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The Green Bond Market: 10 years later and looking ahead

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Executive Summary

Since the World Bank issued its first green bonds nearly 10 years ago, the green bond market has grown exponentially. Green bonds support the financing of climate-friendly projects worldwide. They are attractive to investors as a straightforward instrument to integrate environmental, social, and governance outcomes into fixed income portfolios. More importantly, green bonds are also acting as a catalyst for deeper sustainable and responsible fixed-income capital markets. This article will cover the growth of the market including some key examples from the World Bank (IBRD)² as a pioneering issuer and contributor to standards, disclosure and transparency efforts. It will summarize key initiatives around standards and disclosure in the green bond market. Finally, the article will outline how the green bond market – despite its small size vis-à-vis the overall bond market – has changed how investors think about the purpose of their investments, and discuss prospects and opportunities for going beyond green to build sustainable capital markets.

From niche issuance to a dynamic catalyst: how green bonds have changed market behavior

Looking back on 10 years, the green bond market has seen a tremendous increase in depth, a growing diversity of issuers and an enabling environment that includes guidelines and disclosure frameworks for transparency and growth. Given their development mandate and growing focus on climate investments, multilateral development banks (MDBs) have played a key role in driving the growth of this market.

The key feature differentiating green bonds from other fixed income products is that the proceeds are dedicated to a specific purpose: they are ringfenced for projects and activities that promote climate or other environmental sustainability purposes, based on a transparent process that connects the financing to specific types of projects. The green bond market has laid the foundations for a new way of thinking for investors. Today, investors can decide to allocate capital to products that fulfill their financial requirements and serve a positive social purpose.

Early issuers

The concept of earmarking bond proceeds for climate investments was introduced in 2007, when the European Investment Bank (EIB) launched its Climate Awareness Bond,³ an equity index-linked bond that was listed in 27 domestic markets in the European Union. In 2008, the World Bank issued its first green bond, which was designed in collaboration with Skandinaviska Enskilda Banken (SEB). The aim was to respond to specific demand from Scandinavian pension funds⁴ looking for a straightforward fixed-income investment opportunity to support the transition to lower-carbon, more climate-resilient world, considering their long-term investment horizon as pension funds. The World Bank green bond offered investors the opportunity to invest in a triple-A rated bond that supported projects meeting the World Bank's rigorous environmental and social safeguards, without facing project risk.

1. The opinions expressed here are the authors' and do not necessarily reflect those of the World Bank or its stakeholders. The authors would like to thank Alexandra Klopfer for her comments.

2. **About the World Bank:** The World Bank (International Bank for Reconstruction and Development, IBRD), rated Aaa/AAA (Moody's/S&P) operates as a global development cooperative owned by 188 member countries and is the original member of the World Bank Group. The World Bank Group has two main goals: to end extreme poverty and promote shared prosperity. The World Bank (IBRD) seeks to achieve these goals primarily by providing loans, risk management products, and expertise on development-related disciplines to its borrowing member government clients in middle-income countries and other creditworthy countries, and by coordinating responses to regional and global challenges. IBRD has been issuing bonds in the international capital markets since 1947 to fund its sustainable development activities and achieve a positive impact.

About the World Bank Group: The World Bank Group consists of five separate legal organizations working towards a common mission to eradicate extreme poverty and promote shared prosperity. It includes International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the International Centre for Settlement of Investment Disputes (ICSID). Both IBRD and IFC are issuers of green bonds.

3. http://www.eib.org/investor_relations/press/2007/2007-042-epos-ii-obligation-sensible-au-climat-la-bei-oeuvre-a-la-protection-du-climat-par-le-biais-de-son-emission-a-l-echelle-de-l-ue.htm

4. <http://treasury.worldbank.org/cmd/htm/GreenBond.html>

The World Bank's first green bond received strong support from the original pension fund investors and great interest from the market and the media. This led to additional expressions of interest from other types investors, such as insurance companies, asset managers, corporates, and retail investors. As the market grew, non-governmental organizations, capital markets associations, international climate negotiators, standard setters, regulators, rating agencies and other market participants became more engaged and contributed to growth of the market.

Since its first green bond, World Bank has issued over 135 green bonds raising over USD 10 billion. Reflecting investor demand, World Bank green bonds have been issued in a range of bond sizes, from benchmark-sized issuances in euros, U.S. dollars and Australian dollars, to private placements and smaller sized bonds for retail investors in 18 currencies across a range of maturities out to 30 years.

The World Bank has been at the forefront of expanding green bond product offerings. For example, its Green Growth Bonds, ESG-focused equity index-linked green bonds, have raised USD 530 million from investors in Europe, the US and Asia. Over USD 650 million have been raised through similar, equity-linked bonds for investors – mostly in Europe, but also in the US and Asia.

Other early green bond issuers include the International Finance Corporation (IFC), a member of the World Bank Group, and the African Development Bank (AfDB). IFC issued its first green bond in 2010 and the market's first USD 1 billion-sized benchmark green bond in 2013.⁵ AfDB issued its first green bond in 2013.⁶

Box 1: What's in a name? Green bond definitions

Bonds are labeled as green bonds if they meet a number of criteria. These include: providing investors with eligibility criteria for allocation of proceeds; offering general descriptions of the type of projects that would be eligible for funding; and after a previously agreed upon amount of time, reporting back on the projects that proceeds supported. The World Bank and other issuers of green bonds track proceeds from such bonds through a special account until they are allocated to projects that have been identified as eligible.⁷

A fast-growing, diversifying market

Demand for green bonds is increasing. As of October 31, 2017, annual issuance of labeled green bonds surpassed USD 100 billion, with gross green bond issuance since 2007 reaching almost USD 300 billion. While this represents about 0.1% of the total bond market of over USD 100 trillion, it is a significant milestone – especially considering the catalytic role of the green bond market in expanding interest in sustainable fixed income investing.

Until 2012, the green bond market was dominated by issuers like the World Bank, who already had in place processes for assessing environmental, social and governance (ESG) risks for projects. This changed in 2013, with a growing number of green bond issuances by corporates, energy and utility companies and governments and their agencies from around the world. Notable examples include Chinese issuers, who in 2016 made up about 40% of the overall green bond market; and Poland, which in the same year became the first sovereign to issue a green bond.⁸ A few months later, France issued the largest ever green bond - a Euro 7 billion, 22-year benchmark bond. This was also the longest-dated benchmark green bond ever issued.⁹ In October 2017, on the eve of taking the reins of the COP23 Presidency, Fiji became the first sovereign emerging market issuer of green bonds with a USD 50 million green bond.¹⁰ By the end of October 2017, 90% of all new green bonds had come from issuers other than MDBs.

The greater diversity of green bond issuers—including issuers of different credit strengths—benefits investors, who can select from a greater variety of green bonds offered at different sizes, maturities, currencies and structures.

5. <https://ifcextapps.ifc.org/ifcext/pressroom/ifcpressroom.nsf/0/F9E346765F24CB3085257B1200776829?OpenDocument>

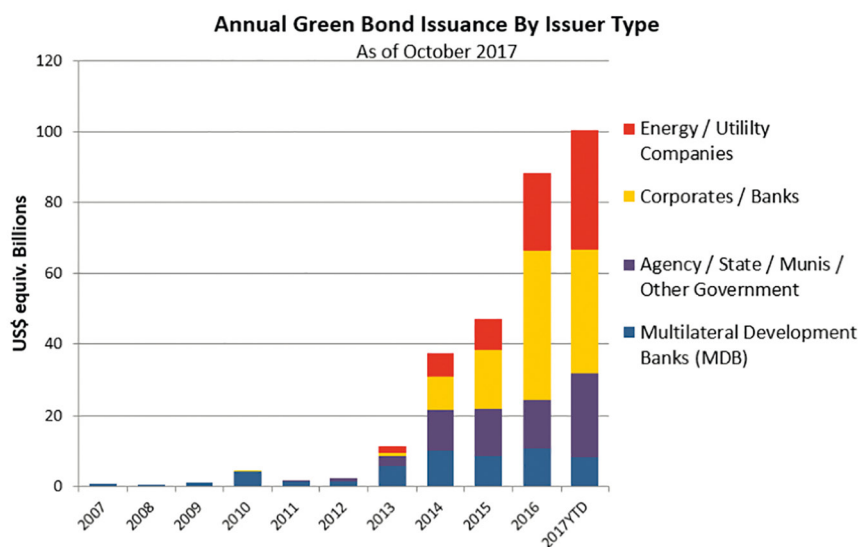
6. <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/green-bond-program/green-bond-transactions/>

7. <http://treasury.worldbank.org/cmd/pdf/ImplementationGuidelines.pdf>

8. <https://www.environmental-finance.com/content/awards/green-bond-awards-2017/winners/bond-of-the-year-ssa-and-award-for-innovation-structure-poland.html>

9. http://www.aft.gouv.fr/articles/lancement-de-l-oat-verte-1-75-25-juin-2039_12865.html

10. <https://cop23.com.fj/fijis-green-bond-launch-sees-unprecedented-support/>



Source: Bloomberg and World Bank data

Increased investor demand is driving green bond market growth

The green bond market has been driven by specific investor demand – initiated by the Scandinavian pension funds who collaborated with the World Bank to get the market started. These and other European pension funds have also been pioneers in changing the way investors approach asset allocation, promoting strategies to incorporate ESG criteria into decision-making with a view to combine sustainable investing with sustainable development outcomes. The market has responded well, particularly as there has been a growing understanding of how climate risks can potentially affect the value of portfolios, and increased demand from shareholders and stakeholders to see positive impact from their investments.

Green bonds have been welcomed as an ideal fixed-income investment opportunity for these investors – and a “starter product” for fixed income impact investing. Green bonds are financially comparable to non-green bonds and offer transparency and disclosure that facilitate broader portfolio analysis around integrating sustainability concerns. Green bond investors generally evaluate issuers’ ESG credentials and green bond criteria to ensure consistency with own expectations and requirements, although some investors focus on the use of proceeds, with less regard to the issuer’s ESG track record.

A unique feature of the green bond market is that investors are keen to be associated with green bond issuances. The World Bank was the first green bond issuer to publish investor names – at their request – in its green bond press releases. Since then, seeing investor names and quotes on green bond issuers’ press releases has become common place. In several cases, such as with UniSuper for the first benchmark-sized green bond in Australian dollars, investors provide anchor orders and engage with issuers as they build new green bond portfolios.¹¹

As the market develops, there are also more instances of close, constructive dialogue between investors and green bond issuers, which often creates a virtuous cycle of engagement that is helping introduce new types of investors. In the case of the World Bank, investors in green bonds have broadened from traditional impact investors to pension funds from several countries, insurance companies and asset managers, corporate and bank treasuries, and retail investors.

