs arising from addressing these challenges are enormous while they simultaneously represent a massive commercial opportunity commensurate with the scale of the challenge. The OECD finds that limiting the global temperature rise to below 2 degrees, in line with the Paris Agreement, will require USD 6.9 trillion per year in infrastructure investment between now and 2030, only 10% more than

8 In 2015, Moody's became the first of the big three rating agencies to launch a methodology to incorporate ESG risks into credit ratings. See Moody's (2015), Environmental, Social and Governance (ESG) Risks – Global: Moody's Approach to Assessing ESG Risks in Ratings and Research. S&P introduced a Green Bond Evaluation Tool in 2016.

9 Climate Policy Initiative (2015), Global Landscape of Climate Finance 2015; IEA (2016), World Energy Outlook 2016.



the carbon-intensive alternative.¹⁰ In addition, climate-friendly infrastructure is more energy-efficient and would lead to fossil fuel savings totaling USD 1.7 trillion annually, more than offsetting the incremental cost. Already since 2010, 50% of private finance in infrastructure (USD 1.3 trillion) has been directed to clean energy, and Bloomberg New Energy Finance estimates that an additional USD 14.6 trillion will be required for clean energy investments alone until 2040 under a 2 degree scenario.¹¹

In recent years, green bonds have thereby emerged as an attractive public and private sector instrument that facilitates access to relatively low-cost and long-term sources of debt capital funding for environmental and climate-related investments. Particularly for green projects such as wind power or urban infrastructure that require large up-front investments and generate steady returns over a long period of time, green bonds are considered a suitable financing instrument that can be issued by either public or private actors up-front to fund projects or for re-financing purposes, freeing up capital and leading to increased lending.


A 2016 background report¹² provided to the G20 Green Finance Study Group summarized the benefits of green bonds for public and private investment in green infrastructure as follows:

1. Providing an additional source of green financing.
2. Enabling more long-term green financing by addressing maturity mismatch.
3. Enhancing issuers' reputation and clarifying the environmental strategy.
4. Offering potential cost advantages if and when government incentives are used.
5. Facilitating the "greening" of traditionally brown sectors.
6. Making new green financial products available to responsible and long-term investors.

10 OECD (2017), Investing in Climate, Investing in Growth.

11 OECD (2017), Investing in Climate, Investing in Growth; Bloomberg, New Energy Finance (2015), New Energy Outlook 2015.

12 OECD/ICMA/CBI/GFC (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG.



More specifically from the perspectives of issuers and investors, green bonds have a range of commonly cited advantages and disadvantages which are important to consider. A report from the OECD summarized these factors in Table 1.1 below.


Table 1.1: Advantages and disadvantages of green bonds as cited by investors and issuers

For investors	
Advantages	Disadvantages
<i>Commonly cited</i>	
<ul style="list-style-type: none"> • Investors can balance risk-adjusted financial returns with environmental benefits • Satisfies Environmental, Social and Governance (ESG) requirements and green investment mandates • Improved risk assessment in an otherwise opaque fixed income market through use of proceeds reporting • Potential use of pure-play, project and ABS as instruments to actively hedge against climate policy risks in a portfolio that includes emissions-intensive assets • Recognised by UNFCCC as non-state actor “climate action” 	<ul style="list-style-type: none"> • Small and nascent (and potentially less liquid) market, small bond sizes • Lack of unified standards can raise confusion and possibility for reputational risk if green integrity of bond questioned • Limited scope for legal enforcement of green integrity • Lack of standardisation can lead to complexities in research and a need for extra due diligence that may not always be fulfilled
<i>Infrequently cited</i>	
<ul style="list-style-type: none"> • Engagement and private dialogue with issuers on ESG topics related to green bond issuance results in information that enhances credit analysis, through more comprehensive credit profiles of borrowers (BlackRock, 2015) • Added transparency of proceeds use and reporting requirements provides informational advantage otherwise unavailable (on spending efficiency, project details and updates, impact performance) which gives green bond investors a significant information advantage (Nikko, 2014) • Tracking of proceeds use and reporting leads to improved internal governance structures and a positive feedback loop which improves the overall credit quality of the issuer (Nikko, 2014) 	

For issuers

Advantages	Disadvantages
<i>Commonly cited</i>	
<ul style="list-style-type: none"> • Demonstrating and implementing issuer's approach to ESG issues • Improving diversification of a bond issuer's investor base, thereby expanding funding sources and potentially reducing exposure to bond demand fluctuations • Strong investor demand can lead to oversubscription and potential to increase issuance size • Evidence of greater proportion of "buy and hold" investors for green bonds which can lead to lower bond volatility in secondary market • Reputational benefits (e.g. marketing can highlight issuer's green credentials and support for green investment) • Articulation and enhanced credibility of sustainability strategy (putting one's "money where their mouth is") leading to enhanced dialogue with investors • Access to "economies of scale" as majority of issuance costs are in setting up the processes 	<ul style="list-style-type: none"> • Up front and ongoing transaction costs from labelling and associated administrative, certification, reporting, verification and monitoring requirements (cost estimates vary) • Reputational risk if a bond's green credentials are challenged
<i>Infrequently cited</i>	
<ul style="list-style-type: none"> • Tracking of proceeds use and reporting leads to improved internal governance structures, communication and knowledge sharing between project side and treasury side of business (Nikko, 2014) • For municipalities, a tool to reach constituencies physically located close to the green project they intend to support and provide them with opportunities to invest in programs that have direct proximal impact (World Bank Group, 2015). 	<ul style="list-style-type: none"> • Investors may seek penalties for a "green default" whereby a bond is paid in full but issuer breaks agreed green clauses (KPMG, 2014)

Source: OECD (2017), *Mobilising bond markets for a low-carbon transition*.



One of the main benefits that draws a growing number of issuers to the market is the marketing effect green bonds have. The green label helps communicate the issuer's sustainability strategy both to investors, clients and the public. Such visibility and related reputational gain may, for instance, positively impact consumer demand for the issuer's products or services. Moreover, as an increasing number of investors search for green opportunities, funding sources for respective projects and assets can become prospectively better and cheaper as friction is reduced.¹³

Green bonds can also come with a variety of other benefits that stem from heightened demand for these securities among investors with environmental sustainability preferences (leading for instance to investor-base diversification for the issuer) and the potential for fiscal or monetary support in certain jurisdictions.

Issuing a green bond entails a modest additional cost. Such costs include the resources needed to develop a green bond framework, establish internal processes and structures for selecting eligible projects, earmarking and managing proceeds, monitoring and reporting as well as to obtaining external assurance.¹⁴

These additional costs may be offset in the longer run, as green bonds evidently attract a larger investor base which may strengthen the issuer's medium- to long-term financial position. If the green label succeeds in attracting new investors, this will result in investor base diversification which lowers the funding risk for the issuer. Additional investors conducting their due diligence with respect to both the bond's environmental credentials and its credit risk can also translate into a wider benefit, as investors are more likely to consider purchasing future regular bonds by the same issuer. Therefore, these extra costs may be viewed as an insurance premium that pays out during any future challenging market conditions when frictions in the financial system can be eased by a presumably more diversified and stable investor base.

13 For further details on investors' roles and rationale, see chapter 1.3.

14 For a detailed description of the green bond issuance process, see chapter 2.

With the exception of the ring-fencing or ear-marking of proceeds required by the green label, green bonds have financial characteristics that are essentially identical to conventional bonds from the same issuer, including the credit quality, yield and consequently, the price at which they are issued. This concept of “flat-pricing” has been central to the rapid expansion of the market driven by investor demand. Prices are said to be flat at issuance because the credit profile of a green bond is the same as any other of the most regular, simple and standardized (“plain vanilla”) bonds from the same issuer, so pricing differentials should be comparable.¹⁵

The future evolution of green bond pricing is uncertain, as the green label has not in itself conferred a pricing advantage at primary issuance, due to the concept of flat pricing. But there is some anecdotal evidence emerging that certain green bonds (for instance in the EU) price “a few basis points tighter” than conventional bonds at primary issuance due to strong demand and oversubscription, and they may also trade at a premium on the secondary markets.¹⁶ S&P (2016)¹⁷ argues that this is most likely due to the imbalance of supply and demand with insufficient quantities of green-labelled bonds available to meet investor demand and states that “although examples can be found of green bonds trading both above and below the credit curve of their non-green counterparts, the general consensus is that they largely trade in line with conventional bonds.” S&P argues that preferential pricing for green bonds could reduce the participation of mainstream investors in the markets unwilling to pay a premium for green benefits, potentially limiting market growth.

15 Source: OECD/Bloomberg Philanthropies (2015), Policy Perspectives, Green bonds: Mobilizing the debt capital markets for a low-carbon transition.

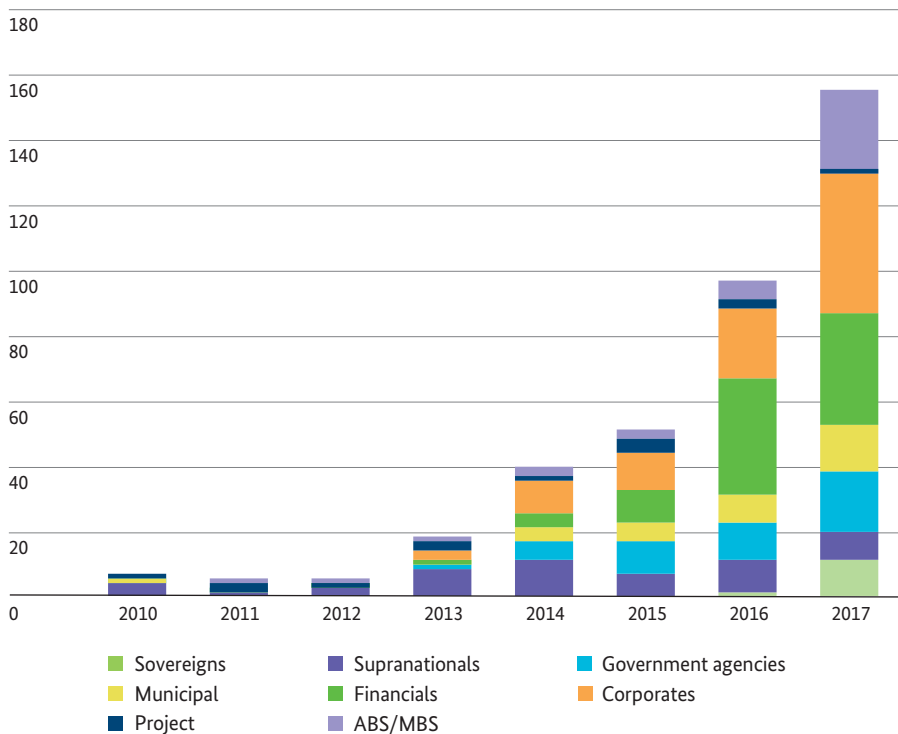
16 See, for example, Oliver D. Zerbib (2016), The Green Bond Premium; Climate Bonds Initiative (2016), Bonds and Climate Change: State of the Market 2016.

17 Standard & Poor's (2016), The Corporate Green Bond Market Fizzes As The Global Economy Decarbonizes.

> Who issues green bonds?

From 2007 until 2012, the supply side in global green bond markets was almost exclusively represented by multilateral development banks and other government-related entities until corporates and financial institutions started entering the market in 2013 contributing to its accelerating growth. The green bond market continues to grow exponentially, with USD 97 billion issued in 2016, and USD 156 billion in 2017, including the first green bonds by sovereigns.¹⁸

Figure 1.1: Amount issuance per year and sector (USD bn)



Source: SEB and Bloomberg data (as of January 2018)

18 BNEF (2017), Green Bonds 2016 in Review.

Supranational, sovereign & agency (SSA) and municipalities

Supranational, sovereign and agency (SSA) issuers include multilateral and national development banks, states and cities, sovereign governments and agencies (e.g. export credit agencies, export-import banks and local funding authorities). These stakeholders have an important role in developing the market by stimulating both the demand and supply side in the early market stage, thereby increasing liquidity and size of issuances, building benchmark yield curves and establishing best market practices and minimum standards for future issuances.¹⁹


The Green Bond concept emerged in 2007/2008 through a variety of actions. In 2007, the European Investment Bank (EIB) launched a structured product, a *Climate Awareness Bond*. Instead of a fixed coupon, the bond's returns were linked to an equity index (such a bond is commonly referred to in the bond market as “structured”).

In 2008, the World Bank and Skandinaviska Enskilda Banken (SEB) launched the first labeled green bond together with a group of Swedish investors with mainstream financial mandates to participate in climate financing and raise awareness on climate related risk. The inaugural World Bank *Green Bond* was the first climate-related fixed income instrument to attract mainstream portfolios in a larger way. It was designed as an investment vehicle that integrates the fiduciary element of fixed income products with climate mitigation and adaptation awareness, giving mainstream investors access to climate-related investment opportunities.²⁰

In the green bond market, the EIB, the World Bank Group and other SSA actors have played a major role in supporting the market's development and promoting best practices in procedures and disclosure. As of December 2017, with total cumulative issuance of over EUR 15 billion in eleven currencies, the EIB was the largest issuer of

19 See OECD (2016), *Green Bonds: Country Experiences, Barriers and Options*, input report prepared for G20 GFSG; OECD (2017), *Mobilising bond markets for a low-carbon transition*.

20 World Bank (2016), *Why did multilateral development banks (MDBs) issue the first green bonds?*



green bonds worldwide.²¹ In 2014, the German development bank KfW entered the market as an issuer. Since setting up its green bond programme, KfW has issued eleven green bonds amounting to EUR 11.5 billion making KfW one of the major and most active issuers in the space.²² Among the largest issuers is also the World Bank (IBRD), with almost USD 11 billion equivalent in green bonds issued in 19 currencies through 140 transactions²³

These institutions typically issue green use of proceeds bonds to finance their multi-sector green portfolio. Outstanding green bonds and projects financed with green bond proceeds are transparently reported and publicly available on the respective websites, in their green bond reports and newsletters. Another significant SSA issuer is the International Finance Corporation (IFC), a member of the World Bank Group focusing on the private sector, which is one of the earliest (since 2010) and largest (total issuance volume of USD 5.48 billion)²⁴ green bond issuers as well. Further green bond issuance by multilateral or national development banks include such from the African Development Bank, the Asian Development Bank, the Inter-American Development Bank, New Development Bank, BNDES (Brazil), Korea Development Bank and Nacional Financiera (Mexico).

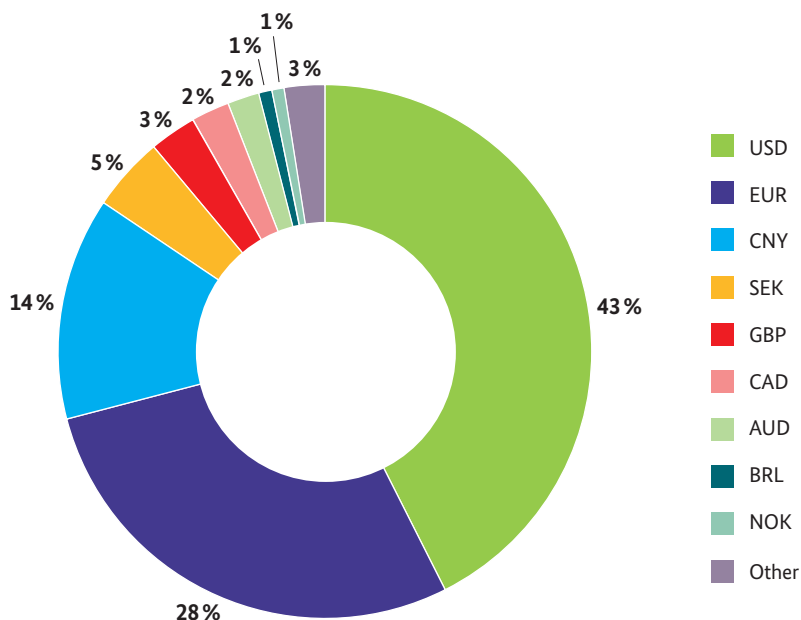
21 European Investment Bank as of 30 April 2018. As of 30 June 2016, CAB proceeds have been allocated to 145 projects in 47 countries. For the full list of CAB financed projects until H1 2016, see <http://www.eib.org/attachments/fi/projects-supported-by-cabs.pdf>.

22 KfW as of June 2017.

23 See World Bank as of 30 April 2018.

24 IFC as of June 2017.

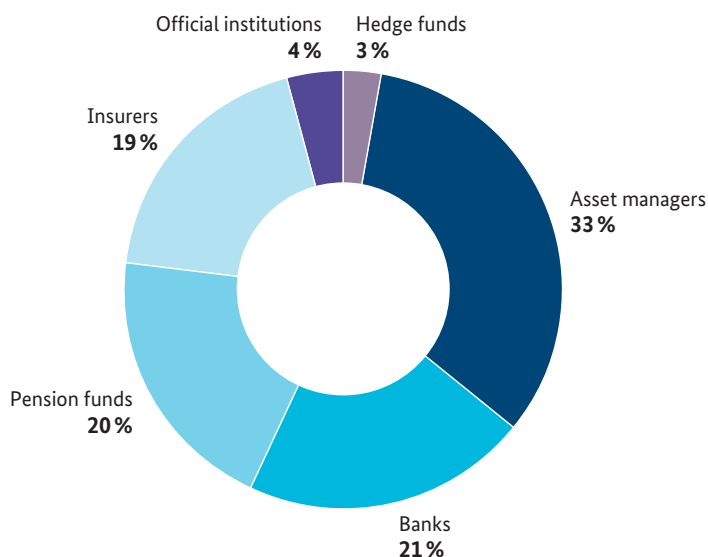
Figure 1.2: Currency split in the green bond market (2007-2017)



Source: Bloomberg and SEB

The first ever sovereign green bond was issued by Poland in December 2016. The EUR 750 million, five-year issuance with a coupon of 0.5% was raised to finance several national green projects such as in renewable energies, clean transport infrastructure, sustainable agriculture and afforestation. France followed in January 2017 with a record-breaking EUR 7 billion green OAT bond that received over EUR 23 billion of bids. With a maturity of 22 years, the Green OAT/1.75%/25 June 2039 issuance became both the largest and longest-dated benchmark green bond issued until date. It was placed with a very wide range of investors: asset managers (33%), banks (21%), pension funds (20%), insurers (19%), official institutions (4%) and hedge funds (3%).

Figure 1.3: Investor base diversification of the French Sovereign Green OAT Bond




Source: Agence France Tresor

Both Poland (EUR 1 billion) and France (EUR 2.7 billion) tapped the green bond market for a second time in 2017. Nigeria (NGN 10.69bn), Fiji (FJD 100mn), Indonesia (USD 1.25bn), Belgium (EUR 4.5bn), and Lithuania (EUR 20mn) followed with sovereign green bonds in 2017 and 2018. Other sovereigns that had been cited as looking into issuing a green bond include Ghana, Hong Kong, India, Ireland, Italy, Kenya, Morocco, Portugal, South Africa and Sweden.²⁵ For governments, green bonds may represent an attractive tool to raise low-cost funding for implementing their green agendas such as defined in the *Nationally Determined Contributions* that governments have committed themselves to against the background of the Paris Agreement.²⁶

²⁵ Environmental Finance (2016), *Green Bond Comment: November*.

²⁶ UNFCCC (2016), *Intended Nationally Determined Contributions*.



At the sub-sovereign level, so called green muni bonds,²⁷ are already commonly used by both state-, county- and city-level governments, as well as other public funding authorities and agencies in order to satisfy the tremendous public investment needs for a sustainable infrastructure as well climate mitigation and adaptation projects. The first green muni bond was issued by the Swedish City of Gothenburg in 2013. The first emerging market green muni bond was launched by the City of Johannesburg in 2014. Another notable green bond in Latin America is the USD 2 billion bond issuance by a government agency of Mexico City that will finance its new zero-emissions airport.

Green bonds have been issued by all four Scandinavian Local Funding Authorities (Kommuninvest in Sweden, Kommunalbanken in Norway, MuniFin in Finland and Kommunekredit in Denmark); by Export-Import banks in India and Korea; and Export Credit Agencies in Sweden and Canada. Other examples by agencies include the New York Metropolitan Transportation Authority (MTA), which issued raised USD 500 million in 2016 to renew the regional infrastructure including projects on New York City Transit, Long Island Rail Road and Metro-North Railroad.

Particularly in the United States, the market for green muni bonds has reached a considerable size, representing roughly half of its domestic green bond market in 2016.²⁸ Benefitting from tax exemption in many cases, the largest issuers of green U.S. muni bonds include New York, California and Massachusetts. Other examples can be found in the public transportation space with issuances from Seattle Transit Authority, and Transport for London. Provinces have issued green bonds, from Ontario and Québec in Canada to Victoria in Australia.

Non-financial corporates

In 2013, the Swedish real estate company Vasakronan was the first corporate to issue a green bond. In 2014 and 2015 aggregated issuance by corporates amounted to roughly USD 13 billion, while issuance roughly doubled to more than USD 25 billion in 2016, and USD 42.3 billion in 2017. Among the earlier ground-breaking corporate

27 US Green City Bonds Coalition (2015), Green Muni Bonds Playbook.

28 For a list of U.S. green muni bonds issued at state, county and city level, see OECD (2017), Mobilising bond markets for a low-carbon transition, page 46f.



green bond issues are Toyota's green asset backed security issued in 2014 to finance electric and hybrid vehicles (representing the first transport-only green bond) and Apple's USD 1.5 billion issuance in 2016, the first from a technology company. The world's most valuable company by market capitalization, which intends to use proceeds to green its operations including its facilities, products and the supply chain, thereby set an important signal for other companies to follow suit, which it underlined with its second green bond issue in June 2017.²⁹ There have further been issues from a wide variety of corporate sectors including first issues for utilities (EDF), engineering (Skanska), real estate (Vasakronan), food (BRF), cosmetics and personal care (Unilever), and others.

Financial institutions

Since loans provided by financial institutions represent in most countries by far the most important source of funding, bonds play a significant role in financing and refinancing of financial institutions' on-balance sheet lending activities.³⁰ Issuance from financial institutions has hence grown steadily since then. The major increase in 2016 stemmed particularly from the strong issuance by banks in China (green financial bonds made up 76 percent of the total amount of Chinese issuance in 2016), where non-financial corporates heavily rely on bank lending.³¹ Based on an OECD estimate, in a 2 degree energy sector investment scenario, financial sector green bond issuance has the potential to continue growing strongly, that is to a total in outstanding bonds of up to USD 1 trillion in 2025 and USD 1.7 trillion in 2035.³²

29 See Sustainalytics (2016), Apple Inc. Green Bond, Second Opinion.

30 In the US and EU, 42% and 48% respectively of outstanding debt securities were issued by financial institutions in 2014. The bond to loan ratio of commercial banks in both markets is at around 1:3 (McKinsey (2013), Between deluge and drought: The future of US bank liquidity and funding, McKinsey Working Papers on Risk, No 48; European Central Bank (2015), Consolidated banking data, Database, ECB Statistical Data Warehouse.

31 OECD (2017), Mobilising bond markets for a low-carbon transition.

32 OECD (2016), Quantitative Framework: Analyzing Potential Bond Contributions in a Low-Carbon Transition.

> Challenges and conclusions

One of the major impediments for potential issuers to first enter the green bond market may be the lack of awareness of the benefits of green bonds, which 74 percent of participants of a survey by the G20 Green Finance Study Group named.³³ In connection to this, the initial costs related to building market knowledge and establishing internal expertise and procedures for issuing a green bond (namely, governance, management of proceeds, external review and reporting) represent a considerable barrier (named by 41%). In this context, the lack of clearly set definitions in most jurisdictions for what qualifies as green project or asset (43%) leaves many issuers insecure about assigning the green label to their bond issue, particularly if risk averse with respect to potential reputational concerns in case the green labeling is publicly challenged.

Promoting capacity building initiatives as well as creating a conducive policy environment both for issuers and domestic and international investors may reduce such barriers and encourage more issuers to consider green bonds as a financing instrument. Such measures may include standardization of definitions and disclosure requirements, de-risking tools (e.g. guarantees, credit enhancements), tax incentives and capacity building measures.

33 The survey on “barriers to scaling up the green bond market” by the G20 Green Finance Study Group (GFSG) received responses from a group of 24 key investors, issuers and intermediaries in the green bond market. In OECD (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG.

