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Insurers and green bonds

An attractive entry point into sustainable investing

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Summary

- A green bond is a fixed income instrument dedicated to new or existing projects deemed environmentally beneficial. The bond's proceeds are ring-fenced on the issuer's balance sheet to finance these green projects.
- As of mid-2018, the green bond market has $389 billion in outstanding debt, by BlackRock's definition, most of it investment grade.
- Green bond performance is driven by the same factors driving traditional bond returns, since the bond is tied to an issuer's overall creditworthiness, not to a specific project.
- Green bonds enable investors to fund green projects without the liquidity sacrifice or credit risk of directly investing in these projects.
- Investors are increasingly demanding detailed and transparent reporting on the quantifiable intended environmental benefits of the projects funded.
- We expect green finance to grow rapidly over the next five years. Insurance companies will likely continue to play a major role in that growth.

Defining Green Bonds

Because green bonds are a new asset class, methodologies for determining which bonds qualify as "green" vary somewhat. BlackRock has developed its own methodology for defining green bonds and maintains a proprietary database of them. Our process includes checking new issuers for alignment with the Green Bond Principles, monthly cross-checks with Bloomberg and the Climate Bonds Initiative and Environmental Finance databases, and annual verification that issuers are meeting their reporting obligations. The Climate Bonds Initiative (CBI) is a non-profit organization working to mobilize the bond market to promote climate change solutions, and Environmental Finance is a news and analysis service focused on sustainable investing. Unless otherwise specified, all green bond analysis in this paper refers to the green bond universe as defined by BlackRock. For more on the Green Bond Principles, see page 5, and for more on our methodology, see page 12. The analysis performed in this publication is for informational purposes only and is based on evidence derived from third party data sources as well as BlackRock's own opinion and analysis as of July 15, 2018. It is not meant to be a recommendation to buy or sell any security.

Data source: BlackRock analysis of BlackRock, Bloomberg data as of July 15, 2018, unless otherwise specified. All assets are denoted in U.S. dollars unless otherwise noted.

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The story so far

More and more institutional investors are embracing some form of sustainable investing. See ***Sustainable investing: A "why not" moment***, published by the BlackRock Investment Institute in May 2018. Insurers are part of the trend, and are among the leading investors in one of the most rapidly growing segments: Green bonds.

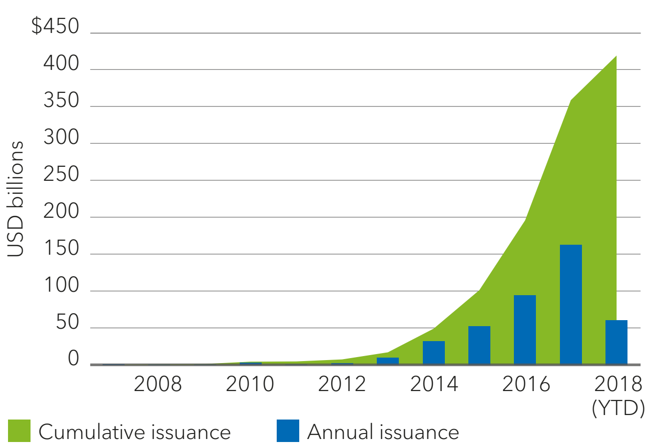
What is a green bond? It is any type of fixed income issuance that specifically and solely dedicates its proceeds to financing new or existing projects that advance environmental objectives. Issuers set the qualifying criteria for these green projects, and have used the bonds to finance initiatives in fields such as renewable energy, green buildings, wastewater management, energy efficiency and public transportation. Unlike a debt offering from a company that presents its overall operations as environmentally friendly, green bond proceeds are ring-fenced on the issuer's balance sheet, set aside for the exclusive purpose of financing one or more projects deemed environmentally beneficial. A green bond's return, however, is backed by the credit of the issuer as a whole.