11. http://treasury.worldbank.org/cmd/htm/AUD300Million_First_Kangaroo_Green_Bond.html

Box 2: Case Studies

World Bank USD 500 million Green Bonds Support Global Climate Action

In November 2016, the World Bank (International Bank for Reconstruction and Development – IBRD) issued USD 500 million of World Bank green bonds to show support for global climate action. This issuance coincided with preparations for COP22 and the implementation of the December 2015 Paris Climate Agreement, which went into effect on November 4, 2016. The lead order of USD 250 million came from a US public sector investor, the Maryland State Treasurer’s Office. The remainder of the bonds were placed with US institutional investors, including Blackrock and PIMCO.¹²

World Bank Green Bonds Reach USD 10 Billion in Funding Raised for Climate Finance

In April 2017 the World Bank green bond program surpassed USD 10 billion with a USD 350 million issuance placed with Folksam, a Swedish insurance company. The program has included green bonds issued in 18 different currencies in a variety of sizes and structures, customized to appeal to a variety of investors around the world. Folksam has been a leader in seeking investment opportunities that bring both financial value and positive environmental and social impacts.¹³

What’s in it for the issuer?

With some exceptions, green bonds have been launched with pricing that is in line with issuers’ comparable classic bond issuances. This means that investors are not charged a premium to buy green bonds, despite the additional reporting that the issuer provides. This is because issuers recognize the benefits associated with green bonds, including investor diversification, closer investor engagement, raising awareness for an issuer’s activities and helping to build a market that helps mobilize private sector financing for climate and environmentally friendly activities. Issuers are also able to reach investors focused on sustainable and responsible investing and those that incorporate ESG as part of their investment analysis – investors that might not otherwise have considered their bond offerings.

Several issuers have also reported greater internal collaboration between staff in funding-related functions and those preparing and/or implementing projects. Many issuers also recognize that this is the way of the future – the next generation of investors will expect more transparent reporting on what bond proceeds are being used for.

Issuers are playing a vital role in building a market that is playing an increasingly important part in climate finance. They are contributing to the transition to a sustainable and responsible fixed-income market overall.

Box 3: World Bank Project Example: Solar Powers Brighter, Greener Future for India

*The Grid-Connected Rooftop Solar project*¹⁴ is helping India reach its renewable energy targets and reduce GHG emissions with a USD 500 million loan from IBRD and a grant from the Global Environmental Facility. Over 200 million people in India remain unconnected to the electricity grid, and those who are, continue to face frequent disruptions. Power shortages also affect industrial output with many industries and manufacturers relying on expensive and polluting diesel-based back-up power supplies. World Bank financing will help the government provide low-cost loans to install rooftop solar capacity through grid-connected solar rooftops to commercial, institutional and industrial buildings to reduce greenhouse gas emissions. Expected target results include: 600 megawatts of installed rooftop solar capacity and 1.2 million tons of CO2 reductions annually.

12. <http://treasury.worldbank.org/cmd/htm/World-Bank-USD-500-Million-Green-Bonds-Support-Global-Climate-Action.html>

13. <http://treasury.worldbank.org/cmd/htm/World-Bank-Green-Bonds-Reach-USD-10-Billion-in-Funding-Raised-for-Climate-Finance.html>

14. <http://projects.worldbank.org/P155007?lang=en>

Transparency is key as the green bond market continues to grow

The green bond market's growth and development has been steady, particularly in the past five years. Though still small compared to the overall bond market, the green bond market has been incredibly important for promoting sustainable fixed income markets, transparency and a focus on impact.

Since its first green bond, the World Bank has been leading efforts to support the market's integrity as it expands, including harmonizing impact reporting. This helps build the foundation for developing capital markets that are focused on ESG risks and achieving a positive social impact. The World Bank is also advising governments (e.g. Fiji, Malaysia, Nigeria) on green bond issuance and impact reporting based on its experience and knowledge as a market leader and publishes resources for new green bond issuers through a toolkit available on its website.¹⁵

The overarching principle of transparency and disclosure aims to ensure that investors have the information they require to assess the suitability of a green bond in terms of its specific mandate and evaluate the impacts of the underlying investments.

Investors have access to a wide selection of resources. This includes a voluntary yet fundamental set of guidelines called the Green Bonds Principles (GBP) that promote transparency and disclosure and second party opinions intended to assess credentials of green bonds prior to issuance that are provided by organizations with climate or environmental focus like Center for International Climate and Environmental Research at the University of Oslo (CICERO) or DNV, or companies with a track record in assessing ESG risks like Vigeo, Oekom, or Sustainalytics. Rating agencies also provide assessments, such as the Moody's Green Bond Assessment and S&P's Green Bond Evaluation service. The Climate Bonds Initiative provides an extensive taxonomy and certification for green bonds that is also helpful for investors.

Newer entrants to the market or those in the process of establishing guidelines for new investment mandates with a specific climate or environment focus have noted the lack of standardization around what is eligible under a green bond program. There are also concerns about proceeds raised through a labeled green bond not being used for the purposes indicated, or for projects with questionable climate or environmental benefits.

Issuers' green bond programs vary, but the resources offered by second party opinion providers and certifiers like the Climate Bond Initiative are helping to bring more clarity and are working towards a common understanding of what is expected.

Notable milestones in the development of the green bond market since 2013

In 2013, at the **World Bank Green Bond Symposium**,¹⁶ a group of investors, issuers and intermediaries came to a shared understanding of green bond features that are most valuable for fostering further development of the market by including new investors, issuers and products while ensuring high standards of integrity and quality. These collective efforts ultimately culminated in the development of the Green Bond Principles.

First introduced in 2014, the **Green Bond Principles** are providing guidance to new market entrants with guidelines, building an expanding set of harmonized impact reporting templates and a supporting growing forum of stakeholders that include issuers, underwriters, investors and others. The Green Bond Principles, which are coordinated by the International Capital Markets Association (ICMA), have been critical to market development by encouraging standardization and integrity in the green bond market.¹⁷

In 2014, **several green bond indices were launched**. These included the Solactive Green Bond Index; the S&P Dow Jones Green Bond Index launched; the BofA Merrill Lynch Green Bond Index; and the Barclays MSCI Green Bond Index family.¹⁸ Green bond indices are helping to bring clarity to the green bond market for both issuers and investors. The Barclays MSCI Green Bond Index, for example, identifies a set of green bonds from the broader green bond universe based on eligibility criteria including on the bond size and issuer's transparent green bond process.

15. <http://treasury.worldbank.org/cmd/htm/What-are-Green-Bonds-Home.html>

16. <http://treasury.worldbank.org/cmd/htm/documents/World-Bank-Green-Bond-Symposium-Summary.pdf>

17. <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

18. Bloomberg tickers for these indices are: SOLGREEN (Solactive), SPUSGRN (S&P), GBGL (Barclays MSCI) and GREN (Bank of America Merrill Lynch).

In February 2015, an investor group convened by Ceres' Investor Network on Climate Risk (INCR)¹⁹, a network of major institutional investors, published a **Statement of Investor Expectations** to support the development of a consistent, durable framework for the green bond market to encourage its further growth and increase clean energy financing and other solutions to climate change.

Building on these efforts, in 2016, MDBs published the **Joint Report on Multilateral Development Banks' Climate Finance**, a harmonized, voluntary set of guidelines for reporting the expected impacts of projects supported by green bonds. The guidelines are intended as a reference for green bond issuers as they design their reporting approaches based on their own business models.²⁰

Independent opinions and reviews are providing investors with additional information and assurance about issuers' green bond programs. Many issuers engage outside experts to review their eligibility criteria and process for selecting eligible projects. This includes even those, like MDBs, with in-house expertise climate-related projects. For example, the World Bank's green bond eligibility criteria underwent an independent review by CICERO.²¹ Such assurances may help issuers add credibility to launch their green bond programs. Since they represent an additional cost to issuers, it is important for investors to engage with issuers to determine what level of second party involvement is required.

Box 4: The role of external reviewers

Most green bond issuers have second opinions that look at the issuer-defined criteria. Some also extend to other aspects of the green bond process. Issuers can provide investors with an additional level of assurance by obtaining independent audits to cover various elements of their green bond process, such as compliance with their stated policies for selecting eligible projects, tracking and allocating green bond proceeds, and reporting to investors on the use of proceeds and impacts of the underlying project. Each second opinion provider has its own approach to providing opinions, with some focusing on the issuers' ESG credentials and others focusing on the green bond eligibility criteria and selection process. Efforts like CICERO's launch of the Expert Network on Second Opinions (ENSO)²² are helping expand the market's capacity to provide second opinions in a consistent manner across the globe. Commercial service providers like DNV, oekom, Sustainalytics and Vigeo are also providing a range of specialist services to issuers and investors, as well as rating agencies such as Moody's and Standard and Poor's. NGO initiatives such as the Climate Bonds Initiative²³ and its partners are working on defining standards for several climate-related sectors by coordinating dedicated working groups overseen by a board representing institutional investors, NGOs and other market participants. External reviewers often align their assessment to the Green Bond Principles²⁴ coordinated by ICMA, as these have been recognized as the market standard for the green bond process.

The quest for standards

Creating standard definitions for green bond eligibility and sustainable finance is complex

First, there isn't a universal agreement on what is "green". For example, is a large hydroelectric project with the clear climate benefits of producing renewable energy with low or no greenhouse gas emissions green, even if there are negative environment or social impacts? Should nuclear energy be considered green? Given the diversity of opinions, it can be challenging to establish "standard" definitions of green.

The second challenge is whether such standards need to consider country-specific contexts. For example, are there country-specific conditions that should be considered when evaluating a public transportation project in one country compared to another, such as existing infrastructure, available public transportation, average commuting distance, or per capita GDP? And if country context is important, can one develop a standard that is applicable globally, or should standards be developed by country, region or level of economic development?

22. <https://www.cicero.uio.no/en/posts/single/global-expertise-on-green-bonds>

23. <http://www.climatebonds.net/>

24. <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

Also, the scope of potential projects with climate or environmental sustainability benefits is so broad and covers such a diversity of sectors that developing standards to cover them all is challenging. Just like investors establish investment guidelines that include financial and credit considerations, those interested in the green bond market would want to have clarity about their own expectations for what they consider to be “green,” and what aspects of the green bond process they consider important. A high level of transparency from the issuer is a starting point for investors to be able to make informed decisions.

ICMA continues to play a central role in the evolution of standards, definitions and reporting by harnessing the views and know-how from over 200 Green Bond Principles members and observers worldwide, with many, such as the EIB and World Bank, serving on the Executive Committee. It continues to serve as a source of expertise for global policy makers and regulatory bodies seeking to craft and adapt standards to support a growing demand for green bond issuance for national climate and sustainable finance agendas. ICMA provides resource materials for market participants and several working groups have contributed to the market for sustainable fixed income investing – for example by clarifying what “sustainable bonds” or “social bonds” are, in addition to green bonds, and contributing to harmonized reporting and transparency.²⁵

Some recent initiatives aim to establish a body of standards and improve the information available to investors and other stakeholders seeking climate-friendly finance options and a broader array of ESG investments. These programs are also helping to explore and build sustainable capital markets that go beyond green bonds and climate-related finance. Some of these initiatives include the following:

- 1. Taskforce for Climate-related Financial Disclosures** aims to “develop voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders”.²⁶
- 2. High Level Expert Group for Sustainable Finance** is providing advice to the European Union on developing a comprehensive strategy on sustainable finance including potentially an EU green bond standard.²⁷
- 3. United Nations-World Bank Group Roadmap for a Sustainable Financial System** outlines how to create a financial system that integrates sustainability considerations into its operations, ultimately directing resources toward more inclusive and sustainable activities.²⁸

Where to from here? Going beyond green

While there remains an urgent need to transition to low carbon and climate-resilient development and growth, making progress toward the Sustainable Development Goals requires action on all fronts. Capital markets are key drivers of investment and an indispensable vehicle for connecting the private sector to investments in development. The financing required for cost-effective technologies and innovative solutions to pressing global challenges that will achieve these sustainability goals cannot come from governments alone.

