The Growing Market for Green Bonds

The market for labeled green bonds—bonds whose proceeds are specifically "ring-fenced" for environmental or climate mitigation or adaptation projects—has grown rapidly since the first green bond issue in 2008. Growing diversity of issuers, larger average issuance size, and estimated full-year 2014 issuance of $40 billion (half in corporates) all suggest that the green bond universe is at an inflection point.

This market is developing as environmental, social, and governance (ESG) concerns are becoming increasingly relevant for many investors—for example, Stanford University's Board of Trustees recently adopted a policy to restrict investments in coal mining companies and Norway's sovereign wealth fund (which is actually funded from oil & gas revenues), the largest in the world, is considering divestment from carbon-intensive investments. Further, as discussed in our recent research note *The Fossil Fuel Divestment Discussion*, while "divestment often dominates the conversation, (re)investing in strategies that are more environmentally sustainable and support lower carbon emissions is something investors should study and consider." In fact, a number of our clients allocate a certain percentage of their portfolios to environmentally focused investments. For those concerned with sustainability and impact, green bonds are one area to keep a close eye on.

In this research brief, we review the growth of the market, take a look at issuers and buyers of green bonds, and discuss key considerations and what to watch going forward as this market matures.

What Are Green Bonds?

There is no universally accepted definition of green bonds, but most would agree that they are bonds whose proceeds are used expressly for environmentally friendly purposes. Labeled green bonds, the focus of this brief, are bonds whose proceeds are specifically "ring-fenced" for environmental or climate adaptation or mitigation projects.

Various stakeholders in the green bond market are in the process of putting parameters around the definition of what constitutes a green bond to create greater transparency for investors and to catalyze more issuance. A consortium of 25 banks drafted and published in January 2014 voluntary guidelines establishing how issuers should disclose and report on the use of green bond proceeds. The Green Bond Principles include guidelines for the use of proceeds, the process for project evaluation and selection, the management of proceeds (audited segregation of proceeds on the issuer's balance sheet), and reporting, including impact measurement. The principles recognize several broad categories of potential eligible green projects, including renewable energy, energy efficiency, sustainable waste management, sustainable land use, biodiversity conservation, clean transportation, and clean water and/or drinking water.

Investors considering green bonds may come across the term "climate-themed bonds." According to the Climate Bonds Initiative, an influential nonprofit based in London, green bonds are a subset of climate-themed bonds, which includes bonds whose proceeds are directed toward "areas aligned with a low carbon and climate-resilient economy." An example of a climate-themed bond that is not a green bond would be any general purpose bond issued by a solar energy supplier, or a bond issued by a rail company, since rail transportation is considered a lower carbon alternative to other modes of transport such as trucking or shipping. These would not be green bonds because their proceeds need not be used specifically for environmental or climate mitigation or adaptation projects and they would not satisfy the Green Bond Principles or similar guidelines.