The green bond market began a little more than a decade ago with issuance by supranationals like the European Investment Bank and the World Bank[1]. It gained momentum with the entry of corporate issuers in 2013 and, in 2014, the establishment of the Green Bond Principles, a framework devised by market participants to bring greater precision to the definition of green bonds. (See page 5.) As the chart below shows, issuance has more than tripled in the last five years, going from less than $15 billion in 2013 to over $155 billion in 2017. The market infrastructure has grown as well. Today, five different indexes track green bonds, multiple second-opinion providers certify that issues meet green criteria, and two of the major rating agencies score green bond issues on their adherence to global norms and environmental benefits.

Insurers were among the first investors in green bonds and are major holders of them, according to a survey released in 2017 by Credit Agricole. For good reason: Their underwriting businesses make insurers keenly aware of the risks posed by climate change, promoting an enlightened self-interest in buy-and-hold investments that can help to mitigate the overall level of risk. With their large fixed income portfolios, moreover, we have observed that many insurers see bonds as a logical entry point into sustainable investing. Green-bond issuers are often already known to them, and green-bond yields have historically been similar to those of their non-green counterparts.

Green sprouts

Annual and cumulative issuance of green bonds



Source: BlackRock, Bloomberg. Issuance value as of July 15, 2018 for green bonds as defined by BlackRock outstanding as of May 31, 2018.

Investment rationale

Like the broader field of sustainable investing, green bonds are evolving rapidly. For insurers less familiar with green bonds as well as those wishing to increase allocations, we think this is an opportune time to review the market. In this paper, we examine the rationale for investing in green bonds, recap some market history, and report on progress in key areas such as measuring the environmental impact of individual bonds, further formalizing the criteria that make a bond green, and boosting supply and liquidity.

1 For more on the market's growth, see "Capital Markets, Climate Finance" in the April 2018 issue of the International Finance Corporation's ***Perspectives***

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Green bonds offer the potential for an effective pairing of investment and environmental objectives. The investment case is a familiar one: Green bonds can provide the same income generation and capital preservation as many other fixed income instruments. For insurers, we believe that fixed income's historically more favorable capital treatment by regulators and relatively lower volatility make the asset class more attractive than other forms of investments, such as equities or alternatives.

At the same time, green bonds enable insurance companies to fund environmentally beneficial efforts without the liquidity sacrifice or credit risk of directly investing in a standalone infrastructure or renewable energy project. Green bonds also benefit from the existence of a well-developed capital market infrastructure that provides secondary-market liquidity, albeit less than conventional investment grade bonds enjoy.

Because a green bond carries the issuer's overall credit rating, its yield and total return are determined by the same factors driving traditional bond returns—structure, credit rating, market technicals and overall interest-rate fluctuations. For the same reason, green bonds are not a direct hedge against exposure to climate risk in a specific portfolio. But in our view, this does not detract from the fact that the asset class is helping to mitigate climate risk in general.

As for yield, the evidence indicates that green bonds have neither a material advantage nor a disadvantage relative to conventional bonds. See the table below. However, there is some evidence that green bonds outperform after issuance. For example, an August 2017 study by the Climate Bonds Initiative (CBI) found that some 70% of green bonds tightened more than their corresponding index in the seven days after issuance in 2016 and 2017, and 71% outperformed after 28 days. These differentials generally stem from a lack of supply in public markets, however, and the reality is that pricing levels between green and conventional bonds are generally very close and highly correlated.

As investments, more alike than different

How European green and non-green bonds compare in three key metrics

Sector	Duration (years)	Yield To Maturity (bps)	Option Adjusted Spread over govt. bond (bps)
Green bond	**6.47**	**52**	**61**
Government Related	6.50	34	45
Treasuries	13.47	110	43
Financial Institutions	4.28	50	85
Industrial	3.04	5	59
Utility	5.67	90	103
Securitized	5.47	27	46
Non-green bond	**6.36**	**45**	**57**
Government Related	6.30	28	41
Treasuries	13.16	116	48
Financial Institutions	3.85	46	87
Industrial	3.12	11	63
Utility	5.82	99	110
Securitized	5.18	22	45

Source: BlackRock analysis on Bank of America Broad Based Euro index as of July 10, 2018. Gray bars show averages for total green bond and non-green bond samples. Methodology: We took all the constituents of the ICE BofAML Euro Broad Market Index (EMU0) and matched each bond that BlackRock considers green with a non-green bond from the same issuer. The corresponding non-green bonds must be in the same currency, at the same level of subordination, and have a duration within one year of the green bond. Hence, the only material difference between the green bonds and their non-green counterparts is the use of the proceeds of the bond. Bonds lacking a comparable non-green bond are excluded. This approach produced 60 duration-matched green bond and non-green bond pairs. Duration, yield and option adjusted spread over government curve are from BlackRock internal database as of July 10, 2018. For illustrative purposes only. Past performance is not indicative of future results.