Green bonds are catalyzing a trend in sustainable and responsible bond markets. Over time, as investors get comfortable with green bonds, they begin to seek other investments and opportunities that go beyond climate-related themes. Recognizing the trend and burgeoning demand, ICMA played a leadership role in coordinating and publishing the Social Bond Principles²⁹ and Sustainable Bond Guidelines³⁰ in 2017 to provide guidance to issuers and investors alike.

Socially responsible investing, ESG or impact investing approaches have been around for decades, but are only gradually being integrated into traditional fixed income investments. We are just scratching the surface of what's possible when it comes to sustainable capital markets and ESG investing.

25. <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/>

26. <https://www.fsb-tcfd.org/>

27. https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en

28. <http://www.worldbank.org/en/news/press-release/2017/11/13/amid-growing-momentum-un-and-world-bank-lay-out-roadmap-for-sustainable-financial-system>

29. <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/SocialBondsBrochure-JUNE2017.pdf>

30. <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/SustainabilityBondGuidelines-JUNE2017.pdf>

Supranational issuers, like the World Bank, other development finance institutions, and public issuers, like states and cities, channel investments to projects designed to achieve the Sustainable Development Goals and programs aimed at improving health, agriculture, and infrastructure in a sustainable manner across communities globally. The World Bank (IBRD), for example, issues \$50-\$60 billion in sustainable development bonds annually. IBRD green bonds are a small subset of this program. Everything the World Bank does is aligned to its goals of reducing extreme poverty and boosting shared prosperity. Labels for bonds are helpful and the sustainable nature or impact credentials of the broader universe of sustainable investment opportunities can be overlooked if they do not come with an explicit label drawing attention to their sustainability or social merits.

A transformation is on the horizon in the way market participants and stakeholders think about sustainable investing and finance. The World Bank is working with an increasing number of partners including asset managers and asset owners to move the needle on ESG integration and sustainable investing, more broadly.

In October 2017, for example, the World Bank Group announced a strategic partnership with the Government Pension Investment Fund of Japan (GPIF), the largest pension fund in the world on developing a framework for ESG investing in fixed income.³¹ GPIF for its part announced a selection of three new benchmarks created for the pension plan by MSCI and FTSE Russell in July 2017 to direct Japanese equity investments to ESG and socially-themed investments.³²

As first step in the partnership, the World Bank Group and GPIF will develop a joint research product that offers practical solutions for integrating sustainability considerations into fixed income portfolios. Ultimately, the aim is to direct more capital towards sustainable investments.

Challenges to greater expansion of sustainable capital markets and related investment products include data quality and availability, a lack of standard approaches for integrating ESG, limited benchmarks, unclear perceptions around performance tradeoffs and impact reporting hurdles. Investors and issuers can expect to see a growing number of initiatives, partnerships, research and news promoting ESG and sustainable investment opportunities. An increasing focus from the private sector and public sector on showcasing their contributions to achieve the Sustainable Development Goals will also help to drive innovation in the sustainable and responsible investment universe.

31. <http://www.worldbank.org/en/news/press-release/2017/10/11/world-bank-group-and-gpif-join-forces-to-mobilize-capital-markets-for-sustainable-investments>

32. http://www.gpif.go.jp/en/topics/pdf/20170703_esg_selection_en.pdf



Colleen Keenan
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Colleen Keenan has over 15 years of experience in financial services and communication. She joined the World Bank Treasury in 2007. In her current role, Colleen is responsible for outreach on the World Bank's bond issuance program to the sustainable and impact investing community and related efforts to build sustainable capital markets. Previously, she led communications efforts for the World Bank Treasury's client advisory and financial products businesses. Before joining the World Bank, Colleen held various roles at Morgan Stanley Investment Management in New York where she focused on client services and marketing for institutional international equity and global asset allocation products. She holds an M.A. in International Relations and Economics from the Paul H. Nitze School of Advanced International Studies at Johns Hopkins University.



Heike Reichelt
Head of Investor Relations and New Products at the World Bank Treasury.

Her team's responsibilities include managing relationships with bond investors and rating agencies, and developing new products for investors. These include products that raise awareness for the Sustainable Development Goals (SDGs), and products for climate change mitigation and adaptation - like World Bank Green Bonds. Her team also performs similar functions for the International Finance Facility for Immunisation (IFFIm), for which the World Bank acts as treasury manager. Heike manages the World Bank's outreach to the sustainable and impact investing community and works with other issuers and market participants to encourage the growth of sustainable capital markets focused on making a long-term positive social and environmental impact. Heike has 20+ years of experience in finance – including as an engagement manager for the World Bank Treasury's Reserves Advisory Management Program for central banks and in the areas of export finance and capital markets. She was recently recognized for her role in building sustainable capital markets as the 2017 recipient of the prestigious Joan Bavaria Award.

Green Bonds: Johanna Köb, head of responsible investment, Zurich

1. Have there been any developments in the green bond market in recent years, in terms of the typical types of issuer type or projects being funded?

The largest development was certainly broadening the spectrum of issuers to municipal, corporate and sovereign issuers, from the supranational ones there were originally. There is now a much broader issuer base and more global base of projects being financed.

First these new, corporate, issuers were mainly in Europe, then the US, then in the last 18 months Asia. Over the last 18 months there has been a lot of growth in China and India and, to a smaller degree, Australia, Japan and Korea. Also, in the last 12 months sovereigns have entered the green bond market: Poland, France and most recently Fiji.

The most prevalent type of green bond projects is still around energy efficiency (including green buildings) and low-carbon transport, which is a form of climate change mitigation. In the US, a lot of the municipal bond issuance focuses on water projects, such as upgrading their canal, sewage and water filter systems, or installing flood defences for more concentrated precipitation patterns, which is a form of climate change adaptation. Climate change is the largest environmental issue that green bonds seek to tackle, especially ensuring that climate change is reduced to the greatest degree possible. However, some degree of climate change is already locked into our atmosphere, so we will certainly need to adapt to these changes.

And not every green bond has to focus on climate change. Pollution, bio-diversity and resource scarcity are also areas of concern that can be addressed by green bonds.

2. Are there any future developments that we have not yet seen enacted that you anticipate being particularly significant in the next few years?

I expect the market to keep growing in volume and also diversity. The bulk of bonds will likely continue to tackle climate change but think that in future, the other areas will grow as a proportion of the total.

There has been a lot of thinking recently about more water-related bonds, in particular looking at marine life conservation and preserving fisheries supply chains, as well as projects such as preserving the Great Barrier Reef. And I expect more of the municipal issuances to be in coastal areas, where some of the biggest threat from climate change is to be expected.

I hope to see more project-based bonds in future. These are structured differently. So when you buy a green bond, either from a supranational issuer like the World Bank, or a corporate, for example Iberdrola, you know the money for those bonds will be ring fenced by the organisation for projects that meet the eligibility criteria for green bonds. But the credit risk you assume as the investor is the same as for any conventional bond of the same issuer, and you are treated like any other creditor in that you are taking on the risk of the issuer. With a project-based bond, the risk is based on the success of the specific project being funded by the issuance. Because the project-based bonds are riskier and require specific expertise in pricing them, most green bonds are structured so the lender has recourse to the issuer. Project-based issuances will probably never make up the majority of the market, but I do hope we will see more of them in the future.

The other development we are likely to see is applying the idea behind green bonds and the way in which they work to other financial instruments, such as green loans. The Green Bond Principles, in fact, could be applied to a variety of different financial instruments.

There will be an improvement in how issuers report on the impact of green bonds to the investors. Issuers are already trying harder to provide investors with more information about the outcomes of their investments. More work will need to be done, but we are already on a very promising path.

3. Has the yield profile of green bonds changed? For example, has the relatively low fixed income yield environment of recent years affected green bond yields, or have low yields in other areas of fixed income made green bonds comparatively more attractive, compared to traditional fixed income securities?

As we have discussed before, a vast majority of green bonds tend to be recourse to the issuer bonds. Accordingly, those bonds tend to price on the same yield curve as conventional bonds of a given issuer. Of course you would see the usual differences in profile between a corporate or a supranational bond, or see pricing differences in developed world and emerging market issuers. But in general, green bonds are just as affected by the low yield environment as the bond market in general. We have seen anecdotal evidence that green bonds price tighter than conventional bonds of the same issuer. But at this point it is hard to attribute those pricing differences to a bond's "greenness" alone.

4. Have there been developments in the market for bonds among different types of buyers (ie. pension funds vs. insurance companies, vs. other institutions)?

That is hard to answer because we don't necessarily know who all the other investors are, or why they are buying green bonds. From having served on the executive committee of the Green Bonds Principles for a few years, I know the other investor members in this committee are other large insurers, pension funds and large asset managers, on behalf of mainly institutional, but also some retail, clients.

At Zurich, we have invested over US\$2.2 billion in green bonds at the moment. As an insurance company, we tend to invest heavily into fixed income in order to match the risk/return criteria of our insurance liabilities. Impact investing is one of the pillars of our responsible investment strategy. So, when looking for impact investment instruments, green bonds - but also social and sustainability bonds - are a natural fit for the type of investor that we are.

5. How has the secondary market for green bonds developed, as issuances have increased? Is there a growing market for wrapped or packaged GB portfolios (ie. funds)?

One of the largest differences between green bonds and conventional bond markets is that liquidity tends to be lower for green bonds in the secondary market. Because many investors buying green bonds do so for impact investment reasons, they tend to hold them to maturity. However, investors still do trade green bonds, and with the growing market volume the secondary market also grows. Still with a lower liquidity profile than conventional bond secondary markets, though.

In terms of fund offers, we do see increasing variety in the market as it grows in volume and matures. There are several retail green bond funds. There are green bond indices. The first green bond Exchange Traded Fund was launched this year, by Lyxor Asset Management. As the market matures further, I am sure instruments such as retail funds, indices and ETFs will be increasingly used. Currently, the bulk of the market activity is between issuers and institutional investors using both primary and secondary markets and it might remain this way for a while.

6. Is there anything else significant coming up in the development of the green bond market that you haven't touched on already here?

The most important thing going on right now is an interesting discussion about what constitutes a green bond exactly. I think it is healthy to let the market develop and allow for innovation. But it is also important to foster harmony in definitions and regulation. Different regulators in different markets are looking at what green bonds should look like in their regimes, for example the European Commission is currently thinking about green bond standards and discussing the question of 'what is green enough?'. But equally we must not have too much of this standardisation and regulation, so that we do not stifle the market and the innovation in it.