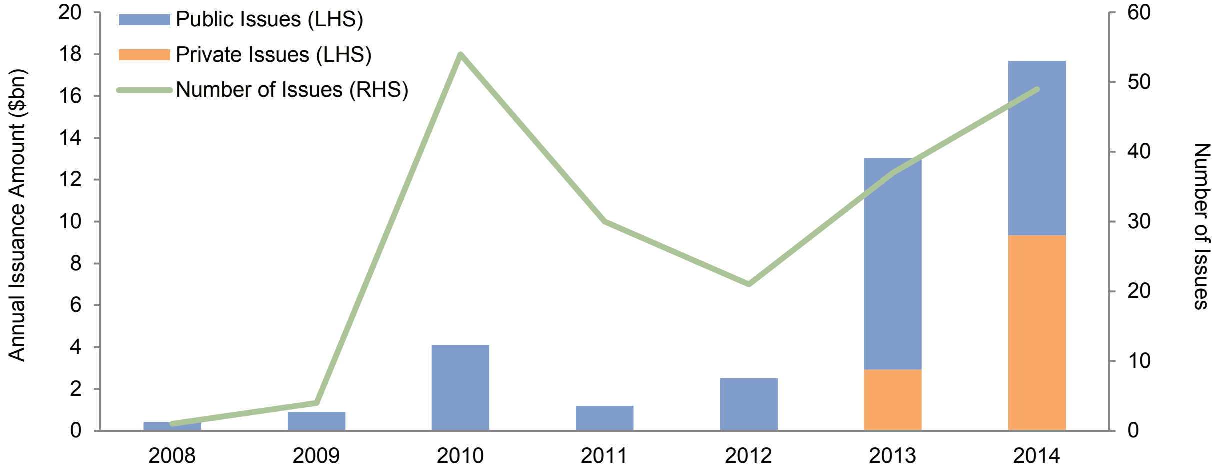
Growth of the Green Bond Market

Commentators normally point to a 3.35 billion SEK (Swedish kronor) (US$416 million) offering in November 2008 as the first "green bond." The bond was developed by the World Bank and the Swedish bank SEB.[1] World Bank entities have subsequently issued close to $9 billion in green bonds, which have been used to fund climate mitigation and adaptation projects in middle income countries, such as the Sunshine Schools Project in China, which is installing 100 mega-watts of solar power in approximately 1,000 public schools and colleges in Beijing.

The World Bank and other supranationals (the African Development Bank, the Asian Development Bank, and the European Investment Bank) were the only green bond

[1] According to a 2009 press release, "that issue marked the first time the World Bank had offered bonds to raise funds identified to a specific World Bank program." The World Bank has also issued green bonds via the International Finance Corporation, one of its group units.

Volume and Number of Green Bond Issues
2008–14



issuers until February 2011, when Norway's Kommunalbanken, a national agency that provides low-cost funding to Norwegian municipalities, became the first national issuer. The bond was used to finance municipal projects to reduce energy consumption and the emission of greenhouse gases.

The green bond market really began to take off in 2013 when the volume and number of issuances significantly increased. The European Investment Bank's July 2013 offering of a €2.6 billion ($3.4 billion) green bond was more than three times larger than any prior issuance. The pace has picked up even more in 2014, and more than $5 billion of green bonds were issued in June and July of this year alone. To date, 40+ entities have issued nearly 200 green bonds in at least 22 currencies. Around 170 of these bonds, with a face amount of roughly $37 billion, are still outstanding.

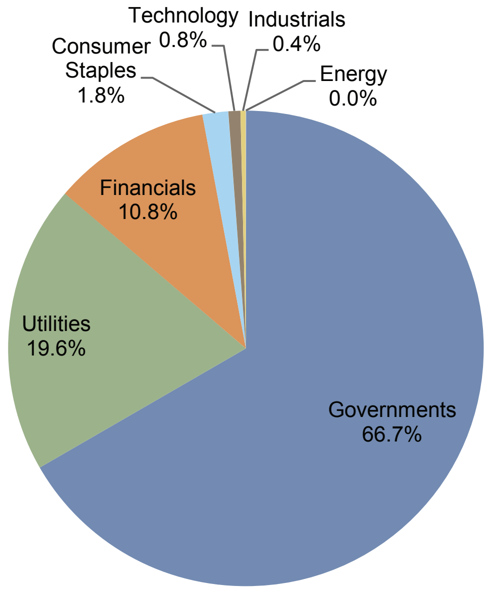
Who Is Issuing Green Bonds?

While the World Bank has issued about one-quarter of all green bonds, its role has naturally diminished as the market has broadened. The World Bank and other supranationals accounted for approximately 80% of the market (by face value) in mid-2013, but this share has declined to 45% as of July 22 as other issuers have come to market.[2]

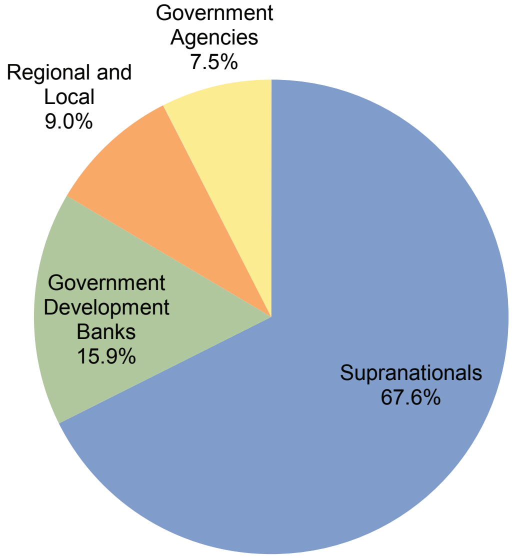
Corporate green bonds were first issued in 2013 and approximately 20 new corporate issuers have now come to market. Utilities and financials have accounted for the overwhelming majority of corporate green bonds thus far. In March 2014, Toyota issued

[2] The numbers in this section are based primarily on Bloomberg data, which capture the great majority of the green bond universe.