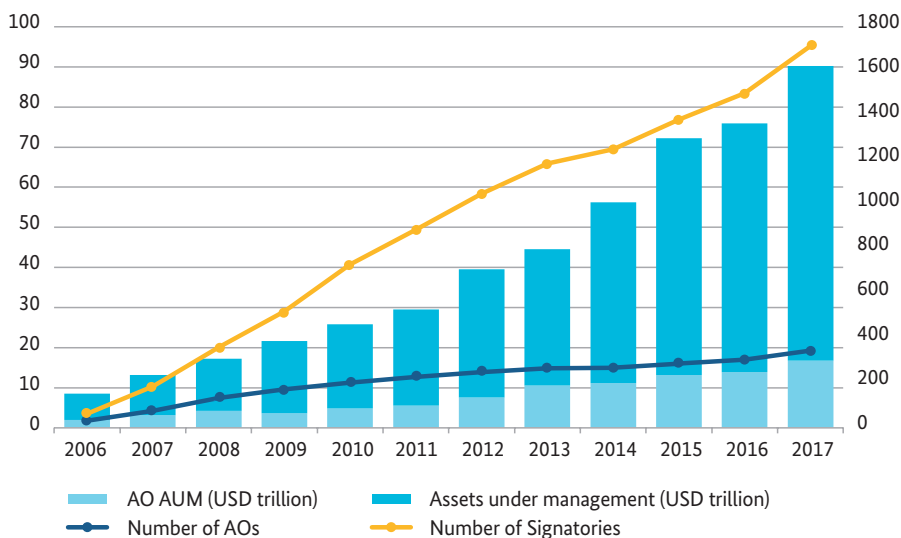
III. Investors

On the demand side, there is an increasingly strong interest by investors in bonds that carry the green label. This section will scrutinize why green investments and specifically green bonds are so attractive for investors, what types of investors are engaged in the green bond market, and what reasons might inhibit others from investing in green products.

> Why invest in green?


Over the past ten years, the number of investors that have publicly committed to invest according to the UN-supported *Principles for Responsible Investment* (PRI) has grown to more than 1,700 signatories from over 50 countries. The aggregated volume of assets under management (AUM) represented by this group amounts to USD 73.5 trillion.³⁴ In order to comply with these pledges, investors seek attractive investments

Figure 1.4: Number of signatories to the Principles for Responsible Investment and assets under management



Source: PRI as of April 2017. Right axis: Number of signatories; left axis: AUM in USD trillion.

34 Principles for Responsible Investment as of April 2017; IMF (2013).



that meet their risk/return profile. Green bonds represent a potentially very powerful financial instrument in facilitating investors to access respective investment opportunities that fit within existing fiduciary mandates.


The PRI were launched in 2006 to guide investors in integrating environmental, social and governance (ESG) factors into investment decisions and ownership practices. By signing the Principles, investors commit to adopt the six principles, where consistent with the investors' fiduciary duty. Accounting for the information asymmetry between asset managers and their clients, the fiduciary duty obliges the former to act loyally and prudently in the best interest of their clients.³⁵ For a long time, this fiduciary duty had been viewed as barrier for asset managers to account for ESG factors given their potential diminishing impact on returns. This perspective has however increasingly been challenged. A common understanding has emerged that integrating ESG factors into the investment decision is both "clearly permissible and arguably required" as first stated in the Freshfield report of the United Nations Environment Programme – Finance Initiative (UNEP FI).³⁶ A recent study by the OECD strongly supports this view but calls for regulatory clarification in order to dispel doubts on investors' duties.³⁷ France has already taken action when it introduced new regulation in 2017 that requires asset owners and asset managers to report on their portfolio's integration of ESG factors, climate risks, and contribution to the transition to a low-carbon economy, or to explain why they have not done so. This change in perspective reflects the increasing understanding and recognition that ESG factors may significantly impact the long-term risk and return performance of issuers and investments.³⁸ A recent, very

35 UN Global Compact, UNEP, UNPRI (2015), Fiduciary Duty in the 21st Century.

36 United Nations Environment Programme Finance Initiative (2005), A Legal Framework for the Integration of Environmental, Social and Governance Issues into Institutional Investment.

37 OECD (2016), OECD Analytical report on investment governance and the integration of ESG factors.

38 See for the rating agencies' perspective, for instance, Moody's (2015), Environmental, Social and Governance (ESG) Risks – Global: Moody's Approach to Assessing ESG Risks in Ratings and Research. For the investor perspective see, for instance, the Global Investor Statement on Climate Change, signed by 409 investors with more than USD 24 trillion AUM, or the Paris Green Bond Statement (Dec 2015) signed by investors with AUM of USD 10 trillion. Among the institutional investors that already require their investment managers to incorporate ESG factors into investment processes and to regularly report on these is, for instance, the California Public Employees' Retirement System (CalPERS), the second biggest pension fund in the United States.



important signal set by investors in this regard was the PRI supported *Statement on ESG in Credit Ratings* signed by 100 investors with AUM of USD 16 trillion and six credit rating agencies, who intend to “enhance systematic and transparent consideration of ESG factors in the assessment of creditworthiness.”³⁹

Particularly for institutional investors with a long-term investment horizon financially material ESG considerations should be considered an integral part of the fiduciary duty to their clients and beneficiaries. The underlying factors affecting the risk/return considerations with respect to environmental factors include in particular:

- **Regulatory and policy risks:** Increased global efforts and commitments for combatting climate change increase stranded asset concerns, hence putting carbon-intensive assets and investments at a higher risk.
- **Fiscal & policy incentives:** Changing policies on taxation and subsidies that increasingly favor renewable energy sources over fossil fuels alter relative prices of energy-related assets.
- **Increased competitiveness of low-carbon energy sources and technologies:** The growing efficiency of maturing clean technologies, storage and transmission capacities as well as further technological innovations improve the cost-competitiveness of renewable energy sources compared to fossil fuels, altering the relative return profile.⁴⁰
- **Long- vs. short-termism:** Growing awareness and concerns about negative effects of short-termism in business practices on medium- to long-term company performance and investment returns influence investment strategies.
- **Improved availability of adequate data and risk assessment methodologies:** Insufficient, non-transparent information and disclosure of environmental risks and externalities result in distorted relative prices of environmental services and assets; in recent years, a number of initiatives have been launched in order to better measure, assess and report environmental risks.⁴¹

39 UN PRI (2016), *Statement on ESG in Credit Ratings*.

40 Climate Policy Initiative (2015), *Global Landscape of Climate Finance 2015*.

41 See, for example, the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (2017), *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures*, or UNEP (2016), *Environmental risk analysis by financial institutions – a review of global practice*.

- **Changing consumer and client expectations:** Customers and clients are becoming more and more conscious and demanding of where and how their money is being invested, thus requesting more transparency regarding climate change and environmental damage, labor conditions, corruption and further critical business practices.

Consequently, in order to better manage risks and enhance financial returns in the long run, investors increasingly search for investment opportunities in projects and assets that are resilient to environmental and climate related risks and meet the demands of their increasingly environmentally conscious clients.


> Why green bonds?

The concept of green bonds was developed in response to investor demand for a simple yet effective fixed-income instrument that helps to identify and access green investment opportunities that fit within fiduciary mandates. The green label thereby works as a signaling function that lowers transaction costs for investors for the following reasons:

- Disclosure of the bond's use of proceeds with assurance through external review facilitates the identification of green assets and projects, thus lowers search costs;
- Reporting on use of proceeds and environmental impacts through the issuer facilitates the monitoring of investment allocations and reporting towards clients;
- The green label works as communication tool in demonstrating compliance with responsible investment commitments and mandates to clients and the public.

Given these benefits, the particular strength of green bonds lies in the instrument's potential to be easily adopted not only by dedicated sustainable or green investors but by mainstream investors. As a result, green bonds are attracting more and more investments as reflected in a widening range of investor types and frequent oversubscriptions of issuances.⁴² This strong appetite of investors for green bonds is also expressed in a number of industry initiatives that have been formed in the past few years, most notably including:

42 KPMG (2016), Green Bonds – The Process.

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- The signatories of the *Paris Green Bond Statement* declared their “responsibility (as investors and fiduciaries) to address threats to the future performance of [their] investments from climate change as well as a responsibility to secure [their] clients’ savings through sustainable and responsible investments.”⁴³ Moreover, they stated their “believe that green bonds can be part of [their] strategy to accomplish both of these aims.” The statement was signed in December 2015 in the context of the Paris Climate Agreement by investors with USD 10 trillion of assets under management including Allianz Global Investors, Aviva Investors, AXA Investment Managers, BlackRock, California Teachers’ State Retirement System, Legal & General Investment Management, Zurich Insurance Group and others.
 - The signatories of the *Statement of Investor Expectations for the Green Bond Market* – comprising 26 large global investors such as Allianz SE, AXA Group, BlackRock, CalSTRS, PIMCO, Zurich Insurance Group under Ceres’ *Investor Network on Climate Risk* – “see a growing investor appetite for green bonds that help fund the transition to a low carbon, sustainable economy,” encourage “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.”⁴⁴
 - The *Green Infrastructure Investment Coalition* aims to bring together investors, governments and development banks to help increase the flow of institutional investors’ capital to green infrastructure investments, with green bonds being advocated as a suitable instrument to this end.⁴⁵ Members include, among others, the Institutional Investor Group on Climate Change (IIGCC), Legal & General Investment Management and the European Investment Bank (EIB).

43 Climate Bonds Initiative (2015), Paris Green Bond Statement.

44 Ceres, 2015, Statement of Investor Expectations for the Green Bond Market.

45 Climate Bonds Initiative, UN PRI, International Cooperative and Mutual Insurance Federation and UNEP Inquiry into the Design of a Sustainable Financial System (2015), Green Infrastructure Investment Coalition Statement.

Despite the fact that green bond markets are still small when compared to the size of the global bond market, these statements including their recognizable list of signatories make clear that green bonds are considered a relevant instrument by the large mainstream investors, which are examined in more detail in the following segments of this chapter.

> Who invests in green bonds?

Institutional investors, specifically pension funds and insurance companies as well as banks and investment funds, have been the main drivers in the growth of green bond markets. Pension funds and insurers typically seek long-term, low-risk investment opportunities that offer predictable, steady returns to match their liabilities. Green bonds very often provide these features:⁴⁶


- **Asset-liability matching:** The average maturity of green bonds is between three and ten years matching the long-term investment horizon of many institutional investors. Roughly 28 percent have maturities of more than ten years.
- **Low risk:** Though not an inherent feature of green bonds per se, 82 percent of issuances are rated investment grade, i.e. classified as BBB- or higher.
- **Comparable yields:** Where data is available, evidence suggests that green bonds are priced in line with regular bonds.
- **Portfolio diversification through diverse currencies:** Although around 80 percent of green bond issuances are in US dollars or Euros, green bonds have been issued in 25 currencies, among them the Chinese Renminbi with growing significance.

Additionally, one of the major benefits of green bonds to investors is their value in communicating their sustainability strategy and commitments to clients and the public without having to bear significant extra costs.

Among the banks, insurers and asset managers that have declared to allocate USD 1 billion or more into green bonds, respectively, are for instance Barclays, Credit Agricole, Deutsche Bank, HSBC, KfW, Actiam, Aviva, AXA and Zurich.⁴⁷

46 Climate Bonds Initiative (2016), *Bonds and Climate Change: State of the Market in 2016*, and OECD (2017), *Mobilising bond markets for a low-carbon transition*.

47 OECD (2017), *Mobilising bond markets for a low-carbon transition*.



At the same time, strong demand comes, inter alia, from the large mainstream asset managers. From the list of the top 20 asset managers globally (by AUM), six are among the signatories of the above mentioned *Paris Green Bond Statement and the Statement of Investor Expectations for the Green Bond Market*. These include BlackRock, the largest asset manager globally with AUM of USD 4.4 trillion, State Street Global Advisors (USD 2.1 trillion), PIMCO (USD 1.3 trillion), Legal & General Management (USD 1.0 trillion), Amundi (USD 985 billion) and AXA Investment Managers (USD 669 billion).⁴⁸ Among the top 50 are also BNP Paribas Investment Partners, Allianz Global Investors, APG, AllianceBernstein, Aviva and Natixis Asset Management.

Among the largest pension funds that engage in green bond markets are, for instance, California Teachers' State Retirement Systems, North Carolina Retirement System, University of California, Swedish AP-Fonden⁴⁹ and South Africa's Government Employees Pension Fund.

Attracted by the long maturities and high credit quality green bonds very often show, another source of demand stems from sovereign wealth funds (SWF) such as the Norwegian Government Pension Fund Global (with USD 885 billion of AUM the largest SWF), which entered the green bond market in early 2014 and allocated USD 6.3 billion in environment-related investments in 2015.⁵⁰ A significant segment of demand for green bonds also stems from governments (e.g. Central Bank of Peru, Central Bank of Bangladesh,⁵¹ Treasury of California State), development banks as well as corporate investors (e.g. Apple).

Opportunities to invest in green bonds (including for retail investors) are offered by a growing number of dedicated green bonds funds. The larger ones with over USD 100 million under management included BlackRock (which also has an index-linked green bond fund), Storebrand, Foresight, the Brazilian development bank BNDES,

48 IPE (2016), Top 400 total global AUM table 2016.

49 The Swedish pension fund AP2 committed to allocate 1% of its portfolio in green bonds.

50 Government Pension Fund Global (2015).

51 Bangladesh's central bank invests parts of its foreign exchange reserves in green bonds. See Bangladesh Bank's press release.

Humanis SEB, AXA Investment Managers, and Amundi. The largest green bond fund, IFC's USD 2 billion *Green Cornerstone Bond Fund*, which was set up jointly with the asset manager Amundi in mid-2017, will invest in green bonds issued by local banks in developing countries. By providing a first loss tranche and additional capacity building measures, the fund aims to build local green bond markets in selected countries. Further green bond funds include those managed by Mirova, Calvert, Erste Asset Management, Raiffeisen Capital Management, Allianz, State Street, Columbia Threadneedle, NN Investment Partners, and Nikko AM.⁵² As of early 2018, there were four index-linked green bond funds, including from State Street and BlackRock and green bond Exchange Traded Funds (ETFs) launched by Lyxor and VanEck. Such ETFs facilitate access to green bond investments for both retail and institutional investors.

Furthermore, there were several cases of green muni bonds in the United States that allowed retail investors to directly place orders, e.g. in the cases of Massachusetts State and New York's Metropolitan Transportation Authority (MTA).

> The relevance of green bond indices and stock exchange listings

Green bond indices measure the financial performance of a group of green bonds that must fulfill certain criteria (e.g. regarding qualifying green categories) to be included in the index. Such indices thereby serve investors both to identify green bonds that meet their requirements concerning specific aspects of the bond and to track their performance. Moreover, the establishment of dedicated green bond indices contributes to scaling up green investments as they allow passive funds such as above-mentioned ETFs, which track certain, specified indices for investment, to invest in green bonds.

As of April 2018, the following green bonds indices exist:⁵³

- Bank of America Merrill Lynch Green Bond Index⁵⁴
- Bloomberg MSCI Green Bond Index⁵⁵
- S&P Green Bond Index

52 OECD (2017), Mobilising bond markets for a low-carbon transition.

53 The Green Bond Principles (2017), The GBP Databases and Indices Working Group – Summary of Green Fixed Income Indices Providers.

54 Bank of America Merrill Lynch's Green Bond Index is aligned to Bloomberg's green bond definition.

55 Bloomberg MSCI Green Bond Index excludes for instance large-scale hydro projects.

- Solactive Green Bond Index⁵⁶
- ChinaBond China Green Bond Index and ChinaBond China Green Bond Select Index
- CUF-CNI Green Bond Index Series⁵⁷

With partly similar implications, dedicated green bond listings and segments have been introduced by twelve stock exchanges, namely those of London, Luxembourg, Mexico City, Oslo, Shenzhen, Paris, Borsa Italiana, Riga, Amsterdam, Lisbon, Johannesburg and Stockholm.⁵⁸ They serve to enhance visibility and data access data, facilitate secondary market trading and can impose certain requirements such as the obtainment of a second opinion.

Both indices and listings can have a shaping impact on the development of common definitions (e.g. by setting eligibility and in- or exclusion criteria for projects and project categories) and common practices, for instance by making the use of external review and regular reporting mandatory, thereby guiding investor decisions significantly.

> Challenges and conclusions


There are several, commonly named challenges and risks for green bond investors.⁵⁹ One of the most frequently cited is the risk of “green washing”, which is partly a function of the lack of clarity regarding definitions, binding regulation and legal enforcement of the environmental credentials in widely self-regulating green bond markets. The GBP, which represent internationally the most recognized reference for market participants (see 1.1), have largely contributed to building a framework for a common and sound governance process recommending transparency and disclosure on its four core components: the use of proceeds, process for project evaluation and selection,

56 The indices by Barclays MSCI, S&P and Solactive are aligned with the Climate Bonds taxonomy.

57 Luxembourg Stock Exchange (2017), Shenzhen and Luxembourg partner with Beijing's Central University of Finance and Economics to launch new Green Bond Index Series.

58 Sustainable Stock Exchanges Initiative (2016), 2016 Report on Progress. Sustainable Stock Exchanges Initiative(2016), Fact Sheet: Bolsa Mexicana de Valores,

59 See, for instance, OECD (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG; or Climate Bonds Initiative (2016), Scaling up Green Bond Market Issuance.



management of proceeds and reporting. While giving quite clear guidance on process criteria, the GBP do not provide clear definitions for eligible projects but instead give broader orientation for eligible project categories that shall “provide clear environmental benefits.”⁶⁰ Outside of China, where regulation clarifies eligible green projects, this approach leaves the definition of what qualifies as green to issuers, verifiers, indices and investors. While thereby allowing for a more dynamic evolution of qualifying projects and assets and accounting for regional conditions, some stakeholders may feel insecure about the greenness of projects and assets. Indeed, the survey by the G20 Green Finance Study Group, which explored the barriers to scaling up the green bond market, found that 43 percent named the “lack of local definitions of green bonds” as a challenge.⁶¹

Defining green through national regulation may, however, not necessarily improve clarity for international investors as transactions costs for understanding and managing regulatory differences across legislations increase with fragmentation in national regulations. Fostering harmonization and transparency of practices and standards through initiatives from policymakers and non-governmental initiatives – such as initiated by Chinese regulators and the EIB in early 2017 – therefore remain key issues for investors in this dynamically growing market. Transparency can, for instance, be enhanced through green bond indices and listings, which help investors to identify green bonds according to their requirements. The still insufficient availability of indices and listings, as well as ratings was still identified by more than half (56 percent) of the surveyed investors, issuers and intermediaries as a barrier. Lacking or low credit ratings are indeed very often a limiting factor for investors seeking green opportunities, particularly in emerging markets.

Related to credit quality concerns, another restriction for international investors, who want to diversify their portfolio, may be a limited access to local green bond markets (67 percent), for instance due to differing disclosure requirements, a lack of adequate

60 ICMA (2017), The Green Bond Principles; for the list of Green Project categories, see chapter 1.1.

61 See the results of the GFSG survey on “barriers to scaling up the green bond market”, which received responses from a group of 24 key investors, issuers and intermediaries in the green bond market. In OECD (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG.



risk mitigation instruments, capital controls or other regulatory restrictions for non-domestic investors. Regulatory reform, such as China's opening of the domestic bond market for international investors, and policy support, for instance through anchor investments and credit enhancement programs offered by development banks such as IFC (inter alia through its Green Cornerstone Bond Fund) and KfW, are important measures to lower such barriers for international investors.

With respect to demand side constraints, on the other hand, three out of four survey participants pointed out the “lack of awareness of environmental risks and green bond benefits” as a major impediment for green bond market expansion. Initiatives to raise awareness and provide technical assistance in order to enable the integration of environmental factors into investment decisions are, therefore, key in this still nascent stage of the market. The recent work by the Task Force on Climate-related Financial Disclosures (TCFD) represents a major step forward in developing voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders. Further work is now required in order to foster the practical implementation of the recommendations.⁶²

Lastly, providing more policy clarity on the compatibility of environmental considerations and the fiduciary duty, as examined above, is another important step in order to align institutional investors' investment mandates with green investment strategies.

62 Task Force on Climate-related Financial Disclosures (2017), Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures.

IV. External review

External reviews, assessments or verification of green bonds or associated frameworks play a critical role in assessing relevant information on the bond's green credentials. The GBP (2017), which recommend the use of external review of project evaluation/selection and management of proceeds, distinguish four types of external review:

1. **Consultant review and second opinion:** An issuer can seek advisory support from a consultant or consulting firm with recognized environmental climate finance expertise, which revises and assesses the issuer's green bond framework, typically in form of a second opinion prior to the issuance.
2. **Verification or auditing:** An issuer can have its green bond, the associated framework or individual parts independently verified or assured by qualified third parties (usually audit firms) against certain internal or external reference criteria.
3. **Certification:** An issuer can have its green bond, the associated framework or individual parts certified by a qualified third party (usually an accredited certifier) against an external standard.
4. **Rating:** An issuer can have its green bond or associated framework rated by qualified third parties, usually rating agencies or specialized consulting firms.

The different types of external review serve different purposes and interests of issuers and investors, which will be assessed in more detail below. The most common form of external reviews of green bonds are second opinions, which about 70 percent of green bonds have, while 20 percent use other forms of assurance such as audits or certification.⁶³ Only few issuers choose to seek more than one form of external review, mostly because of the related costs, though it might be desirable from the investors' point of view to attain both pre- and post-issuance reviewed information on the bond's green features and impact.⁶⁴

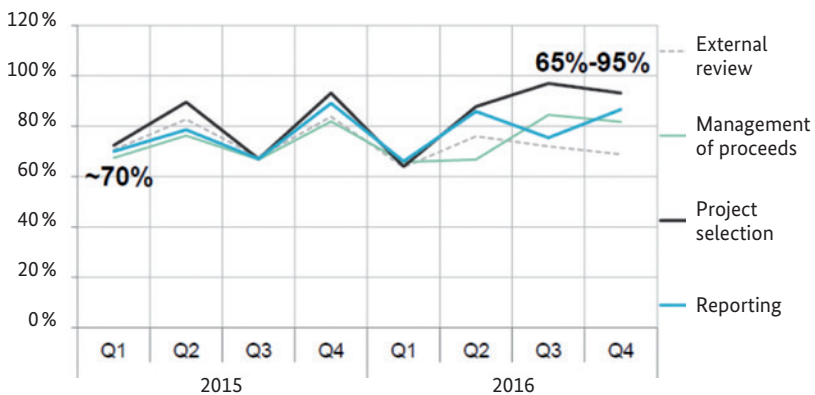
Bloomberg LP has established a process to track any green bond disclosure relevant to the GBP. These are disclosures related to project selection, management of proceeds, reporting (both of proceeds and environmental impact) and external review (assurance provision). The additional disclosures have been widely adopted by the green bond

63 CBI/HSBC (2015) as of October 2015.

64 Costs may vary between USD 10,000 and 100,000. See OECD (2016), Green Bonds: Country Experiences, Barriers and Options, input report prepared for G20 GFSG.

market. The percentage of labelled green bonds that have delivered, or have at least committed to these additional disclosures has increased from around 70 percent in Q1 2015 to 80 percent in Q4 2016. There is still a lag in the number of green bonds that seek an external review as the figure below shows.

Figure 1.5: Percentage of labelled green bonds disclosing additional information as catalogued by Bloomberg LP



Source: BNEF

> Regulatory and listing requirements

While the GBP and most regulators do not require but recommend issuers to attain an external review in order to provide investors with transparent and sound information that foster environmental and procedural integrity in the green bond market, China was the first country to introduce (provisional) *Green Bond Assessment and Verification Guidelines* which impose regulatory requirements for verifiers, concerning qualifications and credentials, verification methods, and reporting requirements. In Mexico, green bonds need to be externally reviewed in form of a second opinion or certification in order to be listed at the Mexican Stock Exchange, and the external reviewer must state its capacities, relevant experience and independence in providing this review.⁶⁵

65 Climate Finance Advisory Group (CCFC) (2018), Green Bond Principles MX.

> What is the value of external reviews?


While green bonds are in most jurisdictions subject to the same regulation and legal supervision as regular bonds, there are – with a few exceptions like China – no regulatory bodies that supervise the greenness of these bonds from a legal perspective. In the absence of such regulation but also in the presence of national standards that diverge from international practices, external review providers assume an important role in safeguarding the environmental integrity of the market and hence the credibility of the product. By enhancing transparency and soundness of the environmental features of the green bond, external reviews significantly contribute to mitigate concerns of *green washing*, that is the risk of a green bond to fail achieving the declared environmental benefits.