The introduction and proliferation of green bonds - who celebrated their ten year anniversary this year, by the way - have had an immensely valuable side effect: The education of financial market participants on environmental topics. I frequently sit in meetings with treasurers these days, who are able to not only explain the financial features, but also the environmental benefits and strategies of their products and operations to me. This was not the case a few years ago. The current debate around “shades of green” is very valuable, and I think we will move towards a better shared understanding of what “green” or “sustainable” means, using more science based definitions. Transitioning our economy to a more sustainable state will take a lot of change in business models and infrastructure, and those changes will have to be financed through a variety of different means. But financial markets are smart. And once we have learnt and understood what “green” and “sustainable” means, I believe there is no limit to future application of this concept to other financial instruments. Facilitating this education is the most fundamental benefit the green bond market has had. It really is the starting point of a much bigger journey.

Amundi AM and Green Bonds

1. Introduction

In December 2015, 195 governments vowed to help limit the rise in global temperature to “well below” 2°C above pre-industrial levels, as well as pursue efforts to limit the temperature increase to 1.5°C¹.

With substantial financing requirements, achieving this objective will require a global investment mobilization. Taking nationally determined contributions (NDCs) as well as other policies in 21 developing countries into account, the UNEP inquiry reported an investment opportunity of \$22.6 trillion from 2016 to 2030 in key sectors². Renewable energy alone is expected to experience \$7.4 trillion worth of investments through 2040³.

These investment levels are intended to pass through the financial sector by activities such as bank lending, project finance, institutional investing, or equity investing. Green bonds are fit-for-purpose having been asserted as a scalable and effective solution to channel private capital towards climate orientated projects.

With that in mind, this article will expand on

- green bond fundamentals;
- the history and current outlook of the green bond market; and
- Amundi's green bond offering for institutional investors.

2. Green Bond Fundamentals

Green bonds are standard fixed income instruments with the specific aim of financing green assets. As such, green bonds are earmarked for green projects but backed by the issuer's entire balance sheet. Risk/return profiles of green bonds are in line with risk/return profiles of conventional bonds given that investors are exposed to the same credit risk.

Overall, issuers can self-label their bonds as green but it has become standard market practice for green bonds to follow the voluntary guidelines published by the International Capital Market Association (ICMA), the Green Bond Principles (GBP), last updated as of June 2017 (first published in January 2014), which comprise four principles:

- Use of Proceeds;
- Process for Project Evaluation and Selection;
- Management of Proceeds; and
- Reporting.

Eligible projects according to the Green Bond Principles include energy efficiency, renewable energy, green buildings, waste management, land use, water management, transportation / mobility.

Currently, there are four types of green bonds on the market⁴:

1. Standard green use of proceeds bond;
2. Green revenue bond;
3. Green project bond; and
4. Green securitized bond.

Taken together, by enhancing transparency and disclosure the GBP promote integrity in the development of the green bond market by providing guidance on green bond issuance.

1. COP 21 Paris Agreement.

2. UNEP Inquiry, World Bank Group, Roadmap for a Sustainable Financial System, November 2017.

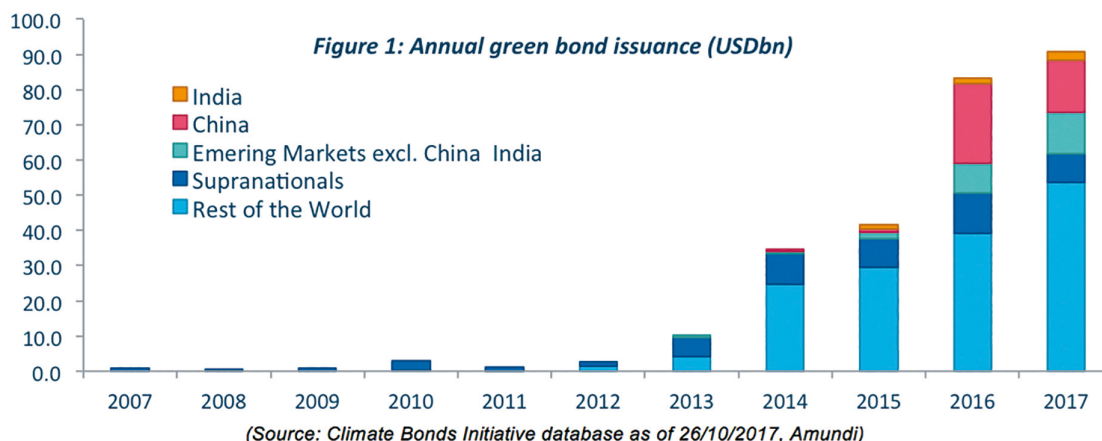
3. Bloomberg New Energy Finance, New Energy Outlook 2017, 2017.

4. <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/GreenBondsBrochure-JUNE2017.pdf> (For further explanation see <https://www.climatebonds.net/market/explaining-green-bonds>)

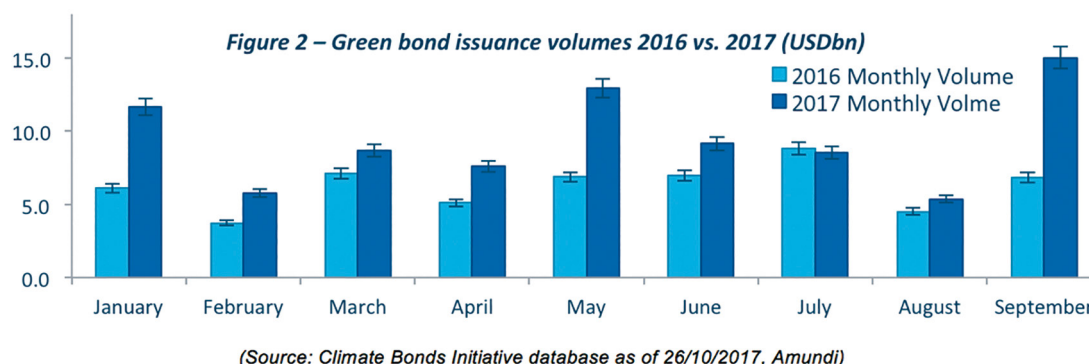
3. The History and Current Outlook of the Green Bond Market

Undeniably, global green bond issuance has experienced impressive growth since first issuance in 2007. The Climate Bonds Initiative reports that as of September 2017, labelled green bonds outstanding amounted to \$221 billion, 24% of the total \$895 climate-aligned bond universe.

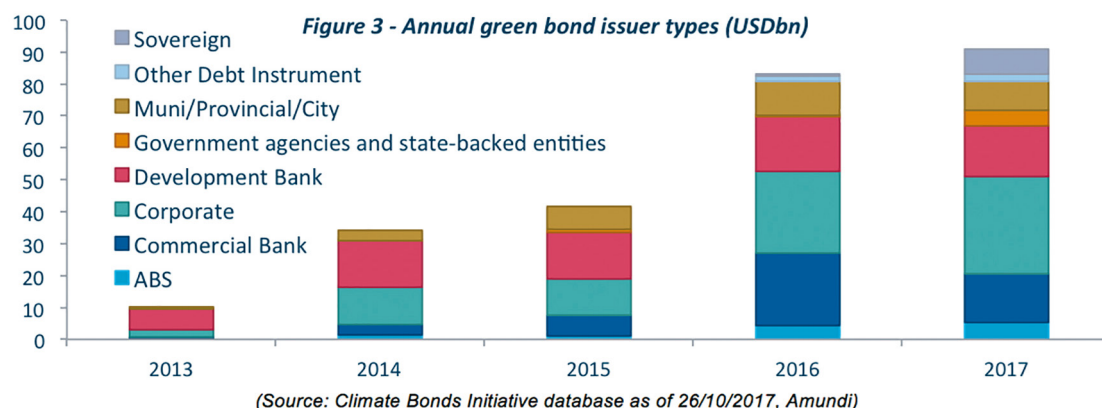
Since 2011, the labeled green bond market has recorded year on year growth (Figure 1) with 2016 marked as a milestone for substantial enlargement of issuance activity in emerging markets.



2017 has continued the groundbreaking trend as by the third quarter it already marked an annual as well as quarterly issuance record, \$94.5 billion and \$32.7 billion correspondingly⁵ (Figure 2). By the end of the year, a total annual global green bond issuance up to \$130 billion is expected⁶.



While supranational entities have been the initial drivers of supply (Figure 1), corporates as well as financial institutions have seen their share grow since 2013 in total green bond issuance (Figure 3). Specific to financial institutions, an IFC survey found over 60% of their financial institution clients in emerging markets are already active in financing climate-related and green projects⁷. Thus, there is room for emerging market financial institutions to grow in the future.



5. Up until 3Q2017. Source: Full-year issuance on course to exceed \$120 billion in 2017, Moody's Investors Service, 9 November 2017.

6. Moody's Investor Service, Green Bonds – Global : Full-year issuance on course to exceed USD120 billion in 2017, 9 November 2017.

7. UNEP Inquire, World Bank Group, Roadmap for a Sustainable Financial System, November 2017.

As the green bond market has grown and diversified from an issuer standpoint, there has also been notable movement from a project point of view. Energy related projects have continued to be the most likely green project categories to be financed by green bond proceeds with 73% of transactions in 2017Q3 geared towards renewable energy and energy efficiency⁸. However, overall, 2017 showed a more equitable spread of projects funded (compared to previous years) largely covering buildings and industry along with transport, water, and waste and pollution control⁹.

The growth in size and diversity of the green bond market must also be considered in light of the rise in global responsible investing as well as the rationale for investment into green bonds. Simply put, Environmental, Social, and Governance (ESG) considerations are growing among investors and they are here to stay, which is emphasized by the rise in global assets managed by a responsible investment strategy from \$13.6 trillion in 2012 to \$22.9 trillion in 2016¹⁰.

One rationale for investment considers the current institutional investor mobilization on the front of addressing the risks of climate change due to the rise of new regulatory obligations. Regulatory obligations related to the management of investor exposure to climate risks already exist and are forthcoming. One may reference the rise of regulations promoting the inclusion of ESG considerations into decision making processes such as the IORPS Directive for pension funds at European level, Article 173 of the Law on Energy Transition for Green Growth in France, as well as SEC Regulations¹¹.

Article 173 of the French Energy Transition for Green Growth Law of August 17, 2015, constitutes a key policymaker-led innovation with regards to climate disclosure. It is the first to make it mandatory for institutional investors to include a detailed assessment of climate considerations, and more generally, to publish how they take environmental, social and governance (ESG) criteria into account in their investment strategies. Perhaps most importantly, the prescribed “comply or explain” approach provides some leeway to investors, thereby favoring a pertinent integration of these criteria through an adaptable framework, while favoring the progressive build-up of internal climate-related capabilities.

Because labelled green bonds encourage and usually rely on impact reporting of the use of proceeds, they can provide an easy and effective way for investors to disclose their energy transition contribution. With the national commitments foreshadowing a more generalized adoption of similar regulatory requirements across the globe, green bonds can become a useful compliance tool for institutional investors.

8. Moody's Investor Service, Green Bonds – Global : Full-year issuance on course to exceed USD120 billion in 2017, 9 November 2017.