Sector Breakdown of Green Bonds
As of July 22, 2014



Breakdown of Public Sector Green Bonds
As of July 22, 2014



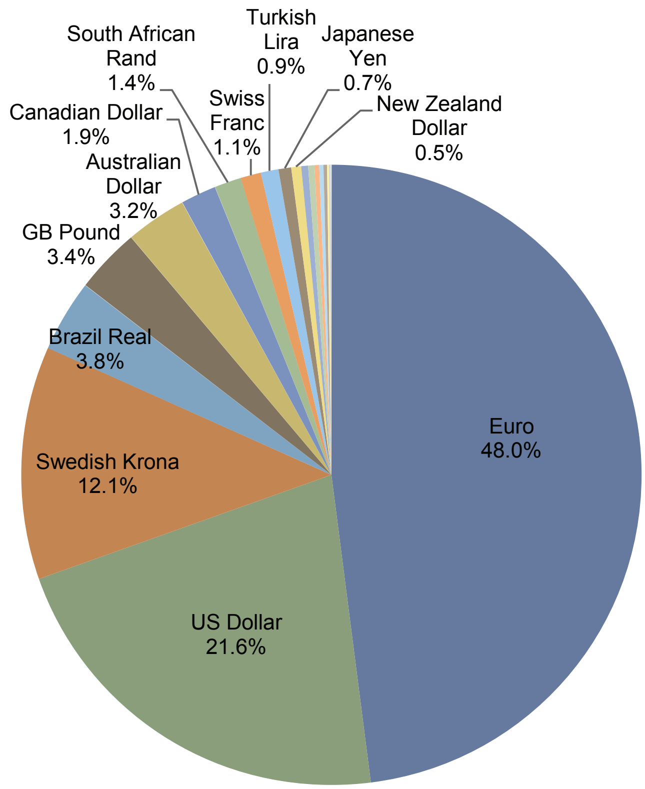
the first asset-backed security (backed by car loans) in the green bond market, with the objective of financing green car loans and leases.

Municipalities have also entered the space, with Massachusetts the first US state to issue a green muni bond in June 2013. Proceeds from this green bond are being used to improve water quality, increase energy efficiency, and clean up pollution. The state is keeping the green bond proceeds in an account separate from other state bond proceeds and issues a quarterly impact report providing updates on the use of the proceeds. Other municipalities that have issued green bonds include Washington, DC; the Region of Ile de France; the City of Johannesburg (South Africa); and the City of Gothenburg (Sweden).

Reflecting the public nature of most issuers, more than 45% of outstanding bonds carry a rating of AAA from Standard & Poor's, with none below investment grade—although 15% of bonds have no rating available. The median maturity at issuance was 5.9 years. Until the recent issuance of a 100-year bond from the District of Columbia Water & Sewer Authority, a March 2014 25-year issuance by the European Investment Bank had the longest maturity. More than two-thirds of the total amount outstanding is in just two currencies, the euro (48.0%) and the US dollar (21.6%). Only about $2 billion of outstanding green bonds have floating or variable rates while less than $1 billion (all from corporates) have been callable.

Greater size and diversity (by issuer, sector, region, credit quality, and individual bond size) will mean greater investor choice, higher potential liquidity, and the opportunity for bond terms to become standardized, lowering transaction costs. Securitization could potentially also be more of a factor as the industry grows, further boosting investment possibilities.

Currency Breakout
As of July 22, 2014



Who Is Buying Green Bonds?

Information about green bond buyers is less available than data on issuers. Early World Bank issuances were typically catalyzed by one or two investors putting in a lead order, with the bank building additional demand. Public entities, including pension funds, were active from the start, and insurers were also early to invest in these bonds. The depth of the buyer community has broadened considerably since the first issuances: German development bank KfW's July 15, 2014, five-year €1.5 billion offering drew interest from 90 institutional investors.