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Growth of the green bond market

Over the last five years we have observed a rapid increase in both the number of green bond investors and the number of issuers with qualifying green projects. The creation of the Green Bond Principles in 2014 fostered growth by bringing process guidelines to the market. (See below.) Another major factor was the 2015 Paris Agreement on Climate Change and the subsequent push by countries to meet their carbon-reduction targets by mobilizing both public and private capital. Issuers now include financial institutions, energy and technology companies, municipals and sovereigns.

Investor-focused non-governmental organizations such as the Climate Bonds Initiative have also been instrumental in the growth and development of the green bond market. CBI has developed a Climate Bonds Standard and a Climate Bond Certification Scheme that are broadly aligned with the Green Bond Principles.

The Green Bond Principles

As with other approaches to sustainable investing, the growth of green bonds depends in part on the ability of market participants to specify an investment's non-financial objectives and measure its success in achieving them. The Green Bond Principles (GBP) are process guidelines that aim to foster transparency and integrity in the development of the market. They were created by an industry-wide working group set up in 2014 and now governed by the International Capital Markets Association (ICMA) and are meant to help move the market toward standard disclosures. The principles have five pillars:

1. **Use of proceeds:** Issuers outline the types of projects they see as eligible for their green bond program upfront and provide a clear description of environmental benefits.
2. **Process for project evaluation and selection:** Issuers communicate the environmental sustainability objectives, the process for determining whether projects are eligible, and the related eligibility criteria.
3. **Management of proceeds:** Issuers provide information on how funds for green projects are ring-fenced, tracked, and used.
4. **Reporting:** Issuers produce information on the use of proceeds annually until the funds are fully allocated and as necessary in the event of material developments. Issuers are encouraged to report qualitative and, wherever possible, quantitative performance metrics reflecting the project's expected or achieved environmental benefits.
5. **External review:** Issuers publish third-party consultation on the environmental benefits of the program and/or the issuer's adherence to the Green Bond Principles.

Impact reporting is an important element of the Green Bond Principles. The topic has its own working group, which over the last several years has helped put forward reporting templates for issuers on metrics for different types of green bond categories. Renewable Energy and Energy Efficiency were the first two categories, driven by work spearheaded by the multilateral development banks. In 2017, Sustainable Water and Wastewater Management Projects were added. The 2018 updates now include suggested metrics on both Waste Management and Clean Transportation. All of these suggested reporting metrics can be found on the "Resource Centre" on the ICMA Group Green Bond Principles website.

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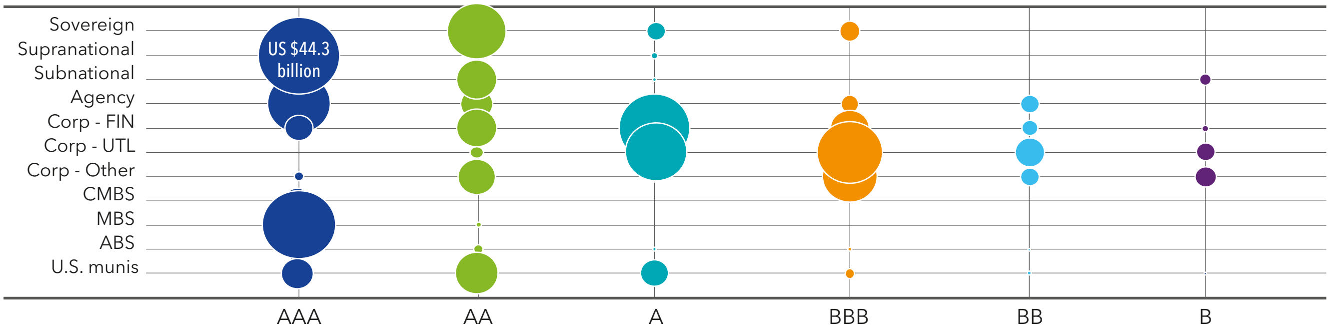
Makeup of the market