Moreover, by contributing to provide more and independently reviewed information on the greenness of the bond, external reviews lower transaction costs for investors, particularly for those with more limited technical and financial capacities to make such an assessment in-house, and hence facilitate a wider range of investors to access green bond markets and navigate in different jurisdictions.

> Second opinions

A second opinion, which represents the common form of a consultant review for green bonds, is a pre-issuance assessment of the green bond or, more specifically, its associated framework. Conducted upon the issuer's request by external consultants or consultancies with environmental and climate expertise, a second opinion has the purpose to provide investors (and the public) with the relevant information on the greenness and governance features of the bond that they need in order to make their initial investment decision. The consultancy thereby reviews relevant documents and engages in a dialogue with the issuer. In this process, the consultancy may take an advisory role in refining the issuer's green bond framework while it should not be involved in the framework development in order to ensure an independent review.

The green bond framework is a first-party opinion by the issuer, which usually contains – typically in adherence to the GBP – information on the definition of green projects or project categories, for which proceeds are intended to being used, as well as internal processes of project selection/evaluation, management of proceeds and reporting prac-




tices. The framework, which should be drafted by the issuer, potentially with support from external consultants or a green structural advisor from the underwriting institution, represents the most central document for review. Further relevant documents that are typically assessed in addition include, for instance, the issuer's sustainability reports, if available, or other information on the issuer's green and general business profile and strategy. Based on this information, a second opinion typically comprises a qualitative assessment of the robustness, credibility and transparency of procedures and practices established by the issuer for issuing a green bond – alongside with a brief description of the issuer and the characteristics of the bond, the applied underlying assessment approach or methodology and the list of documents reviewed.

Most second opinion providers present findings in a descriptive way correspondent to the GBP. A few providers seek however a more analytical approach by evaluating strengths and weaknesses and deducting recommendations (e.g. CICERO). Moreover, second opinions by different providers vary with respect to the granularity (Sustainalytics and oekom, for instance, provide relatively comprehensive assessments), the use of quantitative indicators or rating methodologies (CICERO and oekom) and the availability of post-issuance review updates. Notably, some second opinion providers evaluate specific projects, for which green bond proceeds are used (e.g. oekom), while others assess the internal processes and governance structures of how the issuer defines eligible project categories, selects projects, and monitors and reports on the use and impact of proceeds (e.g. CICERO).

About 70 percent of externally reviewed green bonds have a second opinion. The most prominent second opinion providers include CICERO (with over 60 opinions provided as of January 2017)⁶⁶, Vigeo EIRIS, Sustainalytics, oekom, and DNV GL. Costs range from USD 10,000 and higher that may vary on a reviewer and transaction-specific basis.

Despite the broad use and recognition of second opinions, there are, however, some limitations and challenges related to second opinion provision: First, there may arise conflicts of interest given that second opinion providers are directly commissioned by the issuer and some advise the latter in developing the green bond framework, which

66 CICERO's Second Opinions on Green Bonds.



will then be assessed by the same institution. This approach has the benefit that both parties can work together to build and enhance a solid framework that provides the information required by investors in an adequate way. Identifying shortcomings at an early stage allows issuers to correct the framework prior to the issuance. On the other hand, the independency of the final assessment through the second opinion provider may be questioned. The strongest control in this potential conflict of interest is probably the reputational risk that particularly non-for-profit and dedicated environmental consultancies would face in the case of allegations of neglecting their due diligence obligations.

Secondly, a lack of standardization of second opinions might cause uncertainty and hence create additional transaction costs both for investors and issuers. With the launch of the Green Bond Principles in 2014 and their broadly achieved recognition, methodologies by second opinion providers increasingly converge towards a more harmonized approach but differences remain, for instance with respect to the depth of assessment, the environmental expertise and the use of quantitative measures as depicted above, hence limiting comparability and transparency for investors. In order to support the standardization of external reviews, the GBP Research Centre provides a template on its website.⁶⁷

Third, although second opinions take into consideration whether structures and practices of reporting on the use and management of proceeds and environmental impacts are in place, post-issuance review for verification of these aspects including an environmental impact assessment are neither offered by all second opinion providers nor is there a strong external pressure on issuers to obtain one. Such post-issuance review may certainly be conducted in form of audits by specialized audit firms, which is however not yet a common practice, or often limited to the audit of the management of proceeds, and leaves a somewhat fragmented landscape for external review services.⁶⁸ An exception represents the requirement by the Mexican Stock Exchange to attain an independent review of the annual mandatory impact report.

67 The Green Bond Principles (2017), [External Review Form](#).

68 See, for instance, Bank for International Settlement (2016), [Green Bonds – certification, shades of green and environmental risks](#).

> Third party verification or audits

Conducted by accredited auditing firms (such as EY, Deloitte, KPMG, PwC and various Chinese providers), third party verification can cover both pre- and post-issuance regular auditing of the entire green bond process or parts of it, such as the allocation of proceeds. In line with national and/or international professional standards such as the International Standard on Assurance Engagements 3000 (ISAE 3000) such audits may represent the most independent form of assurance to investors that processes are in line with the statements made by the issuer. However, audits may have a stronger focus on procedural and managerial features of the bond issuance and not necessarily cover the assurance of the environmental objectives of the bond.

> Certification


In the absence of a national regulation and supervision in most green bond markets, a green bond issuer may want to obtain a green bond certificate that verifies the green credentials of the bond against an externally established standard. Such a label may give investors greater security and, moreover, raise the visibility of the bond.

As of end of June 2017, the Climate Bonds Standard (CBS), which was released by the Climate Bonds Initiative (CBI) in its second version in December 2015, represents the only internationally recognized green or climate bond certification scheme.⁶⁹ The CBS basically converts the principles established by the GBP into requirements that an issuer needs to satisfy when deciding to obtain the certificate for his bond issue. Differently from the GBP, the associated *Climate Bonds Taxonomy* defines clear sector-specific eligibility criteria for qualifying projects comprising six sectors with several sub-categories. The six sectors cover water, solar, wind, low carbon buildings, geo-thermal and low carbon transport. In order to ensure that the green bond project level criteria are aligned with a two degrees scenario,⁷⁰ the taxonomy provides detailed, science-based technical *sector specific standards* that require projects to meet certain criteria such as emissions intensity thresholds.⁷¹ Regarding the management of pro-

69 See Climate Bonds Initiative (2015), *Climate Bond Standard*, Version 2.0.

70 That is based on current international standards and research such as IPCC, IEA, Climate Science Framework.

71 For example, the emission baseline for green buildings is set at the top 15 percent of city-level emissions performance.



ceeds, the CBS requires earmarking or ring-fencing. Instruments that are eligible for temporary investment of unallocated proceeds include cash or cash equivalent instruments, within a treasury function, and must exclude greenhouse gas intensive projects. Moreover, the CBS requires issuers to allocate funds within a 24 months settlement period.

In order to obtain the certification, a pre-issuance *readiness assessment* against the CBS by an accredited third party verifier is required. Accredited institutions, which need approval from CBI's board, comprise 30 institutions as of April 2018 including Carbon Trust, DNV-GL, EY, KMPG, oekom, PwC, Sustainalytics, SynTao, Trucost, Vigeo Eiris, and others.⁷² Within one year after issuance, issuers need to acquire an *engagement assurance* that confirms the ongoing eligibility in order to maintain the certification status. This post-issuance assurance focuses on the actual use of proceeds and unallocated funds. Furthermore, issuers are required to disclose at least annually to investors and the public the use and management of proceeds as well as the environmental objectives and impact based on reporting standards recommended by the GBP. As of December 2017, green bonds with an aggregated volume of USD 31,2 billion have been certified against the CBS.⁷³


The benefit of such a certification scheme is that it provides both issuers and investors with a clear and technically specified catalogue of what qualifies as green while imposing the challenge on the certifier of having to continuously update the catalogue according to the latest technological developments in the various sectors.

> Ratings

Green bond ratings serve to qualitatively and particularly quantitatively evaluate different aspects of the bond issue according to a defined rating scale. Ratings may, for instance, refer to the actual or expected environmental impact of the project or project category, the governance structures and/or the transparency aspects related to the green bond, or all aspects jointly. The benefit of a rating lies for investors (and

72 For a full list of approved verifiers under the Climate Bond Standard, see CBI's website.

73 For a full list of certified Climate Bonds, see CBI's website (as of 13 December 2016).



the public) particularly in the relative ease of comparing different green bonds – given that the rating is conducted under the same methodology. The different approaches and objectives pursued by different agencies do currently, however, leave a fragmented landscape that may require larger harmonization as green bond rating practices become more common over time.

CICERO's Shades of Green methodology

As integral part of CICERO's second opinion, the independent non-for-profit climate research institute assesses the expected environmental impact of the defined green bond project categories with respect to their short, medium and long term contribution towards a low-carbon, climate-resilient economy. Based on a thorough scientific approach using the latest climate and environmental science, CICERO's *Shades of Green* methodology expresses this in a light, medium or dark green shading.⁷⁴ With a pronounced dynamic approach, CICERO intends to impede rebound and lock-in or other external effects.

Oekom's Sustainability Bond Rating

Besides CICERO, oekom, one of the world's leading rating agencies in the area of sustainable investment, is another second opinion provider that incorporates a rating into its review.⁷⁵ Through its *Sustainability Bond Rating*, which is based on a detailed ESG analysis of both the green bond and its issuer (the latter being expressed in oekom's *Corporate Sustainability Rating*, oekom assesses the added sustainability value and performance of the projects and assets financed by the green bond proceeds using standardized criteria and quantitative indicators. Differently from CICERO, oekom assesses the green bond on project-level.

74 CICERO (2016), Framework for CICERO's Second Opinions on Green Bond Investments.

75 Oekom Second Party Opinion.

Moody's Green Bonds Assessment

Moody's *Green Bonds Assessment* (GBA) represents a forward-looking opinion on the issuer's practices and procedures towards managing, administering and allocating proceeds as well as reporting on financed projects.⁷⁶ The assessment consists of the scoring of the performance in five weighted key factors – *Organization, Use of Proceeds, Disclosure on the Use of Proceeds, Management of Proceeds, and Ongoing Reporting and Disclosure* – according to a scale ranging from GB1 (Excellent) to GB5 (Poor).⁷⁷

S&P's Green Bond Evaluation Tool

In September 2016, the rating agency Standard & Poor's (S&P) has proposed a green bond evaluation framework and scoring methodology that seeks to provide a qualitative and quantitative lifecycle assessment of the environmental impact of projects and assets financed by the bond.⁷⁸ The net environmental impact, which is calculated in relation to a business as usual baseline scenario, is expressed in a Mitigation score. In the case that bond proceeds are used for adaptation projects, an *Adaptation score* is calculated according to the resilience benefit, that is the reduction of expected social, environmental and financial damages caused, for instance, by extreme weather events, relative to accrued financing costs for respective measures. The final overall score furthermore incorporates a *Transparency score* (focusing on the quality of disclosure, reporting and management of proceeds) and a *Governance score* (focusing on internal structures to manage certification, impact assessment and risk monitoring and management).


> Challenges and conclusions

This sub-chapter provided an overview on the different forms of external review, which all have their value and significance in promoting transparency and environmental integrity in green bond markets. At the same time, there are, as described, various

76 Moody's, 2016, *Green Bonds Assessment* (GBA), Moody's Investor Service.

77 For instance, to reach a score of GB1 (Excellent) in the category Use of Proceeds, which receives a weight of 40 percent in the final score, 95 percent of proceeds need to be allocated to eligible project categories according to the issuer's definition in alignment with the Green Bond Principles and other applicable taxonomies.

78 S&P (2016), *Proposal For A Green Bond Evaluation Tool*.



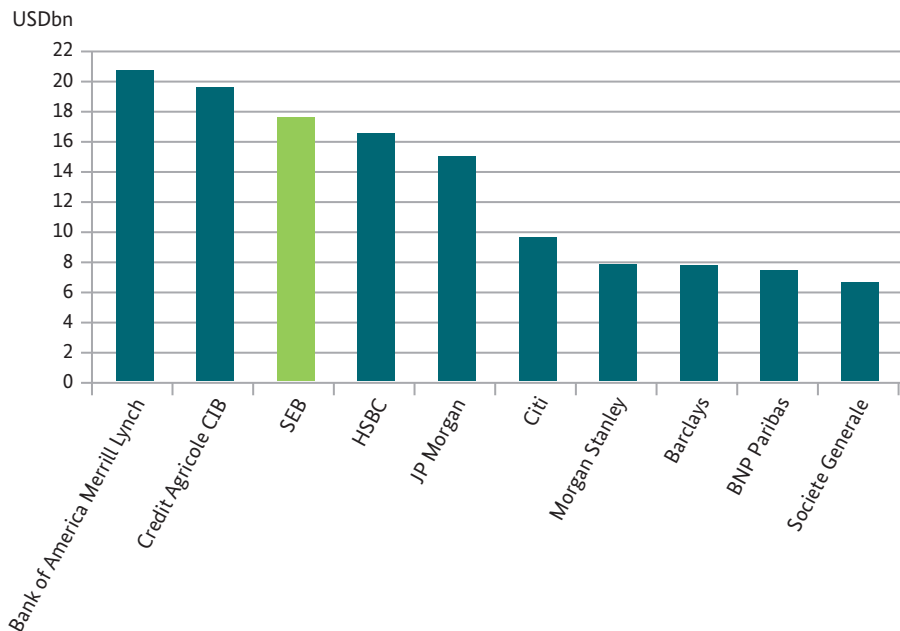
limitations in this still emerging and fragmented field, often leaving issuers with uncertainty which form of review and provider to choose and how to sufficiently encounter skepticism from investors and the public. As green bond markets are expanding further, the need for a universal use of harmonized independent, high-quality review procedures is becoming more pronounced. This process may be accelerated indirectly, for instance, by fostering knowledge building on the value and benefits of external review, possibly by subsidizing the use of external review under certain conditions and more directly, by promoting standardization and obligatory use of external reviews for labelled green bonds by regulators, stock exchanges and index providers.

V. Underwriters

As discussed in detail in chapter 2, issuers in the green bond market mandate a investment bank to arrange and structure their green bonds. This process generally involves appointing a green structuring advisor, and arranging a series of fixed income investor meetings across relevant geographies for the upcoming green bond transaction.

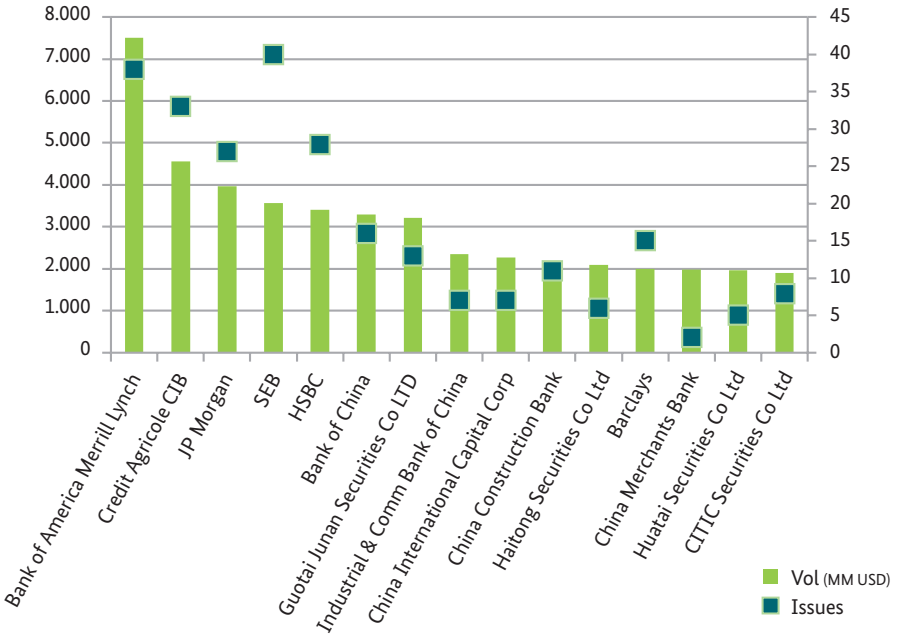
As shown in the historic league table in Figure 1.6, a wide variety of banks are active in the market. The league tables, which are available on the Bloomberg terminal and other media, reflect the increasing proportion of Chinese green bonds issued in the market with Chinese banks entering the underwriting market in 2015 and building market share significantly over 2016 as shown in Figure 1.7.

Figure 1.6: Top 10 green bond underwriters 2007 – 2017



Source: Bloomberg as at 5 October 2017

Figure 1.7: Top 15 green bond underwriters in 2016 by volume and number of issues



Source: Bloomberg (excluding ABS, project and US municipal bonds due to data availability)

Chapter 2

Issuing a Green Bond

The appeal of green bonds derives in many parts from their simplicity regarding structure, key elements and procedure that define the corner pillars of this type of debt security, while permitting a clear and transparent transfer of information from issuers to the investors regarding the use of proceeds and their environmental characteristics. The issuance process is in many ways similar to a regular bond issuance, as green bonds are subject to the same overarching regulation and requirements concerning, for instance, the legal framework and corresponding documentation, as well as financial disclosure. When issuing a green bond, the issuer is, however, expected to incorporate a *Green Bond Framework* that provides additional information disclosure and procedures geared at reassuring investors, for instance, on the green use of proceeds, which are described below alongside the standard steps of issuing a bond.⁷⁹

79 See ICMA (2016), Green Bond Principles; SEB (2016), The Green Bond Framework, available at www.emergingmarketsdialogue.org/dms/giz-emd/events/event18/presentations/3_Mats_Olausson_MX_GB.pdf?z=1481015925043



I. Pre-issuance phase

> Meeting relevant preconditions

The preliminary internal decision to issue a green bond requires that three preconditions are in place: First, that proceeds are intended to be used to finance or refinance green projects or activities that align with a set of defined green criteria. Depending on the region or jurisdiction, these criteria are either imposed by the regulator or need to be internally defined by the issuer. Second, that bonds have been identified as the most suitable instrument to raise funding for the respective projects or assets. Third, that the issuing institution needs to be able to meet the legal, regulatory and financial prerequisites required to issue a bond. Having ensured these preconditions are met, the issuer will approach one or more investment banks to serve as advisors in the bond issuance process (regular and green aspects). In any event, in most cases new issues come to market through a syndicate, or group of banks. The issuer mandates one or several lead managers, i.e. investment banks with particular expertise in the green bond market, to prepare and conduct the deal, in effect acting as an intermediary between the issuer and the investors.

> Designing a tailor-made green bond framework

It is critical that a green bond issuer provides a green bond framework. The green bond framework describes the commitment from the issuer to the investors regarding the green features of the bond. It should be concise and transparent. Each green bond issuer is unique and the framework should be tailored to reflect the issuer's specific circumstances and green commitments to the investors.

The framework is typically developed jointly with environmental consultants and/or a structural advisor, ideally one of the lead-managing banks, and based on a standardized template such as codified by the Green Bond Principles (GBPs).⁸⁰ The green bond framework shown in Table 1 was established by SEB, the leading advisor in the green bond market as well as a leading underwriter, and consists of five pillars and sub-processes as well as key considerations that align with the four principles of the GBP and its templates.

⁸⁰ See GBP Resource Center (2016), External Review Form, available at <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/gbp-resource-centre>

Table 1:
Constructing a sample
Green Bond Framework

Source: SEB

1 Definition Use of proceeds	2 Selection Process for project evaluation
<p>Identification and definition of investment areas/assets which are eligible for Green Bond financing</p> <p>> The Green Bond universe is divided into the following areas that target climate and other environmental stress:</p> <ol style="list-style-type: none"> 1) Mitigation 2) Adaptation 3) Environmental 	<p>The Green Bond selection process ensures the right assets in line with the Green Bond framework are evaluated and selected</p> <p>> Establish procedures and secure ongoing monitoring</p> <p>> It is recommended to include climate competence in the selection process</p> <p>> Climate competence function(s) often has veto right in the selection process</p>

3

Traceability Management of proceeds

The proceeds raised via the Green Bond should be earmarked to support lending to the established eligible Green criteria

- > There are several ways an issuer can earmark Green Bond proceeds, for example
 - Earmarked account
 - Balanced earmarked positions
 - Virtual Green balance sheet

4

Transparency Reporting

To uphold credibility it is essential to be transparent towards investors and the market


- > Obtained via an annual publically available investor letter
- > The letter should include a list of areas financed, a selection of project examples and a summary of the investor's Green development
- > Identification of relevant impact measurements

5

Verification Assurance through external review

Credibility is essential for the long-term development of the Green Bond market

- > Second opinion conducted by an independent third party specialist
- > The primary objective is to verify the 'Greenness' of the investor's projects/areas
- > Additionally, external assurance providers to verify the selection process in line with the Green Bond framework



Such a framework elaborates on the issuer's approach towards defining eligible green project or asset categories and establishing internal processes for selecting eligible projects in the issuer's portfolio, managing proceeds and reporting. In order to define qualifying categories in case these are not determined by the respective regulator⁸¹, the GBPs provide a comprehensive though not exhaustive list of green bond project categories that covers different areas of climate change mitigation and adaptation as well as environmental preservation and may serve as orientation.⁸² The categories can be adapted and defined by the issuer, depending on the issuer's portfolio and sector. Specific industry standards may serve issuers as further reference such as LEED and BREEAM for green buildings, FSC and PEFC for sustainable forestry or clean transportation in the Climate Bonds Initiative's Taxonomy.⁸³

Moreover, environmental laws and issuer-specific overall and environmental policies need to be taken into account. In jurisdictions, where green bond markets are regulated by national authorities, issuers need to ensure compliance with the eligible project and asset categories. In China, the *Green Bond Endorsed Project Catalogue (or the Catalogue)* introduced for financial institutions in China's interbank market by the People's Bank of China (PBC), specifies six categories with 31 sub-categories.⁸⁴ China's corporate green bond market is regulated by the National Development and Reform Commission (NDRC), which provided guidelines that are in line with PBC's

81 See chapter 1.1.

82 The GBP's Green Project categories should "provide clear environmental benefits" and include, but are not limited to: (i) renewable energy, (ii) energy efficiency; (iii) pollution prevention and control; (iv) sustainable management of living natural resources; (v) terrestrial and aquatic biodiversity conservation, (vi) clean transportation, (vii) sustainable water management, (viii) climate change adaptation, (ix) eco-efficient products, production technologies and processes. See ICMA (2016), *The Green Bond Principles*, available at www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles.

83 The Climate Bond Taxonomy by the Climate Bonds Initiative gives further guidance on sector-specific standards.

84 The categories comprise: (i) energy-saving, (ii) pollution prevention and control, (iii) resource conservation and recycling, (iv) clean transportation, (v) clean energy, (vi) ecological protection and adaptation to climate change. Some regional variations exist currently in markets where governments have regulated the green bond market. For instance, the guidelines for China's corporate domestic green bond market set by National Development and Reform Commission (NDRC) are in line with the PBoC's Catalogue, but include nuclear energy as an additional, eligible category.

Catalogue but focus on a list of twelve priority areas.⁸⁵ Listed companies are regulated by the China Securities Regulatory Commission (CSRC), which excludes high emissions or energy usage corporates from the issuance of green bonds. In India, the Disclosure Requirements for the Issuance and Listing of Green Debt Securities drafted by the Securities Exchange Board India (SEBI) include a list of broad project and asset categories for eligible use of proceeds, which are in line with international practice i.e. the GBPs.⁸⁶ The Moroccan Capital Markets Authority (AMMC) released a green bond guide in 2016, prepared with the support of the IFC.⁸⁷ Japan and Indonesia also introduced national guidelines. The *Guide to Issuing Green Bonds in Brazil* published by the Brazilian Federation of Banks (FEBRABAN) and the Brazilian Business Council for Sustainable Development (CEBDS), which represents a non-binding guide, does not include fixed definitions but provides examples of eligible activities for green bonds that are widely in line with the Green Bond Principles and the Climate Bonds Taxonomy.⁸⁸ In Mexico, an industry-led initiative introduced a Mexico version of the Green Bond Principles.⁸⁹ The Lima Stock Exchange also introduced Green Bond Guidelines for the Peruvian market.

The use of standards to define what is green brings the benefits of simplifying the process which can facilitate faster growth of the green bond market. On the other hand, the relevant threshold for what should be regarded as, for instance, green transportation solutions may vary between different geographies (compare Calcutta and Oslo for instance). Secondly, thresholds and stringencies may evolve over time (e.g. for energy use in green buildings).