Asset managers have started to show up in force, purchasing 60% and 68%, respectively, of recent large corporate offerings by utilities GDF Suez (France) and Iberdrola (Spain). This suggests growing retail interest. World Bank green bond press releases issued in the last 12 months have mentioned purchases by bank and corporate treasuries, asset managers, insurers, central banks, pension funds, and superannuation funds.

Based on the limited public data available, major buyers of green bonds include Belgian bank KBC Bancassurance Holding ($3.8 billion), the California State Treasury (at least $700 million), and Teachers Advisors Inc. ($288 million). Prominent pension funds, including AP2 and AP3 (Swedish national pension funds), the California State Teachers' Retirement System and New York Common Retirement Fund (US public pension funds), and UniSuper (an Australian superannuation fund) have also been active market participants. In December 2013 the Zurich Insurance Group announced plans to purchase $1 billion of green bonds (BlackRock is running the mandate), a figure it doubled in July. Other buyers include investment managers with ESG or sustainable fixed income mandates.

Top-Ten Green Bond Issues by Size
As of August 7, 2014

Issuer Type of Bond	**Date**	**Size (US$ bn)**	**Use of Proceeds**
European Investment Bank Supranational	7/18/2013	3.4	Earmarked for renewable energy projects, including hydropower, solar, wave, and wind, and energy efficiency projects such as building insulation, cogeneration, and energy loss reduction in transmission and distribution
KfW Bank Supranational	7/22/2014	2	Linked to KfW's environment investment program to finance projects for the generation of power, especially from wind and photovoltaics
Electricité de France Corporate	11/27/2013	1.9	Used for new investments identified by EDF Energies Nouvelles, a subsidiary, for the purposes of the production of renewable energy—developing, installing, and operating green electricity power plants, mainly in Europe and North America
GDF Suez Corporate (2 bonds—different maturities)	5/19/2014	1.6/1.8	To finance renewable energy projects, such as wind farms and hydroelectric stations, and energy efficiency projects such as smart metering systems
Iberdrola International Corporate	4/24/2014	1	To refinance previous projects and new projects that contribute to the transition to a low carbon and climate resilient economy, including renewable energy as well as transition, distribution, and smart grids (excluding project financing from bonds in its business division on conventional electricity production)
Unibail-Rodmaco Corporate	2/26/2014	1	For new or ongoing projects that have received or will receive a BREEAM certificate, a UK accreditation system similar to the US LEED system. BREEAM sets the standard for best practices in sustainable building design, construction, and operation, and is a measure of a building's environmental performance
International Finance Corporation (member of the World Bank Group)	11/15/2013	1	For energy efficiency, renewable energy, and other climate-smart projects in developing countries
International Finance Corporation (member of the World Bank Group)	2/22/2013	1	For energy efficiency, renewable energy, and other climate-smart projects in developing countries
European Investment Bank Supranational	4/8/2014	0.8	Earmarked for renewable energy projects, including hydropower, solar, wave, and wind, and energy efficiency projects such as building insulation, cogeneration, and energy-loss reduction in transmission and distribution

What May Drive Investor Interest

As some investors focus on incorporating ESG factors in their portfolios by allocating a certain percentage of their portfolios to green investments, green bonds may be an attractive way to fulfill policies for sustainable or ESG investments. Beyond funding environmentally focused projects and initiatives, some green bonds also contribute to other social benefits. For example, a World Bank green bond that helps finance a flood prevention project in a developing nation may contribute to food security and poverty reduction in that region. By funding projects for specifically defined purposes, ESG-focused investors have yet another way to flex their influence beyond divestment or shareholder engagement.[3]

Considerations and What to Watch

Green Bond Pricing. To date, green bonds do not appear to have been issued at a premium relative to similar fixed income assets. Surprisingly, even though the green bond issued by Massachusetts was 30% oversubscribed, it carried the exact same yield as the undersubscribed regular general obligation bond that the state issued at the same time. If demand for green bonds continues to accelerate at anything like its present pace, issuers may start charging up for these green bonds at least in part to cover the costs associated with third-party verification on the use of proceeds and ongoing impact reporting (of course, such costs will also decline as monitoring and reporting procedures become more standardized). Moreover, should green bonds be backed more in the future by revenues from targeted projects rather than by supranational or corporate balance sheets, investors may demand some sort of a risk premium.