Green bond universe by sector and credit rating, amount outstanding (USD billions)



Source: BlackRock, Bloomberg. Issuance value as of July 15, 2018 for green bonds as defined by BlackRock outstanding as of May 31, 2018. For illustrative purposes only. Bond ratings are calculated using the Bloomberg Barclays methodology, which incorporates the individual assessments of the rating organizations S&P, Moody's and Fitch. The ratings do not ensure the stability or safety of an overall portfolio, and past performance is not indicative of future results.

The increase in issuers

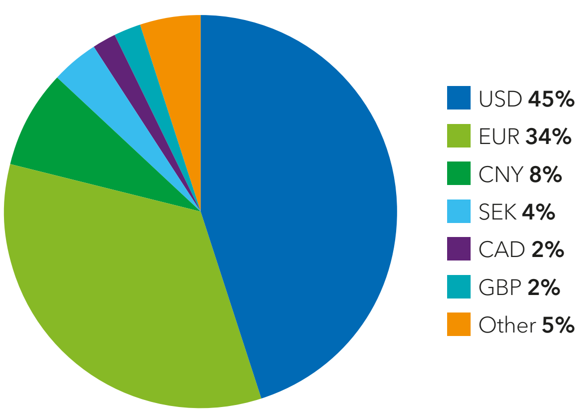
The chart above shows the variety of issuing entities in the market since December 2006, as well as the ratings and size of each segment. Issues are predominantly investment grade (about 95% of the market), of which about one-third are sovereigns, supranationals or agencies (SSAs) and about half are corporates. The outstanding supply of qualifying green bonds (as defined by BlackRock) stood at $389 billion as of mid-2018.

In the universe of green bonds as defined by BlackRock, high yield bonds make up less than 5%. More than 90% of the market is structured with fixed-rate coupons. The option adjusted duration of this universe (including corporates, sovereigns, and securitized assets) is ~6 years, with maturities ranging from <1 to 30-plus years.

The U.S. municipal green bond market is small (approximately $25 billion, with most of the issues tax-exempt) but we expect it to develop rapidly, especially as states like New York and California increasingly focus on climate change. We believe that the municipal market is a natural fit for impact investing given the long-standing focus on project finance. In the case of tax-exempt bonds, however, lower yields can discourage investors who cannot take advantage of the tax exemption such as foreign insurers. Many municipalities also fund environmentally friendly projects through financings not explicitly labeled as green.

Currency distribution and historical issuance by country

Green bonds issued from 2006-2018



Top ten issuing countries 2006-2018

Rank	Country	Issuance ($BN)
1	United States	$97.5
2	Supranational	$51.8
3	France	$49.2
4	China	$48.4
5	Germany	$27.3
6	Netherlands	$20.4
7	Sweden	$15.8
8	Spain	$14.6
9	Mexico	$13.1
10	Canada	$8.7

Source: BlackRock, Bloomberg (issuance value as of July 15, 2018 for outstanding green bonds as defined by BlackRock as of May 31, 2018). For illustrative purposes only.

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U.S. dollar and euro issues have dominated the green bond market, but other currencies such as the Chinese yuan and Swedish krona are making inroads. As of mid-2018, the U.S. ranks as the top issuing country, followed closely by France and China.

The green bond market continues to grow rapidly. A total of 212 issuers, of which 145 are first-time issuers, printed a record $155 billion in green bonds in 2017, a 70% increase from the previous year. The growth in the sovereign market was boosted by France's €10.8 billion Green OAT (as of May 31, 2018). The corporate green bond sector burgeoned with $59 billion in issuance, driven by a doubling in non-financial issuance, to $34 billion. Even so, the top-ten list of issuers since the inception of the market in 2006 remains dominated by supranationals, sovereigns, financials and electric utilities, as the table below shows—with the notable exception of Fannie Mae, which debuted in the green bond market in 2017 and has since become one of the biggest issuers.