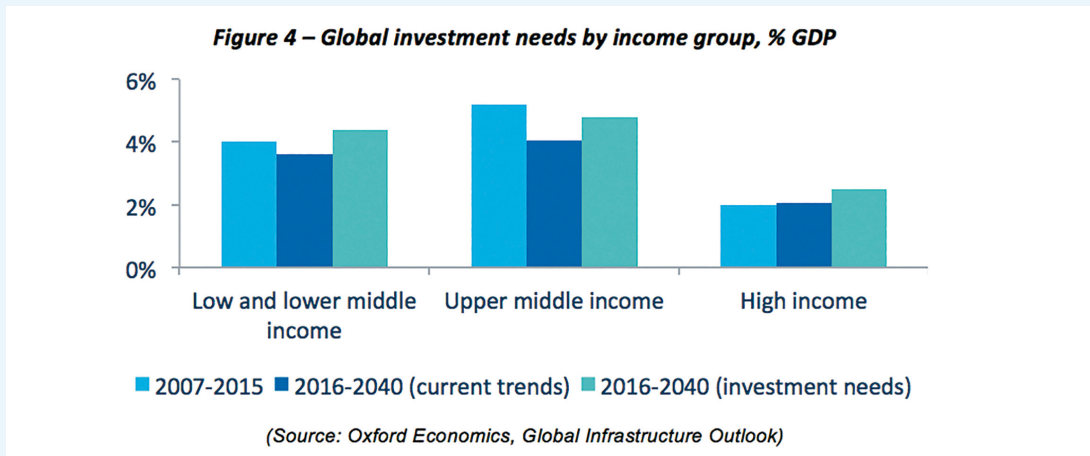
9. Climate bonds initiative since 2013

10. Global Sustainable Investment Review 2016, Global Sustainable Investment Alliance

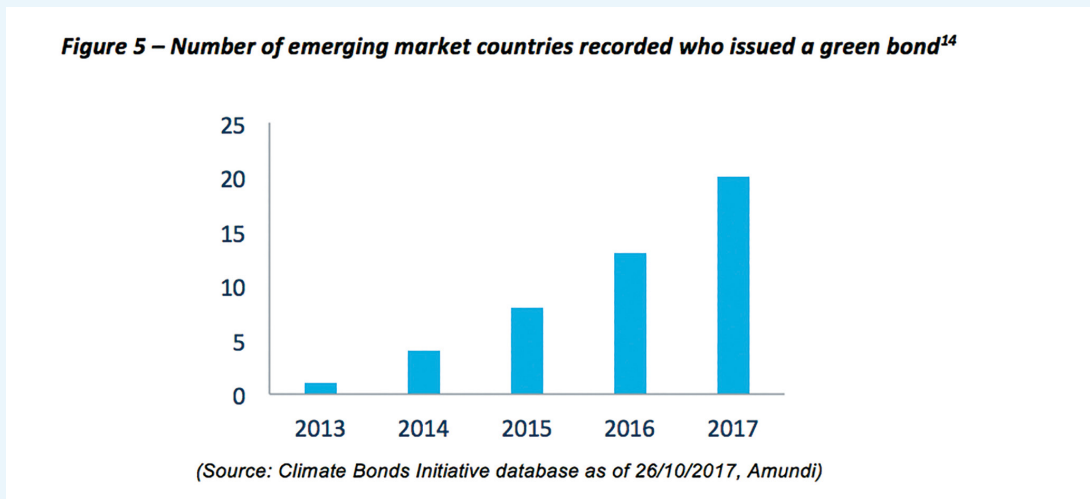
11. SEC Regulations are also increasingly unclear as whether environmental and carbon metrics should be disclosed, while CDSB is pushing Stock Exchanges to promote carbon disclosure of listed companies and the SASB is increasingly recognizing climate risk in its standard process-creation.

Case Study - Emerging markets potentially defining the future green bond market:

Coupled with \$23 trillion in opportunities for climate-smart investments in emerging markets until 2030¹², the rise of emerging market green bonds is at the forefront of addressing the largest demands for climate adaptation and mitigation. Oxford Economics finds the global infrastructure gap to be most apparent in middle and low income nations considering the current infrastructure spending trend as well as the required investment needs trend (Figure 4 overleaf). Taking China alone, there is a required \$300billion needed per year in the next five years to achieve its Intended Nationally Determined Contribution (INDC), 85% of which must come from the private sector¹³.



Green bonds are increasingly addressing the gaps identified as emerging markets represent an increasing proportion of global labelled green bonds (seen in Figure 1) with China leading the pack since 2016. Milestone issuances continue to take place and have been originating from a larger base of emerging market countries (Figure 5), such as Argentina (La Rioja Province), Chile (Inveriones CMPC S.A.), South Africa (City of Cape Town), or the United Arab Emirates (National Bank of Abu Dhabi).

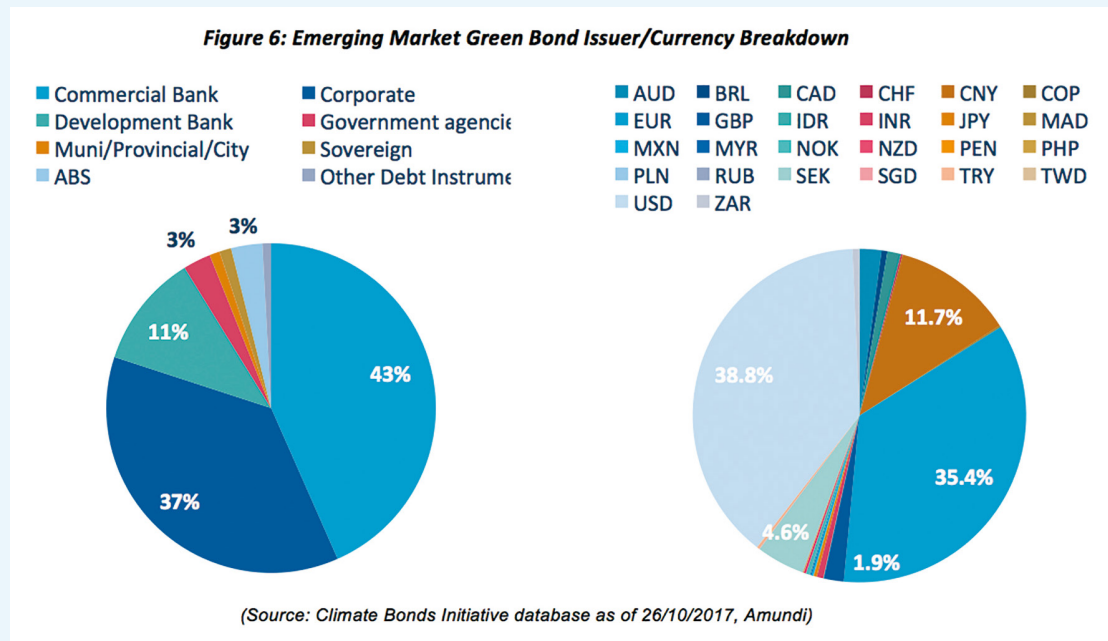


12. Climate Investment Opportunities in Emerging Markets: An IFC Analysis, IFC, 2016

13. Financing China's green ambitions , speech by Helen Wong, Chief Executive, Greater China at HSBC, during the HSBC Sustainable Finance Forum in Beijing on August 9, 2016.

14. 2017 year to date.

The related green bond market is also maturing and diversifying across types of issuers, currency of issuance, as well as across different sectors (Figure 6).



Further issuance and diversification can only be expected as emerging markets continue to be active on setting ambitious sustainable policy agendas as well as releasing national green bond guidelines. China, India, Kenya, Brazil, and Japan just to name a few. The ASEAN Capital Markets Forum is developing green bond guidelines that will be applicable to all its members¹⁵.

Thus, emerging markets quintessentially exhibit the potential behind green bonds channeling private finance towards the low carbon economy thereby helping nations implement and meet their INDC targets.

15. SeC Malaysia & aCMf. (2017). The ASEAN Capital Markets Forum Collaborates with International Capital Markets Association to Introduce ASEAN Green Bond Standards. aCMf. [online] available at <http://www.theacmf.org/aCMf/upload/13march2017.pdf>.

4. Amundi, An Innovator in The Green Bond Segment Leveraging an ESG Expertise

Our commitment to responsible investing has enabled us to become one of the leaders in green finance. With that in mind, we consider our deep ESG capabilities as the foundations for our product offerings aligned with the topic of climate change and more specifically green bonds.

Amundi's responsible investment DNA:

Amundi has an extensive history with responsible investments dating back to 1986. Since then, Amundi's ESG internal resources have grown in adjacency to our responsible investment offering across all asset classes. Specifically, our foundation in responsible investment is based on our ESG analysis capabilities as well our active engagement with issuers.

Firstly, the extensive ESG analysis resources at Amundi enable us to invest responsibly in our position as a manager on behalf of asset-owners. An initial reference point is the strict exclusion policy applied to all of Amundi's management. These rules exclude:

- All direct investment in companies involved in the production or sale of anti-personnel mines or cluster munitions, pursuant to the Ottawa Treaty and the Oslo Convention on Cluster Munitions.
- Businesses that produce or sell chemical, biological, and depleted uranium weapons.
- Companies that seriously and repeatedly violate one or more of the 10 UN Global Compact principles.
- States that systematically and deliberately violate human rights and commit high crimes including war crimes and crimes against humanity.
- Issuers that have more than 30% of their revenue from coal extraction.

Such issuers are rated "G" on Amundi's scale (scale from A to G, A being the best rating and G the worst). Thus, all G rated issuers are excluded from active Amundi investments¹⁶.

Secondly, our governance stewardship allows Amundi to act responsibly beyond ESG assessments and ratings to actively engage with issuers. Through a constructive dialogue and a strong voting policy, asset managers can encourage the improvement of company ESG performance.

Not only do these two pillars allow Amundi to have a broad responsible investment approach but they also allow us to have a palette of solutions enabling us to answer client constraints and objectives. Undeniably, each asset owner has a different view on ESG investing. Thus, Amundi is able to offer tailor-made solutions through either adapting to client ESG investment demands and/or guiding clients in developing their own ESG framework.

For instance, Amundi is able to apply multiple approaches to ESG integration such as exclusion filters, low carbon filters, and so on. A unique application of ESG capabilities is Amundi's Socially Responsible Investment (SRI) methodology encompassing a best-in-class approach that applies to €169bn in SRI management¹⁷.

Furthermore, supporting Amundi's responsible investments is our participation to responsible finance investment forums, collective initiatives, working groups, as well as support for relevant academic literature.

Our participation to investment forums ranges from France to the rest of the world. For example, Amundi is a member and director of Finansol but also a member of multiple SIFs¹⁸ across Europe as well as in Australia and Japan.

Amundi's involvement to collective initiatives with institutional investors and other asset managers concerns a range of issues such as deforestation (Forest Footprint Disclosure Project), use of water resources (Water Disclosure Project), access to medicine (Access to Medicine Index), ESG reporting (UN Global Compact Engagement on Leaders & Laggards), climate change (Green Bond Principles, Portfolio Decarbonization Coalition, Climate Bonds Initiative) and many more such as the Principles of Responsible Investments (Founding signatory in 2006).

16. Excludes index funds and ETFs constrained by their benchmark index.

17. Amundi figures as of September 30, 2017.

18. Sustainable Investment Forums

Finally, Amundi ranked first in the SRI & Sustainability rankings published by Extel and the UKSIF in the category “Asset Management best firms for SRI/ESG” for the last three years. In 2017, Amundi was awarded an A+ score by the PRI, for the third year in a row. This grade reflects the quality of Amundi’s ESG analysis and its ability to incorporate ESG criteria into its asset management.