Detailed Due Diligence Required. Since there is no standard definition of what constitutes a green bond, each investor must decide how to fill a green bond mandate and how to assess the risks. While investors in World Bank green bonds are at present only taking on the (AAA) credit risk of the World Bank, this may change over time.[4] With respect to corporate issuers, meanwhile, "green rating" standards equivalent to those used to gauge a firm's creditworthiness do not exist, so buyers of green bonds must take on greater levels of due diligence. Some green bonds are backed by the performance of the funded asset(s), but most are general corporate bonds backed by the issuer's balance

[3] Investors could take this farther by stipulating which green bond issuers they are willing to hold in their portfolios. For example, an investor may want to limit its exposure to green bonds issued by corporations that have a minimum Intangible Value Assessment score by MSCI. Through this scoring process, MSCI ranks each company by sector based on its ESG profile relative to other companies in the sector.

[4] There is no sovereign risk or project risk associated with these securities, as the World Bank backs the capital lent to the participating countries for the projects and will pay the coupon on the bond from their general assets if the country defaults on the loan. According to the World Bank, no member country has ever defaulted on a loan.

sheet. And while some bonds have monitoring mechanisms, they generally lack covenants through which investors can ensure that they are used for the intended purpose. Increasing issuer acceptance of green bond "guidelines" such as those established by the Green Bond Principles (see the "What Are Green Bonds?" sidebar on page 2) may relieve investors of some of this extra research, since the principles encourage issuers to obtain independent assurances on the use of proceeds and sustainability data reported. However, investors must be aware that green bond proceeds can certainly be used for something other than their intended purpose, frustrating and perhaps embarrassing investors.

Limited Investable Options. While Solactive, a German index provider, launched a Green Bond benchmark in March 2014[5] and other index providers have stated their intent to launch green bond–specific indexes, including a collaboration between Barclays and MSCI, there are no real passive options for dedicated green bond exposure at this point. Apart from those institutions that have bought these bonds directly, investors have gained access to the market by directing their traditional or ESG-focused bond managers to invest in green bonds when they are financially attractive relative to other fixed income investments included in the mandate. We are also aware of a few dedicated green bond strategies. The market is still relatively small and illiquid, especially if an investor confines itself to a particular currency or type of issuer.

Further Innovation in the Socially Responsible Debt Market. The market has responded to the success of green bonds with the proposal of similar securities, such as (1) ESG "labeled" bonds, the first of which was issued by Lloyds Bank to fund socially focused activities such as agriculture, health care, investment in deprived areas, and loans to regional small- and medium-sized enterprises, and (2) blue bonds, which have been recommended to help finance ocean projects such as sustainable fisheries.

The Bottom Line

Green bonds represent an important addition to the menu of sustainable and ESG investment options. The market is growing rapidly, individual bond issues are bigger, and diversity of issues is increasing. As the private sector continues to expand its role, the market should become stronger and more independent of governments and supranationals, providing investors an increasing number of options. ■

[5] The index universe is composed of all bonds that are categorized as green bonds, according to the Climate Bonds Initiative. To be included in the index, bonds need to have an amount outstanding of at least $100 million and a minimum remaining time to maturity of six months. Convertible bonds and inflation-linked bonds are excluded. All bonds are weighted according to their market value with a maximum of 5% per bond.

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Exhibit Notes

Volume and Number of Green Bond Issues
Source: Bloomberg L.P.
Notes: Data for 2014 are as of July 22. There is a substantial government ownership interest in at least some corporate issuers of green bonds.

Sector Breakdown of Green Bonds
Source: Bloomberg L.P.

Breakdown of Public Sector Green Bonds
Source: Bloomberg L.P.

Currency Breakout
Source: Bloomberg L.P.

Top-Ten Green Bond Issues by Size
Sources: Bloomberg L.P., Électricité de France S.A. (EDF), European Investment Bank, GDF SUEZ S.A., Iberdrola, International Finance Corporation (IFC), KfW, and Unibail-Rodamco.