85 A harmonization of the different green bond regulations in China is currently being discussed by the responsible regulatory bodies including PBC, NDRC and China Securities Regulatory Commission (CSRC).

86 See SEBI (2017): Disclosure Requirements for Issuance and Listing of Green Debt Securities, available at www.sebi.gov.in/legal/circulars/may-2017/disclosure-requirements-for-issuance-and-listing-of-green-debt-securities_34988.html.

87 See AMMC (2016), Green Bond Guidelines, available at www.ammc.ma/sites/default/files/AMMC%20BROCHURE%20VGB.pdf.

88 FEBRABAN/CEBDS (2016), Guide to Issuing Green Bonds in Brazil, available at http://cebds.org/wp-content/uploads/2016/10/Guia_emissa%CC%83o_ti%CC%81tulos_verdes_ING-2.pdf.

89 Climate Finance Advisory Group (CCFC) (2018), Green Bond Principles MX.




Furthermore, while the use of clear standards may encourage a more simple access to the issuance of green bonds, the use of tailor made definitions enables issuers and investors alike to evaluate the appropriate thresholds of green in a process that fosters enhanced competence building and understanding of the environmental consequences of real and financial investment decisions. This, in turn, helps mobilizing the human capital which is essential for driving the necessary reallocation of capital towards improved environmental performance, climate resilience and resource efficiency.

The procedure of defining categories, identifying potential green projects in the issuer's portfolio and eventually selecting eligible ones, requires assigning appropriate staff from both financial and sustainability departments within the issuing organization to engage in a dialogue. In order to ensure the environmental integrity of the issue in the absence of environmental in-house expertise, it is recommended to either consult external experts or to design the criteria in a way that allows for external environmental assurance.

The process for project evaluation and selection should be documented in the green bond framework by outlining the issuer's decision-making process in determining the eligibility of green projects, including risk assessment criteria and external standards that may have been applied, as well as by putting this information in the context of the issuer's overarching sustainability objectives and strategy.

> Externally reviewing the green bond framework

The green bond framework and relevant associated documents are recommended to be externally reviewed by a mandated, independent second opinion provider, a third party auditor or a green bond certifier. Soliciting an independent review of the issuer's green bond framework provides investors with transparent and sound information, beyond national standards and peculiarities on the environmental and procedural credentials of the bond. It does not, however, take into account the financial features of the issuance nor necessarily an ex-post assessment of the environmental results and benefits of the projects financed with the green bond proceeds.



Investors typically possess the appropriate capabilities to evaluate the financial risk and return metrics, but often lack the relevant capacity to judge if the green features meet adequate, scientific criteria. The external review – if conducted by environmental experts – serves the purpose of providing such information to make an informed investment decision possible for the investors, both from a financial and an environmental point of view.

For an assessment of the financial creditworthiness of the issue, which is conducted independently from the green label of the bond, rating agencies provide credit ratings that are essentially based on the risk profile of the issuer and/or the financed project and assets.⁹⁰


The rating determines both the risk premium and the pool of investors buying the bond given that many institutional investors are mandated or required by regulation to allocate funds only to investment grade assets, which comprise the four highest rating categories. Although usually not being mandatory by regulation (for instance for some private placements⁹¹), a credit rating is typically requested or even required by many market participants as it reduces uncertainties related to the investment and issuer profile. Consequently, issuers are usually advised to obtain a rating provided that the expected reduction in borrowing costs is larger than the costs related to the rating.

> Establishing structures for managing proceeds

In an additional step, as defined in the issuer's green bond framework, the green bond issuer needs to open a separate earmarked (sub-) account or put in place other procedures to ensure the tracking of proceeds. Ideally, both the settlement period for allocation and eligible temporary investment vehicles and assets ensuring the exclu-

90 For green use of proceeds bonds applies the same credit rating as for the issuer given that full recourse is to the issuer. On the other hand, green project bonds, green use of proceeds revenue bonds and green securitized bonds would require a separate rating as recourse is to the project's assets and balance sheets or to the cash flow of the assets.

91 A private placement is different from the public offering of securities in terms of the regulatory requirements that must be satisfied by the issuer.



sion of non-green projects and assets are specified in the green bond framework.

> Committing to frequent reporting

In connection to issuance of regular bonds, investors do not expect any specific reporting on the use of proceeds. However, when issuing green bonds, issuers commit to allocating the use of proceeds exclusively to specified projects or project categories with environmental benefits. Hence, investors expect to receive information about how their money has been used on a regular (typically annual) basis. This information should be made publically available (since the original buyers of the bonds may have traded them on the secondary market) and should, to the extent feasible, include information on the environmental impact of the investments. For more details, refer to the reporting section in the GBPs.


> Developing a sales strategy

Based on the various features of the bond, issuer and market conditions, the book runners together with the issuer develop a sales strategy including pricing, marketing and syndication plans. The risk and new issuance premium or the spread is determined by the group of lead managers in consultation with the issuer based on the type and rating of the issuer and bond, expected liquidity and overall market conditions. Unless the green feature of the bond has a tangible effect on the financial risk and return profile, i.e. if it is a project bond or equivalent, a green bond is typically priced according to the same criteria as a regular bond, e.g. based on either outstanding bonds with a similar maturity and/or a base rate plus a risk and new issue premium.⁹²

> Preparing relevant legal documents and due diligence

The respective roles for preparation and launch of the bond, i.e. coordination of legal requirements and term sheet, trade documentation, marketing and press coverage, book keeping as well as booking and delivery, are usually assigned by the issuer who determines an individual lead manager to take care of the respective tasks. With regard to the legal framework, the documentation is subject to due diligence which is carried out by both the issuer's and the lead manager's legal advisors. Furthermore, the green bond framework and review document, i.e. second opinion, are important documents

⁹² The base or benchmark rate is usually the most actively traded treasury security in the jurisdiction showing the lowest perceived risk that has the closest maturity gap to the bond issue.



that should be provided to investors and the public prior to the launch or the issuance of a green bond. Issuing a green bond does not require any additional legal documents compared to issuing a regular bond. The specific use of proceeds should, however, be specified in the terms and conditions or final terms, as applicable, of the green bond. This can be done through reference to the green bond framework or inclusion of relevant use of proceeds language.


> Identifying suitable bond terms, market conditions and target market

Depending on the nature of the bond transaction (i.e., strategic placement versus opportunistic selling), the group of lead managing banks advises the issuer in the pre-issuance phase on numerous topics in order to realize the best funding conditions. Currency and maturity of the bond as well as the target investor group are examples of some of the aspects an issuer has to determine in order to identify the respective target market for issuance. This assessment is made by taking into account expected returns and risks (such as credit and liquidity risks as well as macro-economic risks such as interest rate environment and inflation). For international investors, sovereign and exchange rate risks are relevant as well, particularly when investing in emerging markets. Additionally, the green label of the bond represents another relevant feature to specify the investor types most likely to invest in the bond.

> Issuing in the domestic market

When issuing in the domestic market, the issuer has various benefits such as avoiding potential costs from cross-currency swaps and currency hedges as well as higher name recognition which lowers marketing costs compared to an international placement. These cost advantages may facilitate access to the debt capital market particularly for smaller issuers, and also enable smaller issuance sizes. On the other hand, domestic markets may be less developed than international markets, which may be a derivative of underdeveloped financial and capital markets generally, or resulting from factors such as limited legal and macroeconomic stability.⁹³

93 Berger and Warnock (2004), Foreign Participation in Local-Currency Bond Markets, Board of Governors of the Federal Reserve System International Finance Discussion Papers, Number 794, available at www.federalreserve.gov/pubs/ifdp.



In cases where there is less breadth and depth with regards to the issuer and investor base there can be limits to liquidity levels in the domestic bond market, which results in higher capital costs and more volatile trading prices. Therefore, to identify the potential appetite for any bond a careful assessment of domestic market conditions, particularly regarding risk and return profiles, investment restrictions and asset portfolios of different types of domestic and international investors (e.g. insurance companies, pension funds, asset managers, sovereign wealth funds, banks and corporates, and other types of “qualified investors”) is an important prerequisite for the decision, in which market to issue the bond.

> Issuing in international markets

In the case where the above mentioned limitations apply in domestic markets, *tapping* international markets might be more attractive for some issuers. This may allow further diversification of the existing investor base and the potential to issue larger volumes at longer maturities. The risks may then include potential foreign exchange fluctuations and higher transaction costs stemming from additional marketing, regulatory and documentation needs.

> Defining the bond type and structure

Provided that the issuer is able to meet the regulatory and disclosure requirements in the jurisdiction of issuance, the issuer and lead managers agree on the type⁹⁴ and structure of the green bond issuance, depending on the financing needs as well as the issuer’s profile and overall market conditions. The structure or terms of the bond refer to the bond’s target size, tenure, spread, coupon, payment mode and currency.⁹⁵

> Marketing the green bond issue

Given the keen attention green bonds have received in the market, especially from mainstream investors, the green label should play a crucial role in the marketing

94 For a description of the different types of green bonds, i.e. green use of proceeds bonds, green revenue bonds, green project bonds, green securitized bonds, see ICMA (2016), The Green Bond Principles, available at www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles.

95 Issuers may also embed options to call or convert the bond. Callable bonds can be paid back before maturity, while convertible bonds can be converted into shares of the issuing institution.

strategy that is developed by the lead managers. The label itself can be viewed as a *discovery tool* which allows investors with green preferences to identify bonds that align with their investment preferences out of a vast pool of fixed income issuances globally.

> Considering incentive mechanisms

Credit enhancement options should be considered carefully with respect to their cost-effectiveness; i.e., whether the lower targeted risk premium outweighs the cost of the enhancement. Credit enhancements mechanisms are frequently offered for project bonds by a variety of institutions including public financial institutions and under international programs such as the *EU Project Bond Initiative* and the *Asian Credit Guarantee Investment Facility* (CGIF). Guarantees by a parent group, governments, commercial banks or international financial institutions, as well as insurance provided by insurers may be alternative options to lower bond-related risks.⁹⁶ Moreover, in some jurisdictions fiscal incentives for green bond issuers and investors are in place. In the United States, green municipal bonds can benefit from tax exemption. Furthermore, China's Green Finance Committee is exploring the potential for incentive structures—such as a fast-track approval program to support domestic green bond market growth.

> Registering the green bond issue

Prior to the launch, the green bond issue is typically subject to the same regulatory requirements as a regular bond which may include registration at the responsible supervisory authority, which may vary depending on the jurisdiction of issuance and the type of issuer and bond. Documents relevant for registration such as the preliminary prospectus, financial records and statements from the issuing institution must be submitted and approved by the supervisor. In some jurisdictions, the prospectus (which includes information on the business and management profile of the issuer, a list of main investors, the terms of the bond issuance and financial risks) needs approval by the supervisor prior to distribution. In other jurisdictions, the marketing may begin after the registration statement is filed but before it becomes finally approved by the supervisor.

⁹⁶ For example, the Overseas Private Investment Corporation (OPIC), the U.S. Government's development finance institution, offers green guarantees to eligible US investors in domestic debt capital markets.

II. Launch phase and issuance

> Announcing the green bond issue

Lead managers will organize meetings in the context of *road shows* for groups of institutional investors. Following the marketing period, the lead managers make a public announcement of the upcoming transaction and thereafter solicit orders from investors and *build a book* for the issue within spread parameters. Other issue details, such as size and maturity, can also change as a result of investor feedback received during the marketing campaign. Before the launch, the syndicate might be enlarged to include banks with good placing power among specialized investor groups, depending on the market, size of issuance, etc.⁹⁷

Following a joint *go-/no-go call* between the issuer and lead managers, the issuance has to be announced to the public through the respective channels (that is Reuters, Bloomberg and other market data providers) typically starting with *initial price thoughts*. In a public offer the (preliminary) prospectus must be provided to the public.

An alternative to a public offering is to issue the bond through a private placement in which case one or a few investors, via the lead managing bank(s) agree(s) on the terms of the transaction with the issuer. This can be on the initiative of either party involved. While potentially convenient and efficient, this process limits the publicity and branding effect for the issuer, something that often is an aspiration of the issuer, especially in connection to the issuance of the inaugural green bond.

> Book building

Once the order book has been officially opened, the respective sales teams of the book runners contact their accounts and potential investors to explore their interest in participating in the transaction. As long as the order book is open, the group of joint lead managers provides the issuer with updates on the development of the order book and with guidance regarding strategy and pricing of the bond. The price of the bond normally correlates negatively with the overall amount of orders. Market participants receive updates throughout the book building process.

97 Fabozzi, et al. (2012), *The Handbook of Fixed Income Securities*, McGraw-Hill.

> Pricing the green bond

After the book building process has been finalized, the issuer will decide on the quantity allocated to each investor and the price of the issue. Since the final price is determined at the time of selling, current market conditions are priced in. Not all bonds are underwritten using the traditional syndicate process. Variations in the United States, the Euromarkets, and other markets include for example the bought deal, the auction process, and continuous offerings of medium term notes.

> Conducting the transaction

On issuance parties first sign a subscription agreement and the listing authority or relevant stock exchanges approve the prospectus if the bond is to be listed. Secondly, at the closing of the deal, the remaining documents are signed, and the bond is delivered to the bondholders, while the payment is (simultaneously) made to the issuer through a national depository or a clearing system.

III. Post-issuance phase

> Managing proceeds

After the deal has been settled and an amount equal to the net proceeds of the issue has been transferred to the earmarked (sub-)account, the issuer can start to allocate the proceeds. The earmarked account will be managed by the issuer according to the regular liquidity management practices and the defined commitment regarding the management of unallocated proceeds as described in the green bond framework, if different. With respect to the bondholder, the issuer needs to ensure the timely payment of the coupon on a regular, usually semi-annual or annual basis, and of the principal at maturity.

> Listing the green bond on a stock exchange

If the bond is to be listed and traded on a stock exchange, the respective listing authority will be contacted. As of December 2016, dedicated green bond listings and segments have been introduced by twelve stock exchanges, namely those of London, Luxembourg, Mexico City, Oslo, Shenzhen, Paris, Borsa Italiana, Riga, Amsterdam, Lisbon, Johannesburg and Stockholm, of which some have specific requirements such as mandatory external review and impact reporting.⁹⁸ Moreover, depending on the requirements in the respective jurisdiction, the settlement of the transaction needs to be prepared through a national depository or clearing system.

> Monitoring and reporting the use of proceeds and environmental impact

In order to maintain transparency towards investors and the public regarding the compliance of the terms of the issue, green bond issuers are expected to monitor and regularly report the allocation of proceeds including a list of financed projects with a brief project description, amounts allocated, and use of unallocated proceeds. Issuers should further monitor and report the expected or actual environmental impact, based on qualitative and, if feasible, quantitative indicators. Potential channels to publically disclose this information include a dedicated Green Bond investor letter, the annual report or sustainability report as well as the issuer's or project's website. It is recom-

98 Sustainable Stock Exchanges Initiative (2016), 2016 Report on Progress, available at www.unepfi.org/fileadmin/documents/SSE_RoP_2016.pdf; Sustainable Stock Exchanges Initiative (2016), Fact Sheet: Bolsa Mexicana de Valores, available at www.sseinitiative.org/fact-sheet/bmv.

mended to apply standardized reporting procedures and criteria, possibly against the GBP and based on the *Harmonized Framework for Impact Reporting*, in order to increase comparability between different bonds and mitigate transaction costs for issuers and investors.⁹⁹ The *World Bank Green Bond Newsletter* and *Impact Report* are often referred to as best practice examples that incorporate these standards.¹⁰⁰

> Obtaining post-issuance external reviews

Ongoing eligibility of projects, management and allocation of proceeds, impact reporting as well as credit ratings are recommended to be reviewed and verified on a regular basis by respective parties, that is second opinion providers, auditors, certifiers and/or rating agencies.¹⁰¹ The credit rating is typically reviewed annually by a rating agency, which generally requires a rating maintenance fee. Any change in the rating generally needs to be reported to bondholders.

> Trading on the secondary markets


It is in the secondary market that bonds that have previously been issued are traded, mostly *over the counter* (OTC) but also on some exchanges. In the secondary market, an issuer may obtain regular information about the value of the bonds it has issued. The periodic trading of a bond issue reveals to the issuer the consensus price that the bond commands in an open market. Thus issuers can observe the prices of their bonds and the implied interest rates investors expect and demand from them.¹⁰²

99 The Harmonized Framework for Impact Reporting was published in December 2015 by eleven multinational and national development banks with the objective to promote transparency and harmonize the disclosure of environmental and climate related impacts of projects and assets that are financed by green bond. The document is available here: <http://treasury.worldbank.org/cmd/pdf/InformationonImpactReporting.pdf>.

100 The World Bank Green Bond Newsletters are available at <http://treasury.worldbank.org/cmd/htm/WorldBankGreenBondNewsletters.html>.

101 Note that the second opinion is a one-off, pre-issuance report and regular post-issuance assurance of processes and/or verifications of achieved environmental impacts may follow.

102 Fabozzi, et al. (2012), *The Handbook of Fixed Income Securities*, McGraw-Hill.




Investors may hold the bond or trade it on the secondary market. The secondary market trading therefore requires the above described ongoing disclosure, both on the financial and the green features of the bond.

> Repaying the bond

At the date of maturity, the debt will cease and the borrower will redeem the issue by paying the face value, or principal.¹⁰³ Payment of interest and redemption of principal, record keeping, etc. are the responsibility of the issuer but the execution of these tasks are usually handled on behalf of the issuer by a fiduciary agent (generally a bank) that acts as the trustee for the bonds.¹⁰⁴

103 Bonds may also contain arrangements by which the issuing firm either can or must retire the debt early, in full or in part.

104 Thau (2010), The Bond Book, 3rd edition, McGraw-Hill Education.



Chapter 3

Case Studies*

* This chapter has been prepared by Dr Rory Sullivan under the direction of a project team comprising Christine Majowski, Yannick Motz and Qi Lan (of GIZ) and Christopher Kaminker (of SEB), who provided input and comments.


I. Executive summary



In this chapter, we analyse five green bond case studies, covering issuers from Brazil, Canada, Mexico, Sweden and the World Bank. We describe the financial characteristics of the bonds that have been issued, how the proceeds have been allocated, the level of investor interest, the challenges encountered, and the lessons learned.

The case studies provide important insights into the green bond issuance process and valuable lessons for issuers and for governments looking to develop their green bond markets. Specifically, the case studies demonstrate that:

- There are clear benefits to issuing green bonds. These include increased investor reach, the potential for slightly tighter pricing (i.e. a very modestly reduced cost of capital), the ability for issuers to diversify their investor base, introducing discipline in measuring and reporting on the social and environmental impact of the use of proceeds, and brand and reputation benefits for issuers.
- The short-term additional costs of issuing green bonds compared to other bonds of an issuer are modest, and are significantly outweighed by the benefits. The main costs are those associated with external review or verification, and those associated with monitoring and reporting.
- The additional transparency that is inherent to green bonds provides many benefits. For investors, it provides them with assurance that their money is being invested in assets that provide specific environmental benefits, it creates an enhanced dialogue with the issuer, it provides them with more insight into the issuer's projects and strategy, it helps with their reporting to their clients and it can reduce due diligence costs when trying to identify green investment opportunities among other fixed income securities. For issuers, it is an opportunity to communicate about its activities and provide reassurance to investors, especially to investors that have not previously invested in the issuer.

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- Issuers need to understand the green bond external verification processes to ensure that they meet the investor expectations for such bonds (e.g. what constitutes a green bond, what the requirements are for project evaluation and selection, for the use of proceeds and for reporting) before they embark on the verification process.
 - The public sector can actively support the development of the green bond market. The case studies suggest that the issuing and marketing of green bonds increases the likelihood that other green bonds will be issued, supports the building of green investment expertise in the market and helps engage the wider financial system in green finance and in sustainable and responsible investing.

II. Introduction



In this chapter we analyse five green bond case studies (see Table 3.1), covering a range of sectors, instruments, issuer types and regions. We describe the financial characteristics of the bond or bonds that have been issued, how the bond proceeds have been invested, the level of investor interest, the challenges encountered and the lessons learned. The case studies provide important insights into the green bond issuance process and offer valuable lessons for issuers and for governments looking to develop their green bonds markets.

Before we review the lessons learned from the case studies, it is important to emphasise that, in most ways, green bonds are no different from conventional bonds. The structuring, rating (from a credit perspective), pricing and marketing of these instruments are no different to any other bond. The main differences are the requirements for proceeds to be invested in projects that generate environmental benefits, and for verifying, monitoring and reporting on how the proceeds are used and the environmental impacts and benefits that result.

Table 3.1: Summary of case studies

Issuer	Value	Rating	Tenure	Investment focus area(s)
Kommuninvest (Sweden)	USD 600 million	Aaa (Moody's) AAA	3 years	25 investment projects in 18 municipalities including in wind energy, green building and transport
Kommuninvest (Sweden)	SEK 5 billion	Aaa (Moody's) AAA (S&P)	4 years	Swedish municipal investment projects in renewable energy, energy efficiency, green buildings, public transport and water management
	USD 500 million		4 years	
	SEK 3 billion		4 years	
Nacional Financiera S.N.C. (Nafin) (Mexico)	USD 500 million	A3 (Moody's) BBB+ (Fitch)	5 years	Onshore wind energy
Province of Ontario (Canada)	CAD 500 million	Aa2 (Moody's) A+ (S&P)	4 years	Eligible projects fall into the following five categories identified in the Province of Ontario's Green Bond Framework, excluding fossil fuel and nuclear energy projects: <ul style="list-style-type: none"> • Clean transportation • Energy efficiency and conservation • Clean energy and technology • Forestry, agriculture and land management • Climate adaptation and resilience
	CAD 750 million		7 years	
	CAD 800 million		6 years	
	CAD 1 billion		7 years	

Issuer	Value	Rating	Tenure	Investment focus area(s)
Suzano Papel e Celulose SA (Brazil)	USD 500 million	BB+ (S&P) BB+ (Fitch)	10 years	<ul style="list-style-type: none"> • Sustainable forestry • Forest restoration • Biodiversity conservation • Water and wastewater management • Energy efficiency • Renewable energy
World Bank	Almost USD 11 billion equivalent in green bonds issued in 19 currencies through 140 transactions	Aaa (Moody's) AAA (S&P)	1-30 years, with about two thirds of issuance having a maturity of 5 years or less.	<p>World Bank green bonds support projects that promote a transition to low-carbon and climate resilient growth. Examples include:</p> <ul style="list-style-type: none"> • Solar and wind installations • New technologies that permit significant reductions in greenhouse gas emissions • Rehabilitation of power plants and transmission facilities to reduce greenhouse gas emissions • Greater efficiency in transportation, including fuel switching and mass transport • Waste (methane emissions) management • Energyefficient buildings • Carbon reduction through reforestation and avoided deforestation • Protection against flooding (including reforestation and watershed management) • Food security improvement and implementing stressresilient agricultural systems (which reduce the rate of deforestation) • anagement and avoided deforestation

III. Case study 1: Kommuninvest (Sweden)


> Background

Kommuninvest, the Swedish local government debt office, was established in 1986 and is today the largest lender to Swedish local and regional governments (LRGs) and the sixth largest credit institution in Sweden. It was established to provide Swedish local governments with more cost-efficient funding than commercial banks, which was at the time the only available source for external funding. The approach was for Kommuninvest to obtain economies of scale by aggregating local government funding needs through a joint funding vehicle, supported by an unlimited, joint and several guarantee from the owners (Swedish local governments with tax raising capabilities). Since its inception in 1986, the Kommuninvest collaboration has helped lower the local government sector's borrowing costs by many billion kronor. Currently, 277 municipalities and 11 county councils/regions are members of this voluntary cooperation, out of a total 310 local governments.

Kommuninvest Green Bonds raise funds from fixed income investors to support lending for investment projects that seek to mitigate climate change or help adapt to it. Kommuninvest's inaugural Green Bond, a RegS/144A USD 600 million transaction, was issued in March 2016. Its first Green Bond in SEK (for SEK 5 billion) was issued in October 2016. Its third Green Bond, a RegS/144A USD 500 million transaction, was issued in May 2017. In April 2018, Kommuninvest issued its fourth Green Bond, for SEK 3 billion.

Due to high investor demand, Kommuninvest was able to price the fourth green bond transaction 3 basis points through its fair value curve. This was achieved while maintaining a high-quality order book, and thus marked another successful venture into green funding for Kommuninvest.