Amundi’s ESG analysis applied to green bonds:

ESG analysis enables Amundi to incorporate intangible risks related to a company’s activity into investment decisions, and is therefore likely to reduce the level of risk for the investor. The implementation of ESG analysis therefore lies in the ability to select companies that positively address issues of sustainable development, based on a set of ESG criteria.

These ESG criteria include (as examples):

- Energy consumption and CO2 emissions as *Environmental criteria*;
- Human rights and human capital as *Social criteria*; and
- The structure of the Board of Directors and shareholders’ rights as *Governance criteria*.

Amundi has set up an ESG evaluation process that includes different kinds of analysis:

- *Fundamental*: casting a critical view on external data and direct contact with companies,
- *Multi-criteria*: the company is evaluated based on about forty criteria
- *Relative and sector-based*: the aim is to compare practices in a given sector, without judging the company’s sector of operation (Best in Class approach).
- *Forward-looking*: the aim is to identify a company’s ESG risks and opportunities according to their business model. This means incorporating any significant event into the evaluation

Additionally, Amundi’s ESG analysis meets three requirements. It is:

- *Systematic*: all companies analysed are systematically filtered against a set of criteria comprising the core analysis.
- *Universal*: the criteria for the core analysis are based on universally recognised international texts, such as the Global Compact, the Kyoto Protocol, the Millennium Development Goals, the OECD Principles of Corporate Governance, etc.
- *Transparent*: at any time, the rating assigned to a given company can be justified using a decision tree, based on the company’s scores on the various criteria of the core analysis.

In order to identify players leading a low-carbon energy transition the issuer’s ESG analysis focuses on environmental aspects (E rating) and a more specific rating with respect to the energy transition (ET rating).

The “Environment” rating takes into account (among others) criteria such as:

- Three generic environmental criteria: Power consumption and greenhouse gas emissions; Water and biodiversity; Pollution and waste
- The sector-specific environmental criteria

The “Energy Transition” rating takes into account (among others) criteria such as:

- Power consumption and greenhouse gas emissions; and
- The sector-specific environmental criteria

Thereafter the analysis of the green bonds issued covers

- Adherence to the Green Bond Principles;
- Quality of the projects funded; and
- Quality of reporting.

Amundi's engagement capabilities:

Because responsible investing does not stop at asset management, Amundi optimizes an engagement policy and voting policy that are aligned with a sustainable view on investing.

Amundi's engagement policy focuses on three main aspects: engagement for influence, collecting information for rating purposes, voting at general meetings and pre-meeting dialogue. These aspects are central to Amundi's fiduciary responsibility and role as a responsible investor.

Since 2013, our engagement for influence has been particularly active on 6 themes among which: Respect for Human Rights in the mining and petroleum industries; Combatting food waste in the agrifoods and retail sectors; the environmental impact associated with coal in the Utilities sector.

In addition to these sector reviews, our analysts produce extensive studies on themes linked to major sustainable development issues, for instance: water, unconventional hydrocarbons, endocrine disruptors, palm oil, etc. These studies enable us to adopt positions on controversial activities.

Furthermore, in order to fine-tune company assessments, the ESG analysts stage meetings with more than 200 companies per year. During 2016, Environmental issues made up almost half of the subjects addressed, focusing on Environmental strategy, Energy consumption, & greenhouse gas emissions, Biodiversity, and water.

Amundi engagement capabilities applied to green bonds:

Amundi specifically leverages our engagement outreach in approaching green bond issuers to

- gather necessary information in analysing a green bond issuance (adherence checks to the GBPs, quality of projects funded, quality of reporting); and
- communicate our knowledge as an GBP executive committee member to spread green bond best practices.

Thereby, accessing first-hand information on green bond issuances for our green bond analysis processes as well as acting to improve green bond issuance standards.

Amundi's Green Bond Governance Setup:

A "Green Bonds" committee was created in order to:

- track the securities belonging to the investment and portfolio universe;
- track current events related to the topic; and
- discuss methodological problems in order to improve our methodology.

It relies on the expertise of the ESG analysis, portfolio management, research, and sales teams.

It ensures the relevance of the processes by sharing the expertise of the teams involved, maintains topic monitoring due to regular discussions, and ensures that the topic is reviewed and adapted as perceptions of it change (client feedback, competition, research, etc.).

Amundi's Climate Offering:

In general, not only does Amundi attempt to provide specific solutions to meet the investment gaps to finance the energy transition, we also thrive to participate to and encourage the debate to ensure that market developments are aligned with our beliefs.

Since 2014, Amundi has galvanized its responsible investment expertise to develop a leadership in developing products devoted to fighting climate change. Along with participation to key collective working groups and association, this consists of a range of solutions covering fixed income, equity, and real assets.

In 2014, Amundi co-founded the Portfolio Decarbonization Coalition, a coalition of 27 investors that have committed to align over \$600bn of their portfolios with a low carbon economy, and that was a key representative of the business and finance community at the COP21.

Most recently, Amundi was elected as a representative of the investor community at the Executive Committee of the Green Bond Principles, thereby exemplifying its commitment to best represent investors' interest for green bond market development and spreading of best practices.

In the real asset space, Amundi launched a joint-venture with EDF to offer the best energy infrastructure investments sourced by the sector leader to our client base, with concrete impacts on the real economy.

Amundi, alongside Swedish National Pension Fund AP4, Fonds de Réserve pour les Retraites (FRR) and MSCI co-developed low-carbon indexes, with subsequent launch of indexed and ETF strategies. These strategies answer the need for investors to manage and mitigate their long-term carbon risk in their portfolios. This equity expertise was soon complemented by an equity green impact strategy and a water strategy financing respectively key actors of the energy transition in Europe and companies seeking to mitigate water scarcity.

Amundi has launched three green bond strategies since 2015, detailed below.

1. Amundi's first green bond initiative:

Launched in 2015, the fund aims to finance players leading in the low-carbon energy transition.

- Only selecting bond issuers with a positive environmental rating and a positive energy transition rating (both ratings must be greater than or equal to C on Amundi ESG scale);
- Applying restrictions to fossil fuel sectors such as oil, gas and consumable fuels; and
- Targeting the funding of low carbon and climate resilient projects.
- Labelled green bonds as well as regular bonds issued by companies with a positive contribution to the energy transition.
 - Minimum 66% of the investments made must be allocated to labelled green bonds.
 - The expansion to unlabeled bonds focuses on companies with main activities in green technology, who generate at least 50% of their sales from environmental activities, along with a focus on climate mitigation leaders in key sectors (Automobile, capital goods, transport, real estate, chemicals, insurance, banks, and utilities).

2. Amundi' second green bond initiative with impact reporting focus:

Launched in 2016, the fund invests exclusively in green bonds whose projects have a measurable positive impact on the environment.

Amundi has selected one key metric for evaluating the impact of its green bond investments: avoided emissions. The motivation behind this decision is to facilitate easy comparison between the bonds in the investment universe by using a clear metric that can be applied to most issuances.

This enables a superior impact reporting capability which was a breakthrough innovation in that we produce systematic monthly reporting on avoided emissions.

The fund enables investors to measure the positive impact of their investments on the environment in tons of CO₂ avoided per million invested.

- 100% investments into green bonds that meet two criteria: alignment with the GBP; and finances projects with a measurable positive impact on the energy transition.
- Builds tailored impact reporting by measuring the environmental returns of investments through the use of CO₂ avoided emissions per EUR million invested to measure the impact.
- Aims to avoid 1000 of CO₂e per MEUR per year.

3. Amundi & IFC partnership:

Amundi signed a strategic partnership with the International Finance Corporation (IFC). It is unique public-private-partnership whereby an expert developmental finance institution partnered with a leading asset manager to unlock private capital investment flows for climate investments in developing countries.

The IFC Green Cornerstone Bond Programme (GCBF)'s purpose is to develop the green bond market in emerging markets by working on (i) injecting market demand with Amundi's USD2bn Fund and (ii) supporting issuers to bring more green bonds to the market with IFC's supply support facility. The USD2bn-target fixed income fund intends to invest in green bonds issued by banks in Africa, Asia, the Middle-East, Latin America, Eastern Europe, and Central Asia.

- A 12 year closed-end fund to be 100% invested in green bonds issued by financial institutions in emerging market after an initial investment period whereby the relative green bond supply will be supported by IFC's supply enhancement operations.
- Includes IFC taking a first-loss position to offer institutional investors an investment with attractive risk/return standards.
- Aims to spread green bond best practices to reinforce green bond market integrity for emerging market green bonds.

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Green Bonds

An opportunity to effectively finance
a sustainable world with long-term results

Introduction

Four major trends affecting sustainable performance expected from the financial sector

The world we live in changes rapidly. We see four major trends that currently affect the sustainability¹ context in which pension funds and insurance companies are operating.

Firstly, the Sustainable Development Goals (SDGs) have been agreed upon by the world's leaders in the context of the United Nations. These 17 goals aim to end poverty, protect the planet, and ensure prosperity for all. It is an agenda that calls upon the financial sector to make its contribution to realize a sustainable world by 2030.

Secondly, there is an increasing demand amongst stakeholders for more sustainable and impact-driven investments. For example, authorities require the financial sector to contribute to the Paris Agreement on climate change and customers demand that their pension or insurance money is invested with a positive impact on society.

Thirdly, the market for more sustainable financial instruments and specifically green bonds has been growing rapidly in the past years. Although there are challenges surrounding green bonds regarding their actual societal impact, a lack of diversity of deals liquidity and the limited breadth of the market, the financial sector increasingly sees green bonds as an opportunity to contribute to a more sustainable world and low carbon society.

Fourthly, there is a trend towards intermediate financing. Where banks dominate the European market in terms of providing credits, but institutional investors are taking up a larger role by investing in bonds. In this context, green bonds are a means to ensure more green and long-term financing.

The financial sector faces the challenge for more sustainable and long-term returns

Given these trends, pension funds, insurance companies, other institutional investors and their asset managers² face the following question: how can the financial sector most effectively finance a sustainable world and at the same time ensure the financial returns expected by customers?

Green bonds: an opportunity to effectively finance a sustainable world with long-term results

To address this question, pension funds can take on a proactive role and grasp the opportunity green bonds provide. Pension funds can do so by for example demanding that investments are directed towards financial instruments that result in the highest carbon mitigation impact. As it is expected that this in turn also generates the most optimal long-term returns, green bonds are such an instrument.

Pension funds, issuers and their advisors can do so by developing and managing financial instruments that are increasingly sustainable. Measuring the environmental and social impact of these instruments helps to optimize allocation of financial flows to flows that will minimize negative and maximize positive impacts. Green bonds have these characteristics, as they are a low carbon alternative to plain vanilla bonds and require impact measurement and reporting.

In this way the financial sector can contribute to a liveable world, where clients can enjoy the long-term financial returns sustainability provides.