The biggest issuers

Top ten green bond issuers since market inception

Rank	Issuer	Issuance ($BN)
1	Federal National Mortgage Association (Fannie Mae)	35.05
2	European Investment Bank	29.24
3	France (Republic of)	17.23
4	KFW	14.95
5	Mexico City Airport Trust	12.00
6	Shanghai Pudong Development Bank Co Ltd.	7.50
7	Engie SA	7.28
8	Tennet Holdings BV	6.70
9	International Bank for Reconstruction and Development	6.56
10	Electricite de France SA	6.40

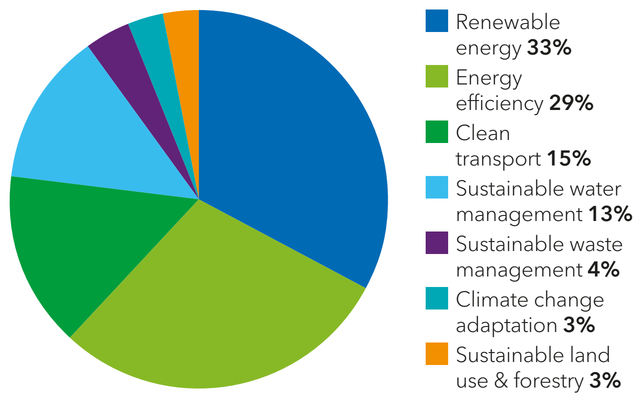
Source: BlackRock, Bloomberg (issuance value as of July 15, 2018 for green bonds as defined by BlackRock outstanding as of May 31, 2018). This list of issuers is for informational purposes only and is not meant as a recommendation to buy or sell any security.

What green bonds are funding

According to the Green Bond Principles, issuers can use the proceeds of an issue to fund a wide range of environmentally beneficial projects, including different kinds of sustainable agriculture, biodiversity projects, and more. In practice, though, most of the issuance to date has been concentrated in a smaller number of categories, with different types of renewable energy the largest use of proceeds. See the chart below.

Where the money goes

Uses for green bond proceeds



Source: Bloomberg, Climate Bonds Initiative, HSBC as of December 31, 2017.

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Expanding investor base

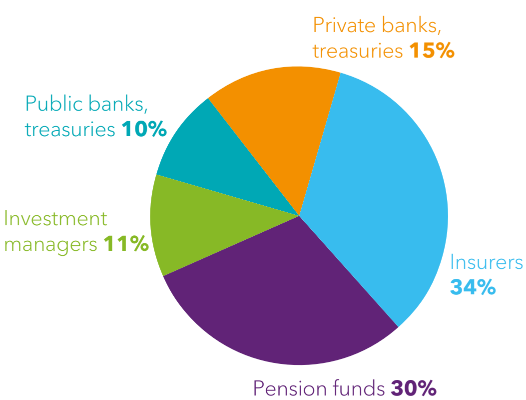
Green bond holders are mostly buy-and-hold institutional investors. In a survey by Credit Agricole of 29 green bond investors (representing 16% of the outstanding green bonds in 2016), 34% were insurers and 30% were pension funds. See the chart below. The majority of these institutional investors have dedicated green bond funds (often focused on SSAs) or are considering dedicated green corporate and/or financial institutions group funds.

We observe, however, that the investor base is growing and diversifying. While open-ended green-bond mutual funds managed just $3 billion in 2016, the funds may be poised to add assets now that many are approaching the three-year track records investors often seek. Further broadening the base are investors adding green bonds to traditional fixed income mandates, including some who want to expand the sustainability focus they already bring to their equity allocations.

One drawback for investors is the limited secondary market for green bonds. Since many green bond buyers intend to hold the bonds to maturity, there are more buyers than sellers in the secondary market. Buyers often have to pay a scarcity premium as a result. This premium can range from one to five basis points in spread versus non-green counterparts, BlackRock estimates, depending on the issuer. Conversely, it is generally easy to sell green bonds on the secondary market given the abundance of buyers.

Green bond owners by type

Makeup of a group of 29 institutions holding 16% of outstanding issues as of Dec. 31 2016



Source: Crédit Agricole CIB, December 12, 2017.