All projects financed are located in Sweden, which aims to be one of the world's first fossil fuel-free nations. The overall goal of Sweden's environmental policy is to hand over to the next generation a society in which the country's major environmental challenges have been solved, without increasing negative environmental and health effects outside Sweden.



To a large degree, Sweden's efforts are led by the local government sector, which accounts for the majority of public sector investments. More than 90% of Sweden's municipalities have set their own environmental targets or have adopted national or regional goals.

Kommuninvest Green Bonds were conceptualized as an opportunity to invest in Swedish climate solutions through a triple-A rated fixed income product, explicitly guaranteed by the members of the Kommuninvest Cooperative Society. The triple-A credit quality of the Green Bonds is the same as for any other Kommuninvest bonds, with standard documentation and a 2nd party opinion¹⁰⁵ from Cicero, the climate and environmental research institute. Green Bonds issued by Kommuninvest finance lending to Swedish municipal investment projects that fit the eight eligible project categories of the Kommuninvest Green Bonds Framework, including renewable energy, energy efficiency, green buildings, clean transportation and water management


> Kommuninvest Green Bond examples

Inaugural Green Bond

On 15 March 2016, Kommuninvest issued its inaugural Green Bond. Following strong investor demand from both dedicated green investors (67%) and mainstream investors (33%), the bond size was increased to USD 600 million, making it the largest Green Bond to date from a Nordic issuer. Bringing an innovative approach to the market, all projects financed by Kommuninvest's Green Bond are vetted by an independent advisory committee.

As Sweden's largest municipal lender, representing around 50% of all financing for municipalities, Kommuninvest had planned for over a year to issue Green Bonds to finance and refinance its green lending activities. In June 2015, Kommuninvest started building up a dedicated Green Loan book, enabling green financing for investment projects in areas including renewable energy, energy efficiency, green buildings, public transport and water management. By early March 2016, Kommuninvest had built up

¹⁰⁵ The 2nd party opinion is available at Kommuninvest's green bond webpage (see bottom of page): <http://kommuninvest.se/en/for-investors/funding/funding-programmes/greenbonds>.



its Green Loan book to SEK 8.8 billion (USD 1.1 billion), committing funds to 25 investment projects in 18 Swedish municipalities. Renewable energy accounted for 67% of the Green Loan portfolio, with green buildings accounting for a further 27%.

Kommuninvest expected that its Green Loan portfolio would grow to 15 – 20% of all lending in the near future and expected to issue Green Bonds regularly, in multiple currencies. This expectation reflected the large investment needs of the Swedish LRG sector, and the strong focus on climate and environmental benefits in LRG investment decisions. Swedish LRGs are instrumental to achieving Sweden's environmental target, as they account for more than half of all public sector investments, are large buyers of goods & services, implement regulatory supervision, and are responsible for city planning and local infrastructure.

The mandate was announced on Monday 14 March 2016, at 1200 noon London time, together with IPTs (Initial Price Thoughts) of mid-swaps plus 'mid 30s' for a USD 500 million transaction. Indications of interest (IOIs) grew steadily overnight enabling a prompt book opening with IOIs in excess of USD 500 million on Tuesday 15 March 2016. Official price guidance was announced at mid-swaps plus 34 bps area. High quality investor support continued to accelerate through London morning, with books exceeding USD 850 million by 11.45 a.m., enabling final price to be revised 1 bp tighter and to be set in the mid-swaps plus 33 bps area for a USD 600 million upsized deal. The final pricing was at 15.45 p.m. with total orders approaching USD 900 million from 41 accounts.

The bond received very strong support from environmentally focused accounts including AP3, AP4, CalSTRS, Erste Asset Management, Everence Financial, NIB, Raiffeisen KAG, SBAB Treasury, SEB Investment Management and United Nations Joint Staff Pension Fund.

Central banks and official institutions accounted for 37% of the deal, asset managers 29%, banks 19%, pension and insurance funds 12% with 3% going to others. The geographical split was very well diversified globally with 30% placed with US investors, 26% with Nordic investors, 24% with Middle Eastern and African investors, 13% with other European investors and 7% with Asian investors.


The bond proceeds were earmarked for Kommuninvest's portfolio of Green Loans, which included at the time 25 investment projects in 18 municipalities: Borås, Botkyrka, Eskilstuna, Gävle, Huddinge, Järfälla, Karlstad, Knivsta, Kumla, Kungsbacka, Lindesberg, Skellefteå, Trelleborg, Trollhättan, Trosa, Umeå, Åre, and Örebro. These included Herresta School in Järfälla municipality, the first school in Sweden to be constructed using massive wood, Umeå municipality's ultrafast-charging electric buses, and Eskilstuna municipality's investment in wind power.

Table 3.2: Summary terms and conditions

Total amount	USD 600 million	
Rating	Aaa (Moody's) / AAA, stable outlook (S&P Global Ratings)	
Issuance date	22 March 2016	
Maturity date	23 April 2019	
Coupon	1.50% payable semi-annually, long first coupon to 23 October 2016	
Re-offer spread	Mid swaps +33 bps	
Underwriter	BofA Merrill Lynch, CA CIB and SEB	
Investor base	By geography: <ul style="list-style-type: none"> • US: 30% • Nordics: 26% • Middle East and Africa: 24% • Other Europe: 13% • Asia: 7% 	By investor type: <ul style="list-style-type: none"> • Central banks and official institutions: 37% • Asset managers: 29% • Banks: 19% • Pension and insurance funds: 12% • Others: 3%

Second Green Bond – largest Swedish krona Green Bond on record

On 18 October 2016, Kommuninvest successfully launched a 4 year 0.000% SEK 5 billion Green Bond transaction. This was the second transaction on the back of Kommuninvest's green lending product and the first transaction denominated in SEK, targeting Swedish municipalities and corporations. The transaction also constituted the largest ever Green Bond issued in Swedish krona, breaking the previous record set by a SEK 2.5 billion dual tranche deal issued by Fortum Värme in May 2015.



The short 4-year first SEK “Green Bond benchmark” from Kommuninvest was announced on the afternoon of Monday 17 October 2016 and immediately generated positive feedback from investors generating IOI’s in excess of SEK 5 billion. With stable market conditions on Tuesday morning and IOI’s in excess of SEK 8.5 billion, books were opened for a SEK 3 – 5 billion Green Bond transaction with guidance unchanged at mid-swaps plus 13 bps area in line with the issuer’s secondary market SEK curve. The order book grew steadily throughout the morning and reached SEK 13 billion by 10.30 a.m. Swedish local time. The transaction was priced at 14.15 p.m. with a level tightened to mid-swaps plus 11 bps and a transaction size set to SEK 5 billion. The bond was priced 2 bps below Kommuninvest’s secondary SEK curve.

A large portion of the bonds was placed with investors for whom environmental and social aspects were a key factor in their decision to invest in the transaction; these included Alecta, AP3, Danske Capital, Folksamgruppen, Nordea AM, KfW, SBAB, Sjunde AP Fonden, SPP Storebrand and Öhman.

The distribution by investor type and geography was as follows; 71% was placed with pension and insurance funds, 11% with fund managers, 9% with banks and 9% with central banks and other investors. Geographically, 90% of the investors were Swedish, 3% were from other Nordic countries, and 7% from the rest of Europe.

Upon issuance of the SEK Green Bond, Kommuninvest had built up a Green Loan book amounting to SEK 14.5 billion (USD 1.6 billion), committing funds to some 60 investment projects in 40 Swedish municipalities and county councils/regions. Renewable energy and green buildings accounted for the vast majority of projects in the portfolio, comprising 43% and 39% of the portfolio, respectively.

Some of the projects financed by the Green Bond include the new Högås school in Knivsta, Sweden’s first school built as a passive house, a green coal pilot facility in Umeå, and an optical waste sorting facility in Halmstad.

Table 3.3: Summary terms and conditions


Total amount	SEK 5 billion	
Rating	Aaa (Moody's) / AAA, stable outlook (S&P Global Ratings)	
Issuance date	25 October 2016	
Maturity date	5 May 2020	
Coupon	0.000% (annual)	
Issue price	100.495%	
Re-offer spread	mid-swaps +11 bps	
Underwriter	SEB and Swedbank	
Investor base	By geography: <ul style="list-style-type: none"> • Sweden: 90% • Europe ex-Nordics: 7% • Nordic ex-Sweden: 3% 	By investor type: <ul style="list-style-type: none"> • Pension and insurance funds: 71% • Fund managers: 11% • Banks: 9% • Central banks and others: 9%

Fourth Green Bond transaction

On Monday, April 23rd 2018, Kommuninvest (Aaa/AAA), the Swedish local government debt office, issued a new SEK 3bn, long-3 year Green Bond. The issue has a final maturity of 15th December 2021, pays an annual fixed coupon of 0.125% and has an issue price of 99.964%, with a corresponding spread of Mid Swaps minus 14 bps. Danske Bank, Nordea, and SEB were mandated as Joint Lead Managers.

This was Kommuninvest's fourth Green Bond and the issuer's second foray into SEK-denominated Green benchmarks, and the second largest green bond YTD 2018 in the Swedish Krona market. The swift and successful execution of the transaction was a testament to Kommuninvest's commitment to green issuance and subsequent support from the broader Green and global investor community.

The announcement of the SEK Green Bond mandate on Tuesday, April 17th came on the heels of the release of Kommuninvest's updated Green Bond framework in late March, and Green Bonds Impact Report in mid-April. An update followed a day later communicating size and maturity expectations as well as timing for global investor calls to be hosted ahead of launch.



A presentation to Swedish investors was held on Wednesday, April 18th, and two global investor calls were both held on Thursday, April 19th. Guidance of Mid Swaps minus 13 bps was announced simultaneously as books were opened the morning on Monday, April 23rd.

The order book gained momentum swiftly, such that just 30 minutes after books opened, the first update informed investors that books were above SEK 3bn. The book continued to build to SEK 4.5bn, at which point a quality book and solid demand allowed for revised guidance of mid swaps -13/-15 (WPIR) at 11:00 am CET.

With the book continuing to build after revised guidance was announced, and with a continued high quality in the orderbook, spread was set at Mid Swaps minus 14 bps, 1 bp inside of guidance and 3.0 bps through Kommuninvest's fair value curve, while size was set at SEK 3bn. The deal priced at 3:00 pm CET with a coupon of 0.125% p.a. and a re-offer yield of 0.135%.

Nearly 90% of bonds were placed with the so-called "Green investor community", i.e. those who have expressed a dedication to Green and Sustainable investments, including Affirmative Investment Management, AI Pension, AP7, Blackrock, Danske Capital Folksamgruppen, Länsförsäkringar Bank, Nordea fonder, Raiffeisen KAG, SEB Fonder, Swedbank Robur, PostFinance AG samt Öhman fonder.


Regarding distribution, a large majority of bonds were placed into Sweden (96%). The remaining bonds were dispersed between Switzerland, the UK, Austria, and Italy. Fund managers took roughly half of total issue size, while pension funds and insurance bought 46%.

> Kommuninvest Green Bond issuance process

Eligible loans

"Eligible Loans" means a selected pool of loans from Kommuninvest, which finance, in whole or in part, Eligible Projects in member municipalities/county councils that primarily promote the transition to low carbon and climate resilient growth.

Eligible Projects (discussed further below) are expected to be part of the systematic




environmental work in the applicant municipality/county council and to be related to the national or regional environmental goals and target (a) mitigation of climate change, including investments in low-carbon and clean technologies, such as public transportation and renewable energy programmes and projects (“Mitigation Projects”), (b) adaptation to climate change, including investments in climate-resilient growth (“Adaptation Projects”) or (c) to a smaller extent (max 30% of issued volume) projects which are related to environmental management in other areas than climate change.

While Kommuninvest allows for financing of both new and completed projects, the ambition is to use the majority of the Green Bonds proceeds to new projects (planned, ongoing or finalised within nine months before the time of issuance). The actual distribution between new and completed projects will be available to investors in the annual letter (see section Transparency below).

Eligible Project categories

Kommuninvest started to provide Green Loans to its clients in June 2015. Green Loans can be approved for Swedish local government investment projects that promote the transition to a more sustainable society. The eligible project categories are:

- **Renewable energy:** Production and supply of renewable energy – such as wind, wave, solar, hydro, geothermal, bioenergy and biogas from waste – or conversion from fossil to renewable energy.
- **Energy efficiency:** Energy efficiency in energy systems – such as district heating/cooling, energy recovery and storage and smart grids.
- **Green buildings:** These can include:
 1. New buildings with at least 25% less energy use per square metre and year than required by applicable regulations (Swedish Building Regulations [BBR 21]) and preferably a minimum certification of either 1) LEED gold, 2) BREEAM very good, 3) Environmental Building (Miljöbyggnad silver), 4) Svanen, 5) EU Green Building or 6) Feby-12 (Mini-energy building).
 2. Energy efficiency measures in existing buildings, activities and operations leading to at least 25% less energy use.
 3. Major renovation of buildings leading to a reduced energy use per square metre per year of at least 35% or compliance with applicable regulations for new buildings (Swedish Building Regulations [BBR 21]).


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- **Public transportation:** This includes trains, underground, trams, buses and infrastructure supporting public transportation, as well as investments in sustainable transportation (such as infrastructure for bicycles, pedestrians, electrical vehicles and logistics solutions with reduced environmental impact for transportation of people and cargo).
 - **Waste management:** Reducing the amount and harmful impact of waste, and increasing the re-use and recovery of materials and energy.
 - **Water management:** This includes water infrastructure, wastewater management and cleaning facilities.
 - **Adaptation** to climate change; these can be measures relating to buildings, infrastructure or sensitive surroundings.
 - **Environmental management** in areas other than climate change: This can include nature conservation, biodiversity measures, sustainable agriculture, and improving ecosystem services.

Note: The above outlines the framework adopted in January 2016. In March, 2018 a revised Green Bonds framework was adopted, principally adjusted to accommodate new Swedish building regulations.

While Kommuninvest allows for financing of both new and completed projects, the ambition is to use the majority of the Green Bonds proceeds to new projects (planned, ongoing or finalised within nine months before the time of issuance).

All projects must meet pre-determined sustainability criteria as set out in Kommuninvest's Green Bonds Framework, including:

1. Promote the transition to sustainable society.
2. Be part of the systematic environmental work in the applicant municipality or county council/region.
3. Be related to Sweden's national environmental objectives, or to regional environmental goals.
4. Target either mitigation of climate change, adaptation to climate change, or be a project related to environmental management in other areas than climate change.



An academic independent third party, Cicero, has carried out a second opinion¹⁰⁶ on Kommuninvest's Green Bond Framework.

Aggregator for green investment projects


The Kommuninvest Green Bonds Framework aggregates funding needs in a similar fashion to Kommuninvest's normal operations. The main differences are that Green Loan applications must be approved according to both sustainability and credit criteria, and that Green Loans are approved for specific projects, rather than for general investment purposes.

The aggregation process comprises the following four steps:

1. Investment projects are initially selected and verified by the environmental and treasury functions of Kommuninvest's member municipalities/county councils.
2. Projects are then screened and initially approved by Kommuninvest's Lending department from a credit perspective. They are not yet Green Loans, however.
3. On a quarterly basis, each loan application is reviewed and finally approved by consensus vote in the Kommuninvest Green Bonds Environmental Committee for compliance with sustainability requirements as set out in the Kommuninvest Green Bonds Framework. The Committee, whose members include climate experts from Sweden's local government sector, is expected to ensure that the projects approved for Green Loans can stand up to external scrutiny.
4. Green Bonds are issued with a commitment to allocate bond proceeds to the portfolio of Eligible Loans. Kommuninvest undertakes not to issue more Green Bonds, in aggregate, than the total amount of disbursements to Green Loans. This is a) to ensure that bond proceeds do not exceed actual disbursements to projects; and b) that there is a buffer for possible loan prepayments or loans losing their green credentials.

By combining single Green Loans into an aggregated Portfolio of Green Loans, Kommuninvest can enable and empower the smaller municipalities with green financing opportunities. This would otherwise not be feasible for a number of reasons, primarily due to insufficient volume and lack of skills and resources. The smallest

106 The 2nd party opinion is available at [Kommuninvest's green bond webpage](#) (see bottom of page).



project funded by Kommuninvest has a Green Loan amounting to SEK 5 million (USD 0.6 million). The largest project is for SEK 2.5 billion (USD 300 million).

Earmarked account

An amount equal to the net proceeds of the issue of the notes will be credited to a special account that will support Kommuninvest's lending for Eligible Loans. As long as the notes are outstanding and the special account has a positive balance, at the end of every fiscal quarter, funds will be deducted from the special account and added to Kommuninvest's lending pool in an amount equal to all disbursements from that pool made during such quarter in respect of Eligible Loans. An amount equal to the special account balance will be held in cash, Green Bonds, Swedish covered bonds, municipality and/or government risk with a minimum, average credit rating of A- by Standard & Poor's or corresponding credit rating by another rating agency approved by Kommuninvest.

Transparency

To enable investors to follow the development and provide insight to prioritised areas, Kommuninvest produces a Green Bonds Impact Report to investors including 1) a list of Eligible Loans/Projects exceeding SEK 25 million 2) a selection of project examples and 3) a summary of Kommuninvest's Green Bond development.

Kommuninvest encourages and promotes the use of impact analysis (ex-ante) and impact reporting (ex-post) to the largest extent possible. Impact analysis and impact reporting is required for projects encompassing fossil energy to a non-negligible extent; such projects may be approved given that they have significant positive climate and/or environmental impact.

In order to support a market development toward more harmonized impact reporting from issuers, Kommuninvest in 2016 initiated a collaboration amongst Nordic public sector issuers of green bonds. A harmonized approach benefit both issuers and investors. A joint guide on green bonds impact reporting was launched in October 2017 and Kommuninvest is committed to reporting impact in alignment with the recommendations of this position paper.

> Environmental benefits and impact

In March 2017 Kommuninvest published its first Green Bonds Impact Report, with an estimate of the environmental benefits associated with (the then) 81 Eligible Projects that had been financed with Green Bonds.

The report highlights and impact results included 27 renewable energy projects expected to result in 1.7 TWh of annual renewable energy generation (~half of the energy production of the average European coal-fired power plant). This corresponded to the avoidance of 395,730 tonnes in annual CO₂ emissions (~85,000 cars removed from the road).

In green buildings, 41 projects had been financed, expected to generate 14.8 GWh of energy savings (roughly equivalent to the energy requirements of 150,000 m² sq.m. of modern office space) and resulting in an expected annual reduction in CO₂ emissions corresponding to 2,020 tonnes (~the latest Scania truck model driving 62 times around the world).

Three projects related to energy efficiency in energy systems had been financed, expected to result in 21,510 tonnes in annual CO₂ emissions savings (~3,500 Swedish citizens becoming completely carbon neutral).


Ten projects had been financed for water and wastewater management, public transport and waste management. The impact of these projects was deemed to include:

- a reduction in harmful substances from wastewater treatment and expansion of access to municipal wastewater for additional 23,000 people (PEs);
- increased capacity of local public transport networks and 6 million car kilometres avoided;
- improved waste management and energy extraction by optical sorting.

> Wider reflections

Key challenges

As an issuer whose fundamental business model is “general investment purposes-financing”; i.e. balance sheet financing, establishing a governance framework to approve and verify projects from an environmental perspective was the main challenge encoun-



tered. While Kommuninvest previously had a framework for evaluating and monitoring clients from a credit risk perspective, it was short on environmental competence.

Its solution was to establish the Kommuninvest Green Bonds Environmental Committee, an advisory board consisting of five representatives from the environmental function of member municipalities and county councils/regions and other relevant public sector organisations, and two Kommuninvest representatives. The Committee was established in spring 2015 and held its first meeting in June 2015. All Kommuninvest Green Loan applications must be approved by the Environmental Committee, for compliance with sustainability requirements as set out in the Kommuninvest Green Bonds Framework. The Committee is also required to ensure that approved projects can stand up to public scrutiny.


Kommuninvest's view is that the governance model with the Environmental Committee has been a success. It has provided the required know-how and expertise to project selection and verification and has provided assurance to investors on the quality of the projects approved.

Benefits

Kommuninvest has identified three main benefits of issuing Green Bonds. First, it has strengthened Kommuninvest's reputation. Kommuninvest's role as an aggregator and conduit issuer for cost-efficient public sector investments has been recognized by the OECD, featuring in two reports published in 2016 in support of the G20 Green Finance Study Group, *Green Bonds: Country Experiences, Barriers and Options*¹⁰⁷ and *Progress Report to Mobilizing Institutional Investment in Green Infrastructure*¹⁰⁸. Kommuninvest was also a recipient, in November 2017, of the United Nations 'Momentum for Change' Climate Solutions Award. The Award shines light on some of the most innovative, scalable and practical examples of what is done across the globe to combat climate change.

107 http://unepinquiry.org/wp-content/uploads/2016/09/6_Green_Bonds_Country_Experiences_Barriers_and_Options.pdf

108 http://unepinquiry.org/wp-content/uploads/2016/09/11_Progress_Report_on_Approaches_to_Mobilising_Institutional_Investment_for_Green_Infrastructure.pdf



Second, because the Green Bonds are linked to local government lending – rather than specific projects – investors are not required to take on direct project credit risk. The triple-A credit quality of the Green Bonds is the same as for any other Kommuninvest bonds, with standard documentation and a second party opinion from Cicero, the climate and environmental research institute. This reduces the cost of capital required to finance the specific projects proposed by local governments.

The third is that the process reduces the transaction and due diligence costs for green investors. The “bottom-up” approach of the Green Bond Framework, whereby Kommuninvest Green Loan approval precedes Green Bond funding, provides investors with assurance on which type of projects that Green Bonds will finance, based on robust and well-defined eligibility criteria.

> Acknowledgement

We would like to thank the following individual for his contribution to this case study: Björn Bergstrand, Head of Sustainability/Senior Investor Relations Manager.

IV. Case study 2: Nafin (Mexico)

> Background

Established in 1934, Nacional Financiera S.N.C. (Nafin) is a development bank that is fully owned by the Mexican government. It provides financial support – e.g. guarantees, second-tier loans – to micro, small and medium enterprises, with the aim of diversifying and expanding Mexico's industrial base in line with national social and economic goals.

In 2009, following the adoption of the Mexican General Law to Address Climate Change, Nafin established its Sustainable Projects Division to finance environmentally friendly projects, primarily in the areas of renewable energy infrastructure and generation. Nafin strengthened its organisational structure in 2010 by establishing the Sustainable Projects Department within its Investment Banking Division.

Nafin was the first Mexican bank to grant funding to renewable energy projects and, since 2009, has played a key role in promoting private sector participation and in ensuring high standards of environmental and social performance for these projects.

In October 2015, Nafin issued Mexico's first green bond for a total amount of USD 500 million with a 5-year tenure and a coupon rate of 3.375%, with the net proceeds from the issuance of the notes to be used to finance eligible wind energy generation projects in Mexico. This bond was Nafin's first cross-border transaction in 18 years.

> About the bond

Characteristics

The bond, rated A3 (by Moody's) and BBB+ (by Fitch), has a maturity date of 5 November 2020. The bond had an issuance price of 99.822% and offers a 3.375% coupon.

The proceeds are dedicated to financing onshore wind energy projects in Mexico. Approximately 40% of the bond proceeds were allocated to refinancing existing assets with the balance allocated to new lending in the sector. As at 30 September 2016, USD 332 million had been invested¹⁰⁹.

109 www.nafin.com/portalnf/files/pdf/2016/pisofinanciero/Green%20Bond%20Report%20nov%202016.pdf

Sustainalytics provided a second opinion on the bond, confirming the bond follows the guidance provided by the Green Bond Principles, and is in alignment with its four components (the use of proceeds, the process of project evaluation and selection, the management of proceeds, and reporting). In addition, the bond was certified as a climate bond by the Climate Bonds Standard Board (part of the Climate Bonds Initiative).