About this paper

To further explain how the financial sector can effectively benefit from green bonds³, the following will zoom in on the rationale for investing in green bonds (section 1), how investing in green bonds works (section 2), the impact and challenges surrounding green bonds (section 3) and the future potential of the green bonds market (section 4). Each section contains examples for illustrative purposes.

1 For the purpose of this paper we are focusing on the sustainable context rather than the financial context.

2 For ease of reading from here on called pension funds.

3 Note that this paper uses the term 'green bonds', which includes 'climate bonds', they do not include 'social bonds'.

1 Vision: why invest in green bonds?

The fiduciary responsibility of pension funds and insurance companies, as well as asset managers, is to make sure that the money their clients entrust to them is invested in such a way that they can enjoy a healthy and prosperous life in a sustainable world. Green bonds provide a way to fulfil this responsibility in the fixed income realm in four ways. Green bonds are defined by the Green Bond Principles (GBP) as “any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects”⁴.

First, green bonds are about creating positive environmental impact and thereby contribute to the Sustainable Development Goals (SDGs). In 2015, the world’s leaders agreed upon a new agenda for sustainable development and the 17 SDGs. As previously mentioned, the aim of this agenda is to end poverty, protect the planet, and ensure prosperity for all. Government, business and civil society are working together to achieve the goals by 2030⁵. There are various SDGs, which green bonds help contribute by financing projects, see Figure 1 for an overview.



Figure 1 Overview of example projects financed by green bonds and linked to SDGs

Second, green bonds are a growing market and are expected to total USD 130 bn at the end of year 2017⁶, compared to a total issuance of USD 81 bn in 2016⁷. Having said this, the green bond market is a nascent market, which represents between 2-3% of global bond market transactions. Thus, the market requires more breadth, depth and liquidity. A wide diversity of deals is required and although this is increasing in terms of the number of countries, bond types, issuer types, ratings and use of proceeds, especially more corporate green bonds are needed. Every party with a verifiably credible proposition is welcome to enter the market, be it with new assets or refinancing, or be it pure green players to grey players that use green bonds in the transition to a low-carbon portfolio.

Third, there are initial indications that green bonds show long-term financial returns similar to other plain vanilla bonds⁸. Given the market for green bonds is still in its infancy it is not yet clear whether in the long-term they provide higher financial returns. However, the market expectation is that in a more pressured market, green bonds will be less volatile and will outperform the other plain bonds, because green bonds are in more fixed hands. Especially when external costs like carbon emissions are captured in carbon prices, this becomes even more relevant.

⁴ The Green Bond Principles (2017). Available at: [\[link\]](#)

⁵ Transforming our world: the 2030 Agenda for Sustainable Development. Available at: [\[link\]](#)

⁶ Climate Bonds Initiative (2017). Global Green Bonds Mid-Year Summary 2017. Available at: [\[link\]](#)

⁷ Climate Bonds Initiative and the International Finance Corporation. Green bond pricing in the primary market: January 2016 - March 2017. Available at: [\[link\]](#)

⁸ Idem

Fourth, green bonds provide transparency on the environmental impacts associated with the projects they finance. That is, issuers are required to report the allocation of proceeds and impact of the bond, for example, in terms of carbon emissions avoided. This makes it easier to identify and provide information on bonds that contribute to a 2-degrees transition path as set out by the Paris COP21 Agreement on climate.

BOX I: Why ACTIAM invests in green bonds

ACTIAM has been an active player in the field of green bonds since their first issuance in 2013. ACTIAM is the responsible and impact asset manager that aims to realize a liveable world as defined by the Sustainable Development Goals (SDGs). It does so by generating long-term financial and social returns for clients. Based on experience with a Responsible Investment Strategy of over 25 years, clients entrust ACTIAM with managing a portfolio of EUR 54.1 billion assets (ultimo June 2017).

ACTIAM believes that focusing on the societal impact of investments results in higher long-term financial returns. That is why, based on a materiality assessment and conversations with key stakeholders, ACTIAM decided to focus its strategy on three SDGs in particular: climate (#7), water (#6) and land (#15). At a minimum, all investments under management meet ACTIAM's social, environmental and governance policies, which are in line with the aims of the SDGs. At the same time, ACTIAM aims to optimize the positive impact of investments where possible and especially on the three SDGs.

To track progress, ACTIAM has set a target for each of these three SDGs. For climate, this is a reduction of 40% of the CO₂ emissions of all investments in 2040. For water, this is a water-neutral portfolio in 2030, and for land this is the protection, restoration and sustainable use of ecosystems and forests. To effectively achieve these targets in its fixed income realm ACTIAM invests in green bonds. First, because green bonds allow for investments specifically aimed at environmentally friendly projects. Second, green bond issuers are required to measure the environmental impacts of investments, where possible in quantitative terms, which allows for tracking progress on the targets ACTIAM has formulated. However, green bonds are not the only means to achieve the goal, also plain vanilla bonds of relatively sustainable issuers help us to reach our targets.

2 Action: How to invest in green bonds?

Green bonds provide a huge opportunity for pension funds that want to invest in a more environmentally friendly way. However, given the strong growth of the market there are still some challenges around investing in green bonds that require attention. For example, there are questions around the definition of a green bond, the costs related to issuing a green bond as well as measuring and reporting the impact of green bonds.

Definition of a green bond

Although the definition by the Green Bond Principles provides an indication of what a green bond is, there are nuances to be made. On the one hand, this is due to a lack of standardisation regarding the eligibility criteria of projects that can be financed by a green bond. That is, green bonds can range from pureplay wind farms to retrofitting coal power plants for energy efficiency. Some regard the latter as not sufficiently green, due to its continued reliance on a fossil fuel industry. On the other hand, this is due to a lack of independent verification.

Since the first green bond issuance from the European Investment Bank (EIB) and the World Bank in 2007, there has been a growing development of green bond labelling. That is, there is a trend towards standardisation, as started with the first corporate green bonds issued in 2013 in line with the Green Bond Principles. This in turn evolved into the Climate Bonds Standard, which defines the official eligibility criteria for a bond to be certified under the Climate Bonds Standard and Certification Scheme. At the same time, countries increasingly develop national green bond regulations, China being an example of this. Thus, there is an increasing mix of definitions evolving.

Some parties are more stringent than others in defining the shades of green of a bond, and rating agencies have a role to play in this. For example, Moody's indicates that capital is required for the transition to a low-carbon economy and therefore is less concerned with whether this is the core activity of the company that issues the bond. Whilst Lombard Odier Investment Managers looks at the extent to which the projects financed by the green bond are green and the motivation of the party issuing the bond; that is why it did not invest in the green bond issued by oil company Repsol.⁹

Costs related to a (new) green bond

Both issuers and investors face additional costs related to green bonds as compared to regular bonds. From an issuer perspective, there are costs related to issuing a green bond, both up front and at an ongoing basis. These costs are related to transaction costs due to labelling, administration, certification, reporting, verification and monitoring requirements¹⁰. However, once costs related to setting up processes have been incurred, there is a large potential for issuers to benefit from economies of scale. Additionally, they also benefit from broadening their investor base. From an investor perspective there are also costs associated with extra due diligence and research into the quality of the green bonds.

No standardized framework for reporting and impact measurement

There is no standardized framework for reporting and measuring the impact of green bonds. This results in challenges regarding the extent to which proceeds are allocated to their intended use or that proceeds have actual positive environmental impact¹¹. However, there are several developments in terms of standardizing the selection of green bonds.

Many challenges are already addressed by industry initiatives like the Climate Bond Initiative (CBI). This is an international NGO working on mobilizing the global bond market required for a transition to a low-carbon and climate resilient economy. It does so by tracking market performance and reporting on market developments, as well as developing the Climate Bonds Standard and Certification Scheme to make it easy for investors to identify investments that address climate change and reduce costs of due diligence.

There are also more specific initiatives to harmonize reporting the impact of green bonds. For example, Carbon Yield, which was launched by Rockefeller Foundation, Lion's Head Global Partners, South Pole Group and Affirmative

9 Financial Times (2017). "Sellers of green bond face a buyer's test of their credentials". Available at: [🔗](#)

10 OECD (2015). Green bonds: Mobilising the debt capital markets for a low-carbon transition. Available at: [🔗](#)

11 KPMG (2015). Gearing up for green bonds: key considerations for bond issuers. Available at: [🔗](#)

Investment Management. This initiative aims to develop a standard methodology to quantify the climate change mitigation impact of green bonds.¹²

BOX II: The ACTIAM Green Bond investment process

ACTIAM has developed expertise in green bonds investments and strongly supports industry initiatives for standardization, such as the GBP and CBI. ACTIAM applies its knowledge of green bonds in two phases of its regular responsible investment process. First, to assess whether to invest in a green bond. Second, to manage the sustainable and financial performance of green bond investments.

With regards to the first phase, ACTIAM assesses whether an issuer and its bond are green and the extent to which it is green. To do so, ACTIAM has formulated a green bond policy, which describes the requirements for investing in green bonds. Figure 2 shows the step-by-step assessment of a bond for it to receive a green label from ACTIAM and the consequences this has for the ESG score we allocate to the bond and the engagement activities we undertake with the issuer of the bond.

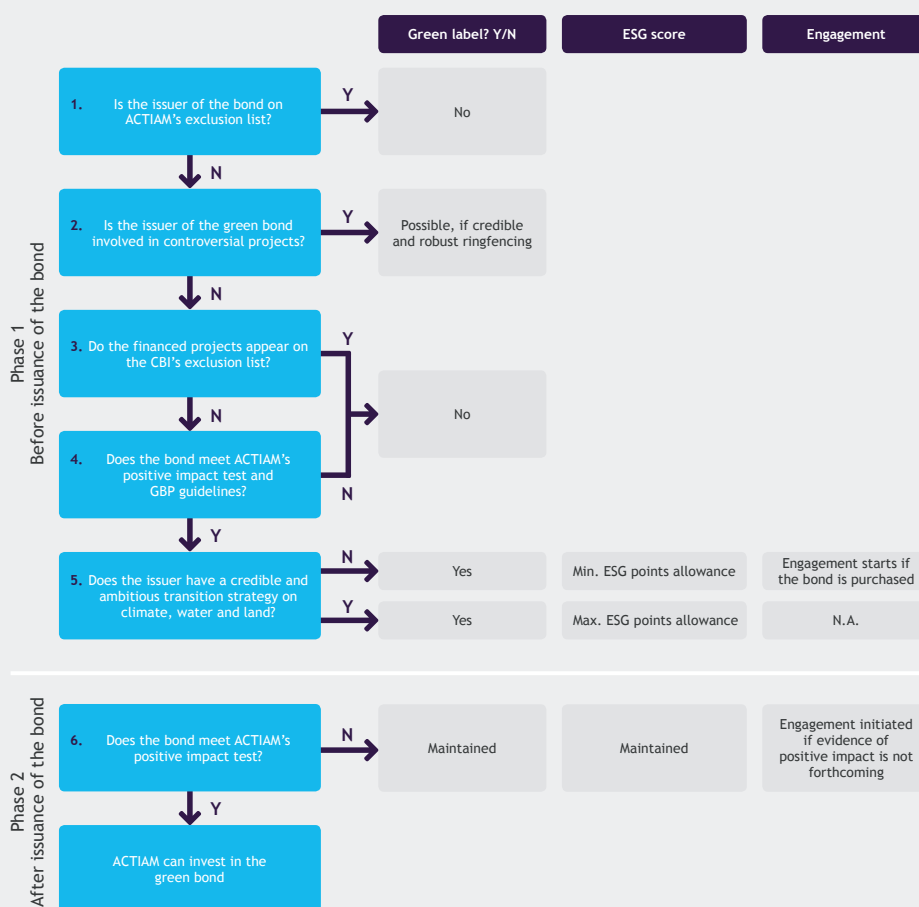


Figure 2: Overview of example projects financed by green bonds and linked to SDGs

Concerning the second phase, ACTIAM uses its ESG score to ensure that investments are geared to more sustainable performance. The ESG score captures the sustainable performance of an individual asset and the degree to which the asset contributes to ACTIAM's targets on climate, water and land. Also, the ESG score of an asset can be adjusted if ACTIAM has determined that it has a material positive contribution to sustainability, such as green bonds. In case a green bond is issued by an issuer with a credible, broad and ambitious sustainable transition strategy it receives additional points for the ESG score. The ESG score ranges from 0 to 100, with 100 being the highest score.¹³

¹² Carbon Yield. Available at: [Carbon Yield](#)

¹³ ACTIAM (2016). Responsible Investment in green bonds. Available at: [Responsible Investment in green bonds](#)

3 Result: what is the impact of green bonds?

Green bonds typically aim to reduce negative environmental impacts through avoidance of CO₂ emissions and energy consumption. That is, the types of projects green bonds finance often concern energy efficient buildings, clean energy and clean technologies. Compared to conventional alternatives these generate less CO₂ emissions and use less energy.