In an attempt to quantify the liquidity level of the green bond universe, BlackRock conducted an analysis using its internal system to derive the historical bid/ask spread of the green versus non-green constituents of the Bank of America Broad Based EUR index. The analysis suggests that green bonds have a slightly wider bid/ask spread than their non-green counterparts. We estimate the bid/ask spread of the green bonds to be ~3.7 bps (or $0.22) for a six year duration universe versus a bid/ask spread of ~2.7bps (or $0.16) for an equivalent non-green universe.[2] Due to the diminished offer-side liquidity in the secondary market, primary market allocations are important. We expect the green bond market's liquidity to improve naturally over time as issuance, issuer diversity and the investor base expand.

Green bond indexes now provide benchmarks that investors can use to monitor market developments, assess market risk and evaluate performance, and to bring the asset class into sharper focus. The list of indexes includes the Bloomberg Barclays MSCI green bond Index, the S&P Green Bond Select Index, and the BAML Green Bond Index. Each offers a slightly different lens on the green bond universe, applying its own criteria for what constitutes a green bond (usually with some reference to the Green Bond Principles) and standards for ratings, issue size and time to maturity.

2 Based on 60 duration-matched green bond and non-green bond pairs as of July 10, 2018. We explain our methodology for identifying the pairs in the table on page 4. For illustrative purposes only.

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Evaluating green bond impact

Because investors want to be sure that green bonds deliver their intended environmental benefits, they are increasingly demanding detailed and transparent reporting on the results of the funded projects. They want to measure how their investments are contributing to their own environmental objectives or, in the case of asset managers, pension funds and insurers, want to report the environmental benefits to their end investors, plan participants or customers. Green-bond investors are pushing both issuers and fund managers to publish environmental impact reports, highlight best practices and encourage greater transparency in the market.

Although impact reporting is still somewhat inconsistent, with varying quality across issuers, the reports have significantly improved in scope and depth over the past three years. BlackRock brings its own approach to impact reporting, drawing on a proprietary database of green bonds in our Aladdin risk and portfolio management system. We illustrate the approach below, using a hypothetical portfolio that tracks the Bloomberg Barclays MSCI Green Bond Index. The *Green report card* display summarizes key metrics such as the amount of renewable energy generated, energy or water saved and emissions avoided per $100 million invested.

In this exercise, we capture most but not all of the hypothetical portfolio's impact. There are 116 issuers represented in this portfolio, who together have a total of $203 billion in green bonds outstanding. Of these issuers, 61%, representing 87% of total assets, reported on environmental impact in 2018. We expect impact reporting to improve over time, in part because of the efforts of the Green Bond Principles' Impact Working Group. Along with helping define key environmental impact metrics for different project categories, the group has worked to harmonize reporting frameworks.

Green report card

Environmental impact of a hypothetical $100 million investment in the Bloomberg Barclays MSCI Green Bond Index.

150,742 tCO_2/year
of avoided emissions/year
Equivalent to taking **32,279 cars off the road**

26,686 m^3/year
of water savings
Equivalent to more than **11 Olympic-sized swimming pools[1]**

3,087 hectares
of land area re/afforested or preserved
Equivalent to more than **4,400 soccer fields[1]**

14,218 people
Benefiting from forest, agriculture, water or waste projects

224,387 MWh/year
of renewable energy generated

262,245 MWh/year
of energy savings
Equivalent to the **annual electricity use of 29,475 homes**

1,042,792 m^3/year
of water or waste collected and disposed or treated
Equivalent to more than **417 Olympic-sized swimming pools[1]**

185,988 new passengers/year
On public transit

Source: BlackRock analysis of publicly available environmental impact reports as communicated by issuers as of May 31, 2018. Based on a hypothetical $100 million invested in the Bloomberg Barclays MSCI Green Bond Index. The above results are shown for informational purposes only, to illustrate the positive environmental impact of a hypothetical green bond portfolio. They are not meant to represent actual impact of or be a prediction or projection of any fund or portfolio. Not every issuer reports on every metric, hence no linear extrapolation should be performed. BlackRock cannot be held responsible for inaccuracies in issuers' reporting; methodology available upon request. Source for CO2 and energy measures: US EPA's Greenhouse Gas Equivalencies Calculator. Other assumptions: 1 Olympic pool = 2,500 m3 of water; 1 soccer field = 7,000 m2.