Table 3.4: Details of the bond

Issuer	Nacional Financiera S.N.C.	
Issuance date	29 October 2015	
Nominal currency	USD	
Nominal value	USD 500 million	
Rating (issuer, bond)	A3 (Moody's), BBB+ (Fitch)	
Bond category	Green bond (bBullet)	
Tenure	5 years, bullet	
Coupon	3.375% per annum	
Underwriter	Credit Agricole Securities (USA) Inc. Merrill Lynch, Pierce, Fenner & Smith Inc. Daiwa Capital Markets America Inc.	
Secondary market performance	In December 2016, the bond traded at a price of 100.473% and a yield of 3.243%.	
Issuance price	99.822%	
Subscription level	Approximately five times the nominal value of the bond.	
Investor base	By geography: <ul style="list-style-type: none"> • US: 40% • Europe: 32% • Latin America: 15% • Asia: 13% 	By investor type: <ul style="list-style-type: none"> • International financial institutions and asset managers: 65% • Insurers: 16% • Pension funds: 15% • Banks: 4%
External review	<ul style="list-style-type: none"> • Second opinion provider: Sustainalytics¹¹⁰ • Climate Bond Certification: Climate Bonds Standard Board¹¹¹ (part of the Climate Bonds Initiative) 	

110 www.nafin.com/portalfn/get?file=/pdf/dosmilquince/Piso_Financiero/NAFIN%20Green%20Bond%20Framework_Sustainalytics%20Opinion.pdf

111 www.nafin.com/portalfn/get?file=/pdf/dosmilquince/Piso_Financiero/CBI_letter-approving_certification_Nafin.pdf

Book runners

Nafin selected three commercial banks, all of whom it had worked with previously, as book runners. CACIB was chosen as the lead subscribing institution due to its being the top green issuer in the market at the time. Bank of America Merrill Lynch was added because of the interest shown by green investors in North and Latin America, and Daiwa was chosen to meet the demand in Asia and to cover major green investors from around the globe. All three institutions looked after new demand from international financial institutions and from green investors who were not traditional buyers of Latin America.


Marketing

The marketing effort for the issuance began on 6 October 2015, with a roadshow (meetings and presentations) targeting green investors in New York and Europe. It continued on 22 October 2015 with a 2-team roadshow focusing on quality investment grade accounts, local pension funds and green investors in Asia, Europe and North America. Green investors were a particular focus in each region as Nafin wanted to use the bond to broaden its investor base as much as possible.

Market performance

There was significant demand for the bond; by close, the book runners had built a USD 2.5 billion book from more than 60 investors including high quality US investment grade accounts, local pension funds, international financial institutions and green investors. All major regions were represented in the book: 40% U.S., 32% Europe, 15% Latin America and 13% Asia. International financial institutions and asset managers accounted for the majority of the book (65%), with insurers (16%), pension funds (15%) and banks (4%) making up the remainder.

Nafin identified a number of reasons for the high level of investor interest. The first was the global roadshow, which helped to introduce Nafin as a healthy sovereign institution, backed by the Mexican government and committed to the government's environmental goals. The second was the fact that the bond was a certified green bond, with transparency on the use of proceeds, making the bond attractive to green investors. The attractiveness to green investors was further enhanced by Nafin being



the first issuer of a green bond in Latin America. The third was the high level of market interest at the time in debt from Latin American issuers.

The level of demand for the bond, coupled with the fact that green investors appeared to be less sensitive to price, allowed Nafin to tighten the spreads offered by as much as 5 basis points. Nafin noted that, prior to coming to market, its book runners had suggested that the green bond labelling would not provide a significant advantage relative to conventional bonds.

Nafin encountered two challenges when issuing and marketing the bond. The first was ensuring that the projects in the portfolio were eligible green assets, i.e. that they would contribute to climate change mitigation and sustainable development. The second was ensuring that Nafin's reporting and revenue management processes met the requirements of the Green Bond Principles, in terms of the transparency of the fund's investment processes, the tracking of the fund's investments and the reporting on the investments made. Nafin addressed these challenges by hiring Sustainalytics and the Climate Bonds Standards Board to review its investment portfolio to ensure that Nafin was following the requirements of the Green Bond Principles (use of proceeds, the process of project evaluation and selection, management of proceeds and reporting).

The key lesson Nafin drew from the process was the importance of transparency to investors; specifically, the more information that is provided about how the bond's proceeds are to be invested, the better the pricing of the bond. In that context, the second opinion and the certification were important in reaffirming Nafin's commitments to transparency and to the Green Bond Principles.

Environmental benefits and impact

As of 30 September 2016, Nafin had invested USD 332 million of the money raised across eight wind projects. These projects had a total installed capacity of 1,198 MW (see Table 3.5) and delivered greenhouse gas emissions reductions of 1.76 million tonnes of carbon dioxide (CO₂) per year; of this 244,801 tonnes per year corresponded to Nafin's investments¹¹².

Table 3.5: Nafin's funded wind energy projects (as at 30 September 2016)¹¹³


Project Name	Factor (tons of CO ₂ emissions reduced per USD 1 million invested [t CO ₂ / USD million])	Nafin investment (USD million)*, **	Project total reduction of greenhouse gases (t CO ₂)	Nafin reduction of greenhouse gases (t CO ₂)
Wind Farm Coahuila	904	54.8	317,209	49,547
Wind Farm Zacatecas	451	58.5	153,088	26,384
Wind Farm Baja California	535	37.9	170,062	20,288
Wind Farm Nuevo León 1	631	34.6	205,203	21,817
Wind Farm Nuevo León 2	631	34.4	205,203	21,739
Wind Farm Oaxaca 6	917	43.9	213,378	40,242
Wind Farm Oaxaca 5	1,011	34.9	262,751	35,345
Wind Farm Oaxaca 4	891	33.0	233,628	29,439
Total	5,973	332.1	1,760,524	244,801

* Using the FX rate of MXN 19.3776 per USD 1, the exchange rate published by Banco de Mexico on September 30, 2016.

** Considering outstanding balance as of September 2016. Figures in MXNmm provided by Nafin.

112 The reduction of greenhouse gases was calculated using the methodology of the Centro de Estudio de Tecnologías Energéticas Renovables, based on an annual electricity emission factor of 0.454 tCO₂/MWh. <https://www.nafin.com/portalfn/files/pdf/2016/pisofinanciero/Green%20Bond%20Report%20nov%202016.pdf>

113 <https://www.nafin.com/portalfn/files/pdf/2016/pisofinanciero/Green%20Bond%20Report%20nov%202016.pdf>



Despite the clear environmental benefits associated with wind energy, Nafin is clear that it is not enough simply to have projects (in this case, renewable energy projects) that have positive environmental impacts. It is also important that the social or environmental impacts associated with such projects are identified, assessed and properly managed.


In relation to social issues, Nafin recognises the importance of having experienced local advisors, specialising in social issues, who can listen to people, allow them express their concerns, and help develop solutions that address everyone's needs. Common concerns raised by local communities include visual impacts and noise, the impacts on local ecosystems and waterbodies and potential disruptions to agriculture. In addition, local communities often want to share in the economic benefits of these projects. On several of the wind farm projects that Nafin has been involved with, the developers worked with local communities to design employment-generation programmes, support the construction of schools, accelerate the development of local infrastructure, create spaces for physical and social entertainment like soccer fields, and provide affected property owners with a fixed and guaranteed income. This work with communities helped build local support for the projects, which were in turn recognised as important drivers of local economic development.

Nafin sees that it is equally important to have environmental experts who are able to investigate all of the ecological impacts, mitigate negative impacts and provide appropriate compensation for any losses or adverse impacts that might result from the project. For flora and fauna impacts, for example, this may involve relocating certain flora and fauna, or it may involve providing ecological offsets at another locations. For agricultural activities, it is generally possible with good planning and dialogue with local farmers for activities (e.g. planting, harvesting) to carry on with minimal if any disruption.

> Wider reflections

The case for certification

The direct costs of certification were a total of USD 30,000, comprising USD 25,000 for the second opinion from Sustainalytics and USD 5,000 for the certification to the Climate Bonds Standard. In addition, some management time was required to collate information and liaise with the certification bodies.



Nafin's believes that the costs of the certification and of the second opinion have been significantly outweighed by the benefits. It has identified three benefits as being of particular significance:

- As the first green bond in Latin America to be Climate Bond Certified, Nafin was able to price the bond at the lower end of guidance; it estimates that it was able to reduce the price by approximately 5 basis points.
- The green bond boosted Nafin's profile, both at the time of issue and later. For example, Nafin has received three significant awards for the transaction: the first Green Bond-Mexico awarded by Climate Bonds Initiative, Bond of the Year SSA (Sovereigns, Supranationals and Agencies) awarded by Environmental Finance and Latin American Green/SRI Bond Deal of the Year awarded by Global Capital.
- The green bonds certification process meant that green investors did not need to do as much due diligence on how the proceeds of the bond would be used (i.e. the transaction and research costs for these investors were reduced).

The importance of internal capacity and support

The issuance process required significant coordination across the organisation. It increased the time demands on key staff and required crystal clear communication. One of the key lessons for Nafin was the importance of senior management support for the certification process. The commitment of senior managers, starting with Nafin's General Director, Jacques Rogozinski, and continuing with its Board of Directors, was successfully transmitted to all levels of the institution.

Nafin also pointed to the importance of having technical capacity and expertise. For example, the Green Bond Principles introduce a series of specific, and relatively complex, requirements for issuers (on the use of proceeds, on the process for project evaluation and selection, on the management of proceeds, on reporting). Building understanding of these requirements takes time but is necessary in order for the certification process to run smoothly. Nafin worked with the Green Bond Principles for a number of years before releasing its bond and was, therefore, very familiar with requirements of the standard. This meant that the certification process itself was very straightforward and did not result in any significant changes to the projects or to the bond itself.

Wider Benefits

Nafin has identified two wider market benefits as a result of its green bond. The first has been that, as a consequence of its positive experiences, Nafin decided to issue a second green bond. In August 2016, and in line with Nafin's mandate to develop domestic capital markets and to foster the green bond market in Mexico, Nafin issued a MXP 2,000 million 7-year green bond with a coupon of 6.05%. This was the first green bond denominated in Mexican Pesos, and the first bond to be listed in the Mexican Stock Exchange segment dedicated to green bonds.

The second is that the positive publicity around Nafin's green bond has catalysed interest among other Latin American issuers. For example, Environmental Finance has noted: "The Nafin bond seems to have kickstarted a movement in the region, with the development bank of Costa Rica recently tapping the market, and the Inter-American Development Bank securing backing from the UN's Green Climate Fund to issue asset-backed green bonds. The Mexican stock exchange is so bullish about growth of its domestic market that it earlier this year launched a platform dedicated to green bonds."¹¹⁴

> Acknowledgements

We would like to thank the following individuals for their contribution to this case study:

- Pedro Guerra Menéndez – Financial Deputy Director
- Igal Benabib Levy – Treasury Director
- Hugo Enrique Aguirre Lopez – International Treasury Sub-director
- Cesar Gabriel Espinosa Garcia – Treasury Relationship Sub-director
- Emilio Garmendia Perez Montero – International Treasury Trader
- Karla Espinosa Zayas – International Treasury Consultant
- Marisol Renteria Bravo – National Treasury Consultant

¹¹⁴ [https://www.environmental-finance.com/content/green-bonds-awards/bond-of-the-year-ssa-nacional-financiera-\(nafin\).html](https://www.environmental-finance.com/content/green-bonds-awards/bond-of-the-year-ssa-nacional-financiera-(nafin).html)

V. Case study 3: Province of Ontario (Canada)

> Background

As the first Canadian province to issue Green Bonds, Ontario continues to lead the way in establishing and developing a Canadian-dollar Green Bond market with global investor participation. Since Ontario's inaugural issue in 2014, the Province's Green Bonds have attracted investors from the United States, Europe and Asia, bringing new international buyers and, recently, international issuers to the Canadian-dollar market.

Ontario's Green Bonds capitalize on the Province's ability to raise funds at low interest rates. They serve as an important tool to help Ontario finance transit and other environmentally friendly projects across the Province. Ontario has a mature Green Bond program and expects Green Bonds to continue having an important role in the Province's annual borrowing. As the programme continues to evolve, the Province may consider issuing in other currencies, if favourable market conditions exist.

Ontario is currently the largest issuer of Canadian-dollar Green Bonds, with four outstanding green issues totalling CAD 3.05 billion. To date, a total of 16 different projects have received or will receive funding from Ontario's four Green Bond issues, with an emphasis on clean transportation and energy efficiency and conservation projects.

> About the bonds

Characteristics

Ontario has issued four Green Bonds as indicated in Table 1, for CAD 500 million, CAD 750 million, CAD 800 million and CAD 1 billion, respectively. The bond proceeds were paid into the Consolidated Revenue Fund of Ontario rather than into a segregated account. An amount equal to the net proceeds of the Green Bonds was recorded in a designated account used to track the use and allocation of funds to eligible projects.

Table 3.6: Summary terms and conditions

Issuer	Province of Ontario			
Issuance date	9 October 2014	29 January 2016	2 February 2017	5 February 2018
Nominal currency	CAD	CAD	CAD	CAD
Nominal value	CAD 500 million	CAD 750 million	CAD 800 million	CAD 1 billion
Rating (issuer, bond)	Aa2(N) (Moody's), A+ (S&P)			
Bond category	Sub-Sovereign			
Tenure	4-year	7-year	6-year	7-year
Coupon	1.75%	1.95%	1.95%	2.65%
Underwriters	BoAML CIBC HSBC RBC	BofAML BMO HSBC RBC TD	BofAML HSBC RBC TD	BofAML BMO HSBC RBC TD
Secondary market performance	Trades on Ontario Curve			
Issuance price	CAD 99.823	CAD 99.792	CAD 99.412	CAD 99.759
Subscription level	Total book size: CAD 2.4 billion	Total book size: in excess of CAD 775 million	Total book size: CAD 967 million	Total book size: in excess of CAD 1.6 billion
Investor base	By geography: <ul style="list-style-type: none"> • Canada: 83% • US: 8% • Europe, Middle East and Africa: 5% • Asia-Pacific: 4% By investor type: <ul style="list-style-type: none"> • Asset managers: 40% • Insurance, pension and corporates: 46% • Banks: 7% • Official institutions: 6% • Retail: 1% 	By geography: <ul style="list-style-type: none"> • Canada: 65% • US: 22% • Europe, Middle East and Africa: 13% By investor type: <ul style="list-style-type: none"> • Asset managers: 54% • Insurance, pension and corporates: 19% • Banks: 15% • Official institutions: 11% • Retail: 1% 	By geography: <ul style="list-style-type: none"> • Canada: 79% • US: 12% • Europe, Middle East and Africa: 7% • Asia-Pacific: 2% By investor type: <ul style="list-style-type: none"> • Asset managers: 41% • Insurance and pension: 25% • Banks: 28% • Official institutions: 6% • Retail: 1% 	By geography: <ul style="list-style-type: none"> • Canada: 75% • US: 15% • Europe, Middle East and Africa: 7% • Asia-Pacific: 3% By investor type: <ul style="list-style-type: none"> • Asset managers: 51% • Insurance: 5% • Pension: 29% • Banks: 11% • Official institutions: 4%
External review	Second opinion: CICERO ¹¹⁵			

115 www.ofina.on.ca/pdf/second_opinion_on_Ontario_Green_Bonds.pdf

Additional information (e.g. use of proceeds, option embedded, debt servicing approach, credit enhancement measures)	<p>An assurance audit by the Auditor General of Ontario verifies the amounts used for selected projects and the balance of proceeds remaining. This assurance audit is expected within a year after the issue date.</p> <p>Ontario's Green Bonds have met the standards to be included in the following Green Bond indices: Bloomberg Barclays MSCI Green Bond Index; ICE BofA Merrill Lynch Green Bond Index; S&P Green Bond Index; and Solactive Green Bond Index.</p>
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Ontario's Green Bond Framework was developed in consultation with the Center for International Climate and Environmental Research – Oslo (CICERO) and is consistent with the Green Bond Principles. CICERO also provided a Second Opinion on Ontario's Green Bond Framework¹¹⁶. In order to provide investors with an additional level of transparency and enhance confidence in Ontario's Green Bonds, the Auditor General of Ontario performs an assurance audit to confirm that Green Bond funds have been properly allocated to the projects specified and to verify the balance of proceeds remaining. The assurance audit is expected within a year after the issue date and is available in the Green Bond section of the Ontario Financing Authority website¹¹⁷.

The bonds were all issued at yields similar to conventional Ontario bonds of comparable term and size. Global offering format was used for all four issues to leverage and facilitate international investor interest and to allow a longer marketing period. It has been Ontario's practice to set its syndicate structure prior to each Green Bond issuance and to use its domestic underwriting syndicate to maximize secondary market-making.


Pricing

Ontario's inaugural Green Bond was a 4-year, CAD 500 million issue¹¹⁸. The mandate was announced early morning, London time, on 26 September 2014 to provide sufficient time for investors to review the bond information ahead of books opening. A global investor call with nearly 250 participants was conducted on 29 September 2014, and the transaction was formally announced on 1 October 2014. Books were opened

116 www.ofina.on.ca/pdf/second_opinion_on_Ontario_Green_Bonds.pdf

117 www.ofina.on.ca/greenbonds/verification.htm

118 www.ofina.on.ca/pdf/Oct9_14_G68_en.pdf



at initial price guidance in the context of Ontario's domestic Canadian-dollar benchmark curve, which was approximately +38.5 bps over CAN 1.25% (1 September 2018). Books were kept open overnight for Asian and European accounts closing at a total book size of CAD 2.4 billion. With strong oversubscription, pricing was tightened by 0.5 bps to +38 bps over CAN 1.25% (1 September 2018).

Ontario's second Green Bond was a 7-year, CAD 750 million issue¹¹⁹. On 14 January 2016, a mandate announcement was released at the opening of the Toronto market and an invitation to a global investor conference call was sent to market participants. The deal was officially announced on 21 January 2016 and books were opened with initial guidance set in the context of the Ontario Canadian-dollar domestic curve, which was in the area of +107 bps vs CAN 2.75% (1 June 2022). Interest built steadily throughout the day with order books approaching CAD 750 million at the Toronto close. Books were kept open overnight for Asian and European accounts and by the time books officially closed at 2.30 p.m. London / 9.30 a.m. Toronto, the total book size was in excess of CAD 775 million. With the strong performance of risk assets globally, pricing tightened by 4.0 bps to +103 bps vs CAN 2.75% (1 June 2022). Compared to the inaugural issue, the second issue had a larger deal size, supported by increased green project capacity. The second Green Bond was also structured with a longer tenor to provide more opportunities for Ontario to potentially re-open the issue and achieve greater liquidity.

On 26 January 2017, the Province of Ontario priced its third Global Canadian-dollar Green Bond for CAD 800 million¹²⁰. The Bond was a re-opening of its January 2013 Green Bond. A mandate announcement was released at the opening of the Toronto market on Monday 23 January 2017 and the deal was officially announced on 25 January 2017. Books were opened at a minimum size of CAD 500 million, with initial guidance set in the context of the market, which was in the area of +75 bps vs CAN 2.75% (1 June 2022). Reflecting the strong order book and some spread tightening, the final spread was set at +74.5 bps.

119 www.ofina.on.ca/pdf/Jan29_16_G72_en.pdf

120 www.ofina.on.ca/pdf/Feb2_17_G72_R1_en.pdf

On 25 January 2018, the Province of Ontario successfully priced its fourth Global Canadian-dollar Green Bond issue for CAD 1 billion¹²¹. This is the Province's largest Green Bond offering to date, and is also the largest issue to be priced in the Canadian-dollar Green Bond market. On 19 January 2018, a mandate announcement was released at Toronto market open and an invitation to a global investor presentation was sent to market participants. The deal was officially announced on 24 January 2018, and books were opened at a minimum size of CAD 500 million. The transaction was met with strong demand and the order book grew rapidly in excess of CAD 1.6 billion. The final size and spread were set at CAD 1 billion and +53.3 bps vs CAN 2.50% (1 June 2024).


Ontario Green Bond Issues: www.ofina.on.ca/greenbonds/issues.htm

Marketing

Ontario Green Bonds have favourable investment characteristics for investors (irrespective of their green features), and both green and non-green investors have participated in Ontario's Green Bond offerings. Specifically:

- Ontario Green Bonds carry the full faith and credit of the Province of Ontario. The Green Bonds rank *pari passu* with Ontario's other bonds and are payable without any preference or priority.
- The bonds also have a high level of liquidity and have yields that are in line with Ontario's other bonds of comparable size. Since Ontario's Green Bonds are direct unsecured obligations of the Province of Ontario, investors do not assume any specific risk related to the funded projects. Payments of principal and interest on the bonds will be a charge on and payable out of the Consolidated Revenue Fund of Ontario and are not tied to the revenues of any particular projects.
- The Green Bonds raise awareness of climate and environmental challenges, garner positive public relations and allow investors to support green initiatives across the Province, which can help investors fulfil their current green/ESG policies.
- Ontario's Green Bonds have met the standards to be included in the following Green Bond indices: Bloomberg Barclays MSCI Green Bond Index; ICE BofA Merrill.

121 www.ofina.on.ca/pdf/Feb5_18_G77_en.pdf



Lynch Green Bond Index; S&P Green Bond Index; and Solactive Green Bond Index. Ontario Green Bonds are also listed on the Luxembourg Stock Exchange Euro MTF and Luxembourg Green Exchange.

Sales


Over 80 accounts participated in the inaugural Green Bond issue with 85% of the deal allocated to investors with green mandates and/or signatories to the UN PRI. Investors from the US, the UK, Germany, Sweden, Switzerland, Japan, Korea and Australia accounted for 17% of the deal. As a result, Ontario added five new investors and expanded its Canadian dollar investor base by eight names. Ontario published the names of investors involved in the initial offering of Green Bonds on a voluntary basis in public documents, having first obtained the written consent of each investor. For Ontario's inaugural Green Bond, a partial list of some investors can be found in the G68 Bond Details on the Ontario Financing Authority's Green Bond website¹²².

Altogether, 52 investors participated in the second Green Bond issue. Demand remained strongly driven by investors with green mandates and/or UN PRI signatories; in total, these represented 70% of overall sales. Foreign investor participation increased from 17% to 35%, and Ontario added four new investors and broadened its investor base by four names.

Over 50 investors participated in the third Green Bond issue. Demand was largest from domestic Canadian investors highlighting the increasing number of Canadian funds with social investing mandates and needs. Investors with green mandates and/or UN PRI signatories represented over 78% of overall sales.

In the Province's fourth Green Bond issue, 71 investors participated in the trade with interest strongly driven by Asset Managers and Pensions. Ontario added eight new investors and expanded its Canadian-dollar investor base by eleven names. Demand from investors with Green mandates and/or UN PRI signatories also increased to over 85% of overall sales.

122 www.ofina.on.ca/pdf/Oct9_14_G68_en.pdf




Retail investors have been able to participate (through Canadian financial institutions) in all four of the Province's Green Bond issues. In each case, they accounted for approximately one per cent of total sales, in line with, to slightly greater than, the typical demand for Ontario's regular domestic issues.

> Environmental benefits and impact

The projects selected for Green Bond funding will mainly focus on environmentally friendly infrastructure (excluding fossil fuels and nuclear energy) across the Province that mitigate or adapt to the effects of climate change. These projects are located throughout Ontario communities and align with the Province's environmental and climate change policies.

The inaugural bond helped fund a clean transportation project, while the subsequent Green Bonds were expanded to include a basket of projects. The basket approach allows more funding flexibility should some of the chosen projects experience different spending patterns than anticipated. The following projects were selected to receive funding from the four Green Bonds, with an emphasis on clean transportation and energy efficiency and conservation:

- Eglinton Crosstown Light Rail Transit (LRT)
- York Viva Bus Rapid Transit
- GO Regional Express Rail
- Finch West LRT
- Hamilton LRT
- Hurontario LRT
- Whitby Rail Maintenance Facility
- Sheridan College Hazel McCallion Campus Expansion
- ErinoakKids Centre for Treatment and Development
- Seneca College King Campus Expansion
- Joseph Brant Hospital – Redevelopment Project Phase 1
- St. Joseph's Healthcare Hamilton – West 5th Campus
- St. Joseph's Healthcare – London (Parkwood) and St. Thomas
- Waypoint Centre for Mental Health Care
- Centre for Addiction and Mental Health – Queen Street
- Woodstock General Hospital



All four Green Bond issues help fund the Eglinton Crosstown LRT project in Toronto, the largest public transit expansion in the history of the region.

Measuring environmental impacts and benefits

Ontario uses core indicators that are widely recognized by the market for its projects and expects to adopt future impact reporting recommendations of the Green Bond Principles. Updates on the selected green projects and allocation of funds to these projects will be reported to investors in an annual newsletter on the website of the Ontario Financing Authority. Ontario's third Green Bond Newsletter was published in December 2017 and included project updates on the projects selected for the first three Green Bond issues (see Table 3.6 and Table 3.7).

Ontario's impact reporting standards are aimed at achieving best practices. Within this, it is important that projects include measurable results or other performance indicators clearly outlining the environmental benefits and features of the projects. Ontario developed an assessment tool that allows it to evaluate the environmental benefits and impacts of all potential projects, thereby ensuring that it has a consistent methodology that can be applied across all project categories.

The Province will continue to release an annual newsletter with robust information and updates on selected projects, including an overview of the process for project evaluation and selection, the total funds allocated to projects and amounts disbursed, a link to the assurance audit performed by the Auditor General of Ontario and projected environmental benefits.

Ontario has recognised the importance of being able to speak knowledgeably about the benefits of both the financial and environmental aspects of any Green Bond offering. It has therefore involved staff from Ontario's Ministry of the Environment and Climate Change to provide expertise on various environmental matters including the Province's Climate Change Action Plan, and to support Ontario in responding to environmental questions and other concerns raised by investors.

Table 3.7: Environmental impacts of clean transportation projects funded by Ontario's Green Bonds¹²³

Project name	Framework category	
Eglinton Crosstown Light Rail Transit (LRT)	<ul style="list-style-type: none">Improving access to public transit and new mobility options such as the Eglinton Crosstown will contribute to decreasing Greenhouse Gas (GHG) emissions and Criteria Air Contaminants (CACs), manage traffic congestion, and encourage mode shift from auto trips to transit trips.The transition from diesel buses to electric light rail vehicles (LRVs) will also contribute to decreasing GHG emissions.All 25 stations and stops are aiming to achieve the Toronto Green Standard Tier 1.Eglinton Crosstown maintenance and storage facility is aiming to achieve LEED Silver certification.	
GO Regional Express Rail (RER)	<ul style="list-style-type: none">The GO RER program will shift GO from a largely commuter system to a comprehensive regional rapid transit option, thereby contributing to mode shift and decreasing GHG emissions and CACs.New GO stations and facilities are aiming to achieve LEED Gold certification.Expanding and electrifying the rail network will provide a more environmentally friendly alternative to the existing diesel trains.	
York Viva Bus Rapid Transit (BRT)	<ul style="list-style-type: none">Improving access to public transit and new mobility options such as the York Viva BRT will contribute to decreasing GHG emissions and CACs, manage traffic congestion, and encourage mode shift from auto trips to transit trips.	
Finch West LRT	<ul style="list-style-type: none">Improving access to public transit and new mobility options such as the Finch West LRT, Hurontario LRT and Hamilton LRT will contribute to decreasing GHG emissions and CACs, manage traffic congestion, and encourage mode shift from auto trips to transit trips.	
Hurontario LRT	<ul style="list-style-type: none">The transition from diesel buses to electric LRVs will also contribute to decreasing GHG emissions.Rapid transit will also support intensification, the efficient use of land and mixed-use land development, which reduces the Province's carbon footprint, promotes active transportation choices, and protects natural resources.	
Hamilton LRT	<ul style="list-style-type: none">New stations and facilities are aiming to achieve LEED Silver certification.	
TOTAL IMPACT	Estimated Aggregate Greenhouse Gas Reductions across all Clean Transportation Projects (CO ₂ [or equivalent] tonnes /year)	600,000 (starting in 2031)*
	Equivalent Passenger Vehicles off the Road across all Clean Transportation Projects (vehicles /year)	128,000 (starting in 2031)*

* Source: Metrolinx Business Case Analyses. Forecast is based on currently available information and subject to change. Metrolinx is examining methods to better quantify GHG benefits and impacts associated with transit projects, including emissions reductions resulting from reduced auto usage (modal shift) and transit vehicle electrification.

123 www.ofina.on.ca/pdf/2017_ontario_green_bond_newsletter_en.pdf

Table 3.7:
Environmental
impacts of energy
efficiency &
conservation
projects funded by
Ontario's Green
Bonds¹²⁴

Project name	Estimated Energy Savings (kWh / year)	Estimated Greenhouse Gas Reductions (CO2 [or equivalent] tonnes / year)	
ErinoakKids Centre for Treatment and Development	At this time, this project has not yet reached substantial impact reporting data is not yet available.		
Sheridan College Hazel McCallion Campus Expansion	660,000	33	
St. Joseph's Healthcare Hamilton – West 5th Campus	15,000,000	3,568	
St. Joseph's Healthcare London (Parkwood) and St. Thomas	6,600,000	3,269	
Waypoint Centre for Mental Health Care	540,000	27	
Woodstock General Hospital	3,134,600	2,203	
Centre for Addiction and Mental Health – Queen Street	20,000,000	1,000	

> Wider reflections

Resources

Ontario’s preparation for its inaugural Green Bond took longer and was significantly more extensive than that required for more traditional bond markets. However, it has found that there is a very supportive community of experienced Green Bond issuers who will actively mentor and support new Green Bond participants.

The market for green bonds


Ontario has seen encouraging signs of growth in the Canadian-dollar space, with new issuers and investors coming into the market, mirroring the global market expansion in Green Bonds. The credibility of Green Bonds is an important issue for the market

124 www.ofina.on.ca/pdf/2017_ontario_green_bond_newsletter_en.pdf

	Equivalent Passenger Vehicles Off the Road (vehicles / year)	Estimated Water Savings (litres / year)	Equivalent Water Saved per Household (Ontario households / year)	Other Environmental Benefits
completion for all three sites (Brampton, Mississauga, and Oakville) and therefore				Targeting LEED Silver certification
	7	-	-	Targeting LEED Silver certification
	754	7,100,000	37	LEED Gold Certified
	691	8,700,000	45	LEED Gold Certified
	6	2,800,000	14	LEED Gold Certified
	465	-	-	LEED Silver Certified
	220	4,300,000	22	LEED Gold Certified

as a whole. One way to address this is to obtain third party certification, which is also considered beneficial when trying to reach the broadest number of green investors. Ontario has also noted that the rapid growth in Green Bonds issuance has also led investors and indices to closely scrutinise the credibility of the Green Bond issuance process.

Ontario sees Green Bonds as offering a variety of benefits beyond raising capital for sustainability-related activities. It sees these benefits as including raised investor awareness of climate and environmental challenges, positive public relations and media attention and enabling investors to support green initiatives across the Province.



The Green Bond program is high profile within the Ministry of Finance and has created opportunities to develop intra-governmental collaboration with the Ministry of the Environment and Climate Change, Ministry of Health and Long-Term Care, Ministry of Children and Youth Services, Ministry of Advanced Education and Skills Development, Ministry of Transportation and Metrolinx.

The importance of investor engagement

Ontario has continued to ensure its processes reflect industry best practices and align with internationally recognised standards. Ontario's Green Bond Framework was developed in consultation with the Center for International Climate and Environmental Research – Oslo (CICERO), and its programme aligns with the Green Bond Principles (GBP). In March 2016, the Province of Ontario became a member of the GBP, which are maintained by the International Capital Market Association. In late 2016, Ontario undertook Green Bond targeted Investor Relations initiatives to New York, Western Canada (Vancouver, Victoria, Winnipeg), Toronto and Montreal. It sees the feedback and recommendations it receives from investors as important considerations in future Green Bond issues. For example, in response to investor feedback, exempt lists were introduced for the second Green Bond issuance and, also in response to investor feedback, the Province may consider issuing Green Bonds in other currencies in the future.

Dealer engagement was essential to the success of Ontario's Green Bond program. Ahead of the first Green Bond, twelve dealers in the Province's domestic syndicate were asked to present to the Ontario Financing Authority's Funding team on the green market both globally and domestically. This approach meant that all of the largest dealers in Canada were up to speed on developments in the Green Bond market. Involving the full syndicate in the deal has led to a broad depth of trading support for the bond since it was issued. While there was some concern that a small, one-off issue in an unconventional term could be "orphaned" and end up trading wide of Ontario's benchmark curve, the opposite has been true.

Public leadership is important

The Province's inaugural Green Bond was mandated by the Premier of Ontario, through a very public appearance. One benefit was that, when reaching out to other government ministries, agencies and departments, it was easier to get their attention and secure their involvement with this initiative. One such partnership was with Metrolinx, an agency of the Government of Ontario created to improve the coordination and integration of all modes of transportation in the Greater Toronto and Hamilton Area. By selecting the Eglinton Crosstown LRT as the first project to be funded by Green Bond proceeds, Ontario had the support of Metrolinx in taking the Province's Green Bond initiative from start to successful completion.

> Acknowledgements

We would like to thank the following for their contribution to our Green Bond Program:

- SEB
- CICERO
- Ministry of the Environment and Climate Change
- Ontario's Ministries and Agencies
- Auditor General of Ontario
- Green Bond indices listing Ontario's Green Bonds
- All banks involved in the process

We would like to thank the following individuals for their contribution to this case study:

- Serena Ly, Senior Advisor, Investor Relations, Ontario Financing Authority
- Elizabeth Wallace, Senior Manager, Funding & Foreign Exchange, Ontario Financing Authority

VI. Case study 4: Suzano Pulp and Paper (Brazil)

> Background

Suzano Pulp and Paper S.A. (Suzano Papel e Celulose) is a forestry-based Brazilian company. It is the second largest producer of eucalyptus pulp in the world and the fifth largest producer of market pulp.

In July 2016, Suzano issued a USD 500 million green bond to finance projects focused on sustainable forestry, conservation, water management, energy efficiency and renewable energy developed by Suzano in Brazil. The bond, issued through Suzano's wholly-owned trading company Bahia Sul Holdings, had a 10-year tenure and a coupon rate of 5.75%. The bond was the second green bond issued in the Brazilian market, and is believed to be the first forestry-related green bond issued outside of Scandinavia.

> About the bond

Characteristics

The bond, rated BB+ (by both Moody's and Fitch), has a maturity date of 14 July 2026. The bond had an issuance price of 99.065% and offers a 5.75% coupon. The notes were registered by Suzano on the Luxembourg Stock Exchange for trading on the Euro MTF Market. The offer was intended only for US investors who are qualified institutional buyers (QIBs, within the meaning of rule 144A under the US Securities Act) or for persons outside the US.

The bond was a standard structure fixed income issue. Its notable point of difference was that the proceeds would be allocated to finance investments in eligible green projects in Brazil.

Sustainalytics provided a second opinion confirming the bond's alignment with the four components of the Green Bonds Principles (the use of proceeds, the process of project evaluation and selection, the management of proceeds, and reporting). Suzano decided to obtain this certification in order to enhance the bond's credibility with and attractiveness to investors, in particular new investors in Suzano's debt.

Table 3.8: Details of the bond

Issuer	Bahia Sul Holdings GmbH
Guarantee	Suzano Papel e Celulose SA
Issuance date	14 July 2016
Nominal currency	USD
Nominal value	USD 500 million
Rating (issuer, bond)	BB+ (S&P), BB+ (Fitch)
Tenure	10 years bullet
Coupon	5.75% per annum
Underwriters	<ul style="list-style-type: none"> • BB Securities • Bradesco • BTG • Itau • JP Morgan • Santander
Secondary market performance	From issuance in July 2016 through to the beginning of November 2016, the bond traded at an average price of 100.809% and an average yield of 5.654%. In the beginning of November 2016, following the election of Donald Trump as US President and the rise in US Treasury 10 year rates, the bond started trading below 100%, with an average price of 96.515% price and a 6.238% yield. The bond subsequently rallied, closing 2016 trading at a price of 97.288% and a yield of 6.13%.
Issuance price	99.065%
Subscription level	Approximately three times the nominal value of the bond.
Investor base	<p>By geography:</p> <ul style="list-style-type: none"> • US: 67% • Europe: 30% • Others: 3% <p>By investor type:</p> <ul style="list-style-type: none"> • Asset/fund managers: 83% • Pension funds: 6% • Hedge funds: 3% • Others: 8%
External review	Second opinion: Sustainalytics ¹²⁵

125 www.sustainalytics.com/sites/default/files/sustainability_bond_framework_and_second_opinion_-_suzano_papel_e_celulo....pdf

Book runners

JP Morgan and Banco Santander were the co-global coordinators and book runners on the transaction. These banks were chosen because of their international distribution capabilities, which resulted in a high quality book for the bond.

Marketing

In the first half of 2016, Suzano conducted a non-deal roadshow with potential investors in Europe and the United States. The aim was to test the international market demand for the company's credit risk, and to gain insights into investor perceptions of green bonds. The roadshow included face-to-face meetings in the United States, as well as global calls. For these meetings and conference calls, Suzano had dedicated teams focusing on global fixed income investors and on green bond investors.

The deal roadshow focused on investors in the United States and Europe, with a particular focus on fixed income investors interested in green bonds or in sustainability-related investments more generally. The key selling points for green investors were:

- Suzano's commitment to environment and social responsibility, and its previous track record of managing the social and environmental impacts of its projects.
- The high level of information available about Suzano and the "Suzano Way" of conducting business, including reports such as the annual Sustainability Report¹²⁶.
- The certifications for its forest areas from FSC and Cerflor (PEFC), which provide tangible evidence of its commitment to high standards of environmental performance.
- The bond's alignment with the Green Bond Principles, confirmed by the second opinion assurance provided by Sustainalytics.
- Well-defined processes for identifying projects, managing proceeds and reporting, with these reviewed annually by an environmental consultant and an external auditor.

126 <http://ri.suzano.com.br/the-company/sustainability>

Market performance

There was significant demand for the bond, with total demand exceeding USD 1,500 million. The major regions represented in the book, reflecting the marketing focus, were the United States and Europe.

Suzano identified three reasons for the high level of investor interest. First, the bond was one of the first green bonds in Brazil, and the first Brazilian green bond to be issued in US dollars. Second, the bond was the first issuance that Suzano had made in international markets since 2010 (i.e. the bond was Suzano's comeback in international markets). Third, the yield was higher than that offered for most developed country companies.

Pricing

The bond had an issuance amount of USD 500 million, with a maturity date of 14 July 2026. The book-building process established the 5.75% coupon and a 5.875% yield, which will be paid twice a year starting from January of 2017.

Challenges during the process

The international scenario at the time of the issuance was extremely complex because of the "Brexit" vote on 23 June 2016. Suzano closely monitored the markets in the aftermath of the vote and, once it was satisfied that it could successfully issue the bond, it was able to complete the issuance process in a quick and effective manner. The fact that the issuance process was completed within a month is testament to the efforts of the entire company, in particular the agility and responsiveness of Suzano's legal team.

> Environmental benefits and impact

The Suzano green bonds proceeds will be allocated to one of six project categories as set out in Table 3.9.

Table 3.9: Use of proceeds and impact metrics of Suzano's green bond

Theme	Use of proceeds criteria	Key Performance Indicators (KPIs)
Sustainable Forestry	Sustainable management of forests that comply with international and national standards such as FSC, Cerflor (PEFC) or equivalent certification.	<ul style="list-style-type: none"> Carbon dioxide (CO₂) emissions avoided through planted forests Continued maintenance of FSC, Cerflor (PEFC) or equivalent internationally recognized certification
	Restoration of native forest cover from degraded lands.	<ul style="list-style-type: none"> Total land area with restoration in progress (hectares)
Conservation	Maintenance and development of conservation areas; protection of native plants and animal species and biodiversity.	<ul style="list-style-type: none"> Total leased and owned land area with conserved native vegetation (hectares) Total leased and owned land area with conserved native vegetation/total leased and owned land area (percent) Total leased and owned land area with conserved native vegetation/total leased and owned planted land area (percent) Number of high conservation value areas (HCVAs) identified and maintained Number of species found in HCVAs Number of beneficiaries of environmental education programs Number of ecotourists at Parque das Neblinas Number of research studies developed at Parque das Neblinas
Water Management	Development of technologies and systems to increase quality of treated waste water, increase water reuse, and reduce water consumption.	<ul style="list-style-type: none"> Reduction in fibre content in effluent (mg/L or percent) Reduction in Chemical Oxygen Demand or Biochemical Oxygen Demand (mg/L or percent) m³ of water saved, reduced, or reused
Energy Efficiency	Projects that increase energy efficiency, including through reduction in fossil fuel consumption.	<ul style="list-style-type: none"> kWh saved/reduced Tonnes of fossil fuel saved/reduced CO₂ emissions avoided
Renewable Energy	Substitution of fossil fuels with renewable sources and/or generation of energy from renewable sources.	<ul style="list-style-type: none"> Tonnes of fossil fuel saved/reduced kWh produced CO₂ emissions avoided

> Wider reflections

Market risks

Both Brexit and recent corruption cases involving Brazilian companies and have created uncertainty and have resulted in international investors being more cautious about investing in Brazilian companies and Brazilian assets. Suzano's view is that events confirm the importance of operating to high standards and with high levels of transparency. In that context, the second opinion from Sustainalytics confirming the bond's alignment with the Green Bond Principles provided tangible external evidence of Suzano's commitment to high standards of environmental performance.


The case for assurance

Suzano's view is that the costs of assurance were not material, and were significantly outweighed by the benefits. The assurance increased the level of investor interest in Suzano's bond, and was an important factor in attracting green investors, many of whom had not previously invested in Suzano's debt. Reflecting on the underwriting process, Marilyn Ceci, Managing Director and Head of Green Bonds at JP Morgan commented that the offering "...brought many first-time investors to both Suzano Papel e Celulose and green bonds"¹²⁷. The assurance also meant that potential investors could reduce the amount of due diligence they needed to do on the environmental characteristics of the projects being funded.

The implications of assurance

Suzano's long-standing commitment to social and environmental responsibility meant that it had most of the systems and processes it needed to comply with the Green Bond Principles. The only changes it needed to make to its normal processes were the preparation of an annual report on how it had used the proceeds from the bond, the commissioning of an external auditor to form that the bond proceeds had been allocated to qualifying eligible projects and the reporting of KPIs (key performance indicators) for each project category.

127 <https://www.environmental-finance.com/content/news/brazilian-paper-company-issues-500m-green-bond-for-forestry-projects.html>.



However, the certification process did have some specific implications for Suzano and required extensive discussions with the banks and with the second opinion provider.

The key challenges were:

- Identifying appropriate projects to be funded with the proceeds of the funds. Projects needed to meet the Green Bonds Principles eligibility criteria, be of reasonably long maturity (given that the bond was a 10-year issue) and have benefits through the lifetime of the bond.
- Developing KPIs that enable the environmental benefits of the projects to be reported.
- Demonstrating the relationship between the environmental benefits achieved and the investment made, and being able to demonstrate the added value of investing in sustainable actions and how these investments contribute to the success and sustainability of Suzano's business.

> Acknowledgements

We would like to thank the following for their contribution to this bond issuance:

- All the banks involved at the process
- Sustainalytics
- Linklaters LLP
- Cleary Gottlieb Steen & Hamilton
- Pinheiro Guimarães Advogados
- KPMG Auditores Independentes
- All areas of Suzano involved at the project

VII. Case study 5: World Bank (IBRD)

> Background

The World Bank (IBRD) is a leader and pioneer in the green bond market. The World Bank has issued almost USD 11 billion equivalent in green bonds issued in 19 currencies through 140 transactions for both institutional and retail investors around the world. In 2008, it issued the first plain vanilla green bond ever, setting the foundation for today's global green bond market. That landmark transaction was designed in partnership with Skandinaviska Enskilda Banken (SEB) and developed based on demand from Scandinavian pension funds for a highly-rated fixed income product supporting climate-related, "green" activities, such as renewable energy and energy efficiency projects. Since then, the World Bank's green bond issuance, impact reporting and process, including the use of a second opinion from Cicero, have paved the way for the development of the green bond market and expansion to a broad range of types of issuers and markets.

The World Bank has also pioneered efforts to harmonize green bond impact reporting among other multilateral institutions as an important tool for investors to evaluate the non-financial benefits of their investments. The World Bank's green bond impact report is seen as a model for the market and the format and transparency is appreciated and promoted by investors.

The World Bank has been a strong advocate for the green bond market working with both investors and issuers to increase awareness about its potential to tackle the climate challenge. The World Bank has published several guides and articles for issuers and investors interested in supporting and learning about climate finance and investing for impact through green bonds that are available on the World Bank's green bond investor website¹²⁸.

128 <http://treasury.worldbank.org/cmd/htm/WorldBankGreenBonds.html>

> World Bank Green Bond Issuance

Since 2008, the World Bank (rated Aaa/AAA by Moody's and S&P) – among the world's largest issuers of green bonds – has issued over 125 green bond transactions, representing almost D 10 billion in value. The largest issuance currency has been USD accounting for over half of total issuance volume, followed by SEK, EUR, and AUD which together account for about 30% of total issuance volume. Other currencies include (in order of magnitude) BRL, TRY, ZAR, MXN, RUB, COP, NOK, HUF, PLN, MYR, CAD, INR and JPY. These bonds have had final maturities of between one and 30 years, with about two thirds of issuance having a maturity of five years or less.

The World Bank makes decisions about the structure of its green bonds based on specific investor demand and has an active structured program to target issuances around highly customized requests from investors. It has issued benchmark sized green bonds in USD, EUR, SEK and AUD. It has also issued a significant number of smaller plain vanilla transactions in currencies and tenors to match specific demand from investors. Its structured notes include callable bonds and bonds linked to equity indices, including a successful 'Green Growth Bonds' program where the bonds were linked to customized equity indices with a focus on ethical and/or green companies.

By volume, most of the World Bank's green bond issuance has been to institutional investors. However, the World Bank has had a number of issuances specifically targeted to retail investors particularly in Europe, the US and Japan.

The World Bank's program was originally designed in consultation with institutional investors looking for a highly rated fixed income product where the proceeds would be used for climate-specific purposes that they could report back to their stakeholders on. These investors were keen to rely on experts to select and monitor projects, and wanted to limit their credit risk to corporate not project risk. The World Bank's approach of pre-defining project eligibility criteria, having a process for selecting projects, tracking green bond proceeds for use to support the financing of these eligible projects and reporting on the specific projects and their impacts has paved the way for the green bond market. Investors often publish details of these investments to show their stakeholders that their investment strategy promotes a positive impact for the climate and society.

> About World Bank Green Bonds: Examples

Inaugural World Bank Green Bond and Increase

In November 2008, the World Bank announced a partnership with SEB and several key Scandinavian institutional investors to introduce a “World Bank Green Bond” to raise funds for projects seeking to mitigate climate change or help affected people adapt to it. The World Bank launched the first ever plain vanilla green bond on November 6, 2008, and a few days later, an increase to reach an amount of SEK 2.7 billion¹²⁹. With the increase, the United Nations Joint Staff Pension Fund joined other key investors – including Länsförsäkringar, Skandia, AP3 (Third Swedish National Pension Fund), AP2 (Second Swedish National Pension Fund) – in support of the green bonds.

World Bank Green Growth Bonds

Since the first such bond launched in the summer of 2014, the World Bank has raised approximately USD 550 million through about 15 individual bonds linked to the Ethical Europe Equity Index, called “Green Growth Bonds”. Approximately 70% of these bonds were purchased by retail investors in Europe (Belgium, France, Italy, Luxembourg, Monaco, and Switzerland) and the US, and with high net worth investors in Asia (Hong Kong, Singapore). The balance was placed with institutional European investors (Belgium, France, Germany, and Switzerland).

129 <http://treasury.worldbank.org/cmd/htm/GreenBond.html> and <http://treasury.worldbank.org/cmd/htm/GreenBondsIncrease.html>

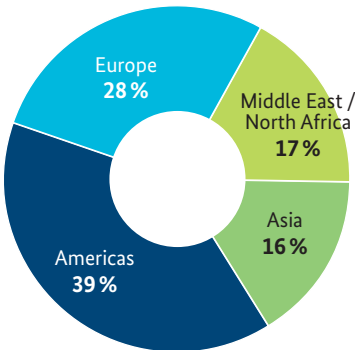
World Bank USD 600m Green Bond

The bonds were placed with 25 investors, including AP2, AP4, Blackrock, Deutsche Bank Treasury, Everence, Mirova, Nikko AM, Nippon Life Insurance, Trillium, UN Joint Staff Pension Fund, and Zürcher Kantonalbank. Several investors highlighted their appreciation for the World Bank's practice to support transparency around its green bond program, as well as the financial characteristics and beneficial climate aspects of World Bank Green Bonds.

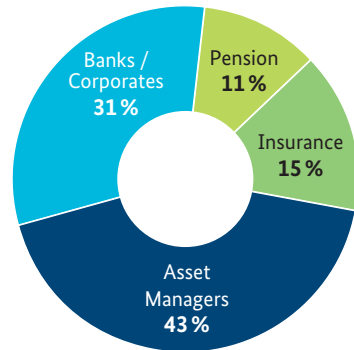
Table 3.10: Details of the bond

Issuer	World Bank (IBRD)	
Issuance date	3 March 2015	
Nominal value	USD 600 million	
Tenure	10 years	
Maturity date	3 March 2025	
Coupon	2.125% (semi-annual)	
Issue price	99.108%	
Lead managers	Deutsche Bank, Morgan Stanley, SEB	
Investor base	By geography: <ul style="list-style-type: none"> • Americas: 39% • Europe: 28% • Middle East/North Africa: 17% • Asia: 16% 	By investor type: <ul style="list-style-type: none"> • Asset managers: 43% • Banks/corporates: 31% • Insurance companies: 15% • Pension funds: 11%

Distribution by geography



Distribution by investor



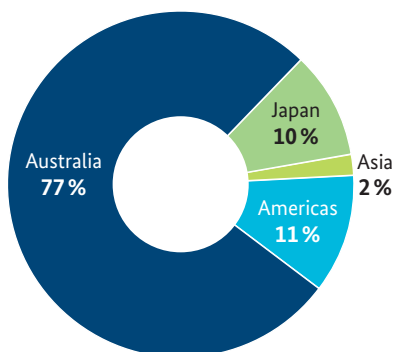
World Bank AUD 300 million Green Bond

The bonds were placed with 15 investors, including Aberdeen Asset Management, AMP Capital, Australian Ethical Investment Ltd, Colonial First State Global Asset Management, Local Government Super, QBE Insurance Group Ltd, and UniSuper. The investors involved in the trade all have a specific interest in supporting climate-smart projects within their investment mandates. UniSuper provided the lead order for the transaction.

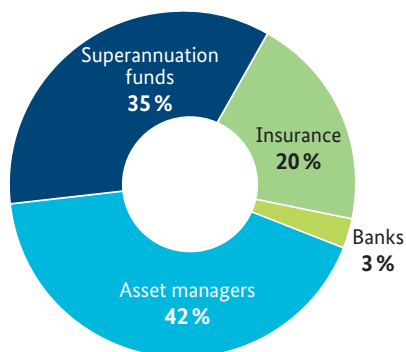
Table 3.11: Details of the bond

Issuer	World Bank (IBRD)	
Issuance date	29 April 2014	
Nominal value	AUD 300 million	
Tenure	5 years	
Maturity date	29 April 2019	
Coupon	3.5% (semi-annual)	
Issue price	98.960%	
Lead managers	RBC Capital Markets & Westpac Institutional Bank	
Investor base	By geography: <ul style="list-style-type: none"> • Australia: 77% • Americas: 11% • Japan: 10% • Asia: 2% 	By investor type: <ul style="list-style-type: none"> • Asset managers: 42% • Superannuation funds: 35% • Insurance companies: 20% • Banks: 3%

Distribution by geography



Distribution by investor



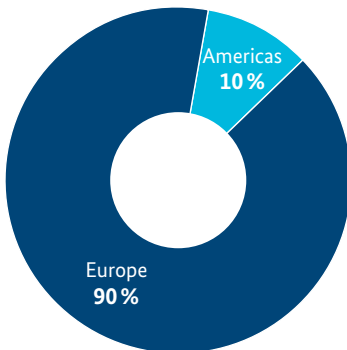
World Bank EUR 550 million Green Bond

The bonds were placed with 21 investors, including ACTIAM (formerly SNS AM), Aegon Asset Management, AP2, APG, Barclays Treasury, Blackrock, Caisse Centrale de Reassurance, Ikea Group, Mirova, Natixis Asset Management, Pictet, SEB Asset Management, Standish Mellon Asset Management Company LLC, Zurich Insurance Group and Zwitserleven.

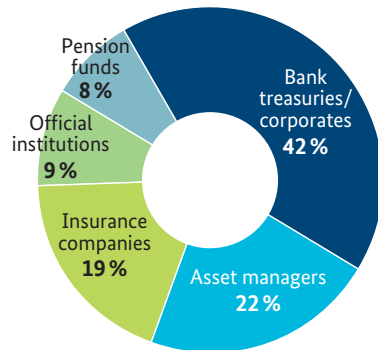
Table 3.12: Details of the bond

Issuer	World Bank (IBRD)	
Issuance date	20 March 2014	
Nominal value	EUR 550 million	
Tenure	3 years	
Maturity date	20 March 2017	
Coupon	0.25% (annual)	
Issue price	99.678%	
Lead managers	Crédit Agricole CIB, Morgan Stanley, SEB	
Investor base	By geography: <ul style="list-style-type: none"> • Europe: 90% • Americas: 10% 	By investor type: <ul style="list-style-type: none"> • Bank treasuries/corporates: 42% • Asset managers: 22% • Insurance companies: 19% • Official institutions: 9% • Pension funds: 8%

Distribution by geography



Distribution by investor



> The World Bank Green Bond process

World Bank green bonds have the same financial terms and risk as other bonds and follow a process that the World Bank established in 2008 for its first green bond that has been the model for the Green Bond Principles. The key Elements of the World Bank Green Bond Process are:

1. Define eligibility criteria (with a second opinion)
2. Establish a project selection process
3. Ring-fence bond proceeds (held in a separate account) earmarked for eligible projects
4. Report on projects supported including the positive climate impact

1. World Bank Green Bond eligibility criteria


World Bank green bonds support the financing of projects that promote a transition to low-carbon and climate resilient growth in client countries targeting climate change mitigation and adaptation. Examples of eligible projects include:

Mitigation projects such as:

- Solar and wind installations;
- Funding for new technologies that permit significant reductions in greenhouse gas (GHG) emissions;
- Rehabilitation of power plants and transmission facilities to reduce GHG emissions;
- Greater efficiency in transportation, including fuel switching and mass transport;
- Waste (methane emissions) management and construction of energy-efficient buildings;
- Carbon reduction through reforestation and avoided deforestation.

Adaptation projects such as:

- Protection against flooding (including reforestation and watershed management);
- Food security improvement and implementing stress-resilient agricultural systems (which slow down deforestation);
- Sustainable forest management and avoided deforestation.



These criteria underwent an independent review¹³⁰ by the Center for International Climate and Environmental Research at the University of Oslo (CICERO). CICERO concurred that, combined with the governance structure of the World Bank and safeguards for its projects, the World Bank eligibility criteria provide a sound basis for selecting climate-friendly projects.


2. World Bank process for selecting eligible projects

Eligible projects are selected by World Bank environment specialists and meet defined World Bank eligibility criteria. All World Bank projects – including Green Bond Projects – undergo a rigorous review and approval process to ensure that the projects meet client countries' development priorities. The process includes early screening to identify potential environmental or social impacts and designing policies and concrete actions to mitigate any such impacts. Green Bond Projects follow the same stages as other World Bank financed projects, including the due diligence and monitoring process throughout the project cycle, but in addition undergo steps to review and screen eligible projects, and allocate green bond proceeds, and report progress and impact to investors.

The World Bank classifies projects with climate mitigation and adaptation co-benefits according to Common Principles¹³¹ for tracking mitigation and adaptation activities were developed together with the International Development Finance Club (IDFC). These Common Principles together with a set of guidelines were established and applied to provide a common approach for reporting on climate co-financing flows that are invested alongside Multilateral Development Banks' (MDBs) climate finance activities. Aligned with these principles, the World Bank specifically tracks and reports climate finance in a granular manner, i.e. climate finance reported covers only those

130 <http://treasury.worldbank.org/cmd/pdf/CICERO-second-opinion.pdf>

131 www.worldbank.org/en/news/feature/2015/04/03/common-principles-for-tracking-climate-finance



components of projects that directly contribute to or promote adaptation and/or mitigation.¹³²

When a new project is recorded in the World Bank system, the Operations Policy and Country Services team, reviews the project document and identifies climate-related finance according to these Common Principles and assigns it accordingly to this project. Climate change specialists in the Climate Change Cross-Cutting Solutions Area, who are responsible for World Bank climate finance reporting and engagement with the other MDBs on this topic, perform quality review checks on to ensure that projects have been correctly coded in the system.

From this validated list of projects that have defined climate co-benefits, the World Bank Treasury's staff select a sample of projects to include in the green bond program. It should be noted that the green bond program is substantially smaller than the volume of climate financing supported by the World Bank – less than one third between FY11 and FY15. The volume of the World Bank's green bond issuance depends on our funding needs and strategy and the investor demand for green bond products rather than availability of eligible green projects. The projects included in the green bond program are those that showcase important climate related projects across a range of sectors, and thereby help to raise investor awareness about country programs and climate finance. Staff also considers the results reporting available for individual projects and whether indicators proposed in green bond impact reporting harmonization frameworks (such as the proposed framework towards harmonized impact reporting developed by a group of IFI's)¹³³ are available when selecting projects.

132 Adaptation finance is calculated using the Joint MDB Methodology for Tracking Climate Adaptation Finance, which is based on a context and location-specific approach and captures the amounts associated with activities directly linked to climate change vulnerability. Mitigation finance is calculated in accordance with the Joint MDB Methodology for Tracking Climate Mitigation Finance, which is based on a list of activities that are compatible with low-emissions pathways. The adaptation and mitigation methodologies are described in detail in the Joint Report, Annexes B and C, respectively (<http://pubdocs.worldbank.org/en/740431470757468260/MDB-joint-report-climate-finance-2015.pdf>).

133 <http://treasury.worldbank.org/cmd/pdf/InformationonImpactReporting.pdf>

3. Earmarking and allocating green bond proceeds

World Bank green bond proceeds are credited to a special account. They are invested in accordance with IBRD's conservative liquidity policy until used for the support of the World Bank's financing of eligible Green Bond Projects. Disbursement requests for eligible projects take place in accordance with IBRD's established policies and procedures. Disbursements are often made over a period of several years, depending on when each project milestone is reached. As disbursements are made for Green Bond Projects, corresponding amounts from the special account are allocated to the general lending pool at least on a quarterly basis.

4. Reporting on impact of World Bank eligible projects

World Bank green bonds support 88 projects in 24 member countries. About 30% of the projects are in China, and the table below provides some examples of these projects.

As of 30 June 2016, D 14.4 billion had been committed with 78% supporting mitigation and 22% supporting adaptation. In addition to spanning the globe, eligible projects also cover different sectors including renewable energy and energy efficiency (37% of the total investments), transport (35%), agriculture, forestry and ecosystems (13%), water and waste management (9%), and resilient infrastructure (6%).

The World Bank provides detailed reporting about the impacts of every project on its website.¹³⁴ In addition, it publishes an annual green bond impact report summarizing the list of green bond eligible projects together with the amount of green bond proceeds allocated to support the financing of these projects and selected results indicators.¹³⁵

134 www.worldbank.org/projects

135 <http://treasury.worldbank.org/cmd/htm/WorldBankGreenBondImpactReports.html>

> Environmental benefits and impact

Table 3.12: Examples of the World Bank's Green Bond investments in China

Investment area and rationale	Project example
<p>Renewable Energy development comprises 15% of World Bank's Green Bonds eligible projects. The energy sector contributes about 40% of global CO₂ emissions. Despite improvements in some countries, the global CO₂ emission factor for energy generation has hardly changed over the last 20 years, making the transition to a more sustainable energy mix critical for climate change mitigation.¹³⁶</p>	 <p>Project P125022 in China promotes renewable energy in schools and other educational institutions, and reduces 89,590 tons of CO₂ eq. annually – equivalent to taking nearly 19,000 passenger vehicles off the road each year.¹³⁷</p>
<p>Energy efficiency is the low cost option to reduce emissions and unnecessary expenditures. Harnessing the “hidden fuel” of energy efficiency offers opportunities to help cities achieve energy security, energy savings, improved municipal services, increased competitiveness, and reduced costs and emissions.¹³⁸ 22% of Green Bond eligible projects include energy efficiency improvements.</p>	 <p>Project P084874 in China improves the energy efficiency of selected medium and large-sized industrial enterprises and is expected to result in energy savings of nearly 22 million MWh per year and 6.5 million of CO₂eq less emissions annually.¹³⁹</p>

136 <https://openknowledge.worldbank.org/handle/10986/17143>

137 www.worldbank.org/en/news/feature/2014/09/30/solar-schools-to-help-build-green-cities

138 www.worldbank.org/en/news/feature/2014/12/08/building-energy-efficient-cities-new-guidance-notes-for-mayors

139 <http://projects.worldbank.org/P084874/china-energy-efficiency-financing?lang=en&tab=overview>

Investment area and rationale

Project example

Transport contributes about 15% of global GHG emissions (IPCC). With that share growing rapidly this is a critical sector to reform to address climate change.¹⁴⁰ Transport improvements that shift to low-emission modes also generate ‘co-benefits’ in terms of reducing congestion, local air pollution, oil dependency and transport safety risks.¹⁴¹ 34% of the Green Bond eligible projects focus on transport.



Project P148527 aims to improve mobility in selected transport corridors through three new bus rapid transit (BRT) lines and 645,000 people are expected to benefit from direct access to 51.7 km of BRT routes.¹⁴²

Water stress is an increasing challenge, driven by population and economic growth, land use changes, increased climate variability, and declining groundwater supplies and water quality.¹⁴³ Improved water resources management and climate-smart water infrastructure helps countries manage this risk. 9% of Green Bond eligible projects focus on water and waste management issues.



Project P114138 in China improves agriculture water management and increases agriculture water productivity.¹⁴⁴ It is expected to deliver higher per capita incomes for local farmers as a result of a projected 15% increase in main crop yields.


¹⁴⁰ www.worldbank.org/en/topic/transport/overview#1

¹⁴¹ <http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1227561426235/5611053-1229359963828/TP40-Final.pdf>

¹⁴² www.worldbank.org/en/news/feature/2016/05/30/project-launched-to-strengthen-public-transport-system-in-urumqi

¹⁴³ www.worldbank.org/en/topic/waterresourcesmanagement/overview#1

¹⁴⁴ www.worldbank.org/en/news/feature/2016/11/18/empowering-farmers-and-implementing-modern-irrigation-helps-china-reduce-water-consumption

Investment area and rationale	Project example
<p>Agriculture is vulnerable to climate change and it is, with associated deforestation and the largest contributor to greenhouse gases. Climate smart agriculture has the potential to deliver a “triple win” of increased productivity, enhanced resilience, and carbon sequestration.¹⁴⁵ 12% of Green Bond eligible projects focus on agriculture, forestry and ecosystem management.</p>	 <p>Project P125496 develops sustainable and climate resilient agricultural production systems in China by investing in improved irrigation and drainage systems and by supporting practices that address climate risk.¹⁴⁶</p>

¹⁴⁵ www.worldbank.org/content/dam/Worldbank/document/CSA_Brochure_web_WB.pdf

¹⁴⁶ www.worldbank.org/en/news/feature/2016/07/13/project-helps-farmers-adapt-to-climate-change-in-china

> Wider reflections

Benefits and potential of green bonds

The World Bank's green bonds program has raised the awareness of financial market participants of the need for private sector financing to tackle the climate challenge and include climate risks and opportunities in their investment decisions. More issuers are recognizing the benefits of issuing green bonds for business reasons and to enhance their brand, and are expanding investment opportunities for investors.

Green bonds are catalysing a development of changing investor expectations in the fixed income markets – investors are asking for social and environmental impact for all investments and require information to include this in their investment decisions. The World Bank is working with issuers to help them understand the product, its costs and benefits, and with issuers, investors, intermediaries and market participants to create more financial products that support climate change programs.

Why is the World Bank issuing green bonds?

Climate change is a threat to the core mission of the World Bank: eliminating extreme poverty and boosting shared prosperity. The impacts of climate change are already being felt by millions of people and can reverse economic progress. Without further action to reduce extreme poverty, provide access to basic services, and strengthen resilience, climate impacts could push an additional 100 million people into poverty by 2030. Examples of climate-related stress include disruption in agricultural productivity, worsened water quantity and quality, increased incidences of diseases, damage to ecological systems and biodiversity, displacement of populations and threats to the existence of small island states.

The process and action of issuing green bonds links issuers to investors, and serves to engage investors, and through them, the entire financial system in climate finance and sustainable and responsible investing. Through this effect, green bonds effectively set the foundations for capital markets to focus on sustainable and responsible investing.

What has the World Bank learned from the green bond experience?

Green bonds connect sources of capital with green uses of capital. By engaging with investors, the World Bank connects directly with them. For example, by engaging with project and operations units within the World Bank organization, the World Bank Treasury Department creates new organizational dialogues and lines of communication, as well as conduits for ideas and green innovation. Similarly, by being part of external working groups focused on green bonds and green finance, etc. the World Bank interacts with other financial market participants (banks, issuers) to find ways to diffuse green financing knowledge and best practice, while using finance as tool to work towards the same sustainable development goals.

Over the course of the World Bank's engagement with investors on green bonds, it has become apparent that issuers in general can learn a great deal about improving project design to gear it towards impact, and enhancing impact reporting so that it is more meaningful for investors' decision-making.

Going forward, the trend in the capital markets is for investors to demonstrate impact and disclose ESG risk information as part of their decision-making process, and the green bond market is expanding globally as these trends also become mainstream. Ensuring the integrity of the process is critical to ensuring the growth of this market. Bonds that are labelled as green bonds must invest in, and be seen to invest in, projects and activities that deliver clear environmental benefits.

What resources are required?

For issuers that already have their projects designed to create positive impact for the environment, climate, and society the main resources involve setting up the process and ongoing reporting for investors, plus undertaking a second opinion and/or auditing costs. If this makes sense as part of the organization's purpose, along with the issuers' strategy and branding as a responsible corporate citizen, the resources that are required to make a positive effect on society are clearly justified and worth the investment.



> Acknowledgements:

We would like to thank the following for their contribution to this case study:

- Heike Reichelt, Head of Investor Relations and New Products, World Bank
- Christine Davies, Senior Financial Officer, World Bank

VIII. Conclusions

> Conclusion 1: There are clear benefits to issuing green bonds


The benefits of issuing green bonds fall into two distinct categories. The first relates to the pricing and demand for green bonds. All of the case studies point to strong market interest in green bonds, as indicated by the number of investors that have made commitments to responsible investment¹⁴⁷ and that have made explicit commitments to increase their investments in areas such as renewable energy and low carbon technologies¹⁴⁸. Furthermore, investors are increasingly aware of and attracted to the investment opportunities in areas such as clean transportation, energy efficiency, clean energy and technology, forestry and climate adaptation¹⁴⁹. This market interest can enable issuers to tighten the pricing of green bonds from initial pricing guidance; while the exact amount differs between issuers (and is clearly driven by a variety of factors), the case studies suggests a range of between 0.5 and 5 basis points tighter than initial pricing guidance.

The second set of benefits relates to the issuer's organisation as a whole. The case studies suggest that issuers can attract new investors to their register (i.e. investor base diversification). Issuers can also use green bonds to demonstrate and financially articulate their commitment to environmental investments, thereby providing positive publicity and branding opportunities. As just one example, Nafin had its green bond verified and certified because it wanted to ensure as much credibility as possible for its return to the international markets.

147 See, for example, the signatories to the Principles for Responsible Investment: <https://www.unpri.org>.

148 See, for example, the signatories to the Green Infrastructure Investment Coalition (www.giicoalition.org) and to the Paris Green Bond Statement (<https://www.climatebonds.net/files/files/COP21-Paris%20Green%20Bonds%20Statement-PGPS-9th%20Dec%202015.pdf>).

149 For analysis of the capital flows into renewable energy and into low carbon assets more generally, see the research and publications from Bloomberg New Energy Finance (<https://about.bnef.com/blog/category/report>) and the Climate Policy Initiative (<https://climatepolicyinitiative.org/climate-finance>).



Internal capacity building is another important benefit. The green bond issuance process often requires different parts of an issuer's organisation to work together on developing and marketing the bond; this can establish new lines of communication and strengthen existing internal communications between parts of the institution and move sustainability and environmental issues closer to the heart of the issuer's business.

> **Conclusion 2: The costs are modest**

There are two distinct sets of costs associated with green bonds. The most obvious costs are those associated with external review or verification. The specific costs differ but, depending on the scope, the initial verification costs are typically between USD 5,000 and USD 50,000, with the ongoing costs usually being much lower. In addition, some management time is required to collate information and to liaise with certification bodies.

The other set of costs are those that are additional to those associated with conventional bonds or with uncertified bond issuances. They include the costs of tracking the proceeds from green bonds (which must be used only for specified projects), and the monitoring and reporting on the investments made and the associated environmental impacts. The extent to which these monitoring and reporting requirements introduce additional costs will depend on the organisation. One of the points made in the case studies is that organisations that have a track record of managing the environmental and social issues associated with their investments are likely to find that – beyond the costs of external verification and the reporting on the use of proceeds – they already have most or all of the systems and processes that are required. That is, for these organisations, the green bond verification process should primarily involve minor adaptations and modifications to existing data collection and reporting processes, rather than requiring the building of completely new systems.

> **Conclusion 3: Transparency provides many benefits**

One of the key attractions of green bonds is the transparency and the verification processes that underpin these bonds. These processes provide investors with assurance that their money is being invested in assets that provide environmental benefits, thereby reducing the costs of due diligence on how the proceeds of the bond will be used. They also help investors with their reporting to their clients, as investors can simply report the amount invested in green bonds, rather than needing to conduct their own detailed portfolio analysis.

Transparency also benefits issuers. For example, Suzano has noted that having an external evaluation provided credibility and confidence to investors, especially to “new investors”. This was particularly important in Suzano’s case given that its bond was released at a time of great political uncertainty in Brazil and internationally, and external verification and transparency provided investors with important reassurance.

> **Conclusion 4: It is important for issuers to understand green bond external verification processes**

The case studies point to the importance of issuers building their internal capacity – on environmental management, on reporting – before they consider issuing green bonds. The case studies suggest that organisations that already manage and report on their environmental performance will already have most of the capacity, expertise and resources that they need. The consequence is that the costs of green bonds external verification and reporting are likely to be modest.

An important additional point is that issuers should be familiar with the specific requirements of the Green Bond Principles (e.g. what constitutes a green bond, what the requirements are for project evaluation and selection, for the use of proceeds and for reporting).

> **Conclusion 5: The public sector can actively support the development of the green bonds market**

While the case studies have focused on the experience of individual issuers, they also offer important conclusions for the public sector.

The first is that “success breeds success”. The case studies demonstrate that positive experiences with the issuing and marketing of green bonds increase the likelihood that other green bonds will be issued, both by the organisations themselves (e.g. Kommuninvest, Nafin, the Province of Ontario, and the World Bank have all issued more than one green bond) and can potentially provide examples for other issuers to follow.

The second is that the successful issuing and marketing of green bonds also leads to the development of capacity and expertise in the market. The World Bank’s green bonds program has raised the awareness of the need and opportunities for private sector financing to tackle the climate challenges and of the importance of investors including climate risks and opportunities in their investment decisions. This program has also led more issuers to recognise that green bonds can be a valuable source of additional capital and can additionally provide brand and reputation benefits.

The third is that the process of issuing green bonds links issuers to investors, and helps engage the broader financial system in green finance and sustainable and responsible investing. Through this effect of engaging mainstream investors, green bonds contribute to establishing the foundations for capital markets to focus on and contribute to sustainable and responsible investing. As such, they offer a valuable way of generating capital for projects that boost green growth and they support countries in making the transition towards becoming low-carbon economies.

Against the background of the commitments governments globally have made towards combatting climate change, these conclusions suggest that national governments have a clear interest in supporting the development of their domestic green bond markets. This should encourage increases in the quantity of capital raised for investments in green economy projects, through stimulating domestic interest in green investment, mobilising flows of capital from overseas investors, and diverting capital away from carbon intensive and environmentally damaging activities.

The actions that the public sector can take to encourage the development of the market include issuing their own green bonds (as well as investing in them). Not only will these raise the required capital for green investments but such exemplary issuance will also catalyse and accelerate subsequent issuances by other issuers following suit. Secondly, policy makers can introduce policy and regulatory measures geared at aggregation, technical assistance and credit enhancement. Finally, the public sector can also promote knowledge transfer and capacity building on green bonds through supporting initiatives and international fora that foster mutual learning through a cooperative approach.

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Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Implemented through develoPPP.de

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Design and layout

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www.w4gestaltung.de

Photo credit

Frontpage: © Shutterstock

As at

May 2018

On behalf of

German Federal Ministry for Economic Cooperation and Development (BMZ);

Division Cooperation with the private sector; sustainable economic policy

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