To understand the impact of green bonds, however, there are two main challenges regarding measuring and reporting the impact of green bonds:

1. **Measuring impact:** a standardized impact measurement framework for green bonds is under development, and there is a large variety in the methods that issuers use to measure impacts. For example, impact measurement can be qualitative or quantitative, issuers can use different reference scenarios for the same impacts and the attribution of impacts to specific bonds or projects is sometimes not sufficiently transparent. Ultimately, this makes it challenging to aggregate and compare impacts of green bonds.
2. **Reporting impact:** the extent to which issuers report the impact of the projects that are financed by a green bond also varies. For example, this can be: in terms of the level of detail, the degree to which impact is quantified, whether impact is expected (ex-ante) or actual (ex-post), the number of indicators, and the degree to which the report is third party verified.

Despite these challenges, it is important to note that the market is developing toward a more standardized manner of measuring and reporting the impact of green bonds. The International Capital Market Association (ICMA) is taking steps to provide templates for green bond issuers on impact reporting at project and portfolio levels. Additionally, ICMA has developed voluntary guidelines on energy efficiency, renewable energy, water and wastewater projects¹⁴.

Further, a position paper for the Nordic public sector green bond issuers, stipulates key impact reporting principles regarding financial, environmental and procedural aspects. It indicates the need to strike a balance between keeping impact reporting manageable and sufficiently detailed at the same time¹⁵. In addition, the paper encourages issuers to formulate information in light of their overall objectives on environmental sustainability as well as the SDGs.

These are positive developments that will allow the financial sector to improve the effectiveness of its investments towards both a liveable world and financial returns.

¹⁴ ICMA (2017). Market Practice & Regulatory Practice, Green, Social and Sustainability Bonds, Resource Center. Available at: [🔗](#)

¹⁵ Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting (2017). Available at: [🔗](#)

BOX III: A snapshot of green bonds ACTIAM invests in

To gain a better understanding of the impact of green bonds, ACTIAM reports on the financial performance, environmental impact and SDG-related impacts at bond-level.

Financial performance of green bonds ACTIAM invests in

ACTIAM invests in a variety of green bonds, ranging from corporates to sovereigns, thereby focusing on Euros. Below follow two green bonds and the projects they financed, with, where available, the environmental impact that can be associated with the projects.

1. Green STORM 2016

In 2016, Obvion N.V., a wholly-owned subsidiary of Rabobank, issued the first RMBS (Residential Mortgage Backed Security) that is 100% green: Green STORM 2016. The bond has a volume of EUR 500 MN. and average duration of 5 years. The assets of the bond are green residential mortgages and proceeds of the bond will finance these. The houses that are financed concern energy efficient homes and houses that have been refurbished to improve energy performance. This bond is unique as it opened up a new market for green investors.

2. EDF green bond

EDF Group, a producer of low-carbon energy, has issued green bonds since November 2013. Its green bonds support the development of renewable energy sources, such as new wind and solar projects as well as renovation and modernization of hydropower facilities. At 31 December 2016 the green bonds are expected to result in 3.9 Mt avoided CO₂ emission per year.¹⁶ EDF maintains a strong green bond framework through which it determines the projects that are eligible for financing. It upholds the ICMA Green Bond Principles, which stipulate transparency on use of proceeds, fund management, proceeds allocation and reported information.

Currently the financial performance of green bonds and 'grey' bonds is similar. As shown by Figure 3, there is not much difference between the z-spread of EDF's first green bond (maturity 2021) and the z-spread of a comparable 'grey' bond that is not expected to allocate proceeds to 'environmentally friendly' projects of EDF over a 5-year period.

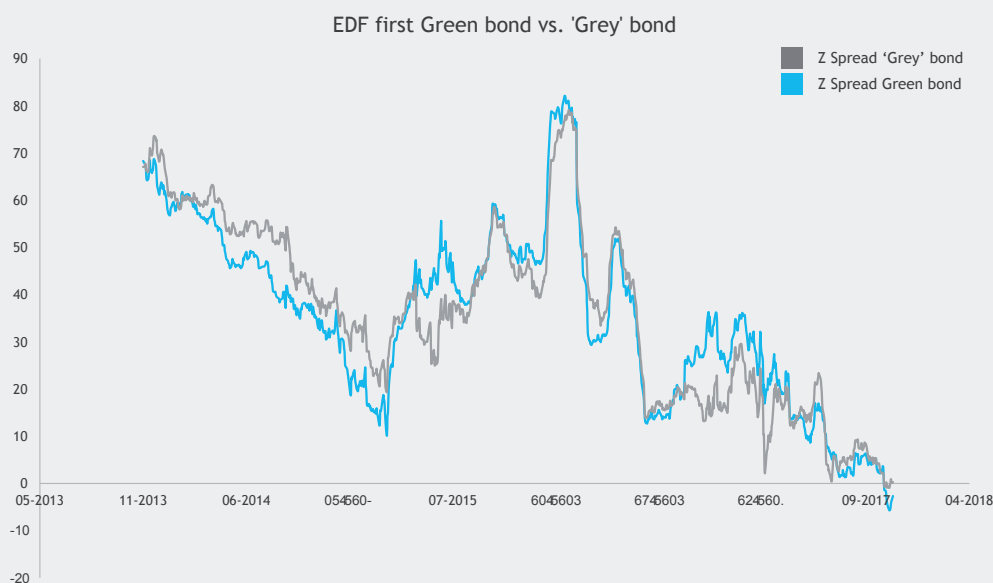


Figure 3. Comparing the z-spread of EDF's first green bond and a comparable EDF 'grey' bond (Bloomberg, 2017)

Environmental impact of green bonds ACTIAM invests in

Unfortunately it is not yet possible to report on the actual impacts of the green bonds we invest in at an aggregate level, due to a limited number of impacts that are or can be quantified and due to various assumptions used for quantifying impact such as differences in reference scenarios and definitions of carbon emissions. This makes it difficult to ensure green bonds investments are made in the most effective manner, for example to assess actual carbon emission reductions and the extent to which bonds are aligned with the 2 degrees scenario as defined by the Paris Agreement on Climate Change.

However, ACTIAM is actively engaging issuers by requiring them to improve both measurement and reporting. We do so by participating in ICMA working groups on defining impact and by asking questions on these topics during roadshows of issuers.

SDG-related impacts of green bonds ACTIAM invests in

ACTIAM aims to understand the extent to which its investments contribute to the SDG agenda. That is why in 2016 we reported on the SDG allocation to projects financed by our green bond investments for one of our portfolios. See Figure 4 for an overview of the various SDGs to which the projects financed by the green bonds in that portfolio can be linked.

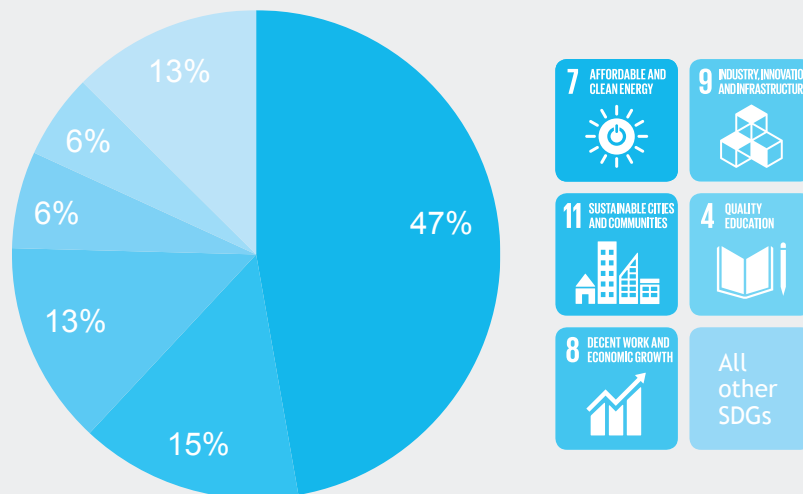


Figure 4 SDG allocation to green bonds we invest in through SNS Obligations Fund in 2016

16 EDF (2017). Available at: [\[link\]](#)

4 Future: where do we go from here?

Despite the challenges in the current green bond landscape, the future of the green bonds market is bright. Especially given the SDG agenda and increasing demand from stakeholders for sustainable investments, as well as information on the sustainable impact of their pension fund or insurance money, there is a positive trend towards more standardization and transparency.

That is why, in light of the current context, the overarching aim of the financial sector is to further exploit the opportunity green bonds provide to create more social and financial returns. To achieve this, the sector can gear efforts towards three sub-aims:

1. Aim to contribute to standardization of the green bond market: green bond definition, impact measurement and reporting.
2. Aim to contribute to maturity of the green bond market: call for more diversity of issuers, for example more corporates.
3. Aim to improve transparency and communication of impacts of green bonds: so that clients like pension funds and insurance companies can in turn use this in communication with their stakeholders.

Multi-stakeholder collaboration can bring the market to a next level. Pension funds can play an important role in this, for example by directly asking issuers for more green investment opportunities or by requiring asset managers to identify more green bonds, who can in turn use this as leverage towards issuers. Once investments in green bonds are made, stakeholders can also demand issuers to measure and report on the environmental and social impact of their investments, so that customers are informed on this.

Next to this, it is interesting to note that next to ambitions in the green bond market, there are developments towards other types of bonds that the financial sector can tap into to contribute to a low carbon world. For example, the Seychelles has issued a blue bond to finance sustainable fisheries initiatives like the management of small scale artisanal fishery, post-harvest value adding opportunities and marine conservation.

All in all, these activities will help to allocate financial flows to shape a more sustainable world in which customers receive the financial returns they require.

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