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External review

The infrastructure for evaluating a green bond's credentials continues to develop. At a minimum, the issuers themselves provide detail on the green eligibility criteria for the use of proceeds, for example disclosed in a green bond framework. To offer additional transparency, issuers can commission an external review. These external reviews, one of the pillars recommended under the Green Bond Principles, consist of an outside, independent opinion on an issuers' green bond framework or issuance, typically provided to investors at time of issuance.

External reviews come in different forms. Second-party opinions by specialized shops such as Cicero or Sustainalytics provide an assessment of the issuer's green bond framework and its alignment with the GBP. Third-party assurances by audit firms such as KPMG or Deloitte state whether the green issuance is aligned with the GBP or CBI's standard. Moody's Investor Services and S&P Global Credit assess an issue's "greenness" on a point scale. Issuers can also opt for a pre-issuance verification of the Climate Bonds Certification according to the Climate Bonds Standard.

In 2018, the annual update of the Green Bond Principles included "Guidelines for External Reviewers." These guidelines stress expertise in eligible green bond categories, confirmation of alignment with the Green Bond Principles, independence and integrity, among other things. Because obtaining these external reviews does entail some additional costs for issuers, some jurisdictions have developed schemes to help pay for the reviews. The Monetary Authority of Singapore announced a grant program for the purpose in 2017, and the Hong Kong Monetary Authority launched a similar initiative in 2018.

Looking ahead

We expect green finance—and the green bond market in particular—will continue to grow rapidly over the next five years.

Some governments see green bonds as a potential tool for mobilizing private capital to mitigate climate risk. In March 2018, the European Commission released its Action Plan on sustainable finance, intended to help generate the €180 billion in annual investment the EU is estimated to need to reach its greenhouse gas emission targets by 2030. Because public funds alone can't meet this need, much of the plan's emphasis is on private capital. Among other measures, its implementation could lead to EU standards for green bonds next year, as well as a push to bring more rigor to disclosure of the environmental benefits achieved by a given investment.

The EU's move is just the latest in a series of government initiatives contributing to the growing geographic diversity of the green bond market. India, China and Japan are among the countries working to foster local issuance. See the sidebar on page 11.

As for the role of insurers, we believe that their unique vantage on (and exposure to) climate risk will help to keep them in the forefront of investors responding to it. Extreme weather events (such as prolonged droughts, hurricanes, floods, and severe storms) led to $560 billion in insured losses from 1980 to 2015, according to a 2016 study by Munich Re. In 2017, the U.S. P&C and reinsurance sectors suffered a record $53 billion in insured losses from catastrophe events, according to A.M. Best. With most climatologists predicting an increase in such events, climate change is likely to become an even greater challenge for P&C insurers.

Insurance regulators are increasingly requiring insurers to factor the effects of climate change into underwriting and investment decisions. As of July 2018, six U.S. states currently mandate insurers with over $100 million in written premiums to complete the Insurance Climate Risk Disclosure Survey of the National Association of Insurance Commissioners. This is designed to assess insurer strategy and preparedness for climate risk in the areas of investment, mitigation, financial solvency (risk management), emissions/carbon footprint, and engaging consumers.

Green bonds cannot directly hedge against climate risk in a portfolio. But as the asset class continues to grow, mature, diversify and improve liquidity, we think they can be an important element of an investment program that seeks to mitigate climate risk for the benefit of the company, its clients and shareholders, and the larger world.

We see green bonds as an effective first foray into impact fixed income investing. They are an efficient way for insurance companies to advance environmentally friendly initiatives while meeting their investment objectives. We encourage investors to consider the long-term benefits of widening their investible universe to include green bonds.

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Growing regulatory support

Selected national initiatives aimed at fostering green bond issuance

China	• The People's Bank of China (PBoC) published Green Bond guidelines, following the template of the GBP, in December 2015 with the aim of harmonizing Green Bond issuance from Chinese issuers. The PBoC has also published the China Green Bond Endorsed Project Catalogue, the official list of eligible green projects.
Brazil	• Brazil's banking federation and the Brazilian Business Council for Sustainable Development developed green bond guidelines in October 2016 with the objective to grow the domestic market.
Japan	• The Ministry of Environment finalized and released a Green Bond Guideline in April 2017.
Singapore	• The Monetary Authority of Singapore launched a Green Bond Grant scheme in March 2017 to cover the costs of external reviews for green bond issuances above a certain size.
India	• The Securities and Exchange Board of India finalized their official guidelines for issuing and listing green bonds in May 2017.
Europe	• In May 2018 the European Commission released its first legislative package under its Action Plan for Sustainable Finance, including proposals on a sustainable investment taxonomy, a green bond certification scheme, sustainable indexes and investor duties. This follows the recommendations of the High Level Expert Group on Sustainable Finance which concluded its work in December 2017. • Poland, France and Belgium have all issued sovereign green bonds, with France's combined €10.8bn issuance in 2017-18 being the single largest constituent of all green indices. More sovereign issuance is expected in Europe later in 2018.
Hong Kong	• The Hong Kong Monetary Authority announced a HK$100 billion (US$12.74 billion) green bond program in June 2018, part of a suite of initiatives expected to encourage more issuance in Hong Kong by mainland China and overseas companies. This includes a grant support scheme for first time issuers that can cover up to 50% of the extra expenses related to green bond issuance.

Worldwide, dedicated green bond lists have been crucial in showcasing green bonds. The table below lists the stock exchanges that have launched a dedicated green bond section:

Name of Exchange	Type of Dedicated Section	Launch Date
Oslo Stock Exchange	Green Bonds	January 2015
Stockholm Stock Exchange	Sustainable Bonds	June 2015
London Stock Exchange	Green Bonds	July 2015
Mexico Stock Exchange	Green Bonds	August 2016
Luxembourg Stock Exchange	Luxembourg Green Exchange	September 2016
Borsa Italiana	Green and Social Bonds	March 2017
Shanghai Stock Exchange	Green Bonds	March 2016
Taipei Stock Exchange	Green Bonds	May 2017
Johannesburg Stock Exchange	Green Bonds	October 2017
Japan Exchange Group	Green and Social Bonds	January 2018

Source: Climate Bonds Initiative, July 30, 2018.

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BlackRock's role

We recognize the broader trend of greater ESG awareness and are expanding the resources dedicated to sustainable investing. BlackRock is an Executive Committee member of the Green Bond Principles group and a Partner of the Climate Bonds Initiative; has a dedicated portfolio management team, the Global Fixed Income (GFI) Responsible Investing Team; and is expanding a proprietary database of green bonds in our Aladdin risk and portfolio management system, including an assessment of the positive environmental impact of each issue.

We update our list of green bonds monthly and cross-check it with multiple external sources such as Bloomberg, the Climate Bonds Initiative database and the Environmental Finance database. Unlabeled green bonds such as debt from "pure play" green entities (e.g. a renewable energy company) is excluded from the list, unless it is labeled "green" according to the Green Bond Principle guidelines. Once a year, when we compile the environmental impact report for our green bond portfolios, we verify that each issuer is complying with its stated reporting obligations on the use of proceeds. On select occasions, bonds that are self-labeled green bonds or that are included on other green bond lists have not been included in the BlackRock tagging due to a lack of transparency on the intended proceeds or our lack of conviction that the projects financed met a defensible threshold of environmental benefit.

BlackRock offers insurance companies customized solutions, including deploying exclusionary screens, incorporating ESG factors, and targeting impact themes in general account mandates. We achieve this through a partnership between the Global Fixed Income Responsible Investing Team and Financial Institutions Group Portfolio Management Team. Clients benefit from BlackRock's scale and Global Capital Markets and Trading and Liquidity Teams, which are dedicated to sourcing bonds in primary and secondary market liquidity. We believe we can apply our understanding of an insurer's business, portfolio and risk management to all aspects of impact investing, including goal definition, target measuring and asset allocation